

**By Email and Overnight Mail**

June 10, 2020

Chairman Draper, Board of Environmental Protection  
c/o Department of Environmental Protection  
17 State House Station  
Augusta, ME 04333-0017

RE: NRCM's Appeal of May 11, 2020 DEP Order re: CMP  
Land Use Permits

To Chairman Draper and members of the Board:

Enclosed for filing are (1) the Natural Resources Council of Maine's ("NRCM") request for Board review and appeal of the Department of Environmental Protection's May 11, 2020 Order conditionally approving Central Maine Power Company's ("CMP") applications for State land use permits for the New England Energy Connect project and related exhibits, and (2) NRCM's request for a stay of those permits.

Please do not hesitate to contact our office with any questions.

Sincerely,



James T. Kilbreth

cc: Commissioner Reid (by email)  
Counsel of Record for CMP (by email)  
Counsel of Record for Other Intervenors (by email)

STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF

CENTRAL MAINE POWER COMPANY  
Application for Site Location of Development  
Act permit and Natural Resources Protection  
Act permit for the New England Clean Energy  
Connect (“NECEC”)

L-27625-26- A-N  
L-27625-TB- B-N  
L-27625-2C- C-N  
L-27625-VP- D-N  
L-27625-IW- E-N

**APPLICATION FOR STAY OF  
AGENCY DECISION**

The Natural Resources Council of Maine (“NRCM”) respectfully requests that the Board of Environmental Protection (“Board”) stay the May 11, 2020 Order (“Order”) issued by the Commissioner of the Department of Environmental Protection (the “Department”) conditionally approving Central Maine Power Company’s (“CMP”) applications for State environmental permits for the New England Clean Energy Connect (“NECEC” or “Corridor”). Staying the Order during the pendency of NRCM’s appeal, filed simultaneously herewith, is within the authority of the Board and is appropriate for this project of statewide significance that has not yet been reviewed by the Board. Applicable statutes require that the Board—not the Department—“**shall** decide each application for approval of permits and licenses that **in its judgment** represents a project of statewide significance” and identify the criteria that determine whether a project is of “statewide significance.” 38 M.R.S. §§ 341-D(2), 344(2-A) (emphasis added); 06-96 CMR. Ch. 2 § 17. The Corridor meets each of the criteria identified in statute and rule and can only be permitted

by the Board. Thus, until the Board determines that the NECEC *is not* a project of statewide significance or exercises its mandatory review of projects of statewide significance, the Order must be stayed.

Further, the Order issued in error. Where, as here, construction of the Corridor will irreparably harm NRCM and a stay will not harm CMP, the Board should stay the Order pending its review. Me. Op. Att'y Gen. No. 80-116 (July 15, 1980); 5 M.R.S.A § 11004.

### **BACKGROUND**

CMP is proposing to build a 145-mile, high-voltage, direct current (HVDC) transmission line from Québec to an interconnection with the New England grid in Lewiston. About 54 miles of the transmission line route would consist of an entirely new 150-foot wide transmission corridor through a currently undeveloped section of Maine's North Woods. The record before the Department reveals that CMP's proposed Corridor includes above-ground transmission lines that would severely fragment this critical forest habitat, crossing the Appalachian Trail, countless wetlands and streams, a large, high-quality deer wintering area, and encroaching upon Beattie Pond, a Class 6 remote pond.<sup>1</sup>

The record before the Department also reflects that CMP's Corridor would expand the clearing along a significant portion of the remaining corridor length that runs within its existing power lines, requiring clearing even more vegetation and undertaking additional development within existing corridors. As demonstrated before the Department, this project poses a unique and substantial threat to Maine's environment.

The Department considered applications for a Natural Resources Protection Act (NRPA) permit pursuant to 38 M.R.S. §§ 480-A – 480-JJ and a Site Location of Development Law (Site

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<sup>1</sup> “The board is not bound by the commissioner's findings of fact or conclusions of law but may adopt, modify or reverse findings of fact or conclusions of law established by the commissioner.” 38 M.R.S. § 342-D(4)(A).

Law) permit pursuant to 38 M.R.S. §§ 481 – 490 for CMP’s proposed NECEC Project. The record conclusively demonstrates that this project will not fit harmoniously into the existing natural environment and will adversely affect existing uses, scenic character, and natural resources, including significant vernal pools, brook trout habitat, wildlife habitat and lifecycles, and deer wintering areas. The NECEC complies with neither NRPA nor the Site Law. A stay is appropriate while the Board reviews the NECEC’s compliance with NRPA and the Site Law.

### ARGUMENT

#### **I. The Board Must Issue a Stay and Review the Application *de novo* Because This is a Project of Statewide Significance That Cannot Be Authorized by the Department**

Controlling statutes require the Board to assume jurisdiction over and decide license applications that involve projects of statewide significance. 38 M.R.S. §§ 341-D(2), 344(2-A); 06-96 CMR. Ch. 2 § 17(C). These statutes state that the Board—not the Department—“**shall** decide each application for approval of permits and licenses that **in its judgment** represents a project of statewide significance.” 38 M.R.S. § 341-D(2) (emphasis added). A project is of statewide significance if it meets at least 3 of the 4 statutorily defined criteria:

1. Will have an environmental or economic impact in more than one municipality, territory or county;
2. Involves an activity not previously permitted or licensed in the State;
3. Is likely to come under significant public scrutiny; and
4. Is located in more than one municipality, territory or county.

*Id.* § 341-D(2)(E); *accord* 06-96 CMR. Ch. 2 § 17(C).

Use of the word “shall” imposes a mandatory duty and does not provide the Board or Commissioner with discretion. The Legislature set forth specific rules to “be observed in the construction of statutes, unless such construction is inconsistent with the plain meaning of the enactment.” 1 M.R.S. § 71. One of those specific rules is that, when used in laws enacted after

December 1, 1989, the words “‘shall’ and ‘must’ are terms of equal weight that indicate a mandatory duty, action or requirement.” *Id.* § 71(9-A); accord *McGee v. Sec’y of State*, 2006 ME 50, ¶ 14 & n.3, 896 A.2d 933, 938–39. “If the meaning of the language is clear, we interpret the statute to mean what it says.” *N.A. Burkitt, Inc. v. Champion Rd. Mach. Ltd.*, 2000 ME 209, ¶ 6, 763 A.2d 106, 107 (citing *Kimball v. Land Use Regulation Comm’n*, 2000 ME 20, ¶ 18, 745 A.2d 387, 392). Here, the statutory mandate is clear.

Nor is the Commissioner possessed of authority to retain jurisdiction over an application that meets 3 of the 4 criteria. 38 M.R.S. § 344(2-A) (“the commissioner **shall decide** as expeditiously as possible if an application meets 3 of the 4 criteria set forth in section 341-D, subsection 2 and **shall request** that the board assume jurisdiction of that application. .... If at any subsequent time during the review of an application the commissioner decides that the application falls under section 341-D, subsection 2, the commissioner **shall request** that the board assume jurisdiction of the application”) (emphasis added).<sup>2</sup>

Thus, unless the Board determines in its judgment that the Corridor *is not* a project of statewide significance—a conclusion that would be flatly contrary to the statutory definition of “statewide significance”—then the Order must be stayed or vacated until the Board reviews it independently.

The Corridor is clearly a project of statewide significance:

- *First*, the Corridor will have environmental or economic effects across many more than one municipality, territory, or county. The Order describes the breadth of the project,

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<sup>2</sup> This section of the law also contemplates that interested persons may request that the commissioner refer an application to the Board, and the commissioner is required to issue a written decision if he declines to do so. 38 M.R.S. § 344(2-A). However, the statutory mandate imposed on the Commissioner and the Board is entirely independent of a request from an interested person. 38 M.R.S. §§ 341-D(2), 344(2-A); 06-96 CMR. Ch. 2 § 17(C). Moreover, because the statutes are written with regard to whether the Commissioner or the Board shall “assume jurisdiction” of a particular decision, *id.*, this issue of subject matter jurisdiction within the agency may be raised at any time—including on appeal—and is decided based on the “jurisdiction, powers and authority that are conferred on the Board by express legislative grant” or necessary implication. *Ford Motor Co. v. Darling’s*, 2014 ME 7, ¶¶ 41-42, 86 A.3d 35, 49.

which includes a 145.3-mile-long transmission line from Beattie Township to Lewiston a 26.5 mile line from Windsor to Wiscasset, and multiple new or renovated converter stations or substations. Order, 3. The environmental impacts pursuant to NRPA and the Site Law are, as described in the Order, significant. Order, 1.

- *Second*, the Corridor involves an activity not previously permitted or licensed in the State—unlike other transmission line projects contemplated by the Department and the Land Use Planning Commission in the past, the Corridor does not meet any reliability need for Maine or connect a new generator within Maine to the grid, but instead proposes a massive corridor as a for-profit passthrough primarily for the benefit of foreign jurisdictions.
- *Third*, the CMP Corridor has undoubtedly come under significant public scrutiny. The sheer number of parties to the underlying Department proceeding evidence the hotly contested nature of the project. A Google search reveals the same: the term “CMP Corridor” returned roughly 21,600 results on June 8, 2020. More than 66,000 Mainers likewise signed petitions in support of a ballot initiative aimed at stopping the Corridor, which is slated to appear on the November ballot. *Reed v. Sec’y of State*, 2020 ME 57, ¶ 2. This project has attracted significant and ongoing public scrutiny because people are rightly concerned about its negative effects.
- *Fourth*, as described above, the project is located across multiple municipalities and counties. *See* Order, 3.

In light of the foregoing, the Board is the proper—and only—licensing decision maker.

The Commissioner was required to refer the matter to the Board, and the Board is required to assert original jurisdiction over and decide CMP’s applications for the Corridor. *See* 38 M.R.S. §§ 341-D(2), 344(2-A); 06-096 CMR Ch. 2 § 17(C). The Board must correct this flawed process and assume responsibility by holding a public hearing, *see* 06-096 CMR Ch. 2 § 7(B), and undertaking its own independent review of CMP’s application.

## **II. The Board Should Issue a Stay Pursuant to the Administrative Procedures Act**

Separate from the issues specific to projects of statewide significance, on any permit granted by the Department, the Board “may issue a stay upon a showing of irreparable injury to the petitioner, a strong likelihood of success on the merits, and no substantial harm to adverse parties or the general public.” 5 M.R.S.A § 11004; *see also* Me. Op. Att’y Gen. No. 80-116 (July

15, 1980) (opining that the Board of Environmental Protection can issue a stay during pendency of appeal). All three factors apply here.

*First*, NRCM will suffer irreparable injury if the stay is not granted. “An irreparable injury is one for which there is no adequate remedy at law.” *Suzman v. Harvey*, No. AP-07-78, 2008 WL 7929211 (Me. Super. May 05, 2008) (Jabar, J.) (citations omitted). Here, no remedy at law can reverse the irreparable damage that will result to Maine’s environment if CMP begins construction on the Corridor.

As outlined in its simultaneously filed appeal, incorporated herein by reference, NRCM is a membership organization with more than 25,000 supporters that exists solely to protect, restore, and conserve Maine’s environment.<sup>3</sup> As the record of the underlying proceeding reflects, there will be significant adverse environmental effects if CMP begins construction of the Corridor based on the Department’s conditional approval of its land use permits. Such construction will devastate trout streams, wildlife habitats, and the other natural resources that NRCM exists to protect. As Dr. David Publicover, Senior Staff Scientist and Acting Director of Research with the Appalachian Mountain Club (AMC), testified in the underlying proceedings, CMP’s proposed Corridor would negatively affect “the heart of a globally significant forest region that is notable for its relatively natural forest composition, lack of permanent development, and high level of ecological connectivity.”<sup>4</sup> Jeff Reardon, Maine Brook Trout Project Director for Trout Unlimited in Maine, likewise testified about the Corridor’s devastating effects, noting that the planned area of

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<sup>3</sup> See <https://www.nrcm.org/about-nrcm/>.

<sup>4</sup> David Publicover Direct Testimony, 3, available at <https://www.maine.gov/dep/ftp/projects/necec/hearing/pre-filed-testimony/Intervenor%20Group%204/2019-02-28%203%20-%20Group%204%20D%20Publicover%20Direct%20Testimony%20with%20Exhibits%2014-18.pdf>.

construction contains the majority of the remaining un-degraded aquatic habitat in the northeast region, making this project an incredible threat to Maine's brook trout habitat.<sup>5</sup>

NRCM and its members will also suffer economic harm if the Board does not stay the Orders. NRCM counts among its members guides who make their living offering guided tours (e.g., fishing and hunting opportunities) on the land that is the subject of this Order. If the Board does not stay the Order and CMP begins construction, it will gravely affect the ability of NRCM members to pursue their livelihoods. For example, Todd Towle, NRCM member and owner of Kingfisher River Guides, testified that the Corridor will impact both the health of wild brook trout in the region and his fishing and guiding business. He noted that he is particularly concerned about the effect on: (a) Cold Stream and Tomhegan Stream because of the number of crossings that are likely to affect stream temperatures and be visible to clients; (b) Gold Brook because of the proximity of the NECEC and the number of crossings of the brook and its tributaries; and (c) Horse Brook because it is a coldwater tributary to a stream that gets very warm in the summer, making the cold water tributary very important for brook trout health and because it is close to a family camp.<sup>6</sup>

Ron Joseph, another NRCM member and a retired wildlife biologist for the Maine Department of Inland Fisheries and Wildlife and U.S. Fish and Wildlife Service, testified that the NECEC will cross 22 deer yards and increase fragmentation in 11 deer yards through tree clearing.<sup>7</sup> He noted that "continued loss of our remaining deer yards has a significant economic impact on

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<sup>5</sup> Jeff Reardon Direct Testimony, 6, available at <https://www.maine.gov/dep/ftp/projects/neccec/hearing/pre-filed-testimony/Intervenor%20Group%204/2019-02-28%201%20-%20Group%204%20J%20Reardon%20Direct%20Testimony%20with%20Exhibits%201-7.pdf>.

<sup>6</sup> Todd Towle Direct Testimony, 3-6, available at <https://www.maine.gov/dep/ftp/projects/neccec/hearing/pre-filed-testimony/Intervenor%20Group%204/2019-02-28%202%20-%20Group%204%20T%20Towle%20Direct%20Testimony%20with%20Exhibits%208-13.pdf>.

<sup>7</sup> Ron Joseph Direct Testimony, 2, available at <https://www.maine.gov/dep/ftp/projects/neccec/hearing/pre-filed-testimony/Intervenor%20Group%204/2019-02-28%205%20-%20Group%204%20R%20Joseph%20Direct%20Testimony.pdf>.

traditional Maine sporting lodges and rural communities that depend on income from deer hunters.”<sup>8</sup> Most importantly, the potential effects to the Upper Kennebec Deer Wintering Area are particularly troubling because this deer yard is in an area of the state already suffering from low deer densities, making it critically important to deer populations as well as recreational hunters and hunting businesses in the region.<sup>9</sup>

As outlined in greater detail in its appeal, incorporated herein by reference, NRCM is also concerned that CMP failed to adequately assess alternatives. For example, CMP did not consider whether burying the transmission line is a possible alternative that would allow the project to proceed while significantly decreasing the impact to the environment. If CMP is allowed to begin construction, it could limit NRCM’s ability to address CMP’s inadequate alternative analysis during the course of this appeal.

For the foregoing reasons, NRCM and its members will be irreparably harmed if CMP begins construction, and the Board should therefore grant NRCM’s stay request. *See Suzman*, No. AP-07-78, 2008 WL 7929211 (“simple notion” that an ill patient deprived of care will suffer sufficient to show irreparable harm).

*Second*, NRCM has a strong likelihood of success on the merits of its appeal and a stay is appropriate. *See Me. Op. Att’y Gen. No. 80-116* (July 15, 1980) (this “requirement need not amount to a probability that the appeal will succeed but rather *merely a substantial possibility of success*) (citations and quotations omitted) (emphasis added). The Department reached incorrect conclusions of fact and law in the Order, and the Board is substantially likely to overturn the Department’s decision on appeal.

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<sup>8</sup> *Id.* at 3.

<sup>9</sup> *Id.* at 4.

The record reflects—and the Department agreed—that the Corridor will cause substantial environmental harm. Despite this overwhelming evidence, the Department nevertheless conditionally approved CMP’s permits. The mitigation conditions imposed by the Department are insufficient, as NRCM will show the Board, to assuage the harm the Corridor will cause. For example, the Department’s proposed mitigation conditions will not adequately protect affected fisheries, and the money CMP must set aside for culvert replacements has no nexus to, and will not mitigate, the harm to affected brook trout habitats. The Department-imposed mitigation conditions likewise will not compensate for the harm caused to wildlife, including deer, birds, and other native species who make their home in the affected area. Troublingly, the Department did not permit NRCM to present evidence about the greenhouse gas effects of the Corridor, and it erred by relying, without any independent assessment, on CMP’s incorrect representations that the Corridor will result in climate benefits. For these and the other reasons outlined in NRCM’s appeal, NRCM is likely to succeed in demonstrating that the Order insufficiently addresses the impacts from NECEC to protected resources and the environment and a stay of the Department’s decision is appropriate.<sup>10</sup> *See, e.g., Vafiades v. Maine State Harness Racing Com'n*, No. CUMSC-AP-16-21, 2016 WL 4151506, at \*2 (Me. Super. June 8, 2016) (granting stay request where no competent and substantial record evidence supported agency’s holding).

Moreover, the CMP Corridor will substantially alter two public reserve lots owned by the State of Maine and managed by the Bureau of Parks and Lands. The record reflects that when CMP presented its application to the Department, it included a Bureau of Parks and Lands (BPL)

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<sup>10</sup> NRCM’s appeal details the Commissioner’s errors. Because both NRCM’s appeal and this Stay Application are now before the Board, NRCM has not restated herein every argument made in its appeal and instead incorporates its appeal by reference.

lease of State Public Reserved Land in Johnson Mountain and West Forks Plantation Northeast<sup>11</sup> parcels that was void as a matter of law because it lacked the requisite approval of the State Legislature and was further unlawfully issued to a utility that lacked the requisite certificate of public convenience and necessity (“CPCN”). This lease was a clear violation of 35-A MRS § 3132(13) because no CPCN had yet been issued for any project crossing Johnson Mountain or West Forks Plantation Northeast.<sup>12</sup> This lease was also in plain violation of the Constitutional and statutory requirements that a 2/3<sup>rd</sup> vote of the Legislature is necessary to approve a substantial alteration to public reserve lands. Me. Const. art. IX, § 23; 12 M.R.S. §§ 598-598-B. The Department’s treatment of this issue was an error of law and NRCM is likely to prevail on this issue before the Board.

*Third*, CMP, other adverse parties, and the general public will not be harmed if the Board implements a stay. The NECEC is not yet authorized at the federal level, including issuance of either a Presidential Permit or authorization under the Clean Water Act by the US Army Corps of Engineers. Further it is not clear that CMP has yet commenced any necessary local approval processes. Without these permits, the NECEC is not “shovel ready.”<sup>13</sup> Moreover, more than

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<sup>11</sup> 2014 Transmission Line Lease Between Department of Agriculture, Conservation, and Forestry, Bureau of Parks and Lands and Central Maine Power, p. 11 (Attachment A to Group 4’s Comments on Draft Order).

<sup>12</sup> 35-A M.R.S. § 3132 states: “Public lands. The State, any agency or authority of the State or any political subdivision of the State may not sell, lease or otherwise convey any interest in public land, **other than a future interest or option to purchase an interest in land** that is conditioned on satisfaction of the terms of this subsection, to any person for the purpose of constructing a transmission line subject to this section, unless the person **has received** a certificate of public convenience and necessity from the commission pursuant to this section” (emphasis added).

<sup>13</sup> For example, CMP still needs to obtain at least the permits listed below.

- a) Presidential Permit from the Department of Energy. *See* Cent. Me. Power Co., Request for a Certificate of Public Convenience and Necessity for the Construction of the New England Clean Energy Connect (NECEC) Transmission Project, Me. Pub. Utils. Comm. Docket No. 2017-00232, App., Vol. I at 21, 24 (Sept. 27, 2017) (“CMP MPUC App.”).
- b) Clean Water Act Permit under Section 10 of the Rivers and Harbors Act from the U.S. Army Corps of Engineers. *See id.*
- c) PUC approval of CMP’s joint petition pursuant to 35-A M.R.S. §§ 707, 708, 901, 902, and 1101, which includes approval transferring CMP’s interest in several transmission service agreements, third-party vendor agreements, related assets, permits, leases, easements, and pending applications to NECEC LLC. *See* Cent. Me. Power Co. & NECEC Transmission LLC, Request for Approval of Petition Pursuant to 35-A M.R.S.A.

66,000 Mainers signed circulated petitions in support of a ballot initiative aimed at stopping the Corridor, which initiative the Secretary of State, Superior Court, and Law Court declared valid and which is slated to appear on the November ballot. *See Reed v. Sec'y of State*, 2020 ME 57. The CMP Corridor is a multi-year project that continues to wind its way through the various federal, state, and local permitting and approval processes, including related appeals and challenges. CMP therefore should not be allowed to begin construction on any part of the Corridor until it obtains all necessary permits and the approval of Maine voters at the ballot box, and staying the Order will help prevent that from happening. Waiting to begin construction until all permits have been granted is common construction practice, and staying these permits to ensure that no construction begins prior to that point will not harm CMP and the other adverse parties.

A stay likewise will not harm the general public. In fact, a stay will *benefit* the general public by avoiding permanent adverse impacts to Maine's natural resources for the benefit of energy consumers in Massachusetts before all necessary authorizations for the NECEC issue. It is the most pristine parts of Maine that are most at risk because they are outside local control or regulation and far from close oversight by a vigilant public. A stay is undoubtedly appropriate where, as here, there is no harm to the party seeking the permits and substantial harm to the party

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707, 708, 901 and 1101 Related to the Transfer of the New England Clean Energy Connect to NECEC Transmission LLC; Me. Pub. Utils. Comm. Docket No. 2019-00179, Petition at 17-21 (August 13, 2019).

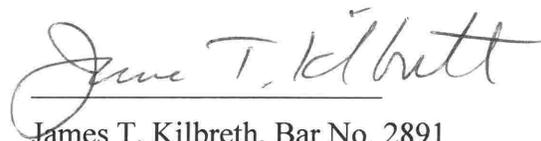
- d) Submerged land and public reserve leases from the Maine Department of Agriculture, Conservation and Forestry. *See* CMP MPUC App. at 18.
- e) Permits from the Maine Department of Transportation. *Id.*
- f) Rezoning or site plan approvals—as well as permits required by local ordinances—from twenty municipalities. *Id.* at 18-19, 26-27.
- g) ISO-NE approval for interconnection pursuant to Section I.3.9 of ISO-NE's Transmission Markets and Services Tariff (Jan. 2020 Progress Report at 4), which CMP has not yet obtained, *see* ISO-NE, Generator Interconnection Queue, <https://irtt.iso-ne.com/reports/external> (last visited May 29, 2020) (refer to Queue Position 639).

seeking the stay. *See Vafiades*, No. CUMSC-AP-16-21, 2016 WL 4151506, at \*2 (stay appropriate where no harm would result to the public or the party opposing the stay).

### CONCLUSION

For the foregoing reasons, NRCM respectfully requests that the Board stay the Order until the Board completes its review.

Dated at Portland, Maine  
this 10th day of June 2020



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STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF

CENTRAL MAINE POWER COMPANY  
Application for Site Location of Development  
Act permit and Natural Resources Protection  
Act permit for the New England Clean Energy  
Connect (“NECEC”)

L-27625-26- A-N  
L-27625-TB- B-N  
L-27625-2C- C-N  
L-27625-VP- D-N  
L-27625-IW- E-N

**Public Hearing Requested**

**NATURAL RESOURCES COUNCIL OF  
MAINE REQUEST FOR BOARD OF  
ENVIRONMENTAL PROTECTION  
REVIEW OF NECEC AND,  
ALTERNATIVELY, APPEAL OF THE  
DEPARTMENT’S ORDER APPROVING  
NECEC**

The Natural Resources Council of Maine (“NRCM”) requests that the Board of Environmental Protection (“Board”) (i) vacate the May 11, 2020 Order (“Order”) of the Maine Department of Environmental Protection (“Department”) conditionally approving Central Maine Power Company’s (“CMP”) applications for approval of the New England Clean Energy Connect (“NECEC” or “Corridor”), and (ii) exercise its sole and mandatory authority to determine compliance of NECEC with Maine’s environmental statutes, specifically the Natural Resource Protection Act (“NRPA”) at 38 M.R.S. §§ 480-A – 480-JJ and the Site Location of Development Act (“Site Law”) at 38 M.R.S. §§ 481 – 490, as required by 38 M.R.S. §§ 341-D(2), 344(2-A) and 06-096 CMR. Ch. 2 § 17(C). Alternatively, NRCM appeals the Order. NRCM respectfully requests that the Board either assume original jurisdiction over this project of statewide significance and hold a public hearing or, alternatively, hold such a hearing and consider

supplemental evidence in reviewing the Order on appeal.<sup>1</sup> As detailed below, the extensive and onerous adverse impacts to natural resources and the environment from the NECEC are unreasonable and thus do not comply with NRPA or the Site Law. Consequently, even if the Board declines to exercise its mandatory review authority, it must reverse the Order on appeal.

## **BACKGROUND**

CMP proposes construction and operation of a 145-mile, high-voltage, direct current (HVDC) transmission line, called the New England Clean Energy Connect, from Québec to an interconnection with the New England energy grid in Lewiston. About 54 miles of the transmission line route would consist of an entirely new 150-foot wide partially-cleared transmission corridor through a currently undeveloped section of Maine's North Woods. The NECEC includes above-ground transmission lines that would severely fragment this critical forest habitat, crossing the Appalachian Trail, countless wetlands and streams, deer wintering areas, and encroaching upon Beattie Pond, a Class 6 remote pond.

CMP also proposes expansion of the clearing running under and beside its existing lines, requiring removal of additional vegetation and increasing the density and intensity of impacts to the entirety of the existing corridor. The NECEC poses a unique threat to Maine's environment. Unlike other transmission line projects contemplated by the Department and the Land Use Planning Commission (Commission or LUPC), the NECEC does not ensure reliable power for Mainers. Instead, it is simply a profit making operation by a Maine public utility that, unlike utility operations, is more akin to a giant subdivision or shopping mall. However, unlike such a traditional

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<sup>1</sup> NRCM hereby incorporates by reference herein all of the prefiled direct, rebuttal, surrebuttal, and hearing testimony of and comments on the Draft Department Order—and any attachments or exhibits thereto—by Groups 1, 2, 4, 6, 8, and 10 and the comments on the Draft Department Order by the Innu Nation, including all attachments thereto, for review by the Board as part of its original jurisdiction review of the NECEC or appellate review of the Order.

development project, this project carves a wide, nearly 150-mile long continuous swath from the Canadian border to Lewiston, including roughly 53 miles of new line in Maine's North Woods.

Commissioner Mercer, commencing in 2017, improperly failed to refer the NECEC, a project of statewide significance, to the Board for its review as required by 38 M.R.S. §§ 341-D(2), 344(2-A) and 06-96 CMR. Ch. 2 § 17(C). Instead, the Commissioner assigned a hearing officer, and the Department proceeded to consider, review and then, in May of 2020, conditionally approve CMP's applications for NRPA and Site Law approvals for NECEC resulting in the Order. Because only the Board, and not the Commissioner, is statutorily authorized to review and approve projects of statewide significance, the Board must vacate the Order and independently and *de novo* review compliance of the NECEC with NRPA and the Site Law as required by statute and as implemented by Chapters 2 and 3 of the Department's Rules.

It is clear from the record before the Department that the NECEC fails to comply with NRPA or the Site Law. Thus, should the Board fail to exercise its original jurisdiction over the NECEC as required by statute, it must overturn the Department's decision on appeal. 06-096 CMR Ch. 2 § 24. NECEC impacts to protected resources and the environment are unreasonable and unsupported by a demonstration that there are not practicable alternatives. The project will not fit harmoniously into the existing natural environment and will adversely and unreasonably affect existing uses, scenic character, and natural resources, including significant vernal pools and wetlands, brook trout habitat, wildlife habitat and lifecycles, water quality, and deer wintering areas.

## DISCUSSION

### **I. NRCM Has Standing as an Aggrieved Party and as a Party to Department Proceedings on the Order.**

NRCM is Maine's largest environmental advocacy group with over 25,000 members and supporters. NRCM's mission is protecting, restoring, and conserving Maine's environment, now and for future generations.<sup>2</sup> Many of NRCM's members use the area proposed for the NECEC for their outdoor recreation, such as fishing, hunting, and hiking. NRCM also has members and supporters who are guides in this area, and NECEC would harm their businesses. As such, NRCM is an aggrieved party with standing to pursue this appeal. *See* 06-096 CMR Ch. 2 § 24(B)(1).

NRCM petitioned to intervene as a party to Department proceedings resulting in the Order, and the First Procedural Order<sup>3</sup> therein held that NRCM established particularized injury as required for party status under 06-096 CMR Ch. 3 § 11. NRCM's submissions and the Department's findings there are incorporated by reference in support of its request for the Board to exercise original jurisdiction pursuant to 06-096 CMR Ch. 2 § 17 and, alternatively, on appeal of the Order pursuant to 06-096 CMR Ch. 2 § 24.<sup>4</sup>

### **II. Because the Commissioner Lacks Authority to Review Projects of Statewide Significance Like NECEC, the Board Must Vacate the Order and Assume Original Jurisdiction.**

Controlling statutes require the Board to assume jurisdiction over and decide license applications that involve projects of statewide significance. 38 M.R.S. §§ 341-D(2), 344(2-A); 06-

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<sup>2</sup> *See* <https://www.nrcm.org/about-nrcm/>.

<sup>3</sup> NRCM incorporates by reference its intervention petition and the First Procedural Order granting NRCM's intervention.

<sup>4</sup> NRCM's standing is consistent with the Department's previous finding in this matter, and Maine courts also regularly hold that similarly situated parties have standing to pursue appeals. *See, e.g., Conservation Law Found., Inc. v. Town of Lincolnville*, No. AP-00-3, 2001 WL 1736584, at \*7 (Me. Super. Feb. 28, 2001); *Nat. Res. Council of Maine v. Pub. Utilities Comm'n*, 567 A.2d 71, 73 (Me. 1989); *Hammond Lumber Co. v. Fin. Auth. of Maine*, 521 A.2d 283, 287 (Me. 1987).

96 CMR Ch. 2 § 17(C). These statutes require that the Board—not the Commissioner—“**shall** decide each application for approval of permits and licenses that in its judgment represents a project of statewide significance.” 38 M.R.S. § 341-D(2). A project is of statewide significance if it meets at least 3 of the 4 statutorily defined criteria:

1. Will have an environmental or economic impact in more than one municipality, territory or county;
2. Involves an activity not previously permitted or licensed in the State;
3. Is likely to come under significant public scrutiny; and
4. Is located in more than one municipality, territory or county.

*Id.* § 341-D(2)(E); *accord* 06-096 CMR Ch. 2 § 17(C).

Use of the word “shall” imposes a mandatory duty and does not provide the Board or Commissioner with discretion. The Legislature provided specific rules to “be observed in the construction of statutes, unless such construction is inconsistent with the plain meaning of the enactment.” 1 M.R.S. § 71. One such specific rule is that, when used in laws enacted after December 1, 1989, the words “‘shall’ and ‘must’ are terms of equal weight that indicate a mandatory duty, action or requirement.” *Id.* § 71(9-A); *accord* *McGee v. Sec’y of State*, 2006 ME 50, ¶ 14 & n.3, 896 A.2d 933, 938–39. “If the meaning of the language is clear, we interpret the statute to mean what it says.” *N.A. Burkitt, Inc. v. Champion Rd. Mach. Ltd.*, 2000 ME 209, ¶ 6, 763 A.2d 106, 107 (*citing* *Kimball v. Land Use Regulation Comm’n*, 2000 ME 20, ¶ 18, 745 A.2d 387, 392). Here, the statutory mandate is clear. Only the Board has jurisdiction to review the NECEC.

Nor is there legal authority supporting the Commissioner’s retention of jurisdiction over an application that meets 3 of the 4 criteria and is thereby defined as a project of statewide significance. 38 M.R.S. § 344(2-A) (“the commissioner **shall** decide as expeditiously as possible if an application meets 3 of the 4 criteria set forth in section 341-D, subsection 2 and **shall** request

that the board assume jurisdiction of that application. .... If at any subsequent time during the review of an application the commissioner decides that the application falls under section 341-D, subsection 2, the commissioner **shall** request that the board assume jurisdiction of the application”) (emphasis added).<sup>5</sup>

Thus, unless the Board determines that NECEC does not meet the definition of project of statewide significance—a conclusion that would be flatly contrary to the statutory definition of “statewide significance”—then the Order is without legal effect because the Commissioner lacked jurisdiction to issue it.

NECEC is the prototypical project of statewide significance, handily meeting all four statutory and regulatory definitional standards:

- *First*, NECEC will have environmental or economic effects across more than one municipality, territory, or county. The Order describes the breadth of the project, which includes a 145.3 mile long transmission line from Beattie Township to Lewiston, a 26.5 mile line from Windsor to Wiscasset, and multiple new or renovated converter stations or substations. Order, 3. The environmental impacts pursuant to NRPA and the Site Law are, as described in the Order, significant. Order, 1.
- *Second*, NECEC involves an activity not previously permitted or licensed in the State—namely the transmission of energy from one foreign jurisdiction (Québec) to an interconnection with the New England grid in Lewiston in order to benefit ratepayers in another foreign jurisdiction (Massachusetts). Unlike other transmission line projects contemplated by the Department and LUPC in the past, this project does not meet any reliability need for Maine or connect a new generator within Maine but instead proposes a massive corridor as a for-profit venture primarily for the benefit of foreign jurisdictions.

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<sup>5</sup> This section of the law also contemplates that interested persons may request that the Commissioner refer an application to the Board, and that the Commissioner is required to issue a written decision if s/he declines to do so. 38 M.R.S. § 344(2-A). It is unclear whether this occurred. However, the statutory mandate imposed on the Commissioner and the Board is entirely independent of a request from any interested person. 38 M.R.S. §§ 341-D(2); 344(2-A); 06-96 CMR. Ch. 2 § 17(C). Moreover, because the statutes are written with regard to whether the Commissioner or the Board shall “assume jurisdiction” of a particular decision, *id.*, this issue of subject matter jurisdiction within the agency may be raised at anytime—including on appeal—and is decided based on the “jurisdiction, powers and authority that are conferred on the Board by express legislative grant.” *Ford Motor Co. v. Darling's*, 2014 ME 7, ¶¶ 41-42, 86 A.3d 35, 49.

- *Third*, NECEC has undoubtedly come under significant public scrutiny. The sheer number of parties to the underlying Department proceeding evidence the hotly contested nature of the project. A Google search reveals the same: the term “CMP Corridor” returned roughly 21,600 results on June 8, 2020. More than 66,000 Mainers likewise signed petitions in support of a ballot initiative aimed at stopping the Corridor, which is slated to appear on the November ballot. *Reed v. Sec’y of State*, 2020 ME 57, ¶ 2. This project has attracted significant and ongoing public scrutiny because people are rightly concerned about its negative effects.
- *Fourth*, as described above, the NECEC spans nearly 150 miles and multiple municipalities and counties. *See Order*, 3.

In light of the foregoing, the Board is the proper—and only—licensing decision maker.

The Commissioner is required to refer projects of statewide significance, like NECEC, to the Board. The Board is required to assert original jurisdiction over and determine compliance of a project of statewide significance like NECEC with NRPA and the Site Law. *See* 38 M.R.S. §§ 341-D(2), 344(2-A); 06-096 CMR Ch. 2 § 17(C). The Board must correct this flawed process and assume responsibility by holding a public hearing and undertaking its own independent review of CMP’s application.

**III. Exercise of Original Jurisdiction Allows the Board to Address the Threshold Question of Jurisdiction as well as Numerous Errors in and Lack of Substantial Evidence Supporting the Order.**

In addition to issuance without jurisdiction, the Order contains numerous errors of law and is unsupported by substantial evidence. The Order likewise imposes conditions that purport to mitigate NECEC’s impacts to protected resources and the environment but which fail to meet the standards set for the in NRPA and the Site Law. *Order*, 1-2. Whether the Board assumes original jurisdiction, or considers these issues on appeal, the Board should conduct a *de novo* review of this matter, 38 M.R.S. § 341-D(4)(A) (“The board is not bound by the commissioner's findings of fact or conclusions of law but may adopt, modify or reverse findings of fact or conclusions of law

established by the commissioner”); *accord* 06-096 CMR Ch. 2 § 24(G), and reverse the Order for the reasons detailed below.<sup>6</sup>

**A. CMP does not have sufficient right, title or interest in the NECEC.**

Right, title and interest (“TRI”) presents a jurisdictional bar to Board or Department review and must exist at all times. 06-096 CMR Ch. 2 § 11(D). CMP does not have TRI in NECEC both because it agreed to transfer its interest in NECEC before NECEC is built or operated and because the documentation of TRI it presented is patently illegal.

*First*, during the course of the Department proceedings on NECEC, CMP’s TRI in the NECEC materially changed through execution and approval of a stipulation before the PUC (which CMP was required to do in order to obtain its Certificate of Public Convenience and Necessity (“CPCN”). That stipulation specified that “CMP will transfer and convey the NECEC to NECEC Transmission LLC (“NECEC LLC”), a Delaware limited liability company that is a wholly owned subsidiary within the Avangrid Networks family of companies and is not a subsidiary of CMP.” *Cent. Me. Power Co.*, Request for Approval of CPCN for the New England Clean Energy Connect Consisting of the Construction of a 1,200 MW HVDC Transmission Line from the Québec-Maine Border to Lewiston (NECEC) and Related Network Upgrades, Docket No. 2017-00232, Stipulation at 16 (Me. P.U.C. Feb. 21, 2019), attached hereto as Appendix D. Because neither CMP nor any subsidiary thereof is legally authorized to construct or operate the NECEC, CMP lacks “the kind of relationship to the ... site, that gives [...] legally cognizable expectation of having the power to use that site in the way that would be authorized by the permit or license he seeks.” *Picker v. State Dep’t of Env’tl. Prot.*, No. CIV.A. AP-01-75, 2002 WL 1023629, at \*3 (Me. Super. Apr. 6, 2002) (*quoting and citing Southridge Corp. v. Board of Env’tl.*

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<sup>6</sup> NRCM seeks reversal of the Order and denial of NECEC authorization under NRPA and the Site Law.

*Protection*, 655 A.2d 345, 348 (Me. 1995) and *Walsh v. City of Brewer*, 315 A.2d 200, 207 (Me. 1974)).

Furthermore, Chapter 2 of the Department's Rules defines a transfer of ownership at Section 1(R). 06-096 CMR Ch. 2 § 1(R). The conveyances required by the CMP Stipulation clearly fall within this definition.<sup>7</sup> Compliance with the CMP Stipulation substitutes a new entity for CMP, one which has not yet presented itself for Department review,<sup>8</sup> and which means that CMP will not, by its very terms, own or operate the NECEC as required by Chapter 2 rules on TRI.

*Second*, the Bureau of Parks and Lands lease of State Public Reserved Land in Johnson Mountain and West Forks Plantation Northeast<sup>9</sup> parcels ("Illegal BPL Lease") was not authorized by the Maine Legislature. The Illegal BPL Lease was also issued to a utility (CMP) which had not yet obtained the required CPCN. As a result, the Illegal BPL Lease is void on its face and does not meet the submission requirements for documentation of TRI set forth in Chapter 2 Section 11(D) of the Department's Rules.

Department reliance on the Illegal BPL Lease as documentation of TRI is improper as even a cursory review reveals significant legal flaws, information about which was readily available during the course of Department review of the NECEC. BPL granted the Illegal BPL Lease prior

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<sup>7</sup> Section 1(R) of Chapter 2 of the Department's Rules defines "Transfer of Ownership" as a change in the legal entity that owns a property, facility or structure that is the subject of a license issued by the Department. A sale or exchange of stock (or in the case of a limited liability corporation, of membership interests), or a merger, is not a transfer of ownership for the purposes of this rule provided the legal entity that owns or operates the property, facility or structure remains the same.

<sup>8</sup> The CMP Stipulation also calls into question numerous Order findings such as those regarding financial and technical ability, where there is no record evidence of NECEC Transmission, LLC's financial and technical qualifications to construct, own, and operate the NECEC.

<sup>9</sup> 2014. Transmission Line Lease Between Department of Agriculture, Conservation, and Forestry, Bureau of Parks and Lands and Central Maine Power, at 11. Attachment A to Group 4's Comments on Draft Order.

to CMP obtaining a CPCN, a clear violation of 35-A MRS § 3132(13).<sup>10</sup> CMP did not receive a CPCN from the Maine Public Utilities Commission (“PUC”) for the NECEC until May 3, 2019. Four and a half years before that, without any public notice or awareness of the NECEC (and perhaps without itself knowing what the lease was for), BPL issued the Illegal BPL Lease to CMP on December 8, 2014. When notified of the CPCN requirement at a February 18, 2020,<sup>11</sup> work session held by the Agriculture, Forestry, and Conservation (“ACF”) Committee of the Maine Legislature on LD 1893, “An Act To Require a Lease of Public Lands To Be Based on Reasonable Market Value and To Require Approval of Such Leases for Commercial Purposes,” BPL Director Andy Cutko stated that, “Now that I am aware of the utilities requirement I would certainly want to follow the law and get that secured prior.”<sup>12</sup> The ACF Committee unanimously voted out of committee an amended version of LD 1893 finding that the Illegal BPL Lease violated 35-A M.R.S. § 3132 and requiring any new lease to receive a two-thirds vote of all elected members of both houses of the Legislature. For the Illegal BPL Lease, the requirement of such a vote was already the law because construction of the NECEC would substantially alter that State Public Reserved Land—Article IX, Section 23 of the Maine Constitution requires that any reduction or substantial alteration of public reserved lands requires approval by a 2/3<sup>rd</sup> vote of the Legislature. *See also* 12 M.R.S. §§ 598 to 598-B.

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<sup>10</sup> 35-A M.R.S. § 3132 states: Public lands. The State, any agency or authority of the State or any political subdivision of the State may not sell, lease or otherwise convey any interest in public land, other than a future interest or option to purchase an interest in land that is conditioned on satisfaction of the terms of this subsection, to any person for the purpose of constructing a transmission line subject to this section, unless the person has received a certificate of public convenience and necessity from the commission pursuant to this section. (emphasis added).

<sup>11</sup> Notably, this occurred months before issuance of the Order.

<sup>12</sup> Cutko statement available at: <https://www.mainepublic.org/post/maine-lawmakers-questionlegality-2014-cmp-lease-state-lands-transmission-corridor>.

More troubling is the Department's disparate treatment of two functionally identical facially void leases. With regard to a lease with the Passamaquoddy presented to the Department by CMP, but which was not yet signed by the Bureau of Indian Affairs ("BIA"), the Department's draft Order conditioned approval on CMP obtaining the requisite approval. Logically, this would require the same condition with regard to the lease over Public Reserved Lands: the permit must be conditioned on CMP obtaining the requisite legislative approval. There is no rational basis for the Department to propose to treat the Public Lands lease any differently than it proposed for the Passamaquoddy lease.<sup>13</sup>

Accordingly, the Board should mandate receipt of TRI sufficient to meet the requirements of Chapter 2 of the Department's Rules and sufficient to ensure that the Board is aware of the actual location of the NECEC in order to provide a legal foundation for evaluation of compliance with NRPA and the Site Law and appropriate conditions before considering the application. The Board should initiate its review (including a hearing) only after NECEC LLC obtains TRI (including a valid lease from BPL) and submits all necessary information for the Department to determine whether the proposed owner and operator of NECEC can comply with NRPA and the Site Law. At a minimum, however, were the Board to consider the application prior to a Legislative vote, the Board should impose a condition, similar to the condition originally proposed by the Department for the BIA lease, that NECEC LLC obtain the necessary legislative approval pursuant to Me. Const. art. IX, § 23; 12 M.R.S. §§ 598 to 598-B for the BPL lease of State Public Reserved Land in Johnson Mountain and West Forks Plantation Northeast.

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<sup>13</sup> The Order eliminated this proposed condition likely due to NRCM's comments noting that the CMP's revisions to the NECEC route meant that the Passamaquoddy land was no longer part of the project. However, while this changes nothing about the above analysis—the Department's proposed approach of a permit condition is the only lawful option—it does present the troubling indication that by the end of its multi-year review of the NECEC the Department remained uncertain of the location of the NECEC. One wonders then, how reliable its assessment of and accounting for of impacts to the environment can be?

**B. The NECEC causes unreasonable adverse impacts to brook trout habitat in violation of NRPA and the Site Law even after mitigating Order conditions.**

NRPA, the Site Law, and Chapters 335 and 375 of the Department's Rules require CMP to prove that the NECEC will not result in unreasonable adverse impacts to significant wildlife habitat, freshwater wetland plant habitat, or threatened or endangered plant habitat. 38 M.R.S. § 480-D(3); 38 M.R.S. § 484(3); 06-096 CMR Chs. 310, 335, and 375. In so doing, CMP must adequately document avoidance and mitigation of and compensation for such impacts. The Order describes the significant impacts to fisheries and wildlife from the NECEC. Specifically, endangered species (Roaring Brook Mayfly and Northern Spring Salamanders); brook trout habitat; habitat fragmentation and buffer strips around cold water fisheries. The NECEC impacts to such resources are unreasonable even considering implementation of Order conditions intended to ameliorate them.

The Order sets forth the following measures in an effort to make reasonable the NECEC adverse impacts to brook trout and coldwater fisheries: (1) Increasing riparian filter areas (buffers) along streams from 25 feet to 100 feet around all perennial streams in Segment 1, all coldwater fisheries streams in other segments, and all Outstanding River Segments; (2) Protection of the Grand Falls, Basin, and Lower Enchanted Tracts, protecting 12.02 miles of streams combined; (3) Providing for full canopy vegetation at Gold Brook and Mountain Brook; (4) Maintaining 35-foot height vegetation in 12 "Wildlife Areas" that total 12.2 miles of Segment 1; (5) Tapered vegetation within the remaining length of Segment 1; and (6) \$1,875,000 in funding for culvert replacements.<sup>14</sup> These measures are inadequate. The NECEC adverse impacts remain unreasonable as discussed in detail below.

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<sup>14</sup> Order, 82-84.

1. The NECEC does not include adequate riparian filter areas (buffers) to address unreasonable adverse impacts to brook trout habitat.

The Order requires maintenance of a “riparian filter area” or buffer within 100 feet of all perennial streams in Segment 1, all coldwater fisheries streams in other segments as identified in Appendix E, all streams containing threatened or endangered species, and all Outstanding River Segments; and within 75 feet of all other streams. Appendix C to the Order outlines the vegetation management plan for these areas. Despite providing more protection for riparian areas than that included in CMP’s applications for the NECEC, the vegetation management plan for riparian filter areas still requires significant clearing within the wire zone (within 15 feet, horizontally, of any conductor). Within the wire zone of riparian filter areas, all vegetation taller than 10 feet would be cut to ground level during initial clearing. Outside the wire zone, in the remainder of the 150-foot-wide corridor, only non-capable vegetation would be allowed to exceed 10 feet in height. All vegetation capable of reaching into the wire zone would be removed on a two- to three-year cycle in Segment 1, and a four-year cycle in other segments.

Order conditions regarding vegetation management convert existing vegetation along the NECEC route from intact forest with strict limits on tree removal during timber harvest to a permanent 150-foot swath of short scrub-shrub vegetation. This vegetative condition would be regularly maintained, preventing recovery of vegetation that could serve critical buffer functions such as providing shade and overhead cover to streams, woody debris inputs that are essential for fish habitat, or a forest canopy that provides leaf fall and insect inputs to aquatic food chains. Stripping an area of vegetation defies its ability to serve as a buffer. Thus, increasing the width of this area where vegetation is slightly less stripped (from 25 feet to 100 feet) does not create a buffer or reduce NECEC adverse impacts to fisheries and other protected resources except that it may somewhat improve sediment removal.

2. NECEC compensation for impacts to brook trout habitat in the Grand Falls, Basin, and Lower Enchanted Tracts is not comparable to nor does it address impacts to brook trout habitat and is thus inadequate to comply with NRPA or the Site Law.

As discussed in detail in Jeff Reardon’s pre-filed direct and surrebuttal testimony on behalf of consolidated Group 4, consisting of NRCM, the Maine Chapter of Trout Unlimited, and the Appalachian Mountain Club, most of the river and stream habitat protected in the proposed compensation parcels is significantly different from the higher-value stream habitat impacted by the NECEC’s inadequate buffers.<sup>15</sup> The impacted streams are mostly cold, high-elevation, headwater streams that are highly productive of wild brook trout. The streams “protected” in the compensation parcels are mostly large main stem rivers that warm significantly in the summer, have a recreational fishery at least partially supported by stocking, and have limited or no potential to produce wild brook trout.<sup>16</sup> This defies the purpose of compensation parcels—*i.e.*, replacing the functions and values of the adversely impacted natural resource. CMP’s failure to propose compensation parcels which hew closely to those impacted by the NECEC impermissibly allows unreasonable adverse impacts.

3. Full-height vegetation at Gold Brook and Mountain Brook only protects one Gold Brook crossing and one crossing of Mountain Brook, not any tributaries, and thus allows unreasonable adverse impacts to brook trout habitat.

The Order condition requiring full canopy vegetation at Gold Brook and Mountain Brook was proposed to protect Roaring Brook Mayfly habitat in part of Wildlife Area 4 (Gold Brook) and Wildlife Area 6 (Mountain Brook) but is also cited for benefits to brook trout at these stream crossings.<sup>17</sup> Full canopy vegetation at these two sites is provided by taller poles or pole locations

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<sup>15</sup> Reardon Pre-filed Direct Testimony, 21-23; Reardon Surrebuttal Testimony, 6-7.

<sup>16</sup> Reardon Pre-filed Direct Testimony, 22-23; Reardon Surrebuttal Testimony, 6-7.

<sup>17</sup> Wildlife Area 11, which includes the Kennebec River crossing and no other streams, will have full canopy vegetation, because CMP agreed to undergrounding in this location. CMP’s original overland crossing maintained full canopy vegetation via pole heights and locations.

that allow for mature tree canopy below the wire zone, and is required between four structures spanning 0.65 miles with two crossings of Gold Brook and between three structures spanning 0.38 miles with a single crossing of Mountain Brook. Thus, full height vegetation is required at only three of the 271 stream crossings in Segment 1 (only 1.1% of stream crossings in Segment 1). While full canopy closure reduces adverse impacts to these two streams, these protections do not apply to tributaries to either Gold or Mountain Brook.

At Gold Brook, five tributary streams adjacent to the Gold Brook crossings are excluded from the “full canopy vegetation” zone, and therefore get only 35-foot tall vegetation. The effectiveness of these “full canopy” areas is further reduced by clearing within the “full canopy” areas for access roads and structures. Within the footprint of each structure and for the entire length of the access roads, NECEC will result in removal of all capable and non-capable species during initial clearing, and these areas would be maintained as scrub-shrub thereafter. Based on the Google Earth map layers provided,<sup>18</sup> access roads coincide with approximately 0.4 miles of the 0.65 miles of full canopy in Wildlife Area 4, including one of the two Gold Brook crossings. The cleared road will cross Gold Brook, leaving a maintained scrub-shrub buffer rather than full canopy in perpetuity at the crossing. As a result, uninterrupted full canopy vegetation is applied to less than one mile of the 53-mile-long Segment 1, and only two of the 271 stream crossings would retain full canopy vegetation. At Gold Brook, one of the two “full canopy” crossings of Gold Brook will be compromised by a cleared and maintained construction road.

In short, even the limited area of “full canopy” vegetation required by the Order only applies fully to the sole crossing of Mountain Brook itself (exclusive of tributaries). While both Gold and Mountain Brook are important brook trout resources, the overall significance of these

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<sup>18</sup>[https://www.maine.gov/dep/gis/datamaps/lawb\\_necec\\_project/2019-10-10%20NECEC%20Project%20Data.kmz](https://www.maine.gov/dep/gis/datamaps/lawb_necec_project/2019-10-10%20NECEC%20Project%20Data.kmz).

two improved crossings is very small in the context of the entirety of the NECEC's adverse impacts to brook trout and other aquatic habitat and certainly does not suffice to make those adverse impacts reasonable.

4. Thirty-five-foot tall vegetation in 12 Wildlife Areas only reduces adverse impacts to 5 miles of the NECEC and, thus, leaves unreasonable adverse impacts to brook trout habitat.

The Order specifies 35 foot tall vegetation to address adverse impacts to fisheries and wildlife habitat in Wildlife Areas 1-10. In these areas, instead of the clear cutting proposed by CMP, the Order requires that trees that are taller than 35 feet, or may reach heights greater than 35 feet before the next scheduled maintenance (within two to three years), may be removed. Trees would be removed when they either reach 35 feet in height, or when they have the potential to reach 35 feet before the next scheduled maintenance. Note that the Order labels these "35-Foot Minimum Vegetation Height" areas, but the prescription for vegetation maintenance would actually result in a 35-foot **maximum** vegetation height, as all vegetation approaching 35 feet would be removed.

The Order applies this prescription to the NECEC adverse impacts in 12.23 miles within Segment 1 of the approximately 150 mile NECEC. These areas include crossings of 21 streams or, according to the Order, 7.7% of the 271 intermittent and permanent stream crossings in Segment 1.<sup>19</sup> Of the 12 miles benefiting from this additional protection, more than seven miles include access roads that will still be cleared and maintained as scrub-shrub habitat. Thus, a mere 5 miles of the NECEC will comply with this condition and support 35-foot vegetation.

Importantly, vegetation maintenance within the 35-foot vegetation area allows tree cutting at ground level, rather than topping, when trees reach 35 feet or have the potential to reach 35 feet

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<sup>19</sup> Order, 135-136 (Table C-1).

within 2-3 years. As a result, this area, though it may support some vegetation taller than scrub-shrub, will never grow mature trees that support spreading canopies or larger trunks. A study of re-generating even-aged hardwood stands in upstate New York found that at age 19, sugar maple, beech, yellow birch, and white ash were all exceeding 30 feet in height; and all reached heights of 35 feet or taller by age 24.<sup>20</sup> At age 24, trunk diameters (dbh) ranged from 3.08” to 4.29”.<sup>21</sup> Even at age 29, when all species but beech were exceeding 45 feet, dbh never exceeded 6 inches for any species.<sup>22</sup> Although trees with a maximum heights of 35 feet in the corridor may provide some shade, they will not grow to heights that support full crown development and provide substantial shading before their removal. They will also not attain trunk diameters large enough to count as large wood for instream habitat.

To summarize, 35 foot vegetation areas are required in only 12 of the 53 miles in Segment 1 and 150 mile NECEC. The 35-foot canopy is interrupted by cleared and maintained access roads for all but 5 miles. Even counting those areas that include access roads, 35 foot vegetation is required for only 21 stream crossings, less than 8% of the stream crossings in Segment 1 alone. On the streams to which it applies, it would result in vegetation taller than scrub-shrub but not in trees tall enough to provide full shade to streams or large enough to serve as large woody debris if recruited into the stream channel.

5. It is not known whether tapered vegetation will effectively alleviate adverse impacts to brook trout habitat caused by the NECEC.

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<sup>20</sup> Nyland, Ralph D; Ray, David G; and Yanai, Ruth D, Height Development of Upper-Canopy Trees Within Even-Aged Adirondack Hardwood Stands, *Northern Journal of Applied Forestry*, September 2004 (Table 1, p. 119), *available at* [https://www.researchgate.net/profile/Ruth\\_Yanai/publication/233671448\\_Height\\_Development\\_of\\_Upper-Canopy\\_Trees\\_Within\\_Even-Aged\\_Adirondack\\_Northern\\_Hardwood\\_Stands/links/5552a64f08ae980ca606c177/Height-Development-of-Upper-Canopy-Trees-Within-Even-Aged-Adirondack-Northern-Hardwood-Stands.pdf](https://www.researchgate.net/profile/Ruth_Yanai/publication/233671448_Height_Development_of_Upper-Canopy_Trees_Within_Even-Aged_Adirondack_Northern_Hardwood_Stands/links/5552a64f08ae980ca606c177/Height-Development-of-Upper-Canopy-Trees-Within-Even-Aged-Adirondack-Northern-Hardwood-Stands.pdf) (attached as Appendix C).

<sup>21</sup> *Id.*

<sup>22</sup> *Id.*

The Order requires tapered vegetation for the entire length of Segment 1. The effectiveness of this measure at mitigation of adverse impacts to brook trout habitat is unproven, untested, and anticipated to be very limited. The Order specifies that tapering will include (1) a 54-foot wide “wire zone” within which all woody vegetation would be cut to ground level and allowed to regenerate to no taller than 10 feet; (2) a 16-foot wide taper on each side of the wire zone that would be selectively cut to remove vegetation taller than 15 feet and maintained with vegetation of 15-foot maximum height; (3) a 16-foot wide taper within which vegetation up to 25 feet would be maintained; and (4) a final 16-foot wide taper within which vegetation up to 35 feet would be maintained. As with the “Full Canopy” and “35-Foot Canopy” areas discussed above, access roads would be cleared and maintained as scrub-shrub.

The record does not support a conclusion that tapering will effectively counteract unreasonable adverse impacts from the NECEC.<sup>23</sup> Trees removed upon reaching heights near 35 feet will be young, short, and with have small trunk diameters and limited canopy spread. This substantially limits their ability to provide shade or to serve as large woody debris. These limitations increase for each progression to shorter woody vegetation in the taper (*i.e.*, removal at 25 feet or 15 feet in height). The wire zone, which occupies more than 1/3 of the total width of the NECEC, will be permanent scrub-shrub, as will all access roads. Thus, tapering will provide neither sufficient shade nor input of large wood materials to protect the many high-quality brook trout stream crossing that comprise the NECEC.

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<sup>23</sup> Group 4 Comments on Draft Order, April 13, 2020.

6. The \$1,875,000 culvert fund does not address adverse impacts to brook trout habitat.

The Order requires fish passage improvements through culvert replacements to improve brook trout access to habitat as an offset to NECEC unreasonable adverse impacts to brook trout. NRCM agrees that NECEC's impacts to brook trout are unreasonable and adverse, and that improving fish passage at culverts can improve habitat access for brook trout. However, there is no nexus between the two and the Department erred in conflating the two issues. The NECEC presents numerous and varied significant impacts to brook trout habitat through its removal and degradation of forested buffers but NECEC does not impede fish passage. Even if the NECEC did present fish passage impacts, the proposed fish passage projects funded by CMP's culvert replacement fund are not necessarily in the same streams or even watersheds impacted by the NECEC.

The Order allows the culvert fund to be spent "in the vicinity of Segment 1,"<sup>24</sup> a facially vague standard. NECEC impacts and the existing quality of brook trout habitat are both highest in Segment 1, where there are few public roads and the land and the logging road network are owned and used primarily for timber harvest. Private forest landowners are generally less willing than municipalities to use funds to improve fish passage because of the associated restrictions on use of their property and maintenance obligations. Further, the Order contains no guidelines ensuring use of or priority of use of the culvert fund for crossings of high-quality brook trout streams equivalent to those adversely impacted by NECEC.

In Segment 1, roads are typically privately owned and used primarily for logging, culvert replacement costs would almost certainly exceed the \$50,000-\$100,000 range cited, with the result that far fewer than 25 culverts would likely be replaced. Worse, there is no clear linkage between

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<sup>24</sup> Order, 86.

the handful of culverts constructed and improvements to brook trout habitat. In short, there is no relationship between paying for culverts (which may improve fish passage) and addressing impacts to brook trout habitat resulting from hundreds of stream crossings laying that habitat bare to the warming effect of sun and removal of all woody inputs.

**C. NECEC habitat fragmentation impacts are unreasonable even considering Order conditions intended to mitigate impacts.**

The Department's Rules implementing the Site Law (06-096 CMR Ch. 375 § 15) require adequate provision for the protection of wildlife and fisheries through maintenance of suitable and sufficient habitat, including travel lanes and avoiding habitat fragmentation. NRPA (06-096 CMR Ch. 310 and 335) similarly prohibits unreasonable impacts to protected natural resources including a goal of no net loss of function and values of rivers, streams, brooks, wetlands, and significant wetland habitat.

The proposed NECEC carves a swath through an unfragmented forest block that encompasses more than 500,000 acres within a larger area that is one of the last remaining temperate broadleaf mixed forests. This part of Maine's North Woods supports exceptional biodiversity and maintains that biodiversity even as the climate changes. These qualities make the area unique and important wildlife habitat. The Order acknowledges that the NECEC "could contribute to habitat fragmentation and have unreasonable adverse impacts on wildlife as a result of the effects on wildlife as a result of the effects on wildlife travel lanes and lifecycles and accessibility to suitable and sufficient habitat. Fragmentation occurs when contiguous habitat is broken into smaller, more isolated patches." Order at 75-76. These impacts result even though there is already forest management in this area. *Id.* The Department found that:

as Segment 1 initially was proposed, the applicant had not made adequate provision for the protection of wildlife; the proposal's contribution to habitat fragmentation and impact on habitat and habitat connectivity was an unreasonable impact on

wildlife habitat. Through modifications CMP made to its proposal during the permitting process, these potential wildlife impacts have been reduced. Through further modification required as a condition of this Order, adequate provision for the protection of wildlife will be achieved.

Order, 76.

Unfortunately, examination of the Order conditions modifying the NECEC indicates continued failure to comply with NRPA and the Site Law. These deficiencies are fatal and the Board should deny the permits.

1. Tapering is a scenic impact<sup>25</sup> mitigation measure that does not mitigate adverse impacts to wildlife habitat from forest fragmentation and will be difficult to implement and monitor for compliance.

Tapering is intended to reduce the scenic impact of the corridor in areas of high scenic sensitivity such as Coburn Mountain. There is no evidence that tapering mitigates impacts to wildlife habitat or addresses forest fragmentation. While tapering the entire length of the NECEC may have some benefit for reducing edge effects in adjacent forested areas, this strategy has not been studied. Tapering provides almost no connectivity benefit for mature forest species to offset fragmentation. Even along the edges, where tapering would result in trees that are a maximum of 35-feet high (as discussed above), these trees will be mere saplings in the 3-inch to 5-inch diameter range (excluding damaged or broken trees with larger diameters). While there may be some species that would avoid 10-foot high scrub-shrub but would utilize 15-foot to 35-foot-tall sapling vegetation, it is insufficient to provide adequate connecting habitat for marten or other mature forest species. As such, reliance on tapering conditions to offset what the Department concedes are unreasonable fragmentation impacts is impermissible under NRPA and the Site Law.

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<sup>25</sup> NRPA (38 M.R.S. § 480-D(1)) and the Site Law (38 M.R.S. § 484(3)) both specify standards pertaining to scenic impacts that NECEC must satisfy- but doesn't. The Board should likewise consider NECEC's failure in this regard.

NRCM also has serious concerns about how this tapered condition would be established, and whether the Department has sufficient capacity to monitor and enforce this condition for the life of the NECEC. The tapering diagram provided by the Applicant shows nicely tapered vegetation.<sup>26</sup> However, Section 1 of the proposed corridor would pass through a range of stand types and ages and it is unrealistic to expect the uniform condition presented in Applicant's Exhibit CMP 5-B to exist immediately following construction. Initial clearing will consist of a nearly complete overstory removal of all trees greater than 5-inch diameter, leaving seedlings and saplings of a range of heights and densities. Closed canopy stands may have little established regeneration and will require time for the regeneration to grow to the desired heights. This regeneration may itself be even-aged (as will regeneration where the NECEC passes through recent clearcuts), and most trees may reach the target height at the same time, resulting in another heavy removal during the next maintenance cycle. Rather than the nicely tapered vegetation pictured by the Department, the NECEC will consist of an on-going patchwork of seedlings and saplings that may only achieve the desired tapered condition after decades of careful tending, if ever.

It is not clear how progress toward the required tapered condition will be monitored and enforced or whether there will be any benefit whatsoever in terms of an offset to habitat fragmentation. Will a monitor be onsite during clearing to ensure that clearing is being done appropriately to reach the desired condition in the shortest possible time? How will the Department determine condition compliance? What, if any, penalties will CMP have to pay for non-compliance, and will those penalties be sufficient to ensure compliance? Without monitoring and substantial penalties, the Applicant could decide that maintaining tapered vegetation is too expensive and simply choose to pay the penalties as a cost of business. Will there be any effort to

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<sup>26</sup> Pre-filed Testimony of Amy Bell Segal, Exhibit CMP 5-B at 60.

determine the value of tapering by quantifying habitat use impacts and the loss associated with NECEC?

2. Requirements for proposed Wildlife Areas are not sufficient to ensure that these protected areas provide any significant connectivity benefit.

In theory, the Wildlife Areas prescribed by the Order may enhance habitat connectivity, primarily for species that do not require mature forest. However, in practice there would be numerous difficulties and significant delays in achieving such benefits—if achievement were ever accomplished.

In her supplemental testimony, Group 6 witness Dr. Simons-Legaard set forth the minimum characteristics for pine marten habitat that should be maintained in the Wildlife Areas in order to provide habitat connectivity. These bare minimums were not so simple as maintaining a set canopy height.<sup>27</sup> As she stressed in her testimony, it is critical that all of these requirements be incorporated into the NECEC to address the unreasonable adverse impacts otherwise resulting from the NECEC. These include: (a) the trees be at least 30 feet tall (preferably greater than 40 feet tall); (b) a minimum basal area of 80 ft<sup>2</sup>/acre; (c) a minimum of 30% canopy closure in all seasons; and (d) frequent snags (dead trees). The NECEC meets none of these measures for avoiding unreasonable adverse impacts to wildlife habitat associated with fragmentation.

The Order holds that NECEC impacts are unreasonable without tapering. Yet, as discussed above, tapering results in a **maximum** tree height of 35 feet with the most likely outcome being that the average tree height in the area impacted by NECEC is well below 30 feet.<sup>28</sup>

Maintenance of a minimum basal area of 80 square feet per acre is at least as important as the minimum 30 foot height requirement because a regenerating stand with only a few scattered

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<sup>27</sup> Supplemental testimony of Group 6 witness Dr. Erin Simons-Legaard, 1.

<sup>28</sup> Order, Appendix C.

taller trees will not mitigate fragmentation. The removal of all trees greater than 35 feet tall from the Wildlife Areas during construction means that large parts of these Wildlife Areas will not meet this threshold following construction. Those stands that provide the greatest connectivity benefit (mature closed canopy stands) would undoubtedly see the greatest level of overstory removal. As a result, achieving this basal area threshold would largely depend on restoration through future growth. As such, this criterion for avoiding adverse fragmentation effects is likewise unlikely to be met.

Likewise, the minimum size tree that can be counted toward this requirement is not specified. However, simple math indicates that there is likely an extremely narrow potential window for trees that can provide enough basal area without tipping over the 35-foot threshold for removal. Research indicates that this requirement could be met by a tree with a minimum diameter at breast height of 7.6 cm (3 inches),<sup>29</sup> meaning that this basal area must be maintained in trees at least 3 inches in diameter but no more than 35 feet tall. Stands fitting this very narrow range of tree sizes would likely be dense, even-aged sapling stands and could require extensive removal once the canopy reaches 35 feet, reducing the stand below the basal area threshold mere years after finally attaining the minimum requirements outlined by Dr. Simons-Legaard. Thus, these stands could end up in a cycle of heavy clearing followed by regeneration without ever really offering any mitigation of the unreasonable fragmentation impacts NECEC imposes.

Based on examination of aerial photography and National Land Cover data, there are several extensive areas of hardwood forest within these Wildlife Areas. Yet, if this basal density requirement can be met at all, it can only be achieved by mixed wood or softwood stands. Absent planting of softwoods, hardwood stands of less than 35 feet will never meet this criterion. There

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<sup>29</sup> See Payer, D. and Harrison, D.J. (2003, 2004), discussed and cited in the pre-filed testimony of David Publicover (February 22, 2019).

is no information indicating how much of the Wildlife Areas consists of mixed wood or softwood stands capable of meeting this threshold and without requiring planting or active management to achieve a mixed wood or softwood stands.

Finally, frequent snags are unlikely in the Wildlife Areas. Once cleared, the remaining tree sizes are so short and of such minimal diameter that the interconnections of snags are effectively eliminated as relevant to habitat fragmentation.

In short, the Wildlife Areas established in the Order are highly unlikely to provide the characteristics necessary to avoid habitat fragmentation. Further, there is no clarity regarding maximization of the benefits of the Wildlife Areas for mature forest connectivity or if there are alternative which would better mitigate the admittedly unreasonable habitat fragmentation impacts of the NECEC. Specifically:

- There is no evidence in the record regarding which stands within the Wildlife Areas currently meet the thresholds set forth above for canopy height, basal area, and softwood canopy cover, and which stands would meet these thresholds following NECEC construction.
- There is no evidence in the record of the tallest poles that can be utilized in different areas as an alternative to habitat fragmentation associated with a maximum tree height of 35 feet.
- There is no evidence in the record of the maximum tree height that can be maintained given poles of the maximum height. This will vary by location based on topography and other factors. These heights, not a blanket 35 feet, should be set at the desired tree height in different areas.
- There has been no provision of any plan based on forest growth modeling (such as the Forest Vegetation Simulator) demonstrating how progress toward the desired conditions would be achieved, how long it would take to achieve these conditions, and that these conditions could be maintained given the need for on-going removal of trees above the maximum 35 foot height.

There is no provision for long-term monitoring to ensure that progress toward these required conditions is achieved and maintained. It is not sufficient to examine aerial photography or simply measure canopy height – basal area must also be periodically monitored.

Finally, there are no “triggers” requiring additional land conservation as compensation for failed Wildlife Areas or portions of Wildlife Areas which do not attain the conditions necessary to mitigate habitat fragmentation (such as hardwood stands that will not meet the winter canopy closure threshold), which will not achieve them in a reasonable time, or which cannot be maintained in the necessary condition over the long term.

3. The Order-mandated land conservation does not adequately compensate for the NECEC abnegation of functions and values of significant wildlife habitat.

The NECEC, as proposed by CMP, included insufficient compensation for impacts to significant wildlife habitat even with the on-site mitigation of tapering and Wildlife Areas. The amount of land conservation required by the Order is the bare minimum recommended by any non-Applicant expert witness and is based on best-case assumptions about the environmental benefits of tapering and Wildlife Areas. Given that, as discussed in detail above, the environmental benefits of tapering and Wildlife Areas are unlikely to be fully realized for some time (perhaps several decades), if at all, the habitat protections provided by compensatory land conservation are especially critical. Furthermore, some impacts, including the Site Law requirement that the project fit harmoniously into the environment cannot be mitigated by offsite measures. Unfortunately, the Order does not contain a sufficient quantity or quality conservation lands to provide these necessary benefits. Conservation easements in an area with limited development threat, but which allow commercial forestry to continue as usual, would provide very limited additional benefits and are insufficient and unacceptable as a replacement for the lost functions and values associated with the NECEC impacts.

**D. CMP failed to perform an adequate alternatives analysis, ignored practicable alternatives, and the NECEC results in unreasonable adverse impacts in contravention of NRPA and the Site Law.**

A fulsome alternatives analysis is foundational to NRPA review and compliance. Under NRPA, CMP must demonstrate that the NECEC “will not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses” and “will not unreasonably harm significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine or other aquatic life.”<sup>30</sup>

Chapters 310 (Wetlands), 315 (Scenic and Aesthetic), and 335 (Wildlife) all contain explicit requirements that an applicant conduct an alternatives analysis to determine whether a less harmful alternative exists. Under no circumstances can an application be approved where this analysis is not done or where the project would cause unreasonable harm to a protected resource, even where no practicable alternative exists. Chapter 310 states that an:

activity will be considered to result in an unreasonable impact if the activity will cause a loss in wetland area, functions, or values, and there is a practicable alternative to the activity that would be less damaging to the environment. The applicant shall provide an analysis of alternatives (see Section 9(A)) in order to demonstrate that a practicable alternative does not exist.<sup>31</sup>

However, “[e]ven if a project has no practicable alternative and the applicant has minimized the proposed alteration as much as possible, the application will be denied if the activity will have an unreasonable impact on the wetland.”<sup>32</sup>

Chapter 315 of the Department’s Rules addressing scenic and aesthetic uses requires the Department to consider all “practicable alternatives to the proposed activity that will have less

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<sup>30</sup> 38 M.R.S. § 480-D.

<sup>31</sup> 06-096 CMR Ch. 310, § 5.

<sup>32</sup> 06-096 CMR Ch. 310, § 5(D).

visual impact, and cumulative effects of frequent minor alterations on the scenic resource” and states that:

[a]n application may be denied if the activity will have an unreasonable impact on the visual quality of a protected natural resource as viewed from a scenic resource even if the activity has no practicable alternative and the applicant has minimized the proposed alteration and its impacts as much as possible through mitigation. An “unreasonable impact” means that the standards of the Natural Resources Protection Act, 38 M.R.S.A. § 480-D, will not be met.<sup>33</sup>

Chapter 335, of the Department’s Rules addressing significant wildlife habitats, also requires:

[a] narrative describing whether a practicable alternative to the alteration exists that would be less damaging to the environment and what alternatives were considered during project design. The narrative must address why the activity cannot avoid or lessen impacts to the significant wildlife habitat by utilizing, managing or expanding one or more other sites; reducing the size, scope, configuration or density of the proposed activity; developing alternative project designs; or by some other means.<sup>34</sup>

The alternatives analysis requirement underlying NRPA as set forth in Chapters 310, 315, and 335 is clear. Is there a practicable alternative? If so, the reasonableness of adverse impacts is called into question. But, “[e]ven if the activity has no practicable alternative, and the applicant has minimized the proposed alteration as much as possible, the application will be denied if the activity will have an unreasonable impact on protected natural resources or the subject wildlife.”<sup>35</sup>

Here CMP did not conduct a reasonable and complete alternatives analysis, did not demonstrate that there is no practicable alternative, and did not demonstrate that the NECEC does not unreasonably impact protected natural resources.

1. CMP’s Alternatives Analysis is Inadequate.

A NRPA alternatives analysis is a report that analyzes whether a less environmentally damaging practicable alternative to the proposed alteration, which meets the project purpose,

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<sup>33</sup> 06-096 CMR Ch. 315, § 9.

<sup>34</sup> 06-096 CMR Ch. 335, § 5(A).

<sup>35</sup> 06-096 CMR Ch. 335, § 3(A) and (C).

exists. Determining whether a practicable alternative exists includes:

1. Utilizing, managing or expanding one or more other sites that would avoid the wetland impact;
2. Reducing the size, scope, configuration or density of the project as proposed, thereby avoiding or reducing the wetland impact;
3. Developing alternative project designs, such as cluster development, that avoid or lessen the wetland impact; and
4. Demonstrating the need, whether public or private, for the proposed alteration.<sup>36</sup>

CMP's alternatives analysis failed to make this determination. CMP never looked at alternate routes for NECEC along existing disturbed corridors, such as the Spencer Road or Route 201. CMP's alternatives analysis contains no discussion of undergrounding all or any portion of the NECEC except the after the fact addition of burial of the Kennebec Gorge crossing.<sup>37</sup> The crossing of the Kennebec Gorge and the Merrill Strip Alternative are perfect demonstrations of CMP's failure to consider practicable alternatives. In both instances, CMP considered and dismissed these alternatives as impracticable only to change course when the threat of permit denial loomed close. Indeed, CMP's NECEC Project Developer, Thorn Dickinson, testified that neither CMP, nor any consultants hired by CMP, did any formal analysis of undergrounding options until directed to do so by the Department.<sup>38</sup>

## 2. CMP's Alternatives Analysis Ignored Practicable Underground Alternatives.

CMP claims that its failure to analyze even a single underground route option was due to the fact that undergrounding the 53 miles of new transmission corridor was "not reasonable or

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<sup>36</sup> 06-096 CMR Ch. 310, § 9(A).

<sup>37</sup> Compare CMP NRPA Application (Alternative Analysis) with CMP Amended NRPA Application of October 19, 2018.

<sup>38</sup> May 9, 2019 Hearing Transcript, 410.

feasible because the costs of doing so would defeat the purpose of the Project.”<sup>39</sup> However, these calculations were not done until long after CMP made the decision to select its preferred route.<sup>40</sup> The actual cost data provided by CMP, the itemized calculations of material and labor costs, were redacted under the label “Proprietary” throughout CMP’s May 17, 2019 submission regarding “costs, dollars, or a numerical backup sheet for CMP Exhibits 11-B through 11-G in Mr. Bardwell’s pre-filed rebuttal testimony” requested by the Department.<sup>41</sup> On cross examination, CMP conceded that the incremental cost increase for undergrounding specific areas within the LUPC P-RR subdistrict for the 53 miles of greenfield corridor in Maine’s North Woods range from \$13, 28 and to 30 million which is approximately one, three, and three percent increases in the capital costs for the project (or a total of 7 percent) of the capital cost of the NECEC.<sup>42</sup> CMP also conceded that its budget includes a contingency of at least 15 percent of the total project cost. Accordingly, CMP’s claims that undergrounding portions of the NECEC is not financially feasible are false. The undergrounding alternative is financially feasible given CMP’s contingency funds.<sup>43</sup>

CMP also argues that undergrounding a transmission line is not technically or logistically feasible.<sup>44</sup> In fact, burial of HVDC lines is exceedingly common, even here in New England.<sup>45</sup> The fully permitted HVDC line from Hydro-Québec through Vermont, TDI, would be 157 miles long with 97 miles in underwater cables and 57 in buried cables.<sup>46</sup> Similarly 60 miles of the

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<sup>39</sup> CMP Dickinson Rebuttal Testimony, 2-3.

<sup>40</sup> In bolstering their argument that burying the new portion of the line would dramatically increase the cost of the project, CMP’s consultants analyzed the cost of burying the line along the 53 new miles of transmission corridor along CMP’s preferred route through the woods but did not disclose the actual cost of only burying the line along existing roads until meeting the existing corridor. CMP Tribbet Rebuttal Testimony, 5; May 9, 2019 Hearing Transcript, 414-15.

<sup>41</sup> May 17 CMP Response to Department Request for Information, 4-28.

<sup>42</sup> May 9, 2019 Hearing Transcript, 395: 5-10.

<sup>43</sup> May 9, 2019 Hearing Transcript, 389: 1-2, 15-18.

<sup>44</sup> See generally, CMP Bardwell Rebuttal Testimony, 2-9.

<sup>45</sup> Group 8 Russo Direct Testimony, 3-4, and Exhibits CR-3 and CR-4.

<sup>46</sup> *Id.* at 4.

Northern Pass Project through New Hampshire would have been buried.<sup>47</sup> CMP claims that Northern Pass and TDI should not be used as an example of an underground transmission project because they have not “demonstrated that is feasible” and have not secured long-term transmission service agreements.<sup>48</sup> This is misleading. Northern Pass was initially selected as the winning bid in the Massachusetts 83D RFP process, but was rejected after the New Hampshire Site Evaluation Committee denied the project a necessary permit siting concerns over siting concerns.<sup>49</sup>

In short, CMP failed to consider utilization of undergrounding techniques (whether directional drilling, micro boring, or otherwise) to avoid or mitigate adverse impacts from the NECEC even though such alternatives are practicable.

3. CMP’s Alternatives Analysis Ignored Practicable Alternatives that Would Minimize Scenic, Wildlife Habitat and Wetland Impacts by Following Existing Roads and Leaving Full-height Vegetation Via Taller Poles.

CMP’s alternatives analysis is impermissibly silent regarding alternate routes utilizing existing disturbances, such as roads, or other techniques such as taller poles to allow full-height vegetation and reduce scenic, wetland, or wildlife impacts.<sup>50</sup> Whether buried or not, a route that followed existing roads, whether along the Spencer Road or Route 201 to Jackman, would dramatically reduce wildlife and fisheries impacts.<sup>51</sup> Unfortunately, CMP’s alternatives analysis does not discuss the practicability of such alternatives.

CMP also failed to consider an alternative that utilized a combination of mitigation strategies. For example, CMP could have selectively designed a route that used some combination of undergrounding such as directional drilling, trenching, micro tunneling, co-location, and taller

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<sup>47</sup> *Id.*

<sup>48</sup> CMP Tribbet Rebuttal Testimony, 3.

<sup>49</sup> Group 4 Comments, 2 (citing New Hampshire Site Evaluation Committee March 30, 2018 Decision and Order Denying Application for Certificate of Site and Facility).

<sup>50</sup> *See generally* CMP NRPA Application (Alternatives Analysis).

<sup>51</sup> May 9, 2019 Hearing Transcript, 62, 66-67.

poles to mitigate some of the worst environmental and scenic impacts from NECEC. Unfortunately, CMP did not evaluate any alternatives that utilized any of these approaches, even though this would align with common practice.

Similarly, CMP did not delineate NRPA protected resources and develop alternative project designs to avoid or mitigate impacts even where practicable alternatives exist. CMP could readily, as discussed above, utilize any number of practicable alternatives (pole heights and locations, directional drilling) to avoid or mitigate NECEC impacts to brook trout habitat. Yet, CMP declined to do so even despite NRPA's plain language requiring this analysis.

CMP's insufficient alternatives analysis, the availability of practicable alternatives, and the unreasonableness of the NECEC adverse impacts preclude Board approval under NRPA.

**E. The Department barred critical analysis of CMP's claims that the NECEC results in greenhouse gas benefit claims then improperly credited CMP for these purported benefits as a mitigation for the NECEC's adverse impacts to protected resources.**

Despite denying parties an opportunity to vet CMP's greenhouse gas claims in an open hearing process and leading parties to believe that their comments would be reviewed in any final Departmental decision-making process,<sup>52</sup> the Department simply accepted CMP's assertions regarding greenhouse gas benefits from the NECEC and referenced findings of the Maine PUC on this issue.<sup>53</sup> In its comments to the Department, NRCM noted that the PUC and the Department failed to examine whether the NECEC would simply divert electricity from other markets to supply this contract or whether those other markets would ramp up fossil-fuel-generated electricity to make up for lost supply going through NECEC.<sup>54</sup> This is the most important issue in determining

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<sup>52</sup> See Order, 12 (“In the February 5, 2019 Third Procedural Order, the Presiding Officer determined that greenhouse gas emissions would not be included as a hearing topic.”).

<sup>53</sup> Order, 105.

<sup>54</sup> See, e.g., Group 4 April 12, 2020 Comments on Draft Order, 23-24; Group 4 May 9, 2019 Comments, 7-8.

whether NECEC would reduce carbon emissions. NRCM provided extensive evidence that NECEC would result in this sort of energy “shell game.”<sup>55</sup> However, the Department never mentioned NRCM’s comments or discussed this issue in any of its decision documents.

Moreover, the Department ignored compelling evidence from NRCM showing that Hydro-Québec’s impoundments emit substantial amounts of carbon pollution, among the highest levels for impoundments in the world.<sup>56</sup> Instead, in simply accepting the PUC’s conclusions, the Department accepted the underlying assumption in the PUC’s flawed finding that carbon emissions from Hydro-Québec’s reservoirs are zero.<sup>57</sup> Massachusetts Institute of Technology Professor Bradford Hager submitted additional evidence on this topic during the Army Corps hearing process. His testimony and supplemental testimony on Hydro-Québec’s carbon emissions to the Army Corps of Engineers on this project was included as Attachment D of NRCM’s comment on the draft Permit, incorporated herein by reference.

Counsel for the Department indicated that this exclusion was the result of a lack of jurisdiction for review of greenhouse gas emissions under NRPA or the Site Law. Despite this, the Order then relied on CMP’s assertions of greenhouse gas emissions benefits from NECEC in offsetting NECEC adverse impacts under NRPA.<sup>58</sup> Notwithstanding the Department’s obligation to assess greenhouse gas emissions generally, *see* 38 MRSA §577, the Department erroneously excluded evidence on and analysis of the greenhouse gas impacts, and then concluded that the permits could not be granted without counting the unsupported assertions of such benefits by CMP, which the parties were never allowed to address with evidence. Such double talk is impermissible.

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<sup>55</sup> *See* Group 4 May 9, 2019 Comments, 1-13.

<sup>56</sup> *See id.* at 7-8 (citing Bradford M. Hager, Commentary: Hydro-Québec offers misleading claims about power’s climate impact. *Portland Press Herald*, January 5, 2019).

<sup>57</sup> *See* Order, 105.

<sup>58</sup> *See id.*

Either the impacts are quantified and assessed with the ability to cogently examine evidence presented supporting mitigation strategies, or the mitigation cannot be counted.

Board review of the NECEC should include an independent greenhouse gas analysis to verify CMP's claims or should explicitly reject those claims given the existing evidence indicating their falsity. Based on its independent greenhouse gas analysis, the Board should, pursuant to NRPA, increase the amount of compensatory land conservation and require that the land conservation be near the impacted area and managed to improve forest health and mitigate climate impacts.

**IV. The Board Should Hold a Public Hearing, Take Additional Testimony, and Consider Supplemental Evidence.**

As explained above, because this is a project of statewide significance, the Board should assume original jurisdiction of these permits and conduct a public hearing. Even if it does not do so, the Board is required to conduct a *de novo* review of the record in this matter. 38 M.R.S. § 342-D(4)(A) (“The board is not bound by the commissioner’s findings of fact or conclusions of law but may adopt, modify or reverse findings of fact or conclusions of law established by the commissioner.”). Furthermore, the Board is authorized to conduct public hearings as part of its *de novo* review of the Department, and NRCM specifically requests that it do so pursuant to 06-096 CMR Ch. 2 § 24(B)(4).

The same factors that make this a project of statewide significance also weigh in favor of the Board holding a public hearing. The NECEC would be one of Maine’s largest-ever industrial projects and would damage a vast area of forest that is a resource of statewide and global significance as well as a significant source of recreation and tourism-based revenue for the entire region. Not only is the NECEC one of the largest industrial projects ever proposed in Maine, the

impacts would be felt for decades, with CMP admitting that the company has no plans to ever decommission this project.

Where, as here, both the Department's draft permits and the Order differ substantially from the NECEC proposed by CMP (and, notably, substantial changes occurred between the draft and final Order) it is particularly important for the Board itself to hold a hearing and take additional testimony. Testimony before the Department focused on the inadequacies of the application as proposed, but the Board should hold a hearing to take testimony on whether the conditions to the Order allow for compliance with NRPA and the Site Law. Such testimony was impossible before the Department because CMP did not include these measures until after the close of the record. While NRCM and others submitted substantial comments on the draft Order, there were not meaningful responses or changes addressing those comments, nor an opportunity to comment on CMP's post-record proposals.

In addition to the evidence and comments in the record before the Department, NRCM makes the following offer of proof with regard to the testimony it would offer at a Board public hearing, and identifies the following supplemental evidence that the Board should consider whether or not a public hearing is held:

- NRCM would submit written or oral testimony on CMP's lack of TRI, in particular with regard to the illegal BPL lease and change in ownership issues. The Department rejected requests to include TRI as a hearing topic during its process. Just as the Board is tasked with considering the environmental impacts of projects of statewide significance, it must determine whether the NECEC (and/or the Order on appeal) is supported by sufficient TRI to clear the low jurisdiction threshold without conditions such as a requirement that CMP obtain the necessary legislative authorization to substantially alter public reserved lands.

- NRCM makes an offer of proof to the Board to take testimony on the Illegal BPL lease. NRCM’s testimony would be consistent with the testimony provided to the Agriculture, Conservation and Forestry Committee (“ACF Committee”) record on LD 1893, which addressed CMP’s illegal BPL lease and includes:
  - All testimony;<sup>59</sup>
  - The January 30, 2020 ACF Committee letter to BPL concerning LD 1893 and BPL’s response (attached as Appendix A); and
  - The recordings of the ACF Committee LD 1893 hearing, work session, and language review.<sup>60</sup>
- NRCM would submit written or oral testimony on the inadequacy of Order conditions implementing measures to alleviate the unreasonable adverse impacts of the NECEC to brook trout habitat and habitat fragmentation, including, among others:
  - Lack of full-height vegetation in all riparian filter areas (such as by directional drilling, taller pole heights, careful pole location or a combination of these techniques);
  - Failure to include cold, high-elevation, headwater streams that are highly productive of wild brook trout;

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<sup>59</sup> Available at

[http://www.mainelegislature.org/legis/bills/display\\_ps.asp?id=1893&PID=1456&snum=129&sec3](http://www.mainelegislature.org/legis/bills/display_ps.asp?id=1893&PID=1456&snum=129&sec3).

<sup>60</sup> NRCM respectfully requests that the Board consider these audio files as supplemental evidence. Because they are audio files and not printed documents, they cannot be attached to this appeal and linking to the audio files is the only appropriate method of presentation. The files are available at <http://sg001-harmony.sliq.net/00281/Harmony/en/PowerBrowser/PowerBrowserV2/20200121/-1/13889> (hearing starts at 1:30 and runs to 4:09); <http://sg001-harmony.sliq.net/00281/Harmony/en/PowerBrowser/PowerBrowserV2/20200218/-1/14054> (starts at 1:20:50 and runs to 2:30:05, containing a discussion by BPL Director Andy Cutko of the BPL response to the ACF Committee FOAA as well as legislators’ statements on the lease being invalid and the vote); and <http://sg001-harmony.sliq.net/00281/Harmony/en/PowerBrowser/PowerBrowserV2/20200305/-1/14177> (language review starts at 3:58:28 and runs to 4:13:20, and also includes testimony from legislators).

- Lack of full canopy crossings for all brook trout streams and their tributaries through directional drilling, taller pole heights, careful pole locations, or some combination of these or other techniques;
  - Lack of full canopy stream crossings in all Wildlife Areas via taller pole heights, careful pole location, directional drilling, or some combination of these or other techniques;
  - Lack of full canopy vegetation in all Wildlife Areas; and
  - Failure to include long-term monitoring and “triggers” that mandate additional land conservation as compensation for any failure of any portion of a Wildlife Areas to attain the conditions necessary to mitigate fragmentation (such as hardwood stands that will not meet the winter canopy closure threshold), which will not achieve them in a reasonable time or which cannot be maintained in the necessary condition over the long term
- NRCM would submit written or oral testimony on the inadequacy of the proposed mitigation and compensation.
  - NRCM would submit written or oral testimony on the lack of carbon emissions reduction benefits from NECEC. NRCM repeatedly sought to introduce such evidence before the Commissioner, yet the Commissioner denied NRCM’s requests and did not respond to its written comments in the record. NRCM repeatedly requested that greenhouse gas emissions be included as a hearing topic.<sup>61</sup> The Department denied these requests, ruling instead that intervenors could submit written comments on the issue of greenhouse gas

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<sup>61</sup> Group 4 oral request to include greenhouse gas emissions in hearing, Second Pre-Hearing Conference, Jan. 17, 2019; Group 4 request to include greenhouse gas emissions, Jan. 24, 2019 (supported by Intervenor Groups 2 and 10).

emissions until the close of the record.<sup>62</sup> Order, 12. NRCM submitted extensive written comments on greenhouse gas emission, which the Department failed to address.<sup>63</sup> Instead, the Department stated that it:

[A]ccepts the PUC's finding on this issue and weighs the NECEC project's reductions in GHG emissions against the project's other impacts in its reasonableness determination. In doing so, the Department finds the adverse effects to be reasonable in light of the project purpose and its GHG benefits, provided the project is constructed in accordance with the terms and conditions of this Order.<sup>64</sup>

The Department's failure to independently review evidence on greenhouse gasses and then to accept the PUC's conclusion that CMP's purported greenhouse gas benefits were real as a mitigating factor for the damage the project does not meet the requirements of NRPA or the Site Law.

- NRCM would submit written or oral testimony consistent with its comments on the draft Order on how the conditional approval is inconsistent with NRPA and Site Law.

In addition to the above-referenced information, NRCM offers the following categories of supplemental evidence, detailed in Appendix B (Index of Supplemental Evidence), which NRCM has used due diligence to bring to the attention of the Department, but was either ignored or could not have been brought to the attention of the Department earlier in the licensing process.<sup>65</sup>

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<sup>62</sup> February 2019 Third Procedural Order, 4 ("The Presiding Officer has determined that net greenhouse gas emissions will not be added as a topic to be addressed at the hearing, however the parties may submit written evidence on this issue into the record. The issue can be adequately addressed through written submissions.").

<sup>63</sup> Group 4 Greenhouse Gas Comments, May 9, 2019.

<sup>64</sup> Order, 105.

<sup>65</sup> Pursuant to 06-096 CMR Ch. 2 § 24(b), NRCM has clearly labeled each exhibit with its date, source, and a note indicating whether it is in the existing record or is proposed supplemental evidence. Appendix B, the Index, summarizes this information.

- The February 21, 2019 Stipulation between Central Maine Power Company and the PUC. *See* Appendix D.
- Testimony provided in connection with LD 640 in March 2019, which Resolve sought specifically to require a study of the greenhouse gas emissions impacts of NECEC. *See* Appendices B (Index of Supplemental Evidence), J, K, L.
- Information excluded by the Department that resulted in the wholesale exclusion or redaction of certain testimony. Because the Department erred by excluding this evidence, the Board should now permit NRCM to introduce this evidence. *See* Appendices B (Index of Supplemental Evidence), E, F, G, H, I, M, N.

Chapter 2 of the Department's Rules specifies that the Board has discretion to hold a public hearing on request regardless whether it reviews the NECEC pursuant to its original jurisdiction over projects of statewide significance or on appeal of the Order. 06-096 CMR Ch. 2 § 7(B). Here, NRCM respectfully requests both. Further, should the Board exercise only its appellate jurisdiction pursuant to Section 24 of Chapter 2, NRCM seeks to supplement the record with evidence that is relevant and material, and which it is bringing to the Board's attention at the earliest possible time as specified above. 06-096 CMR Ch 2 § 24(B)(4) & (D).

## **V. Remedy**

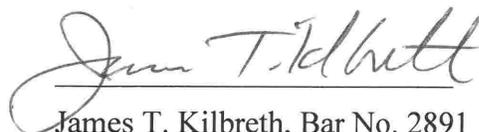
NRCM respectfully requests that the Board vacate the Order and assume original jurisdiction over and hold a public hearing on this project of statewide significance. NRCM asks that the Board take, review, and consider all the evidence necessary to determine compliance of the NECEC with NRPA and the Site Law. Alternatively, NRCM respectfully requests that the Board exercise its appellate jurisdiction to review and overturn the Order.

## CONCLUSION

For the foregoing reasons, NRCM respectfully requests that the Board vacate the Order, exercise its original jurisdiction and review the NECEC *de novo*, including holding a public hearing. Alternatively, NRCM appeals the Order, requests a public hearing, requests submission of supplemental evidence as detailed above, and seeks denial of NECEC. In either case, Board review of the NECEC will show its failure to comply with either NRPA or the Site Law.

*[Remainder of Page Intentionally Left Blank]*

Dated at Portland, Maine  
this 10th day of June 2020

A handwritten signature in cursive script, reading "James T. Kilbreth". The signature is written in black ink and is positioned above a horizontal line.

James T. Kilbreth, Bar No. 2891  
David M. Kallin, Bar No. 4558  
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**Letter from Sen. Dill and Rep. Hickman to Dir. Cutko**

**Attachment B to Group 4 Comments on Draft Order**

**January 30, 2020**

**(In Existing Record)**

## SENATE

JAMES F. DILL, DISTRICT 5, CHAIR  
 G. WILLIAM DIAMOND, DISTRICT 28  
 RUSSELL BLACK, DISTRICT 17

KAREN S. NADEAU, LEGISLATIVE ANALYST  
 CHERYL MCGOWAN, COMMITTEE CLERK



## HOUSE

CRAIG V. HICKMAN, WINTHROP, CHAIR  
 DAVID HAROLD MCCREA, FORT FAIRFIELD  
 MARGARET M. O'NEIL, SACO  
 CHLOE S. MAXMIN, NOBLEBORO  
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 MARYANNE KINNEY, KNOX  
 THOMAS H. SKOLFIELD, WELD  
 RANDALL C. HALL, WILTON  
 THEODORE JOSEPH KRYZAK, JR., ACTON  
 WILLIAM D. PLUECKER, WARREN

STATE OF MAINE  
 ONE HUNDRED AND TWENTY-NINTH LEGISLATURE  
 COMMITTEE ON AGRICULTURE, CONSERVATION AND FORESTRY

January 30, 2020

Andy Cutko, Director  
 Bureau of Parks and Lands  
 Department of Agriculture, Conservation and Forestry  
 22 State House Station  
 Augusta, ME 04333-0022

Dear Director Cutko,

As you know, the Joint Standing Committee on Agriculture, Conservation and Forestry (ACF Committee) held a public hearing on Tuesday, January 21st for LD 1893, "An Act To Require a Lease of Public Lands To Be Based on Reasonable Market Value and To Require Approval of Such Leases for Commercial Purposes."

At the public hearing it became evident that LD 1893 was introduced to address concerns relating to the lease of public lands to Central Maine Power (CMP) for a transmission line through western Maine. This legislation also raises the question of whether the lease agreement between the State and CMP required approval by two-thirds of the Legislature. Article IX, Section 23 of the Constitution of Maine states:

*State park land, public lots or other real estate held by the State for conservation or recreation purposes and designated by legislation implementing this section may not be reduced or its uses substantially altered except on the vote of 2/3 of all the members elected to each House.*

As you know, at the public hearing last week, we requested that you provide the ACF Committee with relevant documents and communications regarding the lease of public lands to CMP. Please include documents and communications, including emails and handwritten notes or notations, among or between staff in the Bureau of Parks and Lands, the Bureau of Forestry, the Office of the Commissioner, the Office of the Attorney General, the Office of the Governor, and representatives of CMP. More specifically, we are interested in any materials from January 1, 2013 through January 1, 2016 and after July 1, 2018 relating to the determination that the lease of public lands on the West Forks Plantation and Johnson Mountain Township in Somerset County by CMP did not constitute a reduction or substantial alteration of those lands and, therefore, did not require a two-thirds vote of the Legislature.

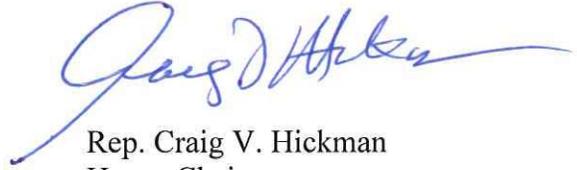
(over)

It is our understanding that the public records search will require approximately 40 staff hours. With this in mind, we respectfully request that you complete this search by Friday, February 14<sup>th</sup>.

Sincerely,



Sen. James F. Dill  
Senate Chair



Rep. Craig V. Hickman  
House Chair

cc: Members, Joint Standing Committee on Agriculture, Conservation and Forestry  
Amanda Beal, Commissioner, Department of Agriculture, Conservation and Forestry  
Emily Horton, Department of Agriculture, Conservation and Forestry

STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF

CENTRAL MAINE POWER COMPANY  
Application for Site Location of Development  
Act permit and Natural Resources Protection  
Act permit for the New England Clean Energy  
Connect (“NECEC”)

L-27625-26- A-N  
L-27625-TB- B-N  
L-27625-2C- C-N  
L-27625-VP- D-N  
L-27625-IW- E-N

**APPENDIX B**

**INDEX OF SUPPLEMENTAL  
EVIDENCE SUBMITTED IN SUPPORT  
OF NRCM’S APPEAL OF  
DEPARTMENT’S MAY 11, 2020 ORDER**

<b>Appendix</b>	<b>Document Date</b>	<b>Document Description</b>	<b>Location in Record/ Supplemental Evidence</b>
C	September 2004	Height Development of Upper Canopy Trees Within Even-Aged Adirondack Hardwood Stands	Referenced in record at page 7 of NRCM’s April 13, 2020 Comments to Draft Permit
D	February 21, 2019	CMP Stipulation	Supplemental Evidence
E	February 28, 2019	Dr. Aram Calhoun Testimony	Supplemental Evidence (redacted version appears in record)
F	February 28, 2019	Elizabeth Caruso Testimony	Supplemental Evidence (redacted version appears in record)
G	February 28, 2019	Greg Caruso Testimony	Supplemental Evidence (redacted version appears in record)
H	February 28, 2019	Janet McMahon Testimony	Supplemental Evidence (redacted version appears in record)
I	February 28,	Roger Merchant Testimony	Supplemental Evidence

	2019		(redacted version appears in record)
J	March 15, 2019	Tom Saviello Testimony	Supplemental Evidence
K	March 15, 2019	Nick Bennett Testimony in Support of LD 640	Supplemental Evidence
L	April 8, 2019	Memo from Nick Bennett to Members of the Environment and Natural Resources Committee	Supplemental Evidence
M	April 15, 2019	David Publicover Surrebuttal Testimony	Supplemental Evidence (submitted in Department proceedings but struck by Eleventh Procedural Order)
N	April 19, 2019	Dr. Aram Calhoun Surrebuttal Testimony	Supplemental Evidence (submitted in Department proceedings but struck by Eleventh Procedural Order)
N/A		Recordings of ACF Committee LD 1893 hearing, work sessions, and language review <sup>1</sup>	Supplemental Evidence

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<sup>1</sup> NRCM respectfully requests that the Board consider these audio files as supplemental evidence. Because they are audio files and not printed documents, they cannot be attached to this appeal and linking to the audio files is the only appropriate method of presentation. The files are available at <http://sg001-harmony.sliq.net/00281/Harmony/en/PowerBrowser/PowerBrowserV2/20200121/-1/13889> (hearing starts at 1:30 and runs to 4:09); <http://sg001-harmony.sliq.net/00281/Harmony/en/PowerBrowser/PowerBrowserV2/20200218/-1/14054> (starts at 1:20:50 and runs to 2:30:05, containing a discussion by BPL Director Andy Cutko of the BPL response to the ACF Committee FOAA as well as legislators' statements on the lease being invalid and the vote); and <http://sg001-harmony.sliq.net/00281/Harmony/en/PowerBrowser/PowerBrowserV2/20200305/-1/14177> (language review starts at 3:58:28 and runs to 4:13:20, and also includes testimony from legislators).

**Height Development of Upper-Canopy Trees  
Within Even-Aged Adirondack Northern Hardwood Stands**

**2004**

**(In Existing Record)**

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/233671448>

# Height Development of Upper-Canopy Trees Within Even-Aged Adirondack Northern Hardwood Stands

Article in *Northern Journal of Applied Forestry* · September 2004

DOI: 10.1093/njaf/21.3.117

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# Height Development of Upper-Canopy Trees Within Even-Aged Adirondack Northern Hardwood Stands

**Ralph D. Nyland**, *State University of New York, College of Environmental Science and Forestry, Syracuse, NY 13210*; **David G. Ray**, *The Woods Hole Research Center, Woods Hole, MA 02543*; and **Ruth D. Yanai**, *State University of New York, College of Environmental Science and Forestry, Syracuse, NY 13210*.

## ABSTRACT:

*Knowledge of the relative rates of height growth among species is necessary for predicting developmental patterns in even-aged northern hardwood stands. To quantify these relationships, we used stem analysis to reconstruct early height growth patterns of dominant and codominant sugar maple (*Acer saccharum* Marsh.), yellow birch (*Betula alleghaniensis* Britton), white ash (*Fraxinus americana* L.), and America beech (*Fagus grandifolia* Ehrh.) trees. We used three stands (aged 19, 24, and 29 years) established by shelterwood method cutting preceded by an understory herbicide treatment. We analyzed 10 trees of each species per stand. Height growth was similar across stands, allowing us to develop a single equation for each species. Our data show that yellow birch had the most rapid height growth up to approximately age 10. Both sugar maple and white ash grew more rapidly than yellow birch beyond that point. Beech consistently grew the slowest. White ash had a linear rate of height growth over the 29-year period, while the other species declined in their growth rates. By age 29, the heights of main canopy trees ranged from 38 ft for beech to 51 ft for white ash. Both yellow birch and sugar maple averaged 46 ft tall at that time. By age 29, the base of the live crown had reached 17, 20, 21, and 26 ft for beech, sugar maple, yellow birch, and white ash, respectively. Live-crown ratios of upper-canopy trees did not differ appreciably among species and remained at approximately 40% for the ages evaluated. These results suggest that eliminating advance regeneration changes the outcome of competition to favor species other than beech. *North. J. Appl. For.* 21(3):117–122.*

**Key Words:** Species height growth, early stand development, Adirondack northern hardwoods, shelterwood cutting.

Understanding patterns of natural stand development is essential when planning cultural treatments (Oliver and Larson 1996). For naturally regenerated hardwood communities, knowledge of growth rates by species allows managers to better predict the likely species composition that will develop, the patterns of height growth and radial increment, the development of clear length on surviving trees,

and the proportion of basal area among species through time (Wang and Nyland 1993). Such information is essential for appropriately timing early cultural treatments to enhance crop tree development, while insuring that they grow stems of high commercial value (Sonderman 1979, Heitzman and Nyland 1991).

Crown canopy closure marks one of the important transition points in young hardwood stand development. It initiates a long period of intense inter-tree competition marked by high levels of mortality, even while the total biomass increases (Bormann and Likens 1979). Trees become vertically stratified between and within species, and radial increment begins to slow (Oliver 1981, Marquis 1991, Nyland et al. 2000). For young, even-aged northern hardwoods in central New York, canopy closure occurs within 10–15 years after a reproduction method cutting

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NOTE: Ralph D. Nyland can be reached (508) 540-9900; dray@whrc.org. Funding for this research came from the New York Center for Forestry Research and Development of the SUNY College of Environmental Science and Forestry. We thank the staff of Huntington Wildlife Forest at Newcomb, NY for logistical support. Christopher Helmes, Daniel Goerlich, and Blair Paige helped with data collection. Lianjun Zhang and Stephen Stehman provided statistical advice. Christopher Nowak, Richard Phillips, and six anonymous reviewers provided comments about the manuscript. Copyright © 2004 by the Society of American Foresters.

(Walters and Nyland 1989; Wang and Nyland 1993, 1996; Ray et al. 1999; Nyland et al. 2000). Furthermore, in stands that initially had well-developed advance regeneration, the base of the live crown reached 7–12 ft by age 10–13, and 9–22 ft by ages 17–20. Total heights measured 40–51 ft by 20 years (Wang and Nyland 1996).

Silvicultural treatment during these early stages of development opens the canopy and keeps the lower branches alive. This can slow the development of clear wood on the main stem (Sonderman 1979, Heitzman and Nyland 1991). Early intervention might also promote low forking (Heitzman and Nyland 1991). Knowing how rapidly the base of the live crown rises on a tree would allow managers to more effectively schedule early treatments to minimize the negative effects, while also ensuring timely entry to maintain radial increment at high rates. Understanding the rates of total height growth would indicate the relative positions that different species might occupy within the main crown canopy, and if early intervention (e.g., cleaning) might be necessary to insure the dominance of species that best satisfy the management objectives.

Earlier studies of height growth in northern hardwoods have focused mainly on stands having advance regeneration, primarily of shade-tolerant species. Findings reflect the influence of seedling abundance, condition, and size at the time of overstory cutting (Marquis 1967, Wang and Nyland 1996, McClure et al. 2000). For the study reported here, we sought to quantify the height growth rates of American beech, sugar maple, yellow birch, and white ash at sites where mistblowing of herbicide had controlled understory beech prior to shelterwood method seed cutting. Due to the treatment, our stands lacked advance regeneration of any species, allowing us to compare the height growth of trees that became established at the time of overstory cutting. We also quantified changes in clear length and live-crown ratios of these trees.

## Methods

### Study Sites

We sampled three northern hardwood stands established by shelterwood method cutting on the Huntington Wildlife Forest near the town of Newcomb in the central Adirondack Region of New York State. The study sites had supported well-developed northern hardwood communities (200–300 years old) dominated by sugar maple and beech with lesser amounts of yellow birch, white ash, and black cherry (*Prunus serotina* Ehrh.). Understory mistblowing followed by individual stem injection of larger unmerchantable trees was used to control the beech in these stands (see Kelty and Nyland 1981, Sage 1987). The treatment eliminated advance growth of all woody species and removed trees that had occupied intermediate and overtopped positions in the original stands. In addition, hunting reduced the impact of local deer populations, whose feeding habits favor the development of beech. Both treatments have proven necessary to successfully regenerate northern hardwood stands in this region (Tierson 1967, Kelty and Nyland 1981, Sage 1987).

Seed cutting left widely spaced, sawtimber-sized sugar maple trees of uppermost canopy positions (20–50% canopy cover in all stands). Removal cutting occurred 4 years after seed cutting in Stand II, and at 10 years in Stands I and III. The removal cut in Stand II was done earlier to assess the degree to which a shortened period of shelterwood influence might speed development of the new cohort. It had little effect at these sites, likely due to the low density of seed trees in all areas (Ray et al. 1999). When we sampled Stands I, II, and III they had grown for 19, 24, and 29 years, respectively, following seed cutting. A period of 9, 20, and 19 years had elapsed since overstory removal.

### Data Collection

We established a 1- × 2-chain systematic grid within each stand and selected 10 grid intersections at random as starting locations for selecting trees for stem analysis. For each species, we sampled the qualifying tree closest to the chosen grid points, but in some cases returned for a second tree to insure equal representation of each species within each stand. Sampled trees occupied upper canopy positions (dominant and codominant), and had no signs of crown damage due to insects, animals, disease, or weather. We used prominent forking as the primary indicator of past damage. All together, we felled 10 upper canopy trees of each species in each stand, for a total of 120 sample trees (3 stands × 4 species × 10 trees per species per stand).

We marked and measured diameter at breast height (dbh) prior to felling and cut each stem close to ground level. After felling a tree, we measured total height and distance to the base of the first live branch. Then we sectioned the stem at 3-ft intervals up to the base of the first live branch, and recorded the distance above the ground to live foliage. Finally, we sectioned the crown portion of the main stem at 3-ft intervals.

We counted annual rings along two perpendicular radii to determine the age for each stem section, then applied Carmean's (1972) correction factor to obtain unbiased estimates of the height-age pairs. This method assumes that annual height growth is constant for each year wholly or partially contained within a stem section, and that a crosscut will occur in the middle of a year's height growth. We used the age at stump height as a surrogate for time of establishment, and as year 0 for determining the rate of height growth.

### Data Analysis

To justify pooling height-age pairs for each species across stands, we used analysis of variance (ANOVA) to compare total heights among species at age 19, the latest common age for the three stands. We evaluated the main effects of species and stand, as well as their interaction. We used a means separation procedure (Fischer's Protected LSD) to identify significant differences between species for a number of measured variables: years to reach stump height, total height, dbh, clear length, and live-crown ratio (defined here as the ratio between the height to the base of live foliage and total height). All significance tests were conducted at  $\alpha = 0.05$ , and individual means were not

separated if the overall *F*-test was not significant (Fischer's Protected LSD).

We used repeated-measures mixed models (Littell et al. 1996) to fit the height-age data for each species. This approach correctly evaluates the autocorrelation between stem sections within a tree, and partitions the fixed and random effects in the model. Here, species were treated as fixed effects, and stands and individual trees considered as random effects. We fitted simple linear and quadratic polynomial regression models to the data. These model forms adequately described the patterns of height growth observed for this range of data. We described the rate of growth as the first derivative of the regression equation for height as a function of age.

## Results

Our ring counts indicate that sugar maple, yellow birch, and white ash reached stump height within 4 years after seed cutting. On average, beech reached stump height soonest, within 2 years (Table 1). The trees were too large at the time of sampling for us to identify their mode of origin, but this rapid early height growth is consistent with root suckering for beech.

Total heights differed significantly among species at age 19 (ANOVA *df* = 3, *P* < 0.00), but not between stands for a given species (*df* = 2, *P* = 0.29), and no species-by-stand interaction was detected (*df* = 6, *P* = 0.64). This finding justified pooling the data by stand and allowed us to develop species-specific height growth models (Table 2 and Figure 1a). Those models provided good fits for our data, as indicated by the *P* values and standard errors of the parameter estimates (Table 2). Quadratic terms in the height regression models were significant (*P* < 0.05) for beech, sugar maple, and yellow birch, indicating that these species were slowing in height growth within the 30 years following seed cutting. By contrast, the quadratic term was not significant for white ash, and a linear model provided a better

fit to the data for this species (Figure 1a). In other words, white ash had a more sustained rate of height growth than the other species.

The average height growth rates (Figure 1b) indicate that through 8 years after seed cutting, yellow birch averaged 2.2 ft yr<sup>-1</sup>. Sugar maple and white ash both grew at average rates of 1.9 ft yr<sup>-1</sup>. Beech averaged 1.6 ft yr<sup>-1</sup> for that same period. By approximately 25–27 years, height growth rates for beech had slowed to 1.0 ft yr<sup>-1</sup>. Regression analyses indicated that the periodic height growth rates declined through time for sugar maple, yellow birch, and beech. But it declined more rapidly for yellow birch than any of the other species (Figure 1b). White ash had a fairly steady height growth rate over the 29-year period documented in this study, as indicated by the linear fit of the model.

The dbh of sample trees varied in a consistent way across stands, suggesting a consistent pattern by age as well as by species (Table 1). Yellow birch and white ash, which are intermediate in shade tolerance, had significantly larger diameters than shade-tolerant sugar maple and beech in all but the youngest stand. There, where sugar maple was similar to white ash. Beech had a smaller average diameter than any of the other species in the 29-year-old stand. The diameters for white ash and yellow birch did not differ significantly at 24 and 29 years.

White ash had the greatest clear bole length in all stands, averaging approximately 26 ft at 29 years (Table 1). Sugar maple and yellow birch both had clear lengths of around 20 ft at that time, and beech averaged approximately 17 ft. The live-crown ratios for main canopy stems did not differ significantly among species or by stand age, averaging 42% across the three sites (Table 1).

## Discussion

These findings complement earlier information about shifts in numbers of stems, tree diameters, and basal area

**Table 1. Characteristics of upper-canopy trees of four northern hardwood species growing in a chronosequence of relatively young shelterwood stands at the time they were harvested for detailed stem analysis.**

Area	Species	Stump <sup>a</sup> (yr)	Dbh (in.)	Height	Clear length	Live crown ratio <sup>b</sup> (%)
.....(ft).....						
Stand I—Age 19	Sugar maple	2.5 <sup>a</sup>	2.73 <sup>b,c</sup>	31.5 <sup>b</sup>	13.8 <sup>a</sup>	45
	Yellow birch	3.0 <sup>a</sup>	3.28 <sup>a</sup>	33.5 <sup>ab</sup>	14.4 <sup>a</sup>	49
	Beech	1.5 <sup>b</sup>	2.46 <sup>c</sup>	27.2 <sup>c</sup>	10.3 <sup>b</sup>	47
	White ash	2.1 <sup>ab</sup>	3.15 <sup>ab</sup>	34.9 <sup>a</sup>	17.2 <sup>a</sup>	41
Stand II—Age 24	Sugar maple	3.1 <sup>a</sup>	3.28 <sup>b</sup>	39.4 <sup>b</sup>	19.9 <sup>b</sup>	39
	Yellow birch	3.8 <sup>a</sup>	4.21 <sup>a</sup>	39.6 <sup>b</sup>	18.7 <sup>b</sup>	37
	Beech	1.1 <sup>b</sup>	3.08 <sup>b</sup>	35.1 <sup>c</sup>	17.7 <sup>b</sup>	35
	White ash	2.9 <sup>a</sup>	4.29 <sup>a</sup>	42.9 <sup>a</sup>	23.8 <sup>a</sup>	36
Stand III—Age 29	Sugar maple	2.9	4.41 <sup>b</sup>	46.2 <sup>b</sup>	19.8 <sup>b</sup>	45
	Yellow birch	2.1	5.65 <sup>a</sup>	46.0 <sup>b</sup>	20.9 <sup>b</sup>	42
	Beech	2.0	3.79 <sup>c</sup>	37.8 <sup>c</sup>	16.9 <sup>c</sup>	40
	White ash	2.3	5.33 <sup>a</sup>	50.7 <sup>a</sup>	25.7 <sup>a</sup>	40

<sup>a</sup> Stump indicates years to reach stump height = time since seed cutting – total age at stump height.

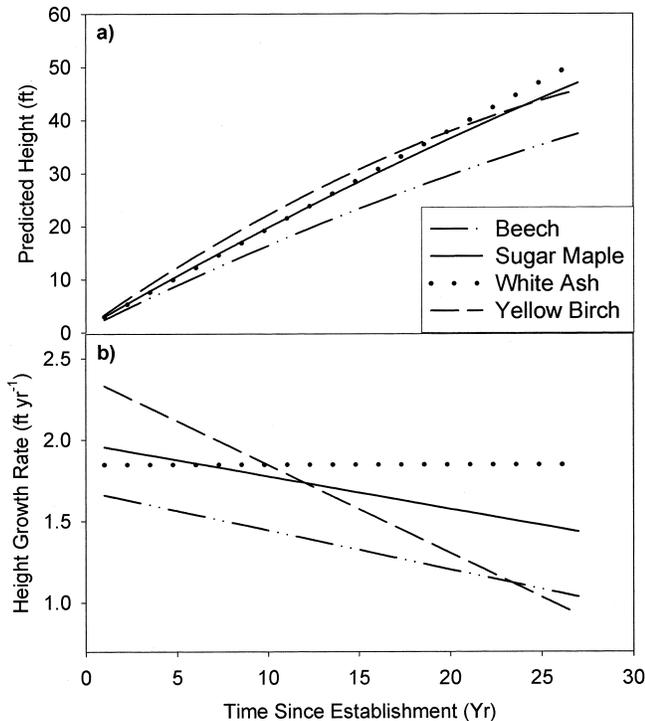
<sup>b</sup> Live crown ratio = (height to base of live foliage/total height) × 100.

NOTE: Differences are significant ( $\alpha = 0.05$ ) between values designated by different letters (Fisher's Protected LSD).

**Table 2. Regression parameters for the species specific height growth models describing the early development of four northern hardwood species of upper-canopy position.**

Species	$b_0$ est.	SE	$P$ -value	$b_1$ est.	SE	$P$ -value	$b_2$ est.	SE	$P$ -value
Sugar maple <sup>a</sup>	1.012	0.53	0.06	1.975	0.10	0.0001	-0.010	0.004	0.020
Yellow birch <sup>a</sup>	1.002	0.54	0.07	2.384	0.10	0.0001	-0.027	0.004	0.0001
Beech <sup>a</sup>	0.755	0.53	0.16	1.683	0.10	0.0001	-0.012	0.004	0.002
White ash <sup>b</sup>	1.131	0.51	0.03	1.847	0.04	0.0001			

NOTE: Models of the form: <sup>a</sup> quadratic (height =  $b_0 + b_1 \times \text{time} + b_2 \times \text{time}^2$ ) and <sup>b</sup> linear (height =  $b_0 + b_1 \times \text{time}$ ).



**Figure 1. Predicted total height (a) and height growth rates (b) for main canopy trees of four northern hardwood species that became established following shelterwood cutting and understory herbicide treatment.**

through a 25- to 30-year period in New York stands regenerated by either shelterwood method or clearcutting (Ray et al. 1999, Nyland et al. 2000). The assessments reported here suggest a consistent pattern of height development across stands and within species as well, at least among dominant stems (Figure 1a). For similar sites given understory beech control, we predict that yellow birch will be the tallest of the four species for the first 10 to 15 years following stand establishment. Sugar maple and white ash will be somewhat smaller, having comparable heights during that same period. Then, between ages 15 and 25, sugar maple, white ash, and yellow birch will not differ much in height. Beyond age 25, white ash will become notably taller, and beech consistently shorter, than these other species.

Similar patterns of height development through 44–48 years were reported following group selection cutting in New Hampshire (McClure et al. 2000). Those openings had abundant advance regeneration of beech and sugar maple, but little yellow birch. Yellow birch grew the most rapidly through 15 years after cutting, and exceeded the height of beech through most of the four to five decades of develop-

ment evaluated. As with our case, vertical development of both yellow birch and sugar maple slowed through time, and those two species had similar heights after 44–48 years. Beech also initially grew the slowest of all species, but at a fairly constant rate in the New Hampshire plots. As a result, its average height at 30 years matched that of yellow birch and sugar maple. Unlike the trees in our site-prepared even-aged communities, some of the advanced beech also grew into dominant crown canopy positions.

Our results indicate that by age 19, sugar maple, yellow birch, and white ash should be about 30–35 ft tall, and beech about 25–30 ft. These heights are shorter than the tallest trees on permanent plots in even-aged stands regenerated by clearcutting in central New York, where the trees averaged 40–51 ft tall at stand ages 17–20 (Wang and Nyland 1996). The clearcut stands include up to 10 species, with sugar maple, white ash, and black cherry as principal components of the upper canopy. The greater heights in central New York likely reflect the longer growing season, finer-textured soils, greater abundance of black and pin cherry (*Prunus pennsylvanica* L. f.), and the fact that sugar maple and beech occurred as advance regeneration prior to the reproduction method cutting.

Shade-tolerant species such as sugar maple and beech commonly become established as advance regeneration. For beech, the understory may have small trees of root sucker origin that develop rapidly following release by overstory cutting. The relative abundance of tall advance regeneration for these two species may profoundly influence the composition of a new cohort (Marquis et al. 1984, Leak 1988) and also determine whether a component of shade-tolerant species will develop into upper canopy positions in a new even-aged stand (Wang and Nyland 1993).

The importance of advance regeneration to the success of sugar maple and beech is illustrated by comparing our study to those in stands with abundant advance regeneration. Twenty years after clearcutting in central New York northern hardwood stands, sugar maple and beech stems accounted for 16% of the trees in a dominant crown position, and 60% of those classified as codominants (Heitzman and Nyland 1994). Likewise, 25 years after clearcutting in New Hampshire, 43% of the surviving beech and 58% of surviving sugar maple occupied dominant or codominant crown positions (Marquis 1967). By contrast, our Adirondack sites lacking advance regeneration had only about 3% of sugar maple survivors in dominant positions in the 24-year-old stand, and 26% were codominants. In the 29-year-old stand, only 1% of the sugar maples were classified as dominants, but over 15% were codominants. Altogether, sugar maple

and beech accounted for only 11% of all upper-canopy trees in the 24-year-old stand, and 18% at 29 years. No sampled beech occupied a dominant crown position in our 24- or 29-year-old stands, due largely to the slow height growth of that species.

Our findings agree with those of Bicknell (1982) for New Hampshire northern hardwoods, both in terms of measured total heights (range 6–11 ft at age 6), and the relative early heights of these species (yellow birch > sugar maple = white ash > beech) up to about age 15. Taking account of the status of advance regeneration in that and other studies, we also see considerable consistency between our conclusions and the findings reported by Marquis (1967), Hill (1987), and McClure et al. (2000). This degree of agreement suggests a widespread pattern of consistent early height development for these species. Based on this evidence, we conclude that beech will not likely dominate the upper canopy of a new cohort after an even-aged regeneration method that includes a herbicide treatment to eliminate advance seedlings and root suckers of that species. Due to its sustained height growth, white ash will occupy the uppermost canopy positions by age 25, with the best-growing yellow birch and sugar maple mostly becoming codominants.

Our data also suggest that early differentiation by diameter may not be as informative as differences in height growth when assessing the competitive status of these four species. A correlation between growth rates and shade tolerance has been demonstrated for a number of northern hardwood species (Gilbert 1965, Yanai et al. 1998). We, too, found evidence to support this relationship. Specifically, shade-tolerant beech consistently had the smallest diameters at a given age, with those of sugar maple intermediate, and yellow birch and white ash the largest. Yet for the main canopy trees sampled in this study, species differentiation by height growth appeared less closely tied to shade tolerance. By age 25, beech had the shortest heights and white ash the tallest, but the heights of sugar maple and yellow birch did not differ significantly in any of the stands.

Our findings indicate that the base of the live crown on white ash had not risen above one log (16 ft) until age 20. For sugar maple, yellow birch, and beech it had not reached 16 ft until age 24. Consistent with these findings, Wang and Nyland (1996) reported an average clear length of 7–12 ft among their tallest trees at 10–13 years following clearcutting of northern hardwood stands in central New York, and 9–22 ft at 17–20 years. Their sample trees included more than just dominants and codominants and reflect the variation in tree heights and distances to the base of the live crown across the full range of crown classes in more species-diverse communities.

Our data indicate that upper-canopy trees should have sufficient vigor to allow a delay of early tending through at least three decades. At that age, the live-crown ratios of upper canopy trees in our Adirondack stands were ~40%. Similarly, crown lengths remained high in central New York clearcuts through at least the first 20 years (Wang and Nyland 1996).

## Management Implications

We observed important differences in height growth rates among four northern hardwood species through 29 years following shelterwood method seed cutting preceded by site preparation to control the dense beech understory. Forest managers can use the prediction equations (Figure 1, Table 2) to forecast how stands given similar reproduction method treatments will likely develop. The findings indicate that if beech, sugar maple, yellow birch, and white ash become established at a common time, main canopy stems of the latter three species will likely outgrow most beech stems by the end of one decade, and be taller than even the largest beech by 20 years of age. This corroborates past observations that appropriate site preparation will minimize the numbers of beech that reach upper canopy positions in young even-aged northern hardwood stands.

Our data also give an indication of the trends in timber-quality production within young, even-aged stands and when to schedule a first tending operation. Based on our observations, the base of the crown for white ash should reach at least 26 ft by the end of three decades, and be at 20 ft for the other species. We propose delaying a first entry until that time. Earlier stand tending will likely keep the lower branches alive, delaying the development of clear length on the crop trees, and increasing the chances of heavy low forking. Tree vigor should remain adequate through at least 30 years to insure a good growth response on the crop trees after release. Thus, postponing the first tending for three decades will insure at least one clear log on upper-canopy trees, but not result in a loss of their vigor due to inter-tree competition.

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**Central Maine Power Company  
Stipulation**

**February 21, 2019**

**(Supplemental Evidence)**

STATE OF MAINE  
PUBLIC UTILITIES COMMISSION

Docket No. 2017-00232

February 21, 2019

CENTRAL MAINE POWER COMPANY,  
Request for Approval of CPCN for the New  
England Clean Energy Connect Consisting  
of the Construction of a 1,200 MW HVDC  
Transmission Line from the Québec-Maine  
Border to Lewiston (NECEC) and Related  
Network Upgrades

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STIPULATION

STIPULATION

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**ATTACHMENTS**

Attachment A: NECEC Transmission Facilities

Attachment B: NECEC Transfer Agreement

Central Maine Power Company (“CMP” or the “Company”), the Maine Office of the Public Advocate (the “OPA”), the Governor’s Energy Office, Industrial Energy Consumer Group (the “IECG”), Conservation Law Foundation (“CLF”), Acadia Center, Western Mountains & Rivers Corporation (“WMRC”), City of Lewiston, Maine State Chamber of Commerce (“Chamber”), and International Brotherhood of Electrical Workers (“IBEW”)<sup>1</sup> (collectively referred to as the “Stipulating Parties”) agree and stipulate as follows:

**I. PURPOSE**

The purpose of this Stipulation is to achieve an agreed upon resolution of CMP’s Petition for Certificate of Public Convenience and Necessity (“CPCN”) for the New England Clean Energy Connect transmission project (“NECEC” or the “Project”). The Stipulating Parties agree that a “public need” exists for the NECEC as specifically described in Section IV.A, Paragraph 1 below and listed in **Attachment A** under Maine law, including 35-A M.R.S. § 3132 and Chapter 330 of the Commission’s Rules and, therefore, the Commission should grant a CPCN for the Project in accordance with the terms and conditions provided in this Stipulation.

The Stipulating Parties further agree that the construction of the NECEC in accordance with the terms and conditions set forth in this Stipulation is in the public interest because the Project and the hydropower it will deliver from Québec to New England will provide, at no cost to Maine electricity customers, (i) lower electricity supply prices and, by reducing reliance on fossil fuel generation, material energy price protection

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<sup>1</sup> Additional parties including the Town of Wilton and the Town of Farmington are still considering whether to join the Stipulation. If they do join, the Stipulating Parties will supplement the Stipulation with additional signature pages from the joining parties.

in natural gas price spike events; (ii) increased reliability for Maine and the ISO-New England (“ISO-NE”) region, by delivering baseload energy to replace retiring baseload resources, as well as other reliability benefits associated with the NECEC’s providing an additional intertie between ISO-NE and Québec and transmission system upgrades associated with the NECEC; (iii) significant carbon dioxide emission reductions as a result of the Project including the increased use of electric vehicle and heat pump programs in Maine, among others, funded pursuant to this Stipulation, which advance Maine’s progress toward its long-term greenhouse gas (“GHG”) emissions reductions goals; and (iv) significant other benefits including a rate relief fund, a low-income customer benefits fund, and a broadband benefits fund, among other benefits.

The Stipulating Parties recognize that there are additional benefits to Maine associated with the NECEC memorialized in agreements in addition to this Stipulation. In addition, the Stipulating Parties also recognize that the environmental impacts of the Project will be determined by agencies other than the Commission including but not limited to the Maine Department of Environmental Protection (“MDEP”), the Maine Land Use Planning Commission (“LUPC”), and the United States Army Corps of Engineers (“USACE”).

This Stipulation is the result of extensive settlement negotiations and discussions among CMP, the other Stipulating Parties, and Commission Staff. The Stipulating Parties recommend that the Commission approve the provisions as set forth below.

The provisions agreed to in this Stipulation have been reached as a result of fair, open, and transparent settlement negotiations based on information presented in this proceeding and gathered through discovery and discussions among CMP and the

intervening parties, including the Stipulating Parties, and Commission Staff.<sup>2</sup> The Stipulating Parties represent a broad spectrum of interests and constitute many of the active participants in the proceeding.

## **II. PROCEDURAL BACKGROUND**

The procedural history of this proceeding is presented below.

### **A. CMP's Response To The Section 83D RFP**

1. On March 31, 2017, the Massachusetts electric distribution companies (the "Massachusetts EDCs"), in coordination with the Massachusetts Department of Energy Resources ("MA DOER"), issued the Section 83D RFP, requesting proposals from clean energy generation<sup>3</sup> and associated transmission to enter into contracts of 15 to 20 years duration with the Massachusetts EDCs to meet Massachusetts' statutorily required annual procurement of 9.45 TWh (the "Section 83D RFP" or the "RFP"). The RFP set a July 27, 2017, deadline for parties to submit bid proposals.

2. On July 27, 2017, CMP and Hydro Renewable Energy, Inc. ("HRE"),<sup>4</sup> submitted joint bids offering two different NECEC configurations.<sup>5</sup> Under the terms of the

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<sup>2</sup> The Commission Staff indicated as part of the settlement process that it takes no position on the Stipulation and will present its recommended decision on the issues presented in this proceeding and on the Stipulation in an Examiners' Report.

<sup>3</sup> Under the terms of the RFP, "Clean Energy Generation" includes the following: (i) firm service hydroelectric generation from hydroelectric generation alone; (ii) new Massachusetts Class I RPS eligible resources that are firm up with firm service hydroelectric generation; and (iii) new Massachusetts Class I RPS eligible resources.

<sup>4</sup> HRE was proposed as a new U.S. affiliate of Hydro-Québec created for purposes of the Section 83D RFP. Ultimately, Hydro-Québec decided to have its existing U.S. affiliate, H.Q. Energy Services (U.S.), Inc. ("HQUS") serve as the counterparty for the NECEC PPAs and TSAs. Hereinafter HRE is referred to as HQUS.

<sup>5</sup> The joint bids proposed either (1) 1,090 MW of Incremental Hydropower Generation provided by HQ Production or (2) 300 MW of new Massachusetts Class I Renewable Portfolio Standard ("RPS") eligible wind generation resources to be constructed by the NECEC Wind Developer firm up with Incremental Hydropower Generation provided by Hydro-Québec Production, the business unit within Hydro-Québec

RFP and the Massachusetts Energy Diversity Act, winning bids recover supply costs from the Massachusetts EDCs through long-term power purchase agreements (“PPAs”) and, as applicable, transmission-related costs through FERC-approved transmission service agreements (“TSAs”).<sup>6</sup>

**B. CPCN Petition**

3. On September 27, 2017, CMP filed the Petition and associated Exhibits NECEC-1 through NECEC-15 requesting that the Commission issue a CPCN for the NECEC.

The Petition asserted, among other things:

- a. The NECEC is a high voltage direct current (“HVDC”) transmission line capable of delivering 1,200 MW of electricity from Québec, Canada to the New England Control Area, and consisting in its entirety of (1) 207 miles (145.3 miles in Maine) of +/- 320 kV overhead HVDC transmission line that will run between the existing Appalaches Substation in Thetford Mines, Québec and a new HVDC converter station approximately 1.6 miles from the existing CMP Larrabee Road Substation in Lewiston, Maine; (2) new HVDC converter stations at both ends of the line; and (3) certain upgrades to the existing high voltage alternating current (“AC”) New England transmission system necessary to permit the interconnection of the NECEC to the New England Control Area at the existing Larrabee Road Substation consistent with the requirements of Section I.3.9 of the ISO-NE Transmission, Markets and Services Tariff (hereinafter referred to as Section I.3.9 Approval) and the Capacity Capability Interconnection Standard (“CCIS”) of the ISO-NE Open Access Transmission Tariff (“OATT”);
- b. CMP would develop, construct, and operate the NECEC transmission facilities located in Maine;

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*(footnote cont'd)*

responsible for the production and marketing of wholesale energy and capacity for export (hereinafter “HQ Production”) and 790 MW of Incremental Hydropower Generation provided by HQ Production, and transmission rights for the remaining 110 MW of transmission capacity to use on a merchant basis. *See* Petition at 2.

<sup>6</sup> M.G.L. ch. 169 § 83D (2016); Section 83D RFP at 2-3.

- c. The NECEC constitutes the transmission component of the two joint bids for clean energy generation and associated transmission submitted by CMP and HQUS, in response to the RFP;<sup>7</sup> and
- d. The NECEC would allow HQUS to use 1,090 MW of NECEC’s transmission capacity to annually deliver up to 9.4 TWh of clean energy generation originating from hydropower generation facilities owned and operated by Hydro-Québec Production (“HQ Production”). The Petition also stated that HQUS had agreed to purchase transmission rights for the remaining 110 MW of transmission capacity on the Project to use on a merchant basis.

**C. Intervenor**

4. On October 3, 2017, the Hearing Examiners issued a Notice of Proceeding that provided all interested persons with the opportunity to file a petition to intervene in this matter on or before October 13, 2017.

5. The Commission received seven timely-filed petitions to intervene. The Hearing Examiners granted all such petitions at the October 19, 2017 initial case conference and by subsequent procedural order dated October 25, 2017. The intervenors in this proceeding that filed timely petitions to intervene include: OPA, CLF, Ms. Dorothy Kelly (“Dot Kelly”), IECG, Maine Renewable Energy Association, Natural Resources Council of Maine (“NRCM”), and WMRC.

6. The Commission also received numerous late-filed petitions to intervene. The Hearing Examiners granted all such requests for intervention on either a mandatory or discretionary basis by procedural orders dated November 27, 2017; March 28, 2018; April 27, 2018; August 28, 2018; September 6, 2018; October 2, 2018; October 11, 2018;

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<sup>7</sup> The Petition described the two different joint-bids that were submitted as different configurations of the NECEC Project. The first bid was a Hydro and Wind Solution, and the second bid was a 100% Hydro Solution. As discussed below, the Massachusetts EDCs, in consultation with the MA DOER, selected the NECEC 100% Hydro Solution as the lone winning bid in the RFP. Accordingly, this summary hereinafter only refers to the 100% Hydro Solution bid.

October 15, 2018; and October 29, 2018. The intervenors in this proceeding that submitted late-filed petitions to intervene include: The Governor’s Energy Office, NextEra Energy Resources (“NextEra”), RENEW Northeast, Inc. (“RENEW”); Calpine Corporation (“Calpine”), Vistra Energy Corporation (formerly known as Dynegy Inc.) (“Vistra”), and Bucksport Generation LLC (“Bucksport”) (Calpine, Vistra and Bucksport hereinafter collectively referred to as the “Generator Intervenors”); Acadia Center; Friends of Maine Mountains; ReEnergy Biomass Operations LLC (“ReEnergy”); IBEW; City of Lewiston; Town of Caratunk; Town of Farmington; Greater Franklin Development Council; Maine State Chamber of Commerce; Trout Unlimited; Senator Thomas Saviello; Mr. Darryl Wood; Town of Alna; Town of Wilton; Town of New Sharon; Town of Jackman; Old Canada Road Scenic Byway, Inc.; and Franklin County Commissioner Terry Brann. In all instances in which the Hearing Examiners granted a late-filed petition to intervene on a discretionary basis, intervention was conditioned on the party’s “taking the case as they find it with respect to discovery.”<sup>8</sup>

**D. Intervenor Testimony, Updates Regarding the Status of the NECEC RFP Bid and London Economics International Report**

7. On January 12, 2018, CMP supplemented its Petition by submitting an Electric and Magnetic Fields (“EMF”) Study for the NECEC, prepared by Dr. William Bailey of Exponent. Dr. Bailey’s report was submitted as Exhibit NECEC-16.

8. On January 26, 2018, Dot Kelly submitted intervenor testimony.

9. On January 31, 2018, the Hearing Examiners issued a procedural order temporarily suspending the proceeding on the basis that the Massachusetts EDCs did not

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<sup>8</sup> See, e.g., Procedural Order – Granting Late-Filed Petitions to Intervene at 1-2 (Oct. 29, 2018).

initially select NECEC as the Section 83D RFP winning bid. In that same order, the Hearing Examiners sought comments from the parties on whether to dismiss or suspend the proceeding.

10. On February 17, 2018, CMP submitted a letter informing the Commission that the Massachusetts EDCs, in consultation with the MA DOER, had selected the NECEC 100% Hydro Solution as the alternative winning bid in the RFP, and that the Massachusetts EDCs would move forward with the 100% Hydro Solution, provided that the NECEC had negotiated acceptable contract terms with the Massachusetts EDCs and the Northern Pass Hydro Project was not able to receive all necessary permitting from the New Hampshire Site Evaluation Committee by March 27, 2018.

11. On February 22, 2018, the Hearing Examiners issued a procedural order that lifted the temporary suspension and resumed the proceeding.

12. On March 28, 2018, CMP filed an additional letter informing the Commission of the MA DOER announcement that the Massachusetts EDCs had terminated the conditional selection of the Northern Pass Hydro Project as the Section 83D RFP winning bid, leaving the NECEC 100% Hydro Solution as the lone winning bid in the RFP. On that same day, the Hearing Examiners issued a procedural order setting a revised schedule for the remainder of the case through hearings.

13. On April 1, 2018, Dot Kelly submitted additional intervenor testimony.

14. On April 30, 2018, as permitted by the March 28, 2018 Procedural Order, the Generator Intervenors submitted direct intervenor testimony from Tanya L. Bodell, William S. Fowler, and James M. Speyer. In addition NextEra submitted intervenor

testimony from Christopher Russo and Stephen Whitley, and RENEW submitted intervenor testimony from Francis Pullaro.

15. On May 21, 2018, Commission Staff filed a report prepared by the Commission’s consultants, London Economics International LLC (“LEI”) entitled “Independent Analysis of Electricity Market and Macroeconomic Benefits of the New England Clean Energy Connect Project” (“LEI Report”). The LEI report was filed in lieu of a bench analysis.<sup>9</sup>

16. On June 13, 2018, the Massachusetts EDCs executed long-term TSAs and PPAs with CMP and HQUS respectively for the NECEC 100% Hydro Solution proposal.

**E. CMP Rebuttal Testimony**

17. On July 13, 2018, CMP filed Rebuttal Testimony from (1) Thorn Dickinson, Eric Stinneford, and Bernardo Escudero with associated Exhibits NECEC-16 through NECEC-26; (2) Chris Malone, Scott Hodgdon, and Justin Tribbet with associated Exhibits NECEC-27 through NECEC-30; and (3) Daniel Peaco, Douglas Smith, and Jeffrey Bower of Daymark Energy Advisors with associated Exhibit NECEC-31.<sup>10</sup>

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<sup>9</sup> Procedural Order – Clarification at 1 (May 24, 2018).

<sup>10</sup> The TSAs that CMP executed with the Massachusetts EDCs are filed in the record as Exhibits NECEC-17 (Eversource TSA), NECEC-18 (National Grid TSA), and NECEC-19 (Unitil TSA). The additional TSAs that CMP executed with HQUS for the period after the TSAs with the EDCs expire and for the 110 MW that the EDCs did not contract for, are filed in the record as Exhibits NECEC-20 through NECEC-23. The executed PPAs are filed in the record as Exhibit NECEC-16 (National Grid PPA), and NEXRE-002-006 Attachment 1 (Eversource PPA) and Attachment 2 (Unitil PPA). On July 24, 2018, CMP submitted public versions of Exhibits NECEC-17 through NECEC-20 upon learning that the Massachusetts EDCs had publicly filed the same documents in ongoing proceedings before the Massachusetts Department of Public Utilities. On October 5, 2018, CMP filed corrected public versions of Exhibit NECEC-18 (National Grid TSA) and Exhibit NECEC-19 (Unitil TSA), known as Revised Supplemental Exhibit NECEC-18 and Revised Supplemental Exhibit NECEC-19, respectively.

**F. Surrebuttal Testimony, Additional LEI Analysis and CMP Visual Renderings**

18. On August 18, 2018, Tanya L. Bodell and William S. Fowler each filed Surrebuttal Testimony on behalf of the Generator Intervenors. Also on August 18, 2018, the following witnesses filed Surrebuttal Testimony on behalf of NextEra: (1) Christopher Russo; (2) Robert Stoddard; and (3) Stephen Whitley, Dan Mayers, and Francis Wang.

19. On September 10, 2018, in response to Mr. Stoddard's Surrebuttal Testimony on behalf of NextEra regarding the Minimum Offer Price Rule ("MOPR"), Commission Staff submitted a memorandum prepared by LEI entitled "MOPR Estimate for the New England Clean Energy Connect Transmission Project" and attached workbook ("LEI MOPR Memo"). Additional exhibits to the LEI MOPR Memo were filed by Commission Staff on September 19, 2018.

20. On September 18, 2018, in response to a request by Commission Staff, CMP filed visual rendering materials for the NECEC transmission line that the Company had previously filed with the MDEP.

21. On October 12, 2018, CMP filed the visual rendering slide deck and supplemental visual renderings that the Company referred to in the September 21, 2018 technical conference.

**G. Hearings – Phase I**

22. The Commission held evidentiary hearings regarding the NECEC on October 19, 2018 (LEI) and on October 22, 2018 (CMP witnesses Malone, Hodgdon, and Tribbet and NextEra witnesses Whitley, Wang, and Mayer).

23. On October 26, 2018, at the request of NextEra supported by other intervening parties, the Hearing Examiners suspended the remaining evidentiary hearings

until January 2019 in order to allow Commission Staff and intervening parties additional time to review and analyze the documents that CMP produced in response to ODR-014-004.<sup>11</sup>

#### **H. Supplemental Testimony and Additional Visual Renderings**

24. On December 10, 2018, the Generator Intervenors filed Supplemental Testimony from Tanya Bodell and William Fowler regarding the MOPR analysis and other issues. NextEra also filed Supplemental Testimony from Christopher Russo and LEI filed a Supplemental MOPR Memo.

25. On that same day, at the request of Commission Staff, CMP filed additional visual renderings and visual impact documents that it had filed with the MDEP, LUPC and the USACE a few days prior.

#### **I. Discovery and Public Comment**

26. Written discovery was conducted and technical conferences were held after every phase of testimony, with the exception of the LEI MOPR Memo submitted by Commission Staff, which was only subject to a technical conference. Collectively, the parties and LEI responded to 58 sets of data requests and 33 sets of oral data requests, each containing multiple individual data requests. CMP, alone, responded to more than 600 data requests during the discovery process.

27. On September 12, 2018, CMP began data production in response to Commission Staff's follow-up questions to ODR-014-004. In total, CMP filed over 97,000

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<sup>11</sup> ODR-014-004 included an initial data request and a series of follow-up questions from Commission Staff that sought all documents relied upon by the primary decision makers and senior management personnel of CMP or any of its affiliates when making the decision to submit the NECEC RFP proposal.

pages of documents in 18 data production rounds that occurred from September 12, 2018 through December 4, 2018.

28. The Hearing Examiners held 17 days of technical conferences throughout this proceeding on the following dates: November 28, 2017 (CMP testimony regarding the Petition); December 11, 2017 (CMP testimony regarding the Petition); April 5, 2018 (CMP testimony regarding the Petition); June 14, 19, 20, and 28, 2018 (Intervenor and LEI testimony); August 1 and 2, 2018 (CMP testimony regarding Rebuttal); September 6, 7, and 14, 2018 (Intervenor testimony regarding Surrebuttal); September 19, 2018 (LEI testimony regarding the MOPR Memo); September 21, 2018 (CMP testimony regarding the Visual Renderings); November 28 and 30, 2018 (CMP testimony regarding the ODR-014-004 Documents); and December 19, 2018 (Intervenor and LEI Supplemental Testimony).

29. The Commission convened three public witness hearings, each of which was noticed in advance by procedural order. The Commission held the first two public witness hearings on September 14, 2018 in Farmington and The Forks Plantation. The Commission held the third public witness hearing on October 17, 2018 at the Commission's offices in Hallowell. In total, the Commission heard approximately 14 hours of public comment and approximately 89 people provided oral and/or written testimony during the public witness hearings.

30. To date, approximately 1,000 public comments have been filed in the Commission's case management system in this docket.

#### **J. Hearings - Phase 2**

31. The Commission held the remaining evidentiary hearings on January 8, 2019 (Generator Intervenor witnesses Bodell and Speyer); January 9, 2019 (CMP witnesses

Dickinson, Stinneford and Escudero); January 10, 2019 (CMP witnesses Malone, Hodgdon and Tribbet, and Daymark witnesses Peaco, Smith and Bower); and January 11, 2019 (NextEra witnesses Russo and Stoddard; and Generator Intervenor witnesses Bodell and Fowler).

32. On January 14, 2019, the Hearing Examiners issued an order identifying specific issues for the parties to address in post-hearing briefs.

33. On January 19, 2019, the Hearing Examiners extended the deadline for opening post-hearing briefs to February 1, 2019, and similarly revised the remainder of the proceeding by extending each subsequent deadline by 7 days.

34. On February 1, 2019, CMP, OPA, IECG, Generator Intervenors, NextEra, CLF, NRCM, Acadia Center, Town of Caratunk, City of Lewiston, IBEW, Chamber, Dot Kelly, RENEW, and WMRC filed opening briefs and on February 13, 2019, CMP, OPA, IECG, Generator Intervenors, NextEra, Town of Caratunk, and Dot Kelly filed reply briefs.

### **III. RECORD**

The record in this proceeding provides ample information on which the Stipulating Parties and the Commission may base their conclusions regarding the NECEC and this Stipulation. These materials include:

- CMP's Petition for CPCN, CMP's Rebuttal Testimony and all supporting exhibits and materials;
- Intervenor Direct, Surrebuttal, and Supplemental testimony submitted by intervening parties and supporting exhibits and materials;
- The May 21, 2018, September 10, 2018 and December 10, 2018 LEI reports;
- Responses to written and oral data requests and attachments to such responses that have been admitted into the record pursuant to the Procedural Orders dated October 24, 2018, February 4, 2019, and February 5, 2019;

- Transcripts of all technical conferences, public witness hearings and evidentiary hearings; and
- Post-hearing briefs and reply briefs.

#### **IV. PARTIES AND SETTLEMENT PROCESS**

To accept a stipulation, the Commission must find that:

- a. The Parties joining the stipulation represent a sufficiently broad spectrum of interests that the Commission can be sure that there is no appearance or reality of disenfranchisement;
- b. The process that led to the stipulation was fair to all parties;
- c. The stipulated result is reasonable and is not contrary to legislative mandate; and
- d. The overall stipulated result is in the public interest.<sup>12</sup>

The undersigned Stipulating Parties believe that each of these factors is satisfied through this Stipulation. The parties joining this Stipulation represent a broad spectrum of interests and many of the active participants in this proceeding.

The process that achieved this Stipulation was fair to all intervening parties, and all intervening parties had the opportunity to participate. CMP engaged in extensive settlement communications with numerous intervening parties and other interested stakeholders throughout the pendency of this proceeding. In addition, formal settlement conferences, noticed in advance by procedural order, were held on September 7, 2018, September 14, 2018, February 5, 2019, and February 12, 2019. Commission Staff participated in these settlement conferences, and no party objected to such participation.

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<sup>12</sup> Chapter 110, § 8(D)(7).

As a result of these settlement discussions, the Stipulating Parties have resolved all issues between them in this proceeding, Commission Docket No. 2017-00232.

**V. RECOMMENDED APPROVALS AND FINDINGS.**

**A. Certificate of Public Convenience and Necessity**

1. Based upon the record in this case, the Stipulating Parties agree and recommend that the Commission issue an order which: (a) approves, accepts and adopts this Stipulation; (b) finds that a public need exists for the NECEC on the basis that the Project, including the hydropower deliveries from Québec to New England it will enable, provides (i) significant economic benefits for Maine and the ISO-NE region in the form of lower electricity supply prices, reduced reliance on fossil fuel generation, material energy price protection in natural gas price spike events, new jobs, increased gross domestic product, and property tax revenues to host communities in Maine; (ii) reliability benefits to Maine and the ISO-NE region, by delivering baseload hydropower to replace retiring baseload resources, as well as other reliability benefits associated with the NECEC's providing an additional inertia between ISO-NE and Québec and transmission system upgrades associated with the NECEC, all at no cost to Maine electricity customers; and (iii) significant carbon dioxide emission reductions as a result of the Project including the increased use of electric vehicle and heat pump programs in Maine, among others, funded pursuant to this Stipulation, which advance Maine's progress toward meeting its long-term GHG emissions reductions goals as set forth in Maine law;<sup>13</sup> and (c) grants a CPCN for the

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<sup>13</sup> See Act to Provide Leadership in Addressing the Threat of Climate Change, P.L. 2003, Ch. 237, codified in the Maine Revised Statutes Title 38, Chapter 3-A.

NECEC permitting the construction of the Project in accordance with the terms of this Stipulation.

2. Specifically, the CPCN shall permit the construction of the transmission lines and substation components listed in **Attachment A** of this Stipulation, as either a core project element of the NECEC or a necessary transmission network upgrade associated with the NECEC, and shall further permit construction of any related additional transmission facilities that ISO-NE determines are necessary to meet the requirements of (i) Section I.3.9 of the ISO-NE's Transmission, Markets and Services Tariff; or (ii) the ISO-NE's CCIS, all at no cost to Maine electricity customers, without further Commission review in this docket or otherwise.

3. Beginning on July 1, 2019, and every three months thereafter until the NECEC is placed into commercial operation, NECEC LLC, as defined below, will file progress reports with the Commission summarizing any significant developments in the permitting, development and construction of the NECEC. These progress reports will (i) summarize the status of the system impact studies or other studies conducted by ISO-NE regarding the NECEC; (ii) identify all transmission network upgrades determined by ISO-NE as needed to permit the interconnection of the NECEC under the CCIS and Section I.3.9 of the ISO-NE Tariff; (iii) identify any federal, state or local permits or approvals received authorizing construction of the NECEC; and (iv) summarize the Project's progress towards completion.

#### **B. CPCN Conditions**

The Stipulating Parties further agree and recommend that the Commission Order granting the CPCN for the NECEC be conditioned on the following terms.

1. **NECEC Project Ownership:** CMP will transfer and convey the NECEC to NECEC Transmission LLC (“NECEC LLC”), a Delaware limited liability company that is a wholly owned subsidiary within the Avangrid Networks family of companies and is not a subsidiary of CMP.

a. **Transfer Agreement:** CMP and NECEC LLC will complete the transfer and conveyance of the NECEC in accordance with an agreement substantially in the form of the NECEC Transfer Agreement provided as **Attachment B** to this Stipulation. Under the terms of the NECEC Transfer Agreement, CMP will transfer and assign to NECEC LLC and NECEC LLC will assume:

- i. Certain real estate interests sufficient to construct and operate the High Voltage Direct Current (“HVDC”) transmission line between the Canada-United States border in Beattie Township, Maine and Lewiston, Maine together with land for the construction and operation of a converter station in Lewiston, Maine, together with real estate interests needed to construct and operate a 345 kV alternating current (“AC”) transmission line from the converter station to CMP’s substation at Larrabee Road, Lewiston, Maine, and together with certain land offered as compensatory mitigation for environmental permits related to the NECEC and the right to purchase additional land to access the converter station (the “Real Estate Interests”);
- ii. All land use permits, any outstanding land use permit applications, and other regulatory permits (the “Permits”) related to the NECEC;
- iii. The Transmission Service Agreements among CMP, the Massachusetts Electric Distribution Companies (“Massachusetts EDCs”) and H.Q. Energy Services (U.S.) Inc. (“HQUS”) (the “TSAs”);
- iv. All agreements executed by CMP with third party vendors and service providers in connection with the development and construction of the NECEC (“Third Party Vendor Agreements”) and certain agreements between CMP and HQUS, Hydro-Québec and WMRC (collectively the “Miscellaneous Agreements”); and
- v. Such other tangible and intangible assets related to the NECEC that CMP may possess including, without limitation, designs, plans and other work

product of CMP or vendors related to the NECEC, and intellectual property related to the NECEC (collectively, the “Related Assets”).

- b. NECEC Transfer Consideration: As consideration for the conveyance and transfer of the NECEC, including without limitation, the Real Estate Interests, the Permits, the TSAs, the Third Party Vendor Agreements, the Related Assets, and any goodwill of CMP related to the NECEC, NECEC LLC will pay CMP the sum total of **\$60,000,000**, payable in forty (40) equal installments of **\$1,500,000** each year commencing on the date the NECEC first achieves commercial operation (the “Commercial Operation Date” or “COD”) and continuing on each anniversary thereof. All payments by NECEC LLC to CMP under the NECEC Transfer Agreement will be disbursed by CMP as part of the NECEC Rate Relief Fund as set forth in Section V.B, Paragraph 5 below.
- c. CMP/NECEC LLC Service Agreement: Effective upon the transfer of the NECEC, CMP and NECEC LLC will enter into a service agreement substantially in the form of the Service Agreement provided as **Exhibit H** to the NECEC Transfer Agreement provided as **Attachment B** to Stipulation.
- d. Other NECEC Transfer Commitments:
  - i. CMP and NECEC LLC agree to complete the transfer of the NECEC before construction of the NECEC commences.
  - ii. NECEC LLC will not participate in any money pooling arrangement, credit facility or other financing agreement with CMP without the prior approval of the Commission.
  - iii. CMP and NECEC LLC will make such accounting entries as are necessary in order to remove NECEC related development expenses from CMP’s books and accounts.
  - iv. NECEC LLC will put in place and maintain a guaranty by AVANGRID, Inc., or its successor, with respect to NECEC LLC’s payment obligations to

CMP under the NECEC Transfer Agreement and NECEC LLC's payment obligations for the Heat Pump Fund (Section V.B, Paragraph 7), the Dirigo EV Fund (Section V.B., Paragraph 8(a)), the Franklin County Host Community Benefits Fund (Section V.B., Paragraph 9) and the Education Grant Funding (Section V.B., Paragraph 10) for as long as such payment obligations exist; provided, however, that such guaranty may be terminated in the event that NECEC LLC obtains and maintains a credit rating from a nationally recognized rating organization that is satisfactory to the Commission in its discretion. NECEC LLC also agrees to grant a first priority security interest to CMP in NECEC LLC's payment rights under the HQUS Support Agreement or related Hydro-Québec guaranty or other credit support discussed in Section V, Paragraph 14 below for the purpose of funding the NECEC Low-Income Customer Benefits Fund and the NECEC Rate Relief Fund. NECEC LLC further covenants not to amend, fail to vigorously enforce, or waive any provision of the HQUS Support Agreement or any guaranty provided by Hydro-Québec or other credit support relating to HQUS's obligations under the HQUS Support Agreement in a manner that could impair any payment obligation of either entity to NECEC LLC.

- v. NECEC LLC and CMP will cooperate in good faith to facilitate access to the use of the NECEC transmission corridor for ATV, snowmobile and other recreational uses, consistent with applicable laws, regulations, ordinances, permits and licenses and CMP's generally applicable standards and practices.
- vi. NECEC LLC will not use CMP's brand name, reputation or customer relations to its benefit and will not engage in joint marketing or joint advertising with CMP at any time.
- vii. Maine transmission and distribution customers shall not be legally or financially responsible for any portion of NECEC LLC's revenue requirement for the NECEC Transmission Project accruing during at least the first 40 years of the useful life of the NECEC.
- viii. CMP and NECEC LLC will not take or support any action to modify the cost recovery mechanism applicable to the NECEC that would result in Maine transmission and distribution customers being legally or financially responsible for any portion of NECEC LLC's revenue requirement for the NECEC accruing during the first 40 years of the useful life of the project, without first obtaining Commission approval for such change.
- ix. Notwithstanding the foregoing, this Stipulation shall not prohibit Maine electricity customers from directly, or through a third party such as the Maine transmission and distribution utilities as approved by the

Commission or a Maine competitive energy provider as approved by the Commission, purchasing energy provided through the 110 MW of the NECEC transmission capacity not contracted for by the Massachusetts EDCs pursuant to the Section 83D RFP even if that purchase has the effect of directly or indirectly paying for a portion of the revenue requirement for the NECEC.

- e. NECEC Network Upgrades: As part of the NECEC, upgrades to certain of CMP's existing transmission facilities will be necessary in order to permit the interconnection of the NECEC to the transmission system administered by ISO-NE in accordance with Section I.3.9 and the Capacity Capability Interconnection Standard ("CCIS") of the ISO-NE Open Access Transmission Tariff (the "ISO-NE Tariff") (the "Network Upgrades"). NECEC LLC agrees to complete all such Network Upgrades determined by ISO-NE through the necessary studies (currently underway and scheduled for completion in Q-3 2019) to be necessary under Section I.3.9 and the CCIS of the ISO-NE Tariff to ensure a total transfer capacity at the Surowiec-South Interface of no less than 2,600 MW. NECEC LLC shall be financially responsible for all costs associated with the construction of the Network Upgrades in accordance with applicable ISO-NE Tariff provisions. Upon completion, the Network Upgrades shall remain the property of CMP, and CMP will be responsible for the operation and maintenance of such transmission facilities. These facilities shall be subject to Section V.B., Paragraph 1(d)(v, vi and vii) above.
- f. Affiliate Transactions: CMP and NECEC LLC agree to obtain Commission approval of all affiliate transactions related to the transfer, construction, operation or maintenance of the NECEC requiring approval under Maine law, including, without limitation, any interconnection agreement and affiliate

service agreements between NECEC LLC and any affiliate within the Avangrid family of companies. Any amounts charged to NECEC LLC for services provided by affiliates, including the Avangrid Service Company, will not count towards any annual cap on total affiliate charges applicable to CMP and other Avangrid affiliates within Maine. NECEC LLC, CMP and other affiliates may share employees, directors, officers and information as necessary for the construction, operation and maintenance of the NECEC.

- g. **Compliance Filing:** Prior to the commencement of construction of the NECEC, CMP and NECEC LLC will make a compliance filing which confirms completion of the transfer of the NECEC from CMP to NECEC LLC in accordance with the terms of this Stipulation and provides the AVANGRID Inc. guaranty and first priority security interest called for in Section V.B. Paragraph 1(d)(iv) above.

2. **Transmission Rates Customer Credit:** Effective with the 2019 rate change for transmission customers, CMP will provide a rate credit for RNS and LNS transmission customers totaling **\$1.005 million**. This credit represents the amounts paid in rates by RNS and LNS transmission customers for those portions of the transmission corridor necessary for the NECEC that have been included in FERC Account 105 for Plant Held for Future Use, plus carrying costs calculated using the FERC refund formula. In addition, upon the issuance of the CPCN for the NECEC, CMP will remove on a going forward basis all NECEC-related property from FERC Account 105 – Plant Held for Future Use.

3. **New Corridor Removed from Transmission Rates:** Upon the issuance of the CPCN for the NECEC, CMP will classify the unused portion of the transmission corridor

it has assembled from the Canada-United States border in Beattie Township to the Company's existing Section 222 transmission corridor as Non-Operating Property in Account 121 of FERC's Uniform System of Accounts until such time as CMP identifies with sufficient clarity a specific transmission project for development in such transmission corridor in accordance with applicable FERC precedent, regulations and standards. CMP agrees that it will not seek to recover the cost of this unused portion of transmission corridor through transmission rates by reclassifying the property as Plant Held For Future Use in Account 105 of FERC's Uniform System of Accounts or by any other means, unless the transmission project that will use this corridor is otherwise eligible for rate recovery in whole or in part from Maine retail customers pursuant to the then applicable FERC-approved transmission tariff.

4. **NECEC Low-Income Customer Benefits Fund:** NECEC LLC will establish a **\$50,000,000** NECEC Low-Income Customer Benefits Fund to fund one or more programs that benefit low-income energy customers in Maine in a manner designated by the OPA, in consultation with the Efficiency Maine Trust ("EMT") and the Governor's designee(s). NECEC LLC will fund the NECEC Low-Income Customer Benefits Fund by making annual payments to the program(s) identified by the OPA, in consultation with the EMT and the Governor's designee(s), of **\$1,250,000** beginning on the NECEC COD and continuing on each anniversary thereof for a period of forty (40) years. The NECEC Low-Income Customer Benefits Fund may be used to fund programs that are intended to reduce the amounts that low-income customers expend for electricity or other sources of energy and may include weatherization and household energy efficiency programs. In designating uses for these funds, the OPA, in consultation with the EMT and the Governor's designee(s),

may apply a preference for low-income energy customers located in the NECEC Host Communities. For purposes of this Stipulation, the “NECEC Host Communities” are defined as the municipalities and communities in which the NECEC Core Project Elements and Network Upgrades as identified in **Attachment A** are located and other municipalities and communities in Franklin and Somerset Counties materially impacted by the construction and operation of the Project.

5. **NECEC Rate Relief Fund**: NECEC LLC and CMP will establish a **\$140,000,000** NECEC Rate Relief Fund to be used to provide per kilowatt hour rate relief for retail electricity customers within CMP’s service territory. To fund the NECEC Rate Relief Fund, CMP will contribute the annual **\$1,500,000** transfer payments to be received from NECEC LLC under Section V.B, Paragraph 1(b) above. In addition, NECEC LLC will make annual contributions to the NECEC Rate Relief Fund of **\$2,000,000** beginning on the NECEC COD and continuing on each anniversary thereof for a period of forty (40) years. In addition, using commercially reasonable efforts CMP will each year seek to sell or otherwise monetize for maximum value the Environmental Attributes provided by HQUS in accordance with NECEC Support Agreement discussed below and contribute those funds to the NECEC Rate Relief Fund. CMP will then credit the **\$3,500,000** contributed annually to the NECEC Rate Relief Fund plus the proceeds from the sales of the Environmental Attributes, net of expenses to complete such sales, to CMP’s stranded cost account or such other account as the Commission may determine in the future will provide comparable per kilowatt hour sharing by all retail electricity customer classes within CMP’s service territory.

6. **Broadband Benefit:**

- a. CMP and NECEC LLC commit that the final design for the NECEC transmission lines will include the necessary facilities and equipment to provide additional fiber optic capacity on the NECEC HVDC transmission line and other AC transmission lines included within the Network Upgrades for the benefit of the State of Maine and in particular the NECEC Host Communities, with an estimated value of \$5,000,000.
- b. CMP and NECEC LLC further commit to construct the necessary fiber optic infrastructure to provide access to this fiber optic capacity at major road crossings or other appropriate access points along the NECEC project route, pursuant to the NECEC Support Agreement discussed in Section V.B, Paragraph 14 below.
- c. In consultation with ConnectME, the Governor's designee(s), OPA and HQUS, NECEC LLC will establish a \$10,000,000 NECEC Broadband Fund. The NECEC Broadband Fund will be funded by five (5) annual contributions of \$2,000,000 by HQUS starting on the NECEC COD. The NECEC Broadband Fund will be available to provide grants to support the implementation and maintenance of high speed broadband infrastructure in the host communities through which the NECEC transmission facilities run. This grant funding may be used for the following purposes:

- i. Payment of any and all costs to study the feasibility and, if commercially, technically and legally feasible, the implementation and construction of a fiber optic connection between the State of Maine and the fiber optic network serving Montreal, Province of Québec through NECEC, pursuant to the NECEC Support Agreement discussed in Section V.B, Paragraph 14 below, provided that no more than \$2,000,000 of the NECEC Broadband Fund may be used for these purposes;
- ii. Payment of legal, consulting and financial planning fees related to the establishment of public/private partnerships to expand the availability of high speed broadband in the host communities or ongoing project management required to expand and maintain the availability of high speed broadband in such communities including, but not limited to, providing broadband service to public buildings where citizens may access the service for personal or business use;
- iii. Payment of annual pole license fees in unserved and underserved areas; or
- iv. Payment of make-ready costs for utility poles in unserved and underserved areas.

7. **Heat Pump Benefit:** NECEC LLC will establish a **\$15,000,000** NECEC Heat Pump Fund for the installation in Maine of heat pumps, or other future efficient heating technologies that are as efficient, or more efficient, than the most efficient heat pumps agreed to by the OPA, the Governor’s designee(s), CLF, Acadia Center, and IECG in consultation with Efficiency Maine Trust (“EMT”). Program specifications, eligibility criteria and other details of the NECEC Heat Pump Fund will be developed on a collaborative basis by NECEC LLC, HQUS, OPA, the Governor’s designee(s), CLF, Acadia Center, and IECG in consultation with Efficiency Maine Trust (“EMT”) and may include a preference for targeted initiatives to reach low- and moderate-income individuals and communities in Maine. The NECEC Heat Pump Fund will be funded by HQUS and NECEC LLC as follows:

- a. Starting on the NECEC COD and annually on the first, second, third and fourth anniversaries thereof, HQUS will make annual contributions of \$2,000,000 to the NECEC Heat Pump Fund, pursuant to the NECEC Support Agreement discussed in Section V.B, Paragraph 14 below;
- b. On the fifth and sixth anniversaries of the NECEC COD, NECEC LLC will make annual contributions of \$2,000,000 to the NECEC Heat Pump Fund; and
- c. On the seventh anniversary of the NECEC COD, NECEC LLC will make a contribution of \$1,000,000 to the NECEC Heat Pump Fund.

8. **NECEC Electric Vehicle (“EV”) Funds:** NECEC LLC, in consultation with CLF, Acadia Center, OPA, the Governor’s designee(s), EMT and IECG, and with the support of HQUS, will establish two funds totaling **\$15,000,000** for the purpose of expanding the numbers of electric vehicles (“EVs”) in Maine and maximizing access and exposure in Maine to EVs and EV infrastructure. The two funds are described below.

- a. **The Dirigo EV Fund:** The Dirigo EV Fund will be used to provide: (1) rebates to defray the cost of workplace, multi-unit dwelling and other public vehicle charging installations in Maine; and (2) consumer rebates for the purchase of qualifying EVs by Maine residents. The Dirigo EV Fund will be managed pursuant to a written agreement between CLF, Acadia Center and the Governor’s designee(s) prepared in consultation with CMP and NECEC LLC. Funding for the Dirigo EV Fund will be provided through a contribution of **\$5,000,000** from NECEC LLC. At the election of CLF, Acadia Center and the Governor’s designee(s) NECEC LLC may make this contribution, either through a lump sum payment based on documented program needs or

through alternative annual contributions, established by CLF, Acadia Center, and the Governor's designee(s) beginning in the year in which NECEC LLC and Hydro-Québec receive all necessary permits and approvals to construct the NECEC and the interconnecting transmission facilities in Québec. In the event that CLF, Acadia Center and the Governor's designee(s) elect that the NECEC EV Fund be funded by a lump sum payment, CLF, Acadia Center and the Governor's designee(s) shall provide NECEC LLC with detailed written descriptions of any such initiatives or programs to be funded with any such lump sum payment, including details as to the magnitude and timing of the funding requirements of such initiatives or programs. NECEC LLC, CLF, Acadia Center and the Governor's designee(s) shall jointly select a party to design the rebate program and/or administer the distribution of the Dirigo EV Fund. NECEC LLC further agrees to reimburse the Dirigo EV Fund up to \$50,000 for the charges for such program design and/or administration related work. The programs or initiatives funded by the Dirigo EV Fund, where applicable, shall be designed to:

- i. facilitate competitive development of charging stations by third parties;
  - ii. coordinate with other policy programs including Volkswagen settlement Appendix D expenditures;
  - iii. include targeted initiatives to reach low- and moderate-income individuals and communities in Maine; and
  - iv. exclude transmission and distribution utility ownership of end use charging stations, except in cases of market failure.
- b. The Hydro-Québec EV Fund: The **\$10,000,000** Hydro-Québec EV Fund will be used to fund the deployment of a state-wide fast and ultra-fast public

charging infrastructure network for EVs in Maine. Hydro-Québec will collaborate with CMP, OPA, IECG the Governor’s designee(s), and other interested stakeholders in developing this network, which will enable Maine EV drivers and visitors to enjoy safe electric travel across the state, with the guaranteed availability of fast chargers at regular intervals of distance. This charging network will be compatible with other public networks already present in Maine and neighboring jurisdictions and will be operated and supported by Hydro-Québec. The Stipulating Parties will provide for public ownership of the equipment comprising, and general public access rights to reasonably use and enjoy, the EV charging infrastructure network developed pursuant to the Hydro-Quebec EV Fund, each for the useful of life of such equipment or charging infrastructure. The Hydro-Québec EV Fund will be funded through five payments of **\$2,000,000** by HQUS starting on the NECEC COD and annually on the first, second, third and fourth anniversaries thereof, pursuant to the NECEC Support Agreement discussed in Section V.B, Paragraph 14 below.

9. **Franklin County Host Community Benefits**: NECEC LLC will establish a **\$5,000,000** NECEC Franklin County Host Communities Fund for the benefit of communities in Franklin County. NECEC LLC will fund this fund through ten (10) annual payments of \$500,000 starting on the NECEC COD and continuing on each of the ensuing anniversaries of the COD. The NECEC Franklin County Host Communities Fund will provide grant funding to support the charitable mission of the Greater Franklin Development Council (“GFDC”), a 501(c)(3) economic and community development

organization operating for the benefit of Franklin County residents) including the marketing of the Franklin County region, workforce development, business retention, and entrepreneurial support. NECEC LLC and GFDC will administer the NECEC Franklin County Host Communities Fund on a collaborative basis, and funds will be disbursed through a grant process that requires applicants to demonstrate the availability of matching funds. Applications for projects to help low-income citizens of Franklin County will be given a priority.

10. **Education Grant Funding:** NECEC LLC will contribute \$6,000,000 for education-related grants and programs as follows:

- a. Once the NECEC receives all State of Maine permits and approvals, NECEC LLC will contribute \$1,000,000 to Maine Prime Technologies LLC at the University of Maine to fund research and development activities associated with marine wind generation technology commercialization;
- b. Starting on the NECEC COD, NECEC LLC will make ten annual contributions of \$500,000 to fund the following:
  - i. Internship programs and scholarships for needy Maine students to attend the University of Maine Farmington totaling \$1,000,000 over ten years (\$100,000 per year); and
  - ii. Vocational programs, scholarships and innovative training programs in the areas of math, science and technology for the School Districts within Franklin and Somerset Counties or such programs and scholarships for Maine Community Colleges that serve students from Franklin and Somerset Counties, totaling \$4,000,000 over ten years. The Stipulating Parties agree to establish a governing board for the (\$400,000 per year) administration and use of these funds. Such board shall include two representatives from school districts in Franklin County, two representatives from Somerset County, and three representatives designated by the Maine Governor.

11. **Mitigating NECEC's Impacts on Transmission System and Existing and Future Maine Energy Resources:**

- a. CMP and NECEC LLC agree to actively participate in all ISO-NE studies to determine the thermal, voltage and stability ratings for the Surowiec-South interface applicable upon the completion of the NECEC and, consistent with good utility practice, advocate to ISO-NE to maximize the stability rating and the total transfer capacity at the Surowiec-South interface after the completion of the NECEC so that such rating is as close as possible to the expected thermal and/or voltage limits (2812 MW and 2930 MW, respectively) for that interface. This advocacy (whether oral or in writing) will address the reasonableness of applicable study assumptions and planning criteria and the appropriate balance between system reliability and achievement of New England's clean energy public policy objectives and will occur through direct interaction with ISO-NE and at appropriate stakeholder and ISO-NE committee meetings.
- b. CMP, CLF, Acadia Center, the Governor's designee(s), OPA, IECG and other interested stakeholders (to be chosen by a process agreed to by CMP, CLF, Acadia Center and the Governor's designee(s)) will engage one or more mutually agreed-upon transmission consultant(s) to evaluate and report on a suite of potential transmission and non-wires solutions (including but not limited to large scale solar and storage), and their respective estimated costs, that would reduce existing and projected congestion at the Maine/New Hampshire Interface and at the Surowiec-South interface. The consultant(s) will be selected through a jointly developed request for proposals or other

agreed upon method that establishes minimum consultant qualifications, services sought, scope of study and solutions to be analyzed. CMP will pay for this study, the costs of which shall not exceed \$2,000,000, and the study shall be commenced once all applicable permits and approvals for the construction of the NECEC transmission project in Maine are received and Hydro-Québec receives all applicable permits and approvals for the construction of the interconnecting transmission facilities in Québec. CMP agrees that it will not seek to recover the costs of this study from electricity customers.

- c. For any cost effective and commercially viable transmission and non-wires solution(s) identified in the Maine/New Hampshire and Surowiec-South interface report prepared pursuant to Section V.B, Paragraph 11(b) above, CMP agrees (directly or through an Avangrid affiliate) to fully assess and pursue all available means of approval and cost allocation pursuant to the ISO-NE Tariff, including but not limited to as a Reliability Transmission Upgrade, a Market Efficiency Transmission Upgrade or a Public Policy Transmission Upgrade, or as part of any future solicitation for clean energy and transmission capacity. To the extent a viable mechanism is determined to fund such solutions, CMP further agrees to, directly or through an Avangrid affiliate, propose such solution(s) in any applicable competitive solicitation, including without limitation any solicitation conducted under the ISO-NE Tariff, and, if such proposal is selected in such solicitation, seek all necessary permits and approvals to implement such solution(s) in

accordance with the then terms of the ISO-NE Tariff. In pursuing the development of such cost effective and commercially viable transmission and non-wires solution(s), CMP and its parent company, Avangrid Networks, agree to bear commercial risk associated with the development of the project.

- d. Within one year of NECEC COD, CMP (directly or through an Avangrid affiliate) shall create and make available an annual electric transmission and distribution system report for public notice (subject to CEII provisions) which analyzes system needs that may potentially be met by non-wires alternatives (“NWAs”). This report will detail capacity and load by substation and circuit and identify corresponding growth-related investments being planned for. This report will also include a detailed description of CMP’s planning and decision-making processes related to NWAs during the year, including transparency into the application of its NWA suitability criteria. CMP will work to develop and implement systems and analyses that can provide heat maps that: (i) show where integration of distributed generation is least likely to require substantial upgrades (i.e., hosting capacity maps); (ii) show the electric load on the electric distribution system, including electric loads during peak electricity demand time periods; and (iii) highlight the most congested or constrained areas of the electric distribution system. Additionally, CMP will support policies and regulations that seek to evaluate NWAs against traditional transmission and distribution projects through (i) the use of competitive solicitations and (ii) the use of

compensation mechanisms that create incentives to place NWAs on an equal footing from a ratemaking perspective. Such tools and heat maps will be available within one-year after NECEC COD.

- e. The above commitments in this Paragraph 11 are conditioned on (i) a CPCN being granted for the NECEC, (ii) NECEC LLC receiving all other necessary permits and approvals for the NECEC including, but not limited to, those issued by the MDEP, the LUPC, the USACE and the MDPU, and (iii) Hydro-Québec receiving all applicable permits and approvals for the construction of the interconnecting transmission facilities in Québec.

12. **Commitment to Long-term Planning for Regional Decarbonization:**

- a. As part of a regional decarbonization collaborative comprised of CLF, Acadia Center, utilities, the Governor's designee(s), OPA, IECG and other stakeholders (to be chosen by a process agreed to by CLF, Acadia Center, the Governor's designee(s) and CMP), CMP and NECEC LLC agree to work with the collaborative to jointly select and hire a consultant to perform an analysis of the means by which the Northeast Region may achieve economy-wide decarbonization of zero emissions by 2050 as called for by the most recent report of the Intergovernmental Panel on Climate Change Special Report on Global Warming of 1.5°C. CMP agrees to contribute at least 50 percent of the cost of this study and associated selection process. This contribution to the study cost by or on behalf of CMP shall not exceed \$500,000. As a member of the collaborative, CMP (directly or through an Avangrid affiliate) will actively engage in a regional stakeholder process to introduce and receive input on

the analysis and assess potential actions by which state policymakers could advance decarbonization in each energy consumption sector. CMP agrees that it will not seek to recover the costs of this study or stakeholder process from electricity customers.

- b. CMP agrees to work (directly or through an Avangrid affiliate) with a stakeholder group made up of CLF, Acadia Center, the Governor's designee(s), OPA, IECG, and other stakeholders (to be chosen by a process agreed to by CMP, CLF, Acadia Center and the Governor's designee(s)) to research and develop a set of utility policies and actions, and state regulatory reforms, that can most effectively facilitate economy-wide decarbonization in the region, consistent with the analysis conducted pursuant to Section V.B, Paragraph 12(a) above. CMP (directly or through an Avangrid affiliate), will work with this stakeholder group to develop a consensus around these approaches, draft proposed regulatory and legislative provisions by which the consensus approaches can be authorized, and actively seek state approval and implementation of them.
  - c. The above commitments in this Paragraph 12 are conditioned on (i) a CPCN being granted for the NECEC and (ii) NECEC LLC receiving all other necessary permits and approvals for the NECEC including, but not limited to, those issued by the MDEP, the LUPC, the USACE and the MDPU.
13. **Securitization:** CMP, OPA, the Governor's Energy Office and IECG agree that electricity customers in Maine may benefit if the annual payments to the NECEC Low-income Customer Benefit Fund provided in Section V.B, Paragraph 4 and the annual payments to the

NECEC Rate Relief Fund provided in Section V.B, Paragraph 5 are leveraged through securitization. To facilitate the securitization of such payment streams, if possible, NECEC LLC, upon the NECEC COD, will establish a fund of **\$1,000,000** to be used to pay for any investment bank, investment advisor or consultant and/or legal fees incurred by OPA, the Governor's designee(s), IECG and CMP related to such securitization. In the event any of these funds are not needed to complete the securitization of either the NECEC Low-income Customer Benefit Fund or the NECEC Rate Relief Fund, any remaining balance will be disbursed to CMP to provide rate relief in accordance with Section V.B, Paragraph 5 above.

14. **HQUS Support Agreement:**

- a. In order to confirm HQUS's commitments herein, CMP, NECEC LLC and HQUS will enter a binding agreement enforceable under Maine law which reflects the following terms:
  - i. HQUS's commitment to provide CMP annually 400,000 MWh of environmental attributes related to deliveries of hydroelectric power to New England over the NECEC or otherwise (the "NECEC Environmental Attributes") for a twenty (20) year period starting in the first full year after NECEC COD. The NECEC Environmental Attributes shall mean any and all generation attributes under any and all other international, federal, regional, state or other law, rule, regulation, bylaw, treaty or other intergovernmental compact, decision, administrative decision, program (including any voluntary compliance or membership program), competitive market or business method (including all credits, certificates, benefits, and emission measurements, reductions, offsets and allowances related thereto) that are attributable, now or in the future, to the favorable generation or environmental attributes of Hydro-Québec hydropower generation resources including, but not limited to: (a) any such credits, certificates, benefits, offsets and allowances computed on the basis of the Hydro-Québec hydropower generation resources using renewable technology or displacement of fossil-fuel derived or other conventional energy generation; or (b) any certificates issued pursuant to the NEPOOL Generation Information System Operating Rules ("GIS") in connection with energy generated by the Hydro-Québec hydropower generation resources;

- ii. Hydro-Québec’s commitment to include sufficient fiber optic capacity in the Québec transmission facilities interconnecting to the NECEC to provide a fiber optic connection between the State of Maine and the fiber optic network serving Montreal, Province of Québec, subject to commercial, technical and legal feasibility;
  - iii. HQUS’s commitment to contribute \$10,000,000 to the NECEC Broadband Fund through five payments of \$2,000,000 starting on the NECEC COD and annually on the first, second, third and fourth anniversaries thereof and to share its expertise on broadband infrastructure;
  - iv. HQUS’s commitment to contribute \$10,000,000 to the NECEC Heat Pump Fund through five payments of \$2,000,000 starting on the NECEC COD and annually on the first, second, third and fourth anniversaries thereof;
  - v. Hydro-Québec’s commitment to share its expertise with respect to EV infrastructure in developing the programs and initiatives funded by the Hydro-Québec EV Fund for the benefit of the State of Maine;
  - vi. HQUS’s commitment to contribute \$10,000,000 to the Hydro-Québec EV Fund through five payments of \$2,000,000 starting on the NECEC COD and annually on the first, second, third and fourth anniversaries thereof;
  - vii. HQUS’s commitment to pay NECEC LLC annually \$3,500,000 beginning on the NECEC COD and continuing on each anniversary thereof for a period of forty (40) years in addition to all amounts due under the TSAs; and
  - viii. A guaranty from Hydro-Québec of HQUS’s payment obligations under the HQUS Support Agreement or such other appropriate credit support for such obligations as the parties to the HQUS Support Agreement agree.
- b. Prior to the commencement of construction of the NECEC, NECEC LLC will file the HQUS Support Agreement and the Hydro-Québec guaranty or other credit support with the Commission as a compliance filing in this docket.

15. **Maine Workers Preference**: All other factors being equal and consistent with applicable law and applicable labor agreements, NECEC LLC, and its contractors working on the construction of the NECEC will give preference to hiring Maine workers.

16. **Funding Commitments Conditions Precedent**: The funding commitments in Section V.B, Paragraphs 4, 5, 6, 7, 8(b), 9, and 10(b) above are conditioned on the NECEC achieving commercial operation.

**C. Nontransmission Alternatives Findings**

1. The Stipulating Parties further agree and recommend that the Commission find, based on the record in this proceeding, that no nontransmission alternative (“NTA”), whether large-scale generation, distributed generation, demand response resource, or conservation alternative, can feasibly substitute for the NECEC at a lower cost to Maine electricity customers. The NECEC will serve the public need by transmitting up to 1,200 MW of hydropower energy from Québec to New England effectively replacing retiring baseload generation, and providing the State of Maine with its first transmission interconnection with the vast Hydro-Québec hydropower generation system. No NTA has the technical capability, size or scale to satisfy this public need, and even if an NTA could meet this public need, no such alternative could so do at a lower total cost to Maine electricity customers, since no NECEC related costs will be borne by Maine electricity customers.

**VI. ADDITIONAL STIPULATION TERMS**

1. The execution of this Stipulation by any Stipulating Party shall not constitute precedent as to any matter of law or fact and, except as expressly provided herein, shall not foreclose any of the Stipulating Parties from making any contention or exercising any right,

including rights of appeal, in any other Commission proceeding or investigation, or any other trial or action.

2. The Stipulating Parties intend that this Stipulation be considered by the Commission for adoption as an integrated solution to the issues addressed herein which arose in the above-captioned proceeding and as otherwise presented in this Stipulation. The Stipulating Parties also intend that this Stipulation shall be null and void, and not bind the Stipulating Parties in the above-captioned proceeding, in the event the Commission does not adopt this Stipulation without material modification.

3. If not accepted by the Commission in accordance with the provisions hereof, this Stipulation shall not prejudice the positions taken by any Stipulating Party on these issues before the Commission in this proceeding and shall not be admissible evidence therein or in any other proceeding before the Commission.

4. Upon approval by the Commission, this Stipulation shall have the legal effect of a binding contractual agreement and shall not be amended without the written agreement of CMP, NECEC LLC, OPA, IECG, CLF, Acadia Center, the Governor's Energy Office, WMRC, City of Lewiston, Chamber, and IBEW.

5. All rights, commitments and obligations under this Stipulation shall be binding upon and inure to the benefit of the lawful successors or assigns of the applicable responsible entities identified herein. In the event that a responsible entity ceases to operate or legally exist without a successor or assign, the Stipulating Parties, in consultation with Commission Staff, will confer to identify an appropriate successor or assign in order that the purposes of this Stipulation may be achieved and, as necessary and appropriate, seek Commission approval of such successor or assign.

6. The Stipulating Parties agree that the record in support of this Stipulation includes: (a) this Stipulation, and (b) any and all confidential or public materials contained in the Commission's Administrative Record of Docket No. 2017-00232 as of this date, as set forth in Section III of this Stipulation.

7. The Stipulating Parties hereby waive any rights that they have under 5 M.R.S. § 9062(4) and Chapter 110, Section 8(F)(4) of the Commission Rules of Practice and Procedure to the extent necessary to permit Commission Staff to discuss this Stipulation and the resolution of the issues addressed in this Stipulation with the Commissioners, either before or at the Commission's scheduled deliberations, without providing to the Stipulating Parties an Examiners' Report or the opportunity to file Exceptions.

8. All Attachments referred to in this Stipulation are incorporated herein by reference and are intended to be considered as part of this Stipulation as if their terms were fully set forth in the body of this Stipulation.

9. In the event that the Stipulating Parties cannot agree on the implementation of necessary details related the administration or use of any of the funds described in Sections V.B, Paragraphs 4, 5, 6, 7, 8, 9, or 10 of this Stipulation, the Commission shall retain jurisdiction to interpret the binding contractual effect of such provisions in accordance with its authority under Maine law.

**[Remainder of page intentionally left blank]**

IN WITNESS WHEREOF, the Stipulating Parties have caused this Stipulation to be executed by their respective attorneys or representatives, or have caused their lack of objection to be noted by the signature of their respective attorneys or representatives.

CENTRAL MAINE POWER COMPANY

By: 

By: 

MAINE OFFICE OF THE PUBLIC ADVOCATE

By: \_\_\_\_\_

GOVERNOR'S ENERGY OFFICE

By: \_\_\_\_\_

INDUSTRIAL ENERGY CONSUMER GROUP

By: \_\_\_\_\_

CONSERVATION LAW FOUNDATION

By: \_\_\_\_\_

IN WITNESS WHEREOF, the Stipulating Parties have caused this Stipulation to be executed by their respective attorneys or representatives, or have caused their lack of objection to be noted by the signature of their respective attorneys or representatives.

CENTRAL MAINE POWER COMPANY

By: \_\_\_\_\_

By: \_\_\_\_\_

MAINE OFFICE OF THE PUBLIC ADVOCATE

By:  \_\_\_\_\_

Barry J. Hobbins, Public Advocate

GOVERNOR'S ENERGY OFFICE

By: \_\_\_\_\_

INDUSTRIAL ENERGY CONSUMER GROUP

By: \_\_\_\_\_

CONSERVATION LAW FOUNDATION

By: \_\_\_\_\_

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CENTRAL MAINE POWER COMPANY

By: \_\_\_\_\_

By: \_\_\_\_\_

MAINE OFFICE OF THE PUBLIC ADVOCATE

By: \_\_\_\_\_

GOVERNOR'S ENERGY OFFICE

By: Angela Monroe

INDUSTRIAL ENERGY CONSUMER GROUP

By: \_\_\_\_\_

CONSERVATION LAW FOUNDATION

By: \_\_\_\_\_

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CENTRAL MAINE POWER COMPANY

By: \_\_\_\_\_

By: \_\_\_\_\_

MAINE OFFICE OF THE PUBLIC ADVOCATE

By: \_\_\_\_\_

GOVERNOR'S ENERGY OFFICE

By: \_\_\_\_\_

INDUSTRIAL ENERGY CONSUMER GROUP

By:  \_\_\_\_\_  
Andrew Landry  
Counsel for IECG

CONSERVATION LAW FOUNDATION

By: \_\_\_\_\_

IN WITNESS WHEREOF, the Stipulating Parties have caused this Stipulation to be executed by their respective attorneys or representatives, or have caused their lack of objection to be noted by the signature of their respective attorneys or representatives.

CENTRAL MAINE POWER COMPANY

By: \_\_\_\_\_

By: \_\_\_\_\_

MAINE OFFICE OF THE PUBLIC ADVOCATE

By: \_\_\_\_\_

GOVERNOR'S ENERGY OFFICE

By: \_\_\_\_\_

INDUSTRIAL ENERGY CONSUMER GROUP

By: \_\_\_\_\_

CONSERVATION LAW FOUNDATION

By: 

ACADIA CENTER

By: Deborah Donovan

MAINE STATE CHAMBER OF COMMERCE

By: \_\_\_\_\_

INTERNATIONAL BROTHERHOOD OF  
ELECTRICAL WORKERS

By: \_\_\_\_\_

CITY OF LEWISTON

By: \_\_\_\_\_

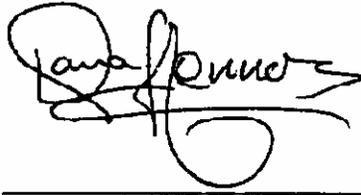
WESTERN MOUNTAINS & RIVERS  
CORPORATION

By: \_\_\_\_\_

ACADIA CENTER

By: \_\_\_\_\_

MAINE STATE CHAMBER OF COMMERCE

A handwritten signature in black ink, appearing to read "Paula Penno", written over a horizontal line.

By: \_\_\_\_\_

INTERNATIONAL BROTHERHOOD OF  
ELECTRICAL WORKERS

By: \_\_\_\_\_

CITY OF LEWISTON

By: \_\_\_\_\_

WESTERN MOUNTAINS & RIVERS  
CORPORATION

By: \_\_\_\_\_

ACADIA CENTER

By: \_\_\_\_\_

MAINE STATE CHAMBER OF COMMERCE

By: \_\_\_\_\_

INTERNATIONAL BROTHERHOOD OF  
ELECTRICAL WORKERS

By: Jan P. Buzgan

CITY OF LEWISTON

By: \_\_\_\_\_

WESTERN MOUNTAINS & RIVERS  
CORPORATION

By: \_\_\_\_\_

ACADIA CENTER

By: \_\_\_\_\_

MAINE STATE CHAMBER OF COMMERCE

By: \_\_\_\_\_

INTERNATIONAL BROTHERHOOD OF  
ELECTRICAL WORKERS

By: \_\_\_\_\_

CITY OF LEWISTON

By: Edward G. Burt

WESTERN MOUNTAINS & RIVERS  
CORPORATION

By: \_\_\_\_\_

**Dr. Aram JK Calhoun Pre-Filed Testimony**

**February 28, 2019**

**(Supplemental Evidence –  
Unredacted Version Not In Existing Record)**

STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

and

STATE OF MAINE  
LAND USE PLANNING COMMISSION

IN THE MATTER OF

CENTRAL MAINE POWER COMPANY  
Application for Site Location of Development  
Act permit and Natural Resources Protection  
Act permit for the New England Clean Energy  
Connect (“NECEC”)

L-27625-26- A-N  
L-27625-TB-B-N  
L-27625-2C-C-N  
L-27625-VP-D-N  
L-27625-IW-E-N

SITE LAW CERTIFICATION SLC-9

PRE-FILED TESTIMONY OF  
DR. Aram JK CALHOUN

ON BEHALF OF INTERVENOR GROUP 4  
(APPALACHIAN MOUNTAIN CLUB,  
NATURAL RESOURCES COUNCIL OF  
MAINE AND TROUT UNLIMITED)

February 28, 2019

**Please state your name and address.**

Dr. Aram JK Calhoun, 31 Haynes Brook Lane, Amherst, ME 04605

**Please describe your professional background and relevant expertise for your testimony.**

I am a Professor of Wetland Ecology in the Department of Wildlife, Fisheries, and Conservation Biology at the University of Maine (UME). I have been at UME since 1999 and have focused my research on issues related to forested wetlands and vernal pool ecology, policy, and conservation. Our research has been funded by three consecutive National Science Foundation grants in excess of 6 million dollars (a tribute to the quality of the research questions for grants with less than 2% funding rates).

My lab has conducted research on vernal pools for roughly two decades and we have published extensively on this topic in peer-reviewed journals (over 60 papers on vernal pool ecosystems), book chapters, a book for practitioners, *Science and conservation of vernal pools in northeastern North America* (2008; Calhoun and deMaynadier [eds]), along with a series of technical manuals for practitioners---

1. Morgan DE, Calhoun AJK. 2012. Maine Municipal Guide to Mapping and Conserving Vernal Pools (University of Maine, Orono, ME).
2. Calhoun AJK, deMaynadier PG. 2004. Forestry Habitat Management Guidelines for Vernal Pool Wildlife in Maine (Wildlife Conservation Society, Rye, NY).
3. Calhoun AJK (1999;2003) Maine Citizen's Guide to Locating and Documenting Vernal Pools (Maine Audubon Society, Falmouth, ME).

4. Calhoun AJK, Klemens MW. 2002. Best Development Practices for Pool-Breeding Amphibians in Commercial and Residential Developments (Wildlife Conservation Society, Rye, NY)

I have been active in vernal pool policy since 1998 when I was the Maine Audubon scientist representative on the Vernal Pool Working Group convened by the State Planning Office to address management of small wetlands, largely focused on vernal pools (see Jansujwicz and Calhoun 2010 for a summary). In 2006, incorporating 10 years of work and advice from this group, Maine adopted a definition for identifying Significant Vernal Pools (SVPs; Significant Wildlife Habitat Rules, Chapter 335, Section 9) based on the abundance and presence of vernal pool indicator species – fairy shrimp, wood frogs, and blue-spotted (*Ambystoma laterale*) and spotted salamanders (*A. maculatum*) – or use by a state-listed threatened or endangered species for a critical portion of its life history. Criteria for egg mass thresholds for SVPs were derived from data collected on vernal pools through a statewide vernal pool inventory we conducted in 1997 and 1998 through a citizen science program (see Calhoun et al. 2003 for details on this program.) The egg mass thresholds for each of the pool-breeding amphibians represent a legislative compromise more than a science-based assessment of ecological significance (in fact, the thresholds capture less than 25% of vernal pools in the State database) (Calhoun et al. 2014). A Significant Vernal Pool includes the adjacent terrestrial habitat within a 250-foot radius around the pool from the high-water mark. New regulatory protections became effective on September 1, 2007.

Since then, I have been active in providing guidance based on research on pools to the Maine Legislature's Committee on Environment and Natural Resources.

Most recently, I convened a 25-person multi-agency stakeholder group to develop an alternative mitigation tool for conservation of vernal pools using a landscape-scale approach that encourages development in town's growth areas while incentivizing conservation from private landowners in the rural areas. This tool (the Maine Vernal Pool Special Area Management Plan (ME VP SAMP)) was adopted by the United States Army Corps of Engineers in 2017 and is currently an option for any eligible Maine municipality. This tool is described in Levesque, Calhoun, and Hertz 2019.

**Please describe your duties and responsibilities in your current position.**

I am currently a professor in the Department of Wildlife, Fisheries, and Conservation Biology at the University of Maine. For short of two decades, I taught two upper-level lab courses for undergraduate and graduate students: *Wetland Ecology and Conservation* and *Wetland Mapping and Delineation*. I currently conduct research on implementing conservation tools at the local level to conserve vernal pools at landscape scales and conduct research on transdisciplinary approaches to solving complex conservation issues. I work with eight colleagues to train 25 graduate fellows in sustainability science in a research and teaching initiative funded by the National Science Foundation.

**Please describe the system of regulation the State of Maine uses to protect vernal pools and your role in developing it.**

I was active in helping to craft the definition of SVPs through my work with the Vernal Pool Working Group described above and have further worked on vernal pool mitigation strategies through my work leading the development of the ME VP SAMP.

In 1996, the State of Maine amended the Natural Resources Protection Act (NRPA) to include regulation of vernal pools. In 2005, the NRPA was amended again directing the Maine Department of Inland Fisheries and Wildlife (MDIFW) to adopt rules defining ‘significant vernal pool habitat’ as Significant Wildlife Habitat (38 M.R.S.A. §480-BB). In 2006, MDIFW amended Chapter 10 Significant Wildlife Habitat to add language defining ‘Significant Vernal Pools’ (SVPs) based on hydroperiod and presence of indicator species and number of egg masses. MDIFW oversees Significant Wildlife Habitat in Maine, including SVPs. They manage data on vernal pools and maintain a GIS database of SVPs reported to them through permitting activities.

**Please describe what a vernal pool is, how they function, and why they are ecologically important**

Vernal pools in the northeastern United States are ephemeral or temporarily inundated wetlands that are best known for providing critical breeding habitat to amphibian and invertebrate species adapted to life in fishless, temporary waters (Calhoun and deMaynadier 2008). The pools also provide resting or foraging habitat to a suite of other species including mammals, birds, reptiles, and other amphibians (Eakin et al. 2019). In Maine, amphibian indicator species include wood frogs (*Lithobates sylvaticus*), spotted and blue-spotted salamanders (*Ambystoma* spp.), and fairy shrimp (Anostraca- one of four orders of crustaceans; genus *Eubranchipus*). Vernal pool habitats are important resting and foraging habitat for spotted turtles (*Clemmys guttata*), Blanding’s turtles (*Emydoidea blandingii*) (Joyal et al. 2001; Beaudry et al. 2009), ribbon snakes (*Thamnophis sauritus* (all Maine Endangered Species Act listed reptiles), and a number of state-listed invertebrates.

An intact vernal pool habitat includes, and is dependent on, the amphibian breeding pool (and other wetlands) as well as the non-breeding terrestrial habitat for amphibian summer refugia and hibernation (Semlitsch 2002; Baldwin et al. 2006; Groff et al. 2015, 2016). Scientists speak of vernal pool landscapes, or *poolscapes*, when considering scales of conservation that will encompass the many functions of these small, discrete wetlands (Calhoun et al. 2014; 2017). Pool-breeding amphibians are present in breeding pools for, at most, a few weeks in the spring; adults and juveniles spend the majority of their lives in the adjacent forests and often use other pools during migration to and from summer, fall, and hibernation habitats in the forest. Because of this, unfragmented connections and the quality of habitats that link breeding and post-breeding elements are key to population vitality. Destruction of individual pools or clearing of connecting forested habitats for the purpose of utility rights-of-way (ROW) may fragment poolscapes and have a negative impact on populations of pool-breeding amphibians. Many species of birds, reptiles, and mammals depend on the pool-breeding amphibians for food in the early spring when other food sources are still in short supply.

Population dynamics of pool breeding amphibians are best described in terms of metapopulations, or loosely connected populations that maintain genetic health through limited exchanges driven by dispersing juveniles. One basic concept of metapopulation dynamics is that if a local breeding population in a given pool experiences a die-off event (disease, changes in hydrology), a nearby population can “rescue” this population with a recolonization event. In order for metapopulation dynamics to be maintained, an array of pools with forest matrix connections must be maintained. Juvenile frogs and salamanders are the key dispersal agents maintaining these connections as a subset colonizes new breeding pools, thereby maintaining the genetic integrity of pool-breeding populations. Their dispersal distances are often measured in

miles (Rittenhouse and Semlitsch 2007; Homola et al. in review). These pool-breeding amphibians need intact forested habitat as far as 1,500 ft (~500 m) from the breeding pool to support a significant portion of the adult population and much longer distances for juvenile dispersal (Semlitsch 2000, 2002; Scott et al. 2013). The negative effects of habitat fragmentation, and more specifically, urbanization, on vernal pool breeding amphibians are well- documented (Semlitsch 2000, Regosin et al. 2009a).

In addition to being prime breeding habitat for a limited number of amphibian and invertebrate specialists, recent research reflected in a vast body of peer-reviewed literature has underscored the broader ecosystem functions that go far beyond the critical biodiversity functions alluded to above. For example, pool-breeding amphibians export nutrients and energy from pools to the surrounding forest (Gibbons et al., 2006; Capps et al. 2014). Vernal pools in the northeastern US have been recognized by scientists as critical ecological units which, much like keystone species (but at an ecosystem scale), are disproportionately more important in their role within entire landscapes than would be assumed by their small size (similar to bat caves and large old trees as small features with big importance to ecosystem functions) (see Hunter et al. 2017; Calhoun et al. 2017).

In summary, vernal pools exchange nutrients, energy, and organisms with other elements in hydrological and habitat networks, contributing to landscape functions, such as nutrient and sediment retention, energy exchange, and biodiversity support (Capps et al. 2014; Cohen et al. 2016; Marton et al. 2015; Creed et al. 2016) and provide food and shelter resources to other wildlife (e.g., Hunter 2008, Mitchell et al. 2008). Fragmentation of these networks weakens these ecological functions at multiple scales.

**Please state the ways that transmission corridors harm vernal pools.**

The effect of powerlines and the clearing of powerline ROWs on wildlife has largely focused on birds (D'Amico et al. 2019) with more limited work addressing mammals (Sánchez-Zapata J.A. et al. 2018; Richardson et al. 2018) and terrestrial salamanders (Brannon et al. 2014). To my knowledge, there are no peer-reviewed journal articles published on the effects of powerline ROWs on pool-breeding amphibians or vernal pool ecosystem functions. Studies by private entities in the grey literature are often limited by time (often to one or two years) and are based on pool assessments of egg mass counts (a poor metric for population vitality) as opposed to amphibian recruitment or fitness. For this reason, I will provide comments on the effects of powerline ROWs on pool-breeding amphibians based on what researchers know about pool-breeding amphibian frog and salamander ecology and movement patterns which are well-documented in the literature. We can also draw from the extensive literature on the impacts of clearcutting on movement patterns.

Note that my comments here are based strictly on potential **ecological outcomes** of impacting vernal pools directly in the ROW and those associated with the ROW that will remain uncut. My concerns are not limited to political and regulatory definitions of vernal pools. I consider the potential impacts of impacting potentially 700 pools or more, directly, or indirectly. It is well documented that current technology for remotely sensing vernal pools commonly miss up to 30 percent of pools, particularly in mixed and evergreen forests (see Dibello et al. 2016) so the number of potentially impacted pools may be conservative.

Of the estimated 700 potential vernal pool features assessed on the ground by the applicant along the 53-mile ROW, the Army Corps of Engineers identifies 242 jurisdictional pools being directly

impacted. Federal jurisdictional vernal pools are limited to those where a significant nexus to Waters of the US can be demonstrated.

State jurisdictional pools are limited to those that fall within strict egg mass numbers that were devised to include less than half of all pools but in reality, to date, capture less than 25% of all pools (pers. comm. MDIFW database). Roughly 160 features were determined to be vernal pools per MDEP definition (that fell within or intersected the ROW) and that were formally reviewed by MDIFW for status. Of the 160, 43 were determined by MDIFW/MDEP to be SVPs and 9 were potential vernal pools.

The jurisdictional definitions of vernal pools are strictly legislative and regulatory definitions that draw from scientific literature but are largely crafted from political realities (e.g., the 250 ft zone of consultation for state SVPS was chosen as a number familiar to the public from shoreland zoning; it is not an ecologically significant number relevant to pool-breeding amphibians).

***Therefore, the proposed CMP project will likely impact hundreds more functioning pools than the regulatory or legislative definitions alone would indicate. The project will have both direct and indirect effects on pools, as described below. It will also harm the ecological webs of pool and post-breeding habitats through fragmentation of forests associated with the pools.***

#### Direct impacts to vernal pools

Pools impacted with fill or compacted by equipment will suffer direct degradation. Pools will also be directly impacted by forest removal. Vernal pools naturally occur in forested habitats and

provide specialized breeding habitat for forest specialists adapted to detrital-based (leaf and organic matter) food webs. The environment is cool, shaded by trees, and sub-optimal breeding habitat for other aquatic breeders (invertebrate and amphibian) more suited to permanent waters in systems driven by primary production (production by photosynthetic plants and algae). The ephemeral hydrology, shaded habitat, and less productive environment allow specialists, such as pool breeding wood frogs and salamanders, to thrive as competitors are reduced by the harsh conditions. The construction of CMPs proposed powerline would degrade pools by turning them into unshaded wetlands driven by primary production (open, sunny conditions). This leads to warmer pools and serves as an attractant to bull frogs and green frogs. This is problematic because:

- a. Bull frogs and green frogs are very efficient egg and larval predators (Vasconcelos and Calhoun 2006).
- b. Bull frogs can transmit Bd (the chytrid fungus) directly to wood frogs (Greenspan, Calhoun, Longcore and Levy 2012) which may be problematic if populations increase significantly. This is not currently an issue in Maine.
- c. Viruses that result in amphibian die-offs are more likely to occur in warmer waters (Gahl and Calhoun 2010).
- d. Hydroperiod is likely to be dynamic. In the first years, pools may be deeper owing to the clearcutting; this may invite more marsh pioneers to colonize the pools (e.g., cattail or sedges, phragmites) which will ultimately dry the pool (see Vasconcelos and Calhoun 2010). This will alter floral and faunal species composition and abundance and will no longer favor forest specialists.

e. Egg mass presence in degraded pools should not be assumed to prove lack of impact. Many open pools serve as ecological sinks---that is, eggs are present from pool breeders but many of these eggs will never mature to adults because of the poor habitat (i.e., in poor, unshaded habitats, predators may eat the eggs and larvae, the eggs and larvae may dry out, or disease may kill the eggs and larvae).

In conclusion, the proposed project will harm many individual pools, even those that are not filled. Even unfilled pools may cease to function as true vernal pools due to lack of shade, changes in species composition, increased predation, and disease.

#### Indirect impacts on vernal pools in the uncut portion of the ROW.

Pools adjacent (within 30 m) to the cut would receive more light and desiccation and would suffer from edge effects of increased exposure to green and bull frogs and mammal and reptilian predators attracted to edges and more open habitats (see Eakin, Hunter, and Calhoun 2019 for differences in pool visitation by predators in open vs. wooded pools in suburban contexts).

#### Impacts on emigration routes and staging areas (fragmentation)

Our recent research on amphibian movement patterns and habitat choice for movements illustrates that the quality of the migratory routes influence amphibian behavior and hence success. Agricultural landscapes (i.e., row crops, pastures, hay fields), clear cuts, and fragmentation from development can all serve as partial barriers to movements of amphibians (Guerry and Hunter 2002; Cline and Hunter 2014; Groff, Calhoun, and Loftin 2017, Hoffmann,

Hunter, Calhoun and Bogart 2018). Population viability and vitality requires functional connectivity in fragmented landscapes.

Maine adult pool-breeding amphibians have been documented traveling from breeding pools to post-breeding habitat up to 2,000 ft for salamanders and 3,000 ft for wood frogs; median distances (half more, half less) are measured in hundreds of feet. They seek shade, cover from light and predators, and moisture during these migrations (Baldwin et al. 2006; Groff et al. 2017; Scott et al. 2013, Hoffmann, Hunter, Calhoun and Bogart 2018). Patrick et al. 2008 showed that adult abundance and habitat use differed among species, with wood frogs, spotted salamanders (*Ambystoma maculatum*), and eastern red-backed salamanders (*Plethodon cinereus*) preferring uncut and partial-cut habitat, and adult green frogs (*Rana clamitans*) and American bullfrogs (*Rana catesbeiana*) being more tolerant of clearcutting. Spotted salamander numbers also showed decline with partial canopy removal and higher numbers in uncleared habitat with higher levels of coarse woody debris.

For pool-breeding amphibians, juvenile dispersal from their natal pools to different breeding pools maintains population connectivity (Homola et al. in review). We know that forested areas are the best facilitator of juvenile dispersal (Cline and Hunter 2014; Hoffmann et al. unpubl. data., Homola et al. in review). In the only peer-reviewed study addressing power line behavior of wood frog juveniles in a controlled experiment, deMaynadier and Hunter (1999) showed that juvenile wood frogs showed an emigration preference for closed-canopy habitat immediately upon metamorphosis, with the highest sampling rates occurring in microhabitats characterized by

dense foliage in both the understory and canopy layers. Their results suggest populations of pool-breeding amphibians in vernal pools will likely decline due to fragmentation from power lines.

If the proposed ROW is clear-cut and allowed to grow to shrubby vegetation, there is a good chance that the area will first be colonized by thick graminoids (herbaceous plants with grass-like characteristics), pioneer vines such as raspberries, and a variety of woody plants more indicative of disturbed sites than natural shrub swamps. Travel for juvenile amphibians can be difficult in tall or thick grass-like vegetation (Cline and Hunter (2014). Popescu et al. (2012) observed forest specialists declined in abundance in partial and clear-cuts beginning 2–3 years post-disturbance. There was a shift in relative abundance towards habitat generalist species, most notably green frog juveniles. In summary, shrubby habitat is a vague goal for what will replace the disturbed land created for the ROW. Shrubby habitat that has an understory of thick graminoids may be difficult for dispersing amphibians to pass through on their way to forested habitat.

Please describe your knowledge of the project area and the importance of protecting its vernal pools.

Much of the new 53-mile section of the project is working forest. It is multiple ownerships so there is no way to tell what parts of it will be logged and when. It also passes through public lands, some of which are quite valuable, such as the Cold Stream Public Reserved Land. Most of the area is typical northern Maine working forest. This is relevant because the extensive literature on forestry practices and pool breeding amphibians shows that working forest is a more

benign land use than developed or cleared areas (Calhoun and deMaynadier 2004; Patrick et al. 2008). Vernal pools with intact forested adjacent habitat, or where a significant portion of the pool edge is left in contiguous forest connecting to other habitat elements, may still function. Pool breeding amphibians prefer uncut or partially cut forests and suffer the most in clear-cuts or other extreme openings.

I have not worked in the area where the pools are being impacted but the importance of conserving vernal pool landscapes transcends geography. Post-breeding habitats, for example, for wood frogs, vary by geographic context from forested wetlands (Baldwin et al 2006a, b), to upland cool deciduous, montane forests (Rittenhouse and Semlitsch 2007, 2009ab) to refugia on and around erratic boulders in montane settings (Groff et al. 2017). But all vital populations of amphibians rely on intact forested landscapes where connections between breeding pools, dispersal routes, and post-breeding habitats are strong. Degrading or removing this forest cover and access to remaining forests across deforested areas will have an impact on amphibian vitality.

In conclusion, the effects of a clear-cut ROW through existing vernal pools, adjacent vernal pools, and travel routes to and from breeding pools will result in impacts ranging from devastation for some individual vernal pools to greatly compromised habitat for others. The literature is clear that some amphibians will make their way through inhospitable cover but that many will avoid the journey or perish along the way. There are many factors affecting the resiliency of pool-breeding amphibians in the face of land conversion and many are undocumented or only explained by complex interactions of other environmental factors. What

we do know is that populations along the corridor will be compromised, some lost, and some severely degraded. We know that significant numbers of animals will be directly impacted through operations. We know that we should avoid all such impacts when feasible. We know that climate change related warming and altered precipitation patterns stress amphibian populations already. The proposed ROW will be a significant further stressor.

Please state your opinion of CMP's proposed compensation for vernal pool impacts.

A small subset of the 700 potential pools identified on the ROW are included in the compensation calculations. Of these, roughly 160 features are determined to be vernal pools per MDEP's definition (that fell within or intersected the ROW) and that were formally reviewed by MDIFW for status. Of the 160, 43 were determined by MDIFW/MDEP to be SVPs and 9 were potential vernal pools (PVPs). In reviewing the data sheet for state pool designation, I have concerns about 23 of the pools which are stated to be non-significant or only potentially significant. In many cases, there are calls limited by the state requirement of determining if pools are naturalized or not and for egg mass number cut offs that are not ecologically rigorous.

The Army Corps of Engineers identifies 242 jurisdictional pools being impacted but identify much lower direct compensation acreage. The disparity between federal and state jurisdictional oversight highlights the policy focus of evaluating pool values and hence compensation requirements. This leaves me with great concerns regarding fair compensation for actual ecological losses.

I believe that CMP's proposed compensation for vernal pool impacts is insufficient for the following reasons:

- The State jurisdictional definition of vernal pools is based on numbers of egg masses of pool breeding amphibians. The thresholds for Significance are the result of a legislative compromise. This limits coverage of ecologically valuable pools. For example, egg mass abundances vary with landscape context (montane vs. lowland for example; single pools vs complexes), with winter and spring conditions effects on breeding adults, and with other factors influencing population dynamics. Hence it is risky assessing pool quality based on egg mass abundances over short time periods (i.e., less than 5 years). Pools in complexes may have relatively low egg mass numbers as a single population disperses eggs over many pools to increase success of metamorphosis (Calhoun et al. 2003).
- Assessments of vernal pools for state Significance for fairy shrimp and state-listed species are problematic in that survey times for these animals often do not overlap with survey times for amphibians.
- The Army Corps of Engineers compensation dollars are based on a square footage estimate of impact times a multiplier based on value. Square footage of impact is not a measure of ecological impact and the ratings of H, M, and L are not based on scientifically defensible science. They are based on the reach of jurisdiction as dictated by the Clean Water Act and adjacency issues and factors related to practical implementation. Given the lack of accountability for ecological impacts and with a very coarse and indefensible rating system, I am extremely concerned that the compensation formulae grossly underestimate potential losses stated. The non-jurisdictional pools are

important elements of the overall poolscape supporting amphibian metapopulations.

Fragmentation resulting from these losses is not calculated in the compensation package.

- Vernal pool functions are not limited to a depository for amphibian eggs. Larger ecosystem functions (hydrological, biogeochemical, and as habitat for facultative species) cannot be assessed through egg mass counts. Compensation should factor in loss of poolscales (pool and connecting habitat) for assessing full environmental impacts.
- I did not see a requirement for a monitoring plan for vegetation recovery. Forty percent credit was given for shrub restoration, but it is not clear what the quality or composition of the understory will be (passable or not to amphibians) after construction of the ROW. With re-entry for maintenance, and with altered pool conditions through destruction or degradation, it is not clear that the pools will be suitable, productive breeding pools where credit should be given for shrub cover or that the revegetation will be hospitable to amphibian dispersal movements.

From an ecological perspective, the losses should be well-compensated, not undercompensated, given the level of uncertainty in actual pool numbers and given the level of uncalculated impacts to all vernal pools in the study area. There is no jurisdictional compensation for the effects of fragmentation and degradation of movement corridors, loss of unaccounted for pools, loss of valuable non-jurisdictional pools, loss of pool clusters, or for the fact that calculations for a given pool loss stop at property lines (this is the only natural resource in Maine that I know of for

which a biological zone stops at property lines). This concern is particularly relevant for linear projects such as this.

Please state your expert opinion of whether this project meets the standard of no unreasonable adverse impacts to fisheries and wildlife in the site law and site rules (38 M.R.S. § 480-D(3), 38 M.R.S. § 484(3), and DEP rule Chapter 375 § 15.

This project will cause harm to potentially hundreds of individual pools. Clearing for the powerline will also fragment pool networks causing undue stress to local amphibian populations. The ability of amphibians to move from pool to pool is critical to vernal pool ecological functions. The mitigation only compensates for direct impacts to vernal pools that have regulatory or legal status--- a small subset of the overall impacts to pools. There is no compensation for fragmentation in the form of interruption of migration and dispersal routes, connections among pools, and connections from breeding to post breeding habitats. Therefore, I do not believe that this project meets the no unreasonable adverse impact standard. Its impacts are severe and the applicant's mitigation proposal is inadequate.

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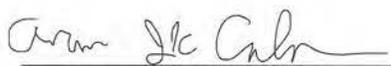
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Notarization

I, Aram Calhoun, being first duly sworn, affirm that the above testimony is true and accurate to the best of my knowledge.

Date: February 28, 2019

  
\_\_\_\_\_

Aram Calhoun

The above-named Aram Calhoun made affirmation that the above testimony is true and accurate to the best of her knowledge.

Date: February 28, 2019

  
\_\_\_\_\_

Catherine B. Johnson, Attorney-at-law

**Elizabeth Caruso Testimony**

**February 28, 2019**

**(Supplemental Evidence – Redacted Version in Record,  
Unredacted Version Not In Existing Record)**

THE STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

APPLICATION FOR SITE LOCATION OF DEVELOPMENT ACT PERMIT  
AND NATURAL RESOURCES PROTECTION ACT PERMIT  
FOR THE NEW ENGLAND CLEAN ENERGY CONNECT  
FROM QUÉBEC-MAINE BORDER TO LEWISTON  
AND RELATED NETWORK UPGRADES

PRE-FILED DIRECT TESTIMONY OF  
ELIZABETH CARUSO  
TOWN OF CARATUNK

FEBRUARY 28, 2019

1 **TESTIMONY OF ELIZABETH CARUSO**

2 **Q. Please state your name and address**

3  
4 A. Elizabeth Caruso, 81 West Shore Rd, Caratunk, Maine 04925

5  
6 **Q. What is the name of your organization and business address?**

7  
8 A. Town of Caratunk, PO Box 180, Caratunk, Maine 04925

9 **Q. What is your current position?**

10 A. First Selectman, Overseer, Assessor

11 **Q. What other occupations have you had in the Caratunk area?**

12 I have worked as a Maine Registered Whitewater Guide since 1992. In 1994, I left a lucrative Industrial  
13 Engineering career in Connecticut to live and recreate in this amazingly beautiful and peaceful area.  
14 Utilizing my Masters in Business Administration, from 1995 to 2008, I co-owned and operated North  
15 American Whitewater Expeditions, Inc. (dba North American Outdoor Adventure), a licensed  
16 whitewater rafting outfitter operating on 7 rivers in Maine, Massachusetts, Vermont and Connecticut. I  
17 also founded and operated The Outpost Bed and Breakfast and River House (bed and breakfast) in the  
18 West Forks. In addition, I founded and operated the Dead River Outfitter Shop, selling outdoor gear,  
19 equipment and clothing for year-round recreationists. In addition to the summer rafting season, we had  
20 a fleet of snowmobile rentals and ATV rentals and offered guided tours during both seasons. My  
21 company was instrumental in maintaining snowmobile trails, building snowmobile bridges and first  
22 opening up Coburn Mountain as a groomed trail.

23 In addition, I helped start The Forks Area Chamber of Commerce and worked as its first Executive  
24 Director, where one of my tasks was creating and marketing the Forks Area Snowmobile Trail map.

25 I also participated in the settlement negotiations over the FERC relicensing of Harris Station where  
26 Florida Power and Light coordinated a large dialogue with the whitewater industry, communities,  
27 organizations and agencies (circa 2000). A far cry from CMP's backroom, secretive dealings with a few  
28 business stakeholders to create an MOU in lieu of open community mitigation talks.

29 In addition to working in the greater Forks Area as a guide and business owner, I am an avid outdoor  
30 enthusiast. I have spent countless hours navigating the Kennebec, Dead and Penobscot rivers, boating  
31 on the area's lakes and ponds, cross country skiing, snowshoeing, hiking the area's mountains and trails,  
32 snowmobiling, ATV-ing and fishing. My husband and sons provide our family's organic, grass-fed  
33 meat every year by hunting the area's deer and moose.

1 As a full-time homeschool mother, my husband is the primary source of income for our family. His  
 2 livelihood is comprised entirely of outdoor, tourism-based activities during Maine's four seasons. He is  
 3 a Maine Master Guide, and it is critical to our family that he have a secure flow of guests during the  
 4 hunting, fishing, snowmobiling and summer seasons.

5 **Q. Why did the Town of Caratunk intervene in these proceedings?**

6 The Town of Caratunk has grave concerns with regards to many facets of the NECEC proposal. As a  
 7 democratic government, our voters (residents) expect the town to defend and represent their welfare.  
 8 Most year-round residents derive their income in the tourism industry as independent guides or by  
 9 working for the recreational outfitters, lodges, cabins and restaurants, area gas stations, etc. A few of  
 10 these residents are intervenors in this proceeding, and many have submitted sworn testimonies and  
 11 public comments against the project.

12 Other residents work as carpenters, roofers, woodsmen, and handymen catering to the needs of the  
 13 area's landowners, both year-round and seasonal. However, most of Caratunk's landowners are from  
 14 out-of-state and own vacation homes and camps along Pleasant Pond and the Kennebec River. Caratunk  
 15 residents will not only be impacted financially through their livelihoods from which they derive income  
 16 to support families, but also in their ways-of-life. All residents chose homes and vacation homes or  
 17 camps in Caratunk for the area's peace and beauty in surroundings and also for the recreational  
 18 opportunities provided by the local mountains, ponds, lakes, rivers, streams, etc. NECEC will invade  
 19 the beautiful and valuable view shed which they enjoy but which also provides financial worth. NECEC  
 20 will assault the nature's silence and the nighttime darkness from their decks and during year-round  
 21 recreation activities.

22 There are obviously impacts to public health and safety, and scenic, historic and recreational values  
 23 related to any major energy project. Those impacts are the reasons behind the public outcry as seen in  
 24 the PUC public witness hearings, on the PUC website, in news stories, letters to the editor and guest  
 25 editorials, and at numerous grassroots events. Those impacts are exactly why the Town of Caratunk  
 26 intervened in this docket and why **every town, township, and plantation in the immediate vicinity**  
 27 that will be impacted by the new corridor **has formally voted against NECEC**.<sup>1</sup> Additionally, several  
 28 road associations, including Mile 10 Road Owners Association, Spencer Road, Grace Pond Subdivision

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<sup>1</sup> The Town of Caratunk, West Forks Plantation, The Forks Plantation, Town of Jackman, Dennistown Plantation, and Town of Moose River and Alna have all voted to oppose the project and Caratunk has a moratorium in place pursuant to a special town meeting vote.

1 Road Owners Association, and Moxie Pond East Homeowners Association, representing landowners in  
2 unorganized territories have submitted letters of opposition to this corridor<sup>2</sup>. Obviously, these impacts  
3 are critical enough to have two agencies analyze them from their respective views as an important part  
4 of evaluating NECEC compared with any benefits to Maine and any potential alternatives.

5 It is self-evident that installing 100-foot-tall transmission towers along a new corridor as wide as the  
6 New Jersey Turnpike through relatively undeveloped western Maine will have numerous, significant,  
7 and permanent impacts. The Department doesn't have to quantify the impacts because CMP bears the  
8 burden of proof to demonstrate that there won't be impacts. Those impacts are part of the total cost of  
9 the project. Unfortunately, CMP hasn't done the studies<sup>3</sup> or provided evidence to quantify the impacts or  
10 prove there won't be any.

11 Due to the grave concerns of this corporate-profit-only project, an Elective Transmission Upgrade, the  
12 Town of Caratunk recently enacted the Electrical Transmission Corridor Moratorium Ordinance in order  
13 to protect the public health, safety and welfare of the residents of Caratunk. The Planning Board is  
14 working on an appropriate ordinance and determining the most appropriate methods to regulate such  
15 activities because there exists the potential for serious public harm including visual and financial impact,  
16 fire, noise, taxpayer-incurred costs as well as environmental and health degradation.

### 17 **Buffering for Visual Impacts: Overview**

18 **CMP has NOT shown that THE USE CAN BE BUFFERED enough to not impact our wild and**  
19 **scenic landscape that characterizes our 4-season outdoor recreation area.**

20 The transmission lines and corridor as designated through our area would not be buffered sufficiently to  
21 maintain our community's economic vitality, our residents' ways of life and our residents' livelihoods.  
22 Our year-round and seasonal residents chose purposefully to live in Caratunk for the remote, wilderness,  
23 pristine and recreational attributes of the greater Forks area. This corridor represents a wide strip ripped  
24 out of our landscape and significantly impacting, in fact negating, our scenic and wild setting. Tourists  
25 and seasonal landowners come from all over the country and the world to partake of our wilderness  
26 landscape and our guided wilderness trips, leaving their urban lifestyle to experience our unique pristine  
27 wilderness.<sup>4</sup>

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<sup>2</sup> CRTK-13, Homeowners' Association Letters

<sup>3</sup> CRTK-1, January 9, 2019 Transcript of PUC hearings, cross-examination by Elizabeth Caruso

<sup>4</sup> CRTK – 2, Kennebec Valley 2017 Regional Tourism Impacts

1 Our year-round residents who have a commercial guiding business or who are employed as guides,  
2 waitstaff, housekeepers, office staff, cooks, cashiers, gas attendants, etc. in this area depend on the  
3 characteristics of this wild and scenic landscape to remain wild and scenic and not be industrialized by a  
4 150'-300' corridor of transmission lines and 100' poles. In addition, these wilderness guide businesses  
5 and their families rely on the viability of the fishing, hunting, snowmobiling, hiking, ATV-ing, and  
6 whitewater activities as well as the strength and health of the fishery and wildlife population and habitat.  
7 Our community would be dramatically and negatively impacted by this transmission line/corridor  
8 through the West Forks/Moxie areas, Johnson and Coburn Mountains and Parlin Pond, Bald Mountain  
9 and Appalachian Trail. So much of our residents' revenue depends on the scenic and aesthetic uses of  
10 our area.

11 We concur with the Department's statement that the photo-simulation of the corridor in leaf-stage was  
12 Inadequate at best. During fall, winter and spring, the lines and poles would be visually, obtrusively  
13 industrial against the natural wilderness. One of the many scenic areas impacted in the sub-districts is  
14 the Coburn and Johnson mountain area. The corridor will tear a strip along the Coburn Connector Trail  
15 and ITS 89, which are one the most popular destinations for snowmobilers. On a busy day, hundreds of  
16 tourists snowmobiling to Coburn Mountain's 3800' observatory would be staring 360 degrees down at  
17 the vastness of this destructive corridor.

### 18 **Winter Survey**

19 Because the applicant failed to conduct any survey of this critical season in the greater Forks area, a  
20 Winter Recreation Impact Survey<sup>5</sup> was conducted by Sandra Howard, PhD. This online survey was  
21 distributed electronically, and participants responded during a 4-week period between January 18 and  
22 February 18, 2019. Of the 163 participants, 70% thought "Riding along a powerline trail" was "Least  
23 Important", 70% thought "Groomed trail riding in forested areas" were "Very Important", 71.2%  
24 thought "Scenic beauty along snowmobile trails" was "Very Important", and 90% thought "Riding along  
25 mountain view trails with overlooks" was "Very Important".

26 We are sure that, had the applicant conducted an analysis of the snowmobile recreation users of the area  
27 of the new corridor, the data would show an overwhelming opposition to industrialized infrastructure in  
28 this scenic area. As guides and guests have attested, 100' poles, red blinking lights and 150-300' scars

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<sup>5</sup> CRTK – 3, Winter Recreation Impact Survey

1 across the mountains, valleys, streams and ponds are simply horrific to recreationists and tourists  
2 traveling to encounter a natural setting.

### 3 ALTERNATIVES ANALYSIS

4 **CMP has failed to show that there is NO ALTERNATIVE. In fact, there are alternatives.**

5 First of all, there already exists a corridor from the Quebec border on the other side of Route 201. CMP  
6 could easily have used this corridor. It's quite simple and is even listed in the MOU with Western  
7 Mountains and Rivers Corporation.

8 Secondly, CMP could have buried the line alongside Route 201 in a preexisting corridor and where the  
9 land is already disturbed. Thirdly, CMP could have buried the line under pre-existing dirt roads. During  
10 the Town's cross examination on January 9<sup>th</sup> of the PUC hearings, Mr. Dickinson explained that he had  
11 proposed burying a transmission line in the Hudson Valley of New York due to aesthetic purposes.<sup>6</sup>

12  
13 MR. TANNENBAUM: Can I just follow up quickly? Did -- I wasn't sure I heard this right.  
14 Did CMP conduct an analysis of what it would cost to bury the line in the new corridor?

15 MR. DICKINSON: No.

16 MR. TANNENBAUM: Okay, thank you.

17 MS. CARUSO: So you mentioned earlier this morning that on a project in the Hudson  
18 Valley you buried the line for aesthetic reasons. And it didn't occur to you to bury the line  
19 here through this high tourism area and with all these camp owners having their property  
20 abutting a huge DC transmission line?

21 MR. DICKINSON: So the project you're talking about, Connect New York, is a project that  
22 is -- I would put in the dream category of project development portfolio that we have. It's --  
23 so far has not got momentum within New York state. Maybe part of that is the cost related to  
24 it, but, again, what the strategy there is we knew we were submitting into a request for  
25 information in New York a number of years ago. We knew that there were existing AC  
26 overhead projects that already were in place, and our idea was to find a corridor that already  
27 was predisturbed. So a predisturbed corridor and putting a buried line along the thruway  
28 means that you're not disrupting, you know, a new area, an area that currently wasn't dug up.  
29 You're doing one that was just previously disturbed. So again, there was a specific rationale  
30 and reason.

31  
32 Route 201 would certainly be considered a "predisturbed" area, and yet, CMP chose not to use this  
33 rationale or reason in this case. Additionally, CMP has given no evidence that it had realistically tried to  
34 find an alternate route. They have stated that they chose this route because they already own the land,  
35 thereby making the project less expensive. **CMP's shortsightedness and desire to cut costs should**

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<sup>6</sup> CRTK – 1, January 9 transcript, p. 90

1 **NEVER be the reason that our towns and landscapes are devastated and our residents' abilities to**  
2 **enjoy life and sustain livelihoods should suffer.**

3 Furthermore, the applicant should have used the same foresight and precautions in our spectacular forest  
4 and tourism area that they offered in New York. In response to a New York RFI, Thorn Dickinson,  
5 Vice-President of Business Development for Iberdrola USA, proposed an underground line for a similar  
6 1,000 MW DC line utilizing existing public and private right-of-way. As clearly stated in their own  
7 "Connect New York" document<sup>7</sup>, the underground routing was utilized in order to 1) mitigate  
8 environmental and right-of-way concerns, 2) avoid eminent domain, and 3) eliminate aesthetic and  
9 health-based concerns.

### 10 **The "Connect New York" Option**

11 Simply stated, "Connect New York" is our vision of how to best advance the major supply-side energy  
12 objectives delineated in "Power NY". It would include a 1,000 MW DC bulk transmission line running  
13 from the Utica area to New York City. There is also the option to add a second 1,000 MW line. The  
14 **routing would be underground utilizing existing public and private right-of-way. In doing so we**  
15 **can mitigate environmental and right-of-way concerns that derail most bulk transmission projects**  
16 **and avoid eminent domain and NIMBY issues. By burying an efficient, underground DC bulk**  
17 **transmission line, line losses will be reduced and aesthetic and health-based concerns eliminated.**

18 In fact, the energy industry knows all too well that burying transmission lines is common practice to  
19 alleviate aesthetic and environmental issues. NextEra has brought this very issue to the Department's  
20 and Commission's attention. Where but in this spectacular area, would it have been more appropriate to  
21 bury this corridor, eliminate 100' monstrosities, huge and humming DC transmission lines, and  
22 drastically reduce the amount of herbicides polluting our streams, renowned fisheries and wildlife –  
23 which many of us rely on to feed our families.

24 As a competitor in the 83D RFP process, TDI-VT has a fully permitted, ready-and-waiting,  
25 **underground and underwater** corridor of 145 miles to deliver the same power from Hydro Quebec  
26 into Massachusetts. There is no excuse for CMP to not have buried NECEC underground for the entire  
27 length of the 53 new miles of corridor through our last contiguous forest and spectacular tourism area.  
28 Additionally, the line should have been buried in all areas where residential homes would abut the line  
29 or view shed.

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<sup>7</sup> CRTK – 4, Connect New York, p.7 (emphasis added)

1 Aside from already owning and arranging lease agreements for the land of the new corridor, CMP didn't  
 2 research existing uses of the new area to minimize scenic, recreational, visual impacts (as their  
 3 competitor TDI had done in Vermont). During the January 9 cross examination, CMP admitted the  
 4 following.

5 MS. CARUSO: Okay. So **have you studied winter snowmobiling** in the affected area  
 6 of the proposed new corridor?

7 MR. STINNEFORD: **We have not conducted a study**, although we have had  
 8 numerous conversations with the Maine Snowmobile Association and they are very  
 9 supportive of the Project.

10 MS. CARUSO: Okay. **Have you completed any studies as to why people come to**  
 11 **the region of the new portion of the line to hunt, fish, raft, hike, or snowmobile?**

12 MR. DICKINSON: **No**, as I said, I think my understandings from the -- why I believe  
 13 there's opportunities for new expanded tourism in the region come from conversations  
 14 that I had had with people in the region.<sup>8</sup>

15 In other words, they had *some* conversations with *some* people and that's all they offer to support their  
 16 contention that NECEC not only won't harm our tourist economy but will actually be good for it. In  
 17 reality, the communities along the new corridor – who obviously know more about our local tourist  
 18 economy than CMP does – have all come out strongly in opposition to NECEC. As mentioned above,  
 19 the registered voters, landowners and/or boards of selectmen along the new corridor have  
 20 overwhelmingly opposed NECEC. In contrast, CMP has very little support. The contractors who would  
 21 build NECEC obviously like the idea, the relatively few business owners who would directly benefit  
 22 from the WM&RC MOU are required to support it (discussed below).

23 CMP also tries to suggest that a “working forest” is somehow an already-spoiled landscape and that our  
 24 local concerns should be dismissed. Western Maine is a wonderful, scenic, special area, and the  
 25 landowners that manage the “working forest” are excellent stewards of the land. The overall value and  
 26 beauty of our natural heritage is exactly why people come to our region to take advantage of a largely  
 27 unspoiled wilderness experience. CMP's implication that this is more or less just a wasteland is untrue,  
 28 disrespectful, and doesn't support any finding that NECEC will cause little, if any, impacts in our  
 29 region. (Roger Merchant's GROUP 2 testimony will go into greater detail on this issue).

30 Aside from the last-minute resort to bury the 1000' of line under the Kennebec River, **CMP didn't**  
 31 **conduct any kind of analysis to find out if it might be possible to install the line underground** – like

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<sup>8</sup> CRTK -1, January 9 Transcript p. 85 (emphasis added)

1 TDI and significant parts of Northern Pass – to see if some of the visual and environmental impact could  
2 be avoided:

3 MR. TANNENBAUM: Can I just follow up quickly? Did-- I wasn't sure I heard this  
4 right. **Did CMP conduct an analysis of what it would cost to bury the line in the**  
5 **new corridor?**

6 MR. DICKINSON: **No.**<sup>9</sup>  
7

8 The fact that they only did relatively superficial analyses related to project impacts is extremely  
9 disturbing to the local communities and to those whose livelihoods and families are at stake. It should be  
10 disturbing to the Department and Commission, as well.

11 What they did do was insufficient. James Palmer, the DEP's peer reviewer responsible for evaluating  
12 CMP's Visual Impact Assessment, found it sorely lacking and sent them back to the drawing board to do  
13 it better. The peer reviewer said, "The question remains—why is there not a full accounting of potential  
14 scenic resources and a documented evaluation of all those with potential visibility? There does not even  
15 appear to be a process to attempt a full accounting."

16 CMP has provided no evidence related to the potential impact on property values, no evidence  
17 addressing whether the local communities have sufficient emergency response capabilities, and no  
18 evidence that NECEC will not harm our tourism and recreation economy. Without supporting evidence,  
19 it is difficult to see how CMP can claim there won't be any impacts. For reasons such as these, it is  
20 difficult for intervenors and members of the public to see how the DEP/LUPC could possibly allow  
21 NECEC to occur.

22 CMP has gone to great lengths to downplay the impacts and disparage the views of its critics. For  
23 example, on September 4, 2018, DEP issued a formal letter response<sup>10</sup> to CMP regarding information  
24 that CMP provided on July 26, 2018. DEP's letter includes some enlightening quotes from the CMP July  
25 26 filing. According to CMP:

26 "At the Preferred Alternative location, the river is generally flat water, and is **not**  
27 **particularly valued by recreational users . . . This commercial [rafting] and**  
28 **recreational use of this section of the river arguably has more impact on any bucolic**  
29 **nature of the river than does the proposed overhead crossing . . . This existing**  
30 **human-caused visual impact at the Harris Dam put-in is significantly greater than**  
31 **the Preferred Alternative would be ... and affects rafters' and other boaters'**

<sup>9</sup> CRTK – 1, January 9 Transcript p. 90 (emphasis added)

<sup>10</sup> <https://www.maine.gov/dep/ftp/projects/neccec/2018-09-04-Mirabile-follow-up-questions-7-27-to-8-14-submissions%20.pdf>,  
emphasis added

**aesthetic expectations on the river downstream . . . Due to the position, buffering, and limited duration of viewing, the overhead crossing in the proposed location will not diminish the recreational use or scenic character of the outstanding river segment** located between the Forks and Indian Pond Dam. Accordingly, the two conductors and two shield wires that would cross the river at **the Preferred Alternative location**, which as described above **is not particularly unique or wild, would not adversely affect existing uses of the Kennebec River.**”

DEP asked, “...did CMP draw these conclusions based on user survey data? Can you provide the basis for these statements?” Of course, there was no survey data or analytical basis for CMP’s conclusions. Most of the “analysis” they did was after-the-fact – after the application was filed and only after DEP asked them to do it.

However, a Kennebec River Visitor Impact Study was conducted in 2018, and 98.6%<sup>11</sup> respondents stated that a pictured transmission line crossing with 12-18 FAA orange balls<sup>12</sup> would have “a negative impact on your wilderness river experience” (275 out of 279 participants). This information was presented as sworn testimony by Carol Howard at the Hallowell PUC Public Witness Hearing; the following day, CMP amended the application to bury the line under the gorge.

Instead of actually studying recreational impacts, CMP just dismisses them. Rafting guides and recreational boaters strongly disagree with the idea that where NECEC would cross the Kennebec River gorge “is not particularly valued by recreation users.” As a matter of fact – and as any study or survey of actual users would have shown – it’s one of the most peaceful and serene parts of the adventure where boaters have a chance to look around and catch their breath after the excitement of the whitewater. Instead of a constructive approach with stakeholders and any data-driven analysis, they offer unsupported, inaccurate, and frankly offensive opinions like, “recreational use of this section of the river arguably has more impact on any bucolic nature of the river than does the proposed overhead crossing.” Somebody at CMP just made that up. What’s even scarier is they apparently thought saying things like that would help them get a permit.

**For additional intervening comments on this topic, please refer to:**

**06-096 Ch. 375, § 9. Buffer Strips.**

**06-096 Ch. 375, § 14. No Unreasonable Effect on Scenic Character.**

**06-096 Ch. 375, § 12. Preservation of Unusual Natural Areas.**

**38 M.R.S. § 480-D(8). Outstanding river segments.**

**6-96 . 315.**

<sup>11</sup> CRTK – 5, KRV Impact Circle Chart

<sup>12</sup> CRTK – 5, KRV Impact Photograph

1 **Site Location of Development Law – 30 M.R.S. § 484. Applicable Licensing Criteria**

2 **30 M.R.S. § 484(3). No adverse effect on the natural environment.**

3

4 The Town of Caratunk believes that CMP has not “made adequate provision for fitting the development  
5 harmoniously into the existing natural environment and that the development will not adversely affect  
6 existing uses, scenic character, air quality, water quality or other natural resources in the municipalities  
7 along the transmission line or in neighboring municipalities.” CMP’s proposed project will likely have  
8 significant negative impacts on existing whitewater rafting, hiking, hunting and fishing activities on  
9 rivers remote ponds, lakes and on land, as well as on the scenic character of the Old Canada Scenic  
10 Byway and the Appalachian Trail. These significant negative impacts on our natural environment  
11 correlate to our residents' way of life, livelihoods and the community's economic viability which is  
12 dependent on the lure of tourists to visit the very attributes which will be taken away.

13

14 **30 M.R.S. § 484(3)(H).**

15

16 The Town of Caratunk believes that CMP’s proposed project may adversely impact significant vernal  
17 pool habitat. CMP’s application indicates that there are at least 42 significant vernal pools and 23  
18 potentially significant vernal pools wholly or partially located within the proposed action area.

19

20 **Chapter 375: NO ADVERSE ENVIRONMENTAL EFFECT STANDARDS OF THE SITE**  
21 **LOCATION OF DEVELOPMENT ACT**

22 The Town of Caratunk – as well as all the towns north to the border – have grave concerns over the lack  
23 of fire and emergency infrastructure that is necessary to support the construction and operation of such a  
24 high-power transmission line. The absolutely horrific fires in California are reason enough to insist on  
25 adequate fire protection around any such lines. None, however, exists.

26

27 In addition, these tourist dependent towns are just as concerned about where the construction workers  
28 would even stay. The tourist lodges, hotels, cabins and motels do not want to fill their occupancy on  
29 temporary construction workers leaving no room for returning tourism clients. In Caratunk’s cross-  
30 examination of CMP executives on January 9<sup>th</sup>, when asked about this issue as well as the **absence of**

1 **fire and emergency medical care**, CMP had not even considered these requirements when choosing to  
 2 place this high-power line in our woods.

3 MS. CARUSO: -- did you ask the affected communities whether or not they  
 4 could accommodate such a large construction workforce or if they had the fire  
 5 and emergency response resources to handle it?

6 MR. DICKINSON: So the -- I don't think -- I think the simple answer is no.<sup>13</sup>  
 7

8 To answer the question, the Town of Caratunk has no local fire or emergency response. (\*Both are  
 9 contracted out from Bingham). The Forks, West Forks, Parlin Pond, Jackman, Dennistown and Moose  
 10 River all rely on Bingham's ambulance, the Skowhegan Redington Fairview Hospital, and they have a  
 11 small fire department in Jackman and a few volunteers at the West Forks Volunteer Fire Department.  
 12

13 Furthermore, the Maine State Federation of Firefighters just released a letter of concern "for fire and  
 14 other emergency response capabilities within the areas located along and adjacent to the NECEC  
 15 corridor." The president warned:

16 "Please also note that these fire departments also lack sufficient off-road fire support  
 17 capacity. While several do have smaller 4WD apparatus, sufficient large-scale wildland  
 18 suppression and emergency mitigation equipment is not available in the rural areas of the  
 19 proposed NECEC Corridor area."<sup>14</sup>

20 "The most current available Somerset County Emergency Management Agency  
 21 Mitigation Plan states the following: C3 Goals Wildfires: Reduce damage, injury and  
 22 possible loss of life in Somerset County caused by wildfires. Somerset County is subject  
 23 to wild land fires. The most likely damages caused by a wildfire are the loss of life, loss  
 24 of prime timberland, and the destruction of personal and real property, especially homes.  
 25 The loss of electricity is also possible, since many high voltage transmission lines pass  
 26 through heavily wooded areas. Major wildfires may close commerce, resulting in major  
 27 losses of income to local businesses and individuals. \*There were at least 261 wild land  
 28 fires in Somerset County in from 2005 to 2010. Information to date indicates that  
 29 consideration of the many emergency hazards associated with the construction and future  
 30 management of the NECEC Corridor have not been addressed. Due to this oversight, we  
 31 conclude that the preparedness and safety of our fire fighters, and other first responders

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<sup>13</sup> CRTK – 1, January 9, p. 124

<sup>14</sup> CRTK – 6, Maine State Federation of Fire Fighters letter, 2/12/19

1 who will respond to NECEC Corridor incidents, has been severely overlooked and their  
2 security and safety significantly compromised.”

3 *With the California fires still fresh in our eyes and memories, we see this concern alone as sufficient*  
4 *reason for the Department and Commission to deny permits for NECEC.*

5 **06-096 375, § 14. No Unreasonable Effect on Scenic Character.**

6 The Town of Caratunk believes that CMP’s proposed project will have a devastating effect on the scenic  
7 character along the proposed transmission line. For example, the line will cross the Appalachian Trail,  
8 the Old Canada Scenic Byway, the Kennebec Gorge, the Spencer Road, Cold Stream, and many other  
9 important scenic sites not the least of which is The Forks Area - Jackman Snowmobile Trail system.

10  
11 CMP has been propagating that the area of the new 53 miles is nothing but a working forest. We all  
12 know that clear cuts grow back, but CMP’s destructive herbicides and cutting will create a permanent  
13 wasteland of the forest.

14 Notably, CMP’s visual rendering showed uninhabited, bland and undesirable roads, ponds and  
15 mountains. In order to illuminate the outlandish misrepresentation of these impressive destinations, the  
16 Town has attached a file<sup>15</sup> of pictures of the tourist destinations, vacation lands, beautiful mountains,  
17 pond and natural landscapes that NECEC will fragment and industrialize, forever destroying God’s  
18 creation.

19  
20 As the Department and Commission review these pictures, we ask you to keep in mind, not only the  
21 beauty of the land, but also the joy and peace of the recreationists. If we could ask you to stretch your  
22 imagination even further, think about how many Maine employees are involved in meeting the needs of  
23 each one of these visitors (housekeeping, cook and wait staff, office administration, reservationists, gas  
24 stations, grocery stores, guides, machine rentals, snowmobile groomers, cabins and lodge owners, etc.).  
25 Next, think about the families they are supporting. A permit awarded to NECEC would not only  
26 permanently affect these landscapes, wildlife and fisheries, but would permanently affect the livelihoods  
27 of these Maine citizens and their families.

28  
29 It is important to note that only after Coburn Mountain was opened as a trail destination, the  
30 snowmobiling season became as strong and vibrant as it is now. Personally speaking as one local  
31 example, my family would not be able to live in Caratunk year-round if we didn’t have the income of

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<sup>15</sup> CRTK – 8, Visual Rendering, Elizabeth Caruso

1 the snowmobiling season during the winter months.

2  
3 Visitors from Maine and all over the globe are drawn to this last contiguous forest, remote ponds, and  
4 incredible landscapes during the summer, fall hunting and hiking, spring fishing and winter  
5 snowmobiling seasons. People leave their industrialized and urban settings to come to this area to catch  
6 a glimpse of raw nature in its beauty and allow the inherent peace of their surroundings to settle their  
7 souls. Once industrial powerlines flood these views, wrap around our mountains and ponds, these  
8 visitors won't have a reason to return.

9  
10 Attached is a rendering of The Forks Area snowmobile trail system around Coburn and Johnson  
11 mountains with the proposed NECEC corridor superimposed.<sup>16</sup> It is plainly evident that NECEC is  
12 **maliciously invasive in its placement within this highly visible tourism destination area.** NECEC  
13 will forever degrade this scenic area, significantly undermine the natural beauty of this area and  
14 destabilize the tourism economy which Somerset County residents rely so heavily on.

15  
16 **The John Muir Trust study of 2017 found that 55% of the tourists would not return to a**  
17 **wilderness area if it has transmission infrastructure.**<sup>17</sup>

18  
19 If CMP chose to bury the line for 1000 ft under the Kennebec River to avoid impact to tourism, CMP  
20 should have avoided the snowmobiling recreational area as well. Snowmobiling, or winter, tourism is  
21 equally as critical to the Forks area as rafting is during the summer. Coburn Mountain, with its 360-  
22 degree spectacular view, is the major lure of snowmobile riders from Eustis, Jackman, Greenville and  
23 Bingham. Wrapping industrial infrastructure all around Johnson and Coburn mountains will turn away  
24 these riders. Without the volume of riders, restaurants, cabins, lodges, rentals, guides, gas stations, retail  
25 shops – and all their support staff – will greatly suffer and some will likely have to move out of the area  
26 for work.

27  
28 **06-096. 375, § 15. Protection of Wildlife and Fisheries.**

29 The Town of Caratunk believes that CMP's proposed project does not adequately protect wildlife and  
30 fisheries. The Town of Caratunk believes that CMP's proposed project does not contain buffer strips of  
31 sufficient area to provide wildlife with travel corridors between areas of available habitat, will adversely

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<sup>16</sup> CRTK – 9, Coburn Mountain snowmobile trails

<sup>17</sup> CRTK – 10, John Muir Study, 2017

1 affect wildlife and fisheries lifecycles, and will result in unreasonable disturbance of deer wintering  
2 areas, significant vernal pools, waterfowl and wading bird habitat, and species declared threatened or  
3 endangered.

4  
5 As the above report explains, it is obvious that the consistent application of herbicides polluting the  
6 Maine native brook trout fisheries and the natural deer and moose habitats would not be considered as  
7 “management and conservation efforts aimed at maintaining populations of native species.” Similarly,  
8 unnecessarily ruining deer wintering habitats by ripping an industrial corridor through these natural  
9 areas would also not be considered proper management and conservation efforts.

10  
11 **Natural Resources Protection Act – 38 M.R.S. § 480-D. Applicable Licensing Criteria.**

12  
13 **38 M.R.S. § 480-D(1). Existing uses.**

14  
15 The Town of Caratunk believes that CMP’s proposed project may unreasonably interfere with existing  
16 scenic, aesthetic, and recreational uses as indicated above.

17  
18 **Rural vs. Industrial Maine Towns**

19 When addressing the effects of the project location, it is critical that the Department and Commission  
20 differentiate between the varied locations which NECEC would affect. There are two completely  
21 dissimilar demographic and geographic cultures of Maine.

22  
23 On the most northern section, NECEC consists of 53 miles of new corridor prior to the subsequent  
24 sections along scenic ponds/lakes and continuing into forested or farm lands in rural towns. These  
25 towns and plantations located in Somerset and Franklin counties are among the most heavily opposed to  
26 the transmission project. In fact, the towns along the new corridor through the last unfragmented green  
27 field are unanimously opposed. Being so remote geographically, these residents specifically chose to  
28 acquire their lands for the scenic, peaceful and healthy attributes of a non-industrialized environment.  
29 Their livelihoods and ways of life and healthy eating (hunting for organic, grass-fed game) require this  
30 preserved, wild landscape. The very livelihoods of the residents in Somerset County, for example, are  
31 dependent on their natural landscapes to lure tourists traveling from industrialized settings to recreate in  
32 Somerset County.

1 In contrast, cities in and around the southern terminus of the line, in Lewiston, Maine, are accustomed to  
2 industrial infrastructure. Just as the rural, northern areas depend on a preserved, wild landscape, these  
3 cities and residents are dependent on mechanical industries for revenue and jobs. Likewise, these  
4 southern areas seek to remedy economic depressions due to loss of industrial jobs with similarly natured  
5 jobs.

6  
7 The State of Maine is very diverse. Maine icons include lobster, lighthouses, coastlines, logging and  
8 paper mills as well as big game, boating and fishing in pristine inland waters and rugged wilderness. LL  
9 Bean, another Maine icon, would never publish fishing, kayaking or hunting pictures with industrialized  
10 transmission lines in a pristine, wild setting. That is not Maine's iconic image. It is not "the way life  
11 should be". Although certain proponents, such as the Maine Chamber, Lewiston/Auburn Chamber, City  
12 of Lewiston and IBEW, may have louder voices, the rural citizens of Maine are equally as important  
13 though fewer in number. The Department and Commission should consider Somerset and Franklin  
14 counties equally with Androscoggin County.

15  
16 It is also enlightening to find that the public outcry, as revealed through media polls, social media, and  
17 especially through the PUC public comments, is not limited to Somerset and Franklin county residents.  
18 Citizens from all regions of Maine are crying out to stop this project from devastating Maine's  
19 wilderness, wild nature, Maine's tourism and brand. A reoccurring message is that we, this generation,  
20 must preserve our wild landscape for the future generations – especially because urbanization and  
21 industrialized infrastructure will only keep increasing in other areas of the state, region and country.  
22 Americans will need Maine's wild and scenic areas even more in the future!

23  
24 **38 M.R.S. § 480-D(3). Harm to habitats; fisheries.**

25  
26 The Town of Caratunk believes that CMP's proposed project may unreasonably harm significant  
27 wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or  
28 adjacent upland habitat, travel corridor, and aquatic life. The Town of Caratunk also believes that  
29 CMP's proposed mitigation may diminish the overall value of significant wildlife habitat and species  
30 utilization of the habitat in the vicinity of the proposed transmission line.

31  
32 **38 M.R.S. § 480-D(4). Interfere with natural water flow.**

33  
34 The Town of Caratunk believes that CMP's proposed project may unreasonably interfere with the  
35 natural flow of surface or subsurface waters as discussed above.  
36  
37

1 **38 M.R.S. § 480-D(5). Lower Water Quality.**

2  
3 The Town of Caratunk believes that CMP's proposed project may cause violations of state water quality  
4 laws, including those governing the classification of the State's waters as discussed above.

5  
6 **38 M.R.S. § 480-D(8). Outstanding river segments.**

7  
8 The Town of Caratunk believes that CMP has not demonstrated that no reasonable alternative to  
9 crossing outstanding river segments, such as the Kennebec Gorge, exists which would have less adverse  
10 effect upon the natural and recreational features of the river segment. Although CMP doesn't consider  
11 this section of the crossing as "particularly unique or wild", citing "... the Preferred Alternative location,  
12 which as described above is not particularly unique or wild, would not adversely affect existing uses of  
13 the Kennebec River."

14  
15 Practically speaking, this is a section of river where guests are sitting in the boats looking around  
16 because it is too shallow to swim. Bald eagles are commonly seen, and the impact of pristine wilderness  
17 is readily noticed and appreciated by guides and guests alike.

18  
19 In actuality, the **Kennebec River is a Class A River** according to the 1982 Maine Rivers Study.<sup>18</sup> CMP  
20 failed to include that, according to the 1982 Maine River Study, the **Kennebec, Dead and Sheepscot**  
21 **Rivers have been identified as "Class A" Rivers** and identified as:<sup>19</sup>

- 22  
23 1. River or river segments possessing six resource values with regional, statewide or  
24 greater than statewide significance in a specific resource category.  
25  
26 2. Rivers or river segments possessing two or more resource values which are recognized  
27 to be some of the State's most significant in a given resource category. Included within  
28 this category are rivers providing important habitat (defined as self-sustaining viable  
29 runs or significant restoration efforts producing fishable populations) for the nationally  
30 significant Atlantic sea run salmon".

31  
32 **RESOURCE VALUES<sup>20</sup>:**

- 33 • Geologic / Hydrologic Features  
34 • River Related Critical / Ecologic Resources  
35 • Undeveloped River Areas  
36 • Scenic River Resources  
37 • Historical River Resources

---

<sup>18</sup> CRTK – 12,

[https://www.maine.gov/dep/gis/datamaps/lawb\\_maine\\_river\\_survey/pdf/1982MaineRiversStudy\\_FinalReport2011.pdf?sfns=mo](https://www.maine.gov/dep/gis/datamaps/lawb_maine_river_survey/pdf/1982MaineRiversStudy_FinalReport2011.pdf?sfns=mo)

<sup>19</sup> CRTK – 12, Maine Rivers Study, p.9

<sup>20</sup> CRTK – 12, Maine River Study, p. 8

- Recreational River Resources

Furthermore, in Section I, Item 5 of the Findings, **the Study stated that impacts of development around these river resources should be avoided or minimized.** Obviously crossing the Kennebec River, whether under or over, and its tributaries should be avoided whenever possible.

**There is a significant base of citizen and public agency support for the conservation and sound management of the river resources of Maine.**

River conservation interests in the state vary widely. Such interests include recreational boating and fishing, commercial boating and fishing, education and scientific research, wildlife preservation, water quality maintenance, and miscellaneous recreational interests. While these interests vary and sometimes conflict, an underlying consensus exists that **rivers in their natural condition constitute a valuable resource to the State of Maine.** There also appears to be a consensus among river interests regarding which rivers are most important and warrant conservation action.

In addition, there appears to be a public recognition of the need to balance the goals of hydroelectric development and river conservation, and a desire for the use of hydropower where compatible with the resource values of a river and **where impacts of development are avoided or minimized.**

**The department and Commission should carefully weigh the findings of this study as it was intended for state agencies' deliberations.** As can be seen below, the Kennebec and Dead Rivers were ranked at the highest classification of river resource value, and the state must ensure that these qualities are protected.

#### INTRODUCTION<sup>21</sup>

On June 22, 1981, Governor Brennan released the Energy Policy for the State of Maine. The hydropower section of the policy directed that:

“The Department of Conservation, working with environmental, economic, energy and other appropriate interests, should identify river stretches in the State that provide unique recreational opportunities or natural values and develop a strategy for the protection of these areas for submission to the Governor.”

In response to this directive, and as a continuation of the State’s ongoing efforts to conserve Maine’s significant rivers, the Department of Conservation initiated the Maine Rivers Study. The U.S. Department of the Interior, National Park Service’s Mid-Atlantic Office, as part of their ongoing river conservation technical assistance to the State, has provided staff to conduct this study.

The purpose of the study is two-fold. The first is to define a list of unique natural and recreation rivers, identifying and documenting important river related resource values as

<sup>21</sup>CRTK – 12, Maine River Study, p. 13 (emphasis added)

well as **ranking the State's rivers into categories of significance based on composite river resource value.** The second purpose of the study is to **identify a variety of actions that the State can initiate to manage, conserve, and where necessary, enhance the State's river resources in order to protect those qualities which have been identified as important.**

## **Chapter 310: WETLANDS AND WATER BODIES PROTECTION**

### **06-096. 310, § 5. General Standards**

The Town of Caratunk believes that CMP has not adequately minimized the amount of wetland to be altered. The Town of Caratunk believes that CMP's proposal may result in an unreasonable impact because the project will cause a loss in wetland area, functions, and values, and CMP has not demonstrated that there is not a practicable alternative to the proposed project that would be less damaging to the environment.

## **Chapter 315: ASSESSING AND MITIGATING IMPACTS TO EXISTING SCENIC AND AESTHETIC USES**

### **06-096. 315.**

The Town of Caratunk believes that CMP's proposed project is likely to unreasonably interfere with existing scenic and aesthetic uses, and thereby diminish the public enjoyment and appreciation of the qualities of a scenic resource, and that any potential impacts have not been adequately minimized.

In Caratunk's cross-examination of CMP executives on January 9<sup>th</sup>, **CMP admitted that they did not even assess the area of the new 53 miles for existing uses.**

MS. CARUSO: "in the visual rendering presentation of August 17th you presented -- or your company presented to the PUC some pictures of Parlin Pond, Enchanted, Coburn Mountain, Rock Pond, Spencer Road, the Kennebec River, and they appear to be uninhabited without visible recreational usage or unusual scenery. And then it was stated at that meeting that you were trying to minimize the impact of a national scenic byway by putting the line to the east and to the west. Did you analyze the usages of areas you chose to place the line beyond it being a working forest?"

MR. DICKINSON: "You know, I'm not aware of that."<sup>22</sup>

In Caratunk's cross-examination of CMP executives on January 9<sup>th</sup>, **CMP admitted that they did not conduct any studies on the impacts of tourism in the area of the new 53 miles.**

<sup>22</sup> CRTK -1, January 9 Transcript p. 81

1 MR. TANNENBAUM: Okay, so maybe the question should be, have you done a study  
2 of the impacts on tourism?

3 MR. DICKINSON: Yeah, there's no specific study that we did.<sup>23</sup>

4  
5 In Caratunk's cross-examination of CMP executives on January 9<sup>th</sup>, **CMP admitted that they did not**  
6 **conduct any studies on winter snowmobiling in the area of the new 53 miles.**

7  
8 MS. CARUSO: Okay. So have you studied winter snowmobiling in the affected area of  
9 the proposed new corridor?

10 MR. STINNEFORD: We have not conducted a study<sup>24</sup>

11  
12 In Caratunk's cross-examination of CMP executives on January 9<sup>th</sup>, **CMP admitted that they did not**  
13 **consider the scenic and economic impacts from the corridor in the scenic and/or residential areas**  
14 **of the new 53 miles.**

15 MS. CARUSO: So because of the scenic and economic impacts from this corridor, especially in  
16 the new corridor area but also in the existing corridor area with all the camp owners and the  
17 people who are impacted, did you ever consider burying the line for the entire length of the new  
18 construction?

19 MR. DICKINSON: No, we didn't.

20 MS. CARUSO: Did you ever study the potential difference on the economy of the region  
21 between burying the line and not burying the line?

22 MR. DICKINSON: No, we did not.

23 MS. CARUSO: Did you ever evaluate the scenic or visual impact of burying the line versus not  
24 burying the line?

25 MR. DICKINSON: No, we did not.<sup>25</sup>

26  
27 Simply stated, CMP did not care where or how this corridor is placed. CMP did not consider the  
28 citizens or residents of Maine. Their lack of foresight and attention to details reveals the rushed  
29 planning of this project and the lack of stewardship in the great State of Maine.

30 **Chapter 335: SIGNIFICANT WILDLIFE HABITAT**

31 **06-096. 335, § 3(A). Avoidance.**

32 The Town of Caratunk believes that CMP's proposed project is likely to have an unreasonable impact  
33 because it is likely to degrade significant wildlife habitat, disturb wildlife, and affect the continued use  
34 of significant wildlife habitat by wildlife and CMP has not demonstrated that there is not a practicable

<sup>23</sup> CRTK -1, January 9 Transcript p. 83

<sup>24</sup> CRTK -1, January 9 Transcript p. 85

<sup>25</sup> CRTK -1, January 9 Transcript p. 89

1 alternative to the project that would be less damaging to the environment. CMP has indicated that the  
 2 placement of the corridor is based on land CMP owns. This is not avoidance.  
 3

4 **06-096. 335, § 3(B). Minimal alteration.**

5 The Town of Caratunk believes that CMP has not minimized the alteration of habitat and disturbance of  
 6 wildlife.  
 7

8 **06-096. 335, § 3(C). No Unreasonable impact.**

9 The Town of Caratunk believes that one or more of the standards of the NRPA at 38 M.R.S. § 480-D  
 10 will not be met and that therefore CMP's project will have an unreasonable impact on protected natural  
 11 resources and wildlife.  
 12

13 **06-096. 335, § 3(D). Compensation.**

14 **The Town of Caratunk believes that CMP's compensation is inadequate to off-set lost habitat**  
 15 **function.**

16 The Department and Commission must differentiate NECEC as opposed to a reliability transmission  
 17 project. As an Elective Transmission Upgrade, NECEC must be held to a higher standard than a  
 18 reliability transmission project, especially when the ETU is just a for-profit project that would be built to  
 19 serve an entirely different state. This ETU is no different than any other corporation, like Walmart or  
 20 McDonalds, that is applying for a permit to do business. That clearly shifts the balance when comparing  
 21 impacts versus benefits. CMP would need to prove there would be numerous, significant, permanent,  
 22 and quantifiable benefits in Maine that would be enough to justify the numerous, significant, permanent  
 23 and quantifiable impacts of the project. The evidence in the record doesn't even come close to  
 24 supporting a permit.

25 CMP argues that "no costs will accrue to Maine consumers." That is not the question. In fact, the Town  
 26 and its residents contend that there will be significant costs related to our livelihoods and ways of life,  
 27 property values, and risks to public safety and health – and we are all Maine consumers, too.

28 The real cost of the project is what it will do to our natural resources and local economy. Therefore, the  
 29 question for the Commission is whether there will be any benefits – such as enhancing reliability,  
 30 improving the tourist and recreation economy, improving trout fisheries, enhancing deer and moose  
 31 habitats– that sufficiently justify the unavoidable costs of building a brand-new transmission corridor  
 32 through an area that so strongly disagrees with CMP's contention it will be a good thing for us.

1 The Department and Commission can only approve NECEC if there is unequivocal and overwhelming  
2 evidence that the NECEC ETU will provide significant and long-lasting benefits to Maine without  
3 adverse impacts.—The applicant must demonstrate that the proposed activity will not unreasonably  
4 interfere with the scenic character, existing scenic, aesthetic, recreational or navigational uses and that  
5 the development fits harmoniously into the natural environment. CMP has not provided that evidence.  
6 This Elective Transmission Upgrade does not fit harmoniously with the fisheries, wildlife, scenery, or  
7 the landowners who abut the line or see the line from their homes. As is obvious from the public outcry,  
8 town votes, the nearly 1000 PUC comments, ever-increasing grass roots uprising, countless editorials,  
9 etc., this foreign corporate profit venture seeks to destroy the local economy, Maine’s brand and lure,  
10 and the livelihoods and ways of life of the Maine people. That’s why CMP didn’t provide sufficient  
11 evidence to support their case.

12 **30 M.R.S. § 484(5). Ground Water.**

13 The Town of Caratunk believes that CMP’s proposed project will “pose an unreasonable risk that a  
14 discharge to a significant ground water aquifer will occur.” CMP’s application indicates that “potential  
15 sources of groundwater contamination will include fuel and hydraulic and lubrication oils used in the  
16 operation and maintenance of vehicles, but most importantly, the application of herbicides to control  
17 vegetation.” NECEC Site Location of Development Application at 15-1. It should be unacceptable to  
18 the DEP that the drinking water of Jackman and Moose River should be polluted with chemicals.  
19

20 **06-096 Ch. 375, § 2. No Unreasonable Alteration of Climate.**

21 The Town of Caratunk believes that CMP’s proposed project may result in “unreasonable alteration of  
22 climate.” CMP claims that the project is expected to reduce regional greenhouse gas emissions in  
23 Massachusetts but has not produced evidence that this proposed transmission line will not result in an  
24 overall increase in greenhouse gas emissions. Expert consultants from CMP, Generator Intervenors and  
25 NextEra in the PUC proceedings could not confirm that Hydro-Quebec had the necessary capacity of  
26 hydro power to provide for NECEC’s requirement to Massachusetts without shifting supply from their  
27 other customers’ and buying fossil sourced power.  
28

29 The Department can only consider whether this project will benefit the climate here in the state. If  
30 NECEC is allowed to transpire, renewable energy projects (such as solar) in the state will be suppressed,  
31 and therefore, harm Maine in reducing the state’s greenhouse gas emissions.  
32  
33

1       **06-096 Ch. 375, § 3. No Unreasonable Alteration of Natural Drainage Ways.**  
2

3       The Town of Caratunk believes that CMP's proposed project "will cause an unreasonable alteration of  
4       natural drainage ways" through improper drainage right-of way and drainage that may result in adverse  
5       impact to adjacent parcels of land. CMP's application indicates that their project will cross 115 streams,  
6       263 wetlands, and impact 76.3 acres of mapped wetlands.  
7

8       **06-096 Ch. 375, §5. Erosion and Sedimentation Control.**

9       The Town of Caratunk believes that CMP's proposed project will not adequately control erosion and  
10       sedimentation to protect water quality and wildlife and fisheries habitat. CMP's application indicates  
11       that their project will cross 115 streams, 263 wetlands, and impact 76.3 acres of mapped wetlands.  
12

13       **06-096 Ch. 375, § 6. No Unreasonable Adverse Effect on Surface Water Quality.**

14       The Town of Caratunk believes that CMP's proposed project could cause the pollution of surface waters  
15       through both point and non-point sources of pollution. CMP's application indicates that their project  
16       will cross 115 streams, 263 wetlands, and impact 76.3 acres of mapped wetlands.  
17

18       **06-096 Ch. 375, § 9. Buffer Strips.**

19       The Town of Caratunk believes that CMP's proposed project will not adequately utilize natural buffer  
20       strips to protect water quality, wildlife habitat, and visual impacts from the proposed transmission line.  
21       At this time, it does not appear that CMP's proposed buffers are sufficient to avoid these impacts.  
22

23       All indication is that these 90-100' structures would devastate the view shed of tourists in our area.  
24       However, from the standpoint of landowners and taxpayers, this industrial invasion of their view shed  
25       from their properties will significantly devalue their land. Not only is this robbing individuals of their  
26       possessions, valuables and net worth, but this degradation will translate to a reduction in property tax  
27       value for the towns and plantations.

28       CMP has bragged about lowering tower heights. For abutting landowners, the overwhelming concern is  
29       not only view shed and property devaluation, but deep concern for sickness and disease from Corona  
30       hum and electromagnetic frequencies. Testimonies from powerline victims (180' from AC MRPR line)  
31       include that they were 1) unable to sleep in the house, 2) radios work laying on the grass, 3) dairy cows  
32       stopped producing milk, 4) their animals became sterile, 5) animals died, 6) adults and children get

1 shocked<sup>26</sup>. When an intervenor asked a CMP executive about particular cases, the executive smugly  
 2 responded that they were litigating the situation. We ask the DEP to stand up for the citizens of Maine  
 3 and to deny a permit for any structure that will cause cancers, sleep degradation and disruption of daily  
 4 health or life to any citizen.

### **COMMENTS ON NON-HEARING TOPICS**

#### **06-096 Ch. 375, § 10. Control of Noise.**

The Town of Caratunk believes that CMP's proposed project will not adequately control excessive environmental noise from construction, operation, and maintenance of the proposed transmission line which could degrade the health and welfare of nearby neighbors, line abutters, Appalachian Trail and other hikers, campers such as on Rock Pond, and camp owners on Moxie Pond. This is especially true for noise from the transmission lines themselves, especially during inclement weather. The Corona hum, inherent in the line's operation is a life altering, property devaluing concern.

The Town of Caratunk currently enacted the Electrical Transmission Line Moratorium Ordinance. One of the major concerns for the townspeople is the corridor's noise and electromagnetic frequencies as well as their associated health defects and/or disruption of normal lifestyles. Residents choose to live in Caratunk and the greater Forks areas is the environment's serenity, the silence that nature brings and the darkness from the absence of urban lights. NECEC would invade the silence with its inherent, constant noise. This very noise has prevented sleep from residents in the Farmington area whose homes abut an AC line - and NECEC is a much more powerful DC line.

#### **06-096 Ch. 375, § 12. Preservation of Unusual Natural Areas.**

The Town of Caratunk believes that CMP's proposed project will harm numerous land and water areas that contain natural features of unusual geological, botanical, zoological, ecological, hydrological, other scientific, educational, scenic, or recreational significance. CMP's proposed project will impact at least 8 deer wintering areas (44.3 acres) and 12 inland waterfowl and wading bird habitats (22.7 acres). The project will cross and degrade the scenically and recreationally significant Kennebec Gorge.

Application material indicates that the project area includes the following rare plants: wild leek, red-stemmed gentian, long-leaved bluet, and dry land sedge, and numerous natural and distinguished natural communities.

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<sup>26</sup> CRTK – 7, Diane Zagwijn-Coston's official PUC testimony, 10/17/18

According to the Recreational Hunter and Angler Market Report: Maine, prepared for the Maine Office of Tourism and Department of Inland Fisheries & Wildlife (See Attachment A, pages 116-117

(emphasis added), *Insights from the Maine licensed and Traveling sportsmen surveys* revealed that:

- “The state of Maine is well positioned as one of the “Best” destinations among Maine licensed hunters and anglers across a majority of attributes that are important to them -ranging from climate, safety, pricing, and amenities. Maine’s particular strengths among Traveling sportsmen are its attractive natural setting and its sense of safety.”
- “The state’s natural amenities, beauty and sense of security or safety are also identified to be among the most important characteristics of a site that hunters and anglers say are important when making the decision to hunt or fish. “
- “The abundance of game species and the ability to target native populations are critical factors that influence destination choices. Maine Department of Inland Fisheries & Wildlife supports management and conservation efforts aimed at maintaining healthy populations of native species. “
- “Interestingly, one of the key destination factors for hunters and anglers is the remoteness of the location. However, travel distance also factors into their decision. The geographical size and travel distance to the more remote areas can be a challenge to bring sportsmen to the state. Among traveling sportsmen, it may be important to highlight other services in the area for nonsportsmen to influence the travel decision.”

### **38 M.R.S. § 480-D(2). Soil erosion.**

The Town of Caratunk believes that CMP’s proposed project may cause unreasonable erosion of soil or sediment and may unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.

### **Impacts to Maine Renewable Energy**

Should CMP be granted the NECEC, Maine’s energy grid will be locked up, and future renewable energy projects such as Caratunk's solar farm would be prevented. With the approval of NECEC, new sources would be hindered and current viable energy contracts would be retired with Maine jobs lost. The only entities benefiting from NECEC is CMP, Massachusetts and Hydro-Quebec.

### **Title, Right or Interest**

The Town of Caratunk believes that CMP does not have full right, title, and interest in the entire proposed corridor. The streams, rivers and the VIEWS belong to the people. CMP might own much of the land - arguably paid for by Maine ratepayers – but they do not have the right to steal the character of the lands or the scenic views.

### **Greenhouse Gas and Climate Benefit**

The key point is that NECEC will not reduce greenhouse gas. The Department must find a valid environmental benefit before authorizing the destruction of a healthy fishery, wetland, wildlife and tourism area. However, NECEC provides no climate benefit as expert witnesses and intervenors have revealed.

The Massachusetts Attorney General submitted testimony from expert Dean M. Murphy to the Massachusetts Department of Public Utilities stating that NECEC does not meet the clean energy standards for their Section 83D RFP because it would not be “new”.

*“The proposed contracts, as written, do not ensure that the Qualified Clean Energy acquired via the contracts will comprise fully incremental energy deliveries into New England, as the RFP specified. The RFP required that the Qualified Clean Energy under the contract should be incremental to (i.e., in addition to) the hydroelectric energy that HQ has delivered to New England historically, or that would otherwise be expected to be delivered. The proposed contracts implement much weaker requirements for incrementality and would allow most (and potentially all) of the contract energy delivered to substitute for historical deliveries (See Attachment B, page 5).*

Mr. Murphy further testifies that just because there are new transmission lines available, there is no requirement for new clean energy.

However, merely adding transmission does not ensure that clean energy deliveries will be incremental relative to historical deliveries, unless the contracts explicitly require this. As the proposed contracts are written, that will not necessarily be the case; clean energy deliveries could be far less than fully incremental and still satisfy the requirements of the 10 proposed contracts (See Attachment B, page 16).

With regards to greenhouse gas benefit, Mr. Murphy clearly explains that HQ would implement “resource shuffling” or greenwashing, resulting in NO greenhouse gas reduction as a result of NECEC.

Q. Must the contracts require full incrementality for the 83D clean energy to create the desired offset to greenhouse gas emissions?

A. Even if the proposed contracts required energy deliveries to be fully incremental, this would not necessarily guarantee that GHG emissions would decrease by an amount corresponding to the Qualified Clean Energy of the contract. Incrementality is defined in the RFP only with respect to deliveries into New England, while GHG emissions must be measured at a global level. It would be possible, at least in principle, to satisfy the requirements of full incrementality

(i.e., the Qualified Clean Energy is incremental to the full historical average deliveries into New England), and still not offset a corresponding amount of global GHG emissions. This could happen through resource shuffling—reassignment of a fixed amount of clean energy so as to increase the clean energy delivered to a particular destination without increasing the total amount of clean energy overall.

For instance, with the new NECEC transmission link, if HQ increased deliveries into New England by the contracts' 9.55 TWh relative to historical New England deliveries, this would achieve full incrementality as defined in the RFP. But if HQ accomplished this by reducing its exports to other neighboring regions rather than by increasing clean energy generation overall, then global GHG emissions would not necessarily be reduced. Diverting clean energy from other regions to New England would enable a reduction in fossil generation and emissions within New England, but the reduced deliveries to other regions may need to be replaced by additional fossil generation in those regions. This would effectively substitute fossil generation in other regions for fossil generation in New England, shifting emissions from one region to another, without causing a material decrease (the actual impact would depend on the relative emissions intensities of each region.) (See Attachment B, , page 16-17)

*Q. What would be required to ensure a reduction in GHG emissions?*

*A. ....Importantly, it must involve overall global emissions reductions, not reductions in one region or sector that might be offset by a corresponding increase that is triggered elsewhere, or reductions that would have occurred regardless of the proposed action (See Attachment B, page 17).*

Hydro-Quebec has not confirmed or proven in any of Maine's proceedings that the company actually has the additional capacity to provide this hydropower. In fact, HQ has committed to utilizing existing facilities to supply NECEC contracted energy.

*Q. Do the proposed contracts require the energy to be additional in this sense of offsetting GHGs globally?*

*A. No, not necessarily. HQ has committed to using existing HQPR facilities to supply the contracted energy. If these facilities were spilling significant amounts of water due to transmission constraints that would be relieved by the NECEC transmission, or if Hydro-Québec undertook investments to expand its system—to increase output from existing facilities or add*

*new generation or storage capability—then a portion of the generation may be considered additional. But the contracts do not require this, nor has HQ indicated that it is the case (See Attachment B, page 18).*

In the Executive Summary of the Energyz Advisors report: GREENWASHING AND CARBON EMISSIONS: UNDERSTANDING THE TRUE IMPACTS OF NEW ENGLAND CLEAN ENERGY CONNECT, experts further confirm that the contracts allow Hydro-Quebec to shift existing exports into New England to supply NECEC at a higher price.

*Hydro-Québec has a financial incentive to sell as much excess energy that it can, subject to water and generation constraints, and divert exports from other markets into NECEC to achieve a higher price. Given its system characteristics and profit goals, Hydro-Québec could even purchase energy from other markets during low-priced hours in order to retain energy in the form of water waiting in its reservoirs for subsequent sale at higher prices to New England through NECEC. Furthermore, the significant inflow via a 1,200 MW transmission line into Maine could adversely affect the economic prospects for Maine renewables, which are likely to be deferred or delayed as a result of the project's impacts on the local transmission network. The net result would be a minimal impact on efforts to reduce total carbon emissions.*

*NECEC could divert energy sales from another market into New England; shifting flows between markets may not reduce total greenhouse gas emissions and could even increase total carbon injections into the atmosphere. (See Attachment C, pages 4-5)*

*Hydro-Québec's proposal in response to the Massachusetts Clean Energy RFP explicitly states that it would supply energy to NECEC from existing generation resources, and not from new sources of renewable energy developed to serve the line. Given that Hydro-Québec would maximize its exports without NECEC and sell whatever excess energy that it had into external markets, Hydro-Québec would supply NECEC by simply shifting those exports into New England via NECEC at a higher contracted price. This shift in energy flows could create an offsetting impact in the other markets which would have to produce replacement energy, potentially resulting in offsetting carbon emissions. While Maine power plants would be forced to shut-down to accommodate energy flowing into NECEC, fossil fuel plants in other markets (including oil, natural gas and coal units), would fire-up in response to Hydro-Québec's shifting its energy sales, negating any potential climate benefits.*

*Hydro-Quebec can and does buy energy from low-priced markets and then sells its “clean energy” at a higher price into other markets, potentially creating a similar impact on carbon emissions in the atmosphere as if Hydro-Québec were generating power from fossil fuels directly. (See Attachment C, page 14)*

The Department should be most concerned with Maine’s greenhouse gas reduction, and in fact, NECEC will be preventing Maine own renewable energy entities from making the necessary strides in this area. According to the Energzt report, and as many of the intervenors have been stating, NECEC will flood and lock up the Maine energy grid. Not only does this inflict much harm on Maine’s ability to reduce greenhouse gas and provide climate change benefit, but it also sets back the State for years to come.

*NECEC would suppress the development of new renewable energy generation in Maine which, in contrast to Hydro-Québec’s market-switching strategy, actually could lower greenhouse gas emissions and provide more local jobs and economic benefits than NECEC.*

The Town of Caratunk offers a prime example of this suppression of new renewable energy generation. In July of 2017, Caratunk was approached by NextEra for a solar farm (located in Caratunk and the Town of Moscow) in response to the Massachusetts 83D RFP. The Town supported this project as it would make good use of existing land, formerly known as the US AF Radar Station; it would create fulltime jobs and tax revenue with no adverse impact. However, with the presence of NECEC’s DC line, this NEW renewable energy project would be prevented, barred from connecting to the Maine energy grid.

It is critical that the Department and state agencies permit an environment that supports Maine-based renewable energy projects as these are the endeavors which will result in greenhouse gas reductions for our state and region as well as employee Maine citizens and provide greater environmental benefit.

Respectfully submitted,

Date: 2/24/19

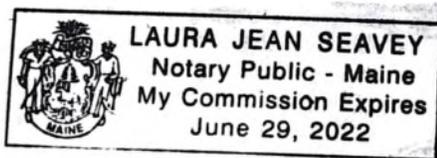
Elizabeth Caruso Gabriel M Caruso  
(type or print witness name here  
& sign on above line)

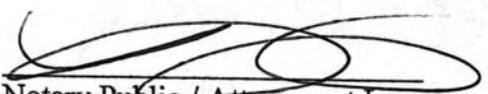
State of Maine  
County of Somerset

Date: 2/10/2019

Personally appeared before me the above-named Elizabeth Caruso, who, being duly sworn, did testify that the foregoing testimony was true and correct to the best of his/her knowledge and belief.

Before me,



  
Notary Public / Attorney at Law  
My Commission Expires: 6/29/22

MAINE PUBLIC UTILITIES COMMISSION  
AUGUSTA, MAINE

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IN RE: )  
 ) Docket No. 2017-232  
CENTRAL MAINE POWER COMPANY ) January 9, 2019  
 )

Request for Approval of CPCN for the New England Clean Energy  
Connect Construction of 1,200 MW HVDC Transmission Line from  
Québec-Maine Border to Lewiston (NECEC)

APPEARANCES:

- MITCHELL TANNENBAUM, Hearing Examiner
- CHRISTOPHER SIMPSON, Hearing Examiner
- MARK VANNOY, Maine Public Utilities Commission
- BRUCE WILLIAMSON, Maine Public Utilities Commission
- RANDALL DAVIS, Maine Public Utilities Commission
- FAITH HUNTINGTON, Maine Public Utilities Commission
- CHRISTINE COOK, Maine Public Utilities Commission
- BARRY HOBBS, Office of the Public Advocate
- ELIZABETH WYMAN, Office of the Public Advocate
- ERIC BRYANT, Office of the Public Advocate
- JARED DES ROSIERS, Pierce Atwood, Central Maine Power Company
- SARAH TRACY, Pierce Atwood, Central Maine Power Company
- ERIC STINNEFORD, Central Maine Power Company
- DAN PEACO, Daymark Energy Advisors, Central Maine Power
- JEFF BOWER, Daymark Energy Advisors, Central Maine Power
- DOUG SMITH, Daymark Energy Advisors, Central Maine Power
- THORN DICKINSON, Avangrid Networks, Central Maine Power Company
- BERNARDO ESCUDERO, Avangrid Networks, Central Maine Power
- JOHN SHOPE, Foley Hoag, Calpine Corp., Vistra Energy, Bucksport
- STEVE BARTLETT, Foley Hoag, Calpine, Vistra Energy, Bucksport
- JOHN FLUMERFELT, Calpine Corporation
- TANYA BODELL, Energyzt, Calpine Corp., Vistra Energy, Bucksport
- ANDREW LANDRY, Preti Flaherty, Industrial Energy Consumer Group
- SUE ELY, Natural Resources Council of Maine
- PHELPS TURNER, Conservation Law Foundation
- AMY OLFENE, Drummond Woodsum, NextEra Energy Resources
- BRIAN MURPHY, NextEra Energy Resources
- BEN SMITH, Soltan Bass Smith, Western Maine Mountains & Rivers
- ELIZABETH CARUSO, Town of Caratunk
- DOT KELLY

1 CONFERENCE COMMENCED (January 9, 2019, 9:05 a.m.)

2 MR. TANNENBAUM: Good morning. This is a hearing in  
3 PUC docket 2017-00232 which is Central Maine Power Company's  
4 request for approval of a CPCN for the New England Clean Energy  
5 Connect. Let's start with appearances from the parties with  
6 the Public Advocate, please.

7 MS. WYMAN: Liz Wyman, Office of the Public Advocate.

8 MR. BRYANT: Eric Bryant with the Office of the  
9 Public Advocate.

10 MR. HOBBS: Barry Hobbs, Public Advocate.

11 MR. LANDRY: Andrew Landry from Preti Flaherty on  
12 behalf of the Industrial Energy Consumer Group.

13 B. SMITH: Ben Smith on behalf of Western Mountains &  
14 Rivers Corporation.

15 MR. TURNER: Phelps Turner, Conservation Law  
16 Foundation.

17 MR. DICKINSON: Thorn Dickinson, Avangrid Networks.

18 MR. STINNEFORD: Eric Stinneford, Central Maine  
19 Power.

20 MR. ESCUDERO: Bernardo Escudero, Avangrid Networks.

21 MR. PEACO: Dan Peaco, Daymark Energy Advisors on  
22 behalf of Central Maine Power.

23 MR. BOWER: Jeff Bower with Daymark Energy Advisors  
24 on behalf of Central Maine Power.

25 D. SMITH: Doug Smith with Daymark Energy Advisors on

1 behalf of Central Maine Power Company.

2 MS. TRACY: Sarah Tracy with Pierce Atwood on behalf  
3 of Central Maine Power.

4 MR. DES ROSIERS: Jared des Rosiers from Pierce  
5 Atwood on behalf of Central Maine Power.

6 MR. MURPHY: Brian Murphy on behalf of NextEra Energy  
7 Resources.

8 MS. OLFENE: Amy Olfene of Drummond Woodsum on behalf  
9 of NextEra Energy Resources.

10 MS. ELY: Sue Ely, Natural Resources Council of  
11 Maine.

12 MS. KELLY: Dot Kelly, Phippsburg, Maine.

13 MS. BODELL: Tanya Bodell from Energyzt on behalf of  
14 the generator interveners.

15 MR. SHOPE: John Shope, Foley Hoag on behalf of the  
16 generator interveners which are Calpine Corporation, Vistra  
17 Energy Corporation, and Bucksport Generation, LLC.

18 MR. BARTLETT: Steve Bartlett, Foley Hoag on behalf  
19 of the generator interveners.

20 MR. FLUMERFELT: John Flumerfelt, Calpine  
21 Corporation.

22 MR. TANNENBAUM: Okay, witnesses on the panel have  
23 been sworn in. Oh, I'm sorry, appearances from the phone,  
24 parties in the case?

25 MS. CARUSO: Elizabeth Caruso the town of Caratunk.

1 MR. TANNENBAUM: Okay. Any other party in the case  
2 on the phone? Okay, let's proceed then. As I mentioned, this  
3 panel has been sworn in in this proceeding so we'll proceed  
4 with the questioning from NextEra.

5 MR. MURPHY: Thank you, and good morning, panel.  
6 Similar to when we had the technical conference, I put together  
7 a booklet with tabs on it that I'll go through. Hopefully  
8 it'll make it easier for you all and for me. And in the first  
9 tab is part of your application. I'm going to ask you some  
10 foundational questions on that first tab. And NEC (sic) is a  
11 high-voltage direct current or HVDC transmission line, correct?

12 MR. DICKINSON: That's correct.

13 MR. MURPHY: And NECEC is a high-voltage direct  
14 current line designed to deliver 1,200 megawatts of energy. Is  
15 that correct?

16 MR. DICKINSON: That's correct.

17 MR. MURPHY: And it's also using the voltage source  
18 converter or VSC technology?

19 MR. DICKINSON: That's correct.

20 MR. MURPHY: And it's approximately, in the Maine  
21 portion of the line, 145 miles?

22 MR. DICKINSON: That's correct.

23 MR. MURPHY: In your September 2017 petition filed  
24 with the Commission, CMP explained that the transmission line  
25 was to be constructed and operated as an overhead transmission

1 line.

2 MR. DICKINSON: That's correct.

3 MR. MURPHY: And since then, on October 22nd, 2018,  
4 CMP filed documents indicating that it was amending its Maine  
5 Department of Environmental Protection application to include  
6 an underground crossing of the upper Kennebec River.

7 MR. DICKINSON: That's correct.

8 MR. MURPHY: The underground crossing of the Kennebec  
9 River will bury the transmission line for approximately one  
10 mile?

11 MR. DICKINSON: That's correct.

12 MR. MURPHY: At the November 28, 2018 technical  
13 conference, I asked if CMP had considered routing the  
14 underground -- excuse me, considered routing the transmission  
15 underground for the 53 miles of green field corridor and  
16 whether they had considered that in the same way they  
17 considered routing under the Kennebec River. And the answer I  
18 received from Mr. Dickinson was that you did not consider in  
19 the same manner. Do you recall providing that answer?

20 MR. DICKINSON: Yes, I do.

21 MR. MURPHY: And therefore, just to make sure we're  
22 all on the same page, it's currently the company's proposal  
23 that the HVDC line will be approximately one mile underground  
24 and 144 miles overhead.

25 MR. DICKINSON: That's correct.

1 MR. MURPHY: Now moving to tab four, this is NextEra  
2 Hearing Exhibit 19 which is CMP's competitive intelligence  
3 presentation on the TDD -- excuse me, the TDI HVDC line. On  
4 page one of the presentation, you'll see that the TDI HVDC line  
5 proposes to deliver a thousand megawatts of Hydro-Quebec energy  
6 into Vermont. Do you see that?

7 MR. DICKINSON: Yes.

8 MR. MURPHY: And also on that first page of the CMP  
9 presentation, the TDI Vermont line is approximately 154 miles  
10 long. Is that correct?

11 MR. DICKINSON: Yes.

12 MR. MURPHY: And of the 154 miles, approximately a  
13 hundred miles of that line is to be routed under water and 54  
14 miles of that line is to be buried underground which is also in  
15 this presentation.

16 MR. DICKINSON: Correct.

17 MR. MURPHY: And the TDI line is also using the same  
18 technology that you all are using which is the VSC HVDC  
19 technology. It's not on that page, but if you recall.

20 MR. DICKINSON: I do remember that, yes.

21 MR. MURPHY: Okay. And do you also recall that the  
22 line that is the subject of this competitive intelligence is  
23 fully permitted? Or they represent that they're fully  
24 permitted.

25 MR. DICKINSON: They represent that they're fully

1 permitted.

2 MR. MURPHY: Thank you. And then on tab six, this is  
3 information about Northern Pass, and it's fair to say that the  
4 panel is aware of the Northern Pass transmission line.

5 MR. DICKINSON: Yes.

6 MR. MURPHY: And that is another HVDC line that is  
7 proposed to deliver 190 megawatts of Hydro-Quebec energy into  
8 New Hampshire. Correct?

9 MR. DICKINSON: Correct.

10 MR. DES ROSIERS: I believe you meant 1,090 not 190.  
11 You said 190.

12 MR. MURPHY: Oh, thank you. 1,090 just to make the  
13 record clear. I appreciate that. Is that correct, 1,090?

14 MR. DICKINSON: Yes, that's correct.

15 MR. MURPHY: Thank you. And of that -- I'm sorry.  
16 And then next question is are you also aware that the Northern  
17 Pass line on the U.S. side is approximately 192 miles in  
18 length?

19 MR. DICKINSON: Yes.

20 MR. MURPHY: And of that 192 miles, Northern Pass  
21 proposes to bury approximately 60 miles of that line.

22 MR. DICKINSON: Yes.

23 MR. MURPHY: And are you also aware that the New  
24 Hampshire siting evaluation committee denied Northern Pass's  
25 application for a siting and facility certificate last year?

1 MR. DICKINSON: Yes, I am.

2 MR. MURPHY: Now tab seven is the New York Connect  
3 project, and, Mr. Dickinson, you worked on that project,  
4 correct?

5 MR. DICKINSON: Yes.

6 MR. MURPHY: And am I correct to say that was a 244-  
7 mile HVDC line that was proposed to be buried?

8 MR. DICKINSON: Yes.

9 MR. MURPHY: Now in your application, is it also  
10 correct to say that you proposed to bury the HVDC line so that  
11 line losses would be reduced and aesthetics and health-based  
12 concerns eliminated?

13 MR. DICKINSON: I'm sorry, could you repeat the  
14 second part of that?

15 MR. MURPHY: Sure. In your application, is it  
16 correct to say that you stated one of the purposes to bury the  
17 HVDC line was to reduce line losses and eliminate the concerns  
18 regarding aesthetics and health?

19 MR. DES ROSIERS: I'll object to the question to the  
20 extent it refers to an application. I don't believe there's  
21 been a foundation laid that any application was filed with  
22 respect to that project, Connect New York.

23 MR. MURPHY: Okay. We're talking about tab seven.  
24 Do you recognize the application that you worked on?

25 MR. DICKINSON: Well, if I -- it would be helpful for

1 me to remember exactly what the date of this is, but I believe  
2 this is from an RFI response from New York, you know, I think a  
3 number of years ago, but it was a response for ideas from New  
4 York about the different risks and challenges they saw  
5 associated with the development of a more vibrant energy  
6 infrastructure and --

7           MR. MURPHY: That's my understanding as well. So if  
8 you go three pages in on tab seven, and under the title The  
9 Connect New York Option, and if you go to the first paragraph,  
10 the last sentence, and that's what I was paraphrasing. "By  
11 burying an efficient underground DC volt transmission line,  
12 line losses will be reduced, aesthetics and health-based  
13 concerns eliminated."

14           MR. DICKINSON: Yeah, I think the line losses refer  
15 specifically to a DC project. The burying portion relates to  
16 concerns that we knew existed in the Hudson Valley region  
17 associated with aesthetic and health-based concerns. And there  
18 were already proposed above-ground AC transmission projects to  
19 alleviate -- this is essentially a project that's fundamental  
20 purpose was to alleviate the central east constraint in New  
21 York where there's a significant amount of congestion. We were  
22 -- we had this specific idea as a competitor to other ideas  
23 that we saw as being out there. Those other ideas were  
24 overhead projects. And by utilizing the thruway, we had a  
25 corridor that was pre-disturbed. Obviously that corridor would

1 not have allowed for an overhead line to go right along the --  
2 back and forth across the thruway, but a buried line through a  
3 portion of land that had already been disturbed by the thruway  
4 we believed was another alternative that the state would  
5 consider. Of course, as you probably know from looking at  
6 this, that in the end, the state decided not to consider this  
7 project within that context.

8 MR. MURPHY: Go to tab eight, and throughout my  
9 questioning --

10 MR. TANNENBAUM: Brian, I just want to follow up on  
11 that. So is your testimony that burying the underground DC  
12 line does not, in and of itself, reduce losses?

13 MR. DICKINSON: Yeah, I'd have to go to my -- the --  
14 my engineering folks to tell me a little bit more about it, but  
15 the prime benefit of the losses comes, I believe, from the  
16 actual difference between DC and AC and the reduction in line  
17 losses.

18 MR. TANNENBAUM: Okay, thank you. Sorry.

19 MR. MURPHY: No problem. Go to tab eight, and  
20 throughout my questioning, again to make it easier on myself  
21 and you all, I've taken parts of your testimony. And if you  
22 need to refer to more than the parts that I've taken, you know,  
23 feel free to, but the first part are pages 15 through 17 of the  
24 panel's rebuttal testimony. And on page 15 at lines (sic) 18,  
25 you state that CMP has executed a finding memorandum of

1 understanding, or MOU, with Western Mountains & Rivers  
2 Corporation. Do you see that?

3 MR. DICKINSON: Yes, I do.

4 MR. MURPHY: Okay. Turning to the next page, which  
5 is 16, on lines three through seven, you state the MOU commits  
6 CMP to an initial donation of \$250,000. Is that correct?

7 MR. DICKINSON: Yes.

8 MR. MURPHY: And for your own purposes, on tab nine,  
9 I have attached the MOU. So if you need to reference the MOU,  
10 feel free to do that. You also state that there is an  
11 additional 250,000 -- or 50,000 over five years should be paid  
12 pursuant to the MOU. Isn't that correct?

13 MR. DICKINSON: That's correct.

14 MR. MURPHY: Now turning to page 17, lines one  
15 through three, you state that if the high-voltage DC line  
16 crosses the Kennebec Gorge underground, CMP agrees to  
17 contribute five to \$10 million. Am I reading that correctly?

18 MR. DICKINSON: That's correct.

19 MR. MURPHY: And as we've already discussed, you've  
20 agreed to route the high-voltage DC line under Kennebec Gorge,  
21 right?

22 MR. DICKINSON: Correct.

23 MR. MURPHY: Now doing some math, given that you have  
24 agreed to route the transmission line under the Kennebec Gorge,  
25 in the event -- this is the words from the MOU if you need to

1 check it -- in the event you attain all your permits, license,  
2 and approvals, then, under the MOU, you are committed to  
3 provide Western Mountains a total of, my read is, 5.5 to \$10.5  
4 million in payments. Does that sound correct?

5 MR. DICKINSON: That's correct. Obviously it doesn't  
6 include the other commitments that are in the MOU, but that's  
7 correct from a dollar perspective.

8 MR. MURPHY: Is it also correct that CMP has not  
9 executed any other similar MOUs or agreements like the one it  
10 executed with Western Mountains & Rivers?

11 MR. DICKINSON: That's correct.

12 MR. MURPHY: Now going back to tab four, which is the  
13 TDI presentation, we'll go to page four. And here there are a  
14 bunch of bullets, and part of my questions are about the  
15 bullets and also clarifications about the bullets, and I want  
16 to just make sure that the record's clear about what the  
17 presentation says and doesn't say. Now if we go to the  
18 presentation, the third bullet from the top indicates that the  
19 TDI line agreed to pay a minimum of \$280 million over 40 years.  
20 Do you see that bullet? It's under community funding, second  
21 bullet, third bullet starts with "The agreement was filed."

22 MR. DICKINSON: I see that.

23 MR. MURPHY: Okay. And this is where I want to make  
24 sure the record's clear. I think we'll be on the same page but  
25 want to make sure. The next three bullets are not additive to

1 the 283 million. Actually they describe what's in the 283  
2 million. And I have the CLF agreements and other information,  
3 but is that your recollection as well? And take your time. I  
4 do think those are not in addition to, but -- or subcategories  
5 of the 283. And if you want to take it subject to check, I'm  
6 happy with that.

7 MR. DICKINSON: That's probably the better way to do  
8 it. I'll take that subject to check.

9 MR. MURPHY: So if, subject to check, you agree with  
10 me those are subcategories, one example is the bullet that's  
11 right underneath the third bullet, the fourth bullet. It  
12 starts 109 million. And one of these subcategories is the 109  
13 million that would be contributed to a fund to provide  
14 renewable energy generation in Vermont. That's what your  
15 presentation says, correct?

16 MR. DICKINSON: Correct.

17 MR. MURPHY: Okay. Also on this page, the very last  
18 bullet, it explains that TDI agreed to \$136 million payment to  
19 be used to reduce electric rates. That's what your  
20 presentation says, correct?

21 MR. DICKINSON: Correct.

22 MR. MURPHY: Just simple math, adding the 283 to the  
23 136 million, I come up with total commitments for TDI in these  
24 agreements of \$419 million. Does that math sound correct?

25 MR. DICKINSON: That sounds correct.

1 MR. MURPHY: Now going to tab 14, this is the  
2 Northern Pass bid, an excerpt from that. And you'll see under  
3 number three, need for New Hampshire to receive unique benefits  
4 for hosting the project, I'm just going to focus on two  
5 bullets. And the first bullet that I'll focus on is the second  
6 one entitled Forward New Hampshire Fund. Do you see that  
7 bullet?

8 MR. DICKINSON: Yes.

9 MR. MURPHY: And according to this bid, Northern  
10 Pass, through the Forward New Hampshire Fund, commits \$200  
11 million to fund New Hampshire priorities in the areas of  
12 community betterment, clean energy innovation, economic  
13 development, tourism, etc. Is that correct?

14 MR. DICKINSON: That's correct.

15 MR. MURPHY: Okay. And if you go two more bullets,  
16 Northern Pass also committed to a northern county job creation  
17 fund for \$7.5 million.

18 MR. DICKINSON: Correct.

19 MR. MURPHY: That's what they're representing. So  
20 taking those two numbers together, I come up with approximate  
21 \$207 million that Northern Pass has stated it's committed to  
22 New Hampshire.

23 MR. DICKINSON: Correct.

24 MR. MURPHY: Now I'd like to go to tab 15. And in  
25 tab 15, I have excerpts from three bids into 83D, the NECEC

1 bid, the TDI bid, and the Northern Pass bid. And I'm just  
2 going to walk through. If you go three pages in, this is a CMP  
3 bid which commits \$50 million to be paid over 40 years to  
4 Massachusetts low-income program if you're selected and awarded  
5 and receive all your approvals?

6 MR. DICKINSON: Correct.

7 MR. MURPHY: And if we continue two more pages, see  
8 that TDI, under what they're calling Section 13.3.2, commits to  
9 \$20 million over 20 years.

10 MR. DICKINSON: Correct.

11 MR. MURPHY: And then if we go another two pages,  
12 Northern Pass -- I read this to state that Northern Pass is  
13 committing only to \$10 million over 20 years for the low --  
14 Massachusetts low-income program.

15 MR. DICKINSON: That's correct.

16 MR. MURPHY: Go to tab 16. Again, this is an excerpt  
17 from the panel's rebuttal testimony. On page nine at line 18  
18 of the rebuttal testimony, you state that the Massachusetts EDC  
19 transmission service rates are fixed. Is that correct? Do you  
20 see that on line 18?

21 MR. DICKINSON: That's correct.

22 MR. MURPHY: Okay. And then later on page nine, you  
23 state at lines 19 through 20, that because the transmission  
24 service rates are fixed, that CMP bears the cost risk if ISO  
25 New England determines that additional system upgrades are

1 required. Do you see that statement?

2 MR. STINNEFORD: Yes, that's correct.

3 MR. MURPHY: Thank you. Now turning to tab 17 which  
4 is CMP's response to NextEra data or information request 002-  
5 012. In this response, the second sentence, you repeat again  
6 that the transmission service agreement rates are fixed. Do  
7 you see that statement?

8 MR. STINNEFORD: Yes.

9 MR. MURPHY: Okay. Then in the next sentence, you  
10 state that in developing the TSA fixed rates, CMP made certain  
11 assumptions regarding required system upgrades and the CCIS  
12 upgrades and their associated cost based on your studies. Do  
13 you see that statement?

14 MR. STINNEFORD: Yes.

15 MR. MURPHY: The next sentence indicates that you  
16 included a level of contingency in the TSA fixed rate to  
17 account for the potential that the final cost associated with  
18 the system and CCIS system upgrades are greater than that  
19 estimate. Do you see that statement?

20 MR. STINNEFORD: Yes, I do.

21 MR. MURPHY: Okay. Now let's go back to tab 16 and  
22 the last page on tab 16. This is, again, an excerpt from your  
23 rebuttal testimony. Now this is page 14 and I would direct you  
24 to lines 15 through 17 where it states that ISO New England is  
25 expected to complete additional -- the additional system impact

1 study by August 2019 and the Section I.3.9 approval process by  
2 October of 2019. Do you see those statements?

3 MR. STINNEFORD: Yes.

4 MR. MURPHY: Now does it follow then that CMP will  
5 not know the certainty of whether the contingency we discussed  
6 with the TSA fixed rate will be sufficient for the additional  
7 ISO system upgrades until the October -- August -- I'm sorry,  
8 the August or October timeframe? Let me restate that. It was  
9 a little choppy. Does it follow that CMP will not know the  
10 certainty of whether the contingency you set aside for the  
11 additional ISO system upgrades, or the potential for those  
12 upgrades, in your fixed transmission service agreement will be  
13 met or exceeded until you have the results of the ISO's  
14 studies in the August or October timeframe of this year?

15 MR. STINNEFORD: I would agree with that, yes.

16 MR. MURPHY: Okay. So given that, is it fair to  
17 state that the current uncertainty associated with the  
18 contingency and whether it will be met or exceeded is one of  
19 the reasons, not all the reasons but one of the reasons, that  
20 CMP has not committed to additional agreements over and above  
21 that of the Maine Western Mountains MOU and similar to the  
22 agreements that we previously discussed for TDI and Northern  
23 Pass?

24 MR. DICKINSON: No, I wouldn't agree to that.

25 MR. MURPHY: Let's go to tab 19. This is page 18

1 from the panel's rebuttal testimony. At lines one through ten  
2 -- or, I'm sorry, at lines 10 through 11, the panel states, "It  
3 is not clear who will purchase any of the hydroelectric  
4 generation that is transported under this TSA." Am I correct  
5 that the TSA referred to here is the 110-megawatt TSA between  
6 CMP and HQUS?

7 MR. STINNEFORD: Yes.

8 MR. MURPHY: Okay. Now turning to tab 20, this is an  
9 excerpt from the HQUS bid into the Connecticut Zero Carbon RFP.  
10 It's the title page. And then if you turn to the second page,  
11 you see that in the bullets this is a bid between Hydro-Quebec  
12 U.S. and Green -- Vermont Green Mountain and not NEC. Am I  
13 reading this correctly?

14 MR. DICKINSON: That's correct.

15 MR. MURPHY: Now are you familiar that HQUS did not  
16 put any bid into the Connecticut Zero Carbon RFP that included  
17 the 110 megawatts TSA and NECEC?

18 MR. DICKINSON: That's my understanding.

19 MR. MURPHY: Is it also your understanding that  
20 Hydro-Quebec didn't place any bid, whether it was the Vermont  
21 Green Mountain line or the NECEC line, into the 2018 Rhode  
22 Island RFP for long-term renewable energy contracts?

23 MR. DICKINSON: Yeah, to my understanding, I agree.

24 MR. MURPHY: Okay. Thank you. Those are all my  
25 questions.

1           MR. TANNENBAUM: I'm a little shocked. Okay, let's  
2 move to the generator interveners.

3           MR. SHOPE: Good morning. Mr. Dickinson, I  
4 understand that you gave some rebuttal testimony in this case  
5 relating to the subject of diversion. Do you recall that?

6           MR. DICKINSON: I just had a little hard time hearing  
7 you.

8           MR. SHOPE: Oh, sure. Okay. Obviously you are one  
9 of the CMP executives who gave rebuttal testimony, correct?

10          MR. DICKINSON: Yes.

11          MR. SHOPE: Okay. And part of the rebuttal that was  
12 sort of under your domain of the three of you was the issue of  
13 addressing Mr. Speyer's testimony about Hydro-Quebec's possibly  
14 diverting exports from other adjoining control areas from New  
15 England. Do you recall that?

16          MR. DICKINSON: I would describe my testimony as  
17 demonstrating that, compared to an historical baseline, the  
18 energy that would be delivered on this NECEC would be  
19 incremental to the northeast.

20          MR. SHOPE: Okay, and -- but the -- was the reason it  
21 was rebuttal testimony was that it was rebutting the arguments  
22 that had been made with regard to diversion?

23          MR. DICKINSON: Yeah, I guess I don't -- the word  
24 diversion, I mean, there was the subject about whether this was  
25 incremental or not, and that was the focus of the testimony.

1           MR. SHOPE: Okay. Now, and with regard to the way  
2 you came about the incremental analysis, just sort of round  
3 numbers, you had -- you based -- your conclusion was that by  
4 2023, Hydro-Quebec would have approximately 40 terawatt hours  
5 available for export and you compared that to a historical  
6 baseline that you had derived of 30.5 and you added the 9.54  
7 (sic) terawatt hours for NECEC, and that essentially indicated  
8 that, in your view, everything under -- that was going to be  
9 supplied across NECEC to the Massachusetts utilities would be,  
10 in your way of viewing things, incremental?

11           MR. DICKINSON: I would describe basically what I did  
12 was to look at a historical five-year baseline which worked out  
13 to be 30.5 terawatt hours and assume that they would continue  
14 to commit to delivering that 30.5 and then looked at whether an  
15 incremental 9.45 terawatt hours could then be delivered and  
16 still, over the 20-year period, result in no impacts and have  
17 that availability.

18           MR. SHOPE: Okay, and you concluded that Hydro-  
19 Quebec, in fact, did have 40 terawatt hours available for  
20 export. And so if you added the 30.5 to the roughly 9.5 for  
21 NECEC, that equaled the 40?

22           MR. DICKINSON: So, yeah, I concluded that if you  
23 take the storage that was demonstrated in capacity at the end  
24 of 2017, the existing capability they had in 2017, added the  
25 Romaine 4 unit that was in 2020 coming online, and 500

1 megawatts of additional capacity in 2025 and you assume all  
2 those pieces, that you -- by delivering 40 terawatt hours, they  
3 had that capability to still serve the energy that they had.

4 MR. SHOPE: Okay. And when you said you included the  
5 storage, that was based, in part, on your measuring the storage  
6 as of the end of the year, correct?

7 MR. DICKINSON: Correct, at the end of 2017.

8 MR. SHOPE: Yeah, okay. And have you made any  
9 adjustment for the -- well, and is it your view that it's  
10 proper to measure the available storage as of the end of the  
11 year as opposed to when it's still winter in -- up in Quebec?

12 MR. DICKINSON: Well, it's the -- I had to rely on  
13 just publicly-available data. That was the only piece of data  
14 that I had associated with storage, and my view was, by  
15 comparing year over year each year's storage at the same point  
16 in time, it gave you a general sense of the increasing storage  
17 of water that was building up in the HQ system.

18 MR. SHOPE: Okay. But so you're saying you looked  
19 for data that would show what the available storage was --  
20 well, let me put it this way. The storage that's available on  
21 December 31 is not the maximum date of storage in the Hydro-  
22 Quebec system, right?

23 MR. DICKINSON: Yeah. I didn't have any other  
24 information to demonstrate whether it was high or low.

25 MR. SHOPE: Okay. Well, just based on your general

1 knowledge of being in the industry, it's the case that with  
2 hydroelectric systems, or at least in the case of Quebec given  
3 its climate, that it has peak load in the winter, it has to  
4 supply a lot of electricity to heat people's houses, but at the  
5 same time, the snow and the ice are not melting to fill the  
6 reservoir, right?

7 MR. DICKINSON: No, that makes sense.

8 MR. SHOPE: Yeah. So during the winter months, in  
9 fact, Hydro-Quebec is drawing down on its reservoirs in order  
10 to supply electricity for heating.

11 MR. DICKINSON: I'm not a hydro expert, but that  
12 makes sense.

13 MR. SHOPE: Okay. So - and the fresh water doesn't  
14 come in to refill the reservoir until the late spring and  
15 summer, right?

16 MR. DICKINSON: That would make sense.

17 MR. SHOPE: Okay. So that would suggest, therefore,  
18 that the low point in the reservoir typically would be at the  
19 end of the winter, beginning of the summer.

20 MR. DICKINSON: Yeah, I can see how that would be the  
21 case.

22 MR. SHOPE: And so for purposes of reserves and  
23 calculating reserves and how much was available, you would want  
24 to look at that low point, right?

25 MR. STINNEFORD: I would just comment that, based on

1 my own experience with reservoir management at CMP, it's a  
2 cyclical process. You would expect reservoirs to be relatively  
3 full, as you say, going into the winter period, but then when  
4 the spring melt hits those reservoirs, they do refill and you  
5 get another high in storage following the spring melt.

6 MR. SHOPE: Sure. But for purposes of the utility  
7 maintaining its reserves, it has to figure out how much it's  
8 going to have at the low point, right?

9 MR. DICKINSON: Yeah, again, my understanding from  
10 everything I've learned on Hydro-Quebec by researching the  
11 publicly-available information, that 98 terawatt hours was  
12 their guideline for that minimum level of storage.

13 MR. SHOPE: Okay. And you just weren't able to --  
14 did you look for data at what the storage was at the -- you  
15 know, in late spring, beginning of summer?

16 MR. DICKINSON: That's correct.

17 MR. SHOPE: You looked for it, but you weren't able  
18 to find it?

19 MR. DICKINSON: Yeah, I looked for it and wasn't able  
20 to find it.

21 MR. SHOPE: Okay. But if you had found it and it  
22 showed lower numbers, that would then mean you would have to  
23 adjust the amount that was in storage, right?

24 MR. DICKINSON: Yeah, I mean, I think if I had  
25 perfect information and saw the shape overall here, that might

1 be something you'd look at for a specific purpose. Here, what  
2 I'm trying to demonstrate is what is the general amount of  
3 storage that's available in capacity. And by measuring it on  
4 the same day every year, you -- you know, looking back over the  
5 last five years, you can clearly see that the level of water in  
6 storage is increasing.

7 MR. SHOPE: Okay. But in any event, if we were to  
8 actually look at the storage on -- at the low point year to  
9 year to year, that would mean there would be a reduction in the  
10 amount that would be available.

11 MR. DICKINSON: Yeah, I mean, I don't know what that  
12 information is so I don't have it.

13 MR. SHOPE: Now, as part of your calculations, you  
14 also had to factor in the amount of electricity that Quebec was  
15 going to consume for its own native load, right?

16 MR. DICKINSON: That's correct.

17 MR. SHOPE: Okay. And so maybe if we could  
18 distribute what's already been previously marked as NRCM 002-  
19 21. So I've marked -- and actually -- so -- and so the --  
20 what's already -- what's just been distributed and is marked  
21 already as NRCM 002-021, this is the backup for your modeling  
22 of the domestic load growth up in Quebec, right?

23 MR. DICKINSON: That's correct.

24 MR. SHOPE: Okay. So if we look at the model here,  
25 it looks like you -- your input is you're assuming Hydro-Quebec

1 domestic load of 182.8 terawatts in 2018, and if we just take -  
2 - go to 2026, that grows to 189 in your modeling assumptions.

3 Is that correct?

4 MR. DICKINSON: Could you just repeat those numbers  
5 and years again?

6 MR. SHOPE: Sure. So it's -- in 2018, which is the  
7 first of the years in your backup, it's 182.8 terawatts, and  
8 that's to the right of the column roughly in the middle there  
9 called HQ Domestic Load.

10 MR. DICKINSON: Correct.

11 MR. SHOPE: Okay. And then that grows in 2026 up to  
12 289.

13 MR. DICKINSON: Correct.

14 MR. SHOPE: Okay. And you drew these figures, as I  
15 understand it, from the 2017/2026 Electric Supply Plan that was  
16 issued by Hydro-Quebec on November 1st of 2016. Is that  
17 correct?

18 MR. DICKINSON: That's correct.

19 MR. SHOPE: Okay, and that's -- so we've circulated  
20 that. And then if you look on the second page, that -- we see  
21 those very same numbers on the -- in the column Needs  
22 Identified by the Plan.

23 MR. DICKINSON: Correct.

24 MR. SHOPE: Okay. Yeah, and the document, the 2017  
25 to 2026 Electric Supply Plan we'd like to have marked as GINT

1 26. Okay, now -- and how did you find out about the 2017 to  
2 2026 Electricity Supply Plan?

3 MR. DICKINSON: I think in my conversations with  
4 Hydro-Quebec and me searching for documents that were publicly  
5 available that related to load growth, they pointed this out to  
6 me.

7 MR. SHOPE: Okay. Now did you make any inquiry as to  
8 whether or not the plan that had been issued on November 1st of  
9 2016 had been updated as of the time that you were preparing  
10 your rebuttal testimony?

11 MR. DICKINSON: I don't remember.

12 MR. SHOPE: You don't remember whether you did that  
13 or not?

14 MR. DICKINSON: I believe that my conclusion was this  
15 was a good source of information for the basis of the model.

16 MR. SHOPE: Okay. But you don't know whether you  
17 inquired as to whether it was the most current information?

18 MR. DICKINSON: It would make sense to me that that  
19 conversation happened. I just don't remember it specifically.

20 MR. SHOPE: And presumably, if you had more current  
21 information from Hydro-Quebec available, you would have wanted  
22 to use it, right?

23 MR. DICKINSON: I think I would have considered -- I  
24 considered every piece of information that I looked at in  
25 putting together this model.

1 MR. SHOPE: Well, I mean, if Hydro-Quebec had issued  
2 an update of the information and that was available, you would  
3 presumably wanted to have used it for your analysis, right?

4 MR. DICKINSON: I think if I had a different report,  
5 I would read the report, I'd understand what that report was  
6 telling me and make sure it made sense within the context of  
7 the analysis I was doing.

8 MR. SHOPE: All right. I'd like to distribute the  
9 next document, please.

10 MR. TANNENBAUM: John, was the prior document  
11 generator interveners six?

12 MR. SHOPE: Twenty-six.

13 MR. TANNENBAUM: Oh, 26.

14 MR. SHOPE: And I'll just note for the record, these  
15 are certified translations of excerpts from documents that were  
16 originally published in French. And actually, with respect to  
17 GINT 16, which was the plan on November 1, 2016, did you read  
18 it in the French, Mr. Dickinson?

19 MR. DICKINSON: I do not speak French.

20 MR. SHOPE: Did you have somebody translate it for  
21 you?

22 MR. DICKINSON: I think for the relevant pieces where  
23 I needed to understand what was being said, my memory is I did  
24 make sure that I was understanding things correctly.

25 MR. SHOPE: Is that Google translate?

1 MR. DICKINSON: I think I was also was speaking to a  
2 number of people that were bilingual.

3 MR. SHOPE: Okay. All right. So you now have before  
4 you the 2017 progress report of the 2017 to 2026 Electricity  
5 Supply Plan issued on October 31, 2017. Do you see that?

6 MR. DICKINSON: Yes.

7 MR. SHOPE: Okay. So this is a progress report on  
8 the plan that you actually had used, right?

9 MR. DICKINSON: That's what it appears to be, yes.

10 MR. SHOPE: Yeah. And it was issued I guess about  
11 nine months before your testimony -- before your rebuttal  
12 testimony.

13 MR. DICKINSON: That looks correct.

14 MR. SHOPE: Yeah, okay. Now if we look at the page  
15 which is a few pages in but it's marked on the bottom --  
16 because it's an excerpt, it says in the lower right corner page  
17 8 of 47. Do you see that?

18 MR. DICKINSON: Yes.

19 MR. SHOPE: Okay. And this also has load growth  
20 being illustrated, and if you see about three-quarters of the  
21 way down there's a -- that Needs Per Plan column that we talked  
22 about.

23 MR. DICKINSON: Yes, I see that.

24 MR. SHOPE: Okay. And this one shows that the needs  
25 per plan grow from -- in 2018 from 182.1 terawatt hours in 2018

1 to, in 2026, 191.6. Do you see that?

2 MR. DICKINSON: I see that, yes.

3 MR. SHOPE: Okay. So that's a load growth of 9.5  
4 terawatt hours in that period, correct?

5 MR. DICKINSON: Between 2018 and 2026?

6 MR. SHOPE: Yes.

7 MR. DICKINSON: Yes.

8 MR. SHOPE: Okay. But the load growth that you had  
9 assumed using the plan from the prior year, November 1 of 2016,  
10 that was projecting a load growth for the same period of only  
11 6.2 terawatt hours, correct?

12 MR. DICKINSON: That's correct, the difference  
13 between the 0.4 percent load growth that I assumed and the 0.5  
14 percent load growth that was in this analysis.

15 MR. SHOPE: So that's a -- so the difference between  
16 those two as of 2026 would be 3.2 terawatt hours of additional  
17 consumption being projected by Hydro-Quebec domestically.

18 MR. DICKINSON: Could you repeat that again?

19 MR. SHOPE: Sure. In other words, the difference in  
20 the load growth projection as of 2026 is 3.3 terawatt hours,  
21 right?

22 MR. DICKINSON: So in 2026, the delta between my  
23 analysis and what would be here would be the difference between  
24 191.6 and 189. So essentially 2.6 terawatt hours, but if you  
25 accumulate that over that period of time, I think that number

1 sounds right.

2 MR. SHOPE: So -- well, just so I'm clear -- but the  
3 updated plan had a slightly lower starting point, right?

4 MR. DICKINSON: That's right, yeah. The 2018 number  
5 was 182.1 versus 182.8.

6 MR. SHOPE: So the -- but we're talking about at  
7 least two or three -- depending on which way you slice it, it's  
8 -- we're talking about two or three or more terawatt hours of  
9 difference of load growth being projected as between the 2017  
10 plan and the 2016 plan.

11 MR. DICKINSON: That's correct.

12 MR. SHOPE: Yeah, okay. And so in relation to NECEC,  
13 that would wipe out about a third of the NECEC terawatt hours,  
14 right?

15 MR. DICKINSON: Explain that to me?

16 MR. SHOPE: So in the NECEC terawatt hours are 9.5  
17 terawatt hours per year over a number of years, right?

18 MR. DICKINSON: 9.4 terawatt hours per year, yeah.

19 MR. SHOPE: Yeah. And your analysis, based on, among  
20 other things, the domestic load growth projections in Quebec  
21 found that all 9.45 terawatt hours for NECEC would be, in your  
22 words, incremental.

23 MR. DICKINSON: Correct.

24 MR. SHOPE: Yeah, okay. But if we say that Quebec  
25 needs somewhere, you know, two and a half, three and a half

1 more terawatt hours domestically than you projected because you  
2 used the older projection, that means that there's that much  
3 less available for NECEC, right?

4 MR. DICKINSON: Well, so if we put into the model a  
5 higher level of load forecast, what would happen -- if you go  
6 to the HQ Energy Available in Storage, the graph that shows the  
7 minimum level of storage and then the maximum level of storage,  
8 what I show is that by 2020, you hit the maximum level of  
9 storage where actually spilling of energy is going to be  
10 required. We obviously know now that that spilling is  
11 occurring earlier than I had projected. So by increasing the  
12 load, you're going to reduce the amount of spilling, but I --  
13 my guess would be that if you actually solved this for that  
14 higher level, you would end up with a very similar case.

15 MR. SHOPE: I see. So basically, using the more  
16 current load growth projection actually reduces what you  
17 perceive as a spillage problem.

18 MR. DICKINSON: It would -- from the forecast I have  
19 here, which was based at my understanding of the potential of  
20 spilling at that point in time, then the amount of spilling  
21 that I'm showing here would be reduced as a result of a higher  
22 load forecast, yes.

23 MR. SHOPE: Now -- and you're assuming -- part of --  
24 or one of the drivers of your assumption of spilling is that  
25 you're using as the baseline the 30.5 terawatt hours which was

1 the average of the five prior years of exports. Is that  
2 correct?

3 MR. DICKINSON: My assumption was that prior to NECEC  
4 and the purpose for my calculation of the baseline, again,  
5 going back to the dialogue that was happening at the time and  
6 some of the questions that we'd received from environmental  
7 NGOs, was that Hydro-Quebec was not going to be able to deliver  
8 on their historical level of exports. They were going to have  
9 to reduce those historical level of exports in order to meet  
10 NECEC's demands. So we wanted to, in good faith, demonstrate  
11 that -- whether that was true or not. And by holding those  
12 historical level of exports, we were able to demonstrate that  
13 Hydro-Quebec could keep their historical level of exports  
14 without -- and add NECEC without having to withdraw energy from  
15 other markets. They had enough incremental generation coming  
16 online and they had enough water in storage.

17 MR. SHOPE: We went through, at the technical  
18 conference, a lot of the storage issues, and so I don't want to  
19 revisit all of that since that's, you know, in the record and  
20 obviously the Commissioners will be able to consider the  
21 correctness or not of your analysis at that time. But you have  
22 raised spillage, and -- well, actually, let me back up. So as  
23 I understand your previous testimony, the NECEC project is  
24 going to be served entirely by existing facilities. Is that  
25 correct?

1 MR. DICKINSON: I think that's the --

2 MR. STINNEFORD: Yeah, it's existing generation or  
3 additions to that existing generation is, I believe, how it's  
4 worded.

5 MR. SHOPE: Okay, but I'm looking at -- so my  
6 understanding is that the power -- that no new facilities are  
7 being built in order to serve the Massachusetts utilities  
8 across NECEC. Is that your understanding?

9 MR. STINNEFORD: Yeah, the PPAs with the  
10 Massachusetts EDCs include a list of eligible specific  
11 resources which can provide energy under the PPAs, and  
12 deliveries -- production and deliveries will have to be tracked  
13 through a GIS-like mechanism to verify that. But that doesn't  
14 mean that other capacity additions that are made on the HQ  
15 system won't occur or won't increase their capability to  
16 produce exports.

17 MR. SHOPE: So, well, let's just break that down.  
18 The power purchase agreements that the Massachusetts utilities  
19 have made with Hydro-Quebec specify that the power that will be  
20 provided across NECEC to the Massachusetts utilities will come  
21 from a specified group of plants, all of which are now  
22 existing. Is that true or isn't it?

23 MR. STINNEFORD: I believe that's true, but, you  
24 know, that would also include upgrades to the capacities of  
25 those existing resources as well.

1           MR. SHOPE: Okay, so Hydro-Quebec may have to spend  
2 additional funds to upgrade its facilities in order to serve  
3 the Massachusetts contracts.

4           MR. STINNEFORD: That's not what I said.

5           MR. SHOPE: Okay, so explain to me what the  
6 difference is between saying it's going to be served by an  
7 upgrade facility or it isn't going to be served by an upgraded  
8 facility.

9           MR. STINNEFORD: Hydro-Quebec has a portfolio of  
10 generating resources. They have identified in the PPAs a set  
11 of those resources that are eligible to provide deliveries  
12 under the PPAs. That includes both the existing capacity of  
13 those resources as well as any expansions to those resources'  
14 capacity in the future. In addition to that, Hydro-Quebec may  
15 add additional resources to its portfolio of generating  
16 resources that would expand its ability to produce energy and  
17 produce exports.

18           MR. SHOPE: Okay. Now, so as I understand your --  
19 well, let me ask you this, Mr. Dickinson, since you raised the  
20 point of spillage. Is it your position that Hydro-Quebec is  
21 going to be building additional upgrades?

22           MR. DICKINSON: Yeah, there's Romaine 4 that'll be  
23 added in 2020, 245 megawatts, and then a variety of efficiency  
24 improvements that increase generation capacity without  
25 increasing reservoir sizes that they've estimated at about 500

1 megawatts for 2025.

2 MR. SHOPE: So these efficiency upgrades, can you  
3 just briefly, for the record, just explain what kind --

4 MR. DICKINSON: My understanding is it's --

5 MR. SHOPE: -- practical matter what kind of stuff is  
6 that, you know, and --

7 MR. DICKINSON: My understanding is that the  
8 reservoir sizes won't change, but they're improving the turbine  
9 technologies to be able to extract more power from the water  
10 that's flowing through the dam.

11 MR. SHOPE: Okay. And are those upgrades the kind --  
12 do they have the lead times that the big dams have?

13 MR. DICKINSON: I would -- I don't have knowledge of  
14 it, but it makes sense to me that that lead time would be less  
15 because the -- one of the challenges in siting, I would assume,  
16 would be the reservoir impact. And if you're not impacting the  
17 reservoirs, I would assume the siting would be simpler.

18 MR. SHOPE: Okay. In other words, they have an  
19 existing dam, they're just going to have to shut down one of  
20 the turbines, either remove it and replace it or in some way  
21 gussy it up, if you will, and then set it spinning again?

22 MR. DICKINSON: Yeah, I mean, I don't know all the  
23 steps that go into planning, certifying, approvals,  
24 construction, and engineering, but in a general sense, yes.

25 MR. STINNEFORD: I would say, you know, typically

1 those types of upgrades are trying to coordinate during  
2 regularly-scheduled maintenance periods so there'd be no lost  
3 generation.

4 MR. SHOPE: Okay, so now as I understand it, your  
5 understanding is that right now, Hydro-Quebec is spilling water  
6 because it has insufficient export transmission capability. Is  
7 that correct?

8 MR. DICKINSON: Well, I would describe it a little  
9 bit different. They clearly have stated that, with this  
10 transmission line, they would be able to avoid, in 2018, an  
11 amount of spilled energy equivalent to the NECEC line. But the  
12 inability for them to deliver energy has -- is a combination in  
13 certain markets to transmission capability, as it is in New  
14 England, but then to the larger market, it's also their  
15 inability to make sales at a margin above zero. Otherwise,  
16 they would be -- putting water through the turbines that would  
17 result in a sale that's a loss. And so instead of doing that,  
18 they're spilling water.

19 MR. SHOPE: Okay. But in other words, at least, in  
20 part in your view, Hydro-Quebec is spilling water even though  
21 it has enough generation capacity, but it can't get the  
22 electricity that it could generate to market in the United  
23 States.

24 MR. DICKINSON: Well, it can't get it to market in a  
25 profitable sale throughout the northeast.

1           MR. SHOPE: Yeah, okay. Now if Hydro-Quebec can't  
2 get the power to market because it has insufficient export  
3 transmission capability and, as a result, it's spilling water,  
4 why would it build more generation?

5           MR. DICKINSON: Well, again, the -- your question --  
6 I just want to make sure that the question is stated correct so  
7 I'm not confusing the record. The -- my point is not that it  
8 doesn't -- there isn't transmission capability to certain  
9 markets. I think yesterday we talked about we do think there  
10 is transmission capability to certain markets, not to New  
11 England. But the challenge is that the cost for them to get  
12 that power to other markets and make an energy sale would  
13 result in a loss. So, again, just to make sure your question  
14 is right, it's not there isn't transmission capability. It's  
15 that they can't make those sales at a loss. So they're faced  
16 with a decision: do we run this water through the turbine and  
17 sell it at a loss or let the water spill over and have that.  
18 So the --

19           MR. SHOPE: Okay, let me just back up and focus on my  
20 question which is, okay, if right now their two choices are, in  
21 your hypothesis, either sell the water at what you call a loss  
22 -- sell the energy at what you call a loss through some export  
23 transmission arrangement or spill the water, and those are the  
24 choices that they have, why would they build more generation?  
25 More generation doesn't solve the problem of getting the energy

1 to market in the United States, does it?

2 MR. STINNEFORD: I think the decisions to add  
3 capacity, generating capacity, are long lead time decisions.  
4 Hydro-Quebec obviously made some of these decisions years ago,  
5 and they have been attempting for over a decade to build a new  
6 interconnection to accommodate additional exports. So the  
7 delays that have been -- have resulted in getting those  
8 additional transmission facilities built have resulted, to some  
9 extent, in the spillage.

10 MR. SHOPE: So as I understand it, your view is that  
11 Hydro-Quebec began building Romaine 3 and planned for Romaine 4  
12 in the expectation that at least some of the energy was going  
13 to be used for export to the United States.

14 MR. DICKINSON: Yeah, I think -- that's correct.

15 MR. SHOPE: Okay. And -- but -- and when they did  
16 that, they had to hope that the necessary transmission was  
17 going to be built on the U.S. side of the border.

18 MR. STINNEFORD: Yeah, I wouldn't --

19 MR. SHOPE: Could you -- do you agree with that?

20 MR. STINNEFORD: I'm not sure I would agree with  
21 Thorn's agreement earlier. It's not necessarily exports to the  
22 U.S. but exports in aggregate to cost-effective markets.  
23 Clearly they would like that to be the U.S. That is the  
24 highest-priced market to which they can export, but --

25 MR. SHOPE: Okay, so your view is --

1 MR. TANNENBAUM: John, excuse me, Commissioner  
2 Williamson has a follow up.

3 MR. SHOPE: Sure.

4 MR. WILLIAMSON: Excuse me, I'd like to ask a  
5 question of the panel. To what extent could Hydro-Quebec be  
6 adding reservoir capacity and upgrading turbines in  
7 anticipation of expiration of the arrangement with Churchill  
8 Falls? I think that's 4,600 megawatts or something at  
9 Churchill Falls that expires in 2042.

10 MR. STINNEFORD: Yeah, I'm sure that's a  
11 consideration in their long-term planning.

12 MR. WILLIAMSON: Okay, the second thing is on  
13 spillage, to what extent might the addition of renewables,  
14 particularly wind and solar in Quebec -- I noticed in one of  
15 these reports it's mentioned that they're uncertain about the  
16 contribution, but it could be -- I think I saw one terawatt  
17 hour or a little bit more. To what extent could that spillage  
18 -- because there is -- be occurring because there is policy  
19 initiatives that are encouraging the development of wind and  
20 solar instead? In other words, they have to buy it as a  
21 prevential statement.

22 MR. DICKINSON: That's right.

23 MR. WILLIAMSON: -- they don't need the water.

24 MR. DICKINSON: That's right, that's right. The --  
25 any generation added or any existing generation within the

1 control area of Quebec, whether it's some that's been added  
2 over the last few years or new generation that would be added,  
3 would only make the situation of additional spilling a larger  
4 challenge.

5 MR. WILLIAMSON: Thank you.

6 MR. SHOPE: So -- oh.

7 MR. WILLIAMSON: Go ahead.

8 MR. SHOPE: Oh, sure.

9 MR. WILLIAMSON: Thank you.

10 MR. SHOPE: Thank you. So -- but just getting back  
11 to my question -- and this is speaking to you, Mr. Dickinson,  
12 because you are the one who prepared the rebuttal testimony on  
13 this point. My recollection of your rebuttal testimony is that  
14 you testified that Hydro-Quebec had been building in  
15 anticipation of export to the northeastern United States, at  
16 least in part. Are you withdrawing that testimony?

17 MR. DICKINSON: Yeah, I do. I think Eric's  
18 refinement of my answer is a better one, which is obviously  
19 they're looking at every market, and the northeast is obviously  
20 one of the important ones that's there.

21 MR. SHOPE: Okay, so your view is that Hydro-Quebec  
22 began planning for, permitting, and building Romaine 3 and 4 in  
23 anticipation of export to northeastern United States, New  
24 Brunswick, Ontario, potential PJM even, Midwest ISO, all of  
25 these markets.

1 MR. DICKINSON: So, yeah, I mean, if you look at the  
2 historical data around their construction and look at their  
3 public statements that they've made as far back as 2003,  
4 they've added 5,000 megawatts. One of the key aspects of that  
5 they discussed in doing that was building a new clean energy  
6 for a future that valued that clean energy.

7 MR. SHOPE: Okay, so --

8 MR. DICKINSON: And then if you move forward, even  
9 since 2014 when Romaine 2, Romaine 1, Romaine 3 came -- or --  
10 came online, they've, since 2014, added 1,304 megawatts of  
11 capacity.

12 MR. SHOPE: Now in planning these dams, they have to  
13 determine how big the dams will be, right?

14 MR. DICKINSON: Yes.

15 MR. SHOPE: Okay. And the size of the reservoir is  
16 actually -- can be controversial. Is that -- up in Canada as  
17 far as --

18 MR. DICKINSON: Yeah, my understanding that the  
19 reservoir and the impacts of that are an important part of  
20 their permitting.

21 MR. SHOPE: Yeah. And so in determining the sizing  
22 of these dams to the extent Hydro-Quebec was considering export  
23 markets, it would size the dam bigger to the extent that it was  
24 hoping to export as opposed to simply sizing it for Quebec  
25 native load.

1           MR. DICKINSON: Yeah, I think their decisions on the  
2 size of the generation will be based on a forward-looking  
3 strategic view of all the different reasons why they might  
4 build hydro.

5           MR. SHOPE: Okay. Now -- and so just to be clear,  
6 it's your understanding that they sized the dams bigger in  
7 order to serve the export market as well as the native load  
8 based on the hope or the expectation or the speculation that  
9 sufficient transmission would be built to get that power to the  
10 external markets.

11           MR. DICKINSON: I think the export sales has been a  
12 consistent, important strategic initiative for them and would  
13 have been considered in the size of the generation.

14           MR. SHOPE: Yeah. And for them to -- but in light of  
15 the fact that export transmission would be needed, they had, to  
16 some degree, speculate that that export transmission would be  
17 built. Is that true?

18           MR. DICKINSON: That's right. So they -- as an  
19 example, I think Northern Pass was originally being discussed  
20 in 2008. And they had to make a decision, if we're going to  
21 serve that, what kind of generation might we want to build in  
22 order to make sure, going back even further before that. And  
23 so when you consider the -- as Eric said, the expectation that  
24 some of that transmission might get built and when it would be  
25 built, they wanted to make sure there was generation available

1 to serve it.

2 MR. SHOPE: Now, with regard to spilling, I think you  
3 said earlier that Hydro-Quebec right now is spilling the amount  
4 of energy that would be -- it's spilling the amount of energy  
5 at least that would be provided across NECEC due to the fact  
6 that it doesn't have insufficient -- it doesn't have sufficient  
7 export transmission. Did I hear that right?

8 MR. DICKINSON: Well, just to be clear, what -- I  
9 never said what their total amount of energy they're spilling.  
10 I understand that on a normal operation of a hydro portfolio,  
11 you're always going to have spilling of water for operational,  
12 local agreements, water levels. So what I'm talking -- so  
13 imagine that as a base level that exists over the last 20 years  
14 of normal spilling from an operations perspective. What I'm  
15 talking about is the spilling that began in 2017 and  
16 accelerated in 2018 related to -- not to operational issues,  
17 but specifically to their inability to get the power out of  
18 Quebec on an economic basis to make export sales.

19 MR. SHOPE: Okay, and is your information on that the  
20 letter of December 14, 2018 from Simon Bergervin at Hydro-  
21 Quebec to you?

22 MR. DICKINSON: Well, so there's that piece of  
23 information. There's conversations that we had with the  
24 Portland Press Herald, with members of Hydro-Quebec. Hydro-  
25 Quebec also met with the Boston Globe. They also -- based on

1 the CEO's comments that he's made related to his public  
2 announcements associated with the spilling of this economic --  
3 the water that can't get out of Quebec as a result of economic  
4 ability. But yes, the 10.4 terawatt hours of water that was  
5 spilled year to date is about equivalent to water that could  
6 have been run through the turbines and delivered on this  
7 project if that project was in service now.

8 MR. SHOPE: Okay, so if we -- you mentioned the 10.4  
9 terawatt hours. That's a reference to -- that's a figure  
10 that's referred in Mr. -- letter -- if we look at what's been  
11 marked as Kelly 004-001, Attachment 1, which was the letter of  
12 December 14, 2018 which was discussed yesterday as an exhibit  
13 -- do you have that?

14 MR. DICKINSON: Yes.

15 MR. SHOPE: Okay. And so if we go down under the --  
16 towards the bottom of the page, it's the paragraph that's one  
17 up from the last paragraph, and it says, "In this category to  
18 date, in 2018 Hydro-Quebec has spilled approximately 10.4  
19 terawatt hours' worth of energy," right?

20 MR. DICKINSON: That's correct.

21 MR. SHOPE: Okay. And that would include the -- as  
22 far as we know from this letter, that would include the  
23 ordinary spillage that you were describing earlier, right?

24 MR. DICKINSON: No, no, absolutely not.

25 MR. SHOPE: Well, it doesn't say that, does it?

1 MR. DICKINSON: Well, it says Hydro-Quebec spilled,  
2 due to a lack of economic transmission, 10.4 terawatt hours.

3 MR. SHOPE: No, I'm reading a sentence there and it  
4 says, "In this category to date," which is the previous  
5 category is water spilled, it says Hydro-Quebec has spilled  
6 approximately 10.4 hour -- terawatt hours' worth of energy.  
7 And then it says "Without additional transmission export  
8 capability, the quantity of spilled water in future years is  
9 expected to be comparable to the quantity of spilled water in  
10 2018 under comparable market and operational conditions,"  
11 right?

12 MR. DICKINSON: So "in this category" is referring to  
13 the category of water that was spilled due to economic  
14 transmission.

15 MR. SHOPE: But it doesn't say that, sir, does it?  
16 Where does it say that?

17 MR. STINNEFORD: That was the question that was posed  
18 and to which they are responding was how much was spilled due  
19 to a lack of economic transmission.

20 MR. SHOPE: So that's your -- but that's your  
21 inference.

22 MR. STINNEFORD: No, that was the question.

23 MR. SHOPE: No, the question -- okay, so the question  
24 is regarding the existing hydro facilities that will provide  
25 electricity for NEC (sic), have those dams spilled water

1 instead of generating electricity due to a lack of economic  
2 transmission. If so, please provide the volume and then please  
3 provide the reasons for that spillage. So the question itself  
4 presumes that there will be multiple reasons other than  
5 economic transmission deficiency, right?

6 MR. DICKINSON: Well, the way Hydro-Quebec answered  
7 the question was interpreting that the volumes that we're  
8 looking for are for economic transmission. If they were to put  
9 in what the total amount of spillage is, I would guess that was  
10 probably closer to 15 terawatt hours of energy that actually  
11 was spilled.

12 MR. STINNEFORD: In fact, they have confirmed that in  
13 conversations that we've had with them.

14 MR. SHOPE: Okay, now these -- when you -- you said  
15 you brought people from Hydro-Quebec down to meet with the  
16 Portland Press Herald?

17 MR. DICKINSON: Well, I don't know if I brought them.  
18 We went together, yes.

19 MR. SHOPE: Okay. And did you ask any of those  
20 Hydro-Quebec representatives whether they would be willing to  
21 come and testify in these proceedings so we could ask these  
22 questions?

23 MR. DICKINSON: I did not ask that question.

24 MR. SHOPE: Nothing further.

25 MR. TANNENBAUM: John, the second document -- I'm

1 sorry, the progress report document, is that --

2 MR. SHOPE: G 7, yes.

3 MR. TANNENBAUM: Okay. Next up is CLF.

4 MR. TURNER: Thanks, Mitch. At this time we don't  
5 have any questions.

6 MR. TANNENBAUM: Public Advocate?

7 MR. BRYANT: Good morning. So while -- I have some  
8 questions about an exhibit that's being distributed, but first,  
9 while Liz is doing that, can you tell us what the status is of  
10 ISO New England's system impact study for this project?

11 MR. WILLIAMSON: Can you speak into the mic?

12 MR. BRYANT: My question was what's the status of the  
13 ISO New England system impact study for this project?

14 MR. STINNEFORD: It is underway. It has begun.

15 MR. BRYANT: Is it still CMP's expectation that that  
16 project -- that that study will be completed next summer or  
17 early next fall?

18 MR. STINNEFORD: Yes, I would say this coming fall,  
19 yeah.

20 MR. BRYANT: Okay, thank you. So I distributed what  
21 has been marked as OPA Exhibit 4. It has been filed in CMS,  
22 and it's a letter from Mr. des Rosiers to Mr. Lanphear, and  
23 I've copied the first two pages. The remaining pages of this  
24 letter are not subject to my question and aren't pertinent to  
25 what I want to know. And the reason that I identified Mr.

1 Stinneford for questioning is that he's referenced in this  
2 letter beginning at the bottom of the first page and it's to  
3 the top of the second. So, Mr. Stinneford, are you familiar  
4 with this letter?

5 MR. STINNEFORD: Yes, I am.

6 MR. BRYANT: Did you review it before it was filed in  
7 CMS?

8 MR. STINNEFORD: I did.

9 MR. BRYANT: Did you help to draft it?

10 MR. STINNEFORD: I may have helped to edit it, yes.

11 MR. BRYANT: So in this letter, Mr. des Rosiers says

12 --

13 MR. DES ROSIERS: The typos are mine.

14 MR. BRYANT: The typos belong to counsel, thank you.

15 In the letter, counsel says that, quote, "CMP commits that the  
16 NECEC will be owned by an affiliated special-purpose entity  
17 rather than CMP should the Commission prefer this structure."  
18 And I would just ask you, Mr. Stinneford, if CMP commits to  
19 what its counsel has put forth in this letter.

20 MR. STINNEFORD: Yes, we do.

21 MR. BRYANT: On the second page of the letter in the  
22 large paragraph towards the top, it references that this  
23 change, this creation of the affiliate and the transfer of the  
24 project to the affiliate, will occur, quote, "before  
25 construction." Can you help me understand what CMP means by

1 "before construction"?

2 MR. STINNEFORD: Well, it was our understanding that  
3 some of the concerns that had been expressed by the Public  
4 Advocate's office and by Commission staff related to the risks  
5 that this project would impose on CMP and its ratepayers were  
6 risks related to construction. So -- whether that's cost  
7 overruns, permitting, whatever. So we felt that to address  
8 those concerns, it would make sense to actually make the  
9 transfer occur prior to the commencement of construction.

10 MR. BRYANT: How would you identify the commencement  
11 of construction? The taking down of trees, the putting up of  
12 poles, or something in between?

13 MR. STINNEFORD: It would certainly be a point in  
14 time after all permits had been received. There is some  
15 procurement activity that's already underway so you can't tie  
16 it to procurement, but certainly clearing of corridors would  
17 constitute an early stage of construction, yes.

18 MR. BRYANT: The CPCN that's been filed here includes  
19 the HVDC line that's generated most of the questioning but also  
20 includes some upgrades to existing transmission -- CMP's  
21 existing transmission system. Does CMP propose to put all of  
22 the projects that are within this CPCN into an affiliate or  
23 only the HVDC line?

24 MR. STINNEFORD: Our thought on that would be it  
25 would be most efficient to put the HVDC line and converter

1 station into the SPE, but the AC upgrades on CMP's existing  
2 system we would propose to keep within CMP. The SPE would  
3 still be financially responsible for all the costs associated  
4 with those upgrades, but ownership, I think if we started to  
5 parse ownership on a reconductored line, for example, gets very  
6 complex.

7 MR. BRYANT: Do you agree that in order to accomplish  
8 the transfer of the project to an affiliate that CMP would need  
9 to initiate a separate docket and to have the affiliate issues  
10 examined in that docket under pertinent statute and rule?

11 MR. STINNEFORD: Well, they certainly would need to  
12 be addressed in accordance with pertinent statute and rule.  
13 Whether that's done within this docket or a separate docket I  
14 think is to be determined.

15 MR. BRYANT: But either way, the affiliate would need  
16 to receive an approval from this Commission as an affiliate and  
17 potentially even as a T&D utility under Maine law. Is that  
18 correct?

19 MR. STINNEFORD: That's correct. As we've  
20 identified, there'd be a number of transfers and affiliate  
21 transactions that would need to occur, and those would require  
22 Commission approval.

23 MR. BRYANT: Thank you, that's all I have.

24 MR. TANNENBAUM: I think this might be a good time to  
25 take a break. So we'll come back in 15 minutes.

1 CONFERENCE RECESSED (January 9, 2019, 10:27 a.m.)

2 CONFERENCE RESUMED (January 9, 2019, 10:45 a.m.)

3 MR. TANNENBAUM: Okay, let's go back on the record.

4 So the generator interveners have passed out a document, an ISO  
5 New England document, titled Interim Compensation Treatment.

6 MR. SHOPE: Yes.

7 MR. TANNENBAUM: And you would like to put that into  
8 the record as an exhibit?

9 MR. SHOPE: Yes, which I guess would be GINT 28 if so  
10 accepted.

11 MR. TANNENBAUM: Okay, any objection? Or do you want  
12 to think about it and -- I realize this is --

13 MR. DES ROSIERS: If I may respond after the lunch  
14 break because we -- I haven't looked at it at all. I mean, I  
15 assume it's -- because it's an ISO report, we'll have no  
16 objection, but since I haven't looked at it, I don't want to  
17 say that blindly.

18 MR. TANNENBAUM: Okay, fair enough.

19 MR. SHOPE: And in particular, just if it helps  
20 anybody, we're going to be focusing -- or the reason that we'd  
21 be introducing it would be slide 20 where ISO indicates that  
22 imports would not be eligible for compensation under the -- a  
23 fuel security program.

24 MR. TANNENBAUM: All right. We have -- we'll go back  
25 to the questioning of the witnesses. I think we do have some

1 follow-up questions from the OPA so we'll do that now. So  
2 CMP's initial proposal in this case was to house the NECEC  
3 project within CMP?

4 MR. STINNEFORD: That's correct.

5 MR. TANNENBAUM: And in making that proposal or  
6 making that decision, can you -- and maybe this is a question  
7 for Thorn. Can you tell me who was involved at CMP in the  
8 discussions regarding this issue?

9 MR. DICKINSON: In my memory, I was involved. There  
10 was counsel, internal counsel, involved. Pierce Atwood was  
11 involved and other executives, including at the head of  
12 Avangrid Networks, I believe the president of CMP.

13 MR. TANNENBAUM: Okay, and their names? The names?

14 MR. DICKINSON: Sarah Burns, Bob Kump, Scott Mahoney,  
15 myself --

16 MR. TANNENBAUM: Eric, were you involved?

17 MR. STINNEFORD: No, not directly in those  
18 discussions. I was on temporary leave at that point in time.

19 MR. TANNENBAUM: Okay. Bernardo, were you involved  
20 in those discussions?

21 MR. ESCUDERO: I do not recall. I mean -- no, I do  
22 not recall.

23 MR. TANNENBAUM: Okay. You want to clarify  
24 (indiscernible)?

25 MS. HUNTINGTON: Well, I'm going to ask some

1 questions about documents that were provided as an attachment  
2 to an October 9th, 2018 filing by CMP. And it -- I'm not sure  
3 that the witnesses need to have the documents in front of them,  
4 but I'll look to Jared and Sarah to see whether you would like  
5 them to. It's the -- just so you know what I'm referring to,  
6 it's the redacted versions of the emails and the privileged  
7 document.

8 MR. TANNENBAUM: I think it's just -- what you want  
9 to do is confirm from those documents who were involved the  
10 discussions. So just --

11 MS. HUNTINGTON: Okay, so I'm looking at the emails  
12 and the persons that were included on the emails, and I see  
13 consistently that Mr. Dickinson and Mr. Escudero were on the  
14 emails. Does that refresh your recollection?

15 MR. ESCUDERO: Yeah, I'm sure I was -- well, I'm not  
16 sure, but I believe it's possible that I was copied in emails  
17 and probably copied on those meeting invites. What I don't  
18 recall is attending those meeting invites -- I mean those  
19 meetings, sorry.

20 MS. HUNTINGTON: Do you recall, Thorn, being involved  
21 in the emails and attending meetings on this topic?

22 MR. DICKINSON: Yeah, definitely. I mean -- and this  
23 is something we've talked about in prior testimony. We had, at  
24 this period of time, a great deal of things going on at the  
25 same time. So my memory is similar to Bernardo's. I do not

1 remember him being in those discussions so --

2 MS. HUNTINGTON: There's a Mr. Coon referenced on  
3 some of the emails. Could you tell us who he is and what his  
4 responsibility is at either CMP or Avangrid?

5 MR. STINNEFORD: He is treasurer for Avangrid  
6 Networks.

7 MS. HUNTINGTON: Okay. And there's a Cathy McCarthy,  
8 Urban Blake (sic), and Anne O'Hanlon included on several of the  
9 emails. Could you tell us who those folks are?

10 MR. STINNEFORD: Ms. McCarthy and Mr. Blake are  
11 attorneys at Bracewell, our Washington FERC counsel. Anne  
12 O'Hanlon is the administrative assistant to Mr. des Rosiers.

13 MS. HUNTINGTON: And there's Paul Dumais referenced  
14 on several of the emails and apparently involved in drafting or  
15 providing comment on the document. Who was Mr. Dumais and what  
16 was his position and his area of expertise?

17 MR. STINNEFORD: Mr. Dumais was director of  
18 regulatory with an emphasis on transmission-related issues at  
19 the time that this was drafted. He's since retired.

20 MS. HUNTINGTON: Was his -- was it transmission  
21 ratemaking issues or transmission development issues or both?

22 MR. STINNEFORD: Primarily ratemaking issues.

23 MS. HUNTINGTON: Okay. And who was -- who is Jeffrey  
24 Seabrick (phonetic)?

25 MR. STINNEFORD: Jeffrey Seabrick is an analyst who

1 works for Paul Dumais -- or did work for Paul Dumais at the  
2 time.

3 MR. TANNENBAUM: So Thorn, we -- well, we'll take a  
4 step back. Eric did answer questions during a tech conference  
5 and in a data request regarding the reasons why CMP chose to  
6 propose to put the project in CMP as opposed to an affiliate.  
7 Can you tell me what your understanding of the reasons why that  
8 decision was made?

9 MR. DICKINSON: Yeah, I think they were similar to  
10 Eric's perspective. You know, I think that in our view the  
11 project could be managed within CMP. We could manage it within  
12 a place that didn't provide adverse risks. The costs of the  
13 project would be separated out and made separate. So, you  
14 know, we didn't see -- at least my own perspective, I didn't  
15 see any benefits associated with creating a separate SPE.

16 MR. TANNENBAUM: Were there any other criteria or  
17 issues discussed other than the ones raised by Mr. Stinneford?

18 MR. DICKINSON: I mean, I think --

19 MR. DES ROSIERS: If I may, just positing that the  
20 content of the discussions that occurred in the presence of  
21 counsel, both from Pierce Atwood and from Bracewell, you can  
22 identify the topics, but at this point, don't disclose any of  
23 the discussion because, as we have previously objected and as  
24 has been found, the contents of the communication, there is a  
25 privilege here, and I'm -- but I just want to walk the fine

1 line through the discussion.

2 MR. TANNENBAUM: I'm not asking about what --  
3 questions about the document. I'm asking Thorn what CMP's  
4 reasons were for proposing that it be put into a -- or stay  
5 into CMP. And so far, the response from Eric is that you had  
6 expertise within CMP --

7 MS. HUNTINGTON: And they own the land.

8 MR. TANNENBAUM: And that you own the land. Is there  
9 anything else?

10 MR. DICKINSON: So the -- I think the other filter  
11 that I was always looking at throughout this whole bid was  
12 preventing -- presenting a project that was as competitive as  
13 it could be, and that includes not only price and cost and our  
14 ability to manage the project, to own the right-of-way, but  
15 also our ability to execute and follow through. And I think  
16 the -- another factor would be that having it at CMP was a  
17 simpler approval process. We wouldn't have to have this other  
18 step associated with creating an SPE. So I think that's the --  
19 that topic would be an additional one that would have played --

20 MR. TANNENBAUM: In the approval process here or in  
21 Massachusetts?

22 MR. DICKINSON: Well, I think just even structurally  
23 within our own organization. You know, the approval process  
24 here. I think we're always concerned, you know, that we knew  
25 that there were projects that had been ongoing for eight, nine

1 years that were well staffed and ready to pick up anything that  
2 we did in our bid. So we tried to minimize any uncertainty and  
3 risk that was in our project that somebody could pick apart.

4 MR. TANNENBAUM: Was there a consideration that  
5 Massachusetts may look at the bid more favorably if it was  
6 housed in CMP as opposed to an affiliate?

7 MR. DICKINSON: I don't think from a -- you know, if  
8 they were comparing two bids, one that had it as a separate SPE  
9 and one at CMP and those existed, I don't think they would see  
10 any difference associated with that. But I think that any  
11 additional approval, requirement, regulatory process that might  
12 have to exist, I could imagine might be looked at as another  
13 risk.

14 MR. TANNENBAUM: Were there any ratemaking  
15 considerations?

16 MR. DICKINSON: I don't believe that we saw any  
17 differences between ratemaking between the two structures.  
18 They would have -- my memory is they would have been identical.

19 MR. TANNENBAUM: Bernardo, are you aware of any of  
20 the reasons why CMP chose to house this in CMP?

21 MR. ESCUDERO: No, I am not.

22 MR. STINNEFORD: If I could, Mitch, I mean, my  
23 testimony will speak for itself, but I believe I did raise a  
24 number of other issues, other than the two that you've noted,  
25 in my testimony.

1 MR. TANNENBAUM: Okay. Now --

2 MS. HUNTINGTON: Can I follow up with a ratemaking  
3 question? Were there -- was there consideration of the  
4 treatment of the property that was acquired for this project  
5 with respect to the period of time between when the property  
6 was purchased and when it was transferred to what we're  
7 referring to as the NECEC tariff within CMP or the ratemaking  
8 treatment of the property if the project didn't succeed in the  
9 Massachusetts RFP? Was that a consideration?

10 MR. DICKINSON: You know, I don't think that was a  
11 consideration associated with the decision. You know, I think  
12 that, you know, obviously we've had a lot of discussions around  
13 this up until this point. My view, from the guidance I got  
14 from external counsel, was that those right-of-ways did -- were  
15 applicable to be recovered in rate base and -- or to return on.  
16 So at that point when I made that decision, I wouldn't -- I  
17 would have thought that if there was an SPE, that they would  
18 have been transferred or some mechanism would have been in  
19 place at that point to pull them out of rate base. So it  
20 wouldn't have played into the decision in my mind.

21 MS. HUNTINGTON: But what -- I was focusing on the  
22 period between when the property was purchased and the point in  
23 time it was transferred to an SPE. Was that -- or in the event  
24 the project didn't go forward. Was that not a consideration,  
25 that in those periods of time and under those circumstances,

1 the land would remain in CMP rate base and be recovered by --  
2 through CMP ratepayers or through the regional tariff?

3 MR. DICKINSON: My understanding based on the  
4 guidance I had from legal counsel was that we would be able to  
5 continue to earn a return on those right-of-ways up until the  
6 time that it would be -- become part of a project later on.  
7 And maybe just a little bit more on that. My understanding of  
8 the FERC guidelines on that was if there was some opportunity  
9 for a useful opportunity related to that right-of-way to the  
10 future, then that's something that has that opportunity to  
11 return, and that's what my understanding was based on.

12 MR. TANNENBAUM: So would it be correct that  
13 ratepayers will continue to pay for that land until it's  
14 transferred to a special-purpose entity?

15 MR. DICKINSON: Well, that was my understanding at  
16 that time. That's what I'm referencing in the decision. So as  
17 a -- because that was my understanding, in my mind it didn't  
18 matter. The property wouldn't matter as it related to  
19 transferring it to an SPE because you would transfer it from a  
20 period of time when you're earning a return to a period of time  
21 when it has a cash flow associated with a transmission service  
22 agreement. Again, that was my understanding at that time.

23 MR. STINNEFORD: And I would just say, prospectively,  
24 if the project does not go forward, that land will only stay in  
25 Account 105 and be considered part of rate base as long as we

1 have a definitive plan for its use. If we no longer have a  
2 plan for its use, it comes out.

3 MR. TANNENBAUM: So if you transfer it to an SPE and  
4 then the project does not go forward, what happens then?

5 MR. STINNEFORD: Well, it would sit on the books of  
6 the SPE as long as the SPE continues to exist, but it would not  
7 be in rate base.

8 MR. TANNENBAUM: It would not be in rate base.

9 MR. STINNEFORD: That's right.

10 MR. TANNENBAUM: And it would not go back into rate  
11 base unless the SPE has a specific project.

12 MR. STINNEFORD: Well, the SPE would have to have a  
13 tariff in which to recover the costs. If it has no project, it  
14 has no tariff.

15 MR. TANNENBAUM: Is there a reason to wait until  
16 construction begins to transfer the property?

17 MR. STINNEFORD: Our -- as we've expressed perhaps in  
18 confidential settlement discussions, but in terms of timing of  
19 a transfer, we think it would make sense to wait until permits  
20 are secured and then make the transfer because it's much easier  
21 to transfer permits once issued than to disrupt the middle of a  
22 permitting process by changing the entity. But we think it  
23 could be done between that window of time once permits are  
24 received but prior to the commencement of construction.

25 MR. TANNENBAUM: So there is a time period between --

1 obviously between the -- getting all the permits and starting  
2 construction, and what you're saying is you would put it into  
3 the SPE after all the permits are --

4 MR. STINNEFORD: That would be our suggestion. As  
5 quickly as possible because we obviously don't want to delay  
6 construction, but that would be the window in which we think it  
7 makes sense to do it.

8 MR. TANNENBAUM: And meanwhile, this land for future  
9 use has been in CMP's rate base and it has been paid for by  
10 ratepayers?

11 MR. STINNEFORD: Yes, it is in rate base and we are  
12 earning a return on it currently.

13 MR. TANNENBAUM: And that's throughout New England,  
14 that's a socialized --

15 MR. STINNEFORD: Land is allocated in rate base based  
16 on the so-called PTF/non-PTF allocator. So it's roughly 80/20.

17 MR. TANNENBAUM: Eighty PTF?

18 MR. STINNEFORD: Yes.

19 MR. TANNENBAUM: So if this project goes through,  
20 then the ratepayers will have paid a certain amount of money on  
21 this land that is now going into CMP's NECEC project.

22 MR. STINNEFORD: Yes.

23 MR. TANNENBAUM: Does CMP have any plans to reimburse  
24 customers for that amount of money?

25 MR. STINNEFORD: I'll take my advice from counsel

1 when we're infringing on confidential settlement discussions.  
2 That is certainly an issue that has been discussed in  
3 settlement.

4 MR. TANNENBAUM: When CMP was -- and maybe this is  
5 for Thorn. When CMP was deciding to propose that the project  
6 remain with CMP, did the issue of a goodwill payment come up?

7 MR. DICKINSON: No, it didn't, my memory.

8 MR. TANNENBAUM: Eric?

9 MR. STINNEFORD: No, not that I'm aware of.

10 MR. TANNENBAUM: Bernardo?

11 MR. ESCUDERO: I am not aware.

12 MR. TANNENBAUM: I realize this is -- well, I'll ask  
13 the question. In making your proposal today or when you filed  
14 the letter to house this in an SPE, did CMP consider a goodwill  
15 payment under Chapter 820 of the Commission rules or something  
16 like a goodwill payment in effect?

17 MR. STINNEFORD: No. This is -- as we've discussed  
18 in the context of Chapter 820, we don't view this as a non-core  
19 activity which would invoke that requirement.

20 MR. TANNENBAUM: So assuming this doesn't settle and  
21 it goes to the Commission, what we have before us is a proposal  
22 that -- what I would assume is an amended proposal to house the  
23 project in an SPE along with the conditions you indicated in  
24 that letter regarding approval of affiliate transactions,  
25 participating in money pool arrangements, credit facilities,

1 and that sort of thing. That's -- what's in this letter is  
2 essentially an amended proposal?

3 MR. STINNEFORD: It's expressing our willingness to  
4 adopt this type of structure with these types of conditions if  
5 the Commission determines that that's in the best interest of  
6 customers.

7 MR. TANNENBAUM: And if the Commission determines  
8 it's in the best interest of customers, the Commission would  
9 then rule on whether a goodwill payment is required under the  
10 rule?

11 MR. STINNEFORD: I guess that's a question for  
12 counsel, but, again, we would dispute that this is a non-core  
13 activity that would invoke a Chapter 820 requirement and the  
14 payment of a goodwill payment.

15 MS. HUNTINGTON: I think we may have addressed this  
16 at one of the technical conferences, but I just wanted to get  
17 clarity on the ratemaking treatment or the accounting treatment  
18 of the ongoing expenses such as participating in this  
19 proceeding or the Massachusetts RFP, as well as engineering and  
20 permitting types of activities. How are those being accounted  
21 for?

22 MR. STINNEFORD: All of those costs are accumulated,  
23 have been accumulated for -- since we initiated the project in  
24 accounts that are booked to a preliminary survey and  
25 engineering account under FERC accounting rules which means

1 that they are effectively deferred. They're not recovered  
2 under our tariff. And once a project is permitted and proceeds  
3 to construction, then they are transferred out of that  
4 preliminary survey account and actually into the specific FERC  
5 plant accounts and expense accounts that would then become part  
6 of the capitalized project. So that would include internal  
7 labor costs, including our time here today, engineering  
8 expenses, study expenses, consultant fees. All of that is  
9 being booked into these preliminary survey accounts.

10 MS. COOK: Eric, those accounts, you said the  
11 expenses are essentially deferred. Are they deferred with  
12 carrying costs in any form?

13 MR. STINNEFORD: No. No.

14 MS. HUNTINGTON: I wanted to go back to the -- to  
15 follow up on Mitch's questions again just to make sure we're  
16 clear on the witnesses' testimony with respect to the issues  
17 that were considered with respect to the decision to house the  
18 project in CMP. And I'll articulate what I've heard from the  
19 witnesses so far, and if you want to supplement it, please do.  
20 So the way you've -- previously Eric has noted that for -- in  
21 support of this, that the property is owned by CMP. CMP has a  
22 proven track record in developing transmission projects. The  
23 employees are within CMP and the arrangements related to  
24 sharing employees in affiliate transactions would create an  
25 administrative step. And I think Mr. Dickinson referred to the

1 advantage of -- in terms of the process of competing in the RFP  
2 as well as with respect to permitting that keeping it in CMP  
3 would simplify those processes or make you more competitive.

4 Is that --

5 MR. DICKINSON: Yeah, again, I just think it's a --  
6 any time you add an additional requirement in an RFP, you take  
7 a risk that that additional requirement is viewed by somebody  
8 as a negative aspect to your bid.

9 MS. HUNTINGTON: Okay.

10 MR. STINNEFORD: If I could, Faith, the other issue,  
11 and it's related to how you summarized my concerns, but the  
12 other concern we expressed was by having to comply with  
13 affiliate requirements between the SPE and CMP, we didn't want  
14 to see barriers that would create inefficiencies in the  
15 execution of the project or that would be detrimental to CMP's  
16 core interests by restricting information, systems, employees'  
17 time, and things like that.

18 MS. HUNTINGTON: Okay. And again, I understand that  
19 I'm not allowed to ask about the content of the privileged  
20 document, but I'm puzzled by the disconnect between your  
21 testimony that you didn't -- that the fact that there'd be  
22 perhaps more favorable ratemaking treatment with respect to  
23 things like the property that could ride on CMP ratepayers was  
24 not a factor, given the involvement of Mr. Dumais whose -- you  
25 know, whose expertise was in FERC ratemaking issues. There

1 weren't any FERC ratemaking issues that were relevant to the  
2 decision?

3 MR. DICKINSON: You know, I do remember conversations  
4 around allocation of administrative and general costs, but in  
5 the end, we determined that those allocations would be the same  
6 if it was within CMP or at an SPE. So I think that was a  
7 conversation I remember having with Paul. So that would be an  
8 example of -- you know, and Paul was also involved in the  
9 discussion with the external counsel previously, this was prior  
10 to this, around the acquisition of the land and its ability to  
11 be recovered under rates. So those are the two things I  
12 remember talking to Paul about about this project and  
13 specifically within that decision.

14 MS. HUNTINGTON: Thank you.

15 MR. TANNENBAUM: Okay, so we are now going to move on  
16 to the IECG. Drew?

17 MR. LANDRY: Thank you. I'm passing out an excerpt  
18 from the transmission services agreement which has previously  
19 been marked Exhibit -- well, it's NECEC 17 which was included  
20 in the prefiling (indiscernible) rebuttal testimony by CMP.  
21 This version is marked confidential, but I conferred with Sarah  
22 Tracy and others, and I'm confident that these portions are not  
23 confidential, so I can refer to these publicly. My name is  
24 Andrew Landry. I'm counsel for the Industrial Energy Consumer  
25 Group. I don't have that much this morning, but first question

1 I had was I just wanted to confirm -- I know this is in the  
2 record elsewhere, but you have stated on a few occasions that  
3 are in the earlier part of the record that CMP agrees to hold  
4 harmless Maine ratepayers from the cost of this project for the  
5 first 40 years of that project. Is that correct?

6 MR. STINNEFORD: Yes.

7 MR. LANDRY: And you just answered a few questions  
8 from the Public Advocate and the staff about moving the project  
9 into a special-purpose entity, and my understanding is you've  
10 expressed a willingness to do so if the Commission orders it  
11 but you haven't committed to do that yet. Is that correct?

12 MR. STINNEFORD: That's correct.

13 MR. LANDRY: And in terms of holding customers  
14 harmless, Maine ratepayers harmless, from any increases in  
15 transmission costs, if the project were to suffer -- it was  
16 within CMP and it were to suffer cost overruns or that sort of  
17 thing, would having the project in a special purpose entity  
18 serve to help insulate Maine customers from those cost  
19 overruns?

20 MR. STINNEFORD: I think Maine customers could be  
21 insulated in either structure, but --

22 MR. LANDRY: I think we previously talked in a prior  
23 technical conference and in some data requests about whether or  
24 not Hydro-Quebec failing to deliver any power would constitute  
25 an event of default under the transmission service agreement,

1 and I think we concluded that it did not. In other words, the  
2 Massachusetts EDCs are on the hook to pay CMP regardless of  
3 whether Hydro-Quebec is actually able to deliver any power.

4 MR. STINNEFORD: There are circumstances under the  
5 PPAs in which, if Hydro-Quebec fails to deliver for reasons  
6 other than a TSA default or TSA non-delivery, that the EDCs can  
7 terminate. And if that happens, then there's a termination of  
8 not only the PPAs but potentially the TSAs, and Hydro-Quebec,  
9 under those circumstances, is liable not only to the EDCs but  
10 to CMP.

11 MR. LANDRY: Thank you. Now I circulated, before my  
12 questioning, a -- what was attached I believe to your rebuttal  
13 testimony, but it's marked NECEC 17. This is a portion of the  
14 transmission services agreement between Central Maine Power and  
15 NSTAR Electric d/b/a Eversource, and I assume the provisions of  
16 this are essentially identical to those agreements that you  
17 have with Western Mass. Electric and National Grid subsidiaries.  
18 Is that --

19 MR. STINNEFORD: I believe with respect to these  
20 particular provisions, that's correct.

21 MR. LANDRY: Now, the provisions that I've copied and  
22 circulated relate to owner defaults and I believe is defined  
23 under the agreement that Central Maine Power is the owner.

24 MR. STINNEFORD: That's correct.

25 MR. LANDRY: And if we look at 14.2(c), one of the

1 events of default is the failure of the transmission line to be  
2 capable of operating at or above 1,040 megawatts as of the  
3 commercial operation date unless it's excused. A little  
4 paraphrasing, but --

5 MR. STINNEFORD: Yeah, there clearly are other  
6 provisions in that section but yes.

7 MR. LANDRY: And looking at 14.2(e), and I'll let you  
8 read it but I'll just paraphrase, essentially if there's a lack  
9 of availability, failure to meet the minimum average  
10 availability for some period of time, there being some  
11 opportunity to cure, but if that's not resolved, then that will  
12 be a default and -- is that a fair paraphrasing of 14.2(e)?

13 MR. STINNEFORD: Yeah, there are clearly many other  
14 subprovisions within that, but that's a fair summary.

15 MR. LANDRY: And looking at the remedies upon  
16 default, if you look at 14.4(a), I understand that upon a  
17 default, which would include any under 14.2, that the  
18 distribution companies may terminate the agreement?

19 MR. STINNEFORD: Yes.

20 MR. LANDRY: Would you agree that moving -- that if  
21 the EDCs were to declare an event of default because of a  
22 failure to -- of the project to be able to operate as it was  
23 agreed to, that the loss of that revenue stream would be a  
24 significant adverse impact on CMP or whoever owns the line?

25 MR. STINNEFORD: Well, there are several things that

1 could happen in that circumstance. I guess the first order is  
2 that Hydro-Quebec would have rights to step into the agreement  
3 and assume those obligations, in which case there potentially  
4 could be no impact. But certainly if all revenue was lost,  
5 and, you know, Hydro-Quebec is not interested in stepping in  
6 and no other third party is, then, yes, the potential loss of  
7 revenue would have a major impact.

8 MR. LANDRY: Would you agree that moving the  
9 ownership of the line into a special purpose entity would  
10 insulate Maine ratepayers from that risk more effectively than  
11 having it within CMP?

12 MR. STINNEFORD: It potentially could be more  
13 beneficial in that circumstance. As we've said, I mean, we're  
14 -- if the project were to stay within CMP, from a ratemaking  
15 perspective, we have committed to a full segregation of costs  
16 at FERC, and FERC has accepted those provisions. So as I said,  
17 I think there are means of insulating CMP even if it is -- the  
18 project stays there rather than an SPE. But it, perhaps, could  
19 be cleaner if it were separated.

20 MR. LANDRY: Thank you. That's all I have.

21 MR. TANNENBAUM: Okay. Dot?

22 MS. KELLY: No questions.

23 MR. TANNENBAUM: Elizabeth, you still on the line?

24 MS. ELY: I do have questions, NRCM.

25 MS. CARUSO: Yes, I am.

1 MS. ELY: If you want to go (indiscernible) or not  
2 (indiscernible).

3 MR. TANNENBAUM: Okay, we'll go with Elizabeth and  
4 then you can finish.

5 MS. CARUSO: Can you hear me -- oh. Can you hear me  
6 --

7 MR. TANNENBAUM: Yes, I'm sorry, Elizabeth. Could  
8 you speak into the phone?

9 MS. CARUSO: Sure. Is this better?

10 MR. TANNENBAUM: Much better.

11 MS. CARUSO: Okay. I have a handout which, due to  
12 the weather, I was unable to attend today, but I have someone  
13 who's helping me out by distributing a packet of information  
14 for your review. And I believe Chris kindly printed off three  
15 more pages that can be added to that. I can't tell when you  
16 are ready. My feed got stuck. Oh, I see now. Thank you so  
17 much for your help, ladies. (Indiscernible) didn't accommodate  
18 my drive down there today. Are you all set?

19 MR. TANNENBAUM: I think we are.

20 MS. CARUSO: Okay.

21 MR. TANNENBAUM: Please proceed.

22 MS. CARUSO: So I'd like to start off with tab one in  
23 the handout. Of course, you're familiar with it. It's the  
24 memorandum of understanding between CMP and the Western  
25 Mountains & Rivers Corporation. On page four, Roman numerals

1 three and four discuss the combined lump sum payment of 22  
2 million which was initially the plan. My question is is this  
3 the only mitigation payment that you have offered to do or do  
4 you have any other agreements in place?

5 MR. DICKINSON: No, there are no other agreements.

6 MS. CARUSO: So you're not having any discussions  
7 with anyone else related to additional mitigation or  
8 compensation payments?

9 MR. DICKINSON: No, there are -- there have been  
10 confidential negotiations that have happened here, and also  
11 there are bilateral conversations that happened in discussions  
12 that we're having.

13 MS. CARUSO: So do you expect to enter into any new  
14 or additional mitigation or compensation agreements?

15 MR. DICKINSON: I would say that's uncertain at this  
16 point.

17 MS. CARUSO: So you include that there -- it is  
18 possible that you could have additional compensation --

19 MR. DICKINSON: Yes.

20 MS. CARUSO: -- your project budget. Okay. Now with  
21 regards to the decision to go under the river, that has now  
22 dropped the mitigation payment to somewhere between five and  
23 ten million. Is that correct?

24 MR. DICKINSON: Yeah, for that portion of the MOU.

25 MS. CARUSO: Okay. Can you explain why you included

1 a provision to allow you to reduce the payment?

2 MR. DICKINSON: Well, it really was part of a two-  
3 year dialogue that we had with the people that we had been  
4 discussing with over that period of time. And you know, when  
5 we started the dialogue, I think there was a general feeling of  
6 just say no to the project. We spent a lot of time listening  
7 to concerns, hearing what the concerns were of the people in  
8 the community, and ultimately -- and part of it is in our --  
9 the way we laid out this project of trying to minimize the  
10 impacts by utilizing existing corridors and utilizing the new  
11 corridor through an area that's already heavily logged, we  
12 recognized that there were a few areas that we believed were of  
13 the biggest importance, and one of them was the Kennebec River  
14 crossing. So when we were approached to begin a dialogue, we  
15 did. And in the process of that dialogue, there -- and part of  
16 that was exploring what our belief was the cost of an  
17 underground piece underneath the Kennebec River, which at that  
18 time was in the 30 million range. We started having a dialogue  
19 about, well, if there was an overhead, what might a mitigation  
20 package look like there. If there is an underground, what  
21 might the mitigation package look (sic). So it was a natural  
22 dialogue over a couple-year period that eventually lead to that  
23 point.

24 MS. CARUSO: So is it safe to assume that you thought  
25 the aerial crossing of the Kennebec was the largest single

1 impact worthy of mitigation?

2 MR. DICKINSON: Yeah, I think that's fair to say.

3 MS. CARUSO: Okay. And do you -- so basically,  
4 relative to the entire project which involves a significant  
5 amount of newly-constructed corridor and numerous other  
6 environmental and other types of impacts, you felt that that,  
7 you know, thousand feet of visibility or so of the entire  
8 project was worthy of mitigation.

9 MR. DICKINSON: We believe that that -- going back to  
10 your prior question, we believe that that was the single  
11 biggest piece of impact. Obviously within the DEP process that  
12 is going on now, we've had a lot of discussions around  
13 mitigation, and we've had a lot of discussions about  
14 mitigations that will be within that process. But to answer  
15 your question, we recognize that there are impacts from a  
16 transmission line like this along the path, but we worked  
17 extremely hard to try to minimize those impacts in the design.  
18 We recognize that in the DEP process, those mitigations will  
19 happen, but we recognize that the overhead river crossing was  
20 the -- as you said, the single biggest area of concern.

21 MS. CARUSO: Right. Well, I'm not saying that. I'm  
22 just asking you if you say that.

23 MR. DICKINSON: Yeah, yeah, no, I agree with that.

24 MS. CARUSO: Okay. And so when you took the 12 to  
25 \$17 million off the table, what impacts do you think that five

1 to ten million dollar payment -- what impacts would they  
2 address?

3 MR. DICKINSON: You know, I think our perspective was  
4 there -- this area around the Kennebec River crossing. Still,  
5 there are impacts around that general area, and I think it  
6 still was meant to be a representation of that. But I think  
7 more that it was an organic process that happened in the  
8 negotiation which was I think there was some perspective  
9 originally that the agreement would only have some -- you know,  
10 only an underground approach could -- would ever be accepted.  
11 And then as I said, eventually there was an approach for an  
12 overhead. So I don't think there was any algorithm or rubric  
13 around what that five to ten meant to represent, but it was,  
14 again, the outcome of a dialogue over a two-year period.

15 MS. CARUSO: So, you know, we hear five and we hear  
16 ten. Is it five? Is it ten? Is it something in between?  
17 What is the amount?

18 MR. DICKINSON: Well, the firm obligation is five,  
19 but, you know, the -- at the time, the range -- at that  
20 specific time there were discussions around, in some of the  
21 unorganized territories, ways in which the community could  
22 benefit incrementally by doing tax incentive financing and  
23 finding a way to make sure that those incremental taxes find a  
24 way into the community. So I think some of that range was  
25 around that area, but, you know, obviously I think we -- I know

1 me particularly who was at I think every individual meeting up  
2 at The Forks and spent a lot of time up talking to people in  
3 the community, I was very proud about this agreement, to the  
4 opportunity to bring value to the community. And obviously we  
5 continue to be open minded about how we can work with the  
6 community going forward, including what that range might mean.

7 MS. CARUSO: So you mentioned that you were meeting  
8 with the public and the community and talking to the public.  
9 Wasn't that after you had already signed the MOU?

10 MR. DICKINSON: No, I mean, I made -- the -- part of  
11 our negotiations with Western Mountains & Rivers was - from our  
12 perspective, had a couple of concerns and things that were on  
13 our mind when we communicated to them. One was we wanted to  
14 have the goal of having this represent the community as a  
15 whole, and as you can -- as you probably know from the makeup  
16 of the board, we also wanted the board to be representative of  
17 a large perspective of the community. And, you know, my  
18 experience is that I was up there a lot talking with people  
19 that had questions, people that wanted to learn more about what  
20 was happening before or after, and we definitely encouraged all  
21 the people we were talking about to continue to have  
22 conversations, to let the community know that these discussions  
23 were going on, although I'm sure that there were components of  
24 the negotiation that -- as it relates to specific aspects that  
25 were held back and confidential.

1 MS. CARUSO: I will follow up with this more a little  
2 bit later, but would it be fair to say that the MOU and the  
3 mitigation payment were designed to buy the local support of  
4 the few companies and entities that were -- you were meeting  
5 with initially for two years and then afterwards broke out and  
6 discussed it with the public?

7 MR. DICKINSON: No, I think the way I would  
8 characterize it is how I characterized it before. I thought  
9 this line provided an opportunity to bring value to the  
10 community through expanded nature-based tourism, economic  
11 development, new trail systems, certain rights that people in  
12 the community would have that they wouldn't have before, access  
13 to certain recreational assets. I saw this personally as a  
14 real opportunity to have a partnership between the project and  
15 the community.

16 MS. CARUSO: So on page six, Section 7, subsection A,  
17 it requires that WMRC, at CMP's request, would provide oral and  
18 written testimony to any jurisdictional permitting agency and  
19 require WMRC to testify that the MOU represents an appropriate  
20 offset to various impacts of the project. Am I interpreting  
21 that correctly?

22 MR. DICKINSON: Yes, I think you are.

23 MS. CARUSO: Okay. Is it typical practice for an  
24 agreement like this to include a quid pro quo that requires the  
25 entity that will receive compensation funds to proactively

1 support the project at the funder's request?

2 MR. DICKINSON: So this is a representation of the  
3 common feeling that we arrived to at the signature of the MOU.  
4 The dialogue, the numerous meetings that we had, the  
5 conversations that we had all led to a point where the  
6 signature -- signatories of Western Mountains & Rivers were  
7 agreeing to this was consistent with their expectations. So I  
8 wouldn't characterize it the way that you have.

9 MS. CARUSO: Do you consider the need to provide  
10 mitigation for impacts related to things like our tourism  
11 industry or potential negative impacts to local property  
12 values?

13 MR. DICKINSON: Well, the -- you know, we're  
14 obviously talking about within this proceeding the benefits and  
15 the need for the project. In the DEP process, we'll be looking  
16 at all the pieces within that, and I think those are all  
17 considerations that happen within that context.

18 MS. CARUSO: Well, it appears that you did mitigate  
19 for the crossing of the Kennebec, but I'm wondering if you  
20 considered the need to provide mitigation for non-Kennebec  
21 River related tourism impact.

22 MR. DICKINSON: Well, you know, I -- my own  
23 expectation based on what I've learned is that there are going  
24 to be significant opportunities for expanded tourism in this  
25 region that -- you know, new access for ATVs, new access for

1 snowmobile accesses, new trail systems, along with funds that  
2 we've designated to go towards encouragement of new tourism in  
3 that area.

4 MS. CARUSO: Did you direct Daymark or the University  
5 of Maine to account for economic impacts in all four seasons?

6 MR. DICKINSON: No.

7 MS. CARUSO: Okay. Have you completed any studies as  
8 to why people come to the region of the new portion of the line  
9 to hunt, fish, raft, hike, or snowmobile?

10 MR. DICKINSON: No, as I said, I think my  
11 understandings from the -- why I believe there's opportunities  
12 for new expanded tourism in the region come from conversations  
13 that I had had with people in the region.

14 MS. CARUSO: Right, and I understand that. You -- I  
15 understand the few companies that you spoke with that are on  
16 the board at the time that you came up with this agreement.  
17 I'm just asking if you did any studies, that's all.

18 MR. STINNEFORD: There are use surveys that are done  
19 as part of the DEP permitting process but not associated with  
20 this proceeding.

21 MS. CARUSO: That was done this fall but not prior to  
22 coming up with the agreement. And that was for the Kennebec  
23 River.

24 MR. DICKINSON: Yeah, I guess the only thing I'll  
25 just say, I don't want it to be represented that the only

1 conversations I've had with people in the community are the  
2 people that were -- we were working together on the agreement  
3 over time. You know, I've talked to snowmobilers, ATVs,  
4 hunters, other people that all see some of the opportunities  
5 that come from a new corridor that exists.

6 MS. CARUSO: Right, but those conversations were had  
7 after the MOU became public, correct?

8 MR. DICKINSON: No, I think the -- you know, we have  
9 done, from the beginning of this project, an effort to reach  
10 out to people along the corridor.

11 MS. CARUSO: Okay. We'll just move on and we'll come  
12 back to that later. Did you -- in the visual rendering  
13 presentation of August 17th you presented -- or your company  
14 presented to the PUC some pictures of Parlin Pond, Enchanted,  
15 Coburn Mountain, Rock Pond, Spencer Road, the Kennebec River,  
16 and they appear to be uninhabited without visible recreational  
17 usage or unusual scenery. And then it was stated at that  
18 meeting that you were trying to minimize the impact of a  
19 national scenic byway by putting the line to the east and to  
20 the west. Did you analyze the usages of areas you chose to  
21 place the line beyond it being a working forest?

22 MR. STINNEFORD: Well, I think as we have presented  
23 in technical conferences here in this proceeding, you know, a  
24 great deal of thought was put into the choice of the new  
25 corridor location, siting it, to the maximum extent possible,

1 avoiding conserved and preserved lands. And, again, I think  
2 we've provided maps that demonstrate that as well.

3 MR. DICKINSON: And I think I would just --

4 MS. CARUSO: -- but did you analyze the usages of the  
5 areas?

6 MR. DICKINSON: You know, I'm not aware of that. You  
7 know, I was just going to also point out that, I think as we've  
8 also presented at that time, there -- these lands are owned by  
9 two private companies. And, you know, they have made it very  
10 clear publicly and particularly in a letter that was addressed  
11 to the Commission in the middle of December that they have --  
12 you know, their primary utilization (sic) of that land is as a  
13 working forest and that --

14 MS. CARUSO: Right, I said beyond it being a working  
15 forest was my question.

16 MR. DICKINSON: Well, no. So I was just making the  
17 point that they have made it very clear that they, as a  
18 secondary and on their own goodwill, have made those lands  
19 available for other utilizations. But that utilization  
20 shouldn't interfere with their ability as a private landowner  
21 to utilize those lands how they see fit.

22 MS. CARUSO: Of course. So now there were three  
23 pages that were distributed separately from my packet, and it's  
24 a state of Maine report, recreational hunter and angler market  
25 report. It's prepared by Southwick Associates, fish and

1 wildlife economics and (indiscernible) in April of 2015. And  
2 this was prepared for the Maine Office of Tourism and the  
3 Department of IF&W. On the second page, it's sort of a summary  
4 of the report, and it says key insights. (Indiscernible) from  
5 the Maine license and traveling sportsmen surveys. It says,  
6 "The state of Maine is well positioned as one of the, quote,  
7 best destinations among Maine licensed hunters and anglers  
8 across a majority of attributes that are important to them,  
9 ranging from climate, safety, pricing, and amenities. Maine's  
10 particular strengths among traveling sportsmen are its  
11 attractive natural setting and its sense of safety. The  
12 state's natural amenities, beauty, and sense of security or  
13 safety are also identified to be among the most important  
14 characteristics of a site that hunters and anglers say are  
15 important when making the decision to hunt or fish." On the  
16 third bullet it says, "Interestingly, one of the key  
17 destination factors for hunters and anglers is the remoteness  
18 of the location." So are you aware in tourism surveys that  
19 they show the primary reason people come to Maine to hunt and  
20 fish is the remoteness and scenic quality of it?

21 MR. DICKINSON: That would -- I mean, that would make  
22 sense to me.

23 MS. CARUSO: Okay. And have you studied how a  
24 transmission line would affect these people's experiences?

25 MR. DICKINSON: I mean, we have, as we've already

1 talked about, done a significant amount of work demonstrating  
2 the impacts both on the natural environment and on the visual  
3 resources that are there. And, again, you know, my  
4 conversations have led me to the belief that the -- that  
5 there's a real opportunity for an increase in tourism, not a  
6 decrease.

7 MS. CARUSO: But beyond discussing it with the people  
8 in the agreement, you haven't done a study.

9 MR. DES ROSIERS: Objection to form, assumes facts  
10 not in evidence. And compound question.

11 MS. CARUSO: I didn't hear that.

12 MR. TANNENBAUM: Okay, so maybe the question should  
13 be have you done a study of the impacts on tourism?

14 MR. DICKINSON: Yeah, there's no specific study that  
15 we did.

16 MR. TANNENBAUM: Okay.

17 MS. CARUSO: Okay. So there is no study on the  
18 effects of the variety of the lodging, the restaurants, all the  
19 associated -- the trickle-down effect of tourism --

20 MR. DICKINSON: Well, no, actually --

21 MS. CARUSO: -- this area?

22 MR. DICKINSON: Well, but that was a different  
23 question I guess from my perspective. You know, the project  
24 has substantial benefits associated with both a drop in energy  
25 prices that have an overall effect on GDP that trickle down

1 throughout the Maine economy. Also, the property taxes that  
2 the region will experience. And then specifically to what  
3 you're talking about is a significant amount of both direct and  
4 indirect jobs around the project, something we saw very clearly  
5 with MPRP that had positive effects on, you know, restaurants  
6 and hotels and other businesses indirectly related to the  
7 project.

8 MS. CARUSO: Right. But there are studies that show,  
9 and you're familiar with them in other proceedings, that people  
10 -- tourists don't come to the remote areas -- or there was one  
11 study, I'm not sure if you recall it, the John (Indiscernible)  
12 Trust of 2017 where 55 percent of the tourists would not return  
13 to an area of wilderness with a transmission line in it.

14 MR. DES ROSIERS: Objection to form, assumes facts  
15 not in evidence.

16 MS. CARUSO: -- were just --

17 MR. TANNENBAUM: Thorn, are you familiar with that  
18 study?

19 MR. DICKINSON: No, I'm not.

20 MR. TANNENBAUM: Okay.

21 MS. CARUSO: Okay. Oh, I thought it was. I thought  
22 that was -- had been part of the proceedings. I apologize.  
23 Moving on. So there were, in the visual rendering, some of the  
24 additions that you submitted, pictures of snow on the ground,  
25 but did you actually do a study in leaf-off conditions?

1 MR. STINNEFORD: I'm not sure what you mean by a  
2 study. We did, in response to requests in the DEP permitting  
3 process, provide additional renderings under winter snow cover  
4 conditions.

5 MS. CARUSO: Okay. So have you studied winter  
6 snowmobiling in the affected area of the proposed new corridor?

7 MR. STINNEFORD: We have not conducted a study,  
8 although we have had numerous conversations with the Maine  
9 Snowmobile Association and they are very supportive of the  
10 project.

11 MR. DICKINSON: You know, I mentioned some of the  
12 comments and conversations we had, and actually at the Somerset  
13 County, the head of the MSA spoke. And I thought it was very  
14 interesting and what he said he receives on a daily basis  
15 complaints from all their members on a numerous amounts of  
16 things. You know, he said you'd be amazed at how much people  
17 complain about various things about their experience, but never  
18 once in his whole period did he ever get a complaint that  
19 somebody said they saw a transmission structure.

20 MS. CARUSO: Right. But have you studied how -- have  
21 you done any studies in -- it seems like you -- there's a lot  
22 about the Kennebec River that you're familiar with, but have  
23 you studied how winter snowmobiling season affects the local  
24 businesses, the year-round residents such as outfitters,  
25 lodges, restaurants, the associated staff members, the

1 snowmobile guides, the grooming operations, and the -- as  
2 travelers come up north, they -- they're spending in the gas  
3 stations and the grocery stores, it all is affected by the  
4 snowmobiling season. And have you studied what would happen to  
5 the economy of the region during the construction period of the  
6 new corridor --

7 MR. DICKINSON: We have not --

8 MS. CARUSO: -- there, you know -- okay.

9 MR. DICKINSON: We have not studied that, but again,  
10 my belief in conversations with people in the snowmobile  
11 communities, this actually will be a net positive effect. So I  
12 would see that as a net benefit of addition, but we did not do  
13 a study for that.

14 MS. CARUSO: Do you -- have you snowmobiled in the  
15 area?

16 MR. DICKINSON: I snowmobiled when I was in -- up to  
17 when I was in fourth grade but not since.

18 MS. CARUSO: Okay. So do you know the difference  
19 between snowmobiling in trails and woods versus under power  
20 lines?

21 MR. DICKINSON: I believe I've snowmobiled in both  
22 conditions, but I wouldn't consider myself an expert.

23 MR. STINNEFORD: And I certainly have.

24 MS. CARUSO: Okay. So do you know what happens when  
25 there's not enough snow on the trails? For example, when

1 spring starts to set in and the snow pack is melting, dirt  
2 starts to be uncovered, the grooming operations cease. And you  
3 know, when grooming operations cease, so does the flow of  
4 riders, of course, both in state and out of state on the  
5 trails.

6 MR. STINNEFORD: It's a sad time of --

7 MS. CARUSO: Does that make sense?

8 MR. STINNEFORD: Yeah, it's a sad time of year for  
9 snowmobilers, I'll grant you that.

10 MS. CARUSO: Yeah. And when -- you know, if --  
11 because when grooming operations stop, people don't want to  
12 snowmobile on the trail. It's not as smooth. And when the  
13 snowmobilers don't come, and the restaurants and lodges, of  
14 course, they're losing their customer base. So did you know  
15 that the snowmobile trails under transmission lines  
16 historically are the first to be rutted and bare due to the  
17 absence of the forest canopy and the resulting exposure of the  
18 sun?

19 MR. STINNEFORD: That would not surprise me, no.

20 MS. CARUSO: Right. So you have -- so in terms of --  
21 you know, you mentioned that you're adding new -- you're  
22 excited about the possibility of new trails for snowmobiling  
23 because of the transmission line. Did you account for that --  
24 the differentiation between the snow cover in your economic  
25 studies and economic impact?

1 MR. DICKINSON: No.

2 MS. CARUSO: What about -- if this -- if this -- if  
3 you get the permits and this corridor is being constructed --  
4 the area around Johnson and Coburn Mountains, which are so  
5 heavily traveled by snowmobilers coming from Rangeley, Jackman,  
6 Greenville, The Forks area, it's a destination spot. Are you  
7 aware that the Coburn Mountain would be shut down during that  
8 proposed construction?

9 MR. DICKINSON: I mean, our perspective would be when  
10 we get to the period of staging our construction, to do it in a  
11 way that has the least impact on whatever operations are going  
12 on in the region.

13 MS. CARUSO: Okay. Well, regarding the line under  
14 the Kennebec, have you started your test soils?

15 MR. STINNEFORD: Test --

16 MS. CARUSO: -- burying the line.

17 MR. STINNEFORD: The test boring, is that what you're  
18 referring to?

19 MS. CARUSO: Yes.

20 MR. ESCUDERO: Yes, we have. We conducted that end  
21 of last year.

22 MS. CARUSO: Okay. And did you need a permit to do  
23 that?

24 MR. ESCUDERO: I believe we needed some sort of  
25 permit and we got it, but I would need to confirm that.

1 MS. CARUSO: So because of the scenic and economic  
2 impacts from this corridor, especially in the new corridor area  
3 but also in the existing corridor area with all the camp owners  
4 and the people who are impacted, did you ever consider burying  
5 the line for the entire length of the new construction?

6 MR. DICKINSON: No, we didn't.

7 MS. CARUSO: Did you ever study the potential  
8 difference on the economy of the region between burying the  
9 line and not burying the line?

10 MR. DICKINSON: No, we did not.

11 MS. CARUSO: Did you ever evaluate the scenic or  
12 visual impact of burying the line versus not burying the line?

13 MR. DICKINSON: No, we did not. And we also didn't  
14 evaluate the various impacts of a buried DC line through a new  
15 corridor.

16 MS. CARUSO: So you chose to bury the line under the  
17 Kennebec but not for the entire 53 miles?

18 MR. DICKINSON: Well, our original --

19 MS. CARUSO: Was cost the primary --

20 MR. DICKINSON: I'm sorry.

21 MS. CARUSO: Sorry?

22 MR. DICKINSON: Sorry, go ahead.

23 MS. CARUSO: Was cost the primary reason for not  
24 burying the line?

25 MR. DICKINSON: We believed it was the simplest, and

1 obviously cost was a component of that. But we also believed  
2 it was the one that made the most sense.

3 MR. TANNENBAUM: Can I just follow up quickly? Did  
4 -- I wasn't sure I heard this right. Did CMP conduct an  
5 analysis of what it would cost to bury the line in the new  
6 corridor?

7 MR. DICKINSON: No.

8 MR. TANNENBAUM: Okay, thank you.

9 MS. CARUSO: So you mentioned earlier this morning  
10 that on a project in the Hudson Valley you buried the line for  
11 aesthetic reasons. And it didn't occur to you to bury the line  
12 here through this high tourism area and with all these camp  
13 owners having their property abutting a huge DC transmission  
14 line?

15 MR. DICKINSON: So the project you're talking about,  
16 Connect New York, is a project that is -- I would put in the  
17 dream category of project development portfolio that we have.  
18 It's -- so far has not got momentum within New York state.  
19 Maybe part of that is the cost related to it, but, again, what  
20 the strategy there is we knew we were submitting into a request  
21 for information in New York a number of years ago. We knew  
22 that there were existing AC overhead projects that already were  
23 in place, and our idea was to find a corridor that already was  
24 predisturbed. So a predisturbed corridor and putting a buried  
25 line along the thruway means that you're not disrupting, you

1 know, a new area, an area that currently wasn't dug up. You're  
2 doing one that was just previously disturbed. So again, there  
3 was a specific rationale and reason. But again, that -- the  
4 RFI was not selected or moved forward with.

5 MR. TANNENBAUM: Thorn, a follow up. Excuse me.  
6 What do you mean by predisturbed?

7 MR. DICKINSON: Yeah, so the -- there -- you know, I  
8 actually don't know what was there before the New York State  
9 Thruway, but you know, let's assume that that was a green field  
10 area at least for some of the --

11 MR. TANNENBAUM: I thought -- excuse me, I thought  
12 when you were talking about predisturbed, you were talking  
13 about the corridor at issue here.

14 MR. STINNEFORD: No.

15 MR. DICKINSON: No, no. No, I was talking about the  
16 corridor along the New York Thruway.

17 MR. TANNENBAUM: Okay, sorry.

18 MR. DICKINSON: Okay.

19 MS. CARUSO: So just to summarize, you didn't  
20 evaluate the cost of burying the line, and likewise, you didn't  
21 evaluate the cost to the region for the impact of property  
22 values and viewshed and scenic issues and the health issues of  
23 herbicides and other sorts of things by having an above line --  
24 above-ground line.

25 MR. DICKINSON: Yeah, that's right. I also would say

1 that there were a lot of other things that we didn't evaluate.  
2 Another example would be what happens if, for a 20 or maybe  
3 even a 40-year period, we're not able to pull three million  
4 metric tons of carbon out of the atmosphere and what happens to  
5 the region, to the tourism, to the people that go and count on  
6 that land to visit if, you know, these kind of steps aren't  
7 made in order to abate climate change.

8 MS. CARUSO: Do you -- in comparing -- in addition to  
9 -- if you had buried the line, in addition to fewer visual  
10 impacts, would burying the line lessen the amount of herbicides  
11 required to be sprayed along the route?

12 MR. STINNEFORD: Well, the corridor would still need  
13 to be cleared of vegetation even if the line were buried. You  
14 know, it may be a less cleared area, but it would still need to  
15 be cleared and maintained.

16 MS. CARUSO: So how wide an area would you need to  
17 clear?

18 MR. STINNEFORD: We haven't evaluated that.

19 MS. CARUSO: So if TDI in Vermont is willing to bury  
20 their line and they're still delivering a significant  
21 mitigation package, how can CMP refuse the cost to bury the  
22 line?

23 MR. STINNEFORD: I guess first I would point out that  
24 TDI has not found a customer that's willing to pay the cost to  
25 do that. They have a proposed project, but no one's agreed to

1 pay for it.

2 MS. CARUSO: Is it a fair statement that burying the  
3 line would have significantly fewer visual impacts and fewer  
4 impacts on human health?

5 MR. STINNEFORD: It certainly would be less visible.  
6 I can't speak to the health impacts. I don't think anyone on  
7 this panel is an expert in this area.

8 MS. CARUSO: Okay. Moving on to tab two, please.  
9 This is an article from the November 18th edition of the  
10 Portland Press Herald. If you could turn to page five as noted  
11 in the bottom right-hand corner. It starts with the headline  
12 Merchant Versus Reliability, quote/unquote. Let me know --

13 MR. DICKINSON: Oh, I'm sorry, yeah, yeah, I'm there.

14 MS. CARUSO: Okay. Do you know Mr. Don Jessome who  
15 is described here as a chief executive of the TDI project in  
16 Vermont and who is a competitor under the 83D RFP?

17 MR. DICKINSON: No, I do not.

18 MS. CARUSO: In the first paragraph under that  
19 headline, he was reported as saying that, quote, "all three  
20 projects," end quote, which I assume related to the three  
21 Hydro-Quebec proposals, including TDI, Northern Pass, and  
22 NECEC, are so-called merchant lines. Would you agree with that  
23 characterization that NECEC is a merchant project?

24 MR. DICKINSON: Yeah, I see that that is -- oh, would  
25 I agree that NECEC is a merchant project?

1 MS. CARUSO: Uh-huh.

2 MR. DICKINSON: No, I'd never consider it a merchant  
3 project.

4 MS. CARUSO: So would -- do you agree that the three  
5 projects are not, quote, "reliability projects"?

6 MR. DICKINSON: So maybe just to clarify what I mean  
7 by merchant. You know, we have a tariff. If this project is  
8 built and constructed, it will have a tariff that's FERC  
9 regulated and will result in revenues as long as we operate the  
10 line that we're supposed to be in a tariff that dictates how  
11 those revenues are provided from a counterparty of a utility.  
12 So from a transmission perspective, I would say it was  
13 consistent with other types of transmission except for the fact  
14 that it's a fixed price and we take more risk associated with  
15 that.

16 When I think of a merchant project, I think of a  
17 project that might be built between two ISOs and takes an  
18 arbitrage risk between those. Those revenues are uncertain.  
19 They're taking the merchant power risk in order to generate  
20 their profits. But I would put it in a different category than  
21 reliability as you're saying. I just wouldn't put it in a  
22 merchant category. I would put them into competitive  
23 solicitations. Now I do think that there are reliability  
24 benefits associated with the project, but clearly the prime  
25 focus is on delivering clean energy to New England.

1 MS. CARUSO: Well, my understanding is that what are  
2 generally referred to as, quote, "Reliability projects are  
3 designated by ISO New England as pool transmission facilities  
4 or PTFs. They're built to address a reliability need" --

5 MR. STINNEFORD: Yeah, I think you --

6 MS. CARUSO: -- "as identified by ISO New England."

7 MR. STINNEFORD: I think you've conflated several  
8 things there. I mean, reliability projects are not necessarily  
9 PTF projects, but they are built to address an identified  
10 reliability need through a planning process, whether that's ISO  
11 New England's process or our local transmission planning  
12 process.

13 MR. TANNENBAUM: Let me follow up on this. Does the  
14 term merchant transmission have a meaning within the industry?  
15 Is there a --

16 MR. STINNEFORD: I'm not sure there's a standard  
17 definition, but I think most people would agree with how Thorn  
18 has represented this. If the project is fully secured through  
19 long-term contracts with a secure counterpart, that would  
20 generally not be considered merchant, just as it would with a  
21 power plant. If a power plant is built on spec to sell into  
22 spot markets without firm contracts, it would be considered a  
23 merchant plant. But if it's secured with long-term power  
24 purchase agreements, it generally wouldn't.

25 MS. CARUSO: Let me rephrase the question.

1 MR. VANNOY: Just a follow up. Sorry, one follow up  
2 here. So how would you put Order 1000 and merchant in that,  
3 just real briefly?

4 MR. DICKINSON: Yeah, at least from my perspective,  
5 if there's a competitive solicitation around an opportunity,  
6 for example, to take advantage of a congestion or a constraint  
7 that exists across an interface like central east or one that  
8 might exist between, you know, some PJM and MISO or something  
9 like that, if the -- in my mind what determines a merchant from  
10 a non-merchant is what is the buyer, where is the revenue  
11 source that's from that. I think both of those could be in  
12 competitive solicitations through an Order 1000, but if the  
13 revenues are based on some market mechanism that involves  
14 energy and/or capacity prices and the project developer is  
15 taking that risk, that's what I would put into the merchant  
16 category.

17 MR. TANNENBAUM: Thank you. Elizabeth, please  
18 proceed.

19 MS. CARUSO: Okay, thank you. So I guess do you  
20 agree that it's a for-profit project rather than a project  
21 that's designated to meet a reliability need?

22 MR. STINNEFORD: I think those are two very different  
23 things. Even reliability projects --

24 MS. CARUSO: Is it a for-profit project?

25 MR. STINNEFORD: Yes, as are most reliability

1 projects.

2 MS. CARUSO: So the article states that these three  
3 projects -- again, we're referring to TDI, Northern Pass, and  
4 NECEC -- are, quote, "being developed for clean energy goals  
5 and to make money for Hydro-Quebec and the builders," end  
6 quote. And by builders we assume he means investors. Do you  
7 agree that these three projects, including NECEC, were proposed  
8 to address public policy goals and make money for Hydro-Quebec  
9 and the transmission line investors?

10 MR. DICKINSON: Yeah, I would say that I wouldn't  
11 limit it to the three -- these three projects, though. There  
12 were 53 proposals that were bid, some by solar developers, some  
13 by wind developers, some by battery technology. All of those  
14 individual developers all had a similar motivation to provide a  
15 competitive project and earn a return.

16 MS. CARUSO: Right, but this article is about these  
17 three right now. So is it true that these three 83D projects  
18 that Mr. Jessome talks about are designed to meet a public  
19 policy goal rather than an identified reliability need and  
20 these are electric transmission upgrades?

21 MR. STINNEFORD: Yes, I mean, -- well, I can't speak  
22 for the other two projects. I can only speak for CMP's NECEC  
23 project. It was definitely proposed to -- in response to a  
24 public policy initiative launched by the Massachusetts  
25 utilities and the DOE. So, yes, I would agree with you that

1 it's a creature of public policy.

2 MS. CARUSO: Okay.

3 MR. DICKINSON: But I would just add one additional  
4 piece is that there was a major focus in the RFP on firmness.  
5 And what firmness implies is that when that energy is needed,  
6 it will be able to be delivered. And we had some testimony  
7 yesterday around the benefits of having a firm amount of energy  
8 available when you're running out of oil on that day when --  
9 within the ISO. So from that perspective, the fact that the  
10 RFP didn't include firmness as a key component, I think there  
11 is a component of the bid related to reliability.

12 MR. STINNEFORD: In fact, if you read, you know, both  
13 Section 83D as well as the RFP itself, one of the stated  
14 criteria is specifically that -- to ensure greater reliability  
15 through, you know, reduced reliance on natural gas,  
16 particularly during winter delivery periods.

17 MS. CARUSO: Okay. But as far as ISO is concerned,  
18 is it an ETU?

19 MR. STINNEFORD: It will be an elective transmission  
20 upgrade.

21 MS. CARUSO: Okay. And given that it's intended to,  
22 you know, meet this public policy goal as you discussed, is it  
23 fair to characterize NECEC as a for-profit project for Avangrid  
24 and Hydro-Quebec?

25 MR. STINNEFORD: As I said, any transmission project

1 is going to earn a profit or return for the investors in that  
2 project, including this project.

3 MS. CARUSO: Okay. Now, does it -- it looks to me  
4 like in the statute it talks about, quote, "public need" but  
5 doesn't specify whether or not it has to be a Maine need. Is  
6 that correct?

7 MR. STINNEFORD: Could you specify what statute  
8 you're referring to?

9 MS. CARUSO: The statute for the PUC that says  
10 petition for approval of proposed transmission lines, Title 35-  
11 A.

12 MR. STINNEFORD: I believe that's 3132 that you're  
13 referring to, in which case I would agree it's -- the statute,  
14 when it defines public need, is not specific in stating whether  
15 that is a Maine need.

16 MS. CARUSO: So, you know, just help me out here  
17 because I'm not a lawyer, but just hypothetically, could  
18 someone in Maine apply for an ETU project in a different state  
19 because of a public need in Maine?

20 MR. STINNEFORD: I'm not sure I followed that  
21 question.

22 MS. CARUSO: Well, is it correct to assume that you  
23 believe the Commission can grant a certificate for an out-of-  
24 state need just because the statute doesn't specifically  
25 prohibit that?

1 MR. STINNEFORD: I thought your question was to build  
2 something out of state, in which case permitting under 3132  
3 wouldn't be required.

4 MS. CARUSO: No, but could -- but it seems the  
5 understanding of the company that they believe the Commission  
6 can grant a certificate for an out-of-state need like  
7 Massachusetts just because the statute doesn't specifically  
8 prohibit -- that it doesn't specifically say it has to be a  
9 Maine public need (sic).

10 MR. STINNEFORD: That's not --

11 MR. DES ROSIERS: Objection, assumes facts not in  
12 evidence.

13 MR. STINNEFORD: Yeah, I was going to say --

14 MR. DES ROSIERS: Misstates the position of the  
15 company.

16 MR. STINNEFORD: That is not the company's argument.

17 MR. TANNENBAUM: That's also a legal question too  
18 that might not really be appropriate for the panel.

19 MS. CARUSO: Okay. Okay, thank you so much. Moving  
20 on to tab three, I have a number of questions about CMP's  
21 community outreach effort, mainly related to the pre-  
22 application phase. There is a public outreach section in your  
23 CPCN application which states that, quote, "CMP recognizes the  
24 importance of public involvement and is committed to  
25 transparent and responsive stakeholder agreements," end quote.

1 Will you accept that that's a direct quote from your  
2 application, the statement represents CMP's corporate policy?

3 MR. STINNEFORD: I'm sorry, we're not finding the  
4 language you're quoting.

5 MS. CARUSO: I don't -- hold on, I'm pulling up on my  
6 screen. Let me find that, and I'll -- let me just move on  
7 right here.

8 MR. TANNENBAUM: Elizabeth, we do need to take a  
9 lunch break pretty soon. So I don't know if this is a good  
10 time --

11 MS. CARUSO: Sure. You want to do it right now?  
12 Because I'm --

13 MR. TANNENBAUM: We could. About how much more time  
14 do you anticipate?

15 MS. CARUSO: I'm not sure. It's taking longer than I  
16 expected so I think lunch right now would be fine. I have --

17 MR. TANNENBAUM: Okay, let me ask --

18 MS. CARUSO: -- four more tabs to get through.

19 MR. TANNENBAUM: Okay, let me ask NRCM. Do you have  
20 an estimate?

21 MS. ELY: I have a very small number of questions. I  
22 would expect no more than ten minutes.

23 MR. TANNENBAUM: Okay. All right, so we'll take a  
24 lunch break for an hour now. What I'm wondering, if people  
25 could think about and maybe we'll talk after, is if we do

1 finish early, which it looks like we will, should we proceed  
2 with the Daymark panel today? Again, people might not be  
3 prepared for that and maybe that doesn't make sense, but I'm  
4 just asking a question and we could talk about it after.

5 MR. DES ROSIERS: Another suggestion I might have is  
6 I think we were down to not that many questions left for a few  
7 witnesses for Ms. Bodell that may fit better. You know, to --  
8 instead of have the portion of her examination fall on Friday  
9 because Friday will be a busier day I think than Thursday.

10 MR. TANNENBAUM: Okay, well, let's think about that  
11 over lunch.

12 MR. FLUMERFELT: Excuse me, Mitch. John Flumerfelt  
13 here. Could we wait until Mr. Shope's back in the room to have  
14 that decision?

15 MR. TANNENBAUM: I assume he'll be back after lunch.

16 MR. FLUMERFELT: No, he -- I think he just took a  
17 quick (indiscernible) break. In terms of your question.

18 MR. TANNENBAUM: Okay, but we'll break for lunch, and  
19 then we'll talk about it after lunch. Okay? Thank you.

20 CONFERENCE RECESSED (January 9, 2019, 12:13 p.m.)

21 CONFERENCE RESUMED (January 9, 2019, 1:16 p.m.)

22 MR. TANNENBAUM: Okay, Elizabeth, please --

23 MS. CARUSO: I can't see the video, but --

24 MR. TANNENBAUM: You should in a second.

25 MR. DES ROSIERS: Mitch, before -- there was one

1 question of Mr. Escudero that he was going to check on. He can  
2 give a confirmatory answer right at the beginning.

3 MR. TANNENBAUM: Okay. Bernardo?

4 MR. ESCUDERO: Yeah, thank you. You asked me if we  
5 needed a permit for doing the borings at the Kennebec River,  
6 and I confirmed with the (indiscernible) that we actually -- we  
7 didn't need it. We checked with the land use planning  
8 commission, and they confirmed that it wasn't needed. So I  
9 wanted to make that (indiscernible).

10 MR. TANNENBAUM: Great, thank you. Okay. Elizabeth,  
11 please proceed with your questions.

12 MS. CARUSO: Okay, thank you. So we are in tab  
13 three, and the statement that I made was on page 88 of your  
14 CPCN application. It states what it states in there, that CMP  
15 recognizes the importance of public involvement and is  
16 committed to transparent and responsive stakeholder engagement.  
17 So my question is do you feel that statement represents CMP's  
18 policy well enough?

19 MR. STINNEFORD: Yeah, we stand by the words in our  
20 petition. We still feel that's true.

21 MS. CARUSO: Okay. Is it fair to assume you included  
22 a discussion related to public outreach because you feel it is  
23 important -- an important issue for the Commission?

24 MR. STINNEFORD: Yes.

25 MS. CARUSO: Okay. So the application describes the

1 first phase of NECEC communication plan as, quote, "prefiling  
2 communications to ensure key stakeholders are well-informed and  
3 not surprised by CMP's proposal," end quote, and it refers to a  
4 more comprehensive discussion later on in the plan presented as  
5 Exhibit NECEC-9. Going to this exhibit, on page one, the  
6 language in the second paragraph reads, quote, "The NECEC team  
7 began its outreach campaign to introduce and advance the  
8 project on July 17th, 2017 with a series of conversations with  
9 targeted stakeholders," end quote. Are you with me?

10 MR. DICKINSON: Yes.

11 MS. CARUSO: Okay. So who were the stakeholders that  
12 were targeted during this phase?

13 MR. DICKINSON: I'm looking at our response to data  
14 request NRCM-02-01 where we list a number of the meetings that  
15 we've had throughout the process. And starting at July 17th,  
16 we have city of Lewiston, Franklin County, Greater Franklin  
17 Development Council, town of Farmington, Somerset County  
18 Commissioners, Somerset Economic Development Corp., town of  
19 Bingham, town of Moscow, town of Farmington, Jay, Androscoggin  
20 County Commissioners. And then -- well, that's into August at  
21 that point. I don't know if -- were you interested in further  
22 meetings?

23 MS. CARUSO: No, I was just curious who the  
24 stakeholders -- who you consider the stakeholders. Are these  
25 the same stakeholders that were part of the board on the MOU?

1           MR. DICKINSON: No. No, these would be the city of  
2 Lewiston -- obviously --

3           MS. CARUSO: Right, I heard -- yeah.

4           MR. DICKINSON: Yeah.

5           MS. CARUSO: Okay. Was there any public notice to  
6 residents of the affected communities about any pre-application  
7 meetings with community leaders or any other broader outreach  
8 to invite public comment?

9           MR. DICKINSON: Yeah, was there any at any time  
10 during the project, is that your question?

11          MS. CARUSO: Well, before the -- was there any public  
12 notice about any pre-application meetings, like, before you  
13 applied?

14          MR. DICKINSON: I mean, the challenge here is in a  
15 competitive process letting your competition know what your  
16 project looks like creates a challenge. You know, we had a  
17 number of different bids, both wind, solar, battery technology  
18 along with the two different Hydro-Quebec bids. We weren't  
19 sure how much of our competition even knew that we were going  
20 to be bidding or what we were going to be bidding, and  
21 providing them any details around that is dangerous. And why  
22 we end up having these meetings so close to our bid for these  
23 kind of key meetings would be one way to mitigate that.

24          MS. CARUSO: Right. Well, you mentioned earlier that  
25 you had met for two years with some stakeholders. So I'm

1 wondering why you chose not to meet with others, aside from  
2 your competitive concerns. I mean, you didn't have to put it  
3 in the newspaper.

4 MR. DICKINSON: Yeah, so the -- so, well, maybe one  
5 comment is that the original conversations with the group that  
6 then became Western Mountains & Rivers emanated out of our  
7 earlier bids in the tristate RFP. So really the bids that we  
8 had submitted into that solicitation also included wind and  
9 solar opportunities. Again, they weren't selected in that RFP  
10 process, but the dialogue really began well before that and  
11 continued through on. As far as communications to the towns  
12 along the corridor, you know, we've had multiple meetings with  
13 every town along the corridor. We've -- all of those meetings  
14 were publicly noticed and put onto the agenda for public  
15 comment.

16 MS. CARUSO: Right, but I was referring to after the  
17 bid but before the application. So on page two of the NECEC-9,  
18 do you see under phase one of the plan where it says, quote,  
19 "Prior to the filing and a broad public announcement, the  
20 project team made contact with key stakeholders to provide an  
21 overview of the project, including the route map, the economic  
22 benefits, and plans to avoid sensitive areas," end quote?

23 MR. DICKINSON: I see that, yes.

24 MS. CARUSO: Okay. And do you also see on page three  
25 under, quote, "phase one pre-filing communication," end quote,

1 the second sentence that says, quote, "Even before the project  
2 was announced publicly or drew media attention, elected  
3 officials, business and community leaders, and economic  
4 development officials were provided with the project details,  
5 answers to their questions, and an understanding of the project  
6 benefits and impact," end quote?

7 MR. DICKINSON: Yes, I see that.

8 MS. CARUSO: Do you happen to recall when the project  
9 first drew media attention?

10 MR. DICKINSON: There was Hydro-Quebec -- when we're  
11 talking about this project specifically, not necessarily the  
12 wind ones which obviously go back multiple years, but the --  
13 Hydro-Quebec first announced that they were going to have a  
14 project through wind -- through -- originally Hydro-Quebec only  
15 had announced one bidding partner which was Northern Pass. And  
16 I think it was in the spring of 2018 that they announced that  
17 they were actually going to have multiple bids, one through New  
18 Hampshire and one through Maine. At that point they didn't  
19 specifically designate us as the provider of the transmission  
20 services. And then as I noted in my earlier communication, we  
21 began to brief people on the project really kind of closer to  
22 the bid at the end of July.

23 MR. DES ROSIERS: Mr. Dickinson, in your answer you  
24 said 2018. Did you mean 2017?

25 MR. DICKINSON: Oh, yeah, thank you. 2017, thank

1 you.

2 MS. CARUSO: So in that quote that we just read, I'm  
3 assuming that when it says elected officials, you refer to  
4 including people like mayors and selectmen and town managers.  
5 Is that correct?

6 MR. DICKINSON: Yeah, so again, the city of Lewiston  
7 would be an example. The Somerset County Commissioners, you  
8 know, the other towns that I mentioned all would be examples.

9 MS. CARUSO: Okay. And did you meet with these  
10 elected officials in each town along the route before you filed  
11 your application?

12 MR. DICKINSON: The towns that are listed -- so this  
13 is a complete list, I believe, of the formal meetings that we  
14 had, and the -- you know, you can see the meetings that --  
15 between the end of 2000 -- you know, summer of 2016 through  
16 2017.

17 MS. CARUSO: I can't see it but --

18 MR. DICKINSON: Oh, okay, all right.

19 MS. CARUSO: -- that's okay.

20 MR. DICKINSON: Yeah, and I think one -- go ahead,  
21 sorry.

22 MS. CARUSO: So those are the towns that you met with  
23 before, but why didn't you meet with all the towns?

24 MR. DICKINSON: I think our -- again, I think there's  
25 a balance of a number of factors. As I already mentioned, we

1 have to be very careful to not tip our hand associated to the  
2 competitive nature of the bids that we're going into with --  
3 you know, we had an idea there were going to be a lot of bids.  
4 Fifty-three was a pretty big number, and that it -- the more  
5 information you provide even an hour before a bid is due could  
6 change somebody's strategy associated with how they bid,  
7 balanced against a desire to get out there, as we laid out in  
8 phase one, and then we identified those key areas to have those  
9 contacts before the bid was submitted.

10 MS. CARUSO: So you chose to tell some towns  
11 beforehand, but you -- it was kind of a secret to other towns  
12 beforehand?

13 MR. DICKINSON: Yeah, there was no purposeful --

14 MR. DES ROSIERS: Objection. Can you define  
15 beforehand? What time period are you referring to?

16 MS. CARUSO: Before the application.

17 MR. DES ROSIERS: And by the application, you mean  
18 the application to the PUC?

19 MS. CARUSO: Right. So would you be surprised to  
20 learn that the very first time any CMP representative discussed  
21 NECEC with our selectboard in Caratunk was around on March 21st  
22 of 2018, around five months after you filed the CPCN  
23 application?

24 MR. DICKINSON: So I'm sorry, I thought there was a  
25 follow up to your earlier question. Could you repeat that

1 again, please?

2 MS. CARUSO: Sure. Would you be surprised to learn  
3 that the very first time that any CMP representative discussed  
4 NECEC with the Caratunk selectboard was on March 21st of 2018  
5 which was about five months after you filed the application?

6 MR. DICKINSON: I see that date on the data request.  
7 That's correct, March 21st.

8 MS. CARUSO: And would you accept my representation  
9 as the chair of the Caratunk selectboard that CMP's March 21st  
10 meeting or presentation was not much more than a relatively  
11 short pitch to request that Caratunk file a letter in support  
12 of the project?

13 MR. DICKINSON: I mean, I would -- I'm pretty  
14 familiar with the presentations that were used to provide  
15 information to the communities along the border where we were  
16 going. I wouldn't represent it the way you did, but I'm pretty  
17 -- I think I'm somewhat familiar with what that presentation  
18 looked like.

19 MR. STINNEFORD: But it's my understanding that each  
20 of the towns, including Caratunk, was offered to have  
21 additional presentations with additional information and we  
22 would follow up if that was desired. And in fact, I think in  
23 almost every town, we did follow up and had multiple meetings  
24 with town officials.

25 MS. CARUSO: With regards to Caratunk, do you recall

1 that -- I believe that our first -- by the way, our first  
2 meeting was pretty short. It wasn't a special meeting. It was  
3 just part of our monthly selectmen meeting. So it wasn't like  
4 we had a separate meeting open to the public to discuss this  
5 project. I think you didn't expect to need much of our time if  
6 I recall correctly so --

7 MR. DES ROSIERS: I'm going to state an objection.

8 MS. CARUSO: -- that's why I asked that question.

9 MR. DES ROSIERS: This appears to be testimony as  
10 opposed to questioning of the witnesses.

11 MS. CARUSO: Well, I was just responding to what you  
12 said.

13 MR. TANNENBAUM: Okay, just proceed.

14 MS. CARUSO: Do you recall that while Caratunk filed  
15 a support letter after the March 21st meeting, we subsequently  
16 retracted our support once we became more educated about the  
17 project and that was submitted into the docket as a public  
18 comment at that time?

19 MR. DICKINSON: You know, subject to check, I will  
20 accept that.

21 MS. CARUSO: Okay. Would you also accept my  
22 representation that Mr. Carroll told the selectmen at the March  
23 21st meeting that Caratunk would be included as a party in  
24 local mitigation discussions that were apparently underway?

25 MR. DICKINSON: I mean, my tendency is not to accept

1 that as a precept. I would want to talk to Mr. Carroll myself  
2 and understand the nature of the dialogue that he had. I mean,  
3 again, our approach was to make ourself (sic) available, and  
4 every town along the corridor, as I understand it, every  
5 organized town we met with multiple times so -- and we're open  
6 to any request for any meeting anywhere. Something I think our  
7 whole outreach team was incredibly about is our ability to make  
8 ourselves available for people in the community to talk about  
9 the project.

10 MS. CARUSO: So as you have earlier testified that  
11 there was a lot of promise for community benefits with this  
12 mitigation package and that it was supposed to go towards the  
13 greater community and specifically it was stated from Caratunk  
14 to Parlin Pond. Is that correct?

15 MR. DICKINSON: Yeah, that's correct.

16 MS. CARUSO: Okay. And so would you accept that, as  
17 far as I'm saying it, the first time we heard about the MOU  
18 with Western Mountains & Rivers Corporation was after it had  
19 been executed, CMP did not request any input whatsoever from  
20 Caratunk, and Caratunk was not, in fact, included in the  
21 discussions leading up to the MOU?

22 MR. DICKINSON: Again, my perspective as I had  
23 answered earlier was that there was a great deal of outreach  
24 from the folks that were representing the community and Western  
25 Mountains & Rivers to the community about what was -- that

1 there were discussions going on with CMP.

2 MS. CARUSO: So were there any elected officials from  
3 Caratunk that were a part of those discussions?

4 MR. DICKINSON: There were none that were directly in  
5 the meetings that I had, but my understanding were those  
6 conversations were -- not specifically necessarily that one but  
7 other ones were happening throughout the community.

8 MS. CARUSO: I'm not following.

9 MR. DICKINSON: So what I'm saying is that we  
10 encouraged, and my understanding are the people that we were in  
11 dialogue with, on numerous occasions, spent time outreaching  
12 into the community to discuss the nature of the discussions and  
13 the project that we were doing.

14 MS. CARUSO: So would it -- would you accept my  
15 representation again that the first time any elected official  
16 from the town of Caratunk, from selectmen to planning board  
17 members to any officer, we had never heard about the MOU until  
18 after Mr. Carroll told us that we would be a part of the  
19 process and Caratunk would be represented in the mitigation?

20 MR. DES ROSIERS: Objection to form, assumes facts  
21 not in evidence.

22 MS. CARUSO: I'm just asking if you would trust me  
23 that that's my understanding of it.

24 MR. STINNEFORD: We have no way of knowing your  
25 understanding. I'm sorry.

1 MR. TANNENBAUM: Eric or Thorn, are you --

2 MS. CARUSO: So if you --

3 MR. TANNENBAUM: Excuse me. So I think the question  
4 is are you aware or can you -- do you know whether any officer  
5 or elected official from Caratunk was informed of the MOU  
6 before it was finalized?

7 MR. DICKINSON: Well, I think what -- to answer your  
8 question is I don't have a way of knowing. I don't actually --

9 MS. CARUSO: Okay. Well, I'm not under oath, but I'm  
10 not -- I'm telling the truth about it.

11 MR. TANNENBAUM: Okay.

12 MS. CARUSO: And it's my understanding that The Forks  
13 -- the West Forks, the areas of this new part of the corridor,  
14 were not knowledgeable or a part of the representation on that  
15 board before it was signed.

16 MR. DES ROSIERS: I'll object to that --

17 MR. TANNENBAUM: And then --

18 MS. CARUSO: Is that your understanding as well?

19 MR. TANNENBAUM: Was that your understanding as well?

20 MR. DICKINSON: No, I -- you know, my belief was  
21 there was a significant understanding around the community that  
22 there was a dialogue going around about an MOU encouraged by  
23 our discussions and our goals of representing a mitigation  
24 package and an agreement that would provide benefits throughout  
25 the community.

1 MS. CARUSO: So you're saying it was up to other  
2 people? The other people on the MOU had to communicate that  
3 with the members of the community?

4 MR. DICKINSON: Well, I think there's -- I can think  
5 about all the trips I've made up to The Forks and sat around  
6 picnic tables and showed maps of people (sic) and talked about  
7 the project. Throughout this process, the outreach team has  
8 proactively reached out to every town. Throughout this process  
9 we've -- every time there's been a request for a meeting, we've  
10 made ourselves available, and it's something I'm incredibly  
11 proud of, the way we have managed the project. In addition to  
12 all that, we encouraged the members of the Western Mountains to  
13 reach out to the community to make sure that this represented a  
14 broad sense of what was happening. So not alone, but in  
15 addition to.

16 MS. CARUSO: I think it was maybe early to mid-March  
17 when several entities like the generators and the Renewable  
18 Energy Association intervened in opposition. Was it around  
19 then? Do you know?

20 MR. STINNEFORD: I don't know exactly when  
21 interventions were filed.

22 MS. CARUSO: At that time, were you more concerned  
23 that the docket might become more complicated or controversial  
24 because the interveners were participating in it?

25 MR. DICKINSON: I mean, we believe in this project.

1 We think this project provides significant benefits for Maine.  
2 And we put together a team, a project, and a filing that we're  
3 proud of, and I don't think we would have done it any different  
4 if there had been just two or three interveners or 30 or 40.

5 MS. CARUSO: Okay. I just didn't know if it was a  
6 coincidence that we were -- that the town of Caratunk was  
7 approached by Mr. Carroll after that or -- I don't know when  
8 CMP started to meet with officials in other towns to get  
9 letters of support in the local area of the new corridor.

10 MR. DICKINSON: Well, again, we -- an NRCM data  
11 request that I said, we listed all the formal meetings. So if  
12 you refer to that, you can see the, you know, two long pages of  
13 very small font set of meetings that we had over that period of  
14 time.

15 MS. CARUSO: Okay. The last bullet on page three of  
16 NECEC-9, it discusses that one of the objectives of pre-filing a  
17 communications plan was to, quote, "build and maintain valuable  
18 relationships along the route." Then continuing on on the top  
19 of page four it says your additional objectives were to, quote,  
20 "identify and address issues of importance to key stakeholders  
21 and to use early input to develop the project worthy of  
22 expedited permitting." Do you see that?

23 MR. DICKINSON: Yes, I do.

24 MS. CARUSO: Okay. Since we didn't -- we weren't met  
25 with prior to the filing, and I suspect Caratunk wasn't the

1 only town, do you think it was an effective execution of phase  
2 one of your communications plan?

3 MR. DICKINSON: Yes, I do.

4 MS. CARUSO: Okay. On the bottom of page four, it  
5 says -- there's a second bullet regarding the project brochure  
6 and some one pagers, and included in the pre-application  
7 communications it says, quote, "outline the NECEC in a clear  
8 and concise fashion and include a map as well highlights of the  
9 project benefits," end quote. And then on page five, the first  
10 bullet says, quote, "project maps." Is it fair to say that the  
11 property taxes were one of the primary benefits you were  
12 promoting in order to encourage support of local -- of elected  
13 officials?

14 MR. DICKINSON: Yeah, I think it was one of a key of  
15 -- a group of them, yes.

16 MS. CARUSO: Okay. And then on the first bullet on  
17 page five, you refer to an overview map which delineates the  
18 route and location of existing transmission-related  
19 infrastructure, and you refer to the route maps that depict the  
20 corridor on a town-by-town basis and include, quote,  
21 "geographical features such as water bodies," end quote. And  
22 the final sentence says that between the overview map and the  
23 route map you provide a full understanding of the project  
24 elements. Is that correct?

25 MR. DICKINSON: Yes, I see that.

1 MS. CARUSO: Okay. So does this imply that the map  
2 showing the general route, the existing transmission  
3 infrastructure, and water bodies provide a, quote, "full  
4 understanding of the project elements of NECEC"?

5 MR. DICKINSON: Yeah, I mean, we've developed  
6 numerous maps for numerous purposes throughout the process.

7 MS. CARUSO: Okay. So would you agree that things  
8 like the height of the proposed towers, the width of the  
9 corridor, the need to manage vegetation with herbicides, the  
10 crossing of streams and wetlands, and the need to address local  
11 fire control or emergency response requirements or the  
12 temporary -- potential temporary interruption of the use of  
13 snowmobile trails and other impacts to recreational resources,  
14 would they be project elements? None of which were discussed  
15 in our first meeting -- presentation at the town office.

16 MR. DICKINSON: I mean, the purpose of that --

17 MS. CARUSO: -- they were --

18 MR. DICKINSON: I'm sorry, go ahead. The purpose for  
19 the town meetings were to provide a comprehensive understanding  
20 of the project and then be available to questions. And, you  
21 know, to the degree that people had a specific question, we  
22 would do our best to get back and provide that information,  
23 but, you know, I can't imagine the size of a presentation. It  
24 would be at least a two-day long presentation if we went to  
25 every element that you described in the project. So the idea

1 is we make ourself available, we listen to what people's  
2 concerns are, and we do our best to respond to those.

3 MS. CARUSO: Right. So do you think that the -- so  
4 you say that one of the goals of the pre-application  
5 communications was to, quote, "identify and address issues of  
6 importance to key stakeholders."

7 MR. DICKINSON: Yes.

8 MS. CARUSO: Since they weren't part of your initial  
9 target audience, is it fair to say you felt that the  
10 landowners, the guides who are using the area, and other  
11 residents of the affected communities were not the, quote, "key  
12 stakeholders"?

13 MR. DICKINSON: No, and I think, you know, again,  
14 there is a balance here before submitting a project on how much  
15 you can disclose about the project. What we did, and I think  
16 what we're very proud about in the way that we built this  
17 project, is to utilize most of it through an existing corridor  
18 and then to -- largely through two private landowners that  
19 currently log the land, utilize, site, the project at that  
20 location. Now in our conversations and in our own analysis we  
21 identified some areas that we knew would be a specific concern,  
22 Moxie Lake, Appalachian Trail crossing, the Kennebec River.  
23 And we actually modified some of our plans in order to mitigate  
24 those impacts after speaking with people in the community about  
25 those areas.

1 MS. CARUSO: So it was my understanding that one of  
2 the groups opposing this is the landowners on Moxie Lake. Did  
3 you meet with the -- those camp owners, the associations that  
4 are along Moxie Lake?

5 MR. DICKINSON: Yes, I met with them.

6 MS. CARUSO: Before this and before the mitigation?

7 MR. DICKINSON: Well, we modified -- based on our own  
8 analysis, we reduced the pole size along the -- there's a  
9 transmission corridor that parallels Moxie Lake with an  
10 existing 115 structure in it, and when we first designed the  
11 line, we imagined having 95-foot poles, monopoles, in that  
12 structure. And both of our own understanding, our own outreach  
13 team, and conversations with the public, we believe that by  
14 reducing the pole size to 75 feet, even though it costs more  
15 money for us, it meant more structures, more pieces in there,  
16 we actually brought the pole size down to the -- similar as the  
17 topography in the area so those camp owners on the opposite  
18 side of the lake would not see the structures. So that would  
19 be, you know, an example where we -- you know, both our own  
20 knowledge of our outreach team which involved people that know  
21 Maine very well, our conversations with people in the public,  
22 and then we made a modification to our project to incur  
23 additional cost in order to mitigate the visual impacts of the  
24 -- of that project.

25 MS. CARUSO: So -- but you didn't meet with the Moxie

1 landowners before you filed and, given the fact that they sent  
2 a letter of opposition, apparently the lower tower height  
3 didn't get them to support the project. Did you offer to bury  
4 the line there?

5 MR. DICKINSON: No.

6 MS. CARUSO: Would you agree that a broader public  
7 outreach -- you know, just given the fact of all the public  
8 comments that have been posted on the PUC site, that perhaps a  
9 broader public outreach at the beginning of the process might  
10 have allowed CMP to develop a better understanding about the  
11 issues of concern in the various communities before you  
12 finalized the application or --

13 MR. DICKINSON: I -- you know, my own feeling is I'm  
14 incredibly proud of the outreach team that we brought to bear  
15 here. It's not one or two people. We have a, you know, large  
16 group of people, both internal and external, some with years of  
17 experience in siting projects and understanding the issues that  
18 get raised. I can't point to a specific thing that we would do  
19 differently. I mean, obviously we believe the project is a  
20 good one. We believe that the benefits are real, and obviously  
21 we've gone through that in extensive detail in this proceeding.  
22 And unfortunately there are people that are -- for whatever  
23 purpose and reason, don't see it the same way. Obviously  
24 that's up to everyone to weigh the benefits here. But, no, I'm  
25 incredibly proud of the outreach team and the efforts that

1 they've done on this project.

2 MS. CARUSO: Well, that's good. So do you think that  
3 anything could have been done different to eliminate the huge  
4 public backlash of the six or 700 comments of opposition, the  
5 different organizations, and the towns that are rescinding  
6 their support?

7 MR. STINNEFORD: I would say, you know, that just has  
8 to be kept in perspective. I think it's still in excess of 90,  
9 95 percent of the communities along the corridor are still  
10 supporting the project. It's a small minority of communities  
11 that are not. And, yes, there are several hundred individuals  
12 who have filed comments and organizations that have filed  
13 comments against the project, but I think a project of this  
14 scale and this magnitude, you have to anticipate that there's  
15 going to be some level of opposition.

16 MS. CARUSO: Okay. Did CMP at that time think it  
17 might have been harder to show NECEC was worthy of expedited  
18 permitting if they started having more broader public outreach?  
19 You know, information sessions instead of talking to just a  
20 targeted audience?

21 MR. DICKINSON: I'm sorry, I'm not sure I --

22 MS. CARUSO: What is expedited permitting in your  
23 opinion?

24 MR. STINNEFORD: Well, I think it's been our  
25 experience that the permitting process, for example, this

1 process that we're in today, although it has the possibility as  
2 we've seen in the past, to run on for years on some projects, I  
3 think to the extent that we hold this project to its current  
4 schedule, we would consider that to be expedited relative to  
5 history.

6 MS. CARUSO: But the PUC regulations say that there's  
7 -- that is has to be decided within a certain amount of time.  
8 So you're kind of limited on that, correct?

9 MR. STINNEFORD: That time is routinely extended.

10 MR. DES ROSIERS: Someday I'm going to get one done  
11 in that time.

12 MR. TANNENBAUM: Don't count on it.

13 MS. CARUSO: Have you ever asked the affected  
14 communities whether the very rural areas like in Somerset  
15 County, like the area of the new corridor, if they logistically  
16 can provide accommodations for such a large construction work  
17 force or whether they have adequate fire and other emergency  
18 response resources to deal with, you know, potential project-  
19 related hazards during the construction and the operation?

20 MR. DICKINSON: I mean, the -- our -- I mean, we have  
21 a great deal of experience in managing these types of projects  
22 and understanding the communities that we host them within.  
23 And those are conversations that, yeah, there were times where  
24 that came up in our dialogue, and I would expect that if this  
25 project continues to go forward, there will be continued

1 coordination and efforts along that front.

2 MS. CARUSO: But just I guess (indiscernible) answer,  
3 did you ask the affected communities whether or not they could  
4 accommodate such a large construction workforce or if they had  
5 the fire and emergency response resources to handle it?

6 MR. DICKINSON: So the -- I don't think -- I think  
7 the simple answer is no. Obviously we've done an analysis over  
8 the employment that will be required in order to get the  
9 project done through the work at the University of Southern  
10 Maine.

11 MR. STINNEFORD: And I would just say that, you know,  
12 setting aside the issues you raised around public safety which  
13 I acknowledge, one community's challenge is another's  
14 opportunity. I mean, to the extent that this construction  
15 process is going to inject a great deal of economic value into  
16 the community, I think many view that as a positive.

17 MS. CARUSO: So have you spoken with, for example,  
18 you know, the towns of Jackman or West Forks, The Forks, or  
19 Caratunk to see if they had accommodations to -- that were  
20 available, aside from their tourist accommodations, like the  
21 hotels that are hosting the tourists that come to the area, do  
22 they have an excessive amount of rooms available? Do they have  
23 fire departments? Do they have emergency resources to support  
24 this kind of construction project?

25 MR. DICKINSON: Yeah, I mean, we continue to be in

1 dialogue in the specific example of Jackman. I was just up  
2 there a few weeks ago, and we were talking about some of the  
3 topics that you mentioned. So, yeah, I think it's -- in our  
4 view it's an ongoing dialogue that will continue to happen in  
5 the towns to make sure that we provide the most value we can  
6 related to the project with having the least impact.

7 MS. CARUSO: Right. But have you ever built such a  
8 large project in Somerset County? An area like this that is  
9 not really inhabited? Do you really know if there's enough  
10 resources or not to support this construction? Or the  
11 operation of the line once it's up in terms of fire and  
12 emergency? You don't really know right now, right?

13 MR. STINNEFORD: You asked about four questions  
14 there, and I haven't had a chance to answer any of them yet.  
15 Yes, we have built projects in Somerset County, not in this  
16 specific area. We have built projects in areas that are  
17 equally remote and have not encountered problems with the  
18 housing and lodging, feeding of construction crews. We've  
19 managed to work those issues out in areas that are equally  
20 remote. But in terms of, you know, have we had conversations  
21 with those municipalities around the public safety issues that  
22 you've raised, I think Thorn has addressed that question.

23 MR. DICKINSON: And then from an operations  
24 perspective, you know, we have thousands of miles of  
25 distribution and transmission system throughout Maine. So, you

1 know, the --

2 MS. CARUSO: Well, I'm only asking this because I  
3 hear the communities themselves are expressing real concerns  
4 that they don't have the housing or the fire should there be  
5 fires like what happened in California. So what the question  
6 is is have you addressed these concerns beforehand? And do you  
7 know that, should there be fires like that, that there is a  
8 response crew in the location that's there? Do you know if  
9 there's -- for example, do you know if they have five  
10 departments? Are they volunteer fire departments? Is there an  
11 ambulance service? Is there a hospital there?

12 MR. STINNEFORD: We have transmission lines that  
13 traverse areas of Maine that have -- are equally remote, if not  
14 more remote, than what we're talking about in this corridor  
15 through many unorganized townships that have no fire  
16 departments, no public safety resources. So it's not a new  
17 issue. It's an issue that we're accustomed to.

18 MS. CARUSO: Okay, moving on to tab four, you'll see  
19 that the first page from the printout -- is a printout from a  
20 January 2nd post on Facebook that invites people to visit a  
21 specific portion of the website, the NECEC website, if they  
22 want to find out more information about how the project affects  
23 their community. Do you see that?

24 MR. DICKINSON: Yeah.

25 MS. CARUSO: And then there's a link that takes

1 visitors to the map on the website where people can click on  
2 individual towns, and here you'll see a relevant page for  
3 Caratunk. At the bottom of the second page on tab four,  
4 there's an estimate of the new tax revenue Caratunk will  
5 receive in one year -- in year one. And there's an asterisk  
6 that refers to a sort of disclaimer on the following page that  
7 says it's an estimate based on the 2017 preliminary design and  
8 it is subject to change. Do you see that?

9 MR. STINNEFORD: Yes.

10 MS. CARUSO: So your tax estimates were performed by  
11 the Maine Center for Business & Economic Research. Is that  
12 correct?

13 MR. STINNEFORD: That's correct.

14 MS. CARUSO: And as I understand it, the total  
15 estimated property taxes are approximately 18 million per year.  
16 Is that correct?

17 MR. STINNEFORD: Yes.

18 MS. CARUSO: And the process that they developed --  
19 they used to develop the \$18 million estimate was the same that  
20 Daymark used as an assumption in how they modeled the overall  
21 economic impacts. Is that true?

22 MR. STINNEFORD: Well, I think both Daymark and Mr.  
23 Wallace will be testifying later in this proceeding. I'd  
24 probably ask them directly.

25 MS. CARUSO: So if the numbers -- but this was to say

1 if the numbers are lower -- if the actual number is lower than  
2 their estimate, would that mean that Daymark had over estimated  
3 the economic benefits?

4 MR. STINNEFORD: Or if the taxes end up being higher,  
5 then they have under estimated the benefits. That's correct.

6 MS. CARUSO: Okay. Are you familiar with the sworn  
7 testimony during the public witness hearings from the tax  
8 assessor for the town of Caratunk and other towns, Mr. Garnett  
9 Robinson?

10 MR. STINNEFORD: I'm generally aware of the  
11 testimony, not the details.

12 MS. CARUSO: Okay. Are you aware that, you know, in  
13 his professional experience, he works as an assessor for  
14 various other towns throughout the state and towns also in  
15 which CMP has recently built large transmission projects?

16 MR. STINNEFORD: Was there a question there?

17 MS. CARUSO: Are you aware of that?

18 MR. STINNEFORD: Yes.

19 MS. CARUSO: Okay. Do you recall that he provided  
20 specific examples of how CMP had tax declarations and lower tax  
21 payments -- under-reported tax declarations and lower tax  
22 payments than the initial revenue projections which had been  
23 provided to those towns during the development or permitting  
24 stage of the projects?

25 MR. STINNEFORD: Yeah, I think one of the things that

1 happened, particularly -- and I think most of these issues have  
2 arisen as -- around the Maine Power Reliability Program, the  
3 MPRP project. And I think what happened in those instances was  
4 the property tax projections were calculated based on the  
5 specific investment to be made in each community and assumed  
6 that that value would be assessed at its installed cost  
7 effectively, at least in the initial year. What it didn't take  
8 into account is the way that Maine Revenue Service handles the  
9 assessment of transmission line. It's unique. It's somewhat  
10 complex. But in general terms, transmission lines are assessed  
11 on an average unitized basis by voltage class. So, for  
12 example, all of CMP's 345,000 volt transmission facilities are  
13 all assessed at the same average value per mile based on an  
14 initial investment, less 30 percent depreciation, and then that  
15 value is fixed. And then all transmission across our -- across  
16 the state is assessed on that same average value basis. So the  
17 result of that was that some communities that had significant  
18 transmission line investment from MPRP did not see the full  
19 benefit of that property tax assessment in their community, but  
20 conversely, there were many other town who did not host any of  
21 the project that saw an increase in the assessed value. Now,  
22 in the case of the NECEC project, we'll see a significantly  
23 diminished impact of that methodology because NECEC's costs  
24 will have to be fully segregated from CMP's other transmission  
25 costs. The DC corridor will be separately assessed, separately

1   costed and assessed.  So the full assessed -- assessment impact  
2   of those facilities will be realized in the host communities  
3   where it's located.  It still will be subject to this fixed 70  
4   percent depreciated value calculation, but it will not be, in  
5   effect, socialized across other communities.

6           MR. TANNENBAUM:  Okay.  We have a follow up.

7           MR. WILLIAMSON:  Eric, I have a question.  To what  
8   extent does CMP face payments in lieu of taxes in towns as  
9   opposed to assessed valuations and so forth?  I mean, it is  
10  used in some states and some other jurisdictions.

11          MR. STINNEFORD:  Yeah, I'm not aware of any of the  
12  host communities for this project where that will be the case.

13          MR. WILLIAMSON:  Okay.

14          MR. TANNENBAUM:  Hold on, Elizabeth.

15          MS. CARUSO:  So --

16          MR. TANNENBAUM:  Yeah, Elizabeth, hold on.  We -- the  
17  bench has another follow up.  Go ahead, Chris.

18          MS. COOK:  So just so I understand what you just  
19  said, Eric, does that mean that the \$18 million of property tax  
20  value is actually only going to be 70 percent of that?

21          MR. STINNEFORD:  It's not as simple as that,  
22  unfortunately.  The initial property tax assessments that had  
23  been done that I believe fed into both Ryan Wallace's work and  
24  Daymark's I believe assumed that they -- that property would be  
25  depreciated over time and its assessed value would depreciate

1 over time. So that analysis probably overstated the assessed  
2 value on the front end but understated it on the back end  
3 because the 70 percent is fixed through time. You know, the  
4 decision under this Maine Revenue Service bulletin that we  
5 subscribe to was done as a simplification. You know, rather  
6 than tracking actual depreciation on every asset through time,  
7 this was a simplified way to establish a fair assessed value,  
8 but it is fixed.

9 MS. COOK: So do you have a view right now as to  
10 whether what Daymark and Mr. Wallace have done is an over  
11 estimate or an under estimate?

12 MR. STINNEFORD: I think there are many assumptions  
13 in that analysis. You know, we assumed it was based on current  
14 mil rates, for example. There was no escalation of mil rates  
15 so -- there are other assumptions that would probably push that  
16 in the other direction if we were to adjust for this  
17 methodology.

18 MS. COOK: Okay, thank you.

19 MR. TANNENBAUM: Okay. Elizabeth, please continue.

20 MS. CARUSO: Okay. So, for example, what you're  
21 saying is that 100,487 for Caratunk is really split to some  
22 extent between the town and the state?

23 MR. STINNEFORD: No. The --

24 MS. CARUSO: So -- go ahead.

25 MR. STINNEFORD: No, I mean, the process I described

1 is the process by which CMP comes up with an assessed value for  
2 transmission lines. So we will calculate the assessed value  
3 using that methodology, report that to the town of Caratunk,  
4 and that will be the basis for Caratunk's issuance of a  
5 property tax bill to CMP.

6 MS. CARUSO: So do you see the concern, though, that  
7 towns have when CMP comes in order to get a permit and they  
8 have a wonderful revenue projection for the town who issues the  
9 permit, and then when it comes down to it, the permit actually  
10 is about, you know, 17 or 30 percent or something far less than  
11 what they expected? Do you see that concern for town assessors  
12 and selectmen?

13 MR. STINNEFORD: Well, I can understand the concern,  
14 yes.

15 MS. CARUSO: And do you think that there's a  
16 difference between the tax treatment for an ETU versus a rate-  
17 based utility asset?

18 MR. STINNEFORD: They're all rate-based assets. I  
19 mean, the purpose of this assessment methodology is to  
20 recognize that fact that, unlike many other classes of  
21 property, transmission line assets, their ability to earn is  
22 based on their depreciated book value. And that's no different  
23 whether it is a rate-based reliability transmission line or an  
24 ETU that is recovering its revenue through some other tariff.

25 MS. CARUSO: So if this -- you know, as a for-profit

1 project, if the actual revenue performance is less than  
2 projected once it's in operation, wouldn't we expect the  
3 property value of the line to drop?

4 MR. STINNEFORD: We might argue for that, but that's  
5 not the methodology that Maine Revenue Service prescribes.

6 MS. CARUSO: Well, are you familiar with the wind  
7 farm in Bingham and the unorganized territory where, just  
8 within two years ago, they put it up, they -- and then within  
9 two years, their performance dropped significantly, they were  
10 filing for abatements, and want to sue the town for their tax  
11 bill?

12 MR. STINNEFORD: You're talking about the assessment  
13 of a generation project, not a transmission line who recovers  
14 its revenues through a completely different mechanism.

15 MS. CARUSO: But it's still a for-profit project, and  
16 if it doesn't -- part of the assessing -- part of the  
17 components for assessing is based on the performance of that  
18 business component of that line. And at some point, CMP could  
19 say, well, we're not really producing what we expected to be  
20 producing, we're not entering the market, it's really not --  
21 it's not as valuable as we thought it would be and we don't  
22 want to pay these taxes.

23 MR. STINNEFORD: Yeah, again, transmission lines are  
24 not assessed based on their market value. Unlike generation  
25 projects, paper mills, other types of property, transmission

1 lines are uniquely assessed based on the methodology that I've  
2 described. It's not based on value. Market value I should  
3 say.

4 MS. CARUSO: But your earnings are locked in by the  
5 PPA, is that right, and -- per the 20-year contract?

6 MR. STINNEFORD: Forty-year contracts, yes.

7 MS. CARUSO: Okay. And you recover your revenue as  
8 well?

9 MR. STINNEFORD: Yes, independent --

10 MS. CARUSO: -- that?

11 MR. STINNEFORD: Yes, we do.

12 MS. CARUSO: Okay. So are you aware that when  
13 selectboards and town assessors review the tax impact of any  
14 new development, we also consider the potential offsetting  
15 impacts to existing property values?

16 MR. STINNEFORD: I'm not aware of that, no.

17 MS. CARUSO: Okay, so we need to look at -- so you  
18 don't know if the value from MCBER included any offsetting  
19 impacts that the towns have to assess?

20 MR. DES ROSIERS: I'm going to object and indicate  
21 that Mr. Wallace of the Maine Center will be testifying on  
22 Friday and can be a much better witness to answer that  
23 question.

24 MR. TANNENBAUM: Eric, do you an opinion one way --

25 MR. STINNEFORD: I do not. I mean, I don't believe

1 he factored that into his analysis, but that's something he  
2 should confirm.

3 MR. TANNENBAUM: Okay. Sustained.

4 MS. CARUSO: At the bottom of the first page of the  
5 website printout provides information that Caratunk is in  
6 Somerset County, provides the distance that the corridor will  
7 travel through Caratunk, and provides the estimated new tax  
8 revenue. Do you see that?

9 MR. STINNEFORD: Yes.

10 MS. CARUSO: And then the next page has four bullets  
11 of additional benefits. Is that right?

12 MR. STINNEFORD: Yes.

13 MS. CARUSO: So -- and then are there any other  
14 information on the Caratunk page?

15 MR. STINNEFORD: Again, I don't know. This -- we did  
16 not produce this so I'm not sure whether there was other  
17 information that was not included or not.

18 MS. CARUSO: No, that's it. So when someone follows  
19 the link for more information about NECEC in their community,  
20 this is what they get, assuming we didn't leave any pages out,  
21 correct?

22 MR. STINNEFORD: Yeah, I'm not sure whether there is  
23 additional information for other communities or if they're all  
24 the same. I don't know.

25 MS. CARUSO: Well, at least for Caratunk. So will --

1 on this issue, will CMP -- so CMP can't make a firm commitment  
2 that they'll actually pay the estimated amount that is being  
3 published as part of the company's efforts to solicit local  
4 support. You're saying you can't make a firm commitment that  
5 you will definitely be paying this?

6 MR. STINNEFORD: No.

7 MR. DES ROSIERS: In paying the "this," is "this"  
8 referring to the tax amount?

9 MS. CARUSO: Yes.

10 MR. STINNEFORD: As the footnote says, we will not  
11 know the actual assessed value until we know the actual cost of  
12 the project. This is all based on estimated project cost.

13 MS. CARUSO: Uh-huh. Okay, the next document, tab  
14 four, is a filing that was made at FERC on August 20th, 2018.  
15 I assume you're familiar with this.

16 MR. STINNEFORD: Yes.

17 MS. CARUSO: The pages are from Exhibit 3-1, Schedule  
18 1. I understand it -- the way I understand it, this is  
19 analysis CMP provided to FERC as part of a proceeding where  
20 FERC would approve the rate of return under your transmission  
21 contracts for NECEC.

22 MR. STINNEFORD: No.

23 MS. CARUSO: Is that right?

24 MR. STINNEFORD: No, that's not correct.

25 MS. CARUSO: It's not?

1 MR. STINNEFORD: We were filing approval of the  
2 transmission service agreements, not specifically a rate of  
3 return but the terms and conditions of the entire agreements.

4 MS. CARUSO: Okay. On line 18 of each page you  
5 provide a number for property tax expense under the category  
6 Revenue Requirements. And in year one of the project it says  
7 you expect to incur 20.533 million in property tax expense.  
8 And it looks like that stays relatively consistent over the  
9 first 20 years of the project. Is that true?

10 MR. STINNEFORD: That is what this indicates, yes.

11 MS. CARUSO: Okay.

12 MR. STINNEFORD: I believe it is --

13 MS. CARUSO: Was this estimate also provided by  
14 MCBER?

15 MR. STINNEFORD: No, it was not. This is based on  
16 assumptions that were in a different financial model, and,  
17 again, it's -- it was based on an estimate of the initial cost  
18 and assessed value. I don't even know if the assumed mil rates  
19 in that analysis were -- equivalent to the analysis that was  
20 used by Mr. Wallace.

21 MS. CARUSO: Okay, so I guess you can understand my  
22 confusion because on one hand we -- there's 18 million that has  
23 been touted as one of the major economic benefits of the  
24 project, and then we have our professional tax assessor who  
25 testified under oath that CMP often pays much less than the

1 initial estimate and then we have this estimate to FERC which  
2 is more than 20 million. So it's hard to know which it is, you  
3 understand?

4 MR. STINNEFORD: I think that just points to the  
5 challenges of estimating future property taxes.

6 MS. CARUSO: Okay.

7 MR. STINNEFORD: I'm assuming that the communities  
8 would not be upset if we -- turned out our estimate of 20  
9 million was correct.

10 MS. CARUSO: Just a minute, please. Okay. Well,  
11 thank you for your interpretation. This is something that, you  
12 know, the public needs to know because it's the outreach that  
13 we are receiving that we want to be able to understand it and  
14 be confident in it. Okay, moving on to tab five, this is an  
15 article published on December 12th in the Times Record which  
16 reports on a public information meeting that was held in the  
17 town of Durham. Do you see that?

18 MR. DICKINSON: Yes.

19 MR. STINNEFORD: Yes.

20 MS. CARUSO: Okay. So I just want to point out that  
21 this was a meeting organized and hosted by NRCM, and I was in  
22 attendance and also spokesperson for Avangrid, John Carroll,  
23 attended. On the seventh paragraph on the second page of the  
24 article toward the bottom, I'll read a quote. It says, that  
25 CMP representative John Carroll called the opposition, quote,

1 "bizarre and shameful, lamenting that instead of seeing Hydro-  
2 Quebec as a leader in the clean energy movement," he said we --  
3 quote, "we are immediately suspicious," end quote. And I  
4 assume by "we" he means project opponents. Do you see that  
5 statement?

6 MR. STINNEFORD: I see the statement, yes.

7 MS. CARUSO: Okay. So do you think it's helpful for  
8 the project spokesman to accuse or insult stakeholders like  
9 that?

10 MR. DES ROSIERS: I'm going to object to the use of a  
11 newspaper article for this purpose. I believe we've excluded a  
12 whole bunch of other press articles, and to ascribe -- to use  
13 it in this purpose is inappropriate and calls for hearsay and  
14 assumes facts not in evidence.

15 MR. TANNENBAUM: Well, I think the -- go ahead and  
16 allow the question on the assumption or hypothetical that Mr.  
17 Carroll did say those things, but I will restrict lengthy  
18 questions regarding a newspaper article. So you can respond.

19 MS. CARUSO: Okay.

20 MR. STINNEFORD: Yeah, I don't think any of us here  
21 were present at that meeting so I have no understanding of the  
22 context in which these partial quotes were made. So I can't  
23 offer an opinion on whether Mr. Carroll's intent here was to be  
24 insulting or whether he was expressing his view on an issue  
25 that's critical to the project. I think it's very difficult to

1 make any kind of assessment with this very limited context.

2 MS. CARUSO: Okay. Do you know if CMP has any kind  
3 of code of conduct with -- or other employee communications  
4 policies governing whether or not -- you know, how CMP  
5 representatives comment?

6 MR. STINNEFORD: We have general codes of conduct. I  
7 don't know whether the -- our corporate communications group  
8 has a specific code of conduct as you've described it. I don't  
9 know.

10 MS. CARUSO: Okay. There was also a radio interview  
11 on December 12th on WVOM with Mr. Carroll, and there -- did you  
12 know that -- did you listen to it?

13 MR. STINNEFORD: I have not, no.

14 MS. CARUSO: He referred to people who disagree with  
15 CMP's projected benefits as being --

16 MR. DES ROSIERS: I really object to this one because  
17 we don't even have a document with a transcript for this radio.  
18 So there's no basis for the question in the record.

19 MR. TANNENBAUM: Okay, that objection's sustained.

20 MS. CARUSO: Okay. So my concern is and the concern  
21 of other residents --

22 MR. DES ROSIERS: I'm going to that too, assumes  
23 facts not in evidence.

24 MR. TANNENBAUM: Go ahead and proceed.

25 MS. CARUSO: We're wondering if, because towns have

1 come out in opposition to the project, if CMP will be kind of  
2 -- with regards to delivering our electricity, with regards to  
3 outages, if they would be retaliating against the towns who are  
4 in opposition.

5 MR. STINNEFORD: I'm sorry, was that a question?

6 MS. CARUSO: Yes.

7 MR. STINNEFORD: No, CMP does -- will not retaliate  
8 against any community for any reason.

9 MS. CARUSO: So we shouldn't have a problem with the  
10 electricity being delivered, the outages, the workings of the  
11 distribution of electricity in our towns because towns have  
12 come out against the project?

13 MR. STINNEFORD: No, we have statutory and regulatory  
14 obligations to provide service to all communities, and, you  
15 know, a community's position with respect to this project is  
16 not going to affect that.

17 MS. CARUSO: So assuming Mr. Carroll's comments are  
18 correct, this does not represent CMP's corporate view towards  
19 its stakeholders?

20 MR. STINNEFORD: Again, I'm not sure what comments  
21 you're referring to.

22 MS. CARUSO: Well, the ones that were already  
23 objected to.

24 MR. DES ROSIERS: I'll repeat my objection.

25 MR. TANNENBAUM: Yes, as far as the radio goes, we

1 don't know what Mr. Carroll said. And as far as the newspaper  
2 goes, there is a lot of question regarding exactly what  
3 somebody might have meant in a quote in a newspaper which is  
4 why we don't allow newspapers into the record.

5 MS. CARUSO: Okay, very good. Thank you. Moving on  
6 to tab six, this includes pages 26 and 27 from the CPCN  
7 application where we discuss municipal permitting requirements.  
8 Do you see that?

9 MR. STINNEFORD: Yes.

10 MS. CARUSO: On line five of page 26, you cite the  
11 requirements of the statute which require the project developer  
12 to provide municipal offices with maps of the project. Is that  
13 correct?

14 MR. STINNEFORD: Yes.

15 MS. CARUSO: And I believe the application says that  
16 you distributed maps via certified mail prior to submitting the  
17 application. Is that correct?

18 MR. STINNEFORD: Yes.

19 MS. CARUSO: Are there any other statutory or  
20 regulatory compliance requirements or Commission policies  
21 related to public outreach that is applicable to NECEC or is it  
22 pretty much entirely your discretion?

23 MR. STINNEFORD: No, there are other requirements, to  
24 notify abutting landowners, for example,

25 MS. CARUSO: Okay. On page 26, line nine, there's a

1 discussion that continues to page 27, and it talks about the  
2 need for NECEC to address municipal jurisdictional issues and  
3 local land use ordinances. And on line three of page 27,  
4 there's a statement that says, quote, "CMP anticipates all  
5 required local approvals will be obtained by mid-2019," end  
6 quote. Is that still what you anticipate given project delays  
7 and such?

8 MR. ESCUDERO: The current expectation is that we  
9 will initiate the local approvals early this year and that the  
10 (indiscernible) will go through early '22, 2022 is the current  
11 plan.

12 MS. CARUSO: Okay. Do you plan to initiate local  
13 permitting before or after the Commission issues its decision?

14 MR. ESCUDERO: Well, I haven't seen the detailed  
15 plans yet. We just got it developed at the end of 2018 so I  
16 cannot provide an answer to that.

17 MR. STINNEFORD: I think, you know, each municipal  
18 permitting requirements are different in terms -- you know,  
19 some may have more substantial permitting requirements that  
20 have longer lead times. Others are fairly perfunctory. And  
21 there are other considerations, such as the time that is  
22 allowed between the issuance of a permit and the time that  
23 construction must begin. So all of that feeds into the  
24 scheduling of local permitting, and it will be different for  
25 different communities and will be driven, in large part, by the

1 construction schedule for the project.

2 MS. CARUSO: Okay. On page 27, line nine, it says  
3 that, quote, "In the unlikely event a municipal ordinance  
4 severely restricts or prohibits construction of the project,  
5 CMP will pursue an amendment of the applicable ordinance," end  
6 quote. Then it goes on to say that if that doesn't work -- and  
7 this is a quote from the CPCN application -- quote, "CMP will  
8 petition the Commission under applicable Maine law for  
9 appropriate redress to permit approval and construction of the  
10 project." And then there's a footnote that states the relevant  
11 statutory language. Do you agree?

12 MR. STINNEFORD: I agree that's what it says, yes.

13 MS. CARUSO: Okay. At this point, do you expect  
14 you'll have to submit any petitions for a municipal permit  
15 exemption?

16 MR. STINNEFORD: It's -- at this stage, we don't know  
17 yet.

18 MS. CARUSO: Okay. Is it a fair summary to say that  
19 the way the process works is that CMP has to make best efforts  
20 to obtain any and all local permits, but if it fails to obtain  
21 one or more, they can and will ask the Commission to give them  
22 an exemption?

23 MR. STINNEFORD: I -- that's a very broad  
24 summarization, but I think it's a fair one.

25 MS. CARUSO: Okay. Is it fair to use the word pre-

1 exemption to describe a situation where a state agency exempts a  
2 project developer from an otherwise applicable local land use  
3 requirement?

4 MR. DES ROSIERS: Objection, calls for a legal  
5 conclusion.

6 MR. TANNENBAUM: Sustained.

7 MS. CARUSO: So for an elective transmission upgrade  
8 or a for-profit project as this is that's not being developed  
9 but was -- is for a for-profit investment for a company, would  
10 an exemption be a -- something that would be pursued if there  
11 were -- if it was missing a permit to continue?

12 MR. STINNEFORD: I guess I still struggle with your  
13 characterization of -- distinguishing this as a for-profit  
14 investment. Any investment that the utility makes will earn a  
15 profit hopefully. There really is nothing that distinguishes  
16 this project with respect to profitability from any other  
17 investment the company would make. I think what you're asking  
18 is an ETU. That is distinguishable. And as far as we're  
19 concerned, its status as an ETU as opposed to some other form  
20 of transmission upgrade under the ISO New England tariff would  
21 not make a difference in terms of whether or not it would  
22 require or result in us seeking an exemption from the  
23 Commission over a local permitting issue.

24 MS. CARUSO: Okay. Has the Commission ever been  
25 asked to approve an elective transmission upgrade over is NECEC

1 the first one?

2 MR. STINNEFORD: To my knowledge, there has not been  
3 one in Maine.

4 MS. CARUSO: So are non-utility energy developers who  
5 may want to invest in things like solar or wind farms, are they  
6 eligible for any exemptions from municipal land use  
7 requirements?

8 MR. STINNEFORD: You're asking for my legal opinion?

9 MR. DES ROSIERS: I'm going to object on legal --

10 MS. CARUSO: What is your understanding, yes.

11 MR. DES ROSIERS: I'm going to object on legal  
12 grounds. But I will state that to the extent such a developer  
13 were building a transmission line, they would be entitled to  
14 seek an exemption.

15 MS. CARUSO: Okay. If you are unable to obtain any  
16 of the local permits, when would the Commission -- or when  
17 should the Commission expect you to file a pre-emption petition  
18 that seeks appropriate redress?

19 MR. DES ROSIERS: Objection --

20 MR. TANNENBAUM: Objection sustained on the question  
21 using the term pre-emption. Otherwise, Eric, you can answer if  
22 you heard the question.

23 MR. STINNEFORD: Well, I think I did. I think, you  
24 know, as you summarized before, we have to make good-faith  
25 efforts to achieve local permitting through the normal means.

1 If we are unsuccessful either in achieving a required amendment  
2 to a local ordinance or achieving a local permit, it would be  
3 at that time that we would petition the Commission for an  
4 exemption.

5 MS. CARUSO: So, you know, you're aware that Caratunk  
6 has rescinded initial support, and are you also aware that  
7 other communities have held town-wide votes and some formally  
8 oppose the approval of NECEC?

9 MR. STINNEFORD: I'm generally aware of that, yes.

10 MS. CARUSO: Okay. Is it your view that the  
11 Commission has the authority to grant an exemption from local  
12 permitting requirements in communities that have voted against,  
13 formally, the project?

14 MR. DES ROSIERS: Calls for a legal conclusion.  
15 Objection.

16 MR. TANNENBAUM: Sustained.

17 MS. CARUSO: Are you aware that the town of Caratunk  
18 currently has an electric transmission line moratorium in  
19 place?

20 MR. STINNEFORD: I am.

21 MS. CARUSO: Do you believe that the Commission could  
22 give an exemption for a town that has a moratorium in place?

23 MR. DES ROSIERS: Objection, calls for a legal  
24 conclusion.

25 MR. TANNENBAUM: Sustained.

1 MS. CARUSO: Would CMP ask for an exemption from the  
2 Commission for towns that are not -- for towns that, for  
3 example, have a moratorium or an ordinance that would not issue  
4 CMP the permit for this?

5 MR. STINNEFORD: I think those circumstances will  
6 have to be addressed on a case-by-case basis. I can't answer  
7 that in the abstract. We have to assess, you know, what our  
8 alternatives are in each one of those municipalities where we  
9 encounter those circumstances.

10 MS. CARUSO: But you wouldn't agree not to.

11 MR. STINNEFORD: I'm sorting out the double negatives  
12 there. I think that's correct, we would not agree not to.

13 MR. TANNENBAUM: Elizabeth, can I ask how much more  
14 time you have? You're going to significantly --

15 MS. CARUSO: Yes. Just a couple more and then I'm  
16 done.

17 MR. TANNENBAUM: Okay, proceed.

18 MS. CARUSO: I understand that CMP has all the land  
19 rights it needs to build the project as currently proposed. Am  
20 I correct that the issuance of the CPCN would let CMP use the  
21 power of eminent domain for NECEC?

22 MR. DES ROSIERS: Calls for a legal conclusion.

23 MR. TANNENBAUM: Sustained.

24 MS. CARUSO: Well, would CMP need to come to the  
25 Commission if it wanted to use eminent domain?

1 MR. DES ROSIERS: Objection, calls for a legal  
2 conclusion as a matter of --

3 MS. CARUSO: Would you agree not to use eminent  
4 domain?

5 MR. STINNEFORD: We can't do that sitting here today  
6 not knowing what circumstances we might encounter in the  
7 future, but as we said, for this project as it stands now, we  
8 have all of the land rights that we require to build the  
9 project. So it would not be necessary under the current  
10 circumstances.

11 MS. CARUSO: So you wouldn't seek the PUC -- you  
12 wouldn't -- so you wouldn't use eminent domain if you had to or  
13 you wouldn't seek the PUC exemption if you had to, as of right  
14 now?

15 MR. TANNENBAUM: I don't think that's -- that was the  
16 answer. The answer was they have land rights so they don't  
17 anticipate needing to use eminent domain, but if eminent domain  
18 was required, I think Eric's answer was he can't commit to not  
19 doing it.

20 MR. STINNEFORD: That's correct.

21 MS. CARUSO: Okay. I think we're all set. Thank you  
22 very much for your time. I have no further questions.

23 MR. TANNENBAUM: Okay. Sue?

24 MS. ELY: Thank you. Sue Ely, Natural Resources  
25 Council of Maine. I have just a couple of questions, and

1 apologies to Eric and Mr. Escudero, I think they're mostly for  
2 Thorn. But if anyone else on the panel has an answer, by all  
3 means, feel free to answer. But, Mr. Dickinson, earlier when  
4 you were answering questions from Attorney Shope, you -- I  
5 think it was Mr. Shope's questions -- you were talking about  
6 speaking to a bunch of people who are bilingual to help  
7 translate Hydro-Quebec documents. Do you recall that  
8 conversation? It was --

9 MR. DICKINSON: Yes.

10 MS. ELY: Okay. Do you recall who those people  
11 where?

12 MR. DICKINSON: Yeah, I -- essentially Hydro-Quebec  
13 employees that could speak English.

14 MS. ELY: Okay. You also -- during --

15 MR. DES ROSIERS: Most of them do that very well.

16 MS. ELY: I know, if only it were a different  
17 province that didn't have quite a strong leaning towards  
18 French, this wouldn't be such a complicated proceeding maybe.  
19 There -- you also mentioned that you had to rely on publicly-  
20 available data when compiling your rebuttal testimony about the  
21 greenhouse gas implications and reservoir levels. Is that  
22 correct?

23 MR. DICKINSON: Correct.

24 MS. ELY: And I was wondering if you could elaborate  
25 on why you had to rely on publicly-available data.

1           MR. DICKINSON: Well, probably a better way to say it  
2 is that was the methodology that I did for putting together the  
3 rebuttal testimony. So the plan was for me to address the  
4 issues that were prior -- in prior testimony, and I pursued  
5 publicly-available information to put that information  
6 together.

7           MS. ELY: You relied on publicly-available data, yet  
8 you had access to Hydro-Quebec employees. Is that correct?

9           MR. DICKINSON: Yeah, I would -- so Hydro-Quebec  
10 employees both, you know, made sure I wasn't making fatal flaws  
11 associated with how I were to look at it and, if I was  
12 struggling to find a specific reference to publicly-available  
13 information, they would point me in the right direction.

14          MS. ELY: What was the purpose in -- if you had  
15 access to Hydro-Quebec employees, what was the purpose of only  
16 relying on information that was publicly available?

17          MR. DICKINSON: I mean, I guess in my perspective,  
18 that made it much easier in providing the information in the  
19 testimony. So by that means, I could put the information out  
20 there and show -- I mean, the -- and stepping back just maybe a  
21 little on the purpose for the analysis, the --

22          MS. ELY: I'm sorry, I just want to know if you had  
23 access to an employee who could give you information, why, if  
24 they could give you sort of the potential to have real-time  
25 information about Hydro-Quebec's system, would you rely only on

1 public information?

2 MR. DICKINSON: For purposes of this specific  
3 representation, the goal was to provide a representation of the  
4 perspective of their ability to me and define this as  
5 incremental energy as an issue that was brought up by a number  
6 of environmental NGOs in my discussions with them and to do it  
7 in a way that allowed us to share that with everybody. So I  
8 never pursued confidential information. I mean, I never asked  
9 a question for confidential information. The goal was always  
10 to develop a model based on publicly-available data.

11 MS. ELY: Okay. So then I want to ask you, the  
12 document that you provided, well, CMP provided in response to a  
13 data request by Ms. Kelly was an email from Hydro-Quebec, and I  
14 guess it's a different approach is to get Hydro-Quebec to write  
15 an email responding to a data request. Was there no publicly-  
16 available information that would make that point --

17 MR. DES ROSIERS: Objection to --

18 MS. ELY: -- in the data request?

19 MR. DES ROSIERS: Objection to form. I'm not sure  
20 what you're referring to by an email.

21 MS. ELY: Sorry, thank you. The email that was the  
22 response to Dot Kelly's data request 004-001 that we have been  
23 discussing earlier today.

24 MR. STINNEFORD: So I believe that was a letter, not  
25 an email.

1 MR. SHOPE: I think it's the letter of December 14  
2 from Bergervin to which I was referring earlier.

3 MS. ELY: I'm sorry. Yes, it is a letter, sorry.

4 MR. DICKINSON: So again, I'm sorry, I lost the  
5 question in there.

6 MS. ELY: That's fine. I'm sure that my muddled  
7 delivery did not help. The -- I'll try it one more time. So  
8 why, for responding to Dot Kelly's data request marked 004-001,  
9 did you -- did CMP include a letter drafted by Hydro-Quebec as  
10 opposed to publicly-available information?

11 MR. DICKINSON: So the method that we -- when we  
12 received the data request, we forwarded it on to Hydro-Quebec  
13 and Hydro-Quebec responded with the letter that they provided.  
14 So that was the method by which we responded to Dot Kelly's  
15 data request.

16 MS. ELY: Okay.

17 MR. STINNEFORD: I would just say specifically there  
18 is no public source for this specific information that was  
19 requested which is why we addressed it directly to them.

20 MS. ELY: Okay. When you responded, did Hydro-Quebec  
21 -- when you asked this question of Hydro-Quebec, did they  
22 respond with any additional information besides the letter?

23 MR. DICKINSON: I mean, as I had said earlier in my  
24 testimony, not only did this data response get responded to,  
25 but we also had meetings with the Portland Press, we had

1 meetings with the Boston Globe. The outreach team also met  
2 with a number of other papers and had discussions, and I think  
3 in those context of discussions that, you know, other  
4 conversations happened, other information, videos on -- showing  
5 the water actually spilling, other things like that were  
6 exchanged.

7 MS. ELY: Were those conversations in an attempt to  
8 answer Ms. Kelly's data request?

9 MR. DICKINSON: Oh, no, I'm sorry, no.

10 MS. ELY: Okay.

11 MR. STINNEFORD: We did have other telephonic  
12 conversations with the author of this letter and other HQ  
13 employees to get further clarity round this.

14 MS. ELY: But they didn't provide you any underlying  
15 data to support the letter? I'll phrase it as a question. Did  
16 they provide you underlying data to support the letter?

17 MR. STINNEFORD: I wouldn't say they provided us  
18 data. They did provide us with clarifying explanation and  
19 information. For example, earlier today we talked about the  
20 ordinary spillage that would occur in the Hydro-Quebec system  
21 to address environmental permitting restrictions, hydrologic  
22 conditions, the normal seasonal spillage that occurs on their  
23 system. In those conversations, they clarified that that is in  
24 the range of four to five terawatt hours a year pretty  
25 consistently through history and that the numbers that are

1 reflected in this letter are incremental above that four to  
2 five terawatt hours that would ordinarily be spilled. So, you  
3 know, we did have those types of clarifying conversations with  
4 them, but they did not provide us, you know, supporting reports  
5 or documents for that data.

6 MS. ELY: Okay. Switching gears. Earlier, Mr.  
7 Dickinson, you were asked a -- and I don't -- I think you'll  
8 remember this generally. I don't have the data request off the  
9 top of my head. You had been asked to identify which employees  
10 -- well, actually, it's in response to an NRCM request that we  
11 were just talking about. It's the meetings that you attended  
12 to talk to individuals about the project. And I'm curious have  
13 these stakeholder meetings continued after the data request  
14 that you responded to? Have you continued to go to those  
15 meetings with community members?

16 MR. DICKINSON: Maybe you could -- if you could just  
17 restate that? I want to make sure I understand what date  
18 you're referring to. Dot Kelly's --

19 MS. ELY: No, the NRCM request for the list of  
20 stakeholder meetings.

21 MR. DICKINSON: Oh, yeah. Yeah, I mean, we have  
22 continued to offer every town along the corridor and adjacent  
23 towns for meetings. They've told us -- I think every town now  
24 has told us, no, we're good. We've had multiple meetings in  
25 all those towns. We're willing to go anywhere and have a

1 meeting anytime with people that are interested in the project,  
2 and, you know, we -- you know, between myself, Eric, Doug  
3 Herling, members of the outreach team, we've been all over the  
4 state. And, you know, my mantra to the team was always there's  
5 only 1.4 million people in Maine, let's talk to them all.

6 MS. ELY: So your testimony is that you have  
7 continued to have these meetings throughout this -- throughout  
8 the process, they didn't stop when you submitted the data  
9 request to the Natural Resources Council of Maine.

10 MR. DICKINSON: No, that's right.

11 MS. ELY: Okay. And you mentioned that Doug Herling  
12 has participated in these meetings, that you have participated.  
13 Who else is continuing to participate in these stakeholder  
14 meetings?

15 MR. DICKINSON: I mean, the short and long of it --  
16 and you could -- I mean, depending on how you call these  
17 stakeholder meetings, you know, we're trying to come up with --  
18 we have meetings right now where we're trying to figure out how  
19 to utilize our commitment to bring fiber optic to Somerset,  
20 Franklin County and to -- like, for example, we were just in  
21 Whitefield the other day. So Whitefield is an area where the  
22 345 line goes, and we've now made a commitment to put fiber  
23 optic up on that AC transmission line. And we met with the  
24 people in Whitefield about the idea of connecting in their  
25 existing fiber optic along that place, and in that meeting, it

1 included -- actually Heather Johnson at the point was Connect  
2 Maine who is, you know, kind of the fiber optic leader for the  
3 state at that point in time. It was Bill Sawyer, an engineer  
4 for CMP, and Justin Tribbet who also is an engineer. We were  
5 meeting with them to figure out how we can bring value to that  
6 community by bringing fiber optic, and those kind of  
7 discussions are going on in Somerset and Franklin County. But  
8 that's just a specific example. Eric would be in some  
9 meetings. Bernardo would be in some meetings. Other  
10 management people that are involved. Really the way I see it  
11 is everybody that's on the project, not just the core group of  
12 outreach teams, should be available to interact with the  
13 community on a regular basis.

14 MS. ELY: Does that include going to selectboard  
15 meetings?

16 MR. DICKINSON: Yeah.

17 MS. ELY: Does that include going to county  
18 commissioner meetings?

19 MR. DICKINSON: Yes.

20 MS. ELY: Okay. You mentioned that you'd made a  
21 recent commitment to put fiber optic in the 345 line. Is that  
22 writing -- is that agreement in writing?

23 MR. DICKINSON: No, I'd describe it as a handshake  
24 agreement, but the engineers and the people that are managing  
25 the dollars related to the project understand that it's a

1 commitment.

2 MS. ELY: Okay. Who is the commitment with?

3 MR. DICKINSON: We sat around a table at the  
4 Skowhegan Cafe or -- I can't remember the name of the place,  
5 and a number of folks from Whitefield and us talked about it.  
6 And, you know, I made the commitment there at that point.

7 MS. ELY: Are these members of the community that you  
8 made the agreement with?

9 MR. DICKINSON: Yeah, I think they're some of the  
10 people that are community members that care, that want to see  
11 about value being brought to their community. Some of the  
12 people that I believe were on the selectboard of --

13 MS. ELY: Can you be more -- like, so I understand  
14 that people who want to see value in their community is a  
15 subset of people, but can you be more specific about who you  
16 made your agreement with and -- or who they represent?

17 MR. DICKINSON: Again, the -- what -- I think the  
18 better understanding of how we have approached this project is  
19 every time we get a phone call for an opportunity in a  
20 community to have a dialogue about the project, we take it. In  
21 that conversation with Whitefield, in that meeting that we had,  
22 they asked about fiber optic because they had heard about it  
23 related to the DC line. We had -- I think I had one  
24 conversation early on with one selectman, who is also on the  
25 economic development selectmen for Whitefield. And then that

1 led to a larger group where we sat around and had blueberry pie  
2 and coffee around a little plastic picnic table, and at that  
3 meeting, we heard what their interests were. I contacted our  
4 engineering group, understood the incremental cost that we'd  
5 incur, and, for me, I believe that extra cost was worth the  
6 value of delivering it. We asked for nothing in return. We  
7 asked for nothing from any of the people in Whitefield. I  
8 believe this is the kind of thing that we've demonstrated  
9 throughout this project.

10 MS. ELY: Will you be signing a memorandum of  
11 agreement or any more-formalized documentation?

12 MR. DICKINSON: If the town of Whitefield would like  
13 to have a formal commitment from us committing to that, we're  
14 happy to do it.

15 MS. ELY: Are there other communities that you've  
16 made these types of handshake agreements with?

17 MR. DICKINSON: So the representation of a handshake  
18 as a negative thing is interesting to me. To me --

19 MS. ELY: It was not a -- it was --

20 MR. DICKINSON: Okay.

21 MS. ELY: My deadpan delivery might give me away, but  
22 I am really just asking are there other communities that you  
23 made a handshake agreement with?

24 MR. DICKINSON: Yeah, I think where there's  
25 conversations we're having throughout the project to find ways

1 to help deliver value in ways that, to my, are synergistic with  
2 the project, and fiber optic is a perfect example. And there's  
3 a lot of things going on in the project, a lot of irons in the  
4 fire, but, you know, those kind of conversations are happening  
5 all along the -- on the project, and we are open to any  
6 additional calls from any towns that want to have these  
7 conversations.

8 MS. ELY: I'm trying to understand if there are other  
9 side agreements that are being made through the -- through this  
10 process.

11 MR. DICKINSON: So the -- there's no -- the agreement  
12 with Whitefield is -- there's no agreement. There's no  
13 negotiation. There's not a document that is looked at to be an  
14 MOU. It was me listening to people in the community about what  
15 they cared about and me making a commitment to them. And as I  
16 said, if they want me to firm that up in a letter or an MOU,  
17 we're happy to do that. So there's no side agreements that are  
18 currently engaged, but we have conversations with both Somerset  
19 and Franklin County around fiber optic, as an example, to try  
20 to figure out how to -- we've already committed as part of the  
21 project to provide significant amount of splice points along a  
22 high-bandwidth fiber optic cable at the edge of our right-of-  
23 way, and we're going to provide that at no cost, no -- to  
24 people that would be able to connect into that as a way to  
25 encourage fiber optic. What we're also interested in are there

1 other opportunities that we could do beyond that, and those are  
2 the kind of discussions would be an example in the specific  
3 area of fiber optic that we're doing.

4 MS. ELY: I understand you testified earlier that  
5 there are no new MOUs that you have signed besides the one with  
6 the Western Mountains & Rivers Corporation. Is that a correct  
7 understanding?

8 MR. DICKINSON: That's correct.

9 MS. ELY: Are there -- aside from the MOU structure,  
10 are there any other agreements that Central Maine Power or  
11 Avangrid has made with any other interested parties?

12 MR. DICKINSON: There's no other MOUs that we've  
13 signed or executed related to any other interested parties.

14 MS. ELY: It doesn't have to be an MOU. Any type of  
15 agreement.

16 MR. DICKINSON: No, I don't believe so.

17 MS. ELY: Okay. That's all I've got for questions.

18 MR. TANNENBAUM: I know Barry's got just an issue.  
19 Jared, how much redirect?

20 MR. DES ROSIERS: Not much, five or ten minutes at  
21 the most.

22 MR. TANNENBAUM: We've been going for a while. I  
23 think we should -- why don't we just take a break now, come  
24 back in 15.

25 CONFERENCE RECESSED (January 9, 2019, 2:56 p.m.)

1 CONFERENCE RESUMED (January 9, 2019, 3:16 p.m.)

2 MR. TANNENBAUM: Okay, let's go back on the record.  
3 Barry, I know you had some -- a line of questions. Let's --

4 MR. HOBBS: Yes, I do, if you don't mind. Well,  
5 good afternoon. It's good to see you. Been a long day so far.  
6 I just had a couple questions, and I don't know whether to  
7 address them to you, Thorn, or to all of you but collectively  
8 why don't we talk about them. We've heard so far from  
9 Elizabeth Caruso from Caratunk and also Ms. Eli who was -- Ms.  
10 Ely, rather, who represents the Natural Resources Council of  
11 Maine, and they talked a little about community benefits and  
12 the like. And when you were putting your project together for  
13 Massachusetts, you had certain criteria you had to follow under  
14 their statute, is that correct, as far as community benefits or  
15 that part of your submission to --

16 MR. DICKINSON: The response to the RFP included an  
17 RFP document that required specific criteria that needed to be  
18 filed.

19 MR. HOBBS: Right. So did -- in your process of  
20 having, you know, been selected, did you look to the New  
21 Hampshire documents or the Vermont documents or the two  
22 proposals that were a competing proposal to look at those  
23 documents at all and, in particular, the community benefit  
24 elements of those two projects with respect to their  
25 submission?

1 MR. DICKINSON: So just so -- just to make sure I  
2 understand, the Massachusetts RFP had specific requirements in  
3 it for their own state.

4 MR. HOBBS: Yes.

5 MR. DICKINSON: So when you're referencing the  
6 community benefits, are you talking about the community  
7 benefits --

8 MR. HOBBS: For the state -- for example, looking  
9 at the state of Vermont and looking at the benefits that would  
10 have gone to the state of Vermont if they would have been  
11 successful in their project. The same is true of New  
12 Hampshire. I'm more interested in New Hampshire if that could  
13 be the case. So did you have an opportunity to look at their  
14 applications, their full applications, both -- more so in New  
15 Hampshire than Vermont?

16 MR. DICKINSON: Sure. So we did a great deal of  
17 market intelligence before we submitted our bid, and because  
18 that's a project that's been going on for nine or ten years,  
19 there was information out there and available. And part of  
20 that was the various agreements that they had made along the  
21 route.

22 MR. HOBBS: And did you happen to look at the  
23 proposal that was rejected by the site evaluation committee of  
24 the state of New Hampshire?

25 MR. DICKINSON: I'm aware that the Northern Pass

1 project was denied by the site evaluation committee.

2 MR. HOBBS: Did any of you -- anyone else, Bernardo  
3 or Eric, look at those particular submissions and then look at  
4 their -- and look what -- the final rejection or why they were  
5 not approved by their respective commissions?

6 MR. STINNEFORD: Yeah, I'm generally familiar with  
7 the filings and the decisions. I probably can't quote the  
8 details.

9 MR. ESCUDERO: I am aware of the decision, but I  
10 didn't review the application.

11 MR. HOBBS: You didn't review the application?

12 MR. ESCUDERO: I did not.

13 MR. HOBBS: You did not. So as far as the state of  
14 New Hampshire's proposal, are you familiar with the community  
15 benefit package that was submitted fairly --

16 MR. DICKINSON: Yeah, in a broad, yes.

17 MR. HOBBS: Yes. Did you also know that there was  
18 an attempt by Public Service Company of New Hampshire d/b/a  
19 Eversource -- and who filed a motion for rehearing on the  
20 decision an order denying the application? Did you know that  
21 there was an extensive submission made? I believe submitted in  
22 March of 2018?

23 MR. DICKINSON: Yes, I'm aware of that.

24 MR. HOBBS: And are you of the document itself?

25 MR. DICKINSON: I think I may have read a summary

1 related to it, but I didn't pick it up and read the whole --

2 MR. HOBBS: So you are familiar with the document  
3 and --

4 MR. DICKINSON: Yes.

5 MR. HOBBS: I'd like to, if I may, if you -- it  
6 sounds like you would -- that I could refresh your  
7 recollection, possibly. And how about you, Eric or Bernardo?  
8 Did you have an opportunity to look at the final -- because  
9 that was the final nail in the coffin. And so obviously I'm  
10 sure -- I know that your attorney did and I know that the  
11 battery of attorneys and I'm sure your president did. But  
12 Eric, I'm sure you must have looked at that particular  
13 document.

14 MR. STINNEFORD: I did look at it. I skimmed it  
15 briefly. I -- again, I didn't spend a lot of time reading it.

16 MR. HOBBS: And, Bernardo, you probably didn't.

17 MR. ESCUDERO: I remember reading about it in the  
18 media, but I don't remember looking at that specific document.

19 MR. TANNENBAUM: Are you familiar with the community  
20 benefit aspect of that motion?

21 MR. DICKINSON: Yeah, I believe in a very general  
22 sense, yes, yeah.

23 MR. HOBBS: The reason I'm asking you that is that  
24 during the process of your successful submission and obviously  
25 your petition to this -- to the Public Utilities Commission

1 allowing for permission to go forward with the project here in  
2 Maine and before the Department of Environmental Protection and  
3 the Land Use Planning Board, you obviously must have thought  
4 about what was offered in the state -- Commonwealth of  
5 Massachusetts, what they required obviously or what was offered  
6 by Eversource and what by -- in New Hampshire -- in Mass. -- in  
7 Vermont. Were you --

8 MS. BODELL: So again, I'm confused when -- only when  
9 you reference Massachusetts. So --

10 MR. HOBBS: Well, no, the reason I say that is  
11 because obviously you were successful with Massachusetts, but  
12 then you had to come to Maine. And I'm talking about the idea  
13 of permission, just like when they were looking at the project,  
14 they couldn't get approval. Eversource couldn't get approval  
15 in the state of New Hampshire because they didn't meet the  
16 requisite requirements apparently of their site evaluation  
17 committee which is different than how we operate here. So the  
18 reason I'm asking you that question --

19 MR. TANNENBAUM: I'm sorry, Barry, what exactly is  
20 the question that you're asking?

21 MR. HOBBS: Well, what I'm asking for a question is  
22 what considerations did you give in putting together some type  
23 of community benefit package in Maine? Maybe give us some idea  
24 of what you went through, what process.

25 MR. DICKINSON: Yeah, sure. It was very similar to

1 some of the testimony that I've already discussed earlier today  
2 where we started off by trying to design a project that had the  
3 smallest amount of impact that we could. And I think always  
4 the first goal there is to build a transmission line across the  
5 existing corridor, and I think just about 70 percent of that is  
6 along the existing corridor. Then the second goal would be,  
7 can you build a transmission line in an area where the impact  
8 is minimized because that area has similar utilization than it  
9 does now. And so by having two private landowners where  
10 there's a heavily-wooded section, a working forest, putting  
11 that line there and avoiding many of the other sensitive areas  
12 was the beginning of the project. I also talked about some of  
13 the things we did in areas where we thought there would be some  
14 concerns and some larger impacts: the Appalachian Trail, Moxie  
15 Lake, the Kennebec River. And then ultimately when we put  
16 together a price, we have to balance the overall price to  
17 Massachusetts, what we think is fair for Massachusetts for what  
18 they pay and the benefits they get, versus the benefits that  
19 Maine and the impacts in Maine. And that is the balance that  
20 we took. And we took in tons of information. We did market  
21 intelligence on where our other projects were, our own  
22 experience in developing projects, and as I said, our  
23 confidence in the way our project was designed.

24 MR. HOBBS: It sounded like, from your testimony of  
25 Ms. Caruso, that the only commitment that's present is the

1 commitment that is binding upon your project.

2 MR. DICKINSON: That's right. I mean, specifically  
3 to that narrow question, obviously as part of the DEP process,  
4 we are currently in discussions about a ton of different types  
5 of mitigation associated with the project, and those are things  
6 that are still ongoing.

7 MR. HOBBS: And obviously there are some  
8 confidential discussions that have occurred in the past and  
9 obviously I don't want you to testify to any of those, of  
10 course. But I wanted you to take a look, if you could, if all  
11 three of you could take a look at community benefits. And I  
12 know that earlier I think Mr. Murphy led you through some  
13 exhibits of the community benefits for the state of New  
14 Hampshire. And it was interesting because I was kind of  
15 puzzled with the figure that was used in the state of New  
16 Hampshire for the proposal because I think that that was the  
17 original amount that was proposed by the developer at the time  
18 and that was the amount of money on the table when the site  
19 evaluation committee turned down the proposal. But the reason  
20 I'm giving you this other document to look at is because the  
21 Public Service Company of New Hampshire d/b/a Eversource, in  
22 their motion to rehear the case, not only made arguments based  
23 upon the original discussion but they also discussed why they  
24 wanted to reopen the case and what other possible potential  
25 benefits could be put on the table for reconsideration in order

1 to have the proposal decided. So if you could do me a favor  
2 and take a look at Attachment C which is in the back of this  
3 very big document. And if you could look at -- if you haven't  
4 -- I'm just going to give you a couple minutes to look at it  
5 because it's really interesting, section Additional Conditions,  
6 which they proposed now in this. So essentially what they're  
7 attempting to do, to give you a backdrop of why I'm interested  
8 in this, they --

9 MR. WILLIAMSON: Barry, is this on page four of  
10 Attachment C?

11 MR. HOBBS: No, it's Attachment C.

12 MR. WILLIAMSON: C. And then I find --

13 MR. HOBBS: And then on page four would be the --  
14 no, it's page 15. It's number 74, page 15, Additional  
15 Benefits.

16 MR. TANNENBAUM: Okay. And Barry, what's the  
17 question that you're asking?

18 MR. HOBBS: What I'm asking -- first of all, I want  
19 them to take a look and if they could just review that.

20 MR. TANNENBAUM: Okay, so you're reviewing Additional  
21 Conditions on page 15.

22 MR. HOBBS: Were you aware, after knowing the  
23 backdrop of this, that there was an additional relief benefit  
24 that was requested -- that was offered as an offer to the  
25 evaluation committee?

1 MR. DICKINSON: At a very high level, yes, but, you  
2 know, my focus here would have been more on -- you know, my  
3 curiosity would have been on the likelihood that they're going  
4 to --

5 MR. HOBBS: What was your understanding of -- at a  
6 high level of --

7 MR. DICKINSON: My simple memory of it was that there  
8 was an extra amount of benefits that were provided as part of  
9 that.

10 MR. HOBBS: And what do you -- what did you know  
11 about, for example, the energy cost relief benefits? That's  
12 number 74. What do -- does that look familiar to you? That's  
13 number 74, page 15. Does that figure of a value up to \$300  
14 million over a 20-year period -- are you --

15 MR. TANNENBAUM: Maybe we can cut this a little  
16 short. Were you aware, before you saw this document, of what  
17 the additional benefits that were proposed?

18 MR. DICKINSON: Not to this detail. I mean, I knew  
19 that they -- my understanding was Eversource was making a last-  
20 pitch effort to try to throw everything they could in order to  
21 overturn the appeal and that they threw a bunch of stuff to see  
22 what would stick. But I didn't go through these in detail to  
23 review them and understand them.

24 MR. HOBBS: So you -- the \$300 million figure  
25 doesn't stand out to you over a 20-year period?

1 MR. STINNEFORD: Well, I --

2 MR. HOBBS: How about you, Eric?

3 MR. STINNEFORD: I guess I would correct the  
4 characterization. They're not paying 300 million in cash.

5 MR. HOBBS: No, no.

6 MR. STINNEFORD: They're providing 400,000 megawatt  
7 hours in --

8 MR. HOBBS: That's right. I'm asking --

9 MR. TANNENBAUM: Barry, allow him to answer.

10 MR. HOBBS: I apologize.

11 MR. STINNEFORD: They're offering to provide 400,000  
12 megawatt hours of environmental attributes whose value may be  
13 as much as 300 million based on their representation of the  
14 market value.

15 MR. HOBBS: But you would define that as a benefit,  
16 wouldn't you?

17 MR. STINNEFORD: Yes, I think that's the intent.

18 MR. HOBBS: Okay. And as far as what the  
19 applicants -- what it says here, if I may just read it to you,  
20 "The applicants shall monetize such environmental attributes  
21 for the purpose of providing a reduction in energy cost to low-  
22 income and business customers in addition to the projected  
23 wholesale market price benefits of the project." So in your  
24 review of your project, was there ever any consideration to  
25 utilizing the same type of benefit structure as a community

1 benefit for the state of Maine?

2 MR. DICKINSON: Again, I think our existing proposal  
3 provides a significant amount of benefits to Maine that we've  
4 already described. And then as I described, in developing our  
5 price, we obviously had to consider contingencies around the  
6 project, and we tried to balance, in that process, our  
7 understanding of the impacts of our project, the real impacts  
8 of our project, not some other project that's different than  
9 ours, and then balance the price that we were then asking for  
10 Massachusetts to pay versus the benefits and the impacts that  
11 Maine would have. In the end, that's how we made the decision.  
12 So we did consider those types of things went in the  
13 development of the price.

14 MR. HOBBS: So in your opinion then what London  
15 Economics found or what your company found through your  
16 consultants will say -- which we're going to hear about later  
17 on is what you feel to be enough community benefits to satisfy  
18 the state of Maine as far as having a benefit consistent with  
19 our law.

20 MR. DICKINSON: And so we -- just to be clear, we  
21 have the incremental jobs for the period of time of the  
22 construction. We have the reduction in energy prices, the  
23 potential reduction in capacity prices, property taxes, fiber  
24 optic, and what we believe is an added benefit for tourism.

25 MR. STINNEFORD: And to your question, you know, that

1 -- those benefits, we've estimated, you know, they're roughly  
2 \$100 million over the first ten years of the project. And that  
3 is, in our view, more than sufficient to meet the statutory  
4 requirement of a public benefit, particularly since the cost to  
5 Maine customers for this project is zero.

6 MR. HOBBS: What was the cost of the project in New  
7 Hampshire to New Hampshire ratepayers? Was it zero?

8 MR. STINNEFORD: Again, it depends on which -- how  
9 you're defining this project. The Northern Pass has been  
10 through multiple iterations.

11 MR. HOBBS: No, this last proposal.

12 MR. STINNEFORD: In this last instance in which it  
13 was bid into 83D, it would have been supported fully by the  
14 Massachusetts customers just as our --

15 MR. HOBBS: Thank you very much, that's the answer,  
16 right? Thank you. I have no further questions. Thank you.

17 MR. TANNENBAUM: Jared, redirect?

18 MR. DES ROSIERS: Mr. Dickinson and Mr. Stinneford,  
19 you were just asked questions about the benefits packages in  
20 Vermont and the benefits packages in New Hampshire. And why  
21 didn't CMP promise hundreds of millions of dollars on top of  
22 the benefits you described, Mr. Dickinson?

23 MR. DICKINSON: Yeah, I think first of all, I would  
24 reference these two specific projects had been developed for  
25 multiple years prior to any awareness of any kind of

1 competitive solicitations for transmission, and they made an  
2 election how they approached that project, the way they built  
3 that out, how they did that, and made their decisions along  
4 with that. For us, we started from the point of designing this  
5 project in a way to mitigate the impacts as much as we could as  
6 we described and then defined that right balance between  
7 Massachusetts, what they're going to pay and the benefits  
8 they're going to get, versus the benefits that Maine would get  
9 and the impacts to Maine.

10 MR. DES ROSIERS: And, Mr. Stinneford, in striking  
11 the balance that Mr. Dickinson described, what is the  
12 significance with respect to competitive transmission under  
13 current FERC policy and the applicable tariffs in New England?

14 MR. STINNEFORD: Yeah, I --

15 MR. SHOPE: Objection, calls for a legal conclusion.

16 MR. STINNEFORD: I'll address it at a policy level  
17 rather than with respect to law.

18 MR. TANNENBAUM: Proceed.

19 MR. STINNEFORD: We have significant concerns that if  
20 the world proceeds as it appears to be where more and more of  
21 our transmission network is going to be built through  
22 competitive bidding solicitations, whether that's through Order  
23 1000 or through state-specific procurement programs such as  
24 we've seen here with 83D, that if projects are continually  
25 required to inflate their bids with community benefit packages

1 on the order of hundreds of millions of dollars, the end result  
2 of that is going to be pricing for transmission projects that  
3 is not going to fulfill the expectations of policymakers, our  
4 state regulators, here in New England in particular where we  
5 have seen, you know, a strongly expressed desire for lower  
6 transmission costs through competitive processes. If those  
7 competitive processes continue to be distorted by these types  
8 of benefit packages, those benefits will never be realized.

9 MR. DES ROSIERS: In the approach that CMP used in  
10 formulating its bid for the NECEC, did the company apply a  
11 similar approach with respect to its other bid in 83D or in any  
12 other prior solicitation?

13 MR. DICKINSON: Yeah, that would be a consistent  
14 approach for the other projects that we bid into this  
15 solicitation, including the wind, the solar, and the battery  
16 projects in addition to the tristate RFP that we had issued  
17 before and similarly to other projects that we've tried to move  
18 forward within a development portfolio.

19 MR. DES ROSIERS: What would be the significance --  
20 what would be the impact, in your view, of requiring  
21 transmission projects built as elective transmission upgrades  
22 to deliver renewable resources from Maine, what would the  
23 impact be if, in order to build transmission, it were necessary  
24 to include significant community benefits along the lines of  
25 the TDI or Northern Pass projects?

1           MR. DICKINSON: Yeah, I mean, I think there are two  
2 impacts. Obviously one of them is going to be that the  
3 resources in Maine, the wind resources, the solar resources,  
4 other sources that are also going to require transmission are  
5 going to become more pricey, and that has impacts on whoever  
6 the end customer is, whether it's Maine customers or other New  
7 England customers. And it's also going to disadvantage those  
8 projects against other alternative sources that may not be  
9 providing that same tax to the price.

10           MR. DES ROSIERS: Shifting gears. Now shifting back  
11 to some of the questioning that Mr. Shope did with respect to  
12 -- and that's to you, Mr. Dickinson, with respect to your  
13 modeling that you did as part of your rebuttal testimony.  
14 Since you submitted the rebuttal testimony in July, are -- have  
15 you become aware of other information that supports, in your  
16 view, the conclusions and opinions you provided in that  
17 testimony?

18           MR. SHOPE: Objection, scope.

19           MR. TANNENBAUM: Overruled.

20           MR. DICKINSON: So as I mentioned earlier today, I  
21 had a conversation with Hydro-Quebec around the issue where  
22 they disclosed to me the spilling of water in '17 and '18.  
23 That was coincident with the CEO from Hydro-Quebec publicly  
24 committing to that in Quebec, as we mentioned, on an interview  
25 publicly. I also already mentioned the conversations we've had

1 with a number of newspaper resources to discuss that same  
2 information. I think the other thing that was interesting is  
3 that during the discovery process, I became aware of an email  
4 that I hadn't read before that, although it's confidential, the  
5 -- what -- the subject of it had to do with Hydro-Quebec  
6 showing that there was a firm amount of energy that they could  
7 get out of Quebec without a new transmission line. And, you  
8 know, I can't get into the specifics of the number in the  
9 public session, but that number that was in there and that  
10 discussion about the fact that, without NECEC, they're going to  
11 reach a cap where they're not going to be able to export  
12 additional energy because of economics that we talked about  
13 earlier is reinforced in that email from May of 2017.

14 MR. DES ROSIERS: Now, Mr. Stinneford, there was  
15 questions from the Office of the Public Advocate and the IECG  
16 with respect to the potential impacts of having CMP be the  
17 owner of the project as opposed to a special-purpose entity.  
18 Do you see benefits to CMP and its existing customers if the  
19 project were to be owned by CMP?

20 MR. STINNEFORD: There are potential benefits, and  
21 I've addressed some of this in earlier testimony that, in  
22 financing the project, there will have to be new debt issued.  
23 And currently, at rates that are available in the market, that  
24 debt could be achieved at a lower cost than CMP's current  
25 embedded cost of debt. The result of that would be that our

1 average cost of debt for CMP would go down. If this is  
2 separately financed outside of CMP, CMP ratepayers would lose  
3 the benefit of that.

4 MR. DES ROSIERS: There was also questions with  
5 respect to whether the company believed it was appropriate or  
6 -- to -- that the special-purpose entity would pay a -- some  
7 kind of a goodwill payment to -- or, excuse me, that the SPE  
8 would pay some sort of a goodwill payment as part of a  
9 transfer, and I believe your testimony was you did not believe  
10 that to be appropriate. And just explain why you don't believe  
11 it would be necessary or appropriate in this instance.

12 MR. STINNEFORD: Sure. The basis that we have heard  
13 argued for a goodwill payment is that the project would  
14 constitute a non-core service under Chapter 820 and that -- and  
15 I've heard various reasons or explanations for why it should be  
16 considered non-core. Our concerns or my concerns are that  
17 those reasons that I have heard expressed would mean that much  
18 of CMP's future transmission activity, if not all of it, could  
19 potentially be considered non-core. You know, whether that's  
20 due to the fact that this was competitively bid or that it was  
21 for the benefit of a third party and not CMP's native  
22 customers, those kind of criteria are behind much of the  
23 transmission that we build today and are likely going to be an  
24 increasing amount that we build in the future. And if that's  
25 the criteria for determining whether something is core or non-

1 core, you know, much of CMP's activities would be then  
2 considered non-core and have to be spun off into an affiliate.  
3 And I -- it leads to what I think is an untenable result, and  
4 we would have great concerns with that.

5 MR. DES ROSIERS: Now there was also questions,  
6 though, with respect to the treatment of the plant held for  
7 future use that is currently owned by CMP and that has been put  
8 into rates under the -- both the regional tariff and the local  
9 tariff and that transmission customers have paid and that what  
10 will happen with that plant when the NECEC moves forward. And  
11 I guess what is the company's position today with respect to  
12 how that plant should be treated both on a prospective basis  
13 and then retrospectively with respect to -- retrospectively?

14 MR. STINNEFORD: Prospectively, I don't think there's  
15 any disagreement that when the project goes forward, that land  
16 would be transferred out of CMP rate base in Account 105 and  
17 would be booked to the project. We have promised in  
18 confidential settlement discussions that in the context of a  
19 CPCN being issued by the Commission here and the project going  
20 forward to construction that we would refund to Maine customers  
21 the amount that has been previously been collected in rates  
22 associated with that land held for future use. That's an  
23 amount that is, in rough terms, a hundred million --

24 MR. TANNENBAUM: Hundred million?

25 MR. STINNEFORD: -- a million dollars plus carrying

1 costs.

2 MR. DES ROSIERS: Hold on.

3 MR. STINNEFORD: And I -- you know, I can say today  
4 that that is a commitment that we would make even outside of  
5 settlement. If that were the desire of the Commission, that  
6 that money be returned to customers through a revenue  
7 requirement credit upon the issuance of a CPCN and transfer of  
8 that property into operating property, we would pledge to make  
9 that commitment.

10 MR. DES ROSIERS: There was some questioning with  
11 respect to the public outreach and the notice that was provided  
12 prior to the submission of the petition in this CPCN  
13 proceeding, and at that time, there was some mention of giving  
14 notice to abutting landowners. Could you describe that and  
15 when that happened?

16 MR. DICKINSON: Sure. So that we were required to  
17 make a public information meeting as a result of our DEP  
18 application. We -- the requirement was really only one of  
19 those information meetings for -- to happen. We actually held  
20 three. In prep for those meetings, you need to provide written  
21 notice to all abutters, and we made that notice to those  
22 parties. We had held those three public hearings in a way to  
23 try to provide coverage for the overall project. Again, even  
24 though we were only required to do one. One was in Bingham,  
25 one was in Lewiston, and one was in Windsor.

1 MR. DES ROSIERS: Were they well attended?

2 MR. DICKINSON: Yeah, they were extremely well  
3 attended. There was a lot of dialogue. We had a well --  
4 staff, number of outreach people and experts, at a number of  
5 stations showing visuals of the project, the route of the  
6 project. We had computers manned so that people could see  
7 specifically where the line was located. We had follow up with  
8 people that had questions and addressed misconceptions that  
9 were out there related to the project.

10 MR. DES ROSIERS: There was also some questioning  
11 with respect to the outreach to the town of Caratunk. And did  
12 CMP -- what was CMP's outreach to Caratunk and the town  
13 officials?

14 MR. DICKINSON: Well, we -- you know, we discussed  
15 the meeting that was held. My expectation is there was an  
16 outreach ahead of that, but since the -- since that meeting,  
17 we've continued to, a number of occasions, ask for additional  
18 meetings and we've been -- to the town officials, and the town  
19 officials have communicated back that they're not interested in  
20 us for coming back.

21 MR. DES ROSIERS: That's all I have, thank you.

22 MR. VANNOY: Can I ask a follow up?

23 MR. TANNENBAUM: Yes, you may.

24 MR. VANNOY: Could you flesh out a little bit more  
25 for me, Eric, the -- you commented a future where TOs can't own

1 as core business those transmission projects. You called that  
2 untenable. Could you flesh out what you mean by that in a  
3 little bit more detail?

4 MR. STINNEFORD: Yeah, if you believe that we're on a  
5 trend, as I do, that, whether it's reliability projects or  
6 public policy projects or state-initiated RFP processes, a  
7 significant piece of our future transmission is going to be  
8 procured through competitive processes -- and that's going to  
9 be reliability upgrades, it's going to be ETUs, it's going to  
10 be all sorts of transmission. If, you know, CMP is required to  
11 separate its activities around those types of construction  
12 projects from its other transmission and distribution  
13 activities, it's going to create additional costs,  
14 inefficiencies, operational constraints that, in our mind, just  
15 don't make sense.

16 MR. TANNENBAUM: The way I see your core business is  
17 to provide reliable transmission and distribution service. It  
18 doesn't really, in my view, matter whether that -- if it's a  
19 reliability project, whether it's procured through a  
20 competitive process or through the judicial process. So I  
21 don't think that the issue is whether it's a competitive  
22 process or not. I think it may go more towards whether it's a  
23 core function of CMP to provide reliable transmission service.  
24 So, for example, if CMP were to own a generator lead to bring a  
25 wind project into the grid, would that generate a lead, be a

1 core business of CMP?

2 MR. STINNEFORD: I'd have to think about the legal  
3 definitions behind that, Mitch.

4 MR. TANNENBAUM: I know, it -- well --

5 MR. STINNEFORD: It's -- I mean, to some extent, we  
6 infringe on that today when we build generator interconnections  
7 under an interconnection request. Although staff may not have  
8 raised the competitive bidding issue, other parties have as a  
9 criteria for consideration in core versus non-core. But  
10 they've also raised the issue of building transmission for  
11 somebody other than our native load requirements as being  
12 outside of core activities. You know, under that definition,  
13 then us building a generator interconnection, whether we own it  
14 or it's being built and turned over for the benefit of the  
15 generator or system upgrades that we're building on our system  
16 to accommodate an independent generator, that would fall under  
17 the category of non-core. And I think, you know, that doesn't  
18 make sense to us either.

19 MR. WILLIAMSON: This is going back to Eric, to your  
20 comments about the benefits, community benefit packages,  
21 becoming a part or perhaps a usual part or a commonplace part  
22 of transmission projects, that tends to increase transmission  
23 costs, project costs overall. How do you regard CMP's -- or as  
24 you stated, a policy view, a high-level policy view, how do you  
25 regard that view as compared with your peers in the region? Do

1 you find, for example, that Eversource is perhaps excessively  
2 generous in what they offer? I mean, do others share that kind  
3 of perspective on, while it may need to be done, there is a  
4 cost on projects? Because, back to your original point, we are  
5 all concerned about transmission costs in New England. That's  
6 well known. So let me know your thoughts regards -- CMP as  
7 related to the peers --

8 MR. STINNEFORD: Yeah, I mean, I hesitate to speak on  
9 behalf of other transmission developers, but, I mean, clearly  
10 some are willing to make those commitments and include those  
11 costs in the cost of their project. You know, they're not  
12 doing it out of their own goodwill and out of their own  
13 financial backers. They're asking customers to pay for those  
14 mitigation packages. Not all projects, I suspect, are doing  
15 that, and I'll admit each state is going to view the  
16 requirement for those kind of mitigation packages differently.  
17 Our concern is that if we reinforce that requirement by  
18 demanding similar mitigation packages here in Maine, we're just  
19 contributing to that snowball effect that is going to make this  
20 very difficult to reverse in the future.

21 MR. WILLIAMSON: And just do you get the impression  
22 that nationally this is a problem? This may be beyond what  
23 you're familiar with, but on the other hand, you may have come  
24 across --

25 MR. DICKINSON: I mean, we just competed in a project

1 in the MISO region, and it is very clear that the winning  
2 bidder, NextEra, did not include a benefits package in that  
3 transmission line. So that would be a very recent example of  
4 that. But the one difference I think to point out here with  
5 Northern Pass as being kind of the prime example -- obviously  
6 the Vermont project was not selected -- that was a project that  
7 moved for ten years and continued to try to find a way to make  
8 that project move forward and had a different strategy on how  
9 they approached it.

10 MR. WILLIAMSON: Thank you.

11 MR. TANNENBAUM: I'm kind of caught up in this  
12 core/non-core. If CMP participated or constructed a  
13 transmission project in another state, would that be core  
14 because it's transmission?

15 MR. STINNEFORD: I think if you -- based on my  
16 reading of the definitions, you know, right now the definition  
17 of core versus non-core does have a hook to franchise service  
18 territory. So activities that are outside of that could be  
19 considered non-core. So we don't dispute the fact that if we  
20 were bidding on a competitive solicitation to build  
21 transmission elsewhere in New England or outside of New England  
22 that that could be considered non-core.

23 MR. TANNENBAUM: Okay. Anything else for this panel?  
24 Okay. You're excused. Thank you very much for your testimony.  
25 We have a couple of exhibit issues I want to discuss. So the

1 generator interveners, I believe, asked questions regarding  
2 Exhibits 26 and 27.

3 MR. DES ROSIERS: No objection to those and no  
4 objection as well to Exhibit 28.

5 MR. TANNENBAUM: No objection --

6 MR. DES ROSIERS: To 26 or 27 or the additional  
7 presentation that they passed around today. We have no  
8 objection to that as well.

9 MR. TANNENBAUM: And was that marked?

10 MR. DES ROSIERS: I believe it was marked as 28.  
11 Yeah, so they --

12 MR. TANNENBAUM: Twenty-eight? Okay. Now, let's  
13 see.

14 MR. TURNER: Mitch, sorry, I just -- over here. I  
15 just want to -- on number 28, it's clearly a typo, but just for  
16 the record it says January 8, 2018. I believe they meant  
17 January 8, 2019.

18 MR. SHOPE: Yes, that's the markets committee error,  
19 but it's a common error at the beginning of the year.

20 MR. TURNER: Understood.

21 MR. SHOPE: We'll talk to Mr. Fowler about it when he  
22 comes on Friday. And by the way, just as a housekeeping  
23 matter, should we -- with regard to the exhibits that we've  
24 passed around today, should we file them on the website?

25 MR. TANNENBAUM: You mean in the docket?

1 MR. SHOPE: Yeah, in the docket. Because I know some  
2 -- CMP has circulated some additional exhibits, and I don't  
3 know whether they've yet been filed on the docket.

4 MR. TANNENBAUM: They should be. If they're not data  
5 requests, they should be on CMS -- or data responses.

6 MR. DES ROSIERS: And in that regard, because we  
7 haven't finished with Ms. Bodell's testimony, I haven't made --  
8 checked to make sure all of ours are addressed, but we  
9 certainly intend to do that when Ms. Bodell's testimony is  
10 complete.

11 MR. TANNENBAUM: Okay. Brian, regarding NextEra's  
12 exhibits, we deferred ruling on many of your proposals. I  
13 believe what you referred to today were marked in your pre-  
14 hearing memo as Exhibits -- well, sorry, I'll get back to that.  
15 I'm assuming now at this hour we're not going to move to Ms.  
16 Bodell or do parties think we should?

17 MR. SHOPE: Oh, so we're ready to go, and as far as  
18 I'm concerned, anything that makes Friday shorter is a good  
19 thing, but --

20 MR. TANNENBAUM: Want to go for an hour --

21 MR. SHOPE: But it's -- okay.

22 MR. TANNENBAUM: Why don't we --

23 MR. SHOPE: I'm assuming that we would finish it up.  
24 Is that --

25 MR. TANNENBAUM: Okay, so quickly, Brian, I believe

1 you referred to as -- you referred to Exhibit 17, 25, 22, and  
2 24. Can I assume -- and then -- so we deferred on those. I  
3 assume there's no objection for those exhibits going in the  
4 record.

5 MR. DES ROSIERS: It's my understanding, subject to  
6 discussion with Mr. Murphy, that for some of them, he intends  
7 to only offer the portions that are included in his handout.  
8 We have no objection to the inclusion of those portions of the  
9 documents, not the complete files that he originally filed. So  
10 with that, we have no objection.

11 MR. TANNENBAUM: So maybe that would be worth filing  
12 in CMS, just the excerpts. And then the other ones that we  
13 deferred ruling on during a case conference, would those be  
14 considered withdrawn?

15 MR. MURPHY: I don't think I'm going to use them  
16 tomorrow, but if we could wait till tomorrow.

17 MR. TANNENBAUM: All right, let's wait until  
18 tomorrow. Okay, Ms. Bodell. Drew, would you like to lead us  
19 off?

20 MR. LANDRY: Sure, why not. Good afternoon, Ms.  
21 Bodell. I'm Andrew Landry. I'm counsel for Industrial Energy  
22 Consumer Group in this proceeding. And I wanted to start with  
23 a couple of follow ups from yesterday's hearing. I think you  
24 mentioned at some point you discussed the fact that Hydro-  
25 Quebec has some flexibility with respect to either delivering

1 power or making a financial make-whole payment in lieu of  
2 delivering power. Do you recall making those comments?

3 MS. BODELL: I do.

4 MR. LANDRY: Would you agree that that's not an  
5 unlimited right, that there is a certain minimum physical  
6 deliverability that has to be done under the contract?

7 MR. SHOPE: I'm going to object to the form because I  
8 think you're talking about deliverability versus delivered. I  
9 mean, I think since you --

10 MR. LANDRY: Delivery --

11 MR. SHOPE: Delivery. Yeah, you said deliverability,  
12 yeah.

13 MR. LANDRY: Thank you. Would you agree that there  
14 is a minimum requirement for physical delivery under the  
15 contract?

16 MS. BODELL: I would agree that there is a minimum  
17 requirement for physical delivery. I think a lot of our  
18 discussion yesterday was about the definition of what's  
19 incremental to New England, and that definition allows for a  
20 significant amount of reduction in what they're currently  
21 sending into New England without any penalty whatsoever. And,  
22 for example, in 2017 they delivered 18.2 terawatt hours into  
23 New England. Under the Eversource and Unitil contracts,  
24 they're only required to deliver three terawatt hours. And  
25 under the other contract, it has a maximum of 9.45 with

1 adjustments that would take it down. So I think the  
2 conversation yesterday did not speak to -- what's in the  
3 contract with respect to total deliverable energy was focused  
4 on the incremental aspects of delivering into New England which  
5 all of the -- well, I'll speak for ourselves -- which the  
6 economic benefits analyses was focused on.

7 MR. LANDRY: Okay. I don't want to dive too deep  
8 into the PPA because I'm sure we'll bore everybody at this late  
9 hour, but would you agree that the contract calls for a hundred  
10 percent capacity factor but allows some flexibility to  
11 substitute either financial payments or delivery in other  
12 hours?

13 MS. BODELL: I would agree that the contract allows  
14 for that flexibility. In both of those cases, either a  
15 financial payment, which is why I referred to this more as a  
16 put, and the second is with respect to the ability to do makeup  
17 deliveries at other points during the period designated,  
18 whether it's within the year, whether it's in the specific type  
19 of hour, or whether it's a longer period.

20 MR. LANDRY: And again, I don't want to get into the  
21 details, but is it your understanding that there's a limit to  
22 the amount of substitution they can do?

23 MS. BODELL: I would agree with you that there is  
24 language that attempts to limit that substitution at which  
25 point the make-whole payments -- I think they're called cover

1 damages -- come into play. But I also indicated in my  
2 surrebuttal report that the Hydro-Quebec guarantee, parental  
3 guarantee, backing the support for these contracts is limited.  
4 And therefore, if there is a benefit that Hydro-Quebec could  
5 obtain by simply walking away from the contract because there's  
6 a higher benefit than that parental guarantee, they would have  
7 an economic incentive to do so. So at the end of the day, it's  
8 going to be an economic decision, but the contract speaks for  
9 itself.

10 MR. LANDRY: Thank you, I agree with that. And one  
11 further question about the PPA and then we'll move along.  
12 Which is would you agree that the contract requires the power  
13 to -- or the contract to satisfy ISO New England's capacity  
14 capability interconnection standard?

15 MS. BODELL: I agree that there is language in there  
16 and a process by which that's to be obtained. And obviously if  
17 there is a deliverability issue with respect to the contract,  
18 there are repercussions with respect to whether or not the  
19 contract and the project can proceed.

20 MR. LANDRY: Okay, thank you. And would you -- and  
21 moving past the PPA, would you agree that the capacity  
22 capability interconnection standard of ISO New England is  
23 intended to ensure that energy is -- from particular units  
24 seeking to interconnect is capable of qualifying for the  
25 capacity market, at least physically capable of delivering the

1 power that -- for which capacity is proposed, it doesn't say  
2 anything as to the MOPR or anything we'll talk about on Friday?

3 MR. SHOPE: I'm going to object to the form of the  
4 question because --

5 MR. LANDRY: Sorry.

6 MR. SHOPE: -- it -- there -- it's a very complicated  
7 clause that you're asking about and there were, like, three  
8 different --

9 MR. LANDRY: Okay --

10 MR. SHOPE: -- concepts getting mashed up there.

11 MR. LANDRY: I'll maybe ask an open-ended question  
12 which is could you describe your understanding of the capacity  
13 capability interconnection standard of ISO?

14 MS. BODELL: I'd actually want to review that before  
15 I gave you a description of that, but on a high level I can  
16 say, in general, any ISO is going to want to ensure that a  
17 connection is not going to adversely impact the reliability of  
18 their system.

19 MR. LANDRY: Okay, thank you. Now, there's a lot of  
20 discussion -- I'm sure we're going to have a lot of discussion  
21 on Friday about the minimum offer price rule, and I really  
22 don't want to talk about that today at all except to note that  
23 in terms of whether Hydro-Quebec is able to qualify this energy  
24 in the capacity market, one possibility is that it could have  
25 -- or could qualify by having a low enough price under the

1 minimum offer price rule to be able to participate in an  
2 auction. Is that fair?

3 MS. BODELL: So you're talking about a minimum offer  
4 price which would be calculated as part of the minimum offer  
5 price rule?

6 MR. LANDRY: Right, I'm saying if Hydro-Quebec seeks  
7 to qualify this power in the capacity market, one possibility  
8 is it would actually -- would satisfy the minimum offer price  
9 rule and would be able to bid in the market?

10 MS. BODELL: I think that we'll talk more about this  
11 on Friday. I would call it a theoretical possibility because I  
12 think there's very strong evidence, including the spirit of the  
13 minimum offer price rule as well as specific information that  
14 we've provided about what we know publicly about Quebec's  
15 system, that makes that theoretical.

16 MR. LANDRY: And another possibility is that it  
17 doesn't qualify, but it does participate in a substitution  
18 auction and replaces some existing units.

19 MS. BODELL: That most certainly is a possibility.

20 MR. LANDRY: And you discuss in your testimony, I  
21 believe -- your initial testimony, I believe, at page 27 the  
22 fact that Wyman might be one of the units that might seek to  
23 retire. Is that -- or -- is that your recollection or is that  
24 fair?

25 MS. BODELL: That is fair. In my original testimony,

1 I identified Wyman as a plant potentially at risk of being an  
2 obvious choice for the substitution given its size but also the  
3 fact that it is -- has been identified already as a plant at  
4 risk of retirement by ISO New England. And so given that, plus  
5 given the general characteristics of Wyman which I described, I  
6 would see Wyman as being a candidate for potential  
7 substitution. But then again, Wyman provides fuel diversity  
8 and that has allowed for an RMR contract in other cases in this  
9 market.

10 MR. LANDRY: And you also identified, I think on page  
11 28, a number of gas units that you thought might be candidates  
12 for substitution?

13 MS. BODELL: That's right. Again, my analysis did  
14 not look at the details of their financials because I don't  
15 have access to a critical component of that which is their  
16 fixed costs. But just basically assuming that if they're not  
17 operating to provide energy, they're not generating as much  
18 revenue, and if they're large, they have larger fixed costs.  
19 That would imply that the larger plants that are not operating  
20 are potential candidates for substitution.

21 MR. LANDRY: Now, let's assume in your hypothetical  
22 that ISO New England stepped in to support Wyman and, in fact,  
23 some gas units retired in the substitution auction. In that  
24 case, would a Hydro-Quebec contract with a capacity supply  
25 obligation enhance the fuel security of Maine and New England?

1 MS. BODELL: Not necessarily, and let me tell you  
2 why. And this goes to your first question about the contract  
3 and the flexibility in the contract. Because there is this  
4 minimum level that theoretically could be required to be  
5 delivered under this contract and there is this contract in  
6 place, it would make sense for Hydro-Quebec to deliver the  
7 energy that it has available through NECEC and also potentially  
8 bid capacity through NECEC but take that capacity away from  
9 what they're currently bidding into New England through New  
10 Brunswick and through New York. And the reason is because they  
11 have to pay wheeling costs for selling that capacity and the  
12 energy associated with it through New Brunswick and through New  
13 York. And so, therefore, it would be less costly if -- under  
14 our conclusion that they have very limited capacity to be able  
15 to sell anyway, it would make economic sense for them to simply  
16 shift their capacity supply obligations from the other  
17 interties into NECEC, which would cause no net benefit  
18 whatsoever, no net impact on capacity prices. As far as the  
19 fuel diversification is concerned, the reality is Maine is the  
20 most diversified fuel part of ISO New England, and some of the  
21 gas that's supplied to those plants comes through a separate  
22 line that is unrelated to the Algonquin city gate TETCO 3  
23 congestion that has occurred during peak periods. So I'm not -  
24 - I haven't done a thorough analysis, but there are just  
25 general aspects of the way the gas plants in Maine are

1 connected that would make me believe it's not going to have a  
2 benefit for the rest of New England from a fuel diversification  
3 point of view even if those gas plants did retire.

4 MR. LANDRY: With respect to imports or delivery of  
5 capacity through New York or Hydro-Quebec, does Hydro-Quebec  
6 have a capacity supply obligation through those points?

7 MS. BODELL: Yes. So Hydro-Quebec has -- I mean,  
8 this is in one of my workpapers. Hydro-Quebec has a capacity  
9 supply obligation -- or qualified -- I'd have to look, but I  
10 think they also did win their capacity supply obligation. They  
11 both qualified and won the capacity supply obligation for I  
12 think it's 300 megawatts through New York and -- I would have  
13 to look up the number, again, it's in my workpapers -- but for  
14 a certain amount through New Brunswick as well.

15 MR. LANDRY: Would they have to surrender those  
16 capacity supply obligations?

17 MS. BODELL: If they, as we conclude, have a limited  
18 amount of capacity and, therefore, they're trying to optimize  
19 the capacity that they have, they would not have to surrender  
20 that. It would just make an economic -- it would make economic  
21 sense that if they have no more capacity to bid, that they  
22 redirect the capacity they're currently bidding through New  
23 York and New Brunswick into NECEC. Again, because they have  
24 the lower cost of delivery since they're not paying the  
25 wheeling charges.

1           MR. LANDRY: I understand that, but they have an  
2 existing capacity supply obligation, yet they transfer to a  
3 different delivery point?

4           MS. BODELL: They only do one year-to-year capacity  
5 supply bid, and I think that's in part because it -- well, I  
6 suspect it's because of the volatility of the water supply and  
7 the capacity that they could have available on any year.

8           MR. LANDRY: So theoretically, it might not be  
9 available at any particular time.

10          MS. BODELL: That's right. And in fact, as I showed  
11 in the supplemental report, there were two years, FCA 9 and FCA  
12 10 I believe, where Hydro-Quebec only qualified for 200  
13 megawatts into the market. And they've recently been able to  
14 qualify for more, but that just shows it was following a dry  
15 year in 2013, and come 2014/'15 I think they bid conservatively  
16 into the FCA. But I think it's important to see the variation  
17 in what their historical qualification and clearing has been.

18          MR. LANDRY: Now if they didn't qualify, or didn't  
19 seek to qualify, in the capacity -- forward capacity market,  
20 would they still be eligible to receive payments from  
21 generators who are penalized under the pay for performance  
22 rules?

23          MS. BODELL: The pay for performance is tied to the  
24 capacity supply obligation, and so if Hydro-Quebec does not  
25 have a capacity supply obligation, they would not be subject to

1 those penalties or rewards.

2 MR. LANDRY: But if another unit, let's say a gas  
3 unit in Maine, was unable to satisfy its obligation during a  
4 peak period and had to pay a penalty, if Hydro-Quebec were  
5 delivering during those hours, would they be eligible to  
6 receive a portion of the payments?

7 MS. BODELL: The pay for performance which is part of  
8 a capacity supply agreement, the answer -- I believe it's part  
9 of the capacity supply agreement obligation, and so the answer  
10 would be no. And that's part of the reason why some of these  
11 plants are putting delist bids out, because there's a pay for  
12 performance penalty that goes into their calculation.

13 MR. LANDRY: Let's say when they pay the penalty, the  
14 money goes into a pool that's used to fund -- to pay folks who  
15 do show up and provide capacity or are available during those  
16 hours, is that right?

17 MS. BODELL: That's right. But I think, again,  
18 subject to check, and we can look at this on Friday, but I  
19 believe the pay for performance is a capacity supply obligation  
20 payment. I know the penalties are only tied to whether or not  
21 they had a capacity obligation and did not pay. I'd want to  
22 check to make sure that the payment only goes to those that  
23 did. But if it does go to all of the plants, then your theory  
24 would be correct.

25 MR. LANDRY: All right, thank you.

1           MR. VANNOY: Just a follow up. If you take the  
2 hypothetical that it goes to anybody who's supplying energy  
3 during that scarcity period --

4           MS. BODELL: Correct.

5           MR. VANNOY: -- that they receive a payment in that  
6 pay for performance incentive piece, how would you view that  
7 with respect to some of the other economic incentives they have  
8 to move their capacity around. I mean, does that change in any  
9 way what you're saying with respect to their incentives?

10          MS. BODELL: It still would change what I'm saying  
11 with respect -- it would not -- I don't think it would change  
12 what I'm saying with respect to the incentives because there's  
13 energy that would be flowing through NECEC. They'd be getting  
14 a high price under the contract for that. And so under most  
15 conditions, they're going to want to flow the energy under that  
16 contract, especially because of some of these contractual  
17 provisions, even though they have flexibility not to. So if  
18 they're going to get paid no matter what, does it matter where  
19 they're shifting their energy? No, but they still want to be  
20 able to get the capacity supply payment. And, again, I'd want  
21 to go back to the pay for performance to refresh myself on the  
22 details of how the payout goes before I make a conclusion, but  
23 I think generally, they still save on the New Brunswick  
24 wheeling charge which is why they would put it through NECEC  
25 irregardless -- if the pay for performance -- so let me step

1 back. If the pay for performance payment occurs just because  
2 they're delivering energy, that in and of itself would not  
3 impact whether they sell it through New Brunswick or through  
4 NECEC. It's the fact that there's a wheeling charge through  
5 New Brunswick that they have to pay that would have to be  
6 compared to a fixed payment that they already have to make  
7 under the TSA. So they can avoid the New Brunswick  
8 transmission fee if they sell it through NECEC. I hope that  
9 makes sense.

10 MR. VANNOY: No, I followed. Thanks.

11 MR. LANDRY: We talked a little bit about delisting  
12 here and the possibility of some units in Maine seeking to  
13 delist. Am I correct there's two types of delist bids that  
14 plants can pursue? One is a dynamic delist bid and another is  
15 a static, is that the right term?

16 MS. BODELL: That is correct.

17 MR. LANDRY: And one of those is -- contemplates the  
18 full retirement of the unit and the other one contemplates that  
19 the unit would remain operational and simply participate in the  
20 energy market or whatever else it wants to do?

21 MS. BODELL: Yes.

22 MR. LANDRY: If the unit selected the option of  
23 remaining open, would those -- are those units eligible to  
24 receive payments from the pay for performance penalties? Maybe  
25 it's the same question I asked before.

1 MR. SHOPE: I'm sorry, you said remaining open, and  
2 I'm not sure what -- I guess formally it's an objection to the  
3 form of the question, but I -- maybe you could rephrase it.

4 MR. LANDRY: Yeah. Would those units be eligible to  
5 receive any payments in the event that there was units paying a  
6 pay for performance penalty?

7 MR. SHOPE: Drew, again, objection because I'm not  
8 sure what unit -- you said units that are open which I don't  
9 think is a term.

10 MR. LANDRY: Right. I'm referring to the units that  
11 have delisted but have remained operational. If they remain  
12 operational and they are able to operate during peak hours when  
13 pay for performance penalties are incurred by some units, would  
14 they be eligible to receive payments as a portion of the  
15 penalties?

16 MS. BODELL: Again, I'd really like -- you know,  
17 sometimes these rules are very complex and they have clauses  
18 and subtle aspects. I'd like to refresh myself on the pay for  
19 performance rules and get back to you on that.

20 MR. LANDRY: Sure.

21 MS. BODELL: My original thought is that the pay for  
22 performance penalties and rewards are only paid to companies  
23 and plants that have a CSO, that have qualified and cleared the  
24 capacity market. But there may be some exceptions or clauses  
25 or under -- you know, they're just -- or state of emergency.

1 So I just -- I really would like to review those rules before I  
2 make a definitive statement to say that somebody who no longer  
3 has a CSO and is operating as an energy-only resource, whether  
4 or not they would be eligible for the upside of a penalty -- of  
5 a performance pays program but not the downside. They most  
6 certainly would not be part of the downside. I just need to  
7 review the rules to see if they'd be part of the upside.

8 MR. LANDRY: All right, thank you.

9 MR. SHOPE: And it's not within the scope of his  
10 testimony, but if you'd like to ask that question of Mr. Fowler  
11 on Friday, then certainly by all means.

12 MR. LANDRY: Thank you. Now those units -- a unit  
13 that does choose to remain open if it's a -- after they delist,  
14 presumably it might be -- a lot of these units in Maine have  
15 been running as peaking units. Is that fair?

16 MS. BODELL: That is true.

17 MR. LANDRY: And if they did have available fuel  
18 supply and were able to run during peak hours, whether that's a  
19 winter unit that has oil available or a unit in the summer, a  
20 gas unit, any -- during the summer, they would be -- have the  
21 opportunity to receive some of those high prices during those  
22 extreme peak hours.

23 MS. BODELL: That is true. However, a lot of those  
24 plants are receiving revenues under the capacity market, and  
25 the question is, from an economic decision point, they now have

1 less flexibility with respect to the source of their revenues.  
2 They're permanently out of -- if they substitute out through  
3 CASPR, they're permanently out of the capacity market, and,  
4 therefore, changes in energy prices -- they'd be more sensitive  
5 to changes in energy prices.

6 MR. LANDRY: Sure, okay, thank you. Now, with  
7 respect to these -- the low-capacity factor units that you had  
8 identified, again, I think at pages 27 and 28 of your  
9 testimony, I believe a number of them were operating in the,  
10 you know, 15 percent capacity factor plus or minus. Is that  
11 your recollection?

12 MS. BODELL: I'll say that the chart speaks for  
13 itself because we did calculate what the capacity factors are,  
14 but most certainly they are not operating very often. They are  
15 not even peak operators, they're super-peak operators that  
16 operate during the most extreme pricing situations.

17 MR. LANDRY: And when do those most extreme pricing  
18 situations occur?

19 MS. BODELL: Those extreme pricing situations  
20 generally occur during the summer peak hours when load is  
21 highest. They also can occur in the winter because of the  
22 higher gas prices that happen not just in New England, but most  
23 of the markets, just because of the winter cold, results in a  
24 higher demand for gas from residential and industrial and  
25 commercial consumers, mainly for the heating. So generally the

1 peak prices in New England occur in the summer and the winter.  
2 However, as we discussed yesterday, there are some anomalies  
3 that can occur during the shoulder months tied to the fact that  
4 that's when a lot of the generators are scheduled for  
5 maintenance. And so, therefore, often that tight supply can  
6 create some anomalous price spikes. Generally, the higher  
7 prices are going to occur -- the super peaks are going to occur  
8 in the winter and the summer.

9 MR. LANDRY: Now, with respect to the gas units that  
10 you'd identified in your chart on page 28, if the price spike  
11 is being caused by a shortage of gas, those units probably were  
12 not running during the gas period -- the peak winter period?

13 MS. BODELL: I would say no. I think if the gas  
14 plants are not operating during the winter peak period, it's  
15 generally because they're not economic and the oil is a lower-  
16 priced option. And so the oil plants will be coming online,  
17 the dual-fuel units will be coming online, and oil will start  
18 to set the price instead of natural gas. So I don't think that  
19 you can't look at a gas plant as being unable to get the supply  
20 and that's why they're not operating. I think the market  
21 prices send a very good price signal which say, look, you can  
22 operate, you can get the gas, but it's going to be very  
23 expensive, but there's a cheaper alternative, which is this oil  
24 plant over here, so we're going to operate the oil plant  
25 instead. And that's the nature of the New England system with

1 the dual-fuel capability and the oil units. New York has a  
2 similar type of situation.

3 MR. LANDRY: Do you think that a fair number of the  
4 hours that the gas units are running are summer afternoons?

5 MS. BODELL: I would expect that to be the case, yes.  
6 Again, summer and winter, but summer afternoon I would expect,  
7 if it's a very hot summer, that there'd be a summer day they'd  
8 be operating.

9 MR. LANDRY: You agree that the development of  
10 additional solar facilities in Maine and New England may tend  
11 to cause the capacity factor of these units to reduce as well?

12 MS. BODELL: So the answer -- the question is simple.  
13 The answer is more complicated because I think what you're  
14 talking about now is what's called the duck curve and that's  
15 where there's actually a dip in the load in the middle of the  
16 day in the summer because the solar is providing energy and  
17 offsetting the need for energy to be delivered to residential  
18 consumers who would otherwise have air conditioning load  
19 because the solar panels on the roof are offsetting that. And  
20 in that case, what you would expect is that an inefficient gas  
21 unit might not operate but, in fact, those inefficient gas  
22 units happen to have the fastest ramp up speeds. And so they  
23 happen to be needed often to be able to make up the difference  
24 when the solar gets covered by a cloud. If a cloud comes over  
25 all of a sudden, the load gets up. And so there's a lot more

1 volatility that requires ramping capability, and that can be  
2 paid for through ancillary services and that can be a valuable  
3 revenue source for these inefficient but fast ramp up/ramp down  
4 plants.

5 MR. LANDRY: The capacity factor only reflects the  
6 hours generation, it doesn't reflect ancillary services.

7 MS. BODELL: Well, the ancillary services are a non-  
8 spinning reserve or spinning reserve. But to the extent  
9 they're required to inject into the system to cover when the  
10 cloud comes over, then there's energy being injected into the  
11 system to do that. And so you would see that would go into the  
12 capacity factor calculation. But again, I said it's a  
13 complicated answer to what seems like a simple question. You  
14 really have to run the analysis to see what the solar load is,  
15 how these plants are needed, and how increased solar is going  
16 to impact their capacity factor. But, in general, I would  
17 expect with lower super peaks, there could be a lower capacity  
18 factor for those units.

19 MR. LANDRY: Thank you. One more area. Would you  
20 agree in general that the cost of energy has a direct impact on  
21 whether businesses are -- can be profitable if energy's an  
22 important part of their cost structure?

23 MS. BODELL: Yes, to the extent that energy is an  
24 important input to a manufacturing process or any business,  
25 then the price of that energy impacts their profitability.

1 MR. LANDRY: So to the extent that you see a  
2 reduction in the price of energy, businesses would have --  
3 potentially have available funds to hire new workers or to  
4 expand their property, their -- expand their business  
5 locations.

6 MS. BODELL: I think it depends on how big that price  
7 reduction is and how much of the cost that energy component is  
8 of the total cost structure as well as what the investment  
9 requirements are and even if there is an opportunity to expand  
10 to produce more. So it's not a simple relationship. There's a  
11 lot of threshold numbers that would need to be analyzed.

12 MR. LANDRY: But the tendency would be, if you have  
13 more available money, you -- I mean, you may just decide to  
14 keep it as a business owner, but you also may decide that,  
15 given the lower cost structure, it's an opportunity to expand.

16 MS. BODELL: Again, I will agree with you that lower  
17 costs are beneficial to businesses. What they do with that is  
18 very unique to those businesses.

19 MR. LANDRY: Do you have a sense of how significant  
20 energy costs are to the operation of paper mills and similar  
21 manufacturers?

22 MS. BODELL: My understanding is that it's a large  
23 portion of their costs, but I don't know the relative portion  
24 or how that compares to the fixed costs.

25 MR. LANDRY: Are you aware that a number of paper

1 mills have permanently closed in Maine over the last four or  
2 five years?

3 MS. BODELL: I am aware of that, but I don't know  
4 what the cause is, whether it's tied to energy prices, whether  
5 it's tied to a change in the market, or if there are other  
6 costs that have increased like gas or any of the other costs  
7 that go into producing and delivering.

8 MR. LANDRY: Fair enough. Thank you very much.

9 MS. BODELL: Sure. You're welcome.

10 MR. TANNENBAUM: Dot?

11 MS. KELLY: Thank you. Thank you, Ms. Bodell. My  
12 questions are all going to be about the same kind of topic to  
13 better understand how if, let's say, the TDI transmission line  
14 was built or the Northern Pass line was built or if the CMP  
15 line was built, how it impacts things like the indirect savings  
16 to energy costs, CASPR, LMP in Maine, and zonal separation in  
17 Maine. So I'm going to start from the beginning, but I was  
18 just giving you a flavor.

19 MS. BODELL: Thank you.

20 MS. KELLY: So referring back to Mr. des Rosiers'  
21 questions on the TDI proposal, are you familiar with that 83D  
22 project to kind of use that or would it be better to use the  
23 Northern Pass or can you do both?

24 MS. BODELL: Why don't we use a generic project?  
25 Because I think whatever your questions are, I don't have

1 enough detail about any of the projects, and if I did, I  
2 wouldn't be able to share it. So let's talk about a general  
3 transmission project.

4 MS. KELLY: Okay, located in different areas.

5 MS. BODELL: And coming from Quebec into New England  
6 is, I assume, your condition.

7 MS. KELLY: Correct.

8 MS. BODELL: Okay.

9 MS. KELLY: Is it fair to say that you're going to do  
10 that response in a way that's an evaluation as done as a but-  
11 for analysis? So it's -- you're going to try to just have that  
12 be the one thing that's changing in the answers that you're  
13 going to give to me?

14 MS. BODELL: That's exactly right. And when you do a  
15 benefits analysis for transmission, you look at what are the --  
16 what would happen without the project, what would happen with  
17 the project. And the only thing you change is the addition of  
18 the project when you run the models. There may be some  
19 ancillary things that have to be adjusted because of the  
20 project, but generally you would just change that one thing. I  
21 haven't seen a benefits analysis that does a comparison where  
22 you take an historical number even though you know the future  
23 is going to be different and put it in. Generally, you do your  
24 projection forward, what is it going to be, and then put in the  
25 new project.

1 MS. KELLY: And so I recognize it's difficult  
2 because, from your testimony of yesterday, there's that  
3 additional question of is this incremental power that's coming  
4 in or how much from Hydro-Quebec will impact it. So I'm hoping  
5 in your answers you'll address what your basis is. So I'd like  
6 to start from where Mr. Landry was questioning you. Assuming  
7 the transmission line through Maine and then a transmission  
8 line leading into Massachusetts from New Hampshire or Vermont,  
9 would that have any significant impact on the price of energy  
10 in Maine due to the indirect savings?

11 MS. BODELL: So in general, as our analysis showed,  
12 an injection of energy into market is going to have an impact  
13 on prices. I think what is critical in this case is if there's  
14 a contract that's going to determine how much energy is going  
15 to be injected into the system, you would -- and you have  
16 access to that contract, you would want to take those details  
17 into account. So given that the supplier is the same in the  
18 three examples that you provided, I think it would be important  
19 to get the details of that contract and analyze what the  
20 economic incentives are and how that impacts the benefits in  
21 New England. We assumed, as I've already said, that this is an  
22 injection that comes in. There's not a redirection from New  
23 England even though we did look at the economics and assume a  
24 diversion from New York. Again, you'd want to look at the  
25 details of ow much is going to be delivered and under what

1 conditions given the contract. If you don't have the contract,  
2 you try to make an educated guess about what the injections of  
3 energy are going to be.

4 MS. KELLY: So yesterday some of the questions were  
5 just assuming what you assumed in your original modeling which  
6 showed a pretty significant indirect benefit. Can you speak to  
7 how that would be the same or different with a line that was  
8 not going through Maine but an adjacent location into  
9 Massachusetts?

10 MR. SHOPE: I guess I'm going to object to the form  
11 of the question. I'm not sure what is meant by significant or  
12 what is meant by indirect. I think the modeling related to the  
13 effect on the wholesale energy market prices. And I think  
14 indirect has been a discussion at least in the expert reports  
15 with regard to jobs or perhaps a multiplier effect, that sort  
16 of thing.

17 MS. KELLY: Okay, please ignore the indirect part.

18 MS. BODELL: So, Dot, could you please repeat the  
19 question?

20 MS. KELLY: Sure. Using your model that you did for  
21 the original testimony, could you describe whether there would  
22 be a difference between a line in Maine, like CMP, and a  
23 similar line in an adjacent state?

24 MS. BODELL: Okay.

25 MR. TANNENBAUM: So I think the question is if you

1 had a similar line in New Hampshire or Vermont, would there be  
2 similar benefits in terms of energy and capacity reductions.

3 MS. BODELL: Right, and I think also she's asking us  
4 to use our original assumption that doesn't get into the  
5 details of the economics of the contract and when energy would  
6 be injected but simply looks at -- assume it all comes into New  
7 England and anything else that would have been sold into New  
8 England continues to be sold into New England. So under that  
9 -- under those conditions, there would be differences between  
10 the impacts of a line that's coming directly into Maine and a  
11 line that's coming into, say, Vermont or New Hampshire. You'd  
12 have to run the model to know how that impacts the locational  
13 marginal prices because it is about transmission constraints,  
14 and I don't think anybody can do that in their head. It's very  
15 complicated. But I think the key difference that we did  
16 emphasize is the impact on the capacity market, the fact that  
17 Maine, with NEC (sic) coming into Maine, it would bind. We  
18 talked about this yesterday, that that would not be the case if  
19 it was going into another marketplace. And so our conclusion  
20 is that there is a higher likelihood you would have the  
21 retirements in Maine with NECEC and, although there's still a  
22 risk, it's a lower risk with respect to a transmission line  
23 that would go into another part of the region.

24 MS. KELLY: And could you address the zonal  
25 separation that has been described? Would that still be the

1 same? Would Maine be considered a separate zone at this point?

2 MS. BODELL: So again, it depends where that other  
3 transmission line would be coming in. If that other  
4 transmission line is coming into New Hampshire or Vermont, it  
5 would still be part of the northern zone which is already a  
6 separate capacity zone. If it were going into Massachusetts,  
7 for example, then it wouldn't -- it'd have a different impact.  
8 But, again, we're getting into some of the details of the way  
9 that the capacity markets work, and Mr. Fowler is, frankly, an  
10 incredible expert on that because he has sat in those meetings  
11 multiple days and hours across the year.

12 MS. KELLY: As always, thank you very much for your  
13 responses.

14 MS. BODELL: Thank you, Ms. Kelly.

15 MR. TANNENBAUM: Sue?

16 MS. ELY: Actually, my question was the zonal  
17 question, and that was just covered. So no questions.

18 MR. TANNENBAUM: Okay. John, redirect?

19 MR. SHOPE: Yes, Ms. Bodell, when you were being  
20 questioned by Mr. des Rosiers, you -- he asked you about, you  
21 know, your observation that in light of what you now know about  
22 Hydro-Quebec's exports to New England last year -- and I think  
23 you had mentioned the 18 terawatt hours -- in relation to the  
24 thresholds for incremental under the Massachusetts contracts  
25 and you had mentioned three terawatt hours for Eversource and

1 Unitil and around nine and a half terawatt hours for National  
2 Grid, at the end of that -- and you had mentioned in connection  
3 with all of that that you believe that potentially all of the  
4 power that was currently being -- or that would be sold on  
5 NECEC could be redirected from power that was already being  
6 sold to New England. You remember that generally?

7 MS. BODELL: I do remember that, yes.

8 MR. SHOPE: And you had mentioned that this would  
9 very significantly affect the determination of whether there  
10 was any price benefit in Maine.

11 MS. BODELL: That's correct.

12 MR. SHOPE: Okay. And I believe Mr. des Rosiers  
13 asked you a question just in general, well, if there's not  
14 going to be price suppression or at least to the same extent,  
15 why do the generators care about that. So I guess the question  
16 would be why would generators in Maine care about the proposed  
17 NECEC project or be concerned about it in light of the  
18 information that you now have about the historical Hydro-Quebec  
19 sales in relation to the thresholds under the contracts?

20 MS. BODELL: Yes, so if what Hydro-Quebec ends up  
21 doing is, without NECEC, it would have sold into Maine through  
22 New Brunswick but instead decides to sell that energy through  
23 NECEC, there would be no difference in the energy price for the  
24 most part. There might be some minor changes, but generally  
25 it's going to be about the same. So that would mean no energy

1 market benefits or impacts in Maine. On the other hand, if it  
2 came out of, say, western Massachusetts and was injected into  
3 Maine, all else equal, you would have the higher congestion,  
4 the higher losses. And, therefore, since the LMP that the  
5 generators receive is composed of the energy price plus the  
6 losses, plus the congestion, there would still be an impact on  
7 the energy market price in Maine, that LMP price in Maine, but  
8 it would be less than what I calculated. That said, there  
9 could still be an adverse impact on the energy market price for  
10 the generators. So I would think they would be impacted --  
11 adversely impacted by that.

12 MR. SHOPE: Now, Mr. des Rosiers asked you about a  
13 cold snap that had occurred just about a year ago in late  
14 December of 2017, the very beginning of January of 2018.

15 MS. BODELL: Yes.

16 MR. SHOPE: You recall that? Okay. And I believe  
17 you had testified that you had some familiarity with that  
18 situation.

19 MS. BODELL: I did. For a client that I can't  
20 disclose, they asked us to do a detailed analysis of what  
21 happened during that cold snap, what caused it, why did it  
22 happen, what happened with prices in New England, is this a  
23 capacity constraint on the gas pipelines coming into New  
24 England, is it something else. So we did that analysis. And  
25 part of what we looked at as part of that analysis was where

1 was the energy coming from in New England, who was supplying  
2 the energy during that cold snap, that period of time.

3 MR. SHOPE: And did you -- well, actually maybe we  
4 can just circulate the next document and you can tell us what  
5 that is.

6 MS. BODELL: Yeah, so one of the things we looked at  
7 was the imports, how were the imports impacted during the cold  
8 snap, did they stay the same, did they go up, did they go down.  
9 And this, what's being passed around, is one of the slides from  
10 the presentation that we made to our client. It was slide six  
11 -- I don't know off the top of my head, maybe it was around 25  
12 pages, 30 pages, the entire deck -- analyzing what had  
13 occurred. We also did some memos and we did some commentary on  
14 some of the public statements that were issued by ISO New  
15 England as part of our analysis. But this particular page, and  
16 this was -- could I get a copy, Steve? Thank you. So this  
17 particular page, I was trying to pull it up yesterday -- and  
18 when you're on the stand, you can't do things as quickly as you  
19 think -- because I vaguely remembered that we had found that  
20 the imports have gone down. And, in fact, what this shows --  
21 it comes from the ISO New England morning reports, and the gray  
22 box in this chart is during the cold snap, December 26th, 2017  
23 to January 8th, 2018. It looks at, on these colored bars,  
24 whether something's coming in from New York ISO across each of  
25 the three interties, whether it's coming into New England

1 through New Brunswick, or whether it's coming in through Phase  
2 II which, as you know, is directly connected to Quebec, or  
3 whether it's coming in from High Gate which is also directly  
4 connected to Quebec but tends to be a pretty standard contract.  
5 And what you see is during that cold snap -- and again, this  
6 was just a statement that we made in April at the bottom in the  
7 brown box -- Canadian imports from Quebec fell by around one-  
8 third and that's specifically the Phase II line. It was  
9 predominantly the Phase II line, although, as you can see from  
10 some of the blue bars, High Gate also went down. And  
11 interestingly, if you look at the orange bars, those are  
12 imports coming in from New Brunswick, and you see that those  
13 also had some variation as well. And the conclusion is, from  
14 this, that during that very cold peak period in the winter of  
15 2017 and '18 the Quebec imports into New England fell by around  
16 one-third.

17 MR. SHOPE: But what was happening to prices in New  
18 England at the time of the cold snap?

19 MS. BODELL: Prices -- as we discussed yesterday,  
20 prices were very, very high. They weren't necessarily being  
21 set by the gas price, although some of the hours were. There  
22 was also prices being set by the oil price, but it was still a  
23 very high-priced period in New England. It would be a time  
24 when you would have the most incentive to sell every single  
25 megawatt of energy that you could into New England. And yet,

1 during that time, it was also cold in New York, it was also  
2 cold in Quebec, and there were other competing needs. We don't  
3 know exactly what was going on with those systems. All we know  
4 is that the total imports coming into New England from Quebec  
5 during that period was one-third lower than the surrounding  
6 days.

7 MR. SHOPE: Okay, and I think Mr. des Rosiers had  
8 asked you about what potential benefit the NECEC line would  
9 have if there -- a similar cold snap were to occur if the  
10 project goes forward. And so could the same thing happen?

11 MS. BODELL: So assuming they haven't shifted their  
12 capacity supply obligation into NECEC, there's enough  
13 flexibility in the contract that during the super peak cold  
14 days Quebec does not have to deliver. As long as they were to  
15 make it up during other hours, they would be fine and wouldn't  
16 suffer any penalty. And then, of course, the incremental  
17 calculation is on a year-by-year basis. But with respect to  
18 fuel security or deliverability during the time when New  
19 England needs it most, there's so much flexibility in that  
20 contract that I wouldn't count on it.

21 MR. SHOPE: That's it for the generator interveners.

22 MR. TANNENBAUM: Okay. Anything else for this  
23 witness?

24 MR. SHOPE: Oh, yes. I'm sorry, yes. Just to  
25 clarify, we would like to have what's just been passed around

1 as Generator Intervener 29.

2 MR. WILLIAMSON: Do you have an extra copies of that?

3 MR. BARTLETT: Yes, we do actually. Sorry.

4 MS. BODELL: Steve, there are three important people  
5 in addition to all the other important people in this room.

6 MR. TANNENBAUM: So --

7 MR. SHOPE: I'm sorry, did you folks not have copies  
8 of that when we were going over it?

9 MR. WILLIAMSON: I have it.

10 MR. TANNENBAUM: Okay, so any objections?

11 MR. DES ROSIERS: Since we've just been provided this  
12 and this is an Energyzt report as opposed to an ISO New England  
13 report, I would want to do -- have a better understanding. The  
14 source is listed as analysis of ISO New England morning  
15 reports. It's not necessarily identifying the source of the  
16 data, and this is ISO data. So we have some foundational  
17 issues as to --

18 MR. SHOPE: Well, it is ISO data, and so we -- I'm  
19 happy to -- then we can have that emailed to Mr. Simpson and  
20 then we can circulate that as well if you'd like or we can have  
21 -- or if you'd like to cross examine Ms. Bodell as to what the  
22 source of the data is, that's fine too. But I --

23 MR. DES ROSIERS: If I may suggest, if counsel for  
24 the generator interveners can share the source data, we can  
25 look at it and then -- and reserve on an objection or reserve

1 on asking any questions of Ms. Bodell with respect to her  
2 analysis that's just been provided to us.

3 MR. TANNENBAUM: Okay, so we'll defer ruling.  
4 Anything else for today? Thank you, Tammy.

5 MS. BODELL: Thank you.

6 MR. TANNENBAUM: See you Friday. We'll probably see

7 --

8 MS. BODELL: All right, we'll see you Friday.

9 MR. SHOPE: And tomorrow is nine o'clock if my memory

10 --

11 MR. TANNENBAUM: Yes, it is.

12 CONFERENCE ADJOURNED (January 9, 2019, 4:51 p.m.)

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I hereby certify that this is a true and accurate transcript of the proceedings which have been electronically recorded in this matter on the aforementioned hearing date.

D. Noelle Forrest  
D. Noelle Forrest, Transcriber

# Kennebec Valley

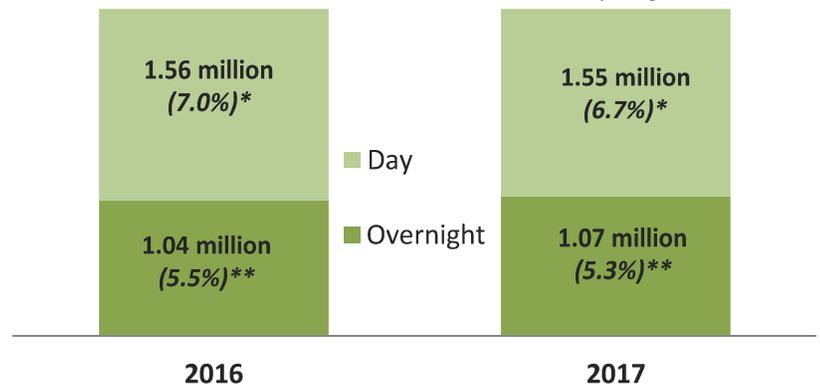
## 2017 Regional Tourism Impact Estimates



An estimated **2.6 million visitors** came to the Kennebec Valley region in 2017, a **0.7%** increase over 2016.

2016 Total	2017 Total
2.60 million (6.3% of All Maine Visitors)	2.62 million (6.0% of All Maine Visitors)

Number of Visitors to the Kennebec Valley Region



\* Percent of estimated total Maine day visitors  
 \*\* Percent of estimated total Maine overnight visitors

Year-over-year changes in visitation estimates fall within standard statistical margins of error and, therefore, should not be interpreted as absolute, significant fluctuations in visitation. Valid indicators of change include ongoing trends over multiple years, as well as noted statistically significant changes.

• For the purposes of visitation and visitor expenditure estimates, only visitors on tourism-related trips are included. Tourism-related trips include: All leisure trips, trips that are a general visit to see friends or relatives, a wedding, a holiday visit, and business trips that are for a convention/conference/trade show or training/professional development.

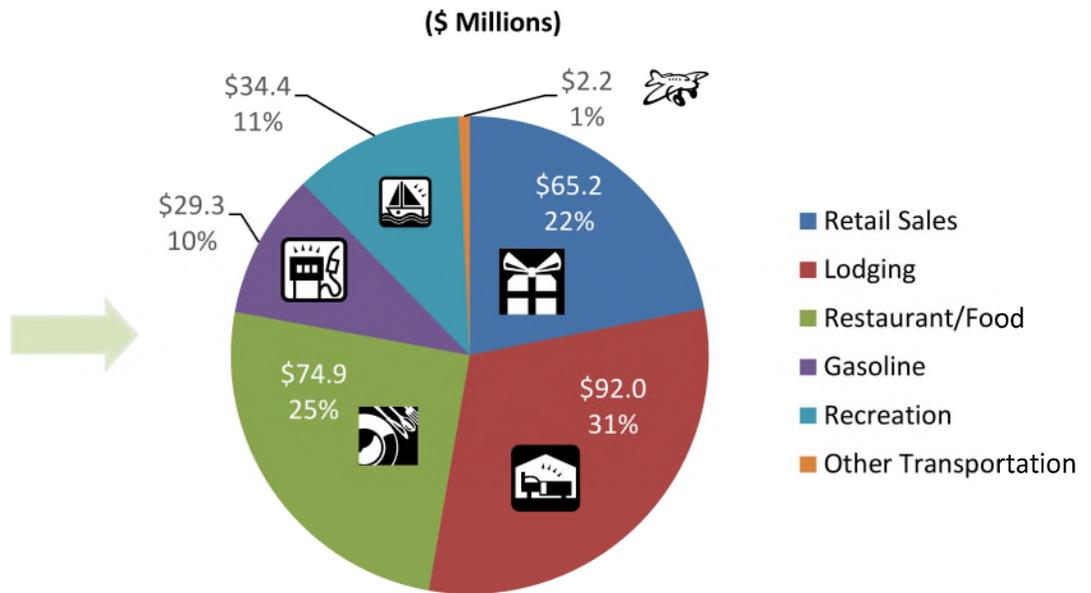


# Kennebec Valley

## 2017 Regional Tourism Impact Estimates

In 2017, Kennebec Valley visitors spent nearly **\$298 million**, down 1.9% from 2016.

**2017 Total**  
**\$298 million**



The \$298 million spent by visitors in the region supported...

*Economic Impact* begins when a visitor spends money in an area. The benefits to the local economy go beyond the basic impact of these dollars spent – these dollars create a chain effect. The effects of these expenditures are evident as the direct recipients of these expenditures in turn pay wages, earn income, and pay taxes. Further these secondary recipients spend *their* income and thereby create more impact.

4,901 jobs

\$95.7 million in total earnings

\$27.6 million in total taxes

- For the purposes of visitation and visitor expenditure estimates, only visitors on tourism-related trips are included. Tourism-related trips include: All leisure trips, trips that are a general visit to see friends or relatives, a wedding, a holiday visit, and business trips that are for a convention/conference/trade show or training/professional development.
- For the purposes of expenditure estimates, visitors are defined as all overnight visitors and all out-of-state day visitors on tourism-related trips.
- Economic Impact is estimated using DPA visitor expenditure estimates, and the RIMS II Economic Impact model.

**Winter Recreation Impact Survey  
February 2019  
Conducted by Sandra Howard, PhD**

Summary:

This online survey was distributed electronically and participants responded during a 4-week period between January 18-February 18, 2019. The prompt to participants read as follows: “We are collecting data about the winter recreation experience in western Maine. These data will be used in response to a proposed 145-mile transmission line through Maine, which would include crossing many mountains, wetlands, and waterways in an undeveloped region of western Maine.”

- 163 Participants
- State of Residence
  - Connecticut (8.0%)
  - Maine (65.6%)
  - Massachusetts (17.8%)
  - New Hampshire (4.3%)
  - Other – Maryland, New York, Virginia, Pennsylvania (4.3%)
- Year of most recent trip to Maine
  - 2019 (84.6%)
  - 2018 (13.5%)
  - 2017 (1.9%)
- Duration of most recent trip to western Maine
  - 1-2 days (14.1%)
  - 3-4 days (40.4%)
  - 5 or more days (30%)
  - Seasonal Resident (3.9%)
  - Year-Round Resident (11.6%)
- Number of times traveled to area to participate in winter rec. activities
  - 1-5 times (8.6%)
  - 6-10 times (11.6%)
  - 11-15 times (7.4%)
  - 16-20 times (7.4%)
  - 20+ times (65%)
- Activities engaged in on most recent trip to area (\*select one or more)
  - Purchased Fuel (91.4%)
  - Purchased Meals/Drinks at Local Restaurant (90.8%)
  - Snowmobiling (86.5%)
  - Purchased Grocery Items (81.6%)
  - Viewed scenery (75.5%)
  - Purchased Retail Items (68.1%)
  - Stayed at Area-Owned Home (55.2%)

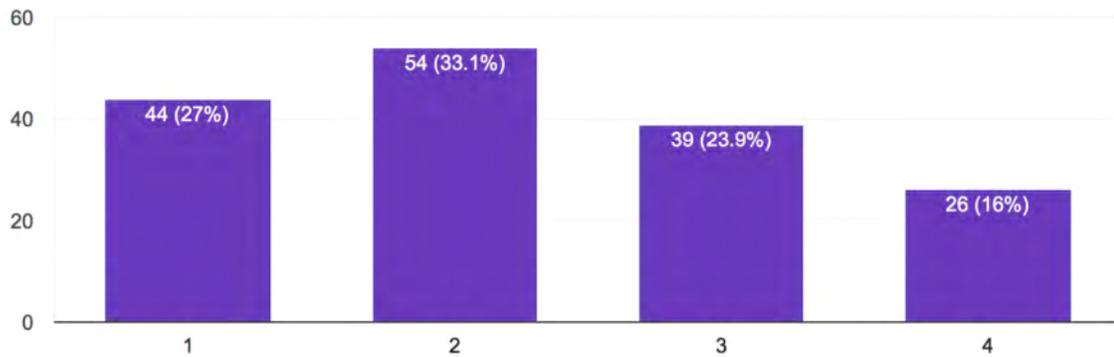
- Stayed at Area-Lodging Accommodations (50.3%)
- Snowshoeing/Winter hiking (39.9%)
- Ice Fishing (39.3%)
- Cross-country skiing (19%)
- Rented Snowmobile (6.7%)
- Other (6.6%)
- Hired Snowmobile Guide (1.8%)

- RATE EACH FACTOR FOR SELECTING A SNOWMOBILE DESTINATION:

### Driving distance from home



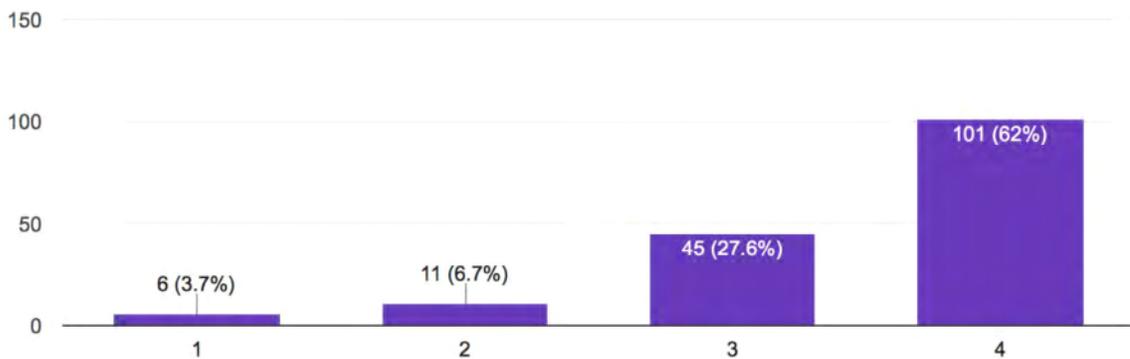
163 responses



SCALE (1 = Less Important; 4 = Very Important)

### Trail conditions

163 responses

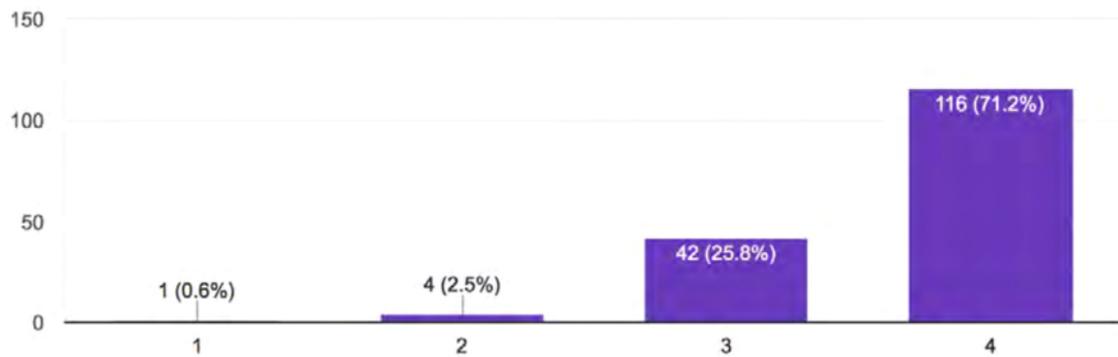


SCALE (1 = Less Important; 4 = Very Important)

## Scenic beauty along snowmobile trails



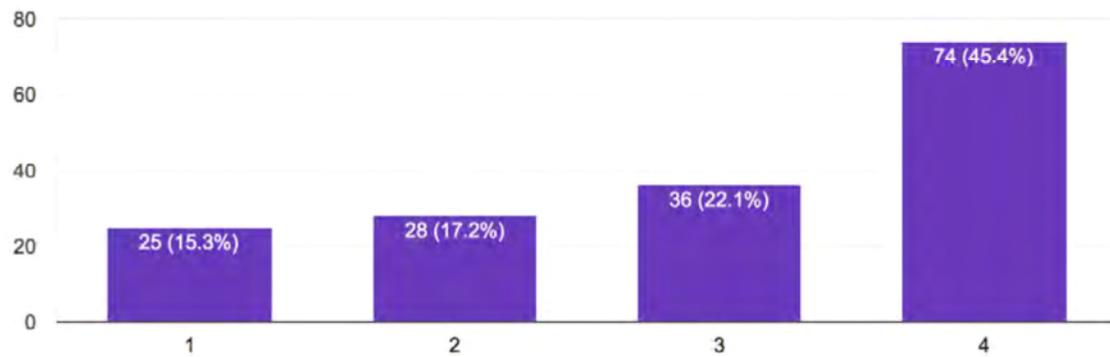
163 responses



SCALE (1 = Less Important; 4 = Very Important)

## Ability to participate in other recreation activities (i.e. ice fishing, snowshoeing, x-country skiing, etc.)

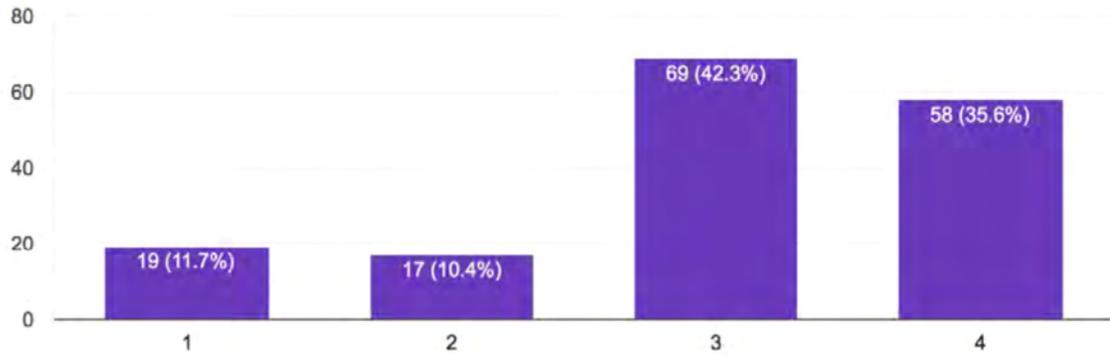
163 responses



SCALE (1 = Less Important; 4 = Very Important)

## Area Accommodations

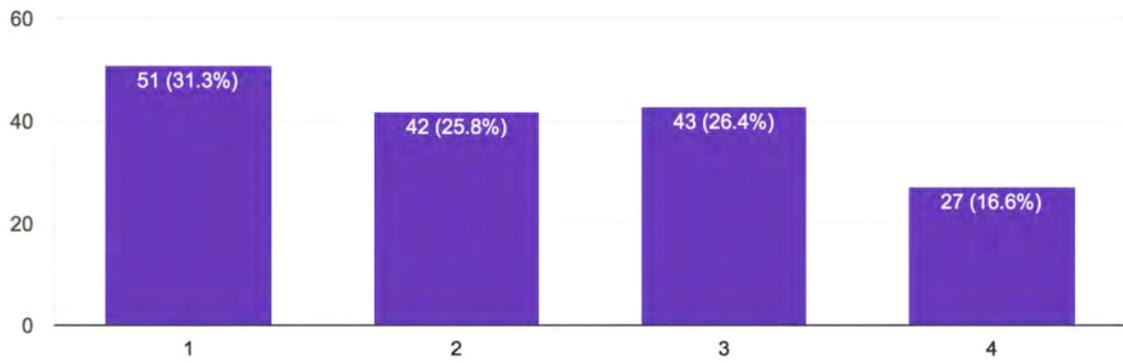
163 responses



SCALE (1 = Less Important; 4 = Very Important)

## Internet Access

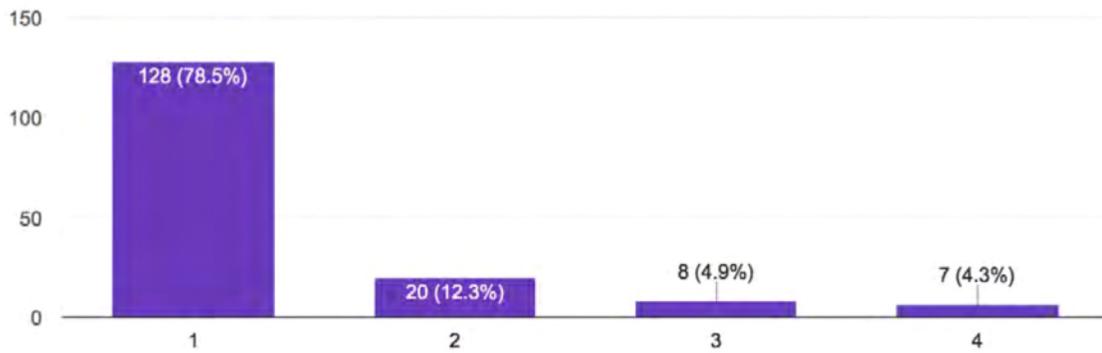
163 responses



SCALE (1 = Less Important; 4 = Very Important)

## Opportunity to view large-scale utility infrastructure in the area

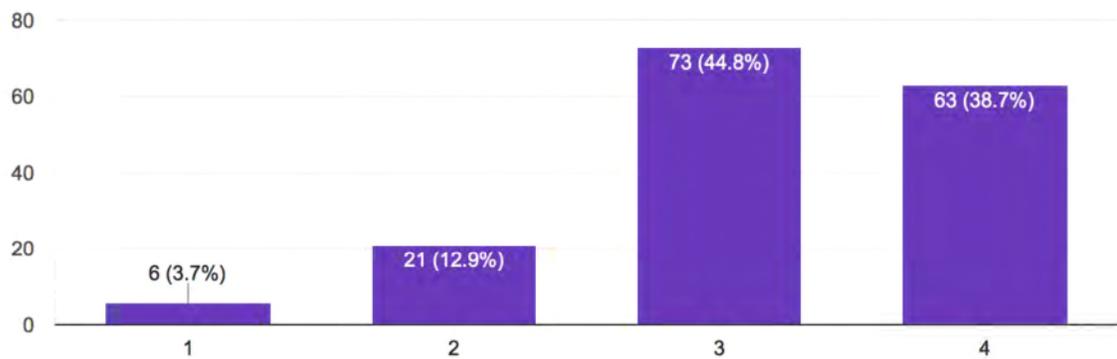
163 responses



SCALE (1 = Less Important; 4 = Very Important)

## Area Restaurants

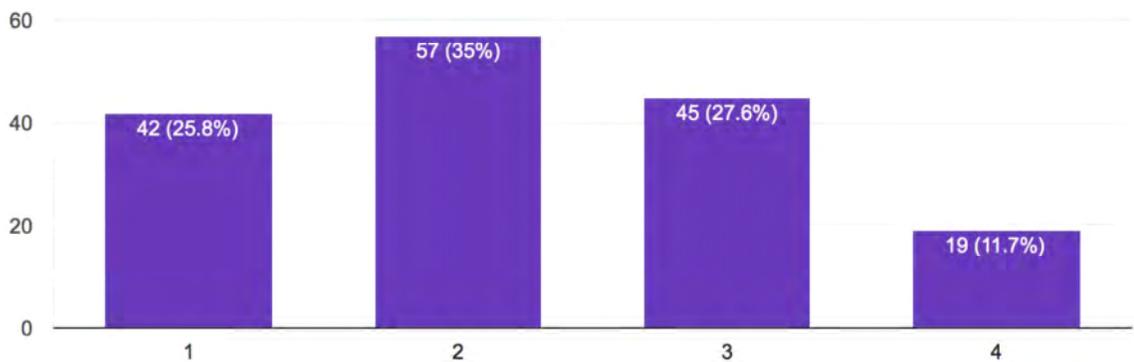
163 responses



SCALE (1 = Less Important; 4 = Very Important)

## Area Shopping

163 responses

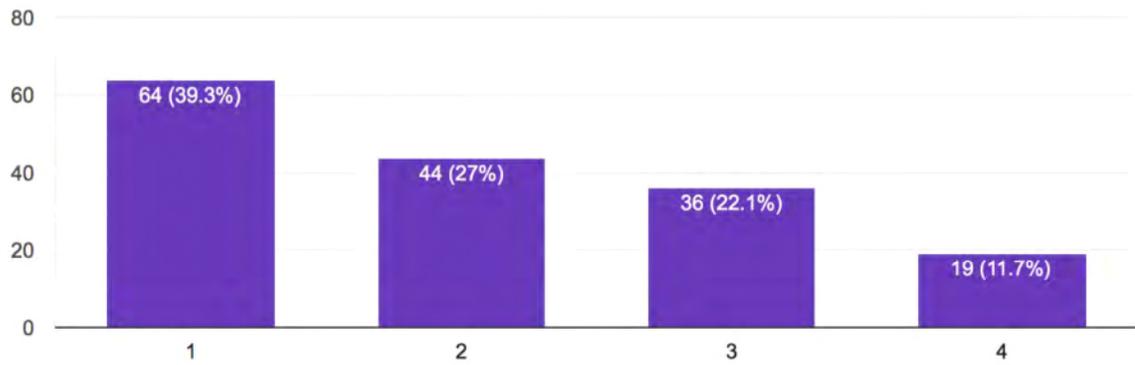


SCALE (1 = Less Important; 4 = Very Important)

## Area Rentals



163 responses

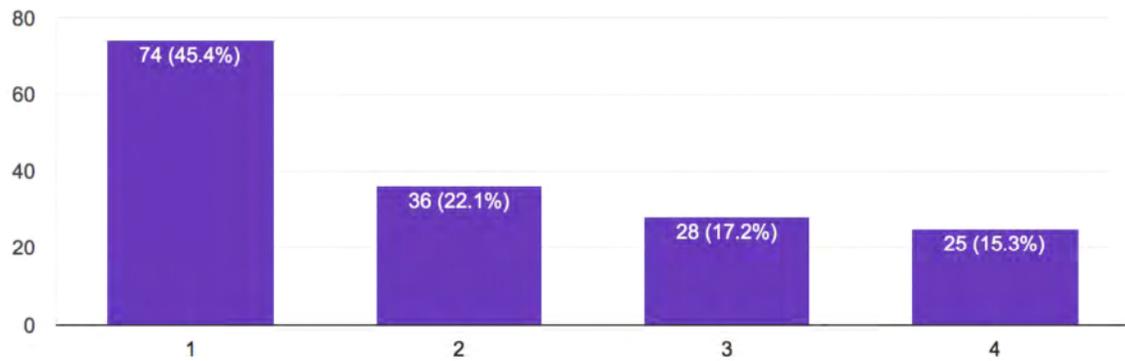


SCALE (1 = Less Important; 4 = Very Important)

## Area Guides



163 responses

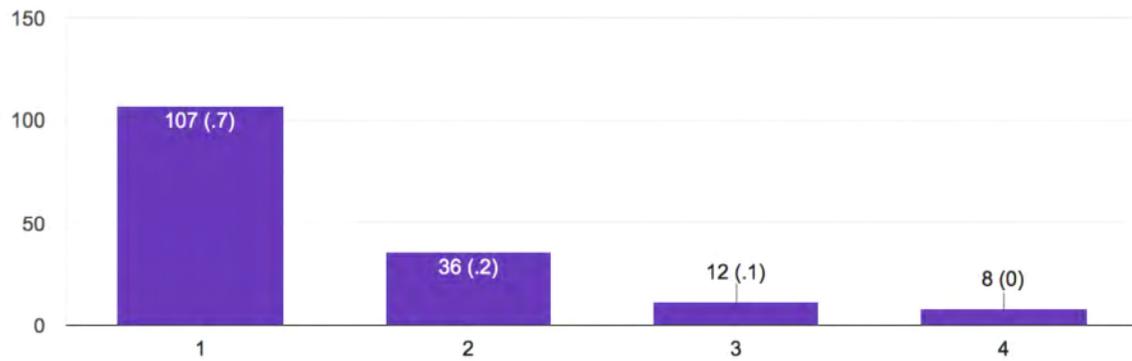


SCALE (1 = Less Important; 4 = Very Important)

- RATE YOUR PREFERENCE FOR EACH TYPE OF SNOWMOBILING EXPERIENCE BELOW:

### Riding along a power line trail

163 responses

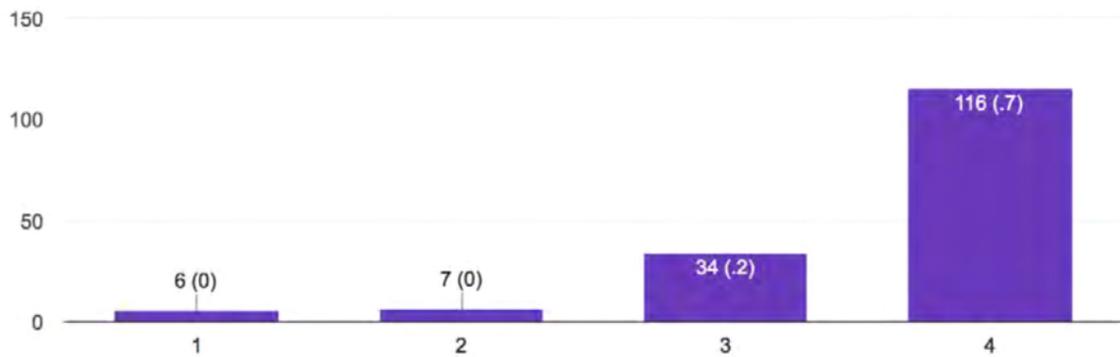


SCALE (1 = Least Preferred; 4 = Most Preferred)

### Groomed trail riding in forested areas



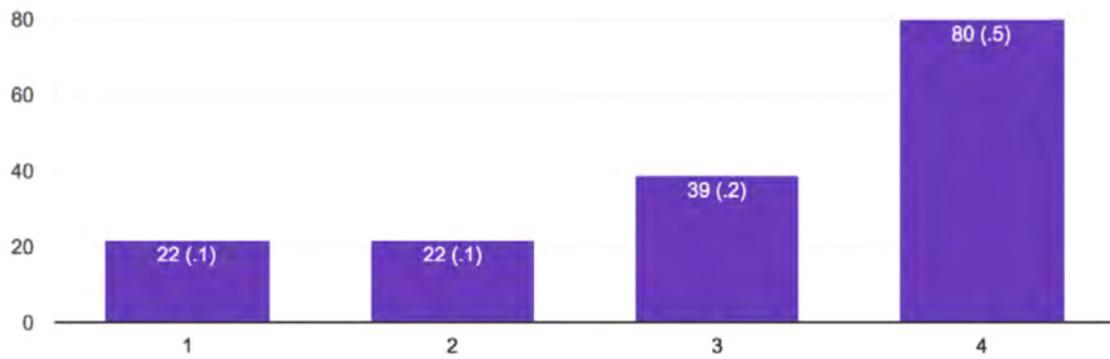
163 responses



SCALE (1 = Least Preferred; 4 = Most Preferred)

### Riding with few road or power line crossings

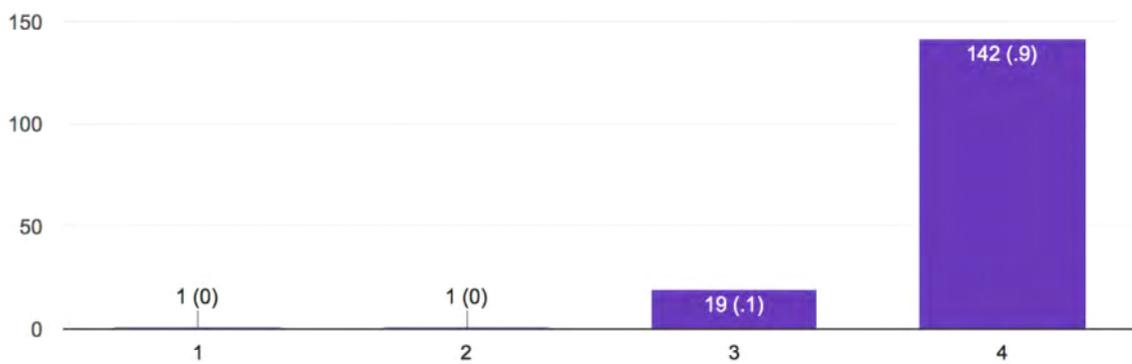
163 responses



SCALE (1 = Least Preferred; 4 = Most Preferred)

### Riding along mountain view trails with overlooks

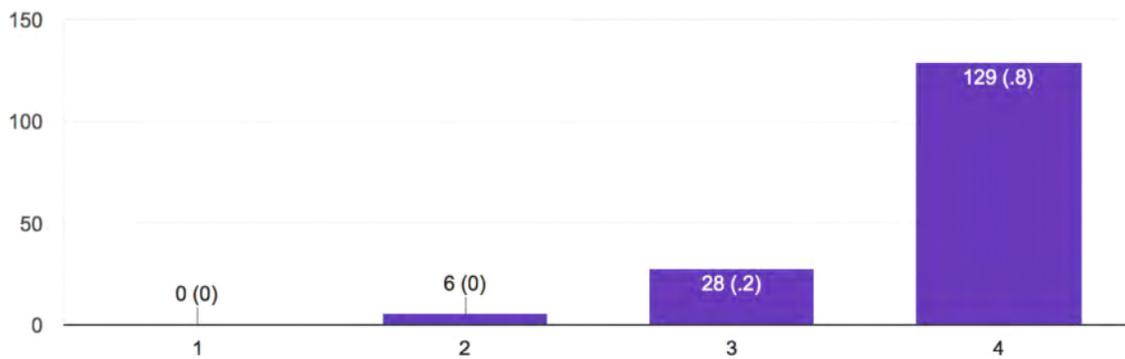
163 responses



SCALE (1 = Least Preferred; 4 = Most Preferred)

### Seeing wildlife in their natural setting

163 responses



SCALE (1 = Least Preferred; 4 = Most Preferred)

- Participants were asked to “look at the scenic photos and GIS simulation photos that show a 150-foot wide cleared corridor with 100-foot transmission towers.”

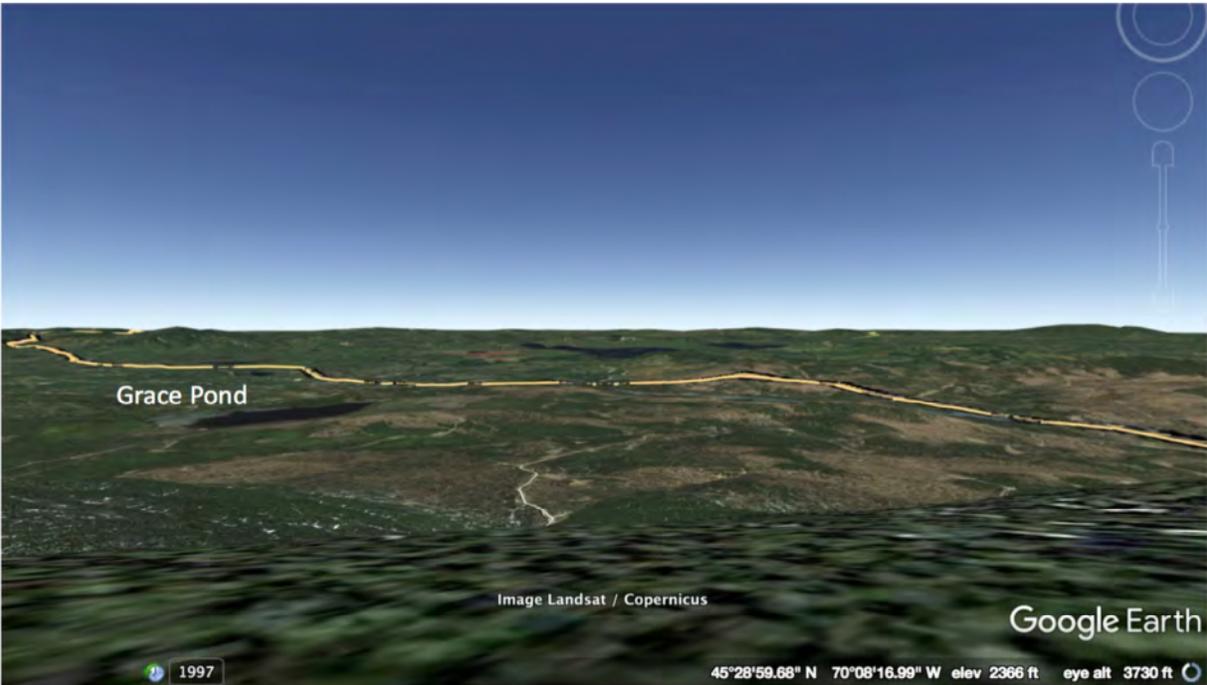
## GIS simulation of proposed transmission corridor at Coburn Mountain



## Snowmobilers at the top of Coburn Mountain



View of Grace Pond from the top of Coburn Mountain - GIS simulation of transmission corridor



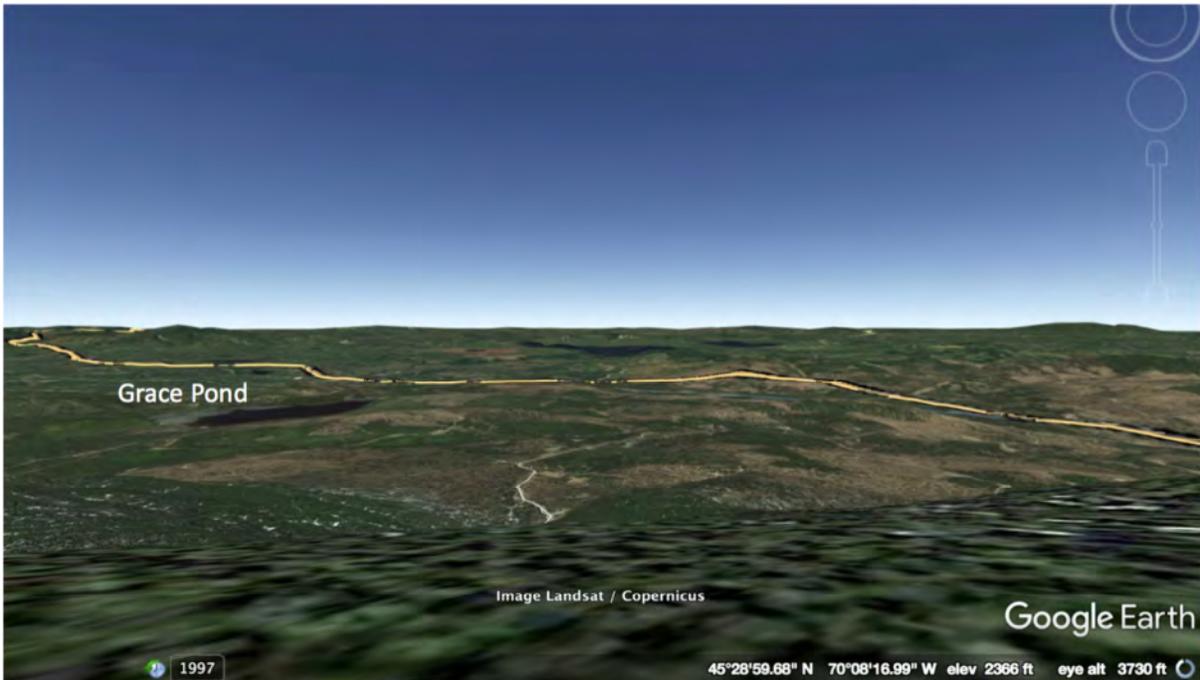
View of Grace Pond from the top of Coburn Mountain



View of Johnson Mountain from the top of Coburn Mountain - GIS simulation of transmission corridor

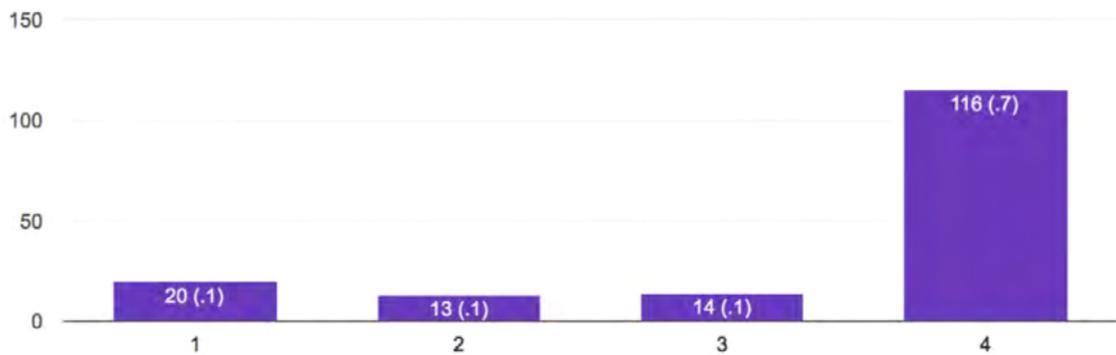


View of Grace Pond from the top of Coburn Mountain - GIS simulation of transmission corridor



### What visual impact would a 150-foot wide cleared corridor with 90-foot transmission towers have on your wilderness snowmobiling experience?

163 responses

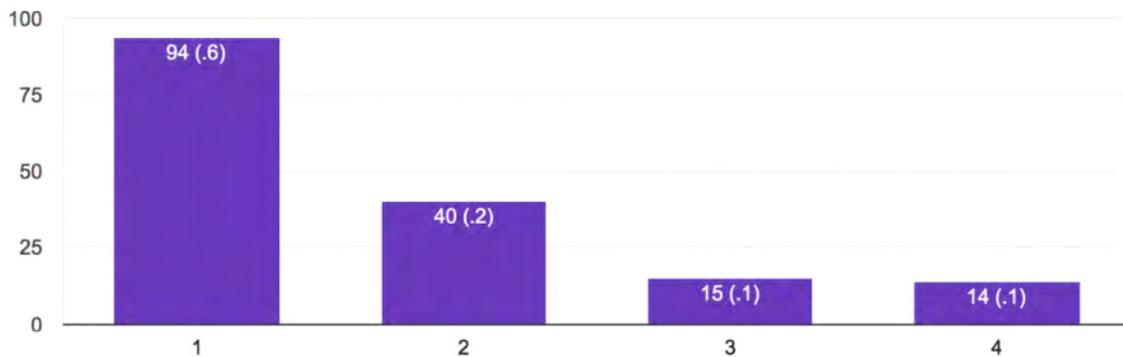


SCALE (1 = Little Negative Impact; 4 = Strong Negative Impact)

### Would you be more or less likely to visit a scenic area which contains large-scale developments for a snowmobiling destination?



163 responses

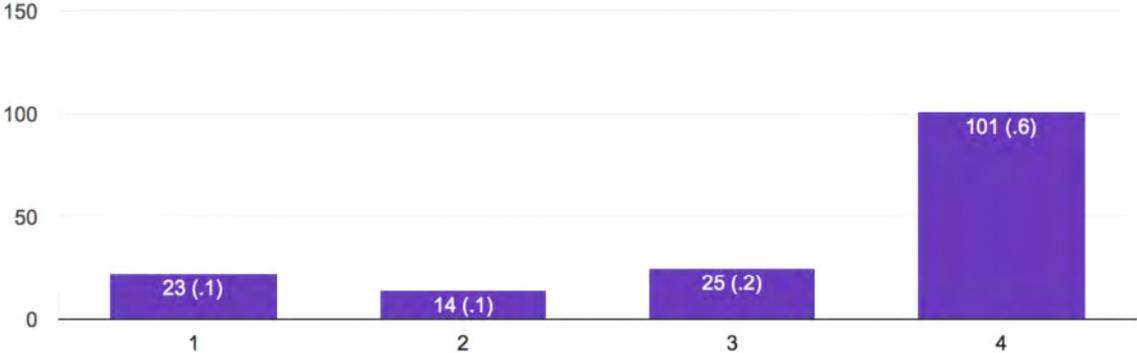


SCALE (1 = Little Negative Impact; 4 = Strong Negative Impact)

What impact would the presence of a 150-foot wide cleared corridor with 90-foot transmission towers have on your decision for a return visit the area in the future?



163 responses



SCALE (1 = Little Negative Impact; 4 = Strong Negative Impact)

\*\*\*\*\*

# “Connect New York”

## Introduction

The respondent group detailed below is proud to provide the following submission to the New York Energy Highway Request for Information (RFI). The information contained within this response addresses the requirements of the RFI and includes additional information regarding property, interconnection, operational, socio-economic, and environmental issues among others. An Index is also included to map the projects benefits to the Energy Highway’s objectives.

Simply stated, the Connect New York proposal:

- Provides for the construction of a 1,000 MW DC underground transmission line, with the option of an additional 1,000 MW’s, utilizing existing public and private rights-of-way which become a main route on the “New York Energy Highway” and will satisfy many of the Cuomo Administration’s energy goals;
- Satisfies “New York’s energy policy goals of providing affordable and reliable energy, while improving the environment, creating and retaining jobs, and promoting economic growth, as New York transitions to a more efficient, lower carbon and cleaner, greener energy economy; and
- Reduces transmission system congestion that prevents the delivery of power from northern and western generating stations to southern load centers, reducing a significant financial burden on ratepayers.

## Section I – Respondent Information

**Iberdrola USA**, 52 Farm View Drive, New Gloucester, ME 04260  
Thorn Dickinson, Vice President – Business Development  
(207) 688-6362  
[thorn.dickinson@iberdrolausa.com](mailto:thorn.dickinson@iberdrolausa.com)

Iberdrola USA, a subsidiary of global energy leader Iberdrola S.A., is an energy services and delivery company serving about 2.7 million customers in upstate New York and New England. Its primary subsidiaries are New York State Electric & Gas, Rochester Gas and Electric and Central Maine Power.

Iberdrola USA, and its parent, bring tremendous experience and investment capabilities to New York. Iberdrola USA is in the midst of a \$1.4 billion upgrade of its transmission system in the state of Maine. The project, called MPRP, includes over 400 miles of new transmission lines, five new substations, and upgrades to numerous existing lines and substations. The company is about 1/3 of the way into the 5 year project and the project is on time and on budget. This project has created over 3,300 direct and indirect jobs for the state of Maine. Importantly, the project’s DART rate (a measure of safety incidents) is .09 through March 2012 vs. a national

average of 2.1. The completion of this project in early 2015 fits well with the likely construction schedule for this proposal.

Iberdrola is also a leader in the utilization of technology. For example, the MPRP project will be fully compliant with IEC 61850, an international best practice standard for substation automation and communications. Iberdrola USA subsidiary, Central Maine Power, recently completed the full installation of automated or “smart” meters that will provide tremendous environmental and customer benefits. Consumers are able to better manage their energy usage. CMP eliminated over 2 million vehicle miles per year.

Our parent, Iberdrola S.A., is a global investor-owned company with experience forged over more than 150 years of history that provides service to 31 million customers in 38 countries and four continents.

After a significant process of growth and internationalization, which involved an investment of over \$100 billion in the last eleven years, Iberdrola is today one of the five largest global utilities, the world leader in the wind sector, and the leading Spanish energy group.

Our 33,000 employees manage assets worth \$130 billion that in 2011 produced revenues worth \$42 billion and a net profit over \$3.5 billion.

Iberdrola will continue to grow its core businesses: power generation through clean technologies and the build up and management of transmission and distribution networks. In addition, the continuous improvement of operational efficiency will remain one of the basic foundations of the Group’s activities.

The path to sustainable growth in size, efficiency and profitability has brought Iberdrola a number of international awards, such as the nomination as leading electric utility on the “Global 100 Most Sustainable Corporations in the World”. In addition, Iberdrola has been member of the “Dow Jones Sustainability Index” for the last eleven years.

**The Cianbro Companies**, 101 Cianbro Square, Pittsfield, ME 04967

Peter G. Vigue, Chairman & CEO

207-679-2192

[pvigue@cianbro.com](mailto:pvigue@cianbro.com)

Throughout its 63-year history, Cianbro has safely and efficiently planned, managed, and constructed many technically complex, historic, and environmentally sensitive projects for a wide variety of public and private clients. A total commitment to safety combined with the enthusiasm of an innovative team of construction professionals, has enabled Cianbro to build a durable reputation for completing projects safely, on schedule, and within budget. Founded in 1949 by the Cianchette brothers, Cianbro is now one of the largest, most diverse, successful, 100% employee-owned, construction and construction services companies based on the East Coast. Presently operating in more than forty (40) states, in twelve markets, and employing over 4,000 team members, Cianbro self-performs civil, structural, mechanical, electrical, transmission, fabrication, and coating work.

Cianbro is also the managing member of Atlantic Energy Partners, LLC; the developer of the Neptune Regional Electrical Transmission System (Neptune). The Neptune Transmission System provides up to 660 MW of electric power from the PJM system to the LIPA grid on Long Island via a 500-kilovolt (kV), high voltage direct current (HVDC) cable. The HVDC cable extends between two converter stations, one in Sayreville, New Jersey, and one on Duffy Avenue in the community of New Cassel in the Town of North Hempstead. The Sayreville converter station takes alternating current (AC) power from the PJM system and converts it to DC power, while the Duffy Avenue station converts DC power back to AC for use on the LIPA system. The DC cable runs approximately 50 miles under the Raritan River in New Jersey and the Atlantic Ocean, and an additional 15 miles buried alongside the Wantagh Parkway. The Neptune Transmission System interconnects to PJM in Sayreville at a nearby First Energy substation, and interconnects to the LIPA system at the Newbridge Road substation in Levittown.

Since starting operation in mid-2007, Neptune has provided, on average, nearly 25 percent of the electric power used on Long Island, and runs at its full capacity of 660 MW most of the time. In addition, Neptune has performed as well or better than expectations, averaging nearly 98 percent availability. The Neptune HVDC cable allows LIPA to tap into a diverse range of power generation from PJM, including renewables such as wind and hydro, as well as oil, coal, nuclear, and natural gas. This diversity of generation sources is not available on Long Island. Because wholesale energy prices in PJM are generally much lower than on Long Island, power brought over the Neptune cable is less expensive than most of what can be generated on the island.

For LIPA, the Neptune HVDC cable was seen as an environmentally friendly, cost-effective solution to future power needs. According to LIPA, an economic assessment conducted prior to construction projected that the Neptune cable would provide about \$1.4 billion in net benefits to LIPA, which was significantly more than any other project proposed to meet Long Island's long-term energy needs. As former LIPA Chairman Kevin Law has said, *"The Neptune cable provides LIPA with the opportunity to acquire lower-cost energy to meet customer needs while providing more flexibility in selecting the markets from which we acquire that energy. It is a significant win-win for Long Island."*

**Gilberti Stinziano Heintz & Smith, P.C.**, 555 East Genesee St., Syracuse, NY 13202  
William Gilberti, CEO and Managing Partner  
315-442-0171  
[wgilberti@gilbertilaw.com](mailto:wgilberti@gilbertilaw.com)

For more than twenty-five years, Gilberti Stinziano Heintz & Smith, PC (GSH&S) has served the needs of clients in the energy field, including large, multi-plant power producers, natural gas pipeline operators, and electric transmission line developers, as well as the developers, installers and operators of various renewable energy systems and other smaller generating facilities. We have been counsel on power generation projects that total more than 5,000 megawatts of generating capacity and have counseled both gas pipeline and electric transmission companies on projects involving more than 450 miles of transmission line.

Together with the firm's CEO and Managing Partner, William J. Gilberti, Jr., the lawyers in the GSH&S energy group combine decades of in-depth industry knowledge and experience and include leading practitioners in the industry, such as a former executive vice president and

general counsel of the New York Power Authority, the largest state-owned power organization in the nation, and a former counsel to the U.S. Nuclear Regulatory Commission.

The firm's understanding of, and experience with, the applicable financing structures, regulatory requirements and governmental approvals needed for large infrastructure and commercial development projects in New York, including large scale energy generation and transmission projects, is unparalleled. From the initial planning and feasibility phases of a project through environmental review and permitting to completion of construction and beyond, GSH&S provides counsel and strategic advice to clients on every aspect of energy development.

GSH&S has successfully completed the permitting and environmental review for various power plants firing a wide variety of fuels and for hundreds of miles of transmission line in the State. The firm has served as lead counsel in several landmark cases under the State's Environmental Quality Review Act (SEQRA), including litigation establishing that certain previously approved industrial operations were "grandfathered" and not subject to review. GSH&S has also provided strategic legal counsel on the approvals needed for various major generation and transmission projects in New York, including, among others, a 130-mile underground electric transmission line, an aboveground 190-mile electric transmission line and a 50-mile overhead electric transmission line.

GSH&S often engages in complex litigation involving State and federal agencies regarding permitting and environmental issues. The firm served as lead counsel in such a case for the second largest independently owned cogeneration plant in North America. As a result of the firm's strategy and effort, the U.S. Court of Appeals for the 4th Circuit vacated and remanded the Federal Energy Regulatory Commission (FERC) interpretation of the Energy Policy Act of 2005 in a case of national first impression, knocking out federal licensing regulations that would displace state regulation of electric transmission lines; and the U.S. Court of Appeals for the 9th Circuit vacated and remanded to the federal Department of Energy, its determination to create the Mid-Atlantic National Interest Electric Transmission Corridor, the designation of which is a prerequisite for any shift of transmission line licensing from the states to FERC.

GSH&S regularly assists in the drafting and negotiation of various energy contracts, most recently having negotiated power purchase and interconnection agreements for the developer of a utility-scale solar photovoltaic project.

**Spectra Environmental Group, Inc.**, 19 British American Blvd., Latham, NY 12110  
Robert C. LaFleur, President  
(518) 782-0882  
[rlafleur@spectraenv.com](mailto:rlafleur@spectraenv.com)

Spectra was formed in 1993 and is a self-certified, federal Small Business Enterprise (SBE). Spectra maintains its corporate office in Latham, New York, just minutes away from the New York State capital office buildings in Albany, and has branch offices in Syracuse and Poughkeepsie, NY. Spectra has 47 employees that specialize in areas of infrastructure engineering, environmental analysis, planning, permitting, and compliance.

Spectra's engineers and scientists are leaders in integrated engineering solutions for a sustainable energy future. In the energy service market, Spectra provides environmental management,

permitting, conceptual design, site/civil engineering, project management, surveying, and construction management.

Spectra is owned and operated by Robert C. LaFleur and John H. Shafer, PE. Mr. Shafer has over 40 years in the field of transportation and infrastructure systems. Prior to joining Spectra, Mr. Shafer served as Executive Director of the New York State Thruway Authority (NYSTA) and Chief Engineer for the New York State Department of Transportation (NYSDOT). Mr. Shafer currently serves on several State advisory committees, including the committee overseeing the replacement of the Tappan Zee Bridge. Mr. LaFleur has 39 years of experience as an expert in environmental planning and permitting projects. He has been called upon to provide expert testimony in a number of legal proceedings concerning environmental and planning matters. Mr. LaFleur has acted as Project Manager on an extensive power transmission project under Article VII of the Public Service Law.

Spectra has experience working with a variety of federal and state regulatory agencies. Among these include the New York State Power Authority (NYPA), the New York State Office for Technology, the New York State Department of Environmental Conservation, the United States Environmental Protection Agency, as well as the NYSTA and NYSDOT. These are all agencies with an interest in this energy highway project being proposed by the Power Authority.

## **Section II – Project Description**

“Connect New York” is a 1,000 MW DC bulk transmission line running from the Utica area to New York City (Zone E - Mohawk Valley to Zone J - New York City). This underground transmission initiative would utilize existing public and private right-of-way to build a new bulk transmission line that would enable the fulfillment of the “New York Energy Highway” and many of the Cuomo Administration’s energy imperatives. It would include 244 miles of high voltage DC cable, two AC/DC converter stations and a small amount of high voltage AC cable. There is also the option to add a second 1,000 MW line. This is a technology that is in use in the United States and overseas. The permitting process is expected to be completed within two years, and the project is expected to be completed within four years, unless those timeframes are shortened as discussed in Section V below.

## **Section III – Project Justification**

“Connect New York” is a bulk transmission initiative that would utilize existing right-of-way to build a new bulk transmission line that would enable the fulfillment of many of the Cuomo Administration’s supply side energy imperatives. “Connect New York” is a practical, feasible and necessary prerequisite to the successful realization of many of the important energy precepts outlined in “Power NY” and the “New York Energy Highway”.

### **“Power NY”**

“Power NY states that... “New York’s energy policy must meet the interrelated goals of providing affordable and reliable energy, improving our environment and creating jobs and economic growth through energy policy as we transition to a more efficient, lower carbon and

cleaner, greener energy economy. (“Power NY” Page 1) “Power NY” delineates its guiding principles as follows:

- **Affordability**... take steps to reduce energy costs
- **Energy Efficiency**
- **Smart Transmission and Distribution**
- **Economic Development** – job creation
- **Environmental Quality** – cleaner fuels and renewables
- **Reliability** – dependable and emergency prepared
- **Equity** – demands that one region or neighborhood not bear most of the costs of a certain policy while another receives the benefits
- **Good Execution and Government’s Role** – facilitate and encourage private sector investments that supports our energy goals and these guiding principles
- **Transparency and Accountability**

“Power NY” delineates several supply side energy imperatives that form the foundation of the Cuomo Administration’s energy policy. These ambitious energy goals include:

1. Upgrade and Expand the Transmission Grid

“Improve Reliability and Reduce Costs by Upgrading our Transmission Infrastructure and Bringing Reliable, Low Cost Clean Energy to Areas Where it is Needed Most While Maintaining Regional Equity”

2. Improve the Environment Through Renewables and Clean Energy

“Expand Wind and Solar Power and Repower Old Plants to Make them Cleaner and More Efficient”

“Make New York the Nation’s Leader in Wind Power”

“Enact a New Power Plant Generation Siting Law”

“Close Indian Point... We must find and implement alternative sources of energy generation and transmission to replace the electricity now supplied by the Indian Point Power facility.

3. Improve Energy Independence

“By... supporting in-state energy resource development, New York will reduce outflow of dollars to pay for energy imports” (2009 State Energy Plan).

4. Renewable Portfolio Standard

Renewable increased to 30% by 2015

5. Greenhouse Gas Emissions Reductions

Executive Order #24: Decreased by 80% by 2050

While these energy precepts are logical, sensible and progressive there are many significant challenges confronting their realization. Some of these challenges are administrative, including permitting and siting. Some involve the limitations of older fundamental infrastructure, including in particular, the bulk transmission grid that constricts the flow of energy from existing and prospective generation sites to the marketplaces.

### **Transmission: The Foundation of a Progressive Energy Policy**

Irrespective of what generation options are utilized, adequate bulk transmission is a necessary prerequisite to bring new age power to market and to realize the supply side energy imperative outlined in “Power NY” and in the “New York Energy Highway”. This view is supported from almost every authoritative vantage point.

- NYISO Wind Generation Study (2010)  
“Although the addition of wind to the resource mix resulted in significant reduction in production costs, the reduction would have been even greater if transmission constraints between upstate and downstate were eliminated.”
- 2009 State Energy Plan  
“(Transmission) investments are also necessary to support the state’s transition to a clean energy economy, and will be driven by longer-term strategic needs, including the need to reduce GHG emissions.”
- NYISO 2010 Comprehensive Reliability Plan  
“The Indian Point Plant retirement scenarios... show that loss of ISOs expectations would exceed criteria... thermal violations... and voltage performance on the system would be degraded.”

### **The “Connect New York” Option**

Simply stated, “Connect New York” is our vision of how to best advance the major supply-side energy objectives delineated in “Power NY”. It would include a 1,000 MW DC bulk transmission line running from the Utica area to New York City. There is also the option to add a second 1,000 MW line. The routing would be underground utilizing existing public and private right-of-way. In doing so we can mitigate environmental and right-of-way concerns that derail most bulk transmission projects and avoid eminent domain and NIMBY issues. By burying an efficient, underground DC bulk transmission line, line losses will be reduced and aesthetic and health based concerns eliminated.

This bulk transmission path will significantly mitigate two of the three major transmission bottlenecks at the Central East interface costing Southeast New York over a billion dollars per year. In addition, the project will bring much needed new capacity to some of New York’s most active wind development sites and existing cleaner gas fired plants in Upstate NY. Because the project will use public right of ways, it will provide a new source of revenue to the state. Additionally, this project will be a life-line to older upstate generating facilities that may currently be less environmental friendly by allowing them to repower with new technologies and to continue to support their local economies.

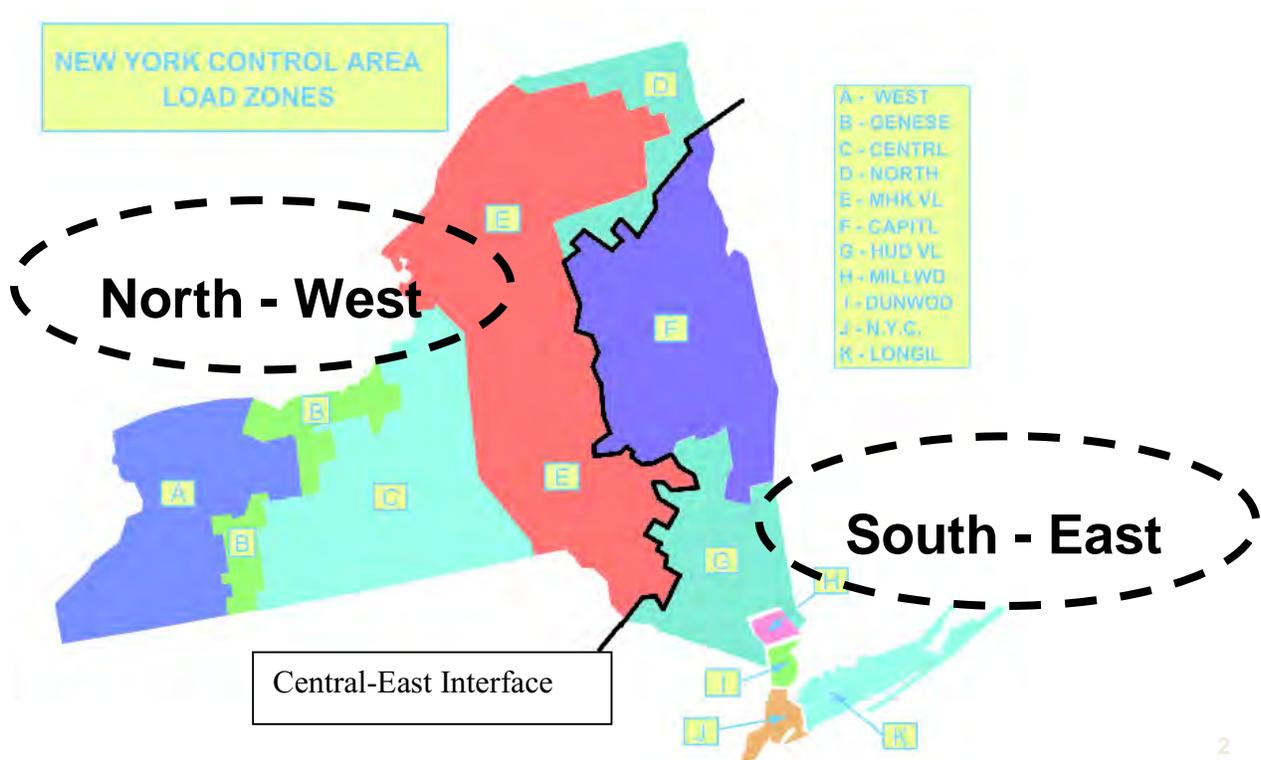
## The Central-East Interface – Transmission Congestion

The Central-East Interface is the name given to a conceptual transmission boundary that separates the bulk transmission capabilities located in the North and West regions of New York from the load (demand) centers located in the South and East. Essentially it is the choke point where the ample generating capacity located in the North and Western regions are constricted from supplying the markets in the South and East regions. Figure 1, below, illustrates the Central-East Interface.

**Figure 1**

### Central – East Interface

Divides New York into 2 distinct zones: North-West and South-East.



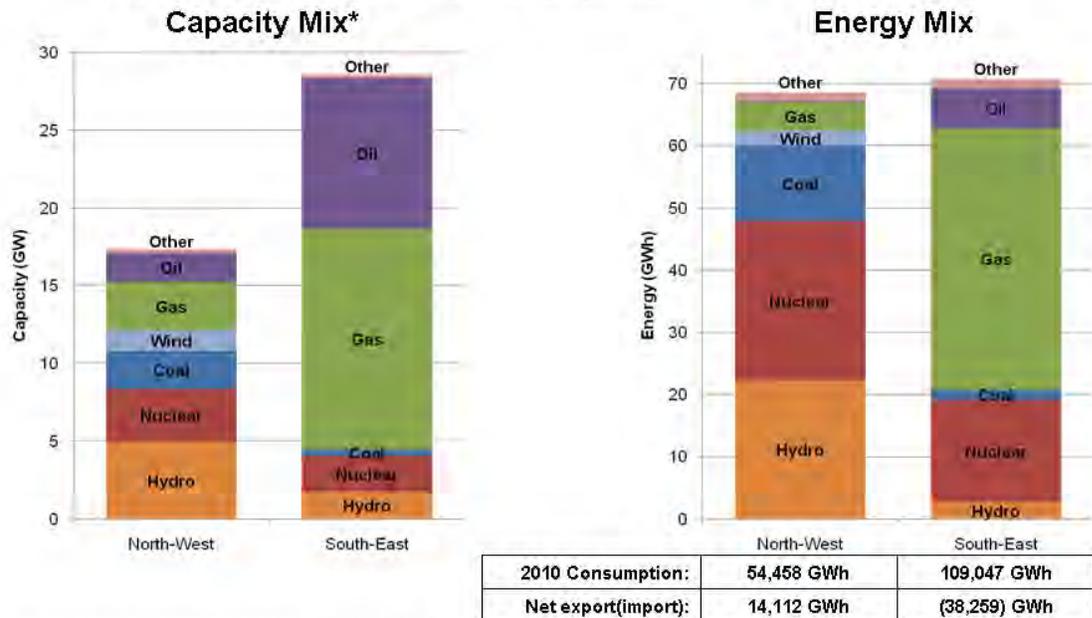
This interface creates two very distinct energy markets. These markets have different energy generation portfolios and demand profiles and accordingly different prices and different greenhouse emissions.

The bar graph below, Figure 2, illustrates the capacity mix of the generators in the North-West and the South-East. It also discloses the energy generated from these facilities.

**Figure 2**

## Regional Capacity and Energy Portfolios

Note: Includes resources physically located in region only.  
Does not include imports from other states/provinces.



\* Values based on nameplate capacity (2011 NYISO Gold Book)

Several observations can be made from this chart.

- The South-East is much more dependent on gas/oil base load capacity.
- As shown below, much of this gas/oil fixed capacity is older, less efficient steam units that rely on fuel with higher green house gas emissions
- Without Indian Point, the South-East generating facilities would be almost entirely gas/oil.
- The North-West regions produce more energy than they consume (net exporters).
- The North-West region's production is less than it would be if the bulk transmission transfer capability across the Central-East Interface were greater than it is.
- The South-East region is a net importer (38,259 GWh) with 14,112 GWh or 36% of these imports coming from the North-West. The remainder comes from out of state, i.e., representing a missed opportunity for in-state generators.

**Figure 3**

## Pre-1970 downstate peaking generators

Owner/Operator	Generator & Unit	Town	Year in Service	Primary Fuel	Nameplate (MW)	2010 net GWh	Capacity Factor
Consolidated Edison Co. of NY, Inc.	East River 6	Manhattan	1951	Oil	156.2	480.6	35%
Long Island Power Authority	Glenwood ST 04	Glenwood	1952	Gas	114.0	95.3	10%
Long Island Power Authority	Far Rockaway ST 04	Far Rockaway	1953	Gas	100.0	189.9	22%
Consolidated Edison Co. of NY, Inc.	East River 7	Manhattan	1955	Oil	200.0	471.0	27%
Long Island Power Authority	Barrett ST 01	Island Park	1956	Gas	188.0	518.4	31%
Astoria Generating Company L.P.	Astoria 3	Queens	1958	Oil	376.0	728.3	22%
Long Island Power Authority	Port Jefferson 3	Port Jefferson	1958	Oil	188.0	238.2	14%
NRG Power Marketing LLC	Arthur Kill ST 2	Staten Island	1959	Gas	376.2	530.3	16%
Long Island Power Authority	Port Jefferson 4	Port Jefferson	1960	Oil	188.0	192.0	12%
Astoria Generating Company L.P.	Astoria 4	Queens	1961	Oil	387.0	636.9	19%
Astoria Generating Company L.P.	Astoria 5	Queens	1962	Oil	387.0	411.7	12%
TC Ravenswood, LLC	Ravenswood ST 01	Queens	1963	Oil	400.0	633.2	18%
TC Ravenswood, LLC	Ravenswood ST 02	Queens	1963	Oil	400.0	502.9	14%
Long Island Power Authority	Barrett ST 02	Island Park	1963	Gas	188.0	562.9	34%
TC Ravenswood, LLC	Ravenswood ST 03	Queens	1965	Oil	1,027.0	1,143.3	13%
Long Island Power Authority	Northport 1	Northport	1967	Gas	387.0	1,153.4	34%
Long Island Power Authority	Northport 2	Northport	1968	Gas	387.0	854.9	25%

Source: 2011 NYISO Gold Book

### Price Impacts in North-West after Relieving Congestion

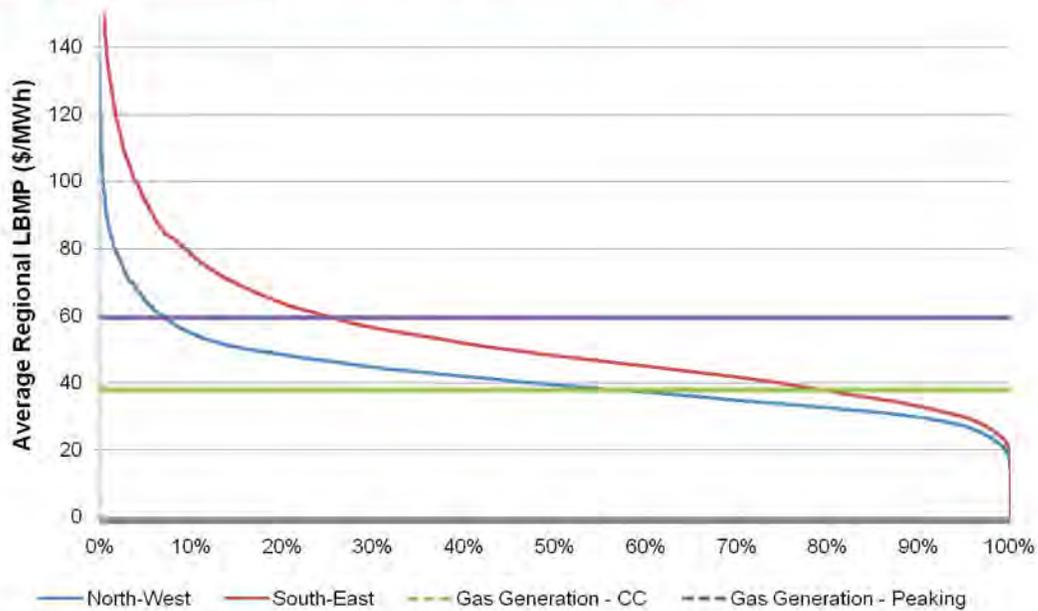
Some have suggested that new bulk transmission designed to relieve the bottlenecks at the Central-East Interface would materially increase the price of energy in the North-West. Comprehensive modeling would need to be completed to accurately forecast the various effects on prices throughout the state if new bulk transmission were built. This would be done as part of our proposal. Nevertheless, one can deduce that there is ample excess generating capacity in the North-West, capable of creating power that would flow into the South-East and not significantly increase the marginal cost of power in the North-West.

Specifically, the North-West had a nameplate capacity for gas of 3,100 MW and in 2010 had net generation of 4,630 GWhs representing a low 17% capacity factor. Of the 3,100 MWs of gas generating capacity, 2,292 MWs or 74% was combined cycle gas and ran at a low capacity factor of 19.8%. Again while comprehensive modeling would spell out the specifics, one can infer that given the low capacity for the combined cycle fleet, these units were setting the market price in the North-West market. More interestingly, the North-West combined cycle fleet has the capacity to export an additional 8,100 GWhs, assuming that they operated at a 60% capacity factor and that the bulk transmission's transfer capability at the Central-East Interface could accommodate it. Currently, the bulk transmission system cannot accommodate any additional exports from the North-West into the South-East. That is why the combined cycle gas fleet in the

North-West region operated at a 19.8% capacity factor and why the less efficient, more expensive, less reliable and dirtier gas/oil steam units listed in Figure 3 filled the void. The regional energy price duration below, Figure 4, graphically makes these points demonstrating the regional price difference.

**Figure 4**

### Regional Energy Price Duration (2010)



- Graph is illustrative of regional price differences in 2010.
- Data is comprised of hourly averages of day-ahead LBMPs for each NYCA zone within region.
- Gas generation marginal prices calculated using 2010 average gas price of \$5.41/rmmBtu and average heat rate of 7,000 btu/kWh (CC) and 11,000 btu/kWh (peaking)

## The Cost of Transmission Congestion

The practical consequences of the Central-East Interface transmission congestion increased the state-wide annual cost of power by an average of 12% over the period from 2004 through 2010. This represented an average annual cost of \$1.4 billion included in the average state-wide cost of energy of \$11.7 billion. Although 2011 numbers are still being finalized, it is estimated that total congestion for last year will be \$1 billion. See Figure 5.

**Figure 5**

### Historical New York Congestion Costs by Zone

Zone Name	Load Zone	Congestion Costs to NY Electric Consumers*							Average (\$M)
		2004	2005	2006	2007	2008	2009	2010	
West	A	-1	-5	1	-14	-25	-14	-1	-8
Genesee	B	1	-1	2	-14	-9	4	6	-2
Central	C	1	-1	4	9	18	8	11	7
North	D	0	-1	0	0	-2	-3	-1	-1
Mohk. Valley	E	0	0	2	5	10	4	5	4
Capital	F	8	19	27	74	143	53	62	55
Hud. Valley	G	5	20	54	87	176	57	73	67
Milwood	H	3	12	27	31	78	16	23	27
Dunwoodie	I	4	24	44	56	124	41	49	49
NY City	J	582	809	673	700	1,403	503	560	747
Long Island	K	230	508	708	518	624	274	350	459
<b>Total</b>		<b>833</b>	<b>1,384</b>	<b>1,542</b>	<b>1,452</b>	<b>2,540</b>	<b>943</b>	<b>1,136</b>	<b>1,404</b>
<b>Total Energy Cost to Load</b>		<b>10,059</b>	<b>15,314</b>	<b>11,969</b>	<b>12,831</b>	<b>15,485</b>	<b>7,397</b>	<b>9,005</b>	<b>11,723</b>
<b>Congestion % - original</b>		<b>8%</b>	<b>9%</b>	<b>13%</b>	<b>11%</b>	<b>16%</b>	<b>13%</b>	<b>13%</b>	<b>12%</b>

Cost to New York consumers averaging \$1.4B per year

86% of that cost borne by New York City and Long Island

Congestion has averaged 12% of consumer energy costs

\*Source: Congestion costs results from NYISO's PROBE analysis, a model designed to reproduce market prices as closely as possible.

2008 results are high due, in large part, to very high natural gas prices which can occur periodically in a commodity's life cycle.

Highlighted areas represent load zones that will benefit from the transmission project.

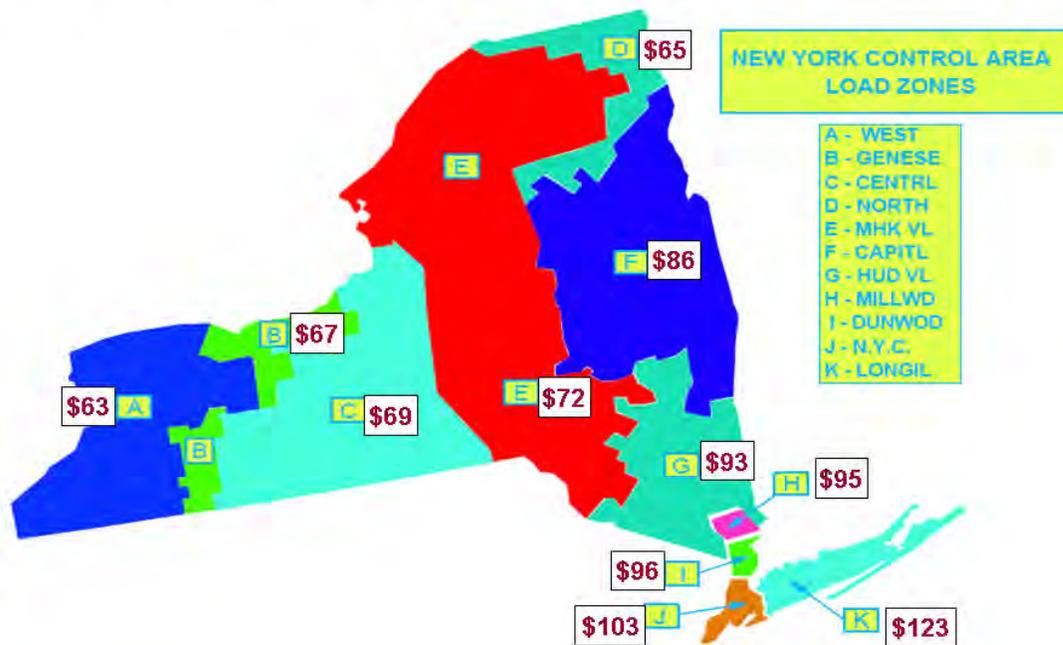
Several observations can be made including:

- New York City and Long Island have paid nearly 86% of this annual congestion cost averaging \$1.4 billion.
- The congestion peaked in 2008 at 16% due to very high natural gas prices which can and will occur periodically in a commodity's life cycle.
- Even during the historical economic downturn in 2009 and 2010 the congestion cost was \$1.0 billion each year.
- This additional cost of energy for New York and Long Island consumers could have been avoided if new bulk transmission across the Central-East interface had been in place.

The map below, Figure 6, illustrates the 2010 average market prices by Load Zone during the highest 1,000 hours of congestion.

**Figure 6**

### **2010 Market Prices by Load Zone Average Prices During Top 1,000 Hours of Congestion (\$/MWh)**



It is the reduction of these congestion costs that represents the primary commercial justification for building “Connect New York”. Nevertheless, other important strategic benefits are associated with this proposal and will, in time, bring commercial returns.

#### **Reinvigorating Renewable Development**

If New York State is committed to meeting its RPS goal, several initiatives could be introduced that would reverse the downward momentum for wind development. Principal among these is relieving the congestion that prevents export of low cost North-West wind power to high cost South-East load centers. This commitment could also be backstopped by requiring utilities and state agencies to enter long-term fixed-price bundled contracts with credible wind developers with proven track records. Utilities have traditionally been hesitant to sign long-term contracts due to rating agency implications, but there are regulatory means to address these concerns.

To realize the potential of the State’s renewable resources, bulk transmission must be expanded to reach north and west into the most promising wind development zones. This bulk transmission must be supplemented with a plan to develop new secondary transmission lines to gather the newly developed wind energy and deliver it to the newly developed bulk transmission system.

Second, the reauthorized Public Service Law Article X process, with its 25 megawatt threshold and application to renewable generation projects, needs to be implemented in a way that maximizes the potential benefits of single entity (Public Service Commission) approval within one year from complete application (or 6 months for certain modifications of existing facilities). Further consolidating and/or streamlining the State Environmental Quality Review Act process for smaller renewable generation sources is necessary and might be accomplished by establishing time limits for completion of hearings, decisions and appeals for renewable projects of certain dimensions/features, regardless of whether they are reviewed under SEQRA or under the Public Service Law.

Finally it is conventional wisdom that off-shore wind is significantly more expensive than on-shore wind. The state's agencies should focus on the most realistic renewable options to meet the RPS mandate that is only four years away. Now is not the time to experiment with the exotic alternatives.

### **Environmental Compatibility**

“Connect New York” will utilize a combination of existing public and private right-of-ways, which have been previously disturbed and will significantly minimize, if not entirely eliminate, impacts to visual, historic, archaeological and other important environmental resources. By proposing efficient, buried transmission lines, the proposal will also address many of the concerns associated with aerial transmission lines and towers, such as their visual impacts and aesthetics, electromagnetic radiation effects and impacts on property value. Connect New York will also allow for the transmission of energy from wind farms and other clean upstate generating facilities that produce less greenhouse gas emissions than the older generating facilities downstate.

### **The Indian Point Question**

The Fukushima nuclear accident refocused attention on the Indian Point nuclear plant and the effort to renew the plant's two operating licenses when they expire in 2013 and 2015. The practical reality is that the plant's 2,000 MW capacity is currently a vital piece of the energy portfolio for southern and eastern New York. Its power is “clean” and low priced. Nevertheless it represents a recognized potential safety risk to the greater New York City metropolitan area.

There cannot be a serious discussion about closing Indian Point without simultaneously proposing an alternative energy supply that meets the reliability requirements of the region. New bulk transmission is a necessary prerequisite to filling this potential energy void.

“Connect New York” is not the exclusive answer to replacing the potential loss of Indian Point energy but it could be an important piece of the puzzle that could, with the right support delivered in an urgent manner, come to the market in a reasonably timely fashion.

## **Summary of Benefits**

### **How Connect New York Could Advance**

### **Governor Cuomo's Supply-side Energy Imperatives and Satisfy the Goals of the New York Energy Highway**

There are many compelling benefits associated with the “Connect New York” initiative but perhaps the most important one is that it is achievable. Many of the mine fields threatening the approval of customary transmission proposals are avoided with the “Connect New York’s” approach. Environmental and NIMBY challenges are largely circumvented by utilizing the existing right-of-way. Eminent domain is similarly not an issue.

Equally important “Connect New York” is all about New York. It will foster New York’s desire for energy independence by building an energy highway that will change the financial dynamics of repowering upstate plants while encouraging new investment in on-shore wind development east of Lake Ontario. It will reduce the state’s annual energy bill by reducing congestion and allowing lower cost, cleaner energy upstate to flow into New York City and Long Island. This will finally reduce downstate energy bills at a time when consumers need some relief.

The energy most likely to be transmitted on “Connect New York” (gas and renewables) will displace more expensive and higher green house gas energy produced by the older vintage fossil fuel plants in the metropolitan New York/Long Island regions thereby reducing greenhouse emissions as well as energy costs.

Finally, “Connect New York” will create thousands of New York jobs not only during the construction period but subsequently by enhancing prospects for older upstate coal plants to invest in repowering as a new downstate energy market is opened up. The same holds true for renewable development east of Lake Ontario, assuming that long-term power purchase contracts can be put in place to support the 2015 RPS mandate.

In summary, the time has come for this transmission infrastructure proposal to be implemented as the foundation for Governor Cuomo’s “Power NY” vision and the “New York Energy Highway”.

## **Section IV – Financial**

As a privately funded capital project, the business case for developing “Connect New York” is predicated on securing long-term capacity purchase contracts with New York State’s load serving entities. The high level business case for “Connect New York” is commercially attractive:

1. Build a 1,000 MW DC line with two converter stations, with the option to add a second 1,000 MW line;
2. Underwrite the investment with a fixed price transmission contract; and
3. New York electric consumers realize a significant annual reduction in energy costs attributable to reduction in congestion costs.

Alternative approaches could be used to determine how the project costs would be allocated among the load serving entities. Some regions in the country utilize an allocation methodology based on which customers benefit from the project. Although this may be the most fair approach, the process of determining beneficiaries is complicated and can become contentious. Other regions in the country use a postage stamp allocation. Under this approach, the project is determined to have benefits for the state or region as a whole and the costs are allocated on a prorated usage basis. This is by far the simplest approach, but it could be argued that those customers that are not receiving the large majority of the projects benefits should not pay an equal share. It may be determined that some combination of the two approaches, one that recognizes the allocation of project benefits but that does not get bogged down into detailed and potentially contentious modeling discussions is the correct middle path.

## **Section V – Permit/Approval Process**

The current administrative and regulatory construct would require the following approvals, each of which will be sought concurrently, with the associated time frames running in parallel. The list below includes an approximation of the time required to secure those approvals based on historical precedents and assuming conventional approach to gaining these approvals. Vigorous support and follow through by the Administration could reduce these timeframes.

### **A. Public Service Commission Article VII Application – 2 years**

An Article VII proceeding before the Public Service Commission (PSC) typically requires approximately two years to complete. The Respondents control the rights to certain application materials and intellectual property that have been maintained on the active docket before the PSC. If utilized as part of the current conceptualized proposal, this position on the active docket could potentially shorten the time frame for permitting, as well as the overall construction date, by approximately six months or more.

### **B. NYISO System Reliability Impact Study**

- Preparation of system impact study – 6 months
- NYISO review and approval – 6 months  
(A similar project was previously evaluated and a system reliability impact study was performed and approved)

### **C. FERC authorizations to sell transmission rights at negotiated rates – 6 months**

### **D. Acquisition of right-of-ways**

- Various public entities

## Index

As a final reference, the table below indicates that all four of the Energy Highway objectives, detailed on Page 11 of the New York Energy Highway RFI, are satisfied by “Connect New York”. The following table provides the appropriate Energy Highway RFI page references.

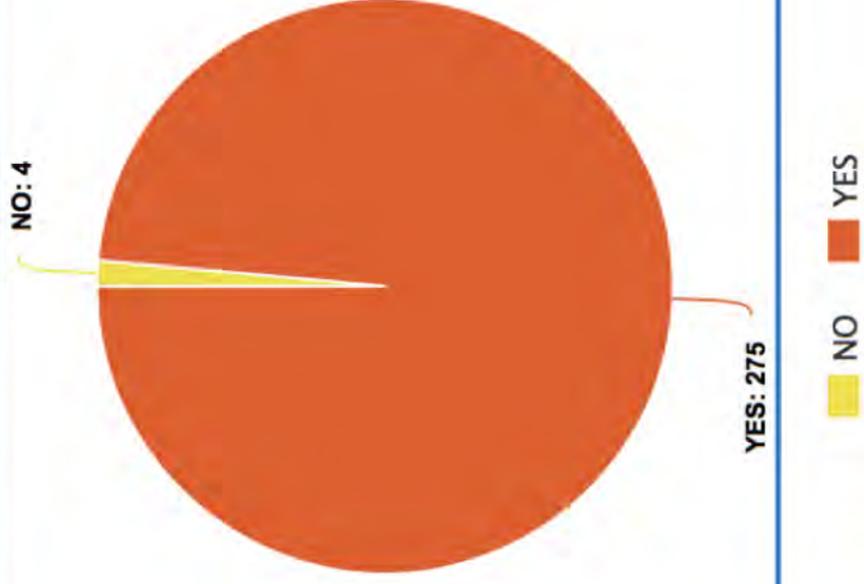
<b>Energy Highway Objectives</b>		<b>Page Reference</b>
Reduce constraints on the flow of electricity	√	4, 7-13
Assure long-term reliability	√	7-10, 13-14
Encourage development of renewable generation	√	13-14
Increase efficiency of power generation	√	4, 7-14

Page 13 of the New York Energy Highway RFI listed additional benefits that should be addressed in the submission. The table below demonstrates that these have been met by this submission and provides the appropriate page references.

<b>Additional Project Benefits</b>		<b>Page Reference</b>
Create Jobs	√	15
Environmentally Sustainable	√	4, 9-14
System Performance and Operation	√	4, 7-14
Rate Payer Value	√	7-13
Demonstrate ability to go through NYISO SRIS/SIS Process	√	16

# Kennebec River Visitor Impact Study

Response to Visual Impact of Kennebec River Crossing on Wilderness Experience  
279 Recreational and Commercial River Users

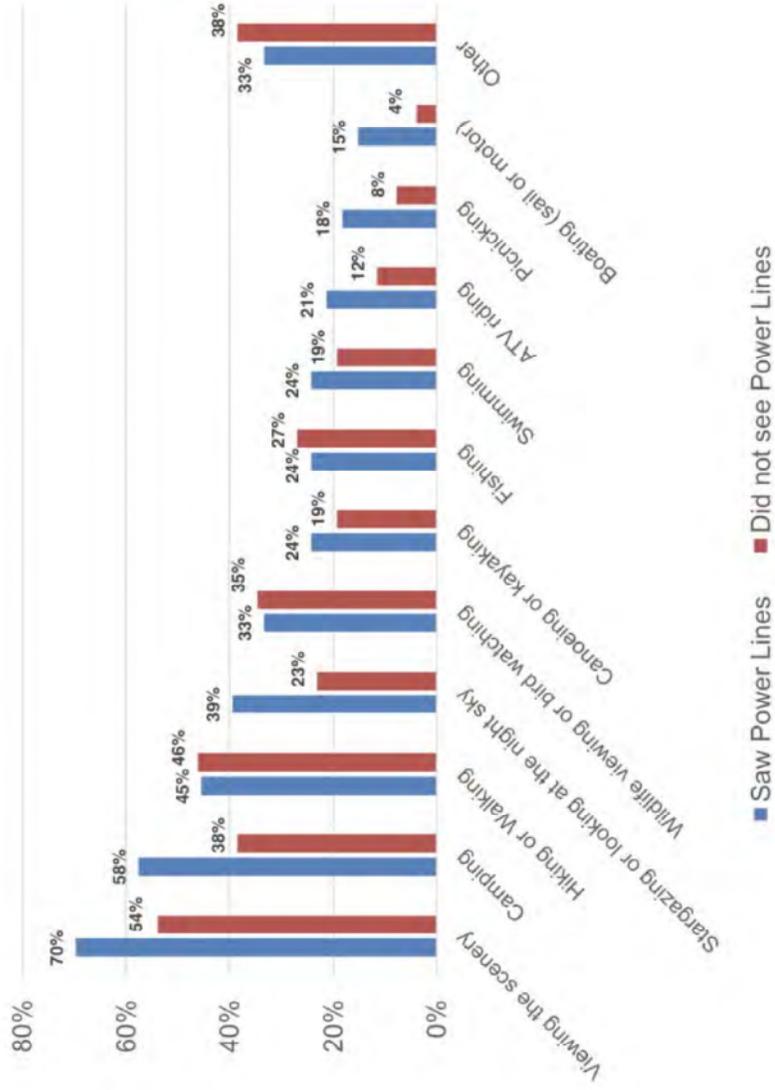


## Updates on River Crossing

- While CMP has decided to drill under the river, that minimizes scenic impact in only that ONE area. There will *still* be sign of infrastructure on shoreline and huge visual impacts throughout the remainder of the corridor.
- Will those access roads to the river provide additional access to river enthusiasts? Will it result in overcrowding like on the Deerfield River?
- What are the impacts on river ecology, water quality & fish habitat?
- If it takes months to complete, how would that impact the rafting season and river flows during construction?
- What about the larger environmental issues of the entire construction and concerns about the source of hydropower?
- The Kennebec River is important, but it's not the only area to be concerned about in Somerset County and remaining corridor.

## Visits to Area and Activities

Q4. Thinking about your visit to the upper Kennebec River area, what are your plans other than rafting?



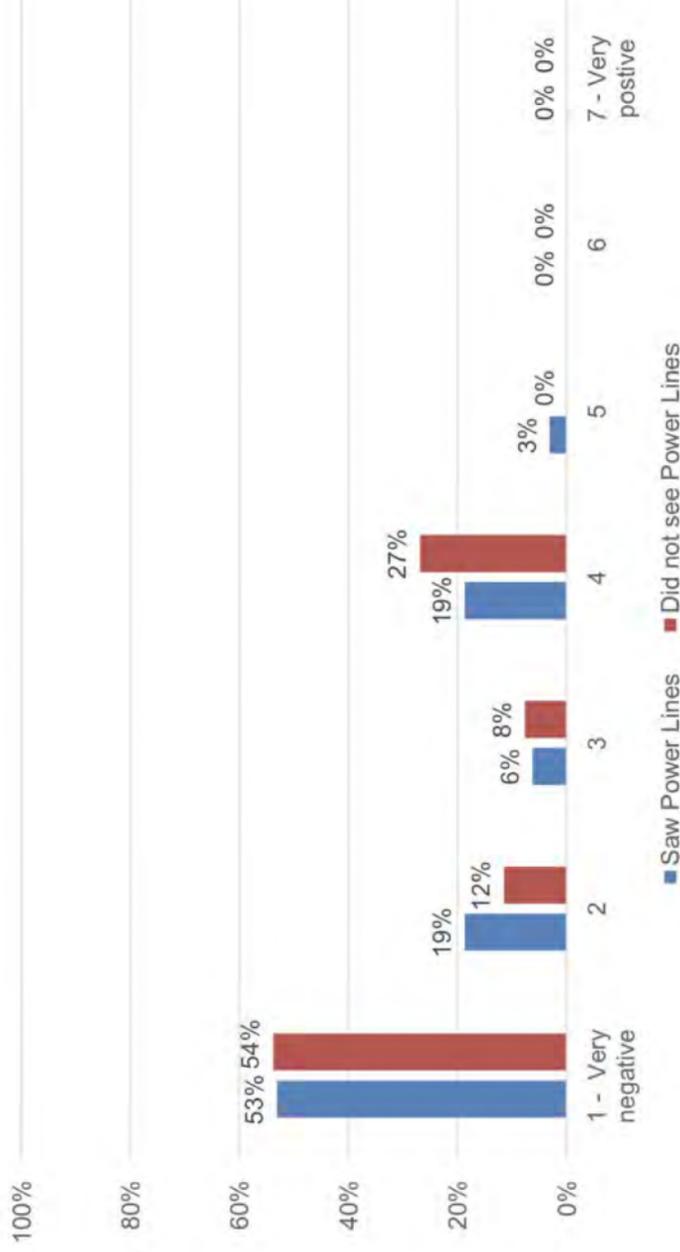
### Summary

Beside rafting, viewing the scenery, camping, hiking or walking were the most common activities for rafters visiting the upper Kennebec River area.

Even CMP's river user survey submitted to PUC-DEP-LUPC revealed that tourists prioritized viewing the scenery in Somerset County.

## Impact of Human Activity

Q10. Please rate the impact this sign of activity may have on the quality of your experience today. - Views of powerlines on hillsides.



The majority of respondents said that power lines on hillsides would be negative. How will this impact their decision to return to this area for a wilderness experience in the future?

Rate on a scale 1 to 7 scale where 7 means a very positive impact on your experience and 1 means the factor would have a very negative impact on your experience.



## Maine State Federation of Firefighters



Feb 12<sup>th</sup>, 2019

Governor Janet T. Mills, Augusta ME  
 Maine PUC: [chris.simpson@maine.gov](mailto:chris.simpson@maine.gov)  
 DEP attn Jim Beyer: [NECEC.DEP@maine.gov](mailto:NECEC.DEP@maine.gov)  
 LUPC attn Bill Hinkel: [Bill.Hinkel@Maine.gov](mailto:Bill.Hinkel@Maine.gov)  
 Mass DPU: [alan.topalian@state.ma.us](mailto:alan.topalian@state.ma.us) & [dpu.efiling@mass.gov](mailto:dpu.efiling@mass.gov)

Dear Recipients:

This letter is to express concerns for fire and other emergency response capacities within the areas located along and adjacent to the proposed NECEC Corridor. (RE: DPU 18-64; DPU 18-65; DPU 18-66)

The Maine State Federation of Firefighters (MSFFF) has a membership of over 6000 firefighters. Many of our members are volunteers within small departments in rural communities. Several of our volunteer members, who serve areas within the proposed NECEC Corridor, contacted us to express their concerns for fire and safety response. These concerns focus not only on the major construction phases of the project, but also on significant risks that will be established and which will continue to exist long after construction crews have left the area and wide areas of high voltage power lines cross their jurisdictions. Further conversations and investigation indicate that to date, no evaluation, assessment, or documentation of the fire, emergency medical, terrorism and other risks, or the services and equipment needed to mitigate those risks, have been formally identified, discussed, studied, and/or reported on.

While Maine is not a "fire regime" it does not mean that catastrophic fires cannot occur here. Rural fire response has improved in the seventy years since "The Year Maine Burned" in 1947, but we must remember October 1947 followed one of Maine's rainiest seasons on record. *"From October 13 to October 27, firefighters tried to fight 200 Maine fires, consuming a quarter of a million acres of forest, taking the lives of 16 people, and wiping out nine entire towns. The Maine fires destroyed 851 homes and 397 seasonal cottages, leaving 2,500 people homeless".*

As we've seen over the last few years in other parts of our country and around the world, fires of magnitude that quickly overwhelm state and local resources are becoming annual events. Additionally, as was demonstrated in 2018 with the Paradise (CA) Campfire; PG&E, the power company whose transmission power lines were responsible for the fire, quickly declared bankruptcy. The convenience of PG&E and its ability to declare bankruptcy leaves Paradise, its victims, and the American taxpayer, to clean up the 150,000 acres of toxic wasteland before any attempt is made to rebuild from the destruction.

Regarding fire suppression and emergency support within the proposed NECEC Corridor, please see the enclosed map and note the following:

Approximately 70 miles, from the Quebec border to Bingham, has no organized fire or emergency response capacity. These areas are covered by the Maine Forest Service (MFS). During a typical fire season, approximately March-October, the MFS has Rangers living the area who provide initial size-up once they arrived on scene. Weather permitting, air support from Augusta is dispatched; if air support is not already assigned to another fire in another part of the state. Ground crew members from around Maine may also be called to fight fires. Organizing and staging MFS wildland firefighters for a significant fire takes an hour or more. Fires on a windy day gain a significant headway before crews can arrive to remote areas. Volunteers from rural Maine towns are also trained in wildland firefighting and may respond to assist with MFS and Rangers when available.

The first 100 miles of the proposed Corridor, including the 70 miles covered by the MFS and Rangers, has only three (3) volunteer departments within a one-mile (1-mile) buffer of the proposed Corridor. These are the Bingham, Anson, and Solon Volunteer Fire Departments. This area has no staffed fire services and daytime coverage is extremely limited.

South of Bingham, and still within Somerset County, there are three (3) additional fire departments with a two-mile (2-mile) buffer of the proposed NECEC transmission line. These are the volunteer departments of Starks, Madison, and Industry. Once again, these three additional departments have no staffed fire and daytime coverage is extremely limited.

Please also note that these fire departments also lack sufficient off-road fire support capacity. While several do have smaller 4WD apparatus, sufficient large scale wildland suppression and emergency mitigation equipment is not available in the rural areas of the proposed NECEC Corridor area.

Non-fire emergency medical services (EMS) paramedic response is provided by Upper Kennebec Valley Ambulance out of Bingham. Emergency transports are taken to Redington-Fariview Hospital, 35-miles away. Redington-Fariview hospital has a Lifeflight landing pad, with helicopter transport dispatched from Bangor, Lewiston, or Sanford, if available.

Initial response for terrorist or other types of emergency incidents would come from either the Franklin or Somerset County Emergency Agencies depending on the location of the incident. We have been unable to locate any reference or notice from NECEC on how risk and incidents of this nature would be mitigated.

An example of a known risk that supports the need to evaluate, assess, document and sufficiently mitigate comprehensive fire and emergency risks associated with the proposed NECEC Corridor is shown by the 2017 (draft) Somerset County ME Hazard Mitigation Plan.

The most current available Somerset County Emergency Management Agency Mitigation Plan states the following:

C3 Goals

Wildfires: Reduce damage, injury and possible loss of life in Somerset County caused by wildfires.

*Somerset County is subject to wild land fires. The most likely damages caused by a wildfire are the loss of life, loss of prime timberland, and the destruction of personal and real property, especially homes. The loss of electricity is also possible, since many high voltage transmission lines pass through heavily wooded areas. Major wildfires may close commerce, resulting in major losses of income to local businesses and individuals. \*There were at least 261 wild land fires in Somerset Country in from 2005 to 2010.*

Information to date indicates that consideration of the many emergency hazards associated with the construction and future management of the NECEC Corridor have not been addressed. Due to this oversight, we conclude that the preparedness and safety of our fire fighters, and other first responders who will respond to NECEC Corridor incidents, has been severely overlooked and their security and safety significantly compromised.

The Officers and members of the MSFFF appreciate the opportunity to present these comments and look forward to having the fire, EMS, and other emergency response issues regarding the proposed NECEC Corridor fully evaluated, assessed, and documented. We also encourage the development of and look forward to reviewing mitigation and implementation plans to address associated Corridor risks, and fully support these risks being formally discussed, studied, disclosed, and reported.

Respectfully submitted,



Kenneth Desmond  
President, MSFFF  
PO Box 911  
Sabattus, ME 04280

enc: map of Somerset Cnty Region

# Somerset County & Region Fire Response Capacity relative to proposed NECEC Corridor

Six Fire Departments in Somerset County are within a two mile buffer (4 miles across) of the proposed NECEC transmission line.

Approximately 70 miles, from the Quebec border to Bingham, has no organized fire response department within two miles.

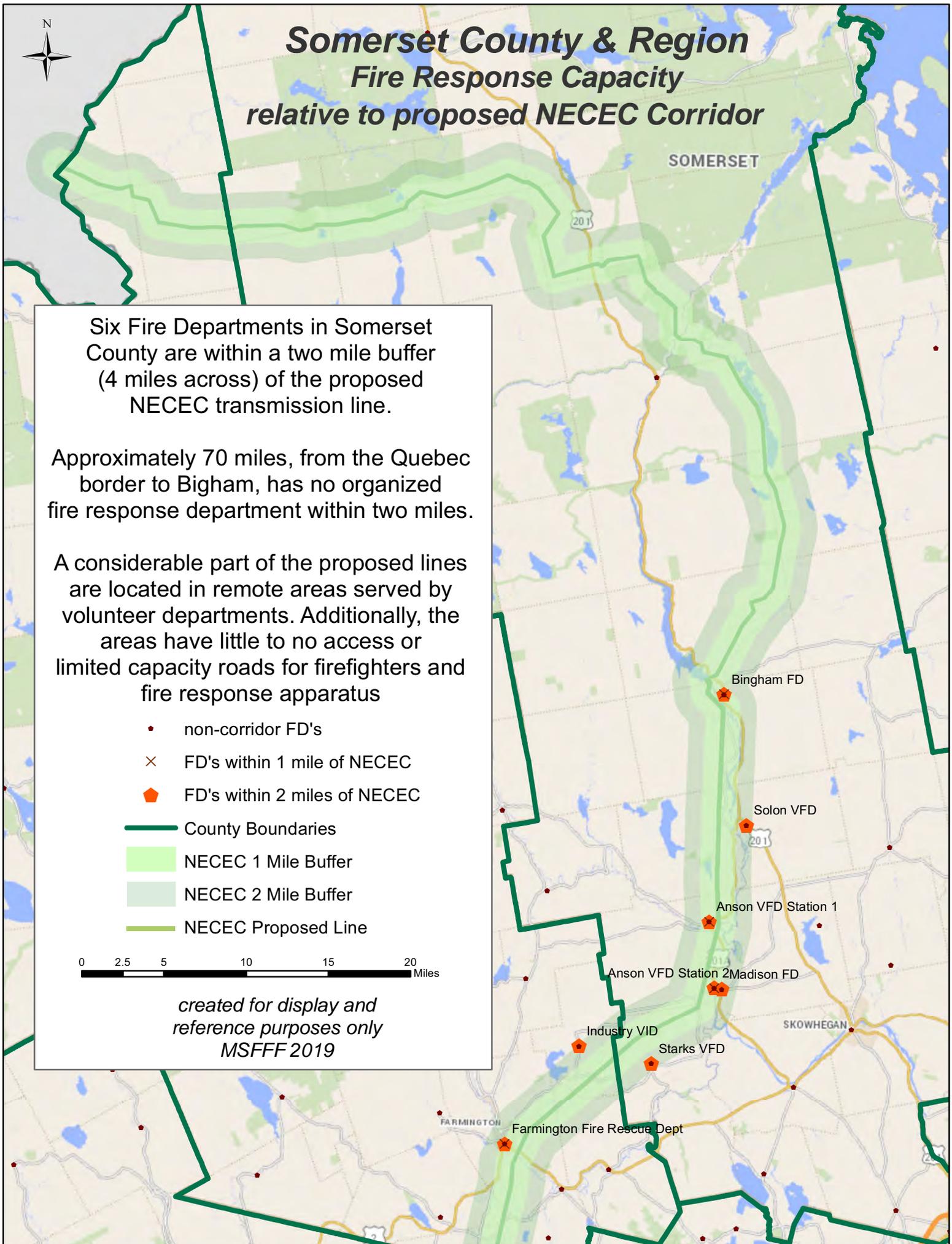
A considerable part of the proposed lines are located in remote areas served by volunteer departments. Additionally, the areas have little to no access or limited capacity roads for firefighters and fire response apparatus

- non-corridor FD's
- × FD's within 1 mile of NECEC
- ◆ FD's within 2 miles of NECEC

- County Boundaries
- NECEC 1 Mile Buffer
- NECEC 2 Mile Buffer
- NECEC Proposed Line

0 2.5 5 10 15 20 Miles

*created for display and  
reference purposes only  
MSFFF 2019*



Maine public utility commission public testimony hearing on October 17, 2018(2018-00232)

My name is Diane Zagwijn-Coston. Jim and I reside at 482 togus Road in Chelsea along with our grand-daughters Lilli age 4 and Autumn age 9.

Our property directly abuts CMP's transmission corridor in witch section 3025 of the high voltage MPRP has now been constructed. This was one of the last sections of the MPRP high voltage transmission line sine 2014 when blasting began. New pole 82 of the 345 Kilovolt AC line is 182.5 from my bedroom and that is to close. I know the CMP considers this project to have been a true success, on time and on budget. But as an abutter, I feel that we where not given accurate and full information and are now suffering with stray and induced voltage that impacts our animals, ourselves and has resulted in very significant shocks to my nephew, my husband, my 9 year old granddaughter, and two of our animals. The shocks are sever enough to knock my husband to the ground and cause our adult horse to rear up and scream out in pain.

In April 2017 when Jim received his first shock I contacted CMP to report the shock and that our radio would play by just stretching the cord out on the ground in our backyard. CMP gave this phone report work order #10300381598. no one from CMP responded.

In May of 2017, after contacting several people, two CMP representatives finally came to our home. They tested a lot of places using a hand held voltage meter one probe on the ground and the other in different locations. I witnessed the testing. My own notes show that the voltmeter read 89 volts by just placing the lead in the gr4ound and the other in the air. This testing was done with the circuit breaker to my property off.

Things happened on our property since the moment they began preparing to build the line. Among other things many trees on my property, not in the right of way, where cut down; Blasting occurred and 23 animals large and small died within weeks of the blasting., fencing was destroyed and herbicide spraying was done with out notice and our horse was sprayed in the face with it. However, what I really want you to hear is what has happened to us since the line was energized in April, 2015.

Right off and still continuing we have stray current(voltage) on fencing that was not turned on. Everyone in our house hold has had health issues we have never had before the line was energized, including sever headaches, body aches with burning pain, and large epidermal cysts. All our animals are now sterile where before, every year for four consecutive years many animals where born yearly on our property.

I am testifying here today, to urge the commission to be sure there is an LDRT (LAND DISPUTE RESOLUTION TEAM) and an Ombudsman be appointed for the NECEC. I suggest that the Ombudsman have more authority to address problems and cause relief to be provided than it had in the MPRP. I don't know if the voltage and magnetic field that is leaking from the transmission line located next to my home is going to be repeated with the new high voltage lines that are to be installed with the NECEC project, but problems like ours should be prevented- and if not prevented, addressed, right away, when they do occur.

I have five documents that I would like entered into evidence. They are all on the PUC online computer system under the invention that the PUC Commissioners, thank you, Commissioners,

Coston Testimony, October, 2018

required PUC staff to undertake after our PUC appeal of the LDRT recommendation was referred to the Commissioner, 2018-00034. The investigation Docket is 2018-00170.

The five documents I wish to include as part of this Testimony are all available in Docket 2018-00170. I have a hard copy here, or they could be digitally included. Four are from item 7, 1. Pre-filed testimony of Diane Zagwijn-Coston; 2. Exceptions to Recommended Decision on Coston's Appeal of LDRT decision (2018-00034); 3. Attachments to exceptions to Recommended Decision; 4. factual issues #4 on stray voltage; in the fifth is item 14 Dot Kelly inclusion of filling in 2018-00034 -Dkelly comment to Revise the Recommend Decision on the Coston Farm. LDRT Appeal final version.

I hope no one else has to go through what my family has endured.

Sincerely,



Diane Zagwijn-Coston

Testimony for 2017-00232 Attachment 1  
2018-00170 Attachments to Exceptions to Recommended  
Decision from Filing # 7.

STATE OF MAINE  
PUBLIC UTILITIES COMMISSION

May 24, 2018

EXCEPTIONS & COMMENTS  
OF DIANE ZAGWIJN-COSTON  
AND JAMES COSTON TO  
RECOMMENDED DECISION

PETITION FOR FINDING OF PUBLIC  
CONVENIENCE & NECESSITY FOR THE  
MAINE POWER RELIABILITY PROGRAM  
CONSISTING OF THE CONSTRUCTION  
OF APPROXIMATELY 350 MILES OF 345  
KV AND 115 KV TRANSMISSION LINES  
(MPRP) PERTAINING TO CENTRAL  
MAINE POWER CO.

DOCKET NO. 2008-00255

CENTRAL MAINE POWER COMPANY  
APPEAL OF LDRT DECISION  
REGARDING DIANE AND JAMES COSTON

DOCKET NO. 2018-00034

TO THE PUBLIC UTILITIES COMMISSION: This submission is made on behalf of Diane Zagwijn-Coston and James Coston [hereinafter, "Costons"] to provide the Commission with their exceptions and comments on the "Recommended Decision" dated May 18, 2018.

**RE I. SUMMARY.** The Costons respectfully take exception in part and agree in part with the recommended finding that the Ombudsman's referral to the Landowner Dispute Resolution Team (LDRT) from the Maine Power Reliability Program (MPRP) is outside the jurisdiction of the Landowner Dispute Resolution Process (LDRP). They expressly take exception to the part that finds the Ombudsman's referral regards alleged impacts "caused by Central Maine Power Company's operation" of the MPRP.

The Coston's complaint involves *design errors* and *construction issues* in the MPRP—not operation. They seek a Commission order that CMP mitigate the MPRP design flaw by moving the tower that is positioned too close for safety to their home,

ATTACHMENT 1  
to Costons' exceptions

### EMF Site Measurements

Customer Name: Diana Coston Witnessed: YIN  
 Service Address: 482 Togs Road  
 Account Number: 211-0009538-019  
 Date of Measurement: May 19, 2017  
 Field Star S/N: FW Bell S/N 1642006 1:30 PM  
 Energy Service Specialist: DM Begin  
 Additional Personnel Present: Chris Marshall-BMMcd

The measurements recorded herein are instantaneous measurements.

Transmission structure; section #: 3025, pole #: 82  
 (If applicable)  
 Center Line of existing transmission corridor: 50.2 mGauss  
 Edge of transmission right of way: 37.2 mGauss  
 Nearest adjacent point of residence/business: 7.4 mGauss  
 Service Entrance: 7.2 mGauss  
 Nearest CMP Distribution Structure: Pole 39 5.6 mGauss  
 (pole/padmout transformer #: 39)

#### Internal measurements for residence/business:

Location	Comment	Measurement mGauss
Porch	adjacent driveway	5.8
Trough-right barn		8.8
Leach field		16.6
Plow Truck		5.6
Microwave		577 mg on contact
In House Kitchen	breaker off	6.2
Kitchen Table	breaker off	6.7

ATTACHMENT 2  
to Coston's Exceptions

**From:** Thompson, Gregory J. [mailto:[gregory.thompson@avangrid.com](mailto:gregory.thompson@avangrid.com)]  
**Sent:** Friday, August 25, 2017 1:46 PM  
**To:**  
**Subject:** FW: Coston Farm, Chelsea

Chris and Bill,

Below is a summary of the meeting between the Coston's, Ray Boucher and Greg Snow. It should be noted that there is no official report regarding the visit. This site visit was meant to rule out the possibility of the distribution circuit causing a safety concern for the Coston's. Ray and Greg do not have the expertise nor the equipment to test for EMF. Further, they would not be the appropriate representatives to discuss safety as it relates to the transmission line and the proximity to the Coston's property. Ben Shepard's group or a contractor through Ben's group should be able to address those issues.

Greg Thompson

Manager of Regional Operations

Augusta Service Building

**From:** Boucher, Raymond A.  
**Sent:** Friday, August 25, 2017 11:03 AM  
**To:** Thompson, Gregory J.  
**Cc:** Snow, Gregory  
**Subject:** Coston Farm, Chelsea

Greg, below are my recollections related to our preliminary investigation of the voltage potential concern raised by Mr. and Mrs. Coston at their farm in Chelsea. Greg Snow may have additional information or comments. Please review this and let me know if you have any questions.

On May 3, 2017, Greg Snow, who was filling in for Tim Robbins, called me to discuss Mrs. Coston's concerns about potential shocks at their farm in Chelsea. Greg indicated that Mr.

Coston had recently been doing some maintenance work on an electric fence at their farm when he became aware of the voltage potential on the metal fencing. The Costons believe the presence of voltage on their fence may be related to the 345 KV transmission line (MPRP) which runs adjacent their property.

Before assuming it was related to EMF from the transmission lines, I suggested to Greg that we should do some preliminary checks to ensure that the unwanted voltage was not related to faulty wiring or equipment connected to the electric service we were providing from the local distribution circuit.

Subsequently, Greg Snow and I met with Mrs. Coston at her farm that morning. Using his standard multi-meter, Greg took voltage measurements by placing one probe in the earth and the other on the fence conductor (with the fence off) in the area Mrs. Coston said her husband had noticed the voltage potential. Greg confirmed that he was measuring voltage that fluctuated around 84 volts.

At our request, Mrs. Coston then opened her electric service main breaker. With the electric service to the farm now completely off, Greg rechecked the earth to fence potential at the same location and indicated that the readings had not noticeably changed. Additionally, he noted that he was getting similar fluctuating voltage to earth readings simply by holding the probe to his body or even in mid-air.

Greg related this to his experiences with EMF induced voltage that he often experienced while doing line-work in transmission corridors. He indicated that it was common practice for linemen to ground metal objects such as vehicles etc. to mitigate the induction while they worked in transmission corridors. He suggested to Mrs. Coston that this might be a good practice for them as well since much of the fencing appeared to be located well within the transmission corridor.

I indicated to Mrs. Coston that we would refer this to Company personnel that had information regarding the 345 KV transmission corridor boundaries and expertise in transmission EMF induced voltage for further investigation and follow-up.

Later that day I sent an email (attached) to you with our findings so this could be directed to the appropriate people for further investigation.

=====  
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Greg Snow and I met with a customer this morning who is getting shocks at her home. They thought the voltage was being induced by the 345 KV transmission line (MPRP) adjacent to their property. We did some voltage checks and did confirm that there was voltage present (varied to over 84 + volts to earth) on their fence line which runs parallel to the transmission line. It is not faulty electrical equipment as we also confirmed the voltage readings even with the service main breaker open. It does appear to be related to the transmission line and Greg Snow can fill you in with the customer name, phone number and explain the voltage readings in more detail.

This is beyond anything I can address. Could you follow-up with someone more familiar with the MPRP project and right-of-way and resulting voltage induction issue. Please let me know if you have any questions for me.

**From:** Pierce, Tamra L.  
**Sent:** Tuesday, May 02, 2017 3:48 PM  
**To:** Boucher, Raymond A.  
**Subject:** Voltage Induction

Ray,

Steve said that this should be given to Greg Thompson to decide how it should be handled. He also suggested the safety person for Augusta but I am not sure they handle these types of issues. I would talk with Greg.

**Attachment 3 to Exceptions and Comments  
of Diane Zagwijn and James Coston**

**AFFIDAVIT OF DIANE ZAGWIJN-COSTON**

I am Diane Zagwijn-Coston of 482 Togus Road in Chelsea, Maine. Under oath, I make the following statement in support of the Exceptions and comments being filed on behalf of myself and my husband James Coston ["Jim"] with the Public Utilities Commission today.

1. The factual statements made in our referenced "Exceptions" being filed today are true to the best of my knowledge, information and belief, including, but not limited to:
  - a. Jim and I are raising two grandchildren, ages 3 and 9, in the house we own at 482 Togus Road, which is located nearest to Pole 82 of Section 3025 of the CMP transmission line.
  - b. we were not notified that Pole 82 was going to be on our side of the corridor until after it was built. We had understood from Al Godfrey that that pole was going to be on the further side of the corridor, but somehow, it got moved closer to us.
  - c. I have become very concerned about my own and my family's health since the line became operational. This is because I have had chronic headaches which I had never had before, growths have appeared on my face, my legs frequently have pains like I've never had before, my blood pressure has gone way up and I suffer a lot of insomnia that I never used to consider a problem. I have seen a growth appear on my husband's hip and hear complaints of headaches and other pains from the girls.
  - d. We have had 24 animals die since the blasting and after the line became active. That is a lot for a small farm. It's hard on everyone.
  - e. We have had several different animals that we always used to be able to breed in the spring, become completely infertile. We have had some newborn animals die shortly after birth. That was not at all our experience as a farm prior to the blasting, construction and operation of this line.
  - f. After seeing what has been happening with so many of our animals, I am increasingly concerned about the long-term impact on our granddaughters healthy development, including but not limited to their ability to someday have children.
  - g. We have moved the girls' bedrooms to the point in the house furthest from Tower 82, but that hasn't helped their symptoms.
  - h. In 2014 our well water was tested and found to be contaminated after several of our farm animals suddenly died (soon after the blasting took place in the transmission line

corridor). From that time until August, 2017, we hauled 28 one-gallon jugs of water every three days from a spring 6 miles away until that spring was no longer available to us. Now we buy almost that much water every three days.

i. We have a house with 2 baths and 3 bedrooms, with a 2 car garage, a storage shed and a barn and we have 10 acres for agricultural use. We do have a small balance on our mortgage on it still.

j. We have been looking for a place to move to that is similar. So we have looked for places with between 5 and 15 acres and 3 bedrooms within a 10-30 mile radius of where we live and where I and my husband work (Chelsea and Vassalboro). But the places we have found are all over \$200,000 some over \$300,000. We found four that we could see moving to, but all have now been sold.

k. We will not be able to purchase such a place and relocate without help.

l. This process has been already very time consuming and extremely discouraging for us. It is especially depressing to think we have to start over or bringing in a different process.

2. I am not a lawyer and I know I have been focusing mostly on incidents and factual matters, not the legal questions like jurisdiction as they said in the proposed decision. This is the reality of my life; I can't help it. That's why we looked for a lawyer to help with the legal issues.

But I still want the Commission to know the details of what we've been through and the specific ways we disagree with what CMP is saying. So attached with this is what I have prepared for a new submission to Harry Lanphear (the same as I did earlier this year) to be ready for hearing in the LDRP process either by the LDRT or by the PUC. I ask that you please consider this affidavit and my attachment in reaching a decision on the PUC's jurisdiction to hear the referral made by the Ombudsman.

May 25, 2018

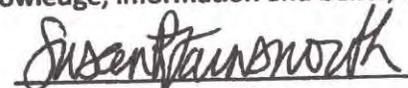
  
Diane Zagwijn-Coston

NOTICE

STATE OF MAINE  
KENNEBEC, ss.

Personally appeared Diane Zagwijn-Coston and, under oath, stated to me that the foregoing statements by her are true to the best of her knowledge, information and belief, this 25<sup>th</sup> day of May, 2015, before me,

My commission expires 12/3/2019.

  
Notary Public: Susan R. Farnsworth

## ATTACHMENT TO AFFIDAVIT OF DIANE ZAGWIJN-COSTON

NOTE: CMP submitted a lengthy comment to this docket on February 21, 2018. This attachment to my affidavit addresses certain points and attachments in the CMP February 21, 2018 to show how we disagree with CMP's version of events and why. Diane Zagwijn-Coston

### 1. ANIMAL DEATHS STARTED AFTER BLASTING.

On page 5, the CMP comment states:

On 05.15.14 – Jim Coston contacted MPRP Real Estate agent Al Godfrey concerning farm animals that had died. Mr. Coston reported that animals started dying in fall 2013. Mr. Coston believed blasting may have tainted the ground water. Chris Marshall (Burns & McDonnell) asked Stephanie Cote (Ciambro) to contact Coston on behalf of Irby, the general contractor responsible for constructing the MPRP in the area.

My husband and I specifically remember that the animals died in the spring of 2014 and it was after April, not February.

I remember contacting Mr. Godfrey and then CMP, within a few days of the deaths, which occurred over a few weeks. The deaths were the newborn calves and the newborn goats, and a couple adult goats, as well as some smaller animals. After this incident, the cows could not be bred back because they were sterile. Calves on the farm are born in May to June. The last calf born, and the only calf to live more than a short period, was born in June and named June. She is still on the farm.

CMP's Exhibit 5 page 1 of 2, is an internal email from Stephanie Cote dated Tuesday, May 20, 2014 sent to Chris McKenney and four other men. It was not sent to the Costons. The email purports to document the conversation she had with Diane Coston the day before. It states (directly conflicting with the information quoted above from page 5 of CMP's exhibit).

I'm following up my voicemail with this email regarding abutter James Coston and his dead farm animals in Chelsea (Togus West). I spoke with Diane Coston over the phone yesterday afternoon. As communicated by the Diane their farm animals (cows, chickens & rabbits) began dying in mid February 2014. Our internal review yesterday confirmed that blasting at structures 83-87 on S. 3025 did not take place until mid April 2014. We confirmed this morning that our matting crews were not in the area until staging began February 27, 2014.

Not only is this information about the calves dying in February wrong, as we are sure about when calving happens, but it conflicts with the statement reported by CMP on page 5 (quoted above) which states Mr. Coston reported the animals started dying in fall 2013. They did not and he would not have said that.

The email in Exhibit 5 ends with the information that Al Godfrey was at the Coston farm because I called him about the dying animals. That is true and that is why we want Al Godfrey to testify about his recollections. We were always impressed with Mr. Godfrey with his quick responsiveness and thoroughness. Al Godfrey initially came to see us

DOC

when he was representing CMP in the negotiations we had with CMP about its purchase of our land in the corridor. I request that Al Godfrey be asked about his recollections on this because we are confident that he will confirm our version of the facts.

It is still not clear why our animals died after the blasting occurred.

## **2. STRAY VOLTAGE.**

### **A. With power off Costons report shocks from fence.**

On page 6, CMP accurately notes that Jim was shocked by the electric fence while the fence was turned off for the first time (04.09.17). The CMP report insinuates that this delay from the energizing of the lines in 2015 means something. In fact, according to Jim it was just the unusual occurrence that the power was off because Jim was setting up the fence for the season. Jim's nephew was by, and because the fence was not energized, being a young man, he grabbed onto it and the handle, and was shocked. Jim couldn't believe it; he confirmed that the fence was unplugged, and tested the fence for himself. He was shocked to the ground. They then walked the whole fence to see if some unknown electrical connection existed, which it didn't. Thus the fact that it wasn't noticed until 2017 that the un-energized fence was conducting significant stray electricity, is not surprising. If, as I understand they do in Wisconsin, the utility did stray voltage testing before and after the installation of high voltage lines on close abutters, the fact would have been known sooner. It was a risk that was unknown to us during the design and construction phase, as a result.

Stray voltage is an issue of significant safety and health for our family. There appears to be a downplaying of the importance of stray voltage by CMP on the Coston property, with important emails missing and erroneous facts included.

The CMP timeline describes the actions that they took after we reported being shocked by the electric fence while the fence was turned off. On Sunday, April 9, 2017, Jim was severely shocked by the un-energized electric fence (See description above). On April 12, 2017 I called to report that Jim had been severely shocked on April 9th. (The timeline however, inaccurately states he was shocked on April 12.) That shock was significant and very upsetting to him and me. We were then and are still very afraid of the stray voltage hazards that are on our property. We all avoid the fence.

**Stray Voltage Shock and Testing.** I have a note that I spoke to Rhonda in the Department of High Tension Line Service Center and Rhonda gave me a work order

#10300381598. The fact that a work order of that number was issued could be checked, but I never got anything in writing and no one ever came.

After I had reported to CMP on April 12, 2017, I waited until the end of the month and when there was no follow up, I contacted Al Godfrey who made a few phone calls. Al Godfrey called back and requested Diane call Tim Robinson. His answering machine said to contact Sam W. Diane spoke to Sam, who was just filling in, and Sam suggested Diane talk to Greg Snow. Diane talked to Greg Snow who agreed to come over and investigate. Greg and Ray came the next day, on May 3, 2017. That's when Greg got his reading of 84 volts as described in Attachment 2.

It was only through extreme perseverance that I got someone to acknowledge the significant shock that Jim had suffered.

On September 13, 2017, the timeline explains that both Jim and our grand-daughter were shocked while operating a gate on a de-energized fence, but that CMP got a message from the PUC that didn't say that both Autumn and Jim got shocked. I conclude from that, that the message did say that Autumn got shocked. The timeline note makes it seem that CMP was unaware that anyone was shocked. But reading it closely, I believe they did learn at least that Autumn was shocked.

I recall that my first call to Merica (since Leah was still out with her medical condition) I only knew and only reported to her that Autumn was shocked. I was not aware at that point that Jim had grabbed the fence from Autumn since she was not letting go, and that is when he got badly shocked. I did tell Merica soon after that however that both of them were shocked. I also told her where that fence was.

The fence that has since had the filters put on it is the one closest to the transmission lines by the leachfield. The gate handle that shocked Autumn is on a different fence, further away from the corridor and south of our home on the south side of the Coston driveway.

This is CMP's timeline entry, which seems to downplay the seriousness of the incident and shows their lack of follow through.

**09.13.17** – Coston's granddaughter, as well as Jim Coston, allegedly shocked while opening gate on de-energized fence. Coston called PUC. PUC forwarded to CMP, in that correspondence, no mention of Jim Coston also being shocked.

Over a month later, the timeline states that Jim Wright and Tom Ward checked fence and filters, finding the filters worked perfectly. They didn't want to talk to me, they just



wanted to check the filters. They didn't comment on the fact that the fence that shocked Autumn was on the other side of the property from the corridor edge.

In section C., of the CMP comment (page 15) CMP describes their efforts on stray voltage at the Coston property. I feel the stray voltage issue that exists throughout the property has not been fully investigated and is clearly related to the design and location of the Transmission Line.

The report continues:

Second, CMP has in any case already addressed the Costons' stray voltage concern by adding filters to the Costons' electric fence. As CMP has reported to the Costons and Ombudsman Sprague, the installation of electric fences below transmission lines, particularly when the fences run parallel to the lines, often causes stray voltage issues in the fence when the fence is turned off. To mitigate this issue, CMP has installed voltage filters on the Costons' fence. CMP repeatedly tested these filters during Summer and Fall 2017, and each time found them to be working properly.

As described in this Exhibit, CMP ignores the stray voltage that has been evident on the property even after the installation of the two filters.

**Summary.** Jim and I ask the PUC, no matter what is decided about jurisdiction, to require CMP to do a full investigation and report on alternatives or to provide a different location for us similar to their relocation of the Morrisseys.

Although CMP maintains they have addressed our stray voltage concern, we ask that the PUC specifically find that CMP has not sufficiently addressed our stray voltage concerns.

A handwritten signature in black ink, reading "Diane Zajac Costo". The signature is written in a cursive style with a large, looping initial "D".

Testimony for 2017-00232 Attachment 2  
 2018-00170 Coston stray voltage filing 7 factual issue #4.  
 (Stray-Induced Voltage)

ISSUES & EVIDENCE RE COSTON'S PROPERTY SAFETY CLAIMS				
FACTUAL ISSUE # (4) STRAY VOLTAGE ENERGIZING ELECTRIC FENCING				
#	EXHIBITS	DATE	PGS	NOTES/COMMENTS
1	Definition of "Agrivolt"	7/19/2018	1	
2	Email from regarding S3025 flows	12/21/2017	2	
3	S3025 Flow charts - 12/18/15-11/14/17		16	
4	Letter to Harry Lanphear rebuttal comments	5/25/2018	6	
5	Readings done by Dot Kelly	5/25/2018	4	
6	Email from Susan Cottle to Leah Sprague	5/18/2017	1	
7	Email from Leah Sprague to Costons	2/1/2018	1	
8	Email from Chris Marshall to Leah Sprague and forwarded to Diane	8/25/2017	4	
9	Email between Greg Thompson and Roy Boucher	5/25/2017	3	
10	Email between Costons and Leah Sprague forwarding emails	8/8/2017	2	
11	Copy of notice of Precautionary Recommendation from Performed Line Products Co.	?	2	
12	Wisconsin Public Service information regarding farm voltage/measuring	?	3	

## Agri volt.

" The presence of electric current in the animal environment, regardless of the source, generates stress. Over time, this stress can affect the immune system. A weakened immune system makes the animal more prone to diseases and consequently affects its well being and performance.

Subject: Fwd: Chelsea: S3025 Flows

From: lwsprague@aol.com

To: costonsfarm@yahoo.com

Date: Saturday, July 14, 2018 11:34:22 AM

Their response.

Sent from my I phone

Begin forwarded message:

**From:** "Marshall, Christopher" <[cmarshall@burnsmcd.com](mailto:cmarshall@burnsmcd.com)>  
**Date:** December 21, 2017 at 10:08:19 AM EST  
**To:** Leah Sprague <[lwsprague@aol.com](mailto:lwsprague@aol.com)>  
**Cc:** "Kayser, John" <[jkayser@burnsmcd.com](mailto:jkayser@burnsmcd.com)>  
**Subject:** Chelsea: S3025 Flows

Leah,

The attached graphs reflect the flow on Section 3025 on the days requested. There does not appear to be any correlation between the flow on the line and the known dates where there was induced voltage on the fence.

On several days the graphing appears to show zero flow. This is inaccurate and is due to the device used to collect the data. CMP has indicated that they can provide more accurate data for those dates using a different device, however the technician who can do so is not available until early January.

As we discussed the other day, we can arrange a time for CMP to test the fence so that it can be moved, however in the future the Costons should use their own voltage meter to confirm there is no voltage on the line if they would like to continue using it in the current configuration running parallel to the transmission line.

I'll be spotty over the next week, but call me if you have any questions.

**Chris Marshall, PMP** \ Burns & McDonnell

Senior Public Involvement Specialist \ Stakeholder Management Solutions

o 207-517-8494 \ m 207-272-5975 \ f 207-517-8463

000197

cmarshall@burnsmcd.com \ burnsmcd.com

27 Pearl Street \ Portland ME 04101

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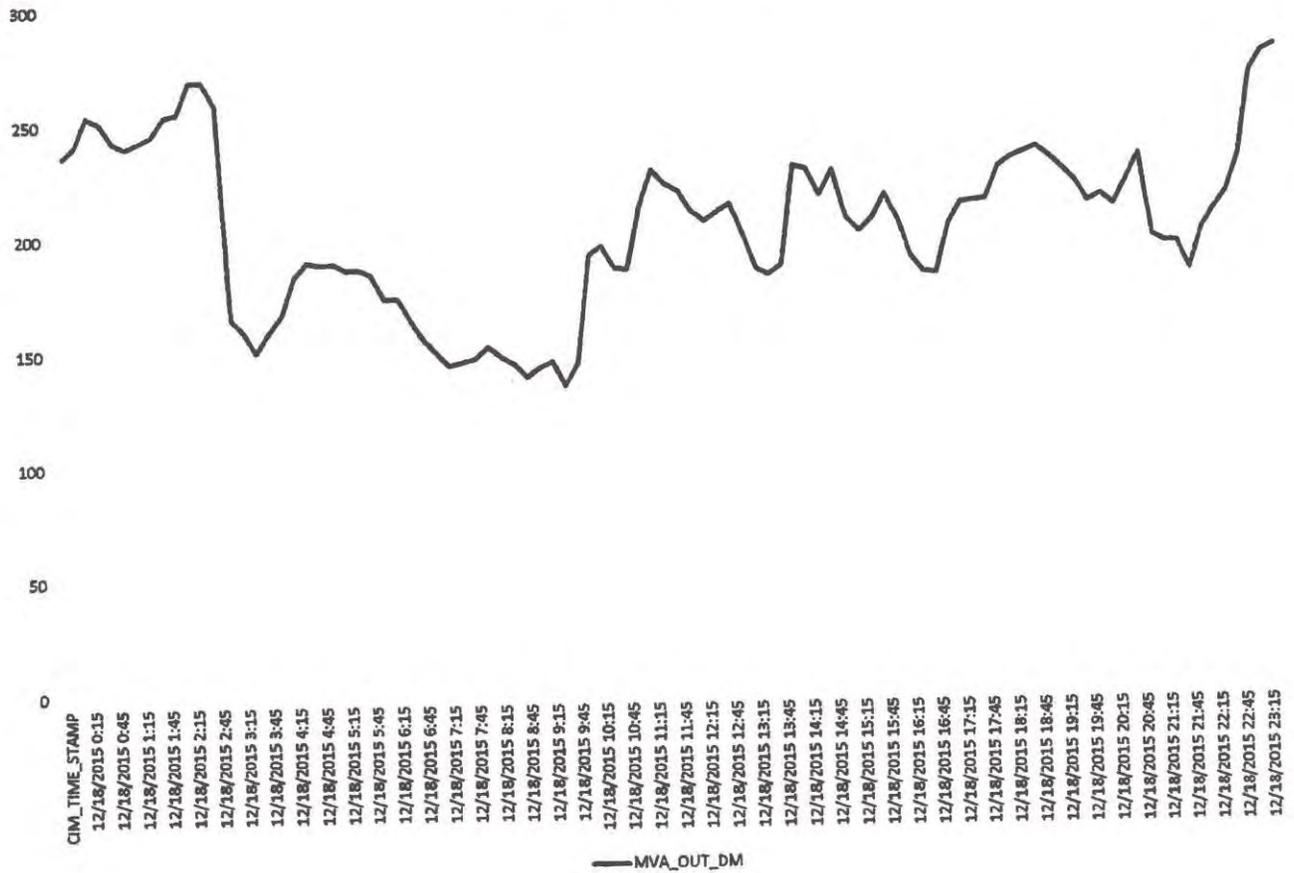
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 S3025 Flows.pdf  
136.9kB

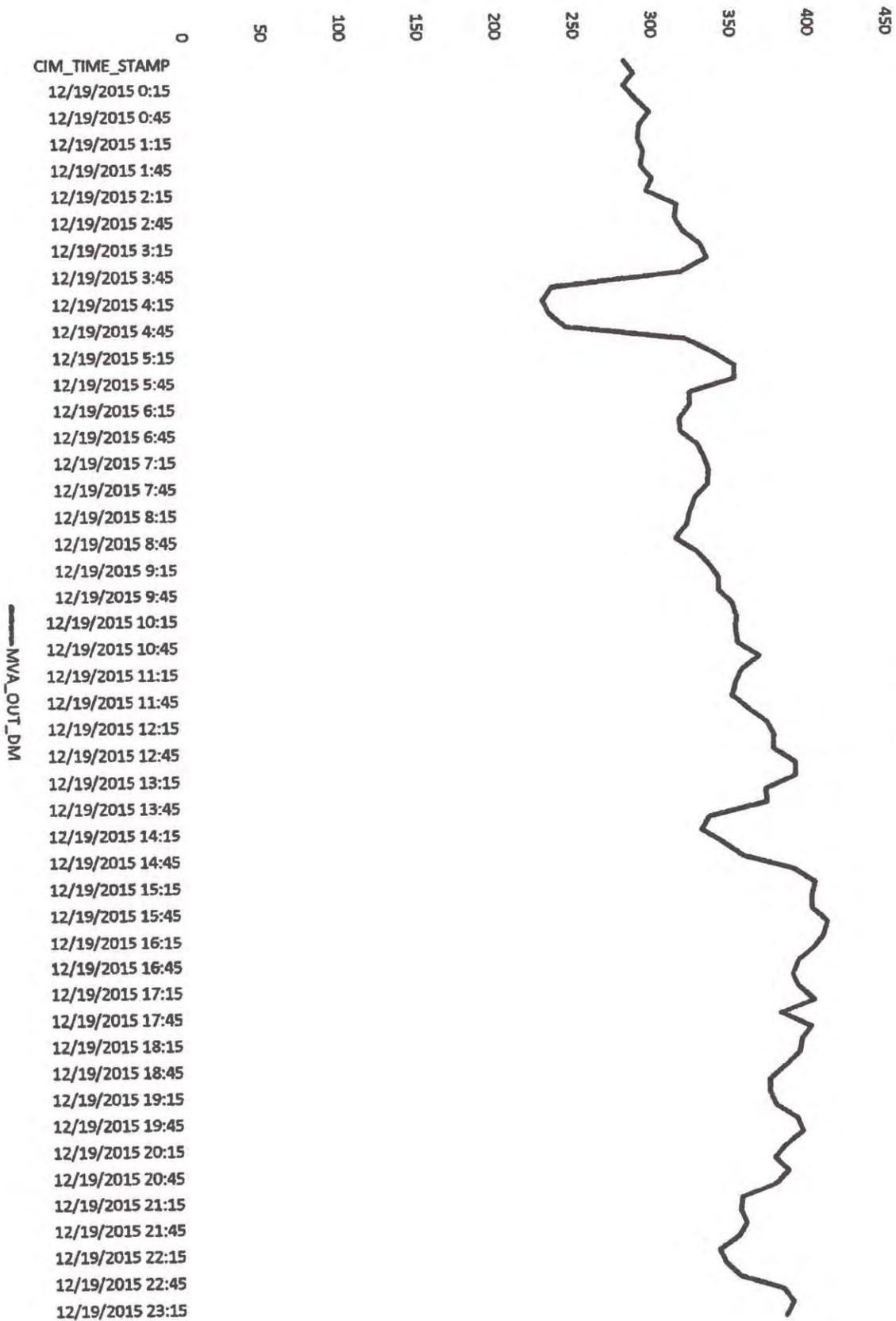
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### S3025 Flow, 12/18/2015

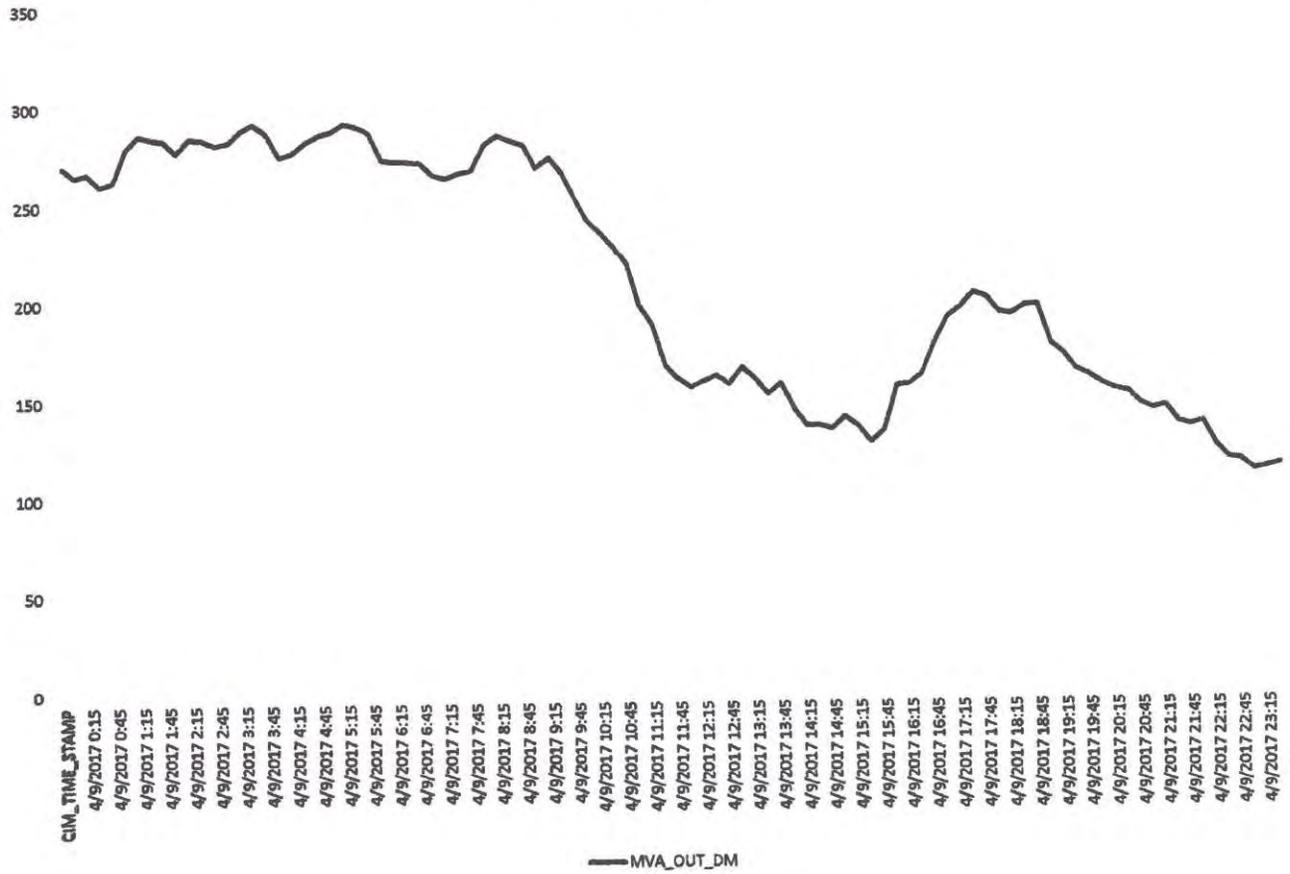


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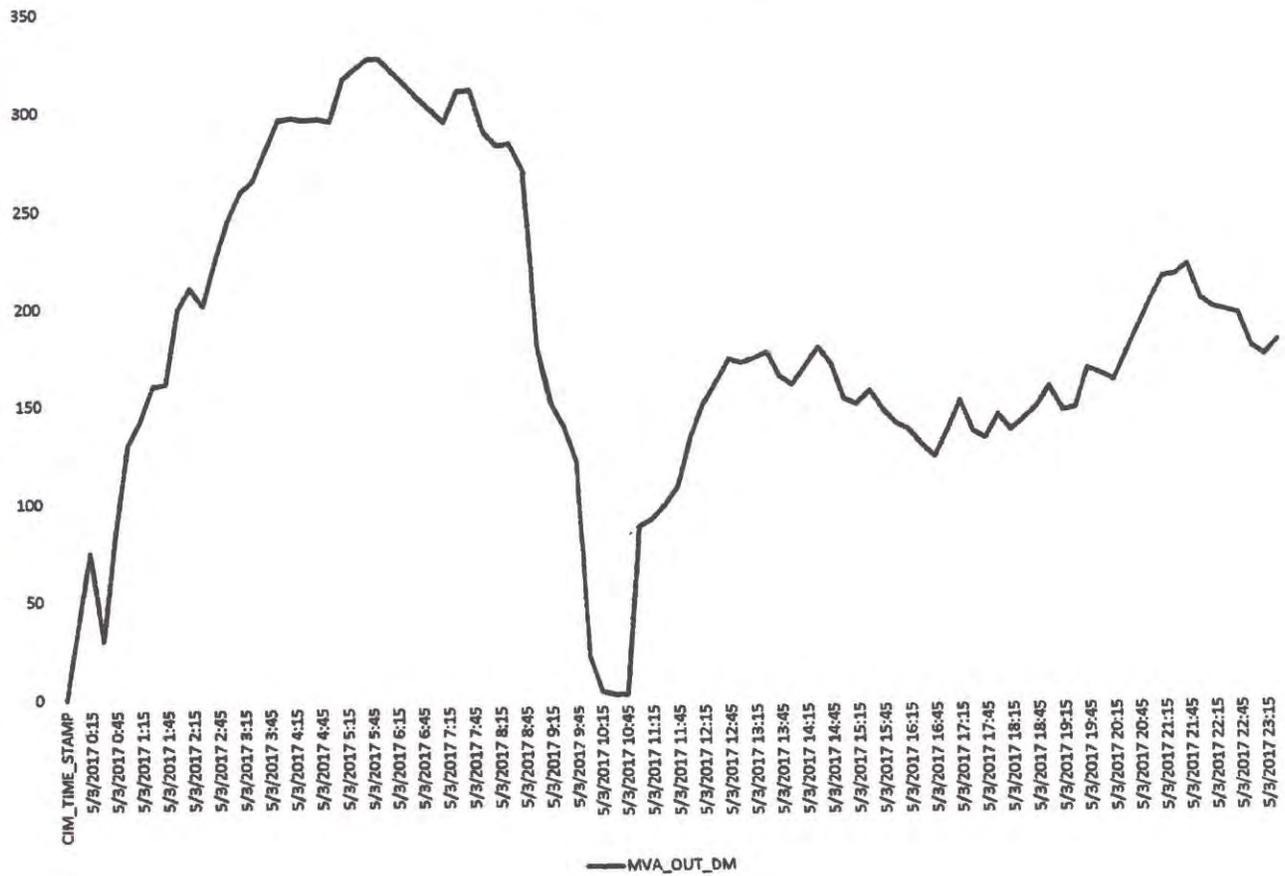
S3025 Flow, 12/19/2015



S3025 Flow, 4/9/2017

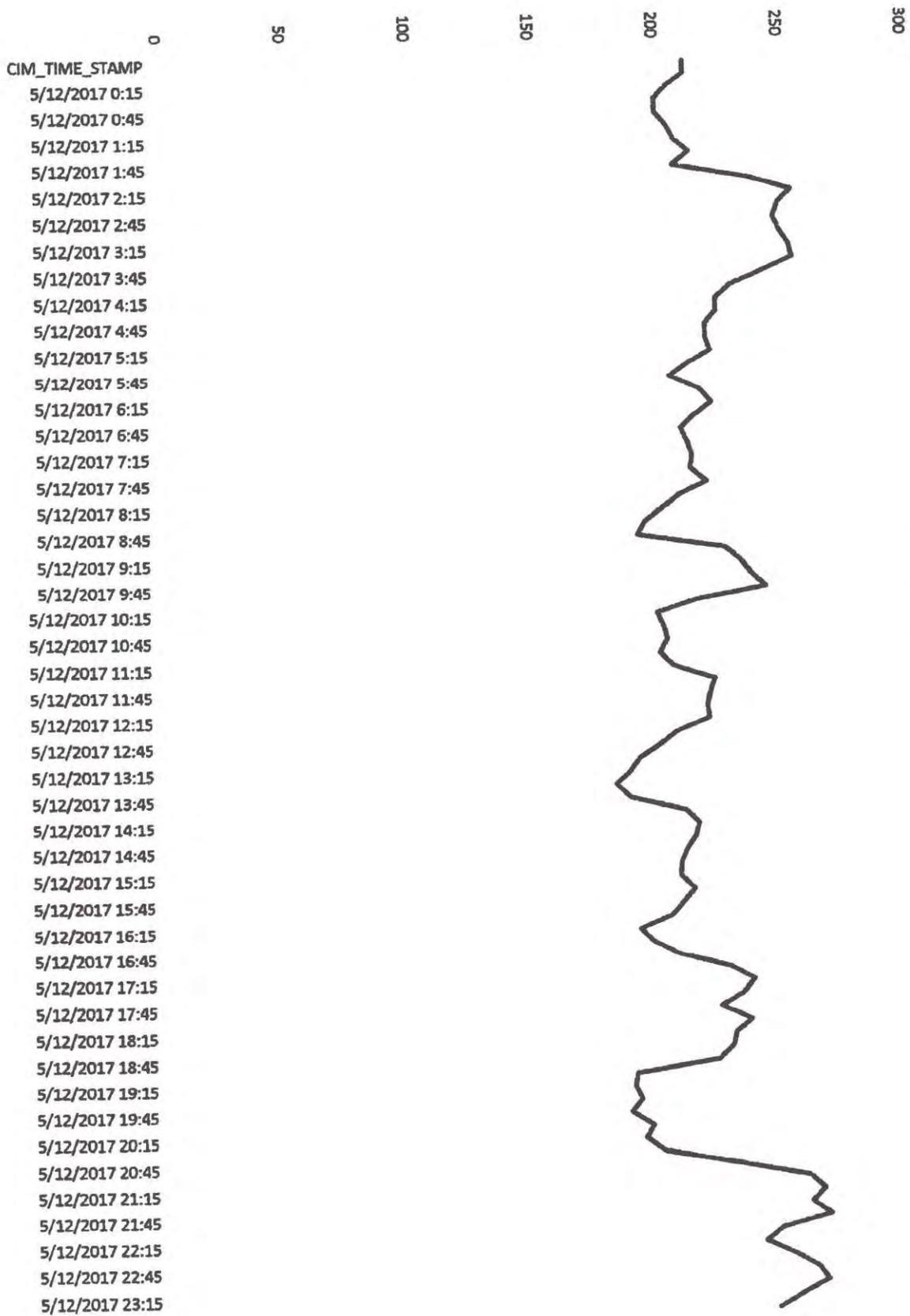


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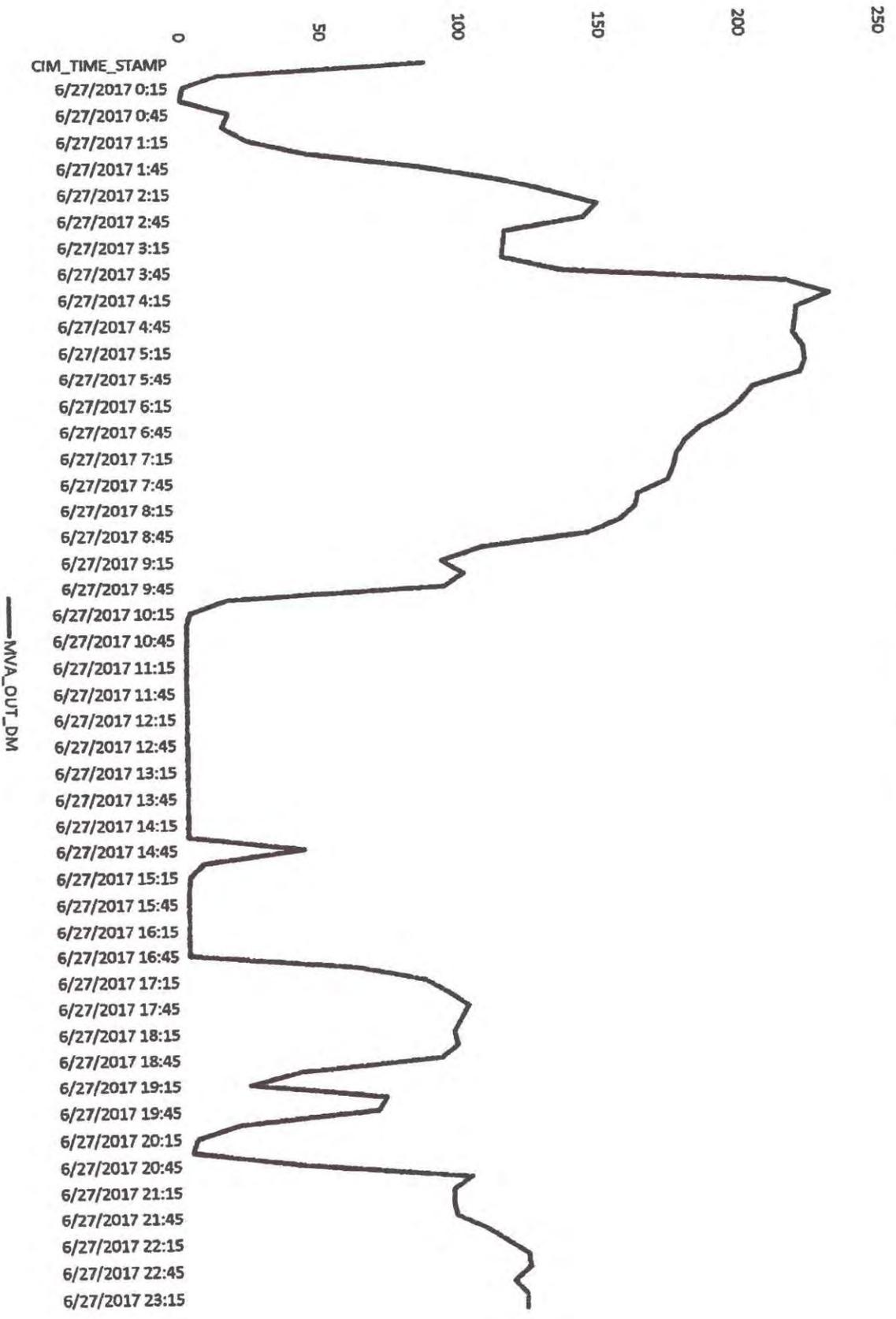


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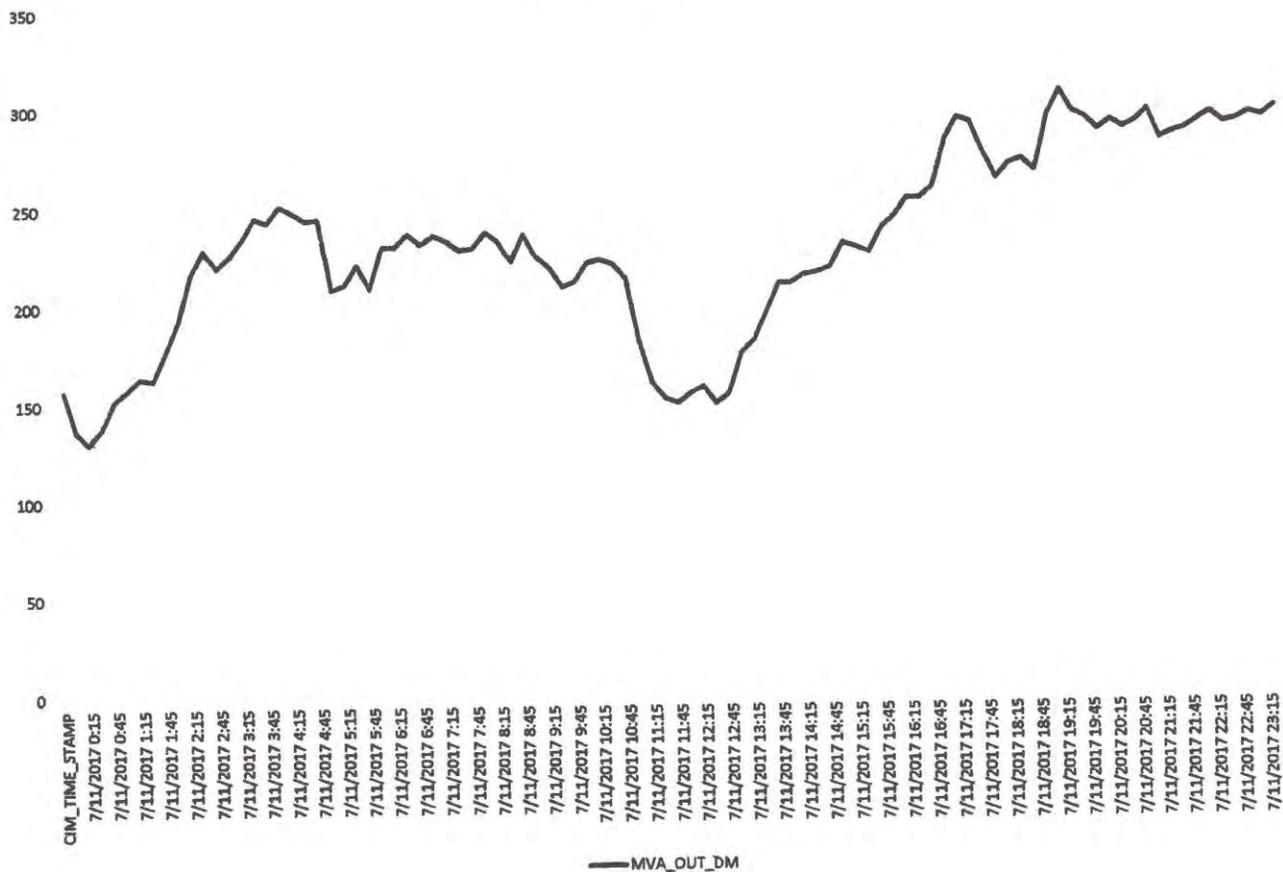
S3025 Flow, 5/12/2017



S3025 flow, 6/27/2017



### S3025 Flow, 7/11/2017



000205

S3025 Flow, 7/19/2017

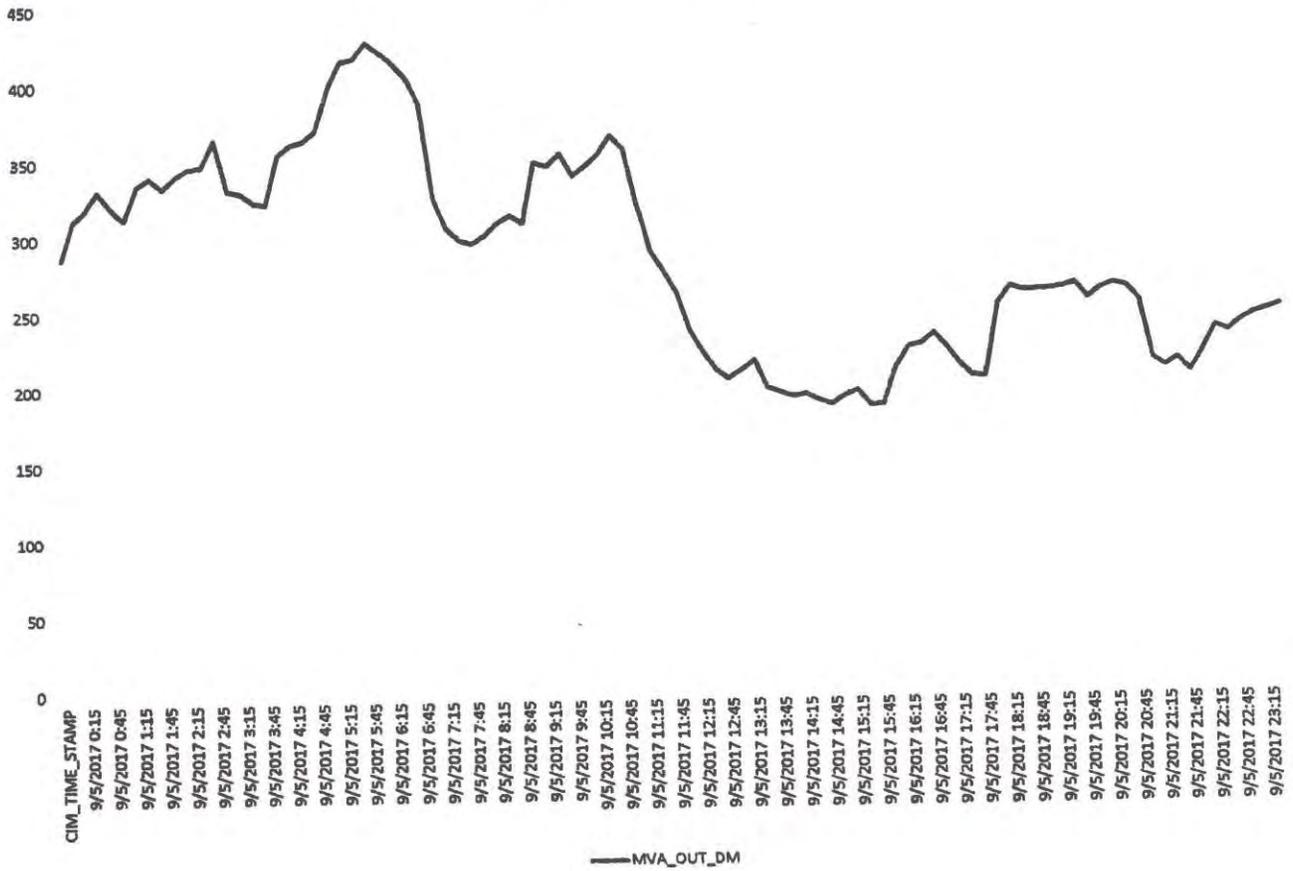


S3025 Flow, 8/10/2017

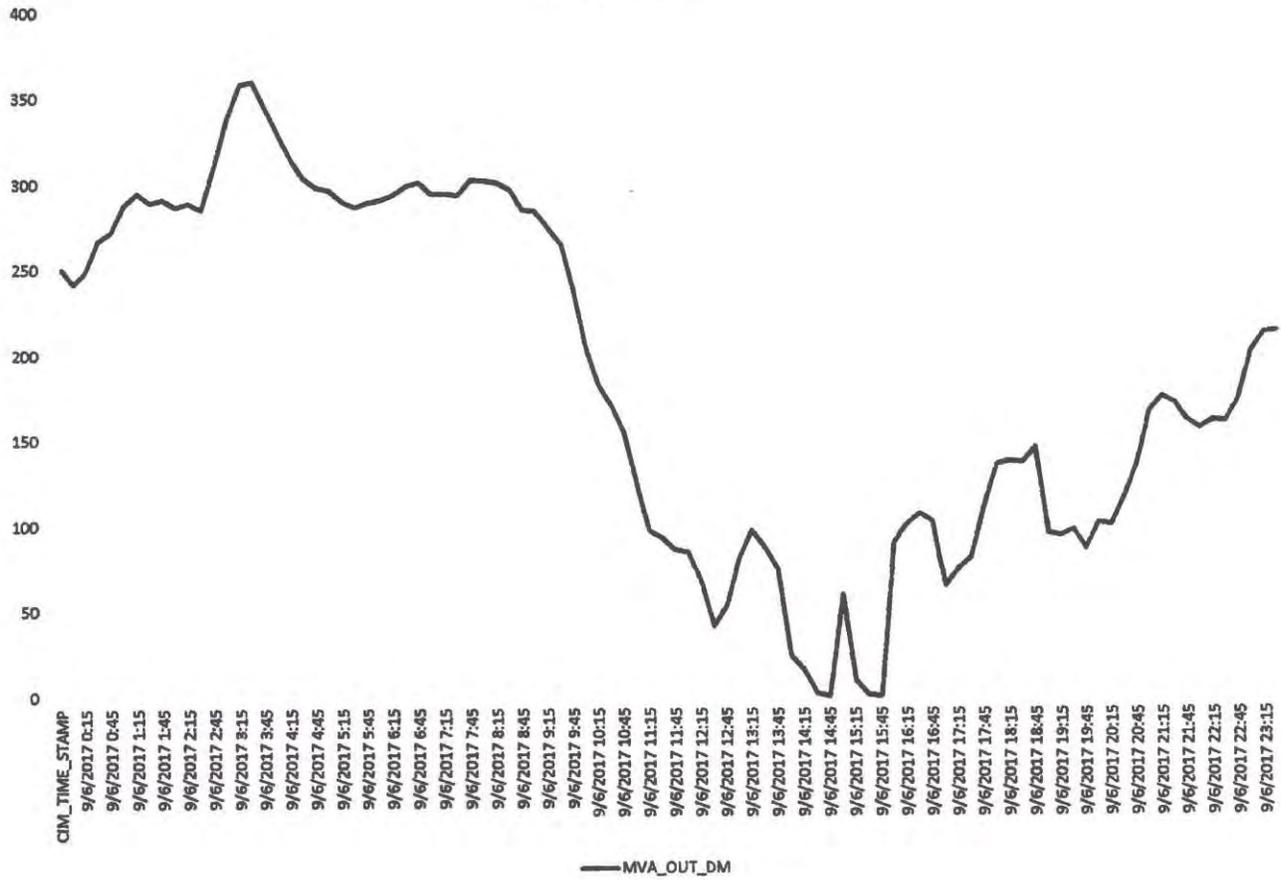


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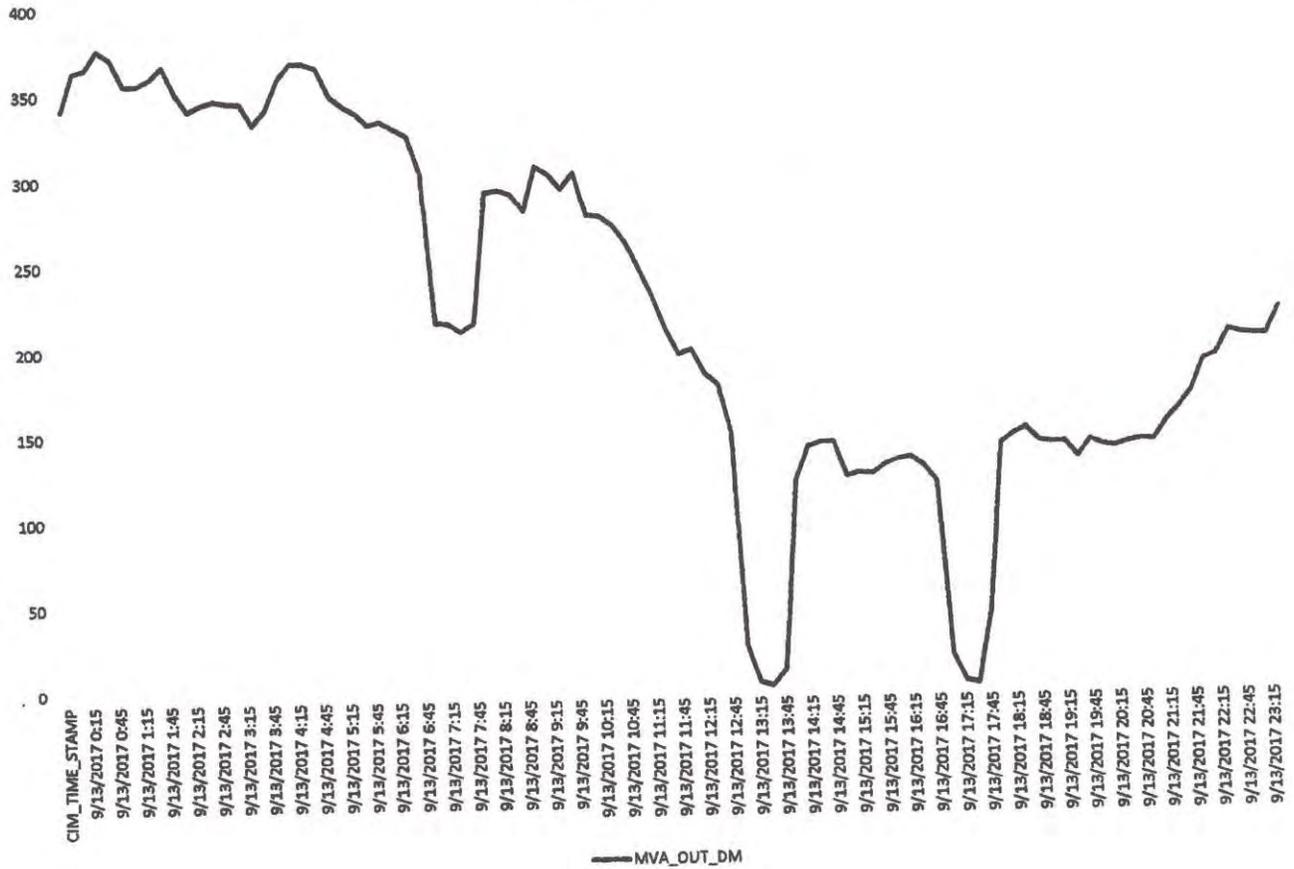
S3025 Flow, 9/5/2017



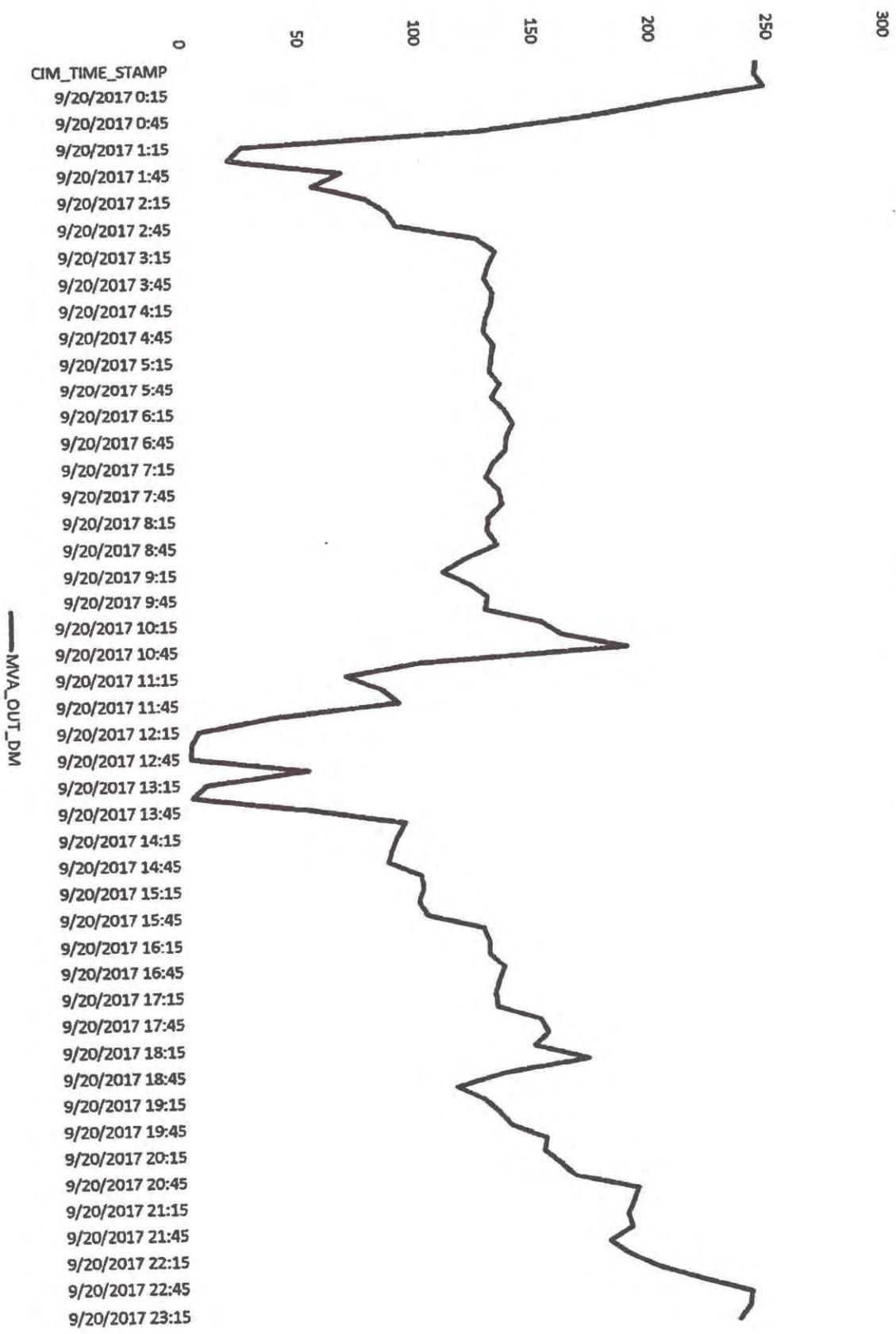
S3025 Flow, 9/6/2017



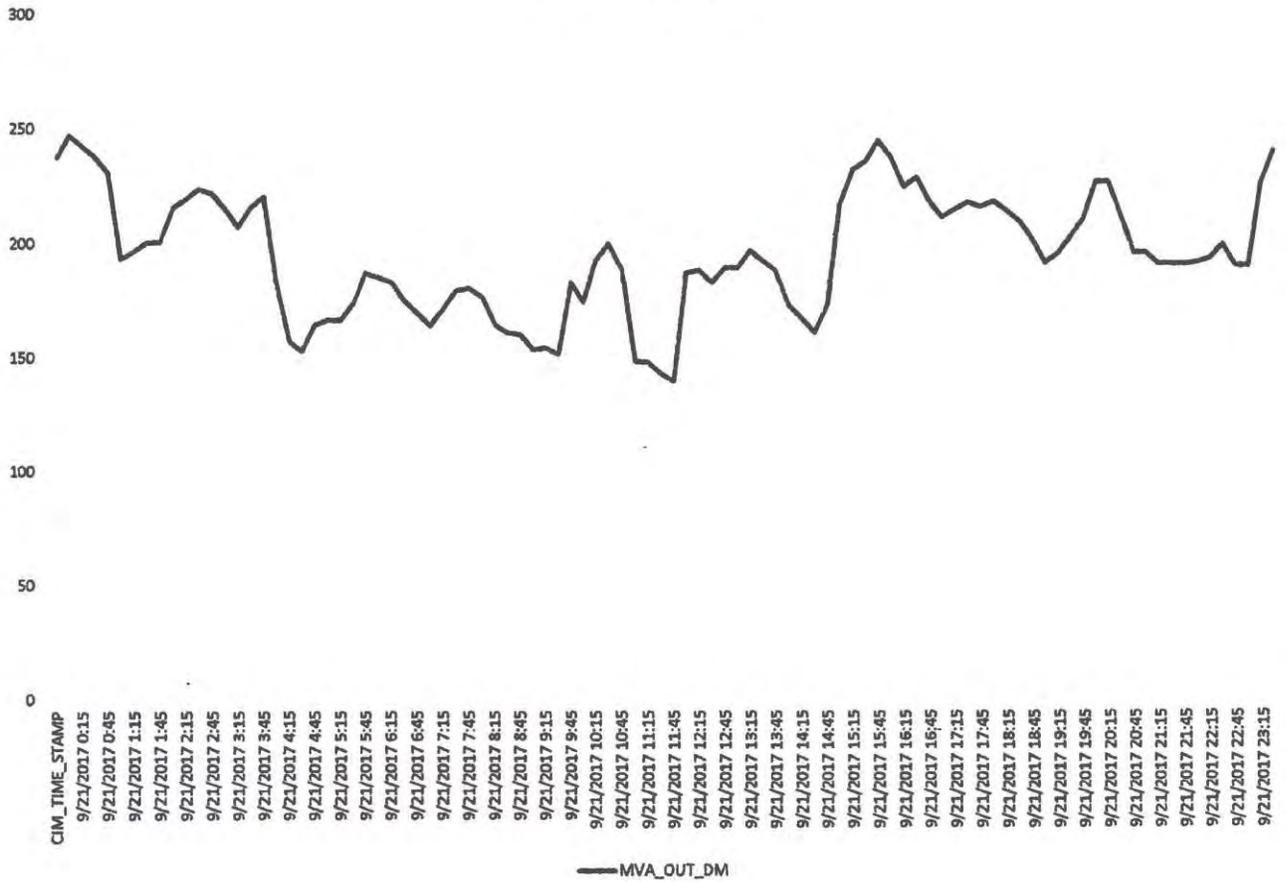
S3025 Flow, 9/13/2017



S3025 Flow, 9/20/2017

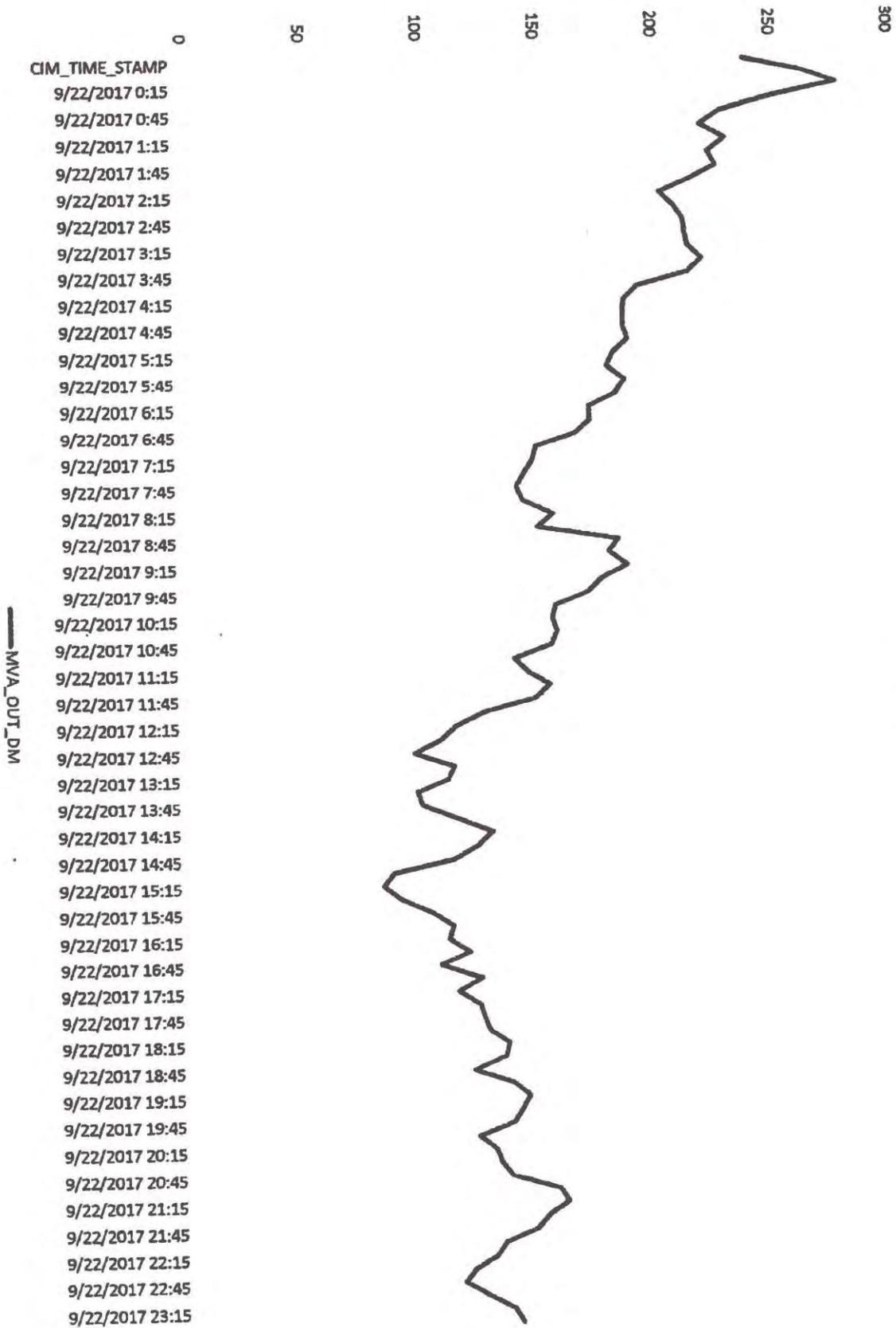


S3025 Flow, 9/21/2017

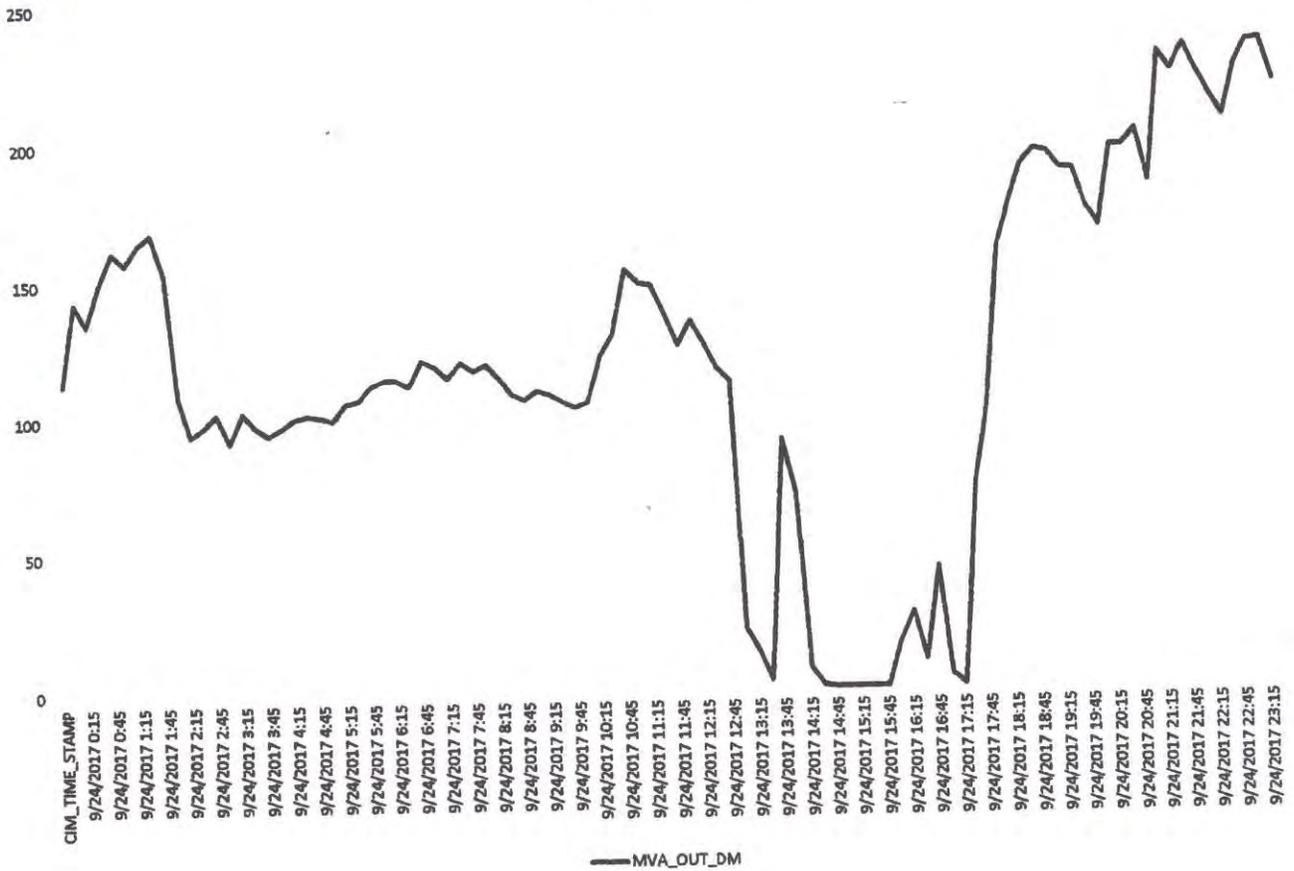


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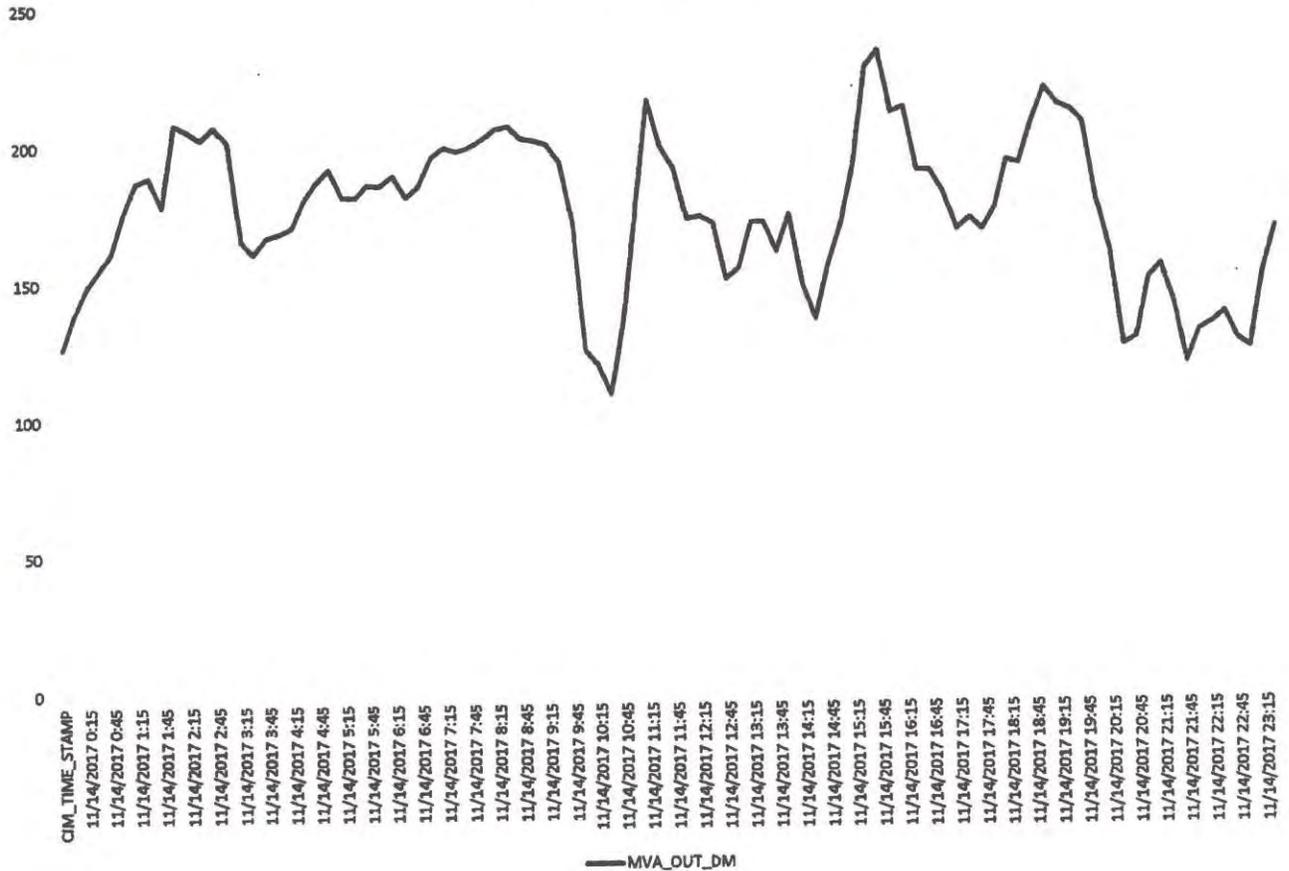
S3025 Flow, 9/22/2017



S3025 Flow, 9/24/2017



S3025 Flow, 11/14/2017



000215

Email 5/25/18  
@ 6:29 pm

#3  
Email  
Dot Kelly

Diane & DOT'S Work  
for 5/25/18

May 25, 2018

Harry Lanphear, Administrative Director  
Maine Public Utilities Commission  
18 State House Station  
Augusta, ME 04333-0018

Re: 2018-00034: Rebuttal Comments on Staff Recommended Decision Regarding Proposed LDRT Referral, Diane and James Coston, 482 Togus Road, Chelsea

Mr. Lanphear,

As I stated in my February 21, 2018 comment to this docket, Jim and I are here before the PUC with two serious and dangerous situations which we ask for your help with CMP to document and develop recommendation.

(1) Unpredictable stray voltage. (2) Excessive levels of EMF.

**We request the Draft decision be modified to specify that CMP perform a stray voltage test similar to the free tests offered in Wisconsin utility areas and produce a report with recommendations. We would appreciate the PUC opening an investigation so that the stray voltage report comes under the PUC process, as the LDRT process is not being allowed as a vehicle for our legitimate issue to be addressed.**

CMP submitted a lengthy comment to this docket on February 21, 2018. This rebuttal addresses the points and attachments in the CMP February 21, 2018 comment.

**DESIGN AND CONSTRUCTION:** On page 1 of CMP's comments CMP maintains that the LDRT process is no longer available because construction is over. The recommended draft decision codifies CMP's contention. We maintain that without a different vehicle to address concerns of design and construction from the MPRP, the LDRT process should be utilized to see that abutters are not facing health impacts to themselves and their livestock from the new transmission line. The EMF readings done at our property by CMP showed levels 37% higher than the maximum CMP predicted and higher than the level in the Curtis decision and lawsuit (Docket 2011-00504 and upheld by the Maine Law Court on February 26, 2013).

With respect to the very important issue of stray voltage, CMP has declined to do the testing that they originally said they would do, on the grounds that they do not typically test along transmission corridors. Meanwhile Jim and I still have a problem that was not resolved by the installation of filters on our electric fencing. CMP had maintained that the filters would solve the problem.

000216

We agree with CMP that our construction concerns were resolved by a settlement agreement entered into in February 2012. That issue is not what is being requested regarding stray voltage and EMF levels.

**EMF and Stray Voltage Impacts.** On page 2, CMP states "The Costons' remaining claims concerning stray voltage and electromagnetic fields were asserted after the completion of construction and involve the operation of CNMP's transmission system in the vicinity of the Coston property." We think this is a false conclusion. It is specifically the design of the transmission lines and their close proximity to our home and farm combined with the lack of warning that we would have any impact from the transmission line on our activities, that makes this issue one directly related to the issuance of the Certificate of Public Convenience and Necessity and the Design and Construction of the line.

We had lived with the 115 kV transmission line in the location where the 345 kV line is now. We did not have stray voltage or the animal behavior that we now experience with the 345 kV line. We do not think CMP wanted to have our life impacted, but it is.

Again, we request the Commission open an investigation into Stray Voltage and EMF levels on our property as an alternative to the LDRT process.

**Rebuttal of CMP's Statement of Facts that it was known that the HVAC line was going to be located to the south.**

On page 3 CMP uses a draft document to infer that we should have been aware that the high voltage line was going to be located on the southern side. In fact, we were informed by Al Godfrey that the high voltage line would be on the north side and that our north neighbors were going to be affected by line and need to move, not us. As documentation we have the October 21, 2008 option to purchase which does not show where the transmission lines will be and which shows we have more land around our home toward the corridor than the similar graphic in CMP's attachment in this filing. The option to purchase and land swap graphic is attached.

We would like the investigation to get testimony from Al Godfrey as he was the CMP consultant directly involved in the land swap and our dead animals discussed below. We disagree with CMP's version of the facts.

**Dying animals. Disagree with internal document revealed in this comment.**

On page 5, the CMP comment states, "On 05.15.14 – Jim Coston contacted MPRP Real Estate agent Al Godfrey concerning farm animals that had died. Mr. Coston reported that animals started dying in fall 2013. Mr. Coston believed blasting may have tainted the ground water. Chris Marshall (Burns & McDonnell) asked Stephanie Cote (Ciambro) to contact Coston on behalf of Irby, the general contractor responsible for constructing the MPRP in the area.

Jim Coston specifically remembers that the animals died in the spring of 2014, and Diane Coston remembers contacting Mr. Godfrey and then CMP within a few days of

the deaths, which occurred over a few weeks. The deaths were the newborn calves, and the newborn goats, and a couple adult goats, and then the cows could be bred back because they were sterile. Calves on the farm are born in May to June. The last calf born, was born in June and named June. She was the only calf that survived. She is still on the farm.

CMP's Exhibit 5 page 1 of 2, is an internal email from Stephanie Cote dated Tuesday, May 20, 2014 sent to Chris McKenney and four other men. It was not sent to the Costons. The email purports to document the conversation she had with Diane Coston the day before. It states (directly conflicting with the information quoted above from page 5).

I'm following up my voicemail with this email regarding abutter James Coston and his dead farm animals in Chelsea (Togus West). I spoke with Diane Coston over the phone yesterday afternoon. As communicated by the Diane [the extra the before Diane is in the email, which otherwise seems well crafted, emphasis added] their farm animals (cows, chickens & rabbits) began dying in mid February 2014. Our internal review yesterday confirmed that blasting at structures 83-87 on S. 3025 did not take place until mid April 2014. We confirmed this morning that our matting crews were not in the area until staging began February 27, 2014.

Not only is this information about the calves dying in February wrong, as Jim is sure about when calving happens, but it conflicts with the statement on page 5 (quoted above) which states the animals started dying in fall 2013.

The email in Exhibit 5 ends with the information that Al Godfrey was at the Coston farm because of the dying animals. That is why we want Al Godfrey to testify about his recollections. We were always impressed with Mr. Godfrey with his quick responsiveness and thoroughness. According to LinkedIn, <https://www.linkedin.com/in/al-godfrey-bb5a6b2b>, Al Godfrey is President at TMSI Engineers in Gardiner, Maine specializing in Civil Engineering.

Diane made mention that Al Godfrey and a Chris (?) stopped by in response to their concern. We want to understand what information you gathered from this meeting as Diane was looking for a comprehensive well water test.

Diane would like to confirm that Al Godfrey did come the day after she called him reporting the multiple deaths. When Al Godfrey arrived, the water testing person, Steven McCoy with AERUS, that Diane had hired was just leaving and Mr. Godfrey and Steven talked for a bit. Again, we request that Al Godfrey be asked about his recollections because we are confident that he will confirm our version of the facts.

It is still not clear why our animals died after the blasting occurred.

**With power off Costons report shocks from fence.** On page 6, CMP accurately notes that Jim Coston was shocked by the electric fence while the fence was turned off for the first time (04.09.17). The CMP report insinuates that this delay from the energizing of the lines in 2015 means something. In fact, according to Jim Coston it was just the unusual occurrence that the power was off because Jim was setting up the fence for the season. Jim's nephew was by and because the fence was not energized, being a young man, he grabbed onto it and the handle, and was shocked. Jim couldn't believe it, confirmed that the fence was unplugged, and tested the fence for himself. He was shocked to the ground. They then walked the whole fence to see if some unknown electrical connection existed, which it didn't. Thus the fact that it wasn't noticed until 2017 that the un-energized fence was conducting significant stray electricity, is not surprising. If, as in Wisconsin, the utility did stray voltage testing before and after the installation of high voltage lines on close abutters, the fact would have been known sooner. It was a risk that was unknown.

### **Stray Voltage.**

This is an issue of significant safety and health for the Coston family. There appears to be a downplaying of the importance of stray voltage on the Coston property, with important emails missing and erroneous facts included.

The CMP timeline describes the actions that they took after the Costons reported being shocked by the electric fence while the fence was turned off. On Sunday April 9, 2017, Jim was severely shocked by the un-energized electric fence (See description above).

**Erroneous fact.** The timeline then states that Mr. Coston was shocked again on April 12, 2017. This is not true. The shock was significant. The Costons were then and are still very afraid of the stray voltage hazards that are on their property. They avoid the fence.

The entry in the timeline for April 12, 2017 doesn't reveal who thought Jim Coston was shocked again, but certainly no one has directly asked the Costons. Diane has a hand written record that shows she called CMP on April 12, 2017 to report the April 9, 2017 event.

**Stray Voltage Shock and Testing.** Diane has a note that she spoke to Rhonda in the Department of High Tension Line Service Center and Rhonda gave her a work order #10300381598. This work order could be checked but was never given to Mrs. Coston.

On May 3, 2017, after Diane had reported to CMP on April 12 she waited until the end of the month and then contacted Al Godfrey who made a few phone calls. Al Godfrey called back and requested Diane call Tim Robinson. His answering machine said to contact Sam W. "I verbally talked to Sam, who was just filling in, and he suggested I

talk to Greg Snow". I talked to Greg Snow who agreed to come over and investigate. They came on May 3, 2017. As you can read in this description, it is only through Diane's extreme perseverance that she got someone to acknowledge her.

The May 3 testing with Ray Boucher and Greg Snow, which Diane witnessed, showed very high levels of stray voltage – 84 V. Ray Boucher sent an email to Gregory Thompson of Avangrid that day which summarized his findings. This email was not described or disclosed by CMP, but was provided to Diane in October 2017. See three page e-mail thread dated August 25, 2017 from Gregory Thompson regarding the testing by Greg Snow.

On May 3, 2017, Ray Boucher wrote:

**Greg Snow and I met with a customer this morning who is getting shocks at her home. They thought the voltage was being induced by the 345 KV transmission line (MPRP) adjacent to their property. We did some voltage checks and did confirm that there was voltage present (varied to over 84+ volts to earth) on their fence line which runs parallel to the transmission line. It is not faulty electrical equipment as we also confirmed the voltage readings even with the service main breaker off. It does appear to be related to the transmission line and Greg Snow can fill you in with the customer name, phone number and explain the voltage readings in more detail.**

**This is beyond anything I can address. Could you follow-up with someone more familiar with the MPRP project and right-of-way and resulting voltage induction issue. Please let me know if you have any questions for me.**

Clearly Ray and Greg thought this was a big issue. The email on August 25, 2017 from Mr. Thompson to "Chris and Bill" takes a different view of the hazard without describing why.

Mr. Thompson writes:

Below is a summary of the meeting between the Coston's, Ray Boucher and Greg Snow. It should be noted that there is no official report regarding the visit. This site visit was meant to rule out the possibility of the distribution circuit causing a safety concern for the Coston's. Ray and Greg do not have the expertise nor the equipment to test for EMF. Further, they would not be the appropriate representatives to discuss safety as it relates to the transmission line and the proximity to the Coston's property. Ben Shepard's group or a contractor through Ben's group should be able to address those issues.

000220

**Downplaying the ongoing issue of stray voltage and pressuring Mrs. Coston to say she is satisfied is mis-represented.**

On June 27, 2017 CMP sent two men to the site. They had a box of filters, didn't do any measurements, used only two filters and then pressured Diane to say that she was satisfied, by repeatedly asking her, "Are you satisfied?" Diane responded, Yes, I am happy you came to put the filters on, but only time will tell if they are going to work." Diane did not state that Leah ever said she had to move out of her home due to EMF. Diane believes Leah said "that the levels are unsafe."

The timeline states:

**06.27.17** – Ben Shepard and Jim Wright (CMP) installed filters on the electric fence to address induced voltage. Diane Coston informed Shepard that Ombudsman Sprague advised her to move out of her home due to EMF.

The CASD letter sent on July 6, 2017, (see Exhibit 8) corroborates that Diane was uncomfortable with the conclusion that the installation of the filters was sufficient. The last paragraph shows that her satisfaction was conditional, by including the word "currently", when Merica Tripp related the phone call just two days after the filters were installed.

I spoke with Ms. Coston on June 29, 2017. She indicated that she is **currently** satisfied with the installation of the filters... (emphasis added, note how it differs from the timeline quotation).

Thus the timeline entry overstates the case when it doesn't include the word "currently".

**07.06.17** – CASD sent letter to James Coston confirming that Diane Coston was "satisfied with the installation of the filters in order to mitigate the safety concern regarding the electric fence" and closing the Costons' complaint.

It is clear that Mrs. Coston would have preferred to have the case remain open to monitor that the filters were successfully addressing the stray voltage issue and that they were no longer going to be shocked.

On September 13, 2017, the timeline explains that both Mr. Coston and his grand-daughter were shocked while operating a gate on a de-energized fence, but that CMP got a message from the PUC that didn't say that both Autumn and Jim got shocked. We can only conclude that the message did say that Autumn got shocked. The timeline note, makes one think that CMP was unaware that anyone was shocked, but reading it closely makes one realized they did learn that Autumn was shocked. Diane recalls that her first call to Merica (since Leah was still out with her medical condition) only reported that Autumn was shocked. She was not aware that Jim grabbed the fence from Autumn

---

Readings  
on  
May 25<sup>th</sup>  
2018.

Done by Dot Kelly  
at 482 Toquo Rd Chelsea  
ME

Finch 10" from filter - 1-7-14  
N Side

7 5" out Air 39.0 40.5  
Finch cor 2 3.9

10" off Air 39.7  
finch 2.25 2.6 2.8

10" 15" Air 39.33 38.09  
Finch By Filter 3.25 3.47

S. W. Corner 10" off Air 36 36.246  
finch 10" off 0.18 0.57

S Side 25" off Barn  
10" 5" off Air 40 41.55  
Finch 3.3 3.21 3.0 3.7  
3.72 3.56

At 12:54 All Testing has leads on  
Top Stairs

Deck 1.003 bottom of stairs .003  
with one <sup>black</sup> lead in .241

Between ~~two~~ Garage doors in corner of barn  
black lead in ground .378 V. AC.

<sup>South side</sup>  
25 ft from corner of Barn 1.57 1.63 V. AC

25 ft from south of west corner of barn

2.457 to 2.57 V. AC

25 ft west of barn 2 feet east of electric fence

3.9 V. AC to 4.86 V. AC, 5 inches from fence  
line 3.7 V. AC touching fence ~~39.03~~ 39.05 V. AC

South East corner of barn fence line 2 ft

away 1.064 V. AC to 1.086 V. AC 5 inches from fence

1.105 V. AC to 1.111 V. AC touching the fence

is 39.03 V. AC to 39.07 V. AC

directly under distribution line edge of driveway 1.553 V. AC  
to 1.533

pole # 39. Standing open air .015 black lead in  
ground under distribution wire .250 to .263

2.7 feet north of 45 mile side under the  
345 K. V. line. Adjacent to road bed (1 foot)  
16.9 to 16.85 V. AC.

# Triaxial Magnetic Field Meter T-192

Homeowner

Gauss meter @ 10:12 am 5/25/18

on kitchen table: 2.33 mG  
2.45

On Diane's work desk in room  
closest to power lines 2.44 - 2.59

VM Southwire 21030T True RMS ~~DC~~ AC  
Clamp meter CAT III 600V 400A

Kitchen table ~~no~~ no leads  
0.003 - 0.004 V

With leads in it shows 0.167 -  
0.170  
- V

Diane's desk

Leads in separated by 2'  
0.131 Volts

When black lead is touched to metal file  
cabinet the reading went to 0.392 V.

1-800-452-4699

Subject: Fwd: MPRP--James and Diane Coston

From: lwsprague@aol.com

To: costonsfarm@yahoo.com

Date: Sunday, February 18, 2018 01:56:26 PM

Ann Brooks is with CMP.

Sent from my iPhone

Begin forwarded message:

From: "Cottle, Susan" <susan.cottle@maine.gov>  
Date: May 18, 2017 at 9:26:52 AM EDT  
To: "lwsprague@aol.com" <lwsprague@aol.com>, "Brooks, Ann M. (Ann.Brooks@cmpco.com)" <Ann.Brooks@cmpco.com>  
Cc: "Tripp, Merica A" <Merica.A.Tripp@maine.gov>  
Subject: MPRP--James and Diane Coston

Leah—I am writing to you as the ombudsman for the MPRP to let you know that we are advising James and Diane Coston to contact you with their concerns resulting from the project; they are being provided with your contact information today. We have a complaint open here for them having to do with stray voltage, which may arise near any transmission line. And we will be continuing to address that complaint accordingly. However, the Costons have additional concerns beyond the voltage issue that they believe are specifically related to the project that have affected their water and, from what we understand from the Costons, have not yet been addressed as needed. The ombudsman process is, of course, the most appropriate venue for the resolution of any MPRP concerns.

Ann—I am including you on this email as our CASD contact so that you/CMP is aware of this. As we discussed yesterday, I had indicated that if the consumer indicated to us that there were matters related to the MPRP that had not previously been satisfactorily addressed, we would need to refer them to the ombudsman. As noted above, the stray voltage issue is something that we in CSAD will continue to look into (Merica will be handling it) and be expecting CMP to address promptly so as to ensure safety in both the immediate- and long-term.

If either of you have any questions, please do not hesitate to contact me directly.

-S

Susan E. Cottle, Deputy Director

Consumer Assistance and Safety Division

Maine Public Utilities Commission

18 State House Station

Augusta, ME 04333-0018

000226

Subject: Notes

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From: lwsprague@aol.com

To: costonsfarm@yahoo.com

Date: Thursday, February 1, 2018, 10:35:25 AM EST

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1. CMP did not notify the Costons that the line would be constricted adjacent to their property. The Costons learned of this only as construction progressed and as finally confirmed by Al Godfrey in 2014. They never received any notice of the change in the location of the transmission structures from the north to the south side of the corridor.
2. Blasting occurred before the Costons' animals began to die. (NOTE: Diane will confirm his again through her notes.) *July 2011.*
3. Obviously the two voltage filters installed by CMP on the Costons' electric fence have not addressed the stray voltage problem because shocks have been received from the non-energized fence after the filters were installed.
4. The Costons never told PUC staff that they were satisfied with this attempt to resolve the stray voltage problem. In fact, it was PUC staff who recommended that the Costons contact the Ombudsman and gave them the Ombudsman's contact information.
5. The issues of excessive EMF and stray voltage are designated and constriction issues that have never been resolved and could only have been known after the transmission line was energized.

It appears from page four of Amy Mills' letter that while the LDRT is not making factual findings at this time, the LDRT has already decided these factual issues and would "deny the referral" but for the question of jurisdiction. Thus, as laymen, the Costons should probably appeal this decision to the full Public Utilities Commission in order to be sure their rights are preserved.

Leah W. Sprague  
P.O. Box 1228  
Damariscotta, ME 04543-1228  
207.586.6080

000227

•  
•

**Fwd: Coston Farm, Chelsea (3)**

People

Leah Sprague <lwsprague@aol.com>

To

Diane Zagwijn-coston

Oct 14 at 1:40 PM

**This message contains blocked images.**

Duane,

I'm not sure whether I forwarded this to you before.

Leah

Sent from my I phone

Begin forwarded message:

**From:** "Marshall, Christopher" <cmarshall@burnsmcd.com>

**Date:** August 25, 2017 at 2:47:17 PM EDT

**To:** Leah Sprague <lwsprague@aol.com>

**Subject:** FW: Coston Farm, Chelsea

Please see below and attached. This is confirmation that there was no official report of the service center visit.

Since this is an internal email from CMP including contact information, I ask that you treat it as information for review only.

As we have previously discussed, the Service Center asked the transmission group to respond following this visit, which we did.

000238

Chris

**Chris Marshall, PMP \ Burns & McDonnell**

Senior Public Involvement Specialist \ Stakeholder Management Solutions

O 207-517-8494 \ M 207-272-5975 \ F 207-517-8463

[cmarshall@burnsmcd.com](mailto:cmarshall@burnsmcd.com) \ [burnsmcd.com](http://burnsmcd.com)

27 Pearl Street \ Portland ME 04101

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000229

Tammy

Tammy Pierce

Key Account Manager

Kennebec Valley Region

Central Maine Power Company

57 Old Winthrop Road, Augusta, ME 04330

Office # - 207-621-6658

Fax # - 207-629-4887

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[Diane Zagwijn-coston](#) Wow!! new email from leah

Oct 15 at 10:04 AM

[Diane Zagwijn-coston](#) Duane, I'm not sure whether I forwarded this to you before. Leah Sent from my I phone Begin forwarded message: From: "Marshall, Christopher" <cmarshall@burnsmcd.com> Date: August 25, 2017 at 2:47:17 PM EDT To: Leah Sprague <lwsprague@aol.com> Subject: FW: Coston Farm, Chelsea Please see below and attached. This is confirmation that there was no official report of the service center visit. Since this is an internal email from CMP including contact information, I ask that you treat it as information for review

000030

Today at 12:09 PM

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000031

**From:** Thompson, Gregory J. [<mailto:gregory.thompson@avangrid.com>]  
**Sent:** Friday, August 25, 2017 1:46 PM  
**To:**  
**Subject:** FW: Coston Farm, Chelsea

Chris and Bill,

Below is a summary of the meeting between the Coston's, Ray Boucher and Greg Snow. It should be noted that there is no official report regarding the visit. This site visit was meant to rule out the possibility of the distribution circuit causing a safety concern for the Coston's. Ray and Greg do not have the expertise nor the equipment to test for EMF. Further, they would not be the appropriate representatives to discuss safety as it relates to the transmission line and the proximity to the Coston's property. Ben Shepard's group or a contractor through Ben's group should be able to address those issues.

Greg Thompson

Manager of Regional Operations

Augusta Service Building

**From:** Boucher, Raymond A.  
**Sent:** Friday, August 25, 2017 11:03 AM  
**To:** Thompson, Gregory J.  
**Cc:** Snow, Gregory  
**Subject:** Coston Farm, Chelsea

Greg, below are my recollections related to our preliminary investigation of the voltage potential concern raised by Mr. and Mrs. Coston at their farm in Chelsea. Greg Snow may have additional information or comments. Please review this and let me know if you have any questions.

On May 3, 2017, Greg Snow, who was filling in for Tim Robbins, called me to discuss Mrs. Coston's concerns about potential shocks at their farm in Chelsea. Greg indicated that Mr.

000232

Coston had recently been doing some maintenance work on an electric fence at their farm when he became aware of the voltage potential on the metal fencing. The Costons believe the presence of voltage on their fence may be related to the 345 KV transmission line (MPRP) which runs adjacent their property.

Before assuming it was related to EMF from the transmission lines, I suggested to Greg that we should do some preliminary checks to ensure that the unwanted voltage was not related to faulty wiring or equipment connected to the electric service we were providing from the local distribution circuit.

Subsequently, Greg Snow and I met with Mrs. Coston at her farm that morning. Using his standard multi-meter, Greg took voltage measurements by placing one probe in the earth and the other on the fence conductor (with the fence off) in the area Mrs. Coston said her husband had noticed the voltage potential. Greg confirmed that he was measuring voltage that fluctuated around 84 volts.

At our request, Mrs. Coston then opened her electric service main breaker. With the electric service to the farm now completely off, Greg rechecked the earth to fence potential at the same location and indicated that the readings had not noticeably changed. Additionally, he noted that he was getting similar fluctuating voltage to earth readings simply by holding the probe to his body or even in mid-air.

Greg related this to his experiences with EMF induced voltage that he often experienced while doing line-work in transmission corridors. He indicated that it was common practice for linemen to ground metal objects such as vehicles etc. to mitigate the induction while they worked in transmission corridors. He suggested to Mrs. Coston that this might be a good practice for them as well since much of the fencing appeared to be located well within the transmission corridor.

I indicated to Mrs. Coston that we would refer this to Company personnel that had information regarding the 345 KV transmission corridor boundaries and expertise in transmission EMF induced voltage for further investigation and follow-up.

Later that day I sent an email (attached) to you with our findings so this could be directed to the appropriate people for further investigation.

=====  
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=====

Greg Snow and I met with a customer this morning who is getting shocks at her home. They thought the voltage was being induced by the 345 KV transmission line (MPRP) adjacent to their property. We did some voltage checks and did confirm that there was voltage present (varied to over 84 + volts to earth) on their fence line which runs parallel to the transmission line. It is not faulty electrical equipment as we also confirmed the voltage readings even with the service main breaker open. It does appear to be related to the transmission line and Greg Snow can fill you in with the customer name, phone number and explain the voltage readings in more detail.

This is beyond anything I can address. Could you follow-up with someone more familiar with the MPRP project and right-of-way and resulting voltage induction issue. Please let me know if you have any questions for me.

**From:** Pierce, Tamra L.  
**Sent:** Tuesday, May 02, 2017 3:48 PM  
**To:** Boucher, Raymond A.  
**Subject:** Voltage Induction

Ray,

Steve said that this should be given to Greg Thompson to decide how it should be handled. He also suggested the safety person for Augusta but I am not sure they handle these types of issues. I would talk with Greg.

000234

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  - kmart
  - Leah Sprague
  - Notes
  - Susan Farnsworth

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Fwd: Fwd: 10300381598 CHELSEA 2 Yahoo/Susan F

Leah Sprague Diane, They communicate Leah Sent f Aug 8, 2017 at 10:04 AM

Diane Zagwijn-coston <costonfarm@yahoo.com> To: farns@gwi.net Aug 8 2017 at 2:55 PM

This message contains blocked images. Show images or Always show images

Hide original message

On Tuesday, August 8, 2017 10:04 AM, Leah Sprague <wsprague@aol.com> wrote:

Diane,  
They communicate.  
Leah  
Sent from my iPhone

Begin forwarded message:

From: "Marshall, Christopher" <cmarshall@burnsmcd.com>  
Date: August 8, 2017 at 9:57:22 AM EDT  
To: Leah Sprague <wsprague@aol.com>  
Subject: Fwd: 10300381598 CHELSEA

Fyi.

Chris Marshall  
Burns & McDonnell  
207 272.5975

Original message  
From: "Kohler, Susan B." <Susan.Kohler@cmpco.com>  
Date: 8/8/17 8:11 AM (GMT-08:00)  
To: "Shepard, Benjamin N" <Benjamin.Shepard@cmpco.com>, "Marshall, Christopher" <cmarshall@burnsmcd.com>  
Subject: FW: 10300381598 CHELSEA

Good Morning,  
More requests from Costons.

From: Couturier, Daniel  
Sent: Tuesday, August 08, 2017 9:07 AM  
To: Kohler, Susan B.  
Subject: FW: 10300381598 CHELSEA

From: Yorls, Rhonda  
Sent: Tuesday, August 08, 2017 8:39 AM  
To: LineClericalNewService  
Cc: Wright, James (CMP); Couturier, Daniel  
Subject: 10300381598 CHELSEA

CONTACT DIANE COSTON  
CONTACT PHONE # 588-6113

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Leah Sprague Fwd: 10300381598 C

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Fw: Fwd: 10300381598 CHELSEA 2

Yahoo/Susan Fa...



Leah Sprague <wsprague@aol.com>  
To: Diane Zagwijn-coston



Aug 8, 2017 at 10:04 AM

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Diane,

They communicate

Leah

Sent from my iPhone

Begin forwarded message:

From: "Marshall, Christopher" <cmarshall@burnsmcd.com>  
 Date: August 8, 2017 at 9:57:22 AM EDT  
 To: Leah Sprague <wsprague@aol.com>  
 Subject: Fwd: 10300381598 CHELSEA

Fyi.

Chris Marshall  
Burns & McDonnell  
207.272.5975

----- Original message -----

From: "Kohler, Susan B." <Susan.Kohler@cmpeo.com>  
 Date: 8/8/17 8:11 AM (GMT-06:00)  
 To: "Shepard, Benjamin N" <Benjamin.Shepard@cmpeo.com>, "Marshall, Christopher" <cmarshall@burnsmcd.com>  
 Subject: FW: 10300381598 CHELSEA

Good Morning,

More requests from Costons.

From: Couturier, Daniel  
 Sent: Tuesday, August 08, 2017 9:07 AM  
 To: Kohler, Susan B.  
 Subject: FW: 10300381598 CHELSEA

From: Yorks, Rhonda  
 Sent: Tuesday, August 08, 2017 8:39 AM  
 To: LineClericalNewService  
 Cc: Wright, James (CMP), Couturier, Daniel  
 Subject: 10300381598 CHELSEA

CONTACT DIANE COSTON  
CONTACT PHONE # 588-6113

- 1 SHE WANTS RADIATION TESTING ON GROUND FROM HIGH TENSION LINES
- 2 SHE WANTS A STEP VOLTAGE TEST DONE
- 3 SHE WANTS TO KNOW IF HER HUSBAND IS WORKING ON THEIR ELECTRIC FENCING AND THERE IS A SURGE THRU THE HIGH TENSION LINES WILL HER HUSBAND GET FRIED?

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# PRECAUTIONARY RECOMMENDATIONS FOR EXTRA HIGH VOLTAGE PRODUCTS

(ARMOR-GRIP® SUSPENSION, ARMOR RODS, OR SPACERS)

**1** Extra care should be exercised in the handling and installation of extra high voltage products including conductors. Nicks, scratches, dirt, identification tags, grease, or other foreign materials can cause corona. Properly remove these materials before installation.

**2** In applying ARMOR-GRIP® Suspension or Armor Rods, the alignment of the ends of the rods should be maintained within 3/4 inch.

# PRECAUTIONARY RECOMMENDATIONS

FOR

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[https://accel.wisconsinpublicservice.com/business/farm\\_voltage/measuring.aspx](https://accel.wisconsinpublicservice.com/business/farm_voltage/measuring.aspx)

## Measuring stray voltage on the farm

Stray voltage, a common phenomenon, most likely will be found if you look for it. In other words, all farms with electrical service have some level of stray voltage. WPS can help you determine if the levels on your farm are affecting your livestock.

A stray voltage test using protocol developed by the Public Service Commission of Wisconsin is the only way to give you the answers that you need. WPS knows where and what to measure, knows what types of sources to look for, and has the equipment and expertise to conduct the most comprehensive stray voltage test available to you.

- [How WPS measures stray voltage](#)
- [Cow contact measurements](#)
- [Determining the source](#)
- [Testing timeframe](#)
- [Schedule a free stray voltage test](#)

### How WPS measures stray voltage

WPS tests for stray voltage for a period of 24 to 48 hours to measure all levels of electric load during a typical day.

Voltmeters are positioned where livestock touch two contact points simultaneously. By doing this, WPS measures the actual voltage levels that livestock encounter, in addition to voltage at other points on the electrical system.

- The handheld Fluke 87 meter allows us to locate cow contact points with the highest voltage. WPS then uses these spots - certain stalls, for example - to conduct the tests. By testing in areas with the highest readings, we know that the "worst-case scenario" is being recorded.
- WPS places its main digital voltmeter (Metrosonics MSRV4) near an area where readings can be observed. This meter reads both steady-state and impulse (motor start) voltages. The Metrosonics records measurements on four channels:
  1. Primary neutral to a remote ground rod
  2. Main service panel neutral to a remote ground rod
  3. Voltage drop in the neutral wire between the primary transformer and the main service panel. (The higher the voltage drop, the stronger the chance for stray voltage problems.)
  4. Cow contact voltage
- A handheld, clamp-on ammeter is used to measure currents on neutral conductors.

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- 
- A handheld oscilloscope displays instant readings of voltage impulses that may be caused by fences, trainers or motors.

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### **Cow contact measurements**

WPS takes measurements where livestock may encounter stray voltage as they simultaneously touch two points, such as:

- Water bowl to floor
- Water bowl to stall
- Stall or parlor steel to floor
- Heated waterer to floor
- Feed bunk to floor

When the floor is a contact point, a wire from the meter is connected to a copper plate pressed down onto a clean spot on the concrete floor. Salt and water may be used to increase conductivity of the floor.

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### **Determining the source**

WPS diagnoses the source of stray voltage by measuring the voltage at the primary and secondary neutral, and also by measuring the voltage drop between these two points. A remote ground rod is used as a reference. The reference rod is driven into the ground at least 100 feet from a primary or secondary panel or an electrical ground. By taking these readings, we can determine the source of any excessive voltage and work with you on corrective actions that may need to be taken.

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### **Testing timeframe**

By testing for 24 to 48 hours straight, WPS is sure to record the highest levels of stray voltage, such as when the milk pump motor is started during milking. The Public Service Commission of Wisconsin requires electric utilities to test for a minimum period of 24 hours.

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### **Schedule a free stray voltage test**

Our comprehensive stray voltage test is free. Schedule an appointment to have your WPS agricultural consultant and a WPS electrical engineer visit your farm and conduct the test. Once testing is complete, WPS will provide you with a printout of the actual voltmeter readings and discuss the findings with

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you. If the utility is found to be the source of any excessive stray voltage, WPS will fix the problem. If the on-farm electrical system is found to be the cause, we will work with you to reduce the level of stray voltage.

To make an appointment, [contact us](#).

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00024

1 **Q. Please state your name and address, and list others currently**  
2  
3 **living with you at that address.**

4 **A.** My name is Diane Zagwijn-Coston. I live at 482 Togus Road, Chelsea, Maine.  
5  
6 with my husband, James Coston ("Jim") and my two granddaughters, ages 3 and 9.

7 **Q. What is your connection to and interest in the investigation recently**  
8 **ordered by the Maine Public Utilities Commission in this case?**

9 **A.** My family's lives have changed horrendously since Central Maine Power's ("CMP")  
10 representative first contacted us on October 21, 2008—nearly ten years ago—asking to  
11 discuss buying some of our land for the high voltage (345kV) powerline to be built in the  
12 Central Maine Power right of way that ran across and beside our property.

13 We first contacted the PUC's Ombudsman in June, 2011—over 7 years ago—about  
14 some of the issues included in this investigation. Some of the initial problems we  
15 complained about were resolved back then. But some things we raised--like having the  
16 new boundary line surveyed—were not.

17 I am grateful for the Commission's willingness to investigate the issues referred  
18 to it by Ombudsman Leah Sprague. I hope this investigation will provide us a resolution  
19 that will leave us able to live, raise our grandchildren and farm in a *safe* environment.  
20 As a result of CMP's high voltage power line being operated too close to our home, and  
21 from other things that happened during the construction phase, our home is no longer a  
22 safe place for us to live in, much less raise little children in, and it is no longer a safe  
23 place for breeding livestock as we had been doing before the line was built. I also hope  
24 this investigation will expose and address issues in certain parts of their land purchase  
25 process, expose and address certain kinds of conduct that occurred during construction,  
26 and expose and address the way complaints were handled in our case, so that other  
27 people won't have to suffer the way we have.

28 **Q. What can you tell the Commission about the factual basis for each of the**  
29 **five issues related to your property that Commission identified from the**  
30 **Ombudsman's referral?**

31 I will explain the factual basis with reference to each of the five issues, issue by issue,  
32 laid out by the PUC Commissioners for this "investigation", but first I want to give the  
33 factual background common to all of the issues. I feel I can best do this by first saying  
34 how things were before CMP bought property from us on November 29, 2010 and then  
35 explaining how it's been after that date.

36 **Q. How did CMP come to acquire land from you in 2010?**

37 **A.** On October 21, 2008, we were contacted by a representative from CMP, named Al  
38 Godfrey I believe, about CMP's purchasing a triangular piece (1.46 acres) of our land  
39 located next to where our home is, that it wanted to own before proceeding with  
40 construction of a new high voltage transmission line to be placed in CMP's existing right  
41 of way. On November 29, 2010, closing was held on that sale as we had agreed that  
42 CMP could acquire that property from us by swapping for another triangular piece of  
43 land adjacent to both our land and CMP's Right of Way, plus some cash payment.

44 At the time of the closing in 2010, we were using the property CMP wanted to buy  
45 for grazing area for a variety of animals on our farm. The land we got in exchange was  
46 further from our house and barn, and less convenient, but still suitable for our grazing  
47 purposes.

48 **BEFORE CMP BOUGHT LAND FROM US ON 11/29/10.**

49 **Q. What is your history of ownership of the property where you live on**  
50 **Togus Road?**

51 **A.** Jim (my husband) and I first acquired acreage and began living at 482 Togus Road  
52 in June of 2004. At the time of our purchase in 2004, the property was crossed in part by

53 and otherwise adjacent to a CMP Right of Way, with a 115v transmission line on the far  
54 side away from us. . In 2010, the land we owned there was reshaped as a result of CMP's  
55 purchase of land from us and a purchase by us of land from CMP. After those two  
56 purchases, all of our land was only adjacent to the right of way, but it longer went across  
57 or under CMP right of way at any point.

58 **Q. Who has occupied the property besides you since 2004?**

59 When we first moved in there in 2004, our household was Jim, me, my ten year old  
60 daughter and our two dogs. By 2010, I had one granddaughter living with us, and we  
61 had acquired a substantial number of farm animals.

62 **Q. How do you and your husband support your household and animals?**

63 For the past several years, I have worked as a teaching assistant in the Chelsea  
64 Elementary School (3/4 mile down the road), the same school my daughter went to and  
65 now my grandchildren attend. My husband is employed in construction by an employer  
66 based in Vassalboro. Because of our jobs, this property was and is a very convenient  
67 location for us.

68 Over the six years (2004-2010), we acquired several kinds of animals and  
69 operated a small farm which helped feed our family and sometimes provided some  
70 additional income.

71 **Q. What animals did you acquire between 2004 and 2010?**

72 **A. HORSES:** On February 14, 2005, we acquired our first horse, a thoroughbred  
73 named "Cheyenne." In April of 2006 we got a second horse, a quarterhorse named  
74 "Ginger". In 2007, our third horse "Frankie", a paint stallion, was born. He was born  
75 there on the property to Ginger.

76 **CATTLE:** In August of 2006, we got ten (10) head of cattle, including one Holstein, one  
77 Black Angus and eight Herefords. That herd consisted of one bull and nine females.

78 From that herd, two calves were born were born in each of the next four years, through  
79 and including 2010. We would usually sell two calves a year, keep half the meat for our  
80 family and sell the other half of the meat.

81 CHICKENS: In August of 2006 we acquired 20 chickens and a couple of roosters. From  
82 those chickens, we were able to collect about two dozen eggs a day, year-round. We kept  
83 what we needed for our family and sold eggs to people who knew we had them at \$2.50  
84 a dozen.

85 PIGS: In 2006, we began seasonal raising of two pigs a year, (from April or May  
86 through October or November) after which we sold them for slaughter. Again, we  
87 usually kept some of the meat, sold the rest.

88 GEESE: In 2008, we got two geese. Four geese were born from them and sold by us  
89 that year and at least two geese were born and two sold in each of the next two years  
90 through and including 2010.

91 GOATS: In 2006, we also acquired six goats because I am lactose intolerant and so is  
92 my granddaughter, Autumn, who has lived with us from her birth in 2008.

93 RABBITS: Between 2006 and 2010, we also acquired six rabbits.

94 GUINEA PIGS: Between 2006 and 2010, we also acquired two guinea pigs.

95 **Q. How would you summarize what it was like, living at 482 Togus Road, in**  
96 **the six years between 2004 and 2010?**

97 A/ Taking care of my young daughter, then beginning in 2008, also my newborn  
98 granddaughter, plus all the animals we had, kept us very, very busy. But we really  
99 enjoyed living on this property through 2010.

100 Periodically, we would have friends and family come over for day-time get togethers,  
101 during which a lot of the time we would be outside on our property: riding horses,

102 walking, talking, barbequeing meals, etc. We felt it was a beautiful surrounding and a  
103 great place for children to be able to play and be active outside.

104 We had no health issues in those days. Overall, we were happy there.

105 **Q. Prior to November 29, 2010, what concerns, if any, had you expressed**  
106 **about the new high power line to be built in the right of way next to you?**

107 **A.** We had understood from Al Godfrey in our discussions with him between October  
108 21, 2008 and the closing on November 29, 2010, that CMP wanted to buy the piece of  
109 land from us so they could construct a new high power (345kV) transmission line in the  
110 right of way, in addition to the 115 kV already there on the far side of the ROW, away  
111 from our property. During our discussions and negotiations with CMP, primarily  
112 through Al Godfrey, we were told by him, and understood, that the new line would be  
113 built near the existing 115kV line and also located on the far side of the right of way –  
114 away from our house. We asked questions about that location and also asked about the  
115 scope of the electromagnetic field (EMF) of the new line.

116 In response to our questions, Al Godfrey provided us with a drawing of the  
117 proposed right of way and line location, as well as printed information for a resource  
118 material about EMF. Given the proposed location of the new line on the far side (away  
119 from us) of the CMP right of way, we felt comfortable that we wouldn't be significantly  
120 impacted by EMF or otherwise by the new power line. See attached pages 1-87 of our  
121 Exhibits related to Issue # 1.

122 Other than our questions about impact from the EMF, we were not aware of any  
123 cause for concern to our health or well-being. We saw no reason to expect significant  
124 disruption or change in our lives, or any negative impact on our health or our farm  
125 animals, from construction of the new 345kV power line on the farther side of the right  
126 of way.

127 Sadly, we were wrong not to worry more—in many respects. See attached pages 88 –  
128 401 of our Exhibits related to Issues # 2- 5.

129 **AFTER CMP BOUGHT LAND FROM US ON NOVEMBER 29, 2010**

130 **Q. What was it like after CMP bought the land in the right of way from you**  
131 **on November 29, 2010?**

132 **A.** Soon after CMP's purchase of the piece of our property on November 29, 2010,  
133 things changed—and got quite difficult within the first six months during the time CMP  
134 sub-contractors were preparing the right of way for construction. They destroyed a  
135 considerable stretch of our fencing, cut a whole stand of trees on *our* property (as well as  
136 one tree in back field that was of great sentimental value to myself and my mother and  
137 that was nowhere near CMP's right of way), plus they destroyed and/or cut off access to  
138 a major grazing area for our animals. CMP sub-contractors also sprayed weed control  
139 liquid, without prior notice to us, and hit one of our horses directly in the face at very  
140 close range, completely spooking her so she bolted and ran off the property over to the  
141 neighbors. The neighbor saw them spray her. When I got to her, her face was dripping  
142 wet with a brown substance that I washed off. I also had to irrigate her eyes—not an  
143 easy task.

144 I called Lucas Tree and was told the spray was not harmful to animals and was  
145 environmentally friendly. I was surprised by that as the sprayers were decked out head  
146 to toe in plastic. I was upset that we got no notice and that they ended up going so close  
147 to our animals. In August of this year, I saw the spraying equipment out front again. I  
148 asked them if they were going to spray by our property. I was told that we are in a “no-  
149 spray” zone.

150 In June of 2011, we filed a complaint with Ombudsman MacGowan. He met with  
151 us on July 22, 2011. His notes are attached at page 95 of our Exhibits re Issue #2. As a

152 result of his investigation, we got a gift card to a tractor supply store for us to purchase  
153 fencing and payment was to a farmer for us to get hay to get through that season. See  
154 page 99 of our Exhibits in re Issue #2. We did not get the other things the Ombudsman  
155 had mentioned in his July 22, 2011 notes.

156 In 2011, the CMP sub-contractors were cutting a large stand of trees on our  
157 property, many of which were not within the ROW. In the process of doing that cutting,  
158 they dropped a tree into the geese's fenced-in area (on our property and not within the  
159 ROW), completely scaring the geese. Then they went into the geese's fenced in nesting  
160 area to remove the two geese and the nest. To accomplish that, they had to hold the  
161 gander by the neck so he wouldn't bite them. After that, none of the 7 goose eggs that  
162 had been laid hatched, because the geese would not return to sit on the nests.

163 The stand of trees they cut down in 2011 on our side of the ROW line had offered  
164 important shade protection to our animals. The pigs blistered and suffered very bad  
165 sunburn from the resulting lack of shade. We had to build a temporary shelter for the  
166 animals until we could relocate and refence their grazing area. Jim was constantly  
167 moving fences at the request of the sub-contractors.

168 Things got much, much worse in April of 2014 after CMP sub-contractors had  
169 blasted within the ROW in preparation for erecting the towers for the new line. Not  
170 long after the blasting, our horses stopped using the watering hole nearest to the ROW  
171 (which they had been using) and would only drink from a watering hole on the far side  
172 of our property, beyond the barn and well away from the ROW.

173 Also, in April and May of 2014, twenty-one (21) of our animals died or were  
174 stillborn. Nine calves (all 6 months old and younger) died, and one calf was born dead.  
175 [ The mother of the newborn born dead had given birth in prior years to 6 other calves  
176 without any issues.] Six rabbits (four, 3 to 4 years old, and two, only 6 months old) also

177 died. Three goats died or were born dead in April (one 3-year old nanny gave birth to a  
178 stillborn female goat; and the nanny died 3 hours later. Also a 1-year old goat died.) A  
179 couple of smaller animals (rabbits) also died.

180 We believe our water was contaminated as a result of the blasting and we think  
181 that affected these animals and caused them to die. This was a year before the line was  
182 activated.

183 With all these things, the year 2014 was a nightmarish time for us due to the  
184 deaths but also what it did to our workload to continue living there with our animals.  
185 After the horses refused to drink the water and a number of our other animals had died,  
186 we called Steven McCoy of Aerus to test our water. We had had him test it in 2008, and  
187 he found some arsenic at that time. He had told us we shouldn't drink it nor should any  
188 of our animals under 200 pounds. So, from that time on, in 2008, we hauled water for  
189 ourselves and the small animals from a well spring on the Vigue Road in Whitefield.

190 After we got the 2014 water test results from Steve McCoy, we had to hauling  
191 more than twice as much water from the well because Steve told us this time, that from  
192 what he found in the water, which now included MbTE, he would advise that we not  
193 even use the water to shower, let alone let us or any of our animals drink it, including  
194 the larger animals. Then, beginning in August, 2017, the well supply was no longer  
195 available as a source for the water we were hauling every week and since then, we have  
196 had to buy our water (bottled) from a store. Attached, for example, are some copies of  
197 receipts for our water purchases from part of June, July and August, 2018. See page 182  
198 of our Exhibits re Issue #3. I do not have a copy of either the 2008 or the 2014 Aerus  
199 test results done for us by Steve McCoy, but we would like to ask that he be able to  
200 testify as an expert on our behalf and that his test results and related documents would

201 be included as part of his report and opinions. See exhibits related to Aerus at pages 123  
202 and 124 of our Exhibits re Issue #3.

203 In April 2014, I also called Al Godfrey. I called him because we had been so  
204 impressed before with how responsive and thorough he had been for us during the land  
205 negotiations. He was very quick to respond this time again.

206 When Al Godfrey arrived, it was 6 p.m. He spoke briefly to Steve McCoy, as Steve  
207 was just leaving after doing our water test. Then, Al talked with us briefly on the porch,  
208 and after that, Al walked with us out beyond the garage. On looking around outside, as  
209 soon as he saw the new poles, Al looked shocked and immediately said “Jim and Diane, I  
210 am so sorry. Wow, they did move the corridor and I don’t know how.” He bowed his  
211 head, and again said “I am so sorry”.

212 And then, after the line was *activated* in March of 2015, things went from bad to  
213 worse.

214 **Q. What happened after the March, 2015 activation of the new 345kV high**  
215 **power line?**

216 **A.** I described a lot of what happened in my affidavit and other attachments we included  
217 with our “Exceptions and Comments of Diane Zagwijn-Coston and James Coston to the  
218 Recommended Decision” that we filed with the Commission in Docket No. 2008-00255  
219 on or about May 24, 2018. See attached that entire response we filed along with all its  
220 attachments.

221 (1) SHOCKS FROM STRAY VOLTAGE AND/OR INDUCED VOLTAGE. See our  
222 attached Exhibits re Issue #4 starting at page 195 – 241. Our May filing described severe  
223 shocks that Jim’s nephew and Jim received from our electric fence when it was not  
224 connected in April, 2017, after the 345kV line was activated. Also, since then, both Jim  
225 and my granddaughter received similar shocks from a de-energized fence in 2017. In

226 June of 2018, our bull got a thick scar across his nose from touching a line with way  
227 more than normal 'juice' in it. Also, later this summer, one of our two horses reared and  
228 screamed also after getting a severe shock from a fence line that was totally deenergized.  
229 We have called those shocks instances of "stray voltage". We realize at least one or two  
230 of those may have been instances of induced voltage in places where our electric fence  
231 runs parallel to the power line. CMP has assumed that our fence is the problem, but  
232 have not helpful in explaining exactly we are to deal it and we still have the problem.  
233 They installed two filters on our fence in 2017 but did not ground them but only to a  
234 painted fence post. I have since understood that a painted fence post is not a proper  
235 ground. Jim has been advised not to touch the fence without first testing and testing  
236 periodically while working with it.

237 (2) HEALTH ISSUES. I also want to elaborate on the physical symptoms that I, my  
238 family and some of our animals have had.

239 (a) HIGH BLOOD BLOOD PRESSURE. In December, of 2015, I was sent to the  
240 hospital by our school nurse, when she got a reading of 240 over 180 for my blood  
241 pressure. I got higher readings in the hospital. I had never before had a problem with  
242 my blood pressure. I now have to take medication every day for to keep my blood  
243 pressure in check.

244 (b) CYSTS. I have had two instances of large really ugly swelling and bumps  
245 appearing on my face, that I was told were epidermal cysts. They disfigured my face so  
246 much that I did not go to work at the school for four weeks in April and May of 2014 and  
247 also two weeks in 2017. In 2017, my cyst absessed and had to be dug out. See my  
248 attached exhibit labeled "8-29-18 medical records of Diane Coston." My horse, Ginger,  
249 had very similar bumps on her body, which also got infected and had to be dug out. See

250 page 398-401 of our “Exhibits re Factual Issue #5. Jim also had a similar sizeable  
251 bump appear on his hip.

252 (c) HEADACHES. Since the line was activated in 2015 all of us have had frequent  
253 long-lasting headaches, when none of us had them before. We get them more often and  
254 more intensely the more time we spend there.

255 (d) ENDLESS INSOMNIA; INTERRUPTED SLEEP. We rarely have been able to  
256 sleep through the night since the lines were activated. We sit bolt upright from a sound  
257 sleep several times a night, for no apparent reason. On occasion, humming of the lines  
258 will wake us up. We moved the children to the far end of the house, and they sleep  
259 better and seem to have fewer complaints. We, however, are exhausted. Jim never  
260 used to have a problem sleeping right through the night; I used to only wake up maybe  
261 once a night. Now we each wake up 4 to 5 times a night.

262 (e) ACHES; PAINS; SENSATIONS. We all experience periodic unexplained  
263 physical aches, pains and odd sensations that we never had before. When the children  
264 complain of such things and are otherwise home for the day, I try to send them to a  
265 friend or relative’s for the day. That seems to help.

266 (f) SPARKING; TINGLING. I have had to stop wearing metal rimmed glasses as I  
267 was seeing sparks in front of my eyes when I wore them and got bad headaches with  
268 them on. I have to wear glasses when I drive, but don’t put them on until I am out of the  
269 driveway. Visiting friends even comment on odd physical sensations and sparks or  
270 tingling when at our house. This is only since the line was activated.

271 (g) LIVER ISSUES. I don’t know the cause, but I recently was found to have fatty  
272 deposits on my liver and more testing is going to be done. I have never had anything like  
273 that before. I do not drink alcohol. Neither of us do.

274 (h) Financial stress has increased for us due to all added costs of mitigating the  
275 contaminated water, time lost by me for work, my added medication expenses, etc.

276 (i) Other more generalized stress has steadily increased for all of us, perhaps  
277 from the unceasing EMF. For Jim and I, it's also from worrying about how we can get  
278 ourselves into a safe living situation, especially for the children. Since so many of our  
279 animals, both large and small, have died or become sterile, we can't help but worry  
280 about health consequences of prolonged exposure for our grandchildren, as well as  
281 ourselves.

282 **Q. What result, what relief, would you like to get as a result of this PUC**  
283 **investigation?**

284 **A.** We do not know what other steps we could take to make our home safe, and we can  
285 not afford to move to anything reasonably comparable. See our attached Exhibit named  
286 "8-29-18 real estate search related documents." Except for Al Godfrey's  
287 responsiveness, we have not felt CMP as a company, or as the employer of various sub-  
288 contractors, has taken our complaints seriously or responded to them effectively. That  
289 makes it all the worse.

290 What I would like is for CMP to agree to, or if not, to be ordered to, relocate us to a  
291 reasonably comparable property in size, geographic location and suitability for  
292 residence and farming, but which is safely removed from high power lines.

293 I ask that the Commission review our pre-filed testimony, allow us opportunity to  
294 make data requests of CMP before they ask more of us; and also allow us time to  
295 designate expert witnesses related to the 5 issues, especially but not only for the  
296 contaminated water, EMF and on stray or induced voltage, and to amend our exhibit list  
297 at the time we do so.

298 If we can not get all our exhibits uploaded tonight by midnight, I ask that we be given an  
299 extension of time to complete the process. I also am very concerned about my own, and  
300 my family's health. We do not have health insurance and so I would ask for some  
301 reimbursement for medical expenses we have and will continue to incur since the line  
302 was activated. I also

303 **Q. Is that all your testimony?**

304 **A.** Yes, it is the essence of what I have to say at least until we can get some more  
305 information, through data requests we want to make from CMP as we mentioned at the  
306 Case Conference held in this Investigation on July 26, 2018.

Testimony for 2017-00232 Attachment 4  
2018-00178 Exceptions to Recommended Decision  
filing 7.

STATE OF MAINE  
PUBLIC UTILITIES COMMISSION

May 24, 2018

EXCEPTIONS & COMMENTS  
OF DIANE ZAGWIJN-COSTON  
AND JAMES COSTON TO  
RECOMMENDED DECISION

PETITION FOR FINDING OF PUBLIC  
CONVENIENCE & NECESSITY FOR THE  
MAINE POWER RELIABILITY PROGRAM  
CONSISTING OF THE CONSTRUCTION  
OF APPROXIMATELY 350 MILES OF 345  
KV AND 115 KV TRANSMISSION LINES  
(MPRP) PERTAINING TO CENTRAL  
MAINE POWER CO.

DOCKET NO. 2008-00255

CENTRAL MAINE POWER COMPANY  
APPEAL OF LDRT DECISION  
REGARDING DIANE AND JAMES COSTON

DOCKET NO. 2018-00034

TO THE PUBLIC UTILITIES COMMISSION: This submission is made on behalf of Diane Zagwijn-Coston and James Coston [hereinafter, "Costons"] to provide the Commission with their exceptions and comments on the "Recommended Decision" dated May 18, 2018.

**RE I. SUMMARY.** The Costons respectfully take exception in part and agree in part with the recommended finding that the Ombudsman's referral to the Landowner Dispute Resolution Team (LDRT) from the Maine Power Reliability Program (MPRP) is outside the jurisdiction of the Landowner Dispute Resolution Process (LDRP). They expressly take exception to the part that finds the Ombudsman's referral regards alleged impacts "caused by Central Maine Power Company's operation" of the MPRP.

The Coston's complaint involves *design errors* and *construction issues* in the MPRP—not operation. They seek a Commission order that CMP mitigate the MPRP design flaw by moving the tower that is positioned too close for safety to their home,

unless CMP is willing to purchase their home and help them relocate to a safe and reasonably comparable replacement home and compensate them for damage to their land and property caused by CMP and its subcontractors in the course of construction.

Only because the cost of moving a tower (or, alternatively, the cost of their being relocated into a comparable home) will likely exceed \$200,000 do the Costons agree with the conclusion that the LDRT does not have jurisdiction to address their complaint.

Finally, the Costons respectfully take the position that the LDRP could and should remain functional for the purpose of dealing with design and construction problems, even after the MPRP became operation, where, as here, the primary way to mitigate continuing safety concerns would be to relocate or redesign structures and the alternate ways for landowners to seek redress are cost prohibitive and beyond the capacity of the Costons, as they would be for the average landowner.

## **RE II. BACKGROUND.**

Section A of the background part of the recommended decision addresses the creation and purpose of the LDRP. Determining that there is jurisdiction in the LDRP now to review the Costons' claims is consistent with the overall purposes cited in this section. Even though it is too late to provide the "expedited" kind of review during design and construction that was hoped for when the process was set up, it is actually not too late to avoid a situation where part of the transmission line would need to be relocated and "reconstructed at considerable expense" should the reviewers find for the Costons on their complaint about the fundamental lack of adequate safety in section 3025 of the MPRP transmission line as designed and constructed so close to their home. Cf. reference at page 12 of the Recommended Decision to the LDRT's explanation in its

Mendola<sup>1</sup> decision of the purpose of the LDRP.

The fact the Coston's complaints include significant safety concerns, rather than, for example, mere aesthetics and related diminution of value, warrants taking advantage of the opportunity to mitigate this situation through the LDRP because allowing this situation to continue without mitigation would directly contravene the Commission's statutory mission "to ensure *safe, reasonable and adequate service*"<sup>2</sup> [Emphasis added.]

With no notice to the Costons, CMP changed the design of the transmission line from the north side to the south side of the corridor (thereby relocating a pole in section 3025 to within 182.5 feet of their home). If they had had proper notice of the change, it would be a lot fairer to say that it's too late for them to complain now because the issue could have been addressed during the design and construction phase. In their response to the LDRT Referral, by letter dated January 23, 2018 to Harry Lanphear, the Costons requested opportunity to provide evidence that this change was made and made without notice to them. They have requested opportunity to call Al Godfrey as a witness because what he said then in 2014 (on seeing the actual location of the tower near them) and what he had told them prior to that would support their version of these facts.

CMP should not be able to change the design with no notice to the affected landowner and then later say in effect, 'Sorry, because the construction (according to the changed design) is now complete, you can't use the LDRT to try to resolve your issues with the design.' The problem that this flawed design creates for the Costons is amplified and illustrated by the fact that the electromagnetic field ("EMF") readings at the corridor's edge (nearest pole to them in section 3025) turned out to be 62% higher<sup>3</sup>

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<sup>1</sup> See Landowner Dispute Resolution Team, Consideration of Referral by Ombudsman Regarding Michael and Rachel Mendola, LDRT Docket No. 2013-00002, Dec. 26, 2013 referenced on page 12 of Proposed Decision dated 5/18, 2018.

<sup>2</sup> 35-A M.R.S.A. §101.

<sup>3</sup> The proposed decision acknowledges this change is part of the Coston's concern, but rely on CMP's claim that

than had been projected by CMP's experts, and this is a level they believe is demonstrably unsafe.

The fact that the design and construction phase is over is a relevant factor in deciding if the LDRT should still have a functional role to resolve controversies like the Costons, but it should not be the only one. Factors to be considered should include what sort of relief is requested and whether relocation or reconstruction of the line is what would best resolve the issues raised as is the case here. If the answer to that inquiry is yes, then the fact that construction is over, should not preclude LDRT review. Otherwise, making design changes without notice and then finishing construction before there is opportunity for landowner input or complaint is encouraged, not avoided and mitigation is made avoidable.

#### B. The Coston Property Dispute

In addition to concerns about the high EMF readings, the Costons have stray voltage issues that also appear to directly result from the design change that relocated the pole so close to their home. As noted in the proposed decision, the Costons are raising two grandchildren, now aged 3 and 9, in their home. They regard the EMF levels as a threat to the children's physical safety and healthy development from just continuing to live in that home. Al Godfrey provided the Costons (when they asked about EMF) an NIH booklet dated June 2002 of questions and answers called "EMF electric and magnetic fields associated with the use of Electric Power." In a section on the World Health Organization International Agency for Research on Cancer, it states the following about a report by an international scientific panel of 21 experts from 10 countries who met in June 2001 to review the scientific evidence regarding the potential carcinogenicity of static and ELF (extremely low frequency or power-frequency) EMF:

The panel classified power-frequency EMF as “possibly carcinogenic to humans” based on a fairly consistent statistical association between a doubling of risk of childhood leukemia and magnetic field exposure above 0.4 microtesla (0.4  $\mu$ T, 4 milligauss or 4 mG).” Referenced NIH report at page 54.

By comparison, the May 19, 2017 reading in the Coston’s kitchen (with the breaker off) was **6.7 mGauss**. See report of EMF Site Measurements by D M Begin on May 19, 2017, incorporated herein by reference and included herewith as **ATTACHMENT 1** to these Exceptions.

Stray voltage is also an important safety concern for this family, especially but not only for the children, one of whom has already been significantly shocked by touching the fence in the Costons’ yard. A reading for stray voltage done by Greg Snow in May, 2017 at the Costons’ showed 84 volts. See **ATTACHMENT 2** correspondence from Greg Thompson including correspondence from Raymond Boucher, incorporated herein by reference.

CMP has declined to do more stray voltage testing, as they had originally said they would do, on the grounds that they do not typically test along transmission corridors. But the Costons still have a problem that was not resolved by the installation of filters on their fencing. The Costons understand the proposed decision to suggest they could file a new complaint about that with the CASD or bring ten-person civil complaint. Neither option is very satisfying at this point, and filing a ten-person civil complaint with the Commission may not be feasible for a number of reasons nor would it likely provide timely relief, even if successful.

Diane Coston’s letter dated January 23, 2015 (commenting on the LDRT referral) to Harry Lanphear, lists the numerous health issues they have experienced since 2015 (that they did not have before) including chronic head aches, leg pain, insomnia, masses forming on face and hip, as well as high blood pressure and chronic fatigue. It is their

experience and belief that these things come from the stray voltage and the high EMF levels since the line was activated. <sup>4</sup> That may seem operational, but it would not have been the issue it is but for the design change that located a pole too close to their home. <sup>5</sup> There is no coal mine with a canary in it here, but the dying and infertile animals they have complained about, support their concerns for their own health and should raise real concern in any observer that they are simply now living too close to a 345 kV line as result of that design change. See **ATTACHMENT 3**, Affidavit of Diane Zagwijn-Coston, incorporated herein by reference. That this impact of a change in project design was not fully knowable until after line operation began, should not bar resolution by the LDRT.

The Costons also allege that their well water was contaminated as a result of the blasting. Whether the blasting had such a damaging impact due to the design change, and whether or not the blasting was done in a negligent manner, the fact is that a number of the Coston's farm animals died mysteriously in 2014 within a short period of time after the blasting that year. Contrary to CMP claims, this was before the lines were activated, so that is not an operational issue either. The damage to the value and usefulness of their property from contamination of their well water source and the loss of several farm animals, is all damage and loss that the Costons incurred during the construction of the line. This damage has not been resolved or compensated either.<sup>6</sup>

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<sup>5</sup> It is consistent that such health impacts could come from high levels of exposure to EMF based on guidelines and related materials published by the International Commission on Non-Ionizing Radiation Protection.

<sup>6</sup> The Costons do agree that a prior complaint they had made about temporary interference with grazing rights was resolved through the Ombudsman and LDRP. They do not agree that the cutting of trees on their land without notice or permission has been compensated or resolved, but they do understand that that is something they would need to deal with through the courts.

As the proposed decision notes, the total impact and effect of the design that placed the pole so close to the Coston's home has been to make that home unsafe and thus unlivable for them and their grandchildren. If they are not able to get the line relocated, or alternatively themselves relocated, the value and usefulness of their property will have been taken from them without compensation. That would be, in our view, tragic. It would also be a taking in violation of the fifth amendment to the US constitution.

#### **RE: V. DECISION AND ORDER**

As noted above in Section II A of these exceptions, there is still need for LDRP-style rapid response now to the safety concerns raised and, with all due respect, the Costons argue that process should not be foreclosed to them simply because the line is now built and operational, when their primary concerns relate to unsafe conditions from design changes made without notice to them and to other construction issues.

The proposed decision suggests that the Costons' case does not involve significant enough EMF levels to warrant the relief requested and cites the Curtis case<sup>7</sup> in support of this conclusion. However, that case is factually distinguishable from the Coston case because CMO projected EMF levels at the Curtis residence would be 3.4 mG on average and 5.0 mG at peak. In the Coston's case, EMF testing (actual not, projected) found EMF levels to be 6.7 mG<sup>8</sup> at their kitchen table with the breaker off. See attached Exhibit A, the results of the 5-19-2017 EMF Site Measurements. The Costons' actual EMF levels are considerably higher than those projected for the Curtis' residence.

Also, the PUC stated in Curtis:

We do not direct CMP to purchase the Curtis residence. In general, we

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<sup>7</sup> Central Maine Power Company Appeal of LDRT Decision Regarding Wanda and Mark Curtis, Docket No. 2011-00504, Order (April 18, 2012).

<sup>8</sup> See ATTACHMENT 1.

do not favor the purchase of abutting landowner property as a reasonable EMF mitigation technique. We do not rule out the possibility that such a home purchase may be reasonable in a particular circumstance. However, we cannot conclude that house purchase is warranted here where CMP does not need the property to build the line, the modeled EMF exposure is relatively low and there is a significant expense associated with the purchase.<sup>9</sup> Id.

### CONCLUSION

In conclusion, the Costons respectfully request that the Commission modify the Recommended Decision to:

- a) find that in this situation the LDRP should be allowed to function because the Costons safety concerns are from design and construction issues, even though construction is complete;
- b) agree that the Costons' case is a case of significant safety concerns, distinguishable in that regard from the Curtis case, and thus is a case warranting house purchase (unless the line is relocated); and
- c) because of the expense involved, is a case jurisdictionally appropriate for resolution by the Commission itself, rather than the LDRT.

Dated: May 25, 2018

Respectfully submitted,



Susan Farnsworth. Bar #348  
Counsel for Diane and James Coston  
P.O. Box 29, Hallowell, ME 04347  
(207) 626-3312

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<sup>9</sup> In the Curtis case, the Commission was asked by the Office of Public Advocate, through its counsel, to adopt a standard of 3mG exposure and the Commission declined to do so.

Testimony for 2017-00232 Attachment 5  
2018-00170 OKelly Comment to Revise the Recommended Decision on the  
Coston Farm LDRT Appeal w/ affidavit, dated 10/17/2018

May 25, 2018

Harry Lanphear, Administrative Director  
Maine Public Utilities Commission  
18 State House Station  
Augusta, ME 04333-0018

Re: 2018-00034: Comments on the Recommended Decision Denying the Referral of the Coston Stray Voltage Health and Safety Issues to the LDRT.

Mr. Lanphear,

I have been following the Coston attempt to get someone to keep their property, their grandchildren, their animals and themselves safe from the impacts of stray voltage on their property. I met Diane Coston soon after I read her request for an appeal submitted to the PUC.

I have spoken with Mrs. Coston on numerous occasions since February and have been at their home for many hours both yesterday and today.

I am concerned that a hazardous situation is being ignored which is caused by the design of the MPRP 345 KV high voltage power line in close proximity to the Coston farm and house.

At the Coston farm and home, they have had ongoing instances of serious shocks from un-energized electric fences on their property.

The important test information that CMP has not explained is the high levels of stray voltage on the Coston property. CMP engineers tested the property on May 3, 2017 (more than a year ago) and found readings of up to 84 volts by having the ground of the voltmeter touching the earth and the other lead held in the air.

I have talked with a few electrical engineers, with the Wisconsin Public Service Utility and have read the information in this docket. All the engineers, including the two CMP employees that conducted the stray voltage test and the Wisconsin Public Utility manager for their stray voltage program feel that a reading of 84 volts is a serious situation. I have attached a document on stray voltage from the Wisconsin Public Service Utility.

In Wisconsin, I spoke with Cory Kauchta, 920-433-2913, and he described their free stray voltage testing program, which is available from all the Wisconsin Public Utilities. He told me that for cattle farms, 0.5 volts AC is the screening level in Wisconsin, with 1 volt AC an action level. At 2-3 volts, cattle are affected. Today I brought a volt meter to the Costons and tested many areas around their yard and fence. Although I just had a

unit from Lowe's, I was able to replicate high voltage readings in the 30 – 40 Volt AC range by placing the black lead in the ground and red lead in the air. By the fence with the filters, closest to the transmission line, the readings on the electrified fence were vacillating but generally low, so the filters there are working. However, the unenergized fence, further away from the transmission line, at the back of barn showed readings of 39 Volts AC.

We can see that the Costons have had serious incidents where they have been badly shocked by unenergized gates and fences. They are taking many precautions to not be hurt by this dangerous situation.

I firmly believe that the Commission should not make a decision in this case that allows this level of stray voltage to be swept under the rug. Please reconsider the recommended decision and modify it to require that CMP to fully investigate the stray voltage at the Coston residence, submit documentation of the findings and take appropriate action.

Thank you for considering these comments. If you have any questions or wish further information please contact me.

Sincerely,

Dot Kelly

Dot Kelly

Date: 10/17/2018

I attest that the foregoing testimony is correct to the best of my knowledge and belief.

Dot Kelly

Exhibit 8

# NECEC's Negative Impacts to Scenic View Shed and Year-Round Recreational Tourism

View from Sally Mtn,  
looking south to  
Coburn Mtn. (left),  
Attean Mtn. (right)

# CMP's rendering of Parlin Pond Claims: uninhabited & no Corridor view

Coburn Mtn.



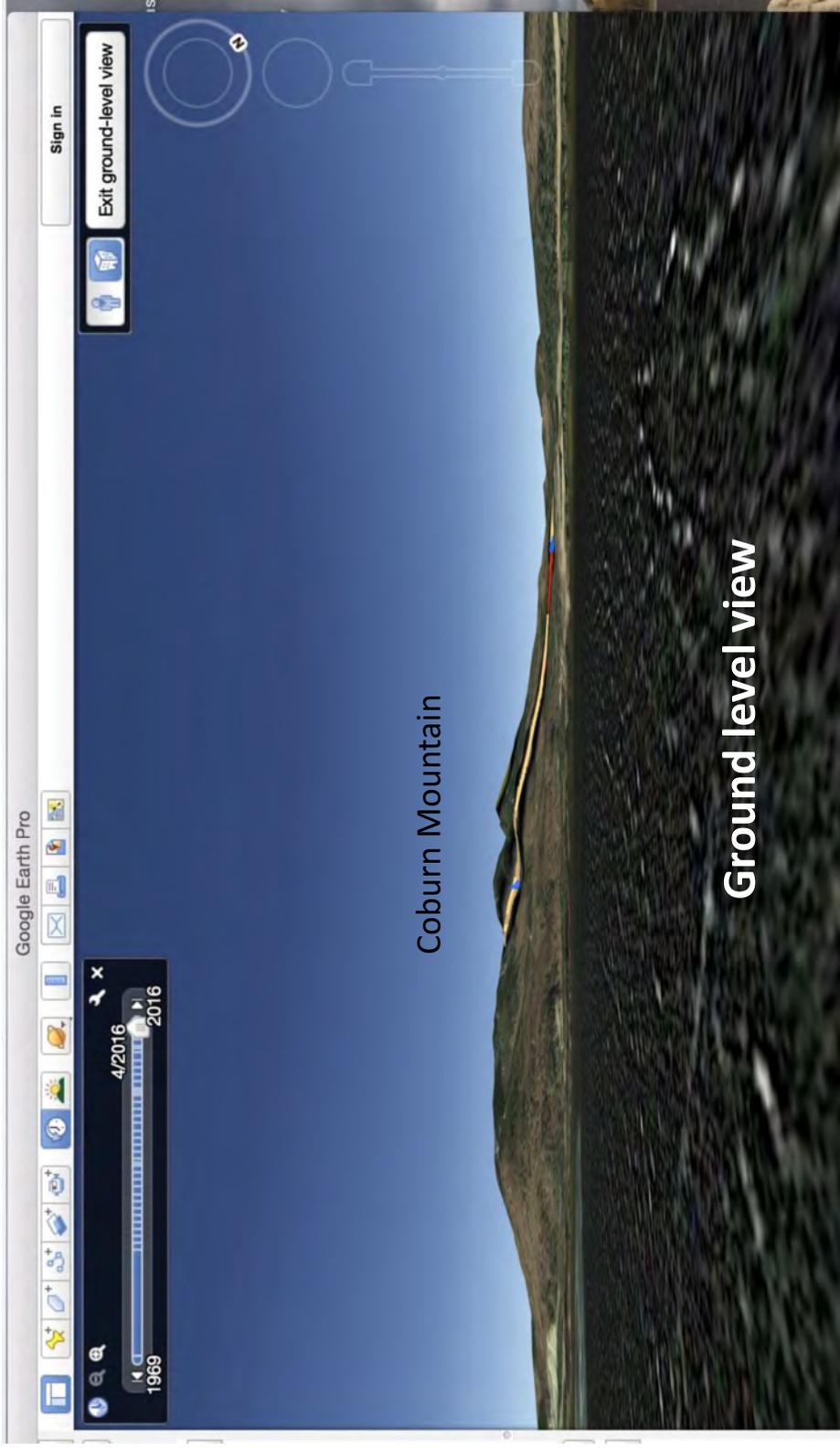
Existing Conditions: Normal view looking south from the northern end of Parlin Pond. Coburn Mountain is on the left in image.

September 27, 2017

# Google Earth's Parlin Pond: Corridor is indeed VISIBLE

From northern end  
of PP looking  
southwest.

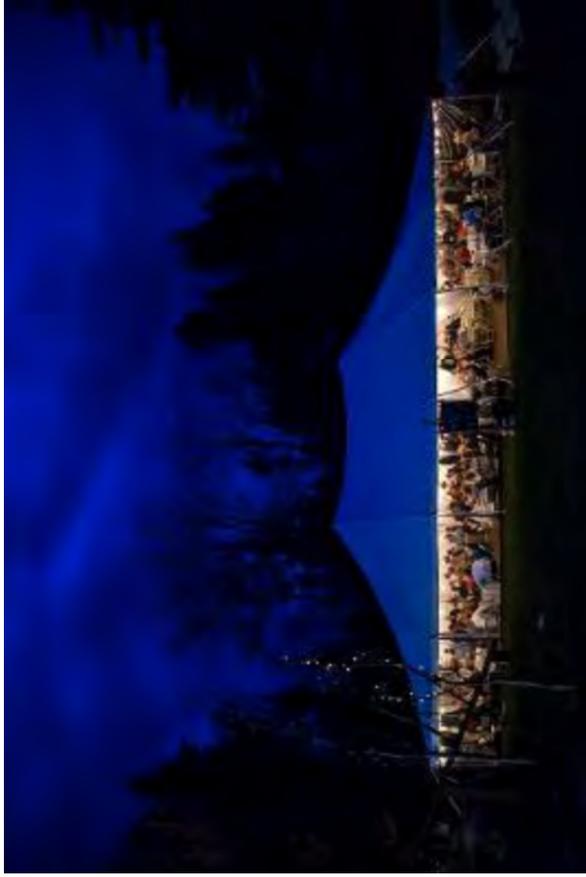
**60-80 ft Average  
Tree Height  
vs.  
100' Towers**



\*see Forest Trees of Maine: [https://www.maine.gov/dacf/mfs/publications/handbooks\\_guides/forest\\_trees/individual\\_spp\\_index.html](https://www.maine.gov/dacf/mfs/publications/handbooks_guides/forest_trees/individual_spp_index.html)

# Parlin Pond: Corridor to Impact Business

Who would want an industrial transmission line as a backdrop of their wedding venue?



Joe Kruze

# Lake Parlin Lodge: Winter Recreational Usage



- ❖ Hundreds of meals served daily during the snowmobile season.
- ❖ Tourists ride in from Eustis, Jackman, Forks, Greenville, Bingham

# Parlin Pond: Heavy Winter Recreational Usage



Joe Kruze

# Parlin Pond Tourism Economy

Where are the  
**winter user**  
**studies?**



Joe Kruze

# The Forks Area to Jackman

is a

Maine Tourism  
Winter Destination.

**Where's the user data for  
scenic and economic  
impact?**

**How deeply are the  
employees and families  
going to be impacted?**



# Coburn Mountain, 360 view of NECEC



**Tallest ITS peak in New England**

**Host to hundreds of snowmobilers a day**

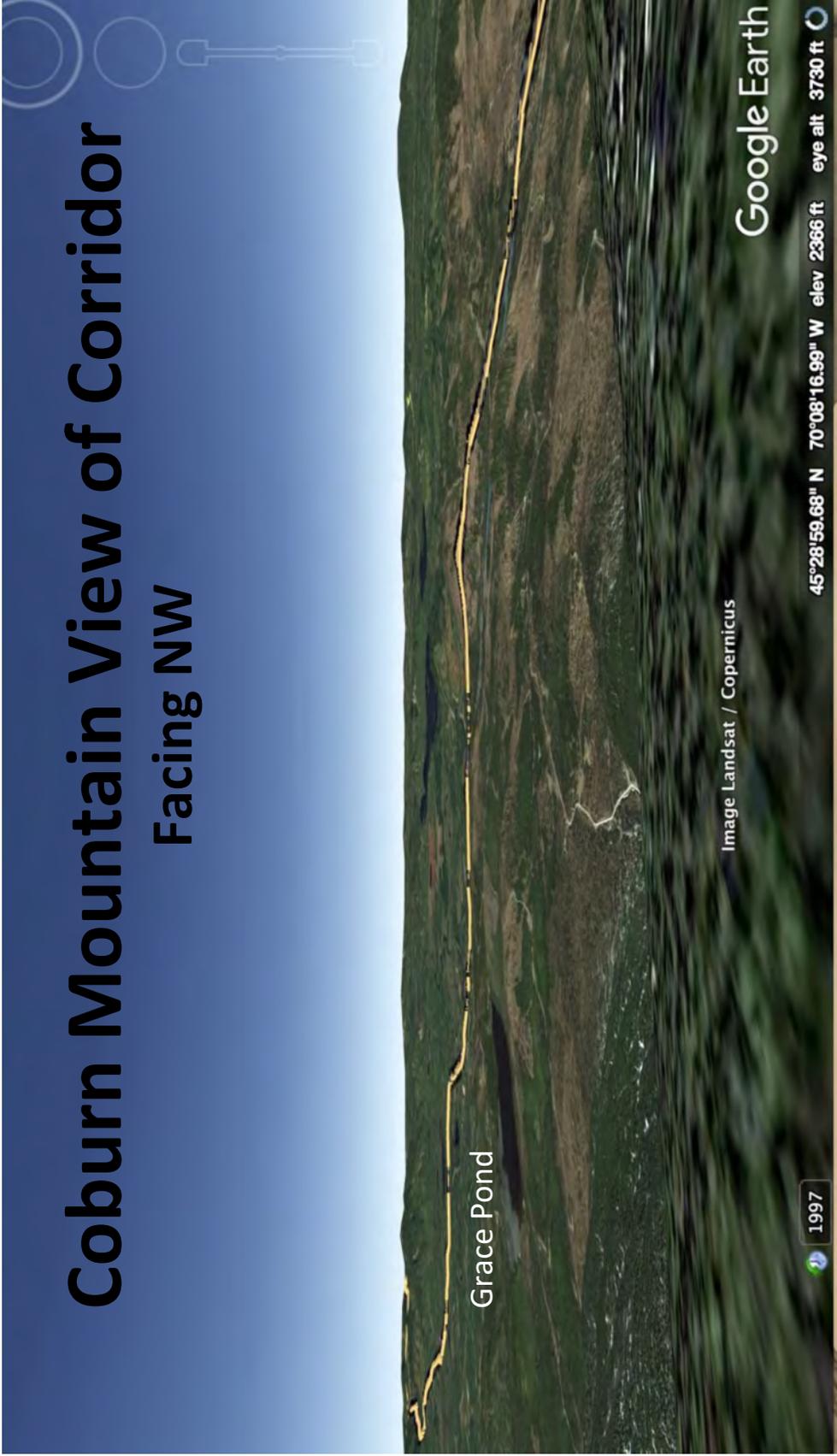
Joe Kruze

# Grace Pond from top of Coburn Mtn



Ed Buzzell

# Coburn Mountain View of Corridor Facing NW



Grace Pond

Image Landsat / Copernicus

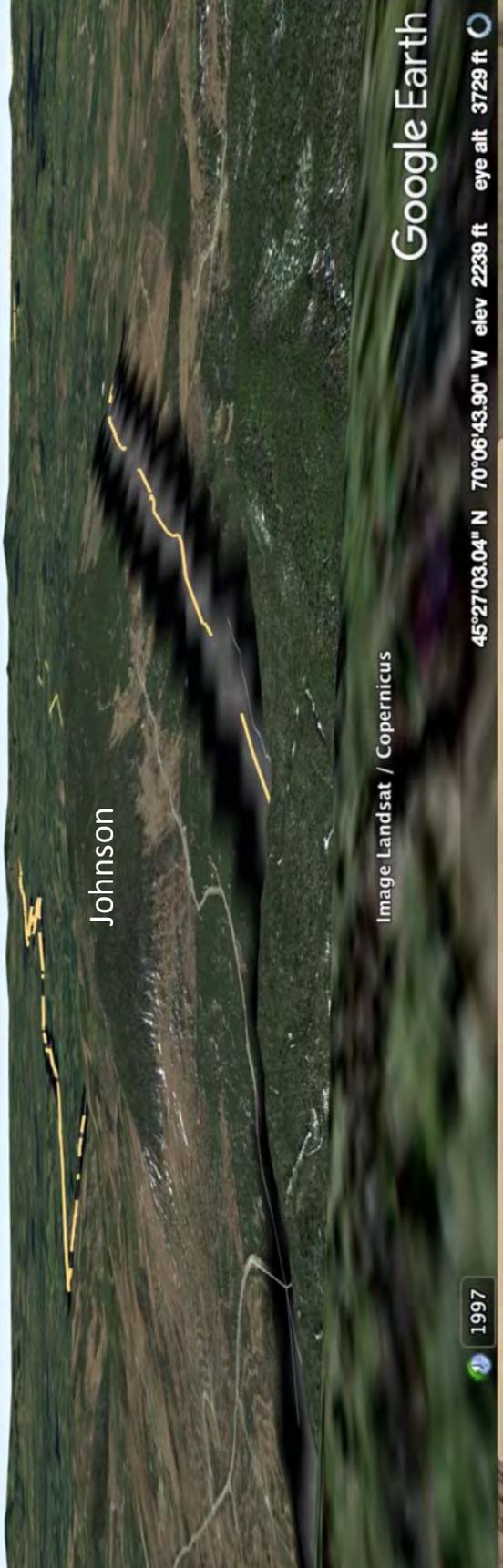
Google Earth

1997

45°28'59.68" N 70°08'16.99" W elev 2366 ft eye alt 3730 ft

1969 2016

# From the Top of Coburn: Corridor Visible around Johnson Mountain



Johnson

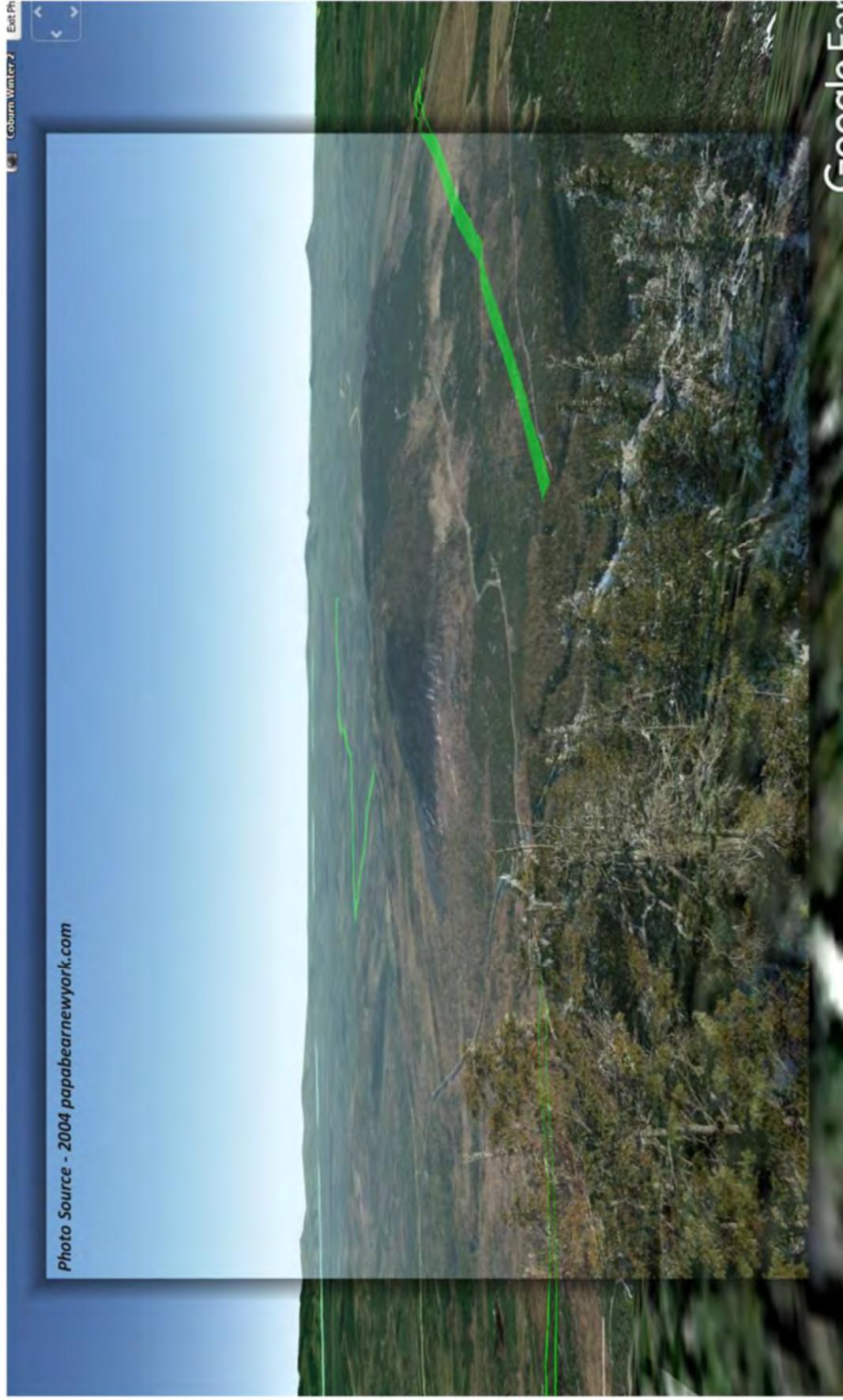
Image Landsat / Copernicus

Google Earth

45°27'03.04" N 70°06'43.90" W elev 2239 ft eye alt 3729 ft

1997

## Coburn Mountain Google Earth Overlay 2





# Enchanted Pond

Mike/Shirley  
Johnson

# Shutdown Mountain from Enchanted Pond



Mike/Shirley  
Johnson



Exit ground-level view



# Corridor from Shutdown Mtn Trail

## Enchanted Pond

Image Landsat / Copernicus

Preview

Google Earth

Imagery Date: 4/23/2016 46°25'44.70" N 70°10'03.56" W elev 1788 ft eye alt 2083 ft



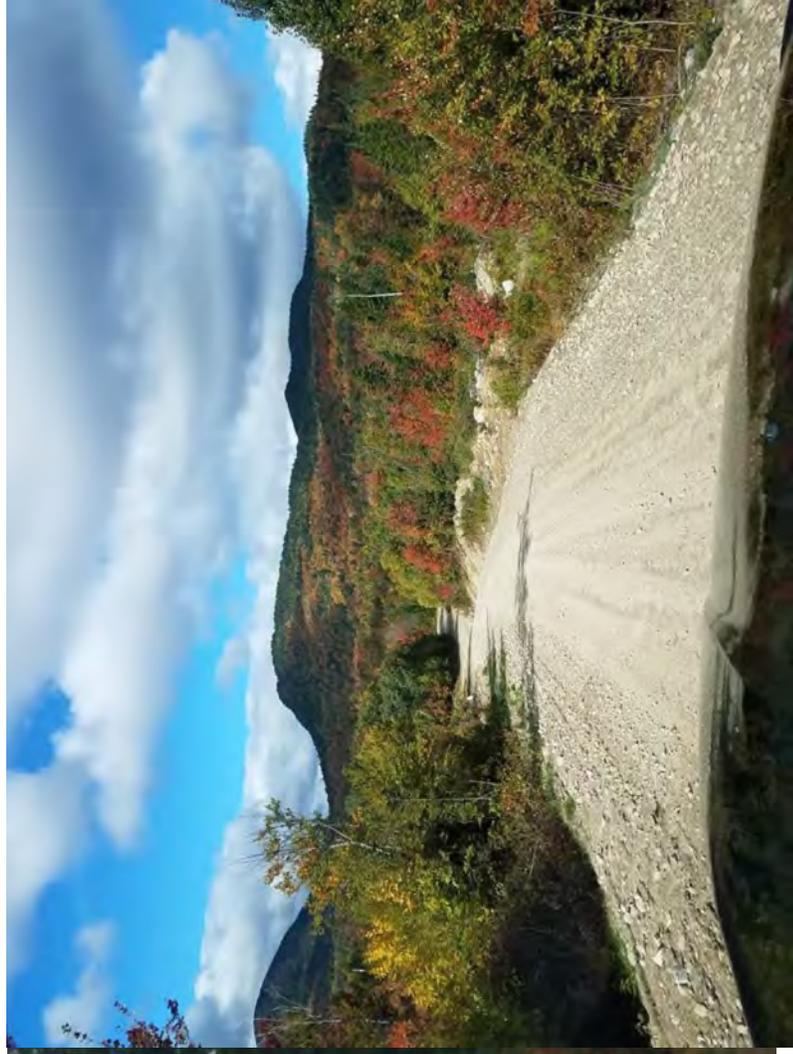
1997

# Spencer Access Road Not just a “logging road”

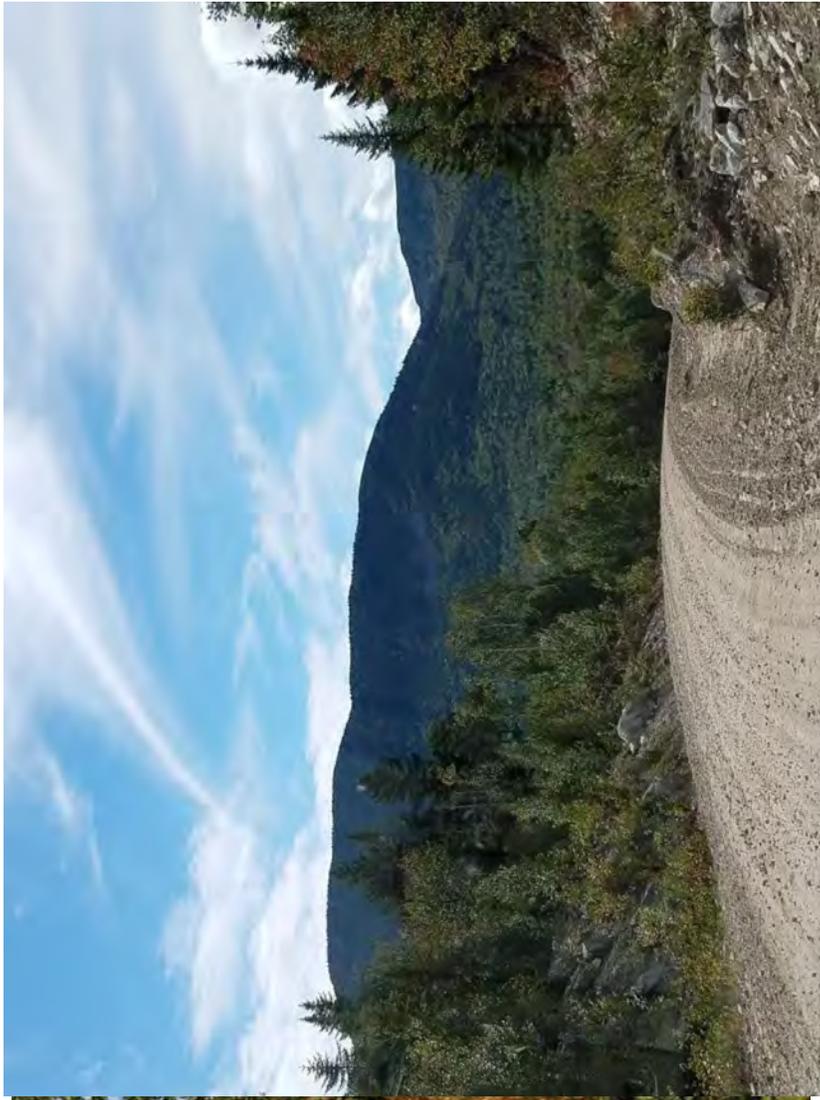


[Jennifer Pelotte Poirier](#) – Spencer Road

Spencer Road is a highly used, beautiful and scenic access road to Enchanted, Grace, Rock ponds, #5 Mtn., access to 16,000+ acres of conservation land...



# Spencer Access Road



# Spencer Road Recreational Usage

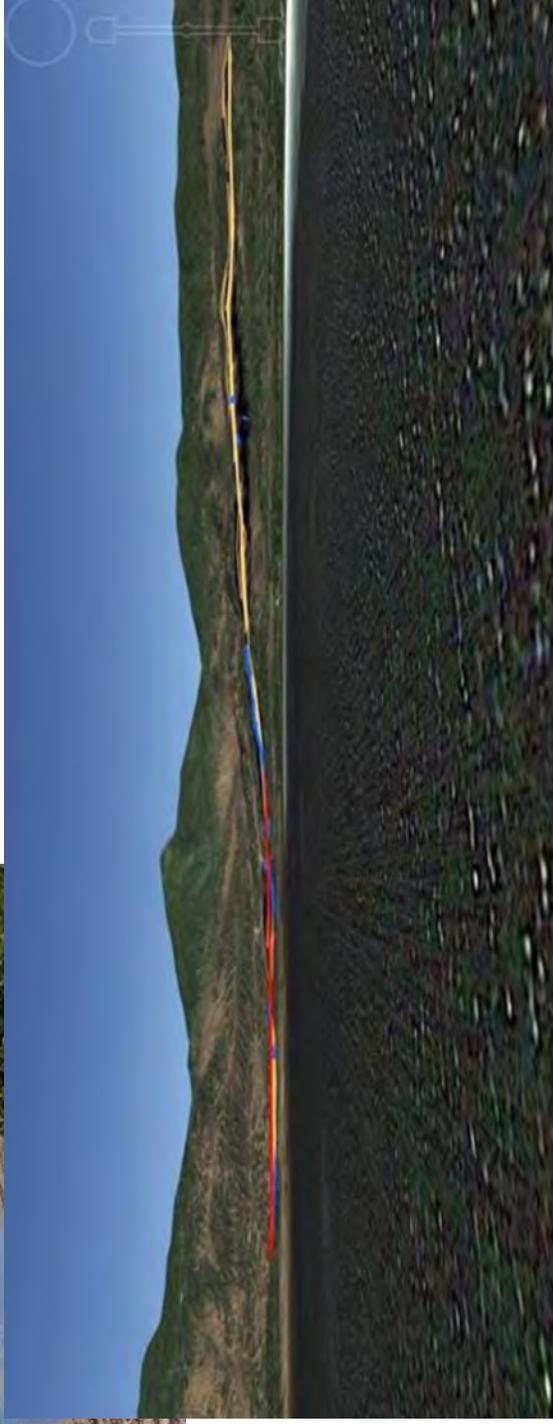


Kimberly Nadeau— Spencer Road

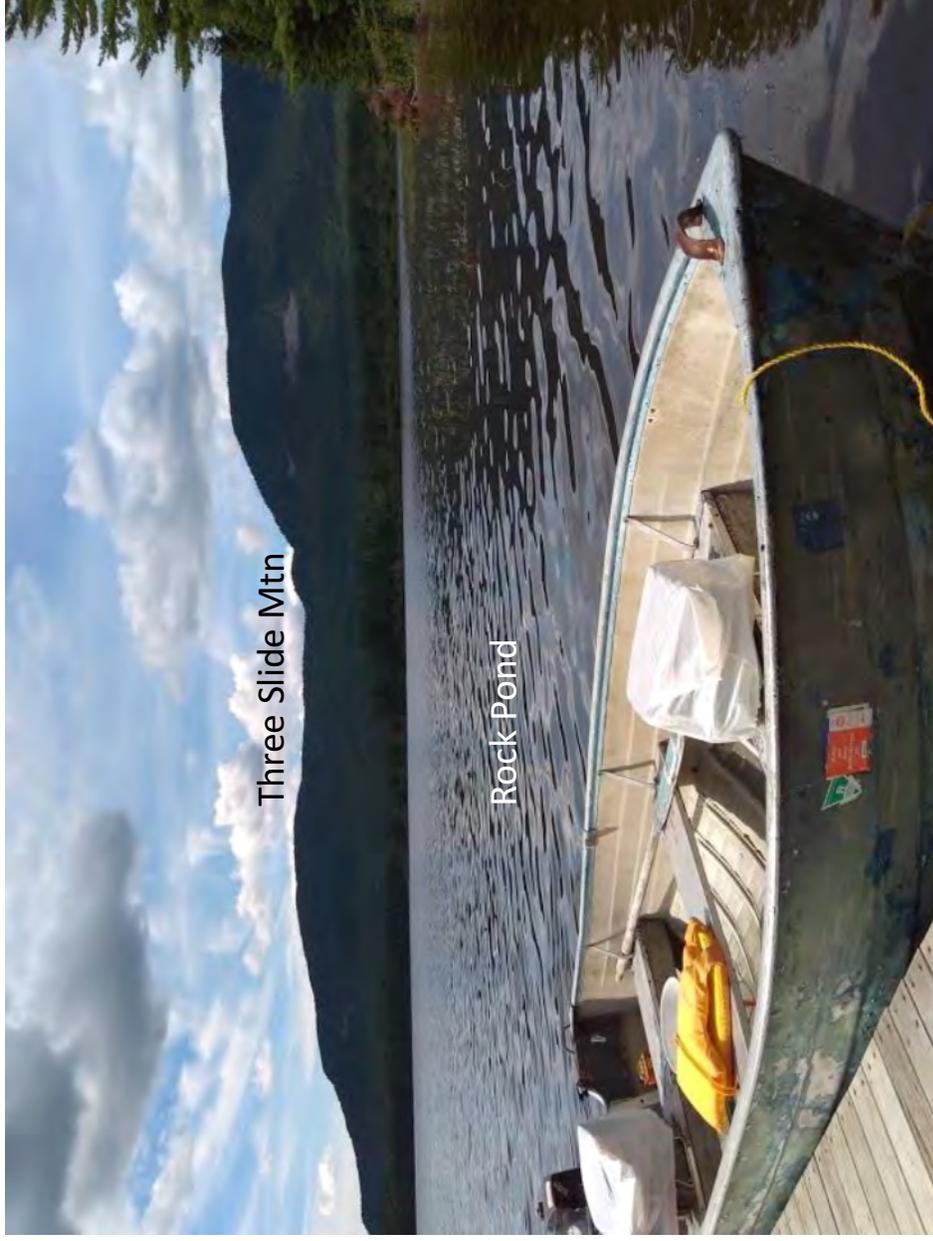
Rock Pond now

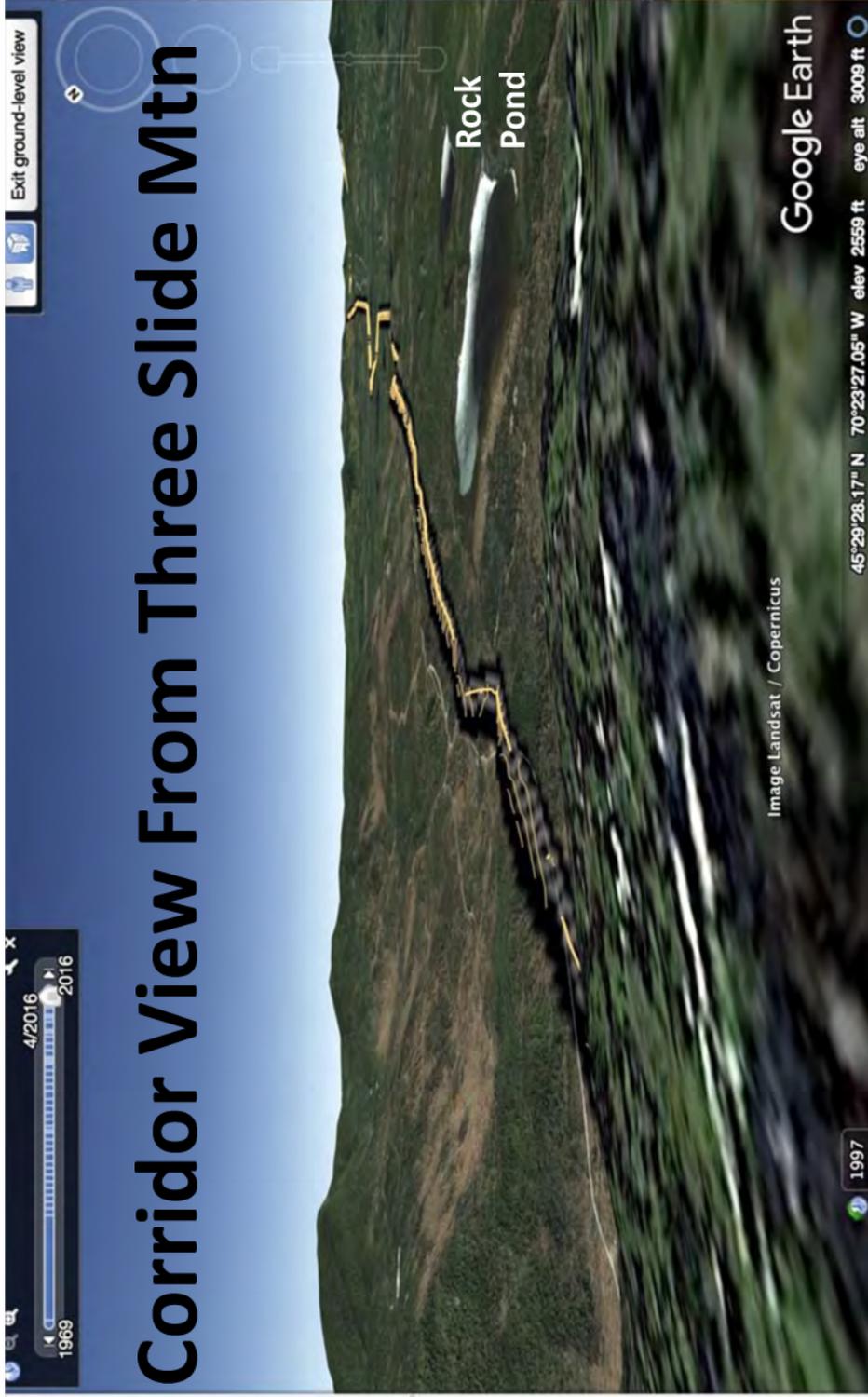


Rock Pond after



# Three Slide Mountain from Rock Pond





# Corridor View From Three Slide Mtn

Rock Pond

Image Landsat / Copernicus

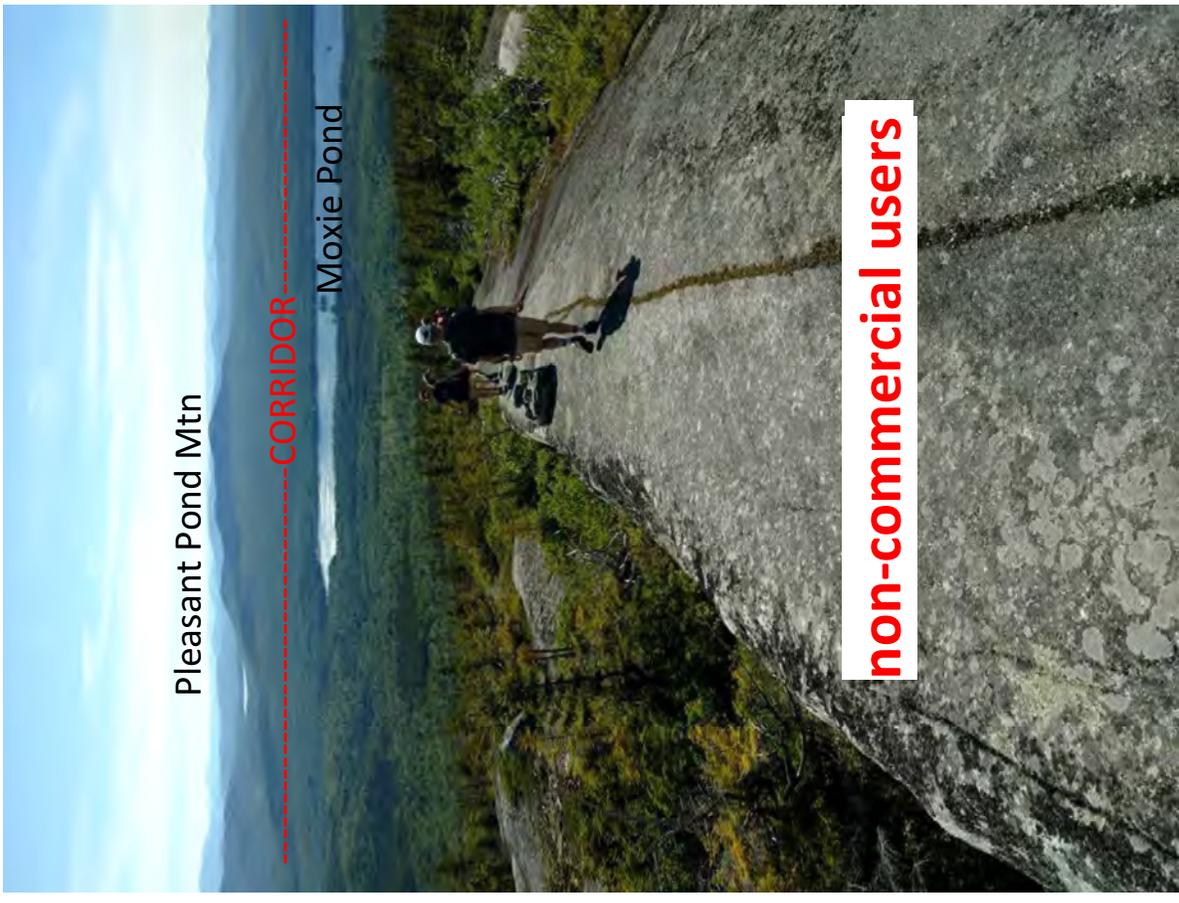
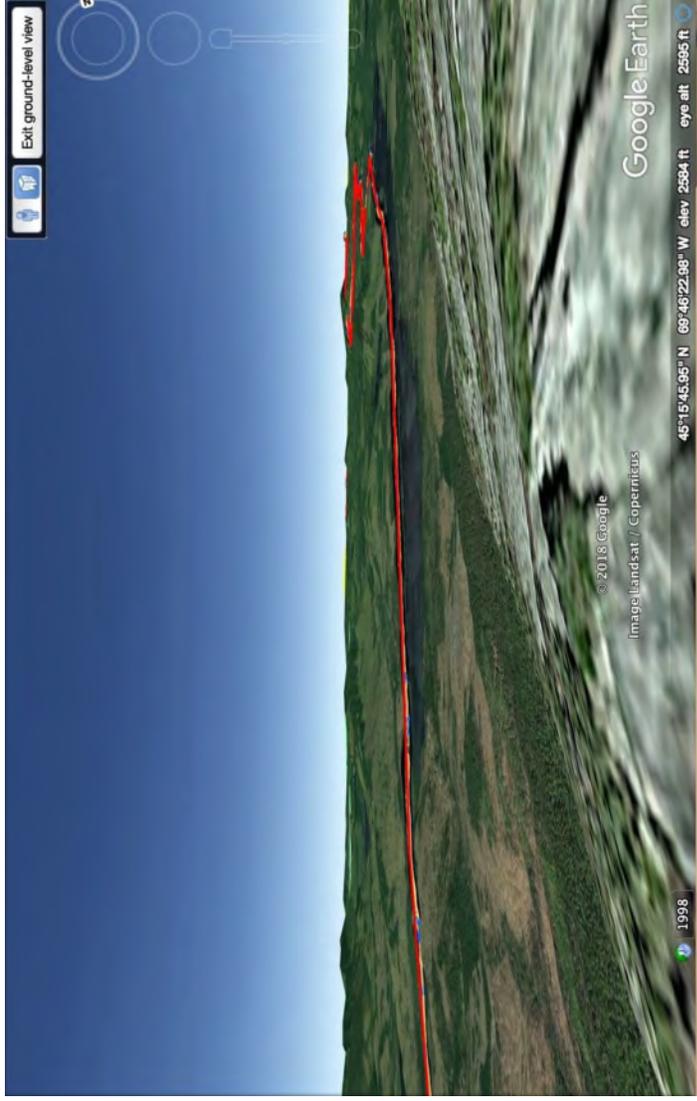
Google Earth

45°29'28.17" N 70°23'27.05" W elev 2559 ft eye alt 3009 ft

Timeline interface showing a slider from 1969 to 2016, with a specific date of 4/2016 selected.

Exit ground-level view

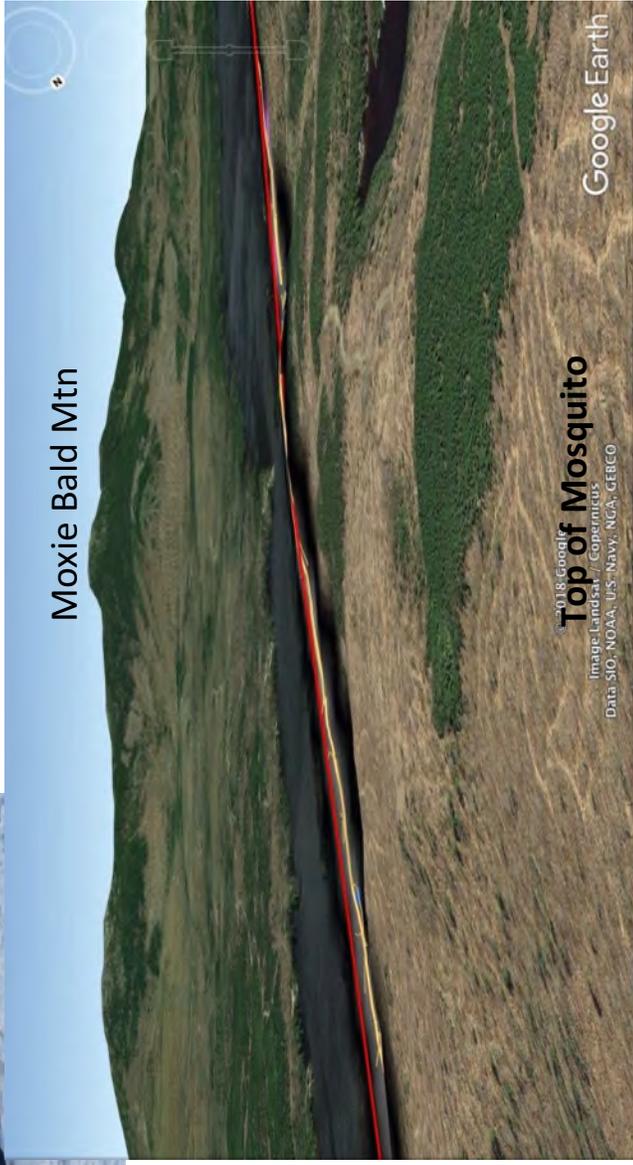
# Summit of Moxie Bald Mountain Appalachian Trail





Moxie Bald Mttn

# Moxie Pond as seen from summit of Mosquito Mtn.



Moxie Bald Mttn

From Top of  
Mosquito

© 2018 Google  
**Top of Mosquito**  
Image Landsat / Copernicus  
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Google Earth

Exhibit 9

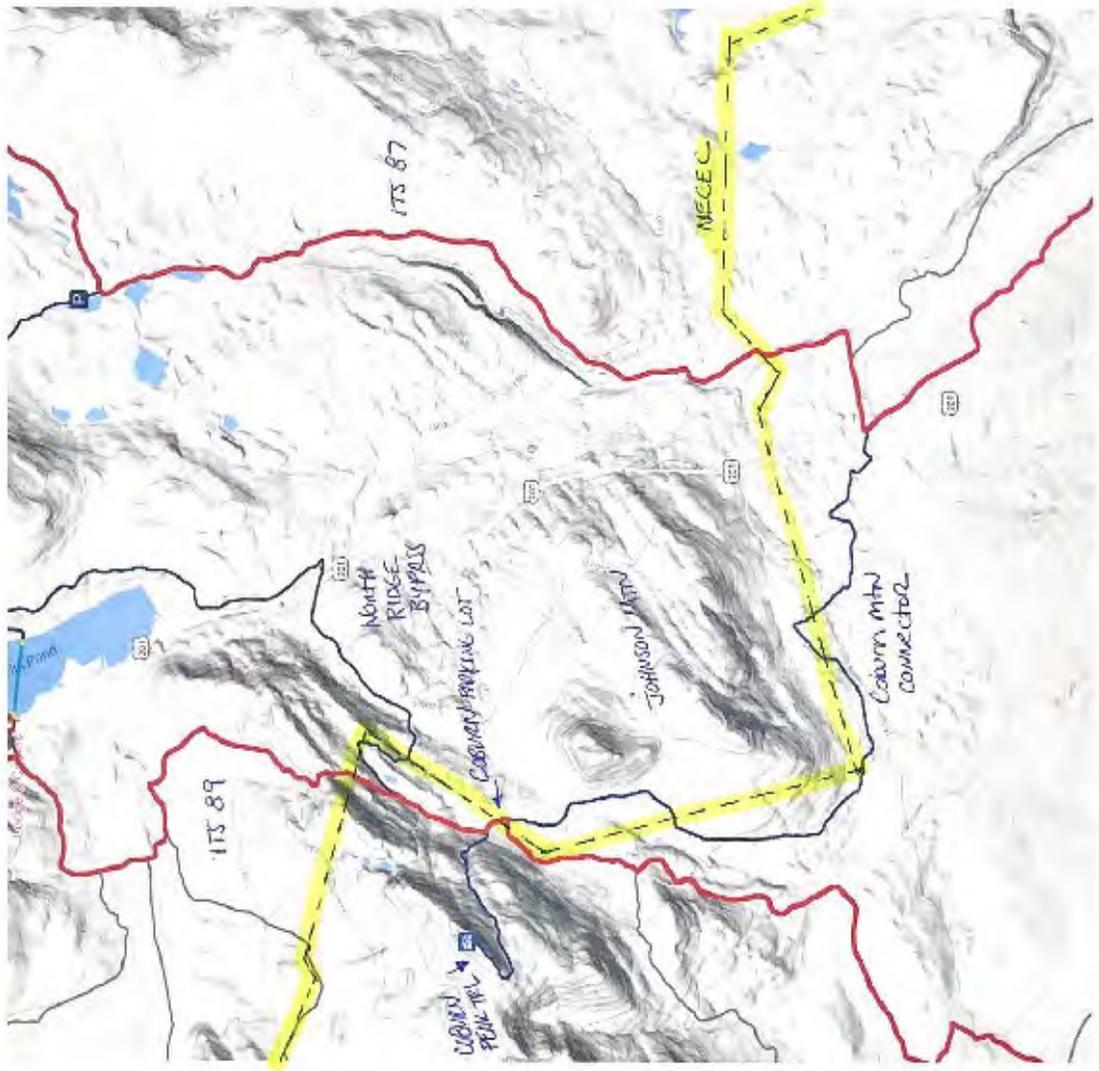
**2019**  
**The Forks Area**  
**SNOWMOBILE MAP**  
Ride ITS 86, 87 & 89

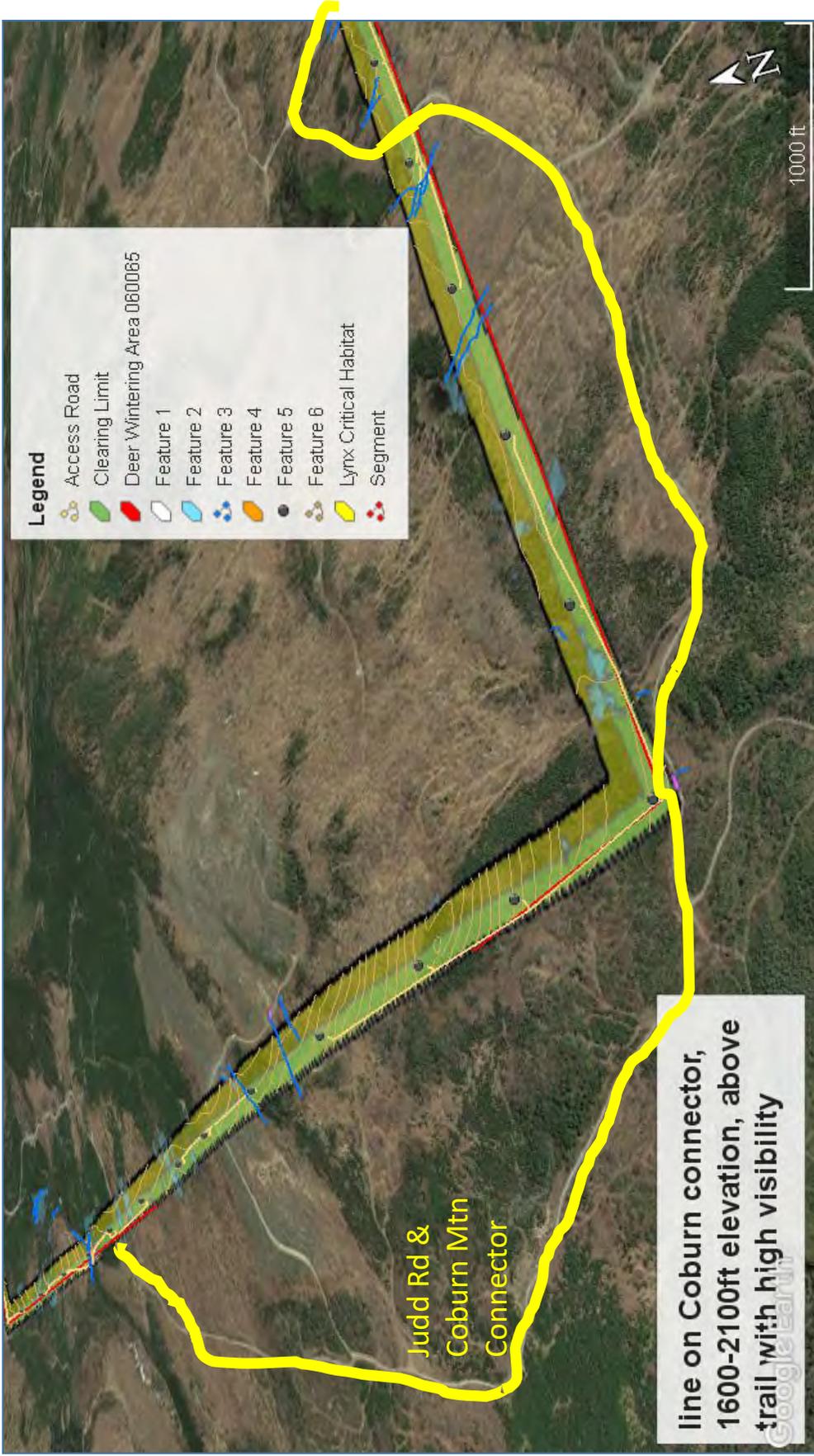
Bingham • Caratunk • The Forks • West Forks  
TWP Parlin • Jackman • Eustis • Rangeley  
Rockwood • Greenville • Kokadjo • Abbot

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Snowmobile Trail at **3750ft**

The Forks Area Chamber of Commerce  
Route 201, PO Box 1 | West Forks, Maine 04985  
[www.forksarea.com](http://www.forksarea.com)



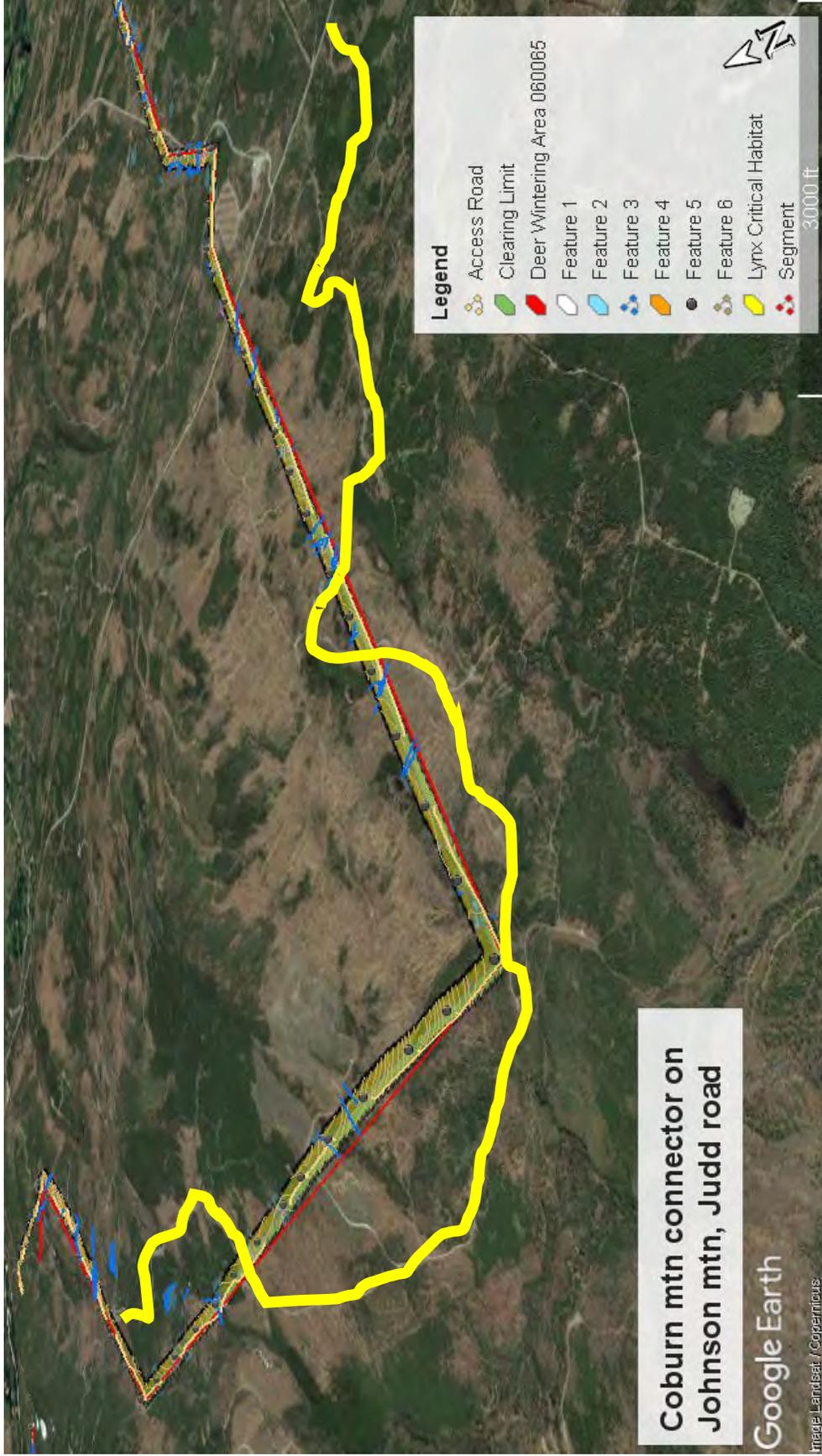


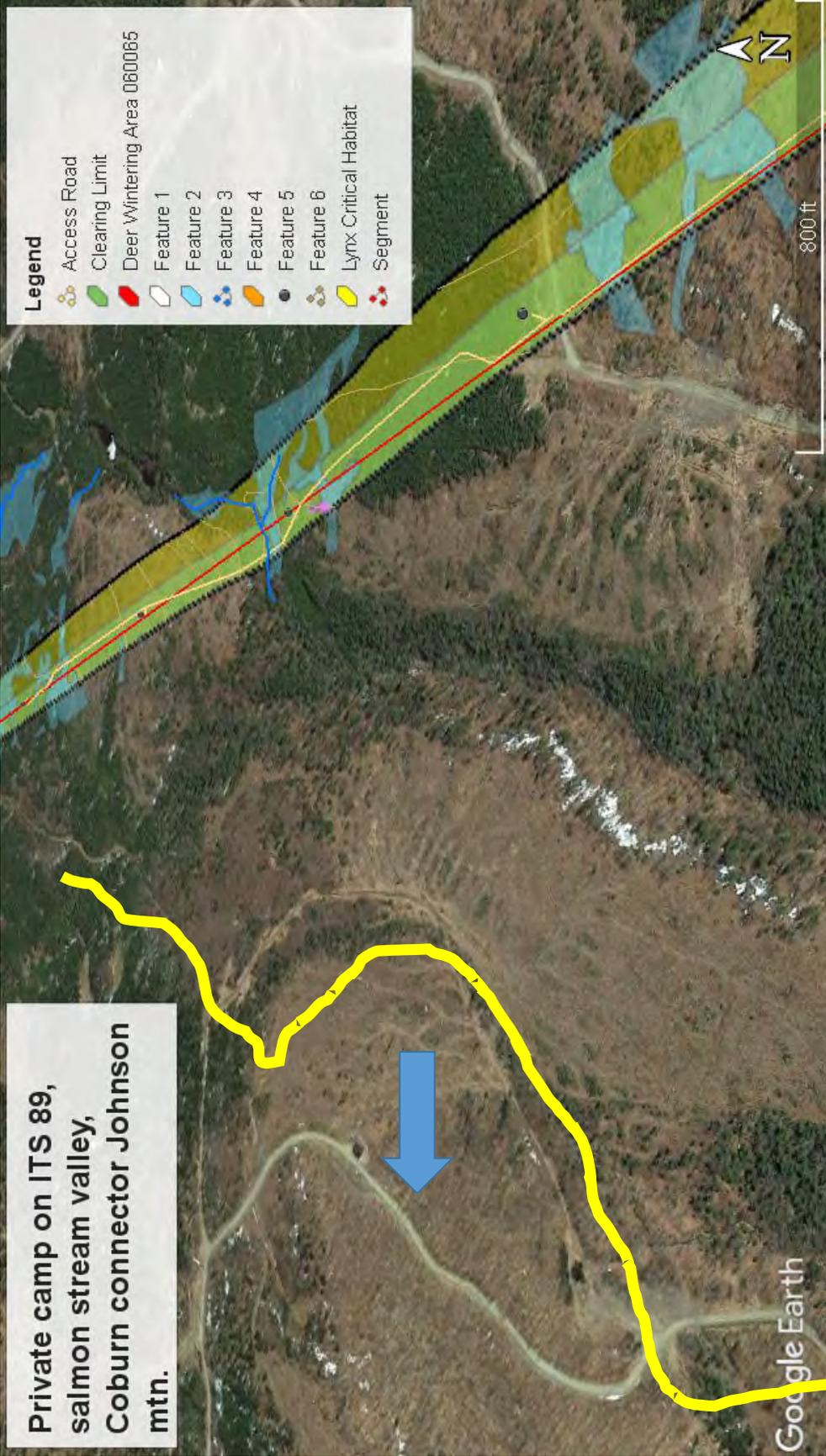
- Legend**
- Access Road
  - Clearing Limit
  - Deer Wintering Area 0600065
  - Feature 1
  - Feature 2
  - Feature 3
  - Feature 4
  - Feature 5
  - Feature 6
  - Lynx Critical Habitat
  - Segment

1000 ft

Judd Rd &  
Coburn Mtn  
Connector

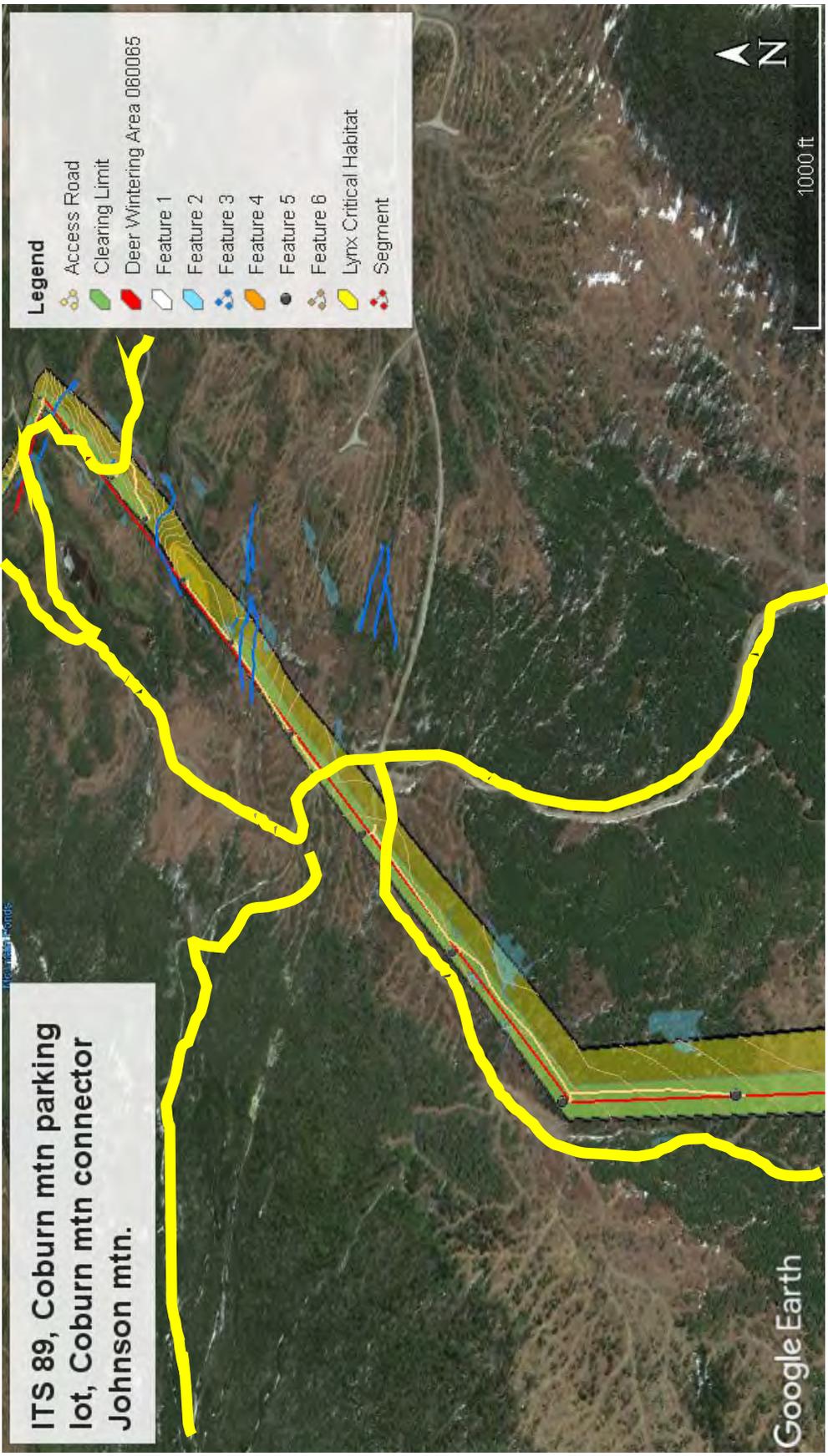
line on Coburn connector,  
1600-2100ft elevation, above  
trail with high visibility





Private camp on ITS 89,  
salmon stream valley,  
Coburn connector Johnson  
mtn.

ITS 89, Coburn mtn parking lot, Coburn mtn connector Johnson mtn.



Google Earth

1000 ft



# ITS 89 and North Shoulder Bypass trail

**Legend**

- Access Road
- Clearing Limit
- Deer Wintering Area 0600665
- Feature 1
- Feature 2
- Feature 3
- Feature 4
- Feature 5
- Feature 6
- Lynx Critical Habitat
- Segment

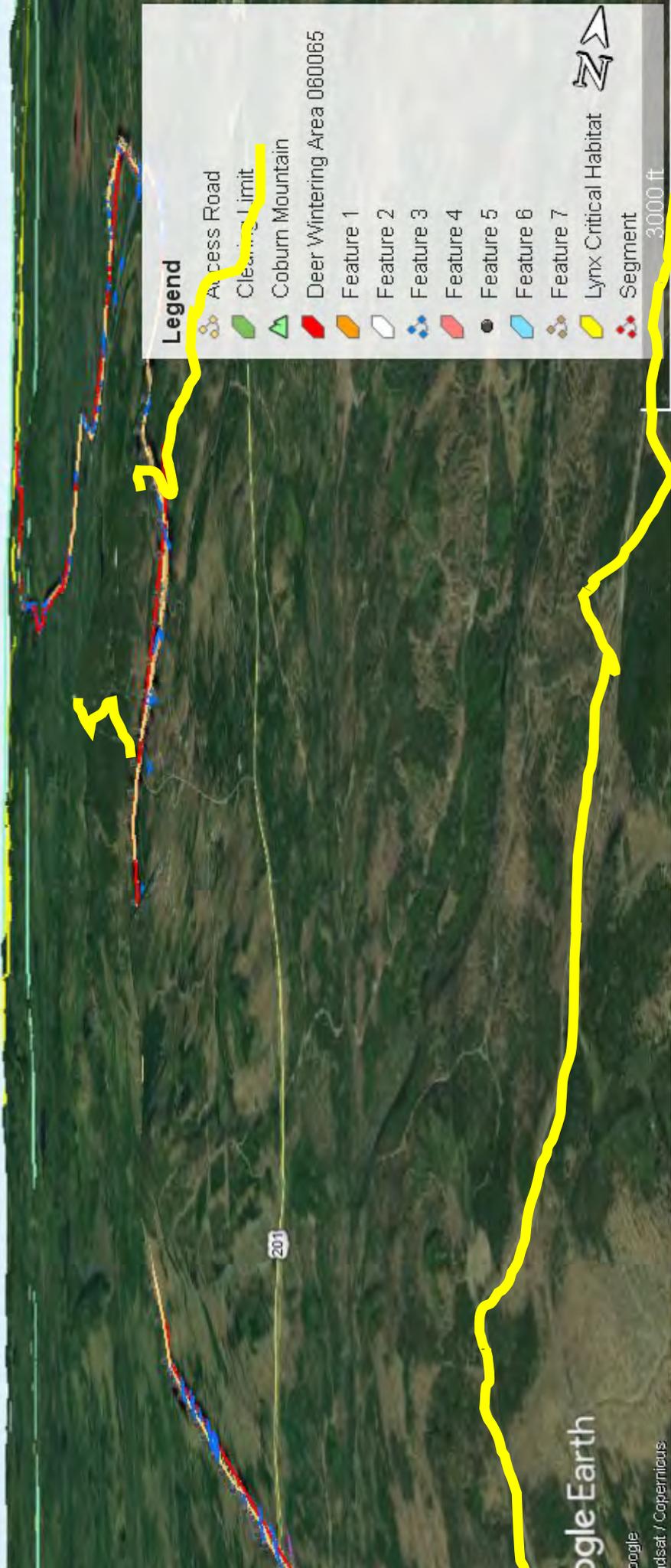


1000 ft

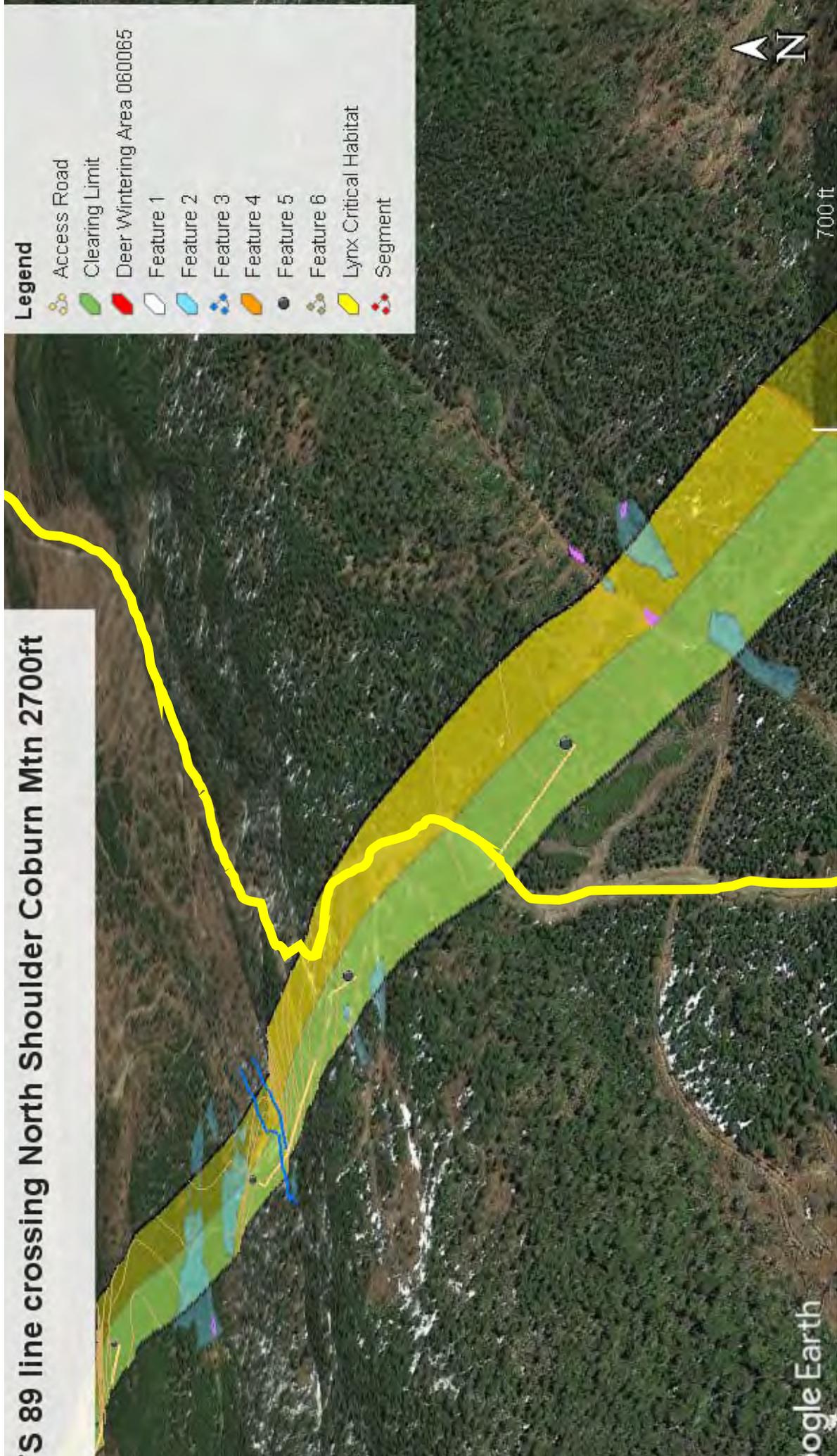
Google Earth



US 87 from Cold Stream mountain and looking toward Johnson and Coburn mtn( ITS 89 and Coburn connector and bypass trail



# S 89 line crossing North Shoulder Coburn Mtn 2700ft





# Wild Land

Conducted by YouGov on behalf of John Muir Trust

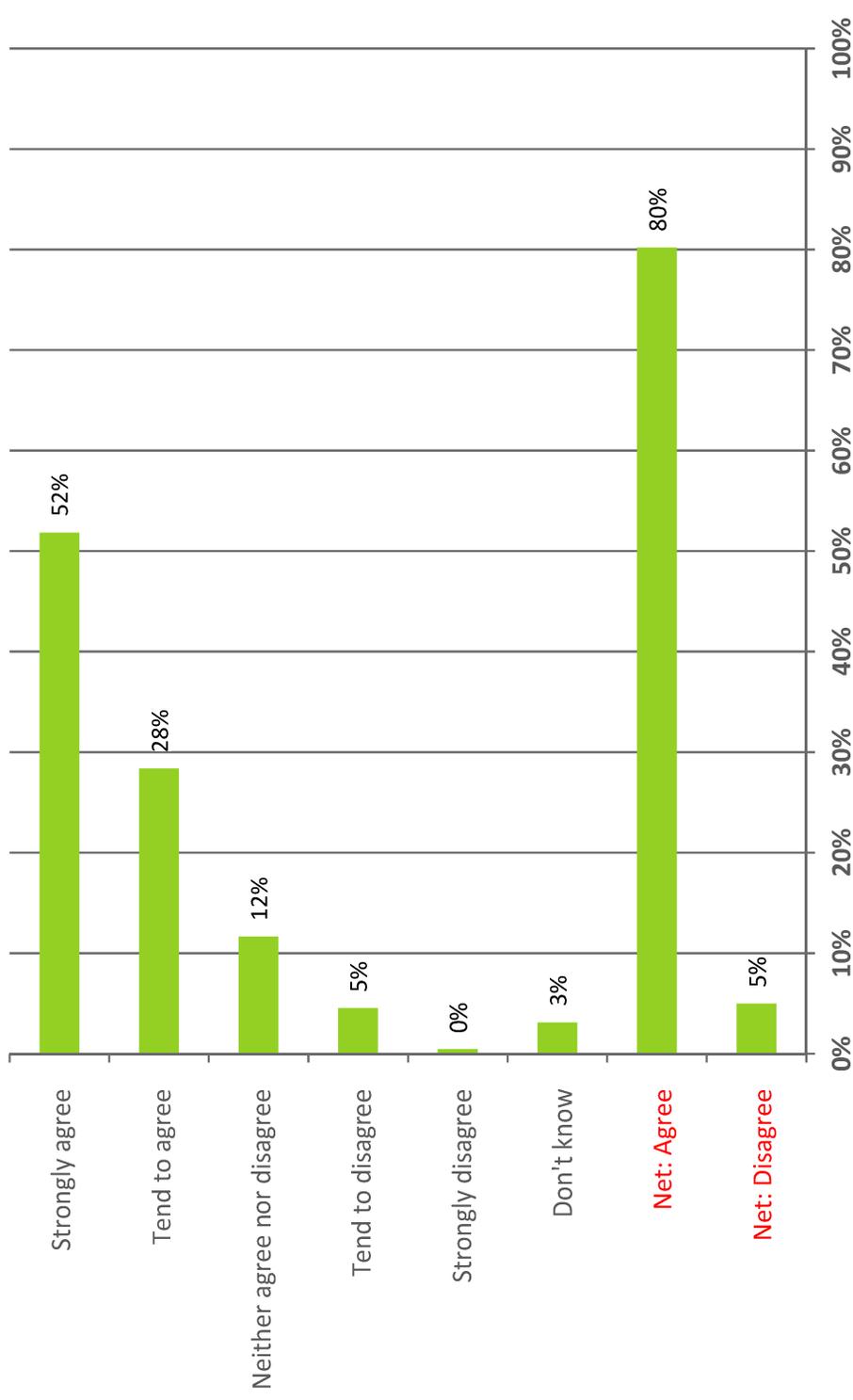
Fieldwork Dates: 18th - 22nd May 2017



# Wild Land

*SJW\_q1. For the following question, by "Wild Land Areas", we mean places that are rugged, remote and free from major human structures. To what extent, if at all, do you agree or disagree with the following statement?*

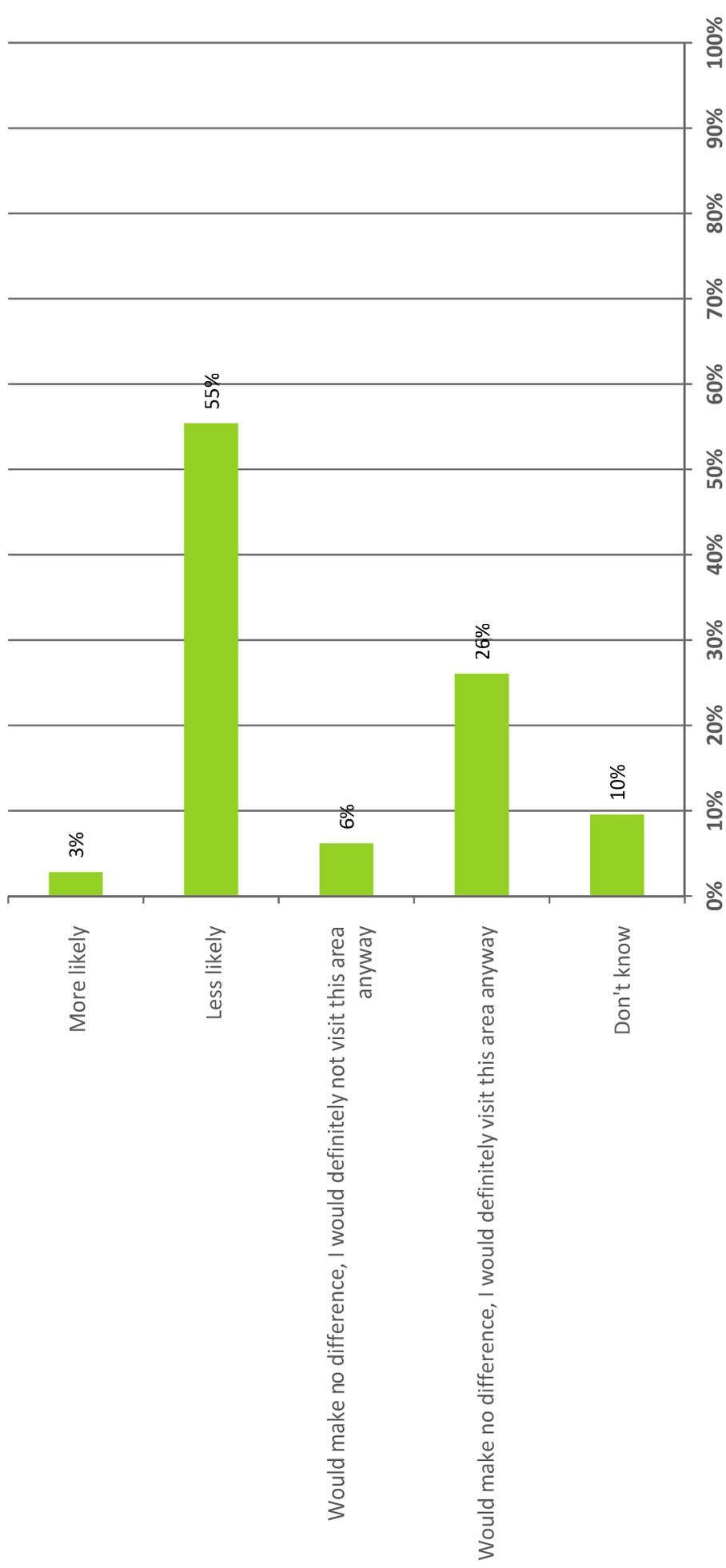
*"Wild Land Areas should continue to be protected in the future from large scale infrastructure, such as industrial-scale wind farms, major electricity transmission and super-quarries"*



Unweighted base: All Scottish adults (1028)

# Wild Land

*SIW\_q2. Would you be more or less likely to visit a scenic area which contains large scale developments (e.g. commercial wind farms, quarries, pylons etc.), or would it make no difference?*



Unweighted base: All Scottish adults (1028)

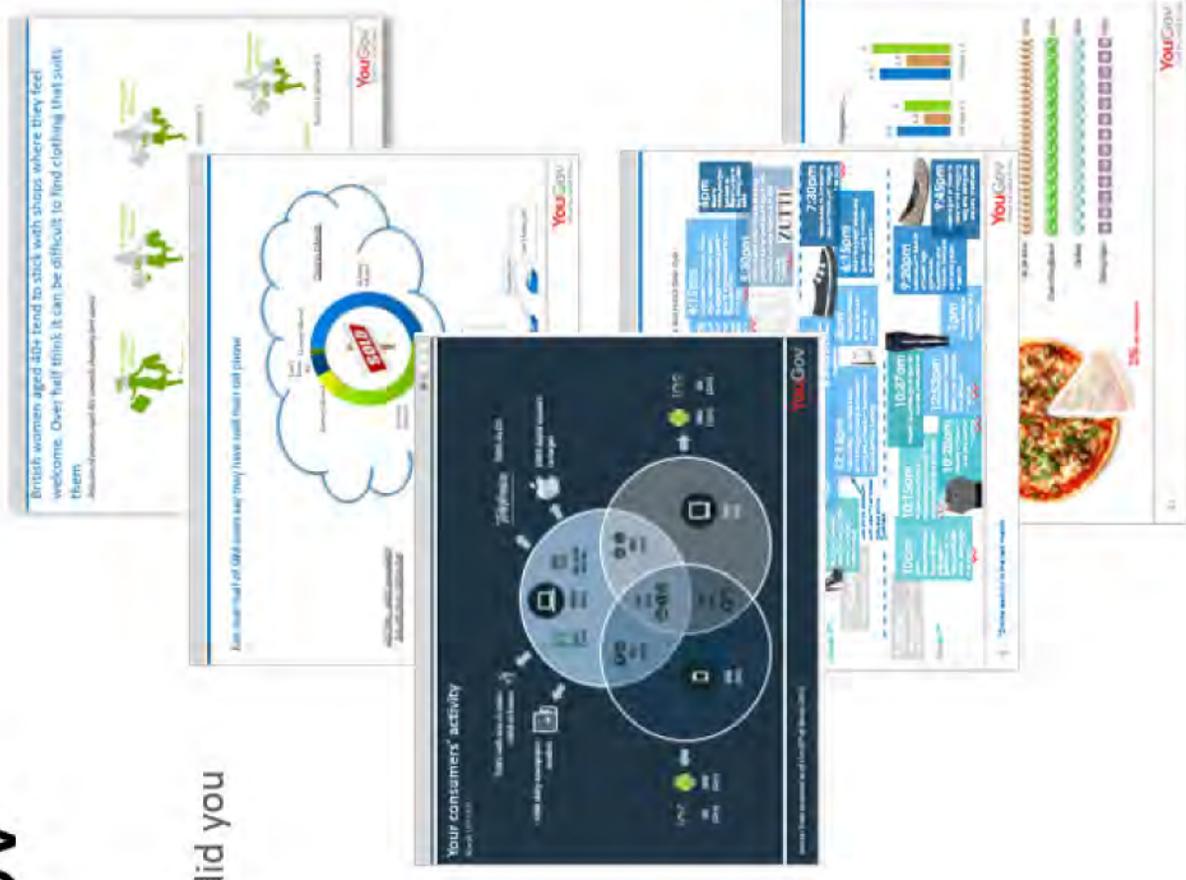
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# MAINE RIVERS STUDY

Final Report

State of Maine  
Department of Conservation

U.S. Department of the Interior

National Park Service  
Mid-Atlantic Regional Office

May 1982  
Electronic Edition August 2011  
**DEPLW-1214**

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## Section I. Major Findings

### 1. The State of Maine is unique in the Northeastern United States in the number and diversity of significant natural and recreational river resources that it possesses.

The Maine Department of Inland Fisheries and Wildlife estimates that there are 31,806 miles of permanently flowing rivers and streams in the state, a figure equivalent to one linear miles of stream for every square mile of land surface. Rivers vary in size from the long and wide Penobscot River which drains 8570 square miles to the short and narrow Rapid River and Grand Lake Stream. Over sixty rivers enter the ocean along the Maine coast and three rivers form the U.S. / Canadian International Boundary. Among these water resources are select quantity of rivers which are widely recognized for their outstanding values.

Important river resources include:

- a. 17 river gorges, 61 waterfalls, and 38 white water rapids identified as being outstanding geological or hydrological features with state-wide significance.
- b. More miles of undeveloped free-flowing rivers than any other state in the Northeast United States
- c. River corridor segments which provide habitat for diverse populations of rare and endangered plant species of state and national importance.
- d. Coastal rivers which provide significant habitat for northern bald eagle and shortnosed sturgeon, on the Federal Threatened and Endangered Species List.
- e. 192 miles of high quality river habitat for an internationally known landlocked salmon fishery and 22,000 miles of primary brook trout habitat known for its excellence throughout New England
- f. The only rivers in the eastern United States containing significant self-sustaining Atlantic Salmon runs, and, due to federal and state restoration efforts, the East coast's most heavily fished Atlantic sea run salmon river.
- g. Three rivers which together account for over 60% of the state's commercial alewife catch and a number of other coastal rivers which have the potential to become profitable commercial fisheries
- h. The only two stretches of Class V white water and the longest single stretch of Class II-IV rapids in the entire New England region.
- i. The longest and most popular extended back country canoe trips in the Northeast and over 4000 miles of other rivers suitable to boaters of all ability levels.

### 2. The Maine River Study has identified 4264 miles of rivers and river segments which possess significant natural and recreational resource values.

Maine rivers have been inventoried and analyzed to identify important river areas and to rank these areas according to their overall significance as unique and/or multiple value natural and recreational resources. The final ranking represents a synthesis of objective resource analysis and a consensus of opinion among resource experts and state river conservation interests.

Rivers, river segments and related tributaries identified as possessing significant natural and recreation resource values were placed in one of four significance categories, identified as rating A, B, C, and D. These categories represent a hierarchy of cumulative resource values, and are defined in the following manner.

River Rating Hierarchy:

- A** Rivers and related corridors on the "A" list possess a composite natural and recreational resource value with greater than state significance.
- B** Rivers and related corridors on the "B" list possess a composite natural and recreational resource value with outstanding statewide significance.
- C** Rivers and river-related corridors or specific areas on the "C" list possess a composite natural and recreational resource value with state-wide significance.
- D** Rivers and river-related corridors or specific areas on the "D" list possess natural and recreational values with regional significance.

The total mileage of rivers and streams in each of the categories is summarized in the following table:

Significance Category Rating	Number of Rivers	Total Miles of Main Segments	% of the State's Total River/Stream Resource	Total Miles including Significant Tributaries	% of State's Total River/Stream Resource
<b>A</b>	20	867.0	2.7	1663.5	5.2
<b>B</b>	18	698.0	2.2	1176.0	3.7
<b>C</b>	41	843.5	2.6	1152.5	3.6
<b>D</b>	23	262.0	0.8	272.0	0.9
<b>Total</b>	102	2670.5	8.4	4264.0	13.4

A number of rivers included on the study's B list have been identified as possessing specific resource values of highest importance to Maine river constituents. These rivers are therefore deserving of special efforts to maintain the identified outstanding resource values. These rivers and their corresponding values are as follows;

**Inland Fisheries Values:**

- Crooked River
- Grand Lake Stream
- Kennebago River

**Commercial Anadromous Fisheries Values:**

- Damariscotta River
- St. George River

**Whitewater Boating Values:**

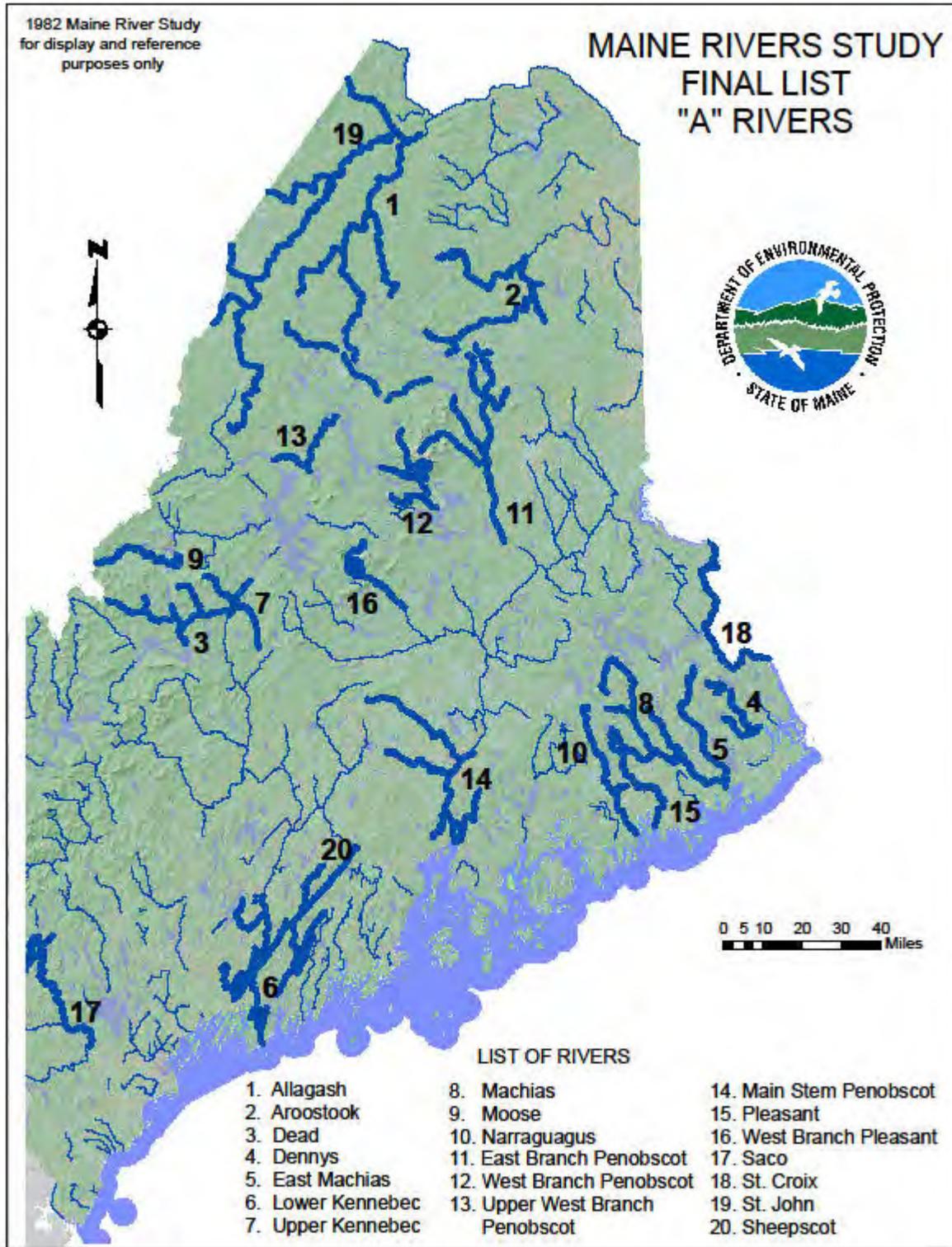
- Carrabassett River
- Rapid River

**Critical Botanic Values**

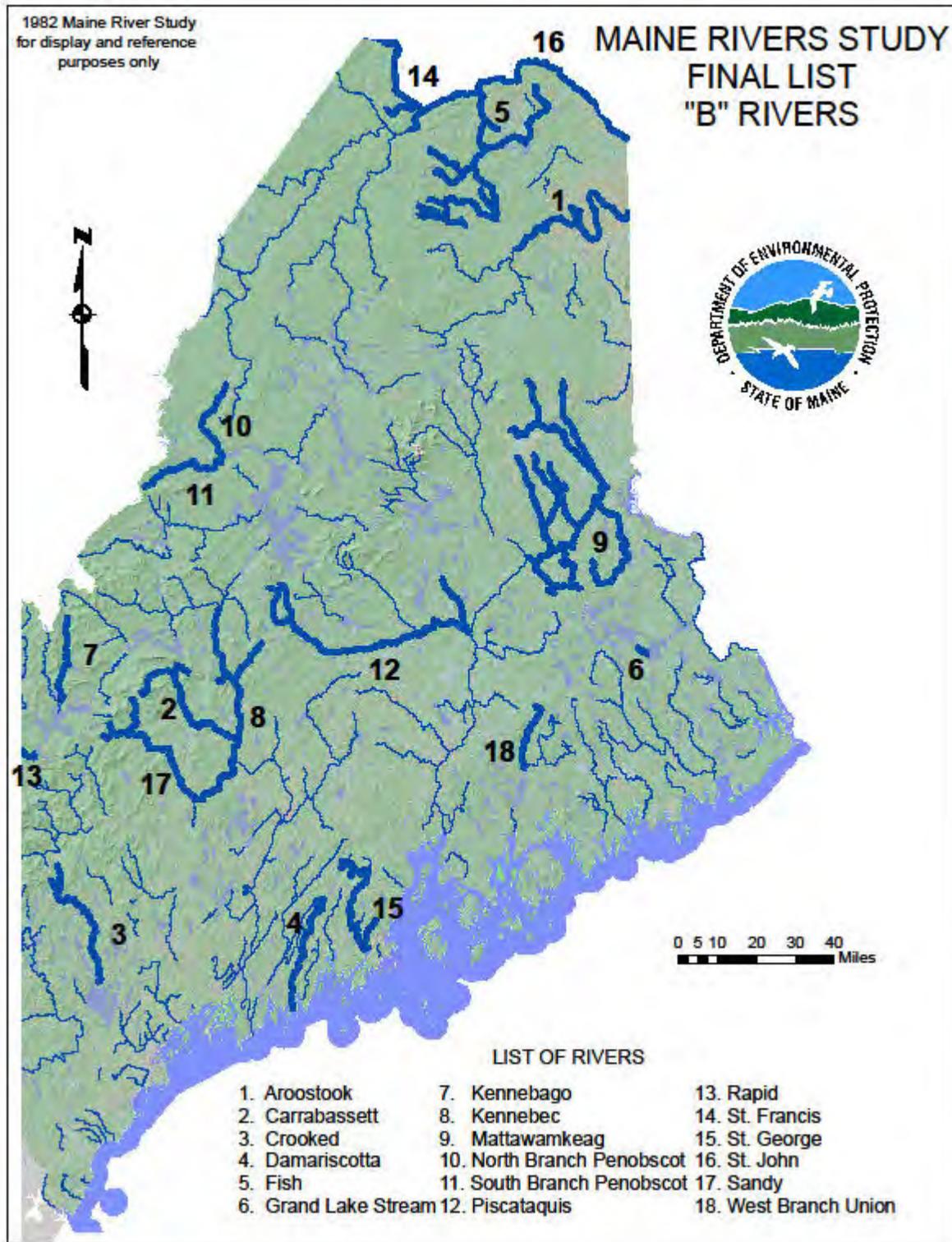
- St. John river
- Aroostook River

Maps identifying rivers and river segments included in the study's "A" and "B" significance categories follow.

**“A” Rivers Map and River segments**



“B” Rivers Map and River segments



3. The potential exists in Maine for the conservation of complete watersheds or river ecosystems, an opportunity unparalleled by few, if any, states in the Northeast.

A specific river segment does not function independently but instead, both affects and is affected by adjacent land areas, connecting segments, lakes and tributaries. This physical and biological interdependence of rivers and tributaries within a watershed provides the basis for the principle that a systems approach to water resources planning and management is both prudent and necessary. This is particularly so in riverine systems which are in a natural state.

The Maine River Study has identified a number of relatively large watersheds within the state which are of high significance as undeveloped and interdependent hydrologic units. These sub-basins are characterized by a general lack of major artificial river impoundments, minimal river corridor development, a high degree of hydrologic and ecologic interdependence, and a consistency of resource quality among all segments. These include:

- a. The upper St. John watershed including the Northwest, Southwest, and Baker Branches, and the Little and Big Black Rivers.
- b. The East Branch of the Penobscot watershed, including the Seboeis River and Wassataquoik Stream.
- c. The Aroostook and Big Machias watershed above Sheridan.
- d. The Allagash watershed.
- e. The Mattawamkeag watershed.
- f. The Fish River watershed, including the Fish Lakes Chain.
- g. The Machias River watershed in Washington County

4. Potential conflicts between hydroelectric development projects and significant natural and recreation rivers exist in the State of Maine.

Estimates of the total hydropower potential in the state (including both undeveloped sites and existing dam sites capable of being retrofitted) vary between 600,000 kilowatts and 1,200,000 kilowatts. Preliminary assessments of feasible hydroelectric sites on the study's A, B, and C rivers by Maine's Office of Energy Resources have identified 72 sites capable of producing 400,000 kilowatts of power.

Of the river segments identified on the Maine River Study's A list, Federal Energy Regulatory Commission preliminary permits are pending for 5 sites with a total generation potential of over 125 megawatts. These projects are located on the West Branch of the Penobscot, the Kennebec, the Aroostook, and the East Machias. A 500 kilowatt project is currently being constructed on the Pleasant River in Washington County. Twenty additional potential sites are located on "A" list rivers. "B" list preliminary permit applications include projects on the St. George, Rapid, Kennebago, Mattawamkeag, Piscataquis, and Aroostook rivers with a total generation potential of over 60,000 kilowatts.

The extent of the conflict between significant river resource areas and hydropower development vary according to the specific resource characteristics associated with a particular site. In many instances, resource impact will be minimal or can be mitigated or avoided through proper facility sizing and placement, fishway design, and/or water release scheduling. However, while the impact on river related resources will be minor for many potential projects, a select number of developments could significantly alter a river's character and destroy irreplaceable resources, some with multi-state or national significance.

Corridor land development and resources use may also impact river resource values with adverse effects occurring on water quality, wildlife habitat, user access, and scenic values. Again, conflict can often be minimized through proper planning which recognizes the resource values associated with the particular river area.

5. There is a significant base of citizen and public agency support for the conservation and sound management of the river resources of Maine.

River conservation interests in the state vary widely. Such interests include recreational boating and fishing, commercial boating and fishing, education and scientific research, wildlife preservation, water quality maintenance, and miscellaneous recreational interests. While these interests vary and sometimes conflict, an underlying consensus exists that rivers in their natural condition constitute a valuable resource to the State of Maine. There also appears to be a consensus among river interests regarding which rivers are most important and warrant conservation action.

In addition, there appears to be a public recognition of the need to balance the goals of hydroelectric development and river conservation, and a desire for the use of hydropower where compatible with the resource values of a river and where impacts of development are avoided or minimized.

6. A variety of alternatives are available within the local, State and federal government and the private sector to conserve and manage Maine's significant natural and recreational rivers.

The natural and recreational resources of Maine's rivers are extremely significant, diverse and complex. These river areas contain a mix of public and private land ownership in the form of existing parks, recreation areas, agricultural lands, historic sites, natural areas, forests and villages. Natural resources in some areas are interwoven with the fabric of existing communities. These "living or working river areas" contribute to the uniqueness, quality, and resource value of the areas from a State and National perspective.

In addition to the importance of the river corridor resources, there appears to be a base of public agency and citizen support for improved management and enhancement of these resources. The State and local jurisdictions as well as private groups and citizens have committed themselves to conserve and enhance river areas throughout Maine. As strong as the support is for improved management of Maine's rivers, so are the feelings of a need for local control and private stewardship. Indications are that proposals for the conservation of Maine's rivers should be initiated and developed at the State and local level.

In this regard, no single level of government or existing system of parks, regulations, recreation areas, programs or preserves can be expected to conserve and manage Maine's rivers. Only through the shared responsibility of the several levels of governments and the private sector, can the significant natural and recreational values of the State's rivers be conserved or enhanced.

A coordinated application of existing government programs, consistent with varying river area goals, could result in significant economic benefits and will support federal, State and local conservation and enhancement efforts.

## II. INTRODUCTION

On June 22, 1981, Governor Brennan released the Energy Policy for the State of Maine. The hydropower section of the policy directed that:

**“The Department of Conservation, working with environmental, economic, energy and other appropriate interests, should identify river stretches in the State that provide unique recreational opportunities or natural values and develop a strategy for the protection of these areas for submission to the Governor.”**

In response to this directive, and as a continuation of the State’s ongoing efforts to conserve Maine’s significant rivers, the Department of Conservation initiated the Maine Rivers Study. The U.S. Department of the Interior, National Park Service’s Mid-Atlantic Office, as part of their ongoing river conservation technical assistance to the State, has provided staff to conduct this study.

The purpose of the study is two-fold. The first is to define a list of unique natural and recreation rivers, identifying and documenting important river related resource values as well as ranking the State’s rivers into categories of significance based on composite river resource value. The second purpose of the study is to identify a variety of actions that the State can initiate to manage, conserve, and where necessary, enhance the State’s river resources in order to protect those qualities which have been identified as important.

### III STUDY METHOD AND PROCESS

Introduction – Each of Maine’s rivers and major streams were assessed during the course of this study to identify the State’s unique natural and recreation rivers. The method used to identify and rank Maine’s rivers, prepared in cooperation with the River Basin Subcommittee of the State’s Land and Water Resource Council, was designed to:

- a. Rely on existing quantitative and qualitative research information.
- b. Rely on information from recognized river resource experts
- c. Use a “systems” or river-ecosystem approach of analysis which recognized the relationships and interrelationships of rivers, their tributaries and watersheds.
- d. Incorporate public and expert input into the evaluation process

The study process was intended to not only develop an objective and factual base of information on Maine’s rivers, but also a consensus among river experts regarding the most important rivers in the State.

The method used is based on the following five step process.

#### **Step 1 – Identification and Definition of Unique River Values**

The first step in the study identified unique recreation and natural river categories. These categories, selected by the study team and the River Basin Subcommittee, were used to serve as a framework for the collection and analysis of river information. The unique natural river categories selected for analysis included:

- 1) geologic and hydrologic features (gorges, waterfalls, etc)
- 2) critical and rare species of plants and wildlife (bald eagle wintering areas, etc)
- 3) undeveloped river corridors
- 4) scenic river corridors (river areas with outstanding views, visual diversity, etc)

The categories selected for unique recreational river areas included:

- 1) anadromous fisheries (salmon runs, etc)
- 2) inland fisheries (trout streams, etc)
- 3) whitewater boating (areas with rapids)
- 4) canoe touring (areas for canoe boat trips)
- 5) backcountry excursion boating (areas for extended wilderness trips)
- 6) river related historic sites with national significance

Once these categories or “types” of unique rivers and river segments were identified each category was described and defined in detail.

To help determine which rivers or river segments possessed resource values of regional or greater significance, a set of standards were established for each category. These standards serve as minimum “threshold” criteria to determine which rivers should be considered for further evaluation.

The specific criteria for each natural and recreational river category and the evaluation method used to identify qualifying river areas is described in Section IV of this report.

#### **Step 2 – Identification of Significant River Resource Values**

The second step of the study process involved the identification of those rivers and river segments which met the natural and recreation river category criteria. River areas were identified through a review of existing sources of information (canoe guidebooks, natural area studies, previous river inventories, etc) and through discussions with various government and private sector river experts. Rivers which met or exceeded the category criteria were identified on the Preliminary Draft List of Rivers Under Evaluation released in November 1981. This list of more than 120 rivers and river segments was distributed to public and private interests for review and comment.

Each of the rivers and river segments on the Preliminary Draft List was researched by natural and recreation river category, and river values were systematically identified. The Preliminary List and documentation of river values served as a basis for subsequent analysis.

### **Step 3 – River Category Evaluation**

The next step of the study process focused on the evaluation and detailed documentation of river values by specific category. With assistance from resource experts all rivers and river segments identified as unique or significant in a given category were further inventoried and analyzed in detail to substantiate river values. The results of this analysis were recorded on lists by river category. These lists of rivers represent a culmination of the river evaluation, documentation and expert review process and are judged to possess resource values of regional, statewide, and greater than statewide significance.

### **Step 4 – River Category Synthesis**

River information collected, evaluated and documented in earlier steps was combined in an effort to summarize all of the natural and recreation values associated with particular river segments and to connect adjoining river segments which possess similar values.

To help simplify the recording and display of river values a matrix was used. The matrix identified the total number of resource values associated with each river segment and highlighted those areas of statewide or greater than statewide significance. New river segment descriptions were defined using the following general guidelines.

1. Where a river possesses a combination of overlapping natural and recreation values, a composite river segment is identified with the outer boundaries of the overlapping segments determining the boundary of the entire river area.
2. A tributary stream which flows into, and is connected to a larger river area is included in the larger river segment description if the tributary stream: a) possesses natural or recreation values consistent with those of the main river area, and/or b) significantly enhances the overall value of the larger river segment's resources.
3. A tributary stream with natural or recreation values greater than those of a connecting main river area is listed separately from that area.
4. Larger connecting rivers have been listed as tributaries to a river system in certain unique situations (i.e. Big Machias River in the Aroostook River watershed), where: a) the rivers are free-flowing and within an undeveloped watershed; b) the rivers in the watershed exhibit a high degree of hydrological and ecological interdependence.

Following the combination of rivers and associated tributaries, river segment descriptions and resource values were revised and displayed on a matrix.

Rivers or river segments with related resource values which have been determined to be the state's most significant in a specific resource category were identified on a matrix with an asterisk. These resources possess greater than state or national significance, related to the distribution and rarity of the resource value.

### **Step 5 – Comparative River Evaluation**

The combined unique and significant natural and recreational resource values of all river segments were evaluated on a comparative basis to determine their relative importance within the State of Maine. Each of the rivers from the Preliminary Draft List were ranked and placed into one of four categories of river resource significance ranking. These categories, identified as A, B, C, and D, represent a range of river values, from areas which are greater than that of State significance to those of regional importance.

Rivers and river segments were placed within particular categories based on the number and significance of various river values. The final river ranking scheme recognizes rivers which have a variety of significant values as well as importance due to specific unique resource qualities.

**River Ranking Criteria** – The criteria used to place rivers within the four categories are as follows:

**“A” Rivers**

1. River or river segments possessing six resource values with regional, statewide or greater than statewide significance in a specific resource category.
2. Rivers or river segments possessing two or more resource values which are recognized to be some of the State’s most significant in a given resource category. Included within this category are rivers providing important habitat (defined as self-sustaining viable runs or significant restoration efforts producing fishable populations) for the nationally significant Atlantic sea run salmon.

**“B” Rivers**

1. Rivers or river segments possessing four or five resource values with regional, statewide or greater than statewide significance in a specific resource category.
2. Rivers or river segments possessing one resource value which is recognized to be one of the State’s most significant in a given resource category.

**“C” Rivers**

1. Rivers or river segments possessing one to three resource values with regional, statewide or greater than statewide significance in a specific resource category.

**“D” Rivers**

1. Rivers or river segments possessing one or more resource values of regional significance

Using the aforementioned criteria, rivers and river segments were identified in the Draft Final List of Rivers Under Evaluation released in February 1982. This list of rivers was distributed to public and private interests for review and comment, and copies of the list were made available through a statewide news release.

In addition, a series of public meetings in Bangor, Presque Isle, Machias, and Lewiston were held to solicit input. Public comments, and additional information where appropriate, were incorporated in final revision of the Draft Final List.

Thus, the Final List of Rivers released in April 1982 reflects the results of a comparative and cooperative river evaluation process which incorporates factual, objective information and the consensus opinion of numerous diverse river interests.

## IV. RIVER RESOURCE CATEGORIES

### Unique Natural Rivers – Overview

This section of the final report will outline the process of identification, documentation, and evaluation of Maine's "unique and natural rivers". The focus here is on these natural resources that make a river important:

- an absence of development within the land corridor adjacent to the river
- the presence of a variety of habitats for the fauna and flora
- uncommon and unique features like bedrock formations
- rare and threatened plant and animal species
- critical ecologic areas
- scenic waterfalls and vistas
- National Historic Sites and National Natural Landmarks

The combination of the wide scope of this study and the limited time allocated did not allow for the collection of new information or field work on a river by river basis. Rather, the emphasis was on the gathering and organizing of existing information from a variety of sources and experts. State and Federal resource management agencies were of help in this section of the study, and will be cited in discussion on the appropriate resources.

Much of the river-related resource information was taken from statewide assessments of natural resources by the Maine Critical Areas Program, a part of the State Planning Office. The groundwork for this program was laid in 1972 with the Maine Natural Areas Inventory, a report which attempted to identify the most significant natural areas around the state. After this study was issued, it became clear that additional work was needed for the systematic evaluation of the relative values of natural resources of the state, in order to identify which areas were the most unique or significant.

In 1974, the State Legislature passed an act establishing a state Register of Critical Areas, and charged the State Planning Office with initiating a Critical Areas Program designed to identify, document, and conserve statewide critical natural areas through management agreements and donation or acquisition of property. Primary emphasis in the program at this time is on identification and registration of critical areas.

The kinds of critical areas evaluated by the program primarily correspond to the definition of "historic and fragile lands," from U.S. Senate Act 268, 93<sup>rd</sup> Congress.

*“ . . . lands where uncontrolled or incompatible development could result in irreversible damage to important historic, cultural, scientific, or esthetic values, or natural systems which are of more than local significance, such lands to include shorelands of rivers, lakes and streams, rare or valuable ecosystems and geological formations, significant wildlife habitats, and unique scenic or historic areas. . . .”*

Other natural resource experts with important contributions to the study included wildlife resource experts from the University of Maine at Orono, Maine Department of Inland Fisheries and Wildlife, and U.S. Fish and Wildlife Service, who were helpful in the identification and documentation of significant river related wildlife resources. The prior assessment of the state's rivers by the National Park Service for the Nationwide Rivers Inventory was the primary source of information for the evaluation of corridor development and scenic resources of the rivers in Maine.

### A. GEOLOGIC/HYDROLOGIC FEATURES

#### Introduction

The majority of bedrock formations of the State were originally deposited as sediments on the bottom of the ocean during the Lower Paleozoic era (hundreds of millions of years before the present), as well as being formed from molten rock material from deep within the earth. Later in the Paleozoic period during the building of the Appalachian Mountains, these sediments were subjected to intense pressures and temperatures causing them to become folded, faulted, and uplifted, accompanied by intense volcanic activity. Today these durable igneous and metamorphic rocks are exposed in the Mountains of New England upland section of the state, as well as along parts of Maine's rocky coast. The finest examples of bedrock features – such as waterfalls, gorges, and fossils – are distributed in these areas of Maine.

Many of the bedrock materials outcropping along the banks of streams and rivers in northern Maine contain traces of organisms and plants called fossils, which once lived in the early marine environments hundreds of millions of years ago. The majority of these river related fossil localities lie within a band of non-to-partially metamorphosed rocks which sweeps across the central part of the state, ending in the northeastern corner of Aroostook County. Most of these fossils are marine vascular plants and invertebrates from the Lower to Middle Paleozoic era.

During the Quaternary glaciation, the state was covered with a mile thick accumulation of snow and ice, a much larger version of the glaciers which survive today in the European Alps and Canadian Rockies.

As the glaciers from Laurentide Ice Sheet moved southward from eastern Canada they scoured the bedrock formed millions of years earlier, shearing off the tops of many hills, ridges, and mountains. Approximately 10,000 years ago this ice began to melt, leaving behind a watery landscape of lakes, ponds, streams, rivers, and wetlands.

A veneer of boulders, sand, gravel, and clay also remained to blanket the landscape, testimony to the tremendous erosive power of the slowly moving glaciers. These deposits of glacial sediments formed many of the state's lakes by damming valleys widened and deepened by the glaciers. The hydraulic action of glacial meltwater initiated the process of erosion on underlying bedrock material, occasionally encountering cliffs or abrupt jumps in the landscape, and forming waterfalls. Normally, these hydraulic features degenerated into whitewater rapids as the bedrock eroded. For a waterfall to remain in a landscape, one of two conditions must have been present. Either the flow of the stream was insufficient to significantly erode the bedrock, or the rock contained a particular feature (such as cracks or joints) which allowed the waterfall to maintain itself as erosion proceeded. In this situation, the falls would migrate upstream with time, excavating a downstream gorge. Waterfalls also resulted from streams selectively eroding areas of weakness in the bedrock.

Many interesting surficial geologic formations were formed at the margins of the melting glaciers in the central and southern areas of the State; many of these glacial deposits are the finest examples in the northeast region. Surficial formations related to rivers include linear ridges called eskers or horsebacks, intricately braided streams with complexes of river islands, rivers with sinuous meander complexes, glacial outwash plains, glaciofluvial marine deltas, and washboard moraines.

## 1. Definition

There are river-related physical features in the state whose location and distribution are controlled by the structure and composition of the bedrock, by the surficial geology and by natural geologic processes including weathering and erosion.

Towering waterfalls, steep-walled granite gorges, systems of lakes, ponds, and wetlands, and surficial glacial formations are among these unique physical features. The distribution of these resources is a function of the geologic events occurring hundreds of millions of years ago, as well as resulting from events occurring after the melting of more than one mile of ice which covered Maine until approximately 10,000 years ago.

## 2. Significance

**a. Scientific** – Many of the geologic features associated with rivers have unique importance for scientific research. These features (such as glacial eskers, fossils, or gorges) are useful in the research of past geologic processes which affected the distribution and composition of rocks and minerals on the earth, as well as understanding present-day geologic processes changing the world.

Gorges and waterfalls contain large areas of steam washed and exposed bedrock, important in a state where most bedrock areas are obscured by glacial drift making scientific study difficult if not impossible. Waterfalls are also important geologic sites for study because they are not accidental features in a landscape; their location is a function of the bedrock geology and / or glacial history of an area.

The scientific study of the fossils found in the rocks of the state has greatly affected the understanding of the State's paleogeographic history and the knowledge of the types of ancient forms of life which once lived in what is now Maine. Some of the state's fossil sites are widely known and well-documented localities and have yielded specimens of museum quality; many are the finest found in the world. Still other sites have been discovered only recently and deserve more detailed study.

One river-related geologic locality which is reportedly crucial to the understanding of central Maine geology is Ripogenus Gorge. The Gorge, which contains a wide variety of sedimentary, igneous, and metamorphic rock types; displays significant geologic structures in addition to being an important Silurian fossil locality; was recently recognized by the National Park Service as a potential National Natural Landmark.

**b. Scenic / Recreational** – Because of their scenic and esthetic qualities, waterfalls and gorges are often linked to local and regional tourist economies serving as camping or fishing sites or scenic roadside vistas. Some gorges have large rapids run by commercial whitewater rafting interests which bring dollars into local areas.

**c. Historic** – The rivers of Maine are intimately tied to the State's history because of their importance as traditional transportation routes. Many gorges and waterfalls presented obstructions to former log running and have legendary significance. Others have since been modified by channel improvements for log running, or obliterated by downstream dams for hydroelectric generation. Occasionally, waterfalls and gorges were the sites for mills or small towns and have associated historic buildings with state and national significance.

**d. Ecologic** – Gorges and waterfalls often contain a great diversity of hydrologic and ecologic environments, and a variety of habitat for flora and fauna. These environments may include flatwater above the hydrologic feature, ledges, rapids, and shooting flow through the gorge or waterfall, with gravel floodplains and rapid water downstream. Ravines, gorges, and streamside cliffs are often more shaded, with higher humidity than most environments, and many species of rare plants are known to grow in such areas. Sandy glacial outwash plains are another river-related geologic feature which have a unique association of plants. The droughty infertile soils are often maintained as blueberry barrens, supporting the cultivation of wild blueberries.

### 3. Standards for Inclusion

Unique and significant geologic and hydrologic features in Maine are studied on a continuing basis by the Critical Areas Program. The physical resources studied to date include bedrock fossil localities, eskers, waterfalls, and gorges. Significant white water rapids in the state have also been identified by this program, and their findings were incorporated into the assessment of recreational boating by the Maine Rivers Study.

Geologic and hydrologic features meeting the significance criteria defined by the Critical Areas Program are recommended for inclusion on the Register for Critical Areas; at this time, 61 waterfalls and 19 gorges have been recommended. Significant eskers and fossil locations have also been added to the Register.

River-related geologic features recognized by the National Park Service in the Nationwide Rivers Inventory as important because of their uniqueness, rarity, or scarcity (one-or-two-of-a-kind nature, or having significance for a particular region of the state) were also included in this study. These features included reversible falls, glacial outwash plains, river-linked lake systems, and river meander complexes.

### 4. Evaluation Method and Criteria

During the assessment of the State's geologic and hydrologic features, general criteria were used to identify significant river-related physical features. These criteria were developed in order to identify areas of geologic and hydrologic importance associated with rivers which deserved recognition by this study, but had not been comprehensively studied on a statewide basis. These criteria included the following:

**a. Scarcity:** a resource with extremely limited distribution in the State, New England region, or United States; distinctly unusual, rare, one-or two of a kind features.

**b. Diversity of values:** significant physical features occurring in association with other values (i.e., a gorge which is a classic geologic type locality with habitat for endangered bald eagles and high recreational value).

**c. Susceptibility to human activities;** features which could be degraded or destroyed by human presence or activities.

**d. Ecologic significance:** resource sites which contain a variety of habitats and ecological values.

**e. Historic value:** features that were involved in the settlement, transportation, or early industrial activities of the State. A site was considered significant historically if: a) it had interesting military history; b) it was an important industrial or economic site; c) it was important in 19<sup>th</sup> century log driving activities.

**f. Scenic / Esthetic value:** resource features which were important to the local and regional recreation and tourist economies. A feature was considered to have outstanding scenic attributes if: a) it was of large magnitude in some way (length, depth, overall size); b) had good potential or existing vistas, and c) it had a diversity of hydrologic elements including rapids, chutes, flumes or falls.

**g. Scientific attributes:** a site was considered geologically outstanding if any one of the following criteria existed: a) it was a type locality or best exposure of a geologic formation; b) it had an exceptional display of bedrock structures; c) it displayed exceptional hydrologic features.

The fossil sites were considered scientifically significant if meeting on or more of the following criteria:

- 1) Areas which are the type of locality of a particular fossil (i.e. The area where there first specimens known to science were collected).
- 2) Areas containing a unique fossil assemblage, index fossils, and/or fossils useful for scientific age determination and correlation work.
- 3) Areas with educational value and frequently visited by school groups.

The following rivers were recognized by experts as having outstanding river related geologic resources and highlighted on the Final List of Rivers with an asterisk:

Upper Kennebec River  
West Branch Penobscot River  
West Branch Pleasant River

## **5. Information Sources and Expert Review**

The following references were used by the study team to identify and document resource values.

**Waterfalls in Maine and Their relevance to the Critical Areas Program of the State Planning Office;**  
Brewer, Thomas, 1978

**Gorges in Maine and Their relevance to the Critical Areas Program of the State Planning Office;** Brewer,  
Thomas, 1978

**A Preliminary Listing of Noteworthy Natural Features in Maine;** Center for Natural Areas, June 1976.

**Significant Bedrock Fossil Localities in Maine and Their Relevance to the Critical Areas Program;**  
Forbes, William H., 1977

**Nationwide Rivers Inventory;** U.S. Department of the Interior, National Park Service, Mid-Atlantic Regional Office, Philadelphia, PA, 1981

Dr. Thomas Brewer of Boston College, Boston Massachusetts, and Janet McMahon and Harry Tyler of the Critical Areas Program within the State Planning Office provided information and expert opinion to the study team.

## **B. RIVER RELATED CRITICAL/ECOLOGICAL RESOURCES**

### **Introduction**

The State of Maine possesses an unusual abundance of water and related land resources, having more miles of river and more lakes per square mile than any other state in New England, as well as the highest percentage of land covered by forest of any state in the United States. Of the 19.8 million acres of land in Maine, 17.4 million acres (approx 88% of the state) is in forest, and 1.5 million acres (7% of the state) is covered by inland fresh water. This figure does not reflect areas of bogs and wetlands which are perennially wet or flooded for certain seasons of the year.

The topographic relief in Maine has produced a complexity of terrestrial ecosystems, which for the purpose of this discussion can be grouped into basic vegetative types: Alpine tundra, Northern hardwood spruce-fir, Northeast spruce-fir, transition hardwood-conifer, and transition hardwood. With the exception of Alpine tundra, any of these major vegetative associations may be found along a river corridor, depending on the altitude of the area, as well as other influencing factors such as soil type, steepness and aspect of slopes, and amount of moisture present.

Just below the alpine areas and on the tops of many of the lesser peaks in the White Mountains is the Northeast spruce-fir association, usually consisting of pure fir forest just below timberline, with red spruce increasing at lower elevations. These conifer forests grade into Northern hardwood spruce-fir forests downward, the transition occurring at about 2500 feet in the White Mountains. These forests contain a variety of hardwood and conifer species. Some of the conifers such as red spruce and fir drop out at lower elevations and in the more southern portions of Maine. Transition hardwood-conifer forests, found in extreme southwest Maine and along lower valleys in other parts of the state, have a greater number of southern species like white ash, black birch, black cherry, and increasing concentrations of red oak, white oak and hickory.

Soils throughout the state are largely developed from glacial tills and stratified drift, tending to be podsoles (soils with upper horizons depleted of plant essential nutrients) at higher elevations under spruce-fir forests, and brown podsolics at lower elevations. Most of the soils are acidic, although limestone areas throughout the state often have unique calciphile (or calcium loving) vegetation, occasionally with associations of rare and endangered plant species.

These are other special types of river-related vegetation in Maine found with certain types and conditions of soils. Areas of coarse sandy glacial outwash along many rivers support pitch pine barrens. In some cases these areas are maintained in a lower successional stage as blueberry barrens by controlled burning and other management practices.

White pine is another species that grows well in glacial outwash areas, where it can reproduce without competition from other species of trees. This tree also grows well on steep-sided riparian areas (along rivers, streams, lakes, and ponds) in a variety of soil conditions. The vast majority of the immense pines which once grew along the rivers of Maine have been cut, although a few stands of old growth white pine exist in the state. The most notable example of these is The Hermitage stand along the West Branch of the Pleasant River.

Low, cool, poorly drained sites in Maine often support classic bog ecosystems, with typical acid peats resulting from the accumulation of sphagnum moss. These bogs are important natural areas, supporting many endemic, unique, or peripheral species of plants (especially orchids) which are found only in these unusual biotic systems. A special type of bog forest characterized by Eastern Atlantic or coastal white cedar is found in some parts of mid-coastal and southeastern Maine. Another unique type of bog sometimes within river corridor areas is the raised bog, formed in depressions on drier ridges surrounding bogs. A mound several feet high is formed by the accumulation of sphagnum moss, while water is retained by the sponge-like consistency of the moss.

Of all the various ecosystems associated with rivers, perhaps the most significant are the wetlands, the transition zones between the terrestrial and the aquatic environments. Wetlands have outstanding natural value (for the production of photosynthetic oxygen, as catchments for flood waters, pollution filters, and aquifer recharge areas and for species habitat) as well as significant economic value, supporting the important statewide hunting, fishing, and trapping recreational community. Inland wetlands have primary importance as feeding, nesting, and rearing areas for waterfowl.

Although generally associated with waterfowl, wetlands provide habitat for many furbearing animals as well. Otter, beaver, muskrat, mink, and others are directly dependent on these areas for their food and shelter. Other species such as deer, woodcock, and hare often inhabit areas bordering these wetlands. In addition to the previously mentioned furbearers and game animals, numerous non-game species depend on wetlands to supply some or all of their life requirements. Tidal rivers and salt marshes have plants which are adapted to changes in water level, salinity, temperatures, and nutrients. These coastal rivers and wetlands serve as resting areas for spring and fall migrations of waterfowl, as well as wintering areas for waterfowl and raptors, including the endangered bald eagle.

There are other areas associated with rivers that support unusual assemblages of plants, including certain relict and endemic species. These are highly specialized species, influenced by subtle changes in sunlight, humidity, temperature, and soil moisture, texture and composition. These areas include cliffs, where plants are subjected to fluctuations and extremes of light, temperature, climate, and erosion, as well as ravines and gorges which have shaded, humid conditions preferred by certain species.

## **BOTANIC CRITICAL / ECOLOGIC RESOURCES**

### **1. Definition**

There are over 2,100 species of vascular plants known to occur in the State of Maine. Of these, 318 species are considered scarce or rare. The Critical Areas Program has identified 97 species known to inhabit riverine areas. Significant habitats for vascular plants include cliffs, gorges, river and stream banks, pond and lake margins, bogs, and wetlands.

The causes of the rarity of these plants can be difficult to define at times, although the majority of the rare plants can be identified in one or more of the following categories, according to the Critical Areas Program:

- a. Species with scarce habitat within the State (although more common elsewhere)
- b. Species at the northern or southern limit of their range.
- c. Species with a very restricted natural range (endemics).
- d. Species with seriously declining populations.
- e. Species which, for a variety of reasons, are rare throughout their entire range.

The definition of rarity can be complex, since it is a function of the actual limited distribution of the plant in its habitat, as well as its perceived value to our society. The Critical Areas Program has defined rarity primarily by its biological distribution. A plant species is considered to be rare if it has been found in ten (or fewer) towns in the state; a species may be found in more than 10 towns and still be considered rare if it is at the limit of its range, is declining or vulnerable, or is restricted in distribution throughout its range.

### **2. Significance**

The values of plants to our society and to other animals of the land and waters of this world are infinite. Plants regulate temperature near the earth, maintain the atmospheric balance of carbon dioxide to oxygen, convert solar energy into stored chemical energy needed by animals, have educational and aesthetic value, and supply an endless variety of medical and chemical products for humans. Communities of plants are important for soil development, prevention of erosion, storage of water, and providing food and shelter to many species of animals.

The many varieties of rare and unusual plant species are found in habitats which are unstable and changing, and subject to climatic extremes. The gene pool of these plants is a storehouse for traits necessary for breeding new species, as well as representing unknown potential as a source of new chemicals and drugs to serve mankind.

### **3. Standards for Inclusion**

Using data on the distribution of rare plant species, as well as the previously mentioned rarity criteria, a group of botanists has assigned levels of importance to rare plants in the New England region. The Critical Areas Program has adopted this system for its own work in the state, assigning each listed plant species to one of three levels of importance; National, New England, or State.

National level rare species are of two types;

- 1) Presently listed as a Federal Endangered or Threatened Species, or proposed for review or under review for listing by the Office of Endangered Species of the U.S. Fish and Wildlife Service, or
- 2) found in few areas outside of New England, although not having official recognition as nationally threatened.

Species considered rare within New England are vascular plants listed through a joint effort by the U.S. Fish and Wildlife Service and New England Botanical Club. Some of these species may be rare throughout New England, but are common in Maine, and are obviously not included on this list.

Species rare at the state level are those species not considered rare through most of their range, but are rare within this state. The majority of species in this level are species reaching their northern limit in Maine.

In addition to identifying rare vascular plants, the Critical Areas Program has also assessed unusual stands of old growth white pine around the state. Significant river-related stands on the Presumpscot River, West Branch Pleasant River, and Vaughan Brook have been included in this study.

#### 4. Evaluation Method and Criteria

The known or suspected locations of critical botanic species along the rivers in Maine were mapped, and segments containing the range of distribution of the plant species were defined using the following criteria;

- a. Plant species were considered to be river-related if found within the one-quarter mile land corridor adjacent to either bank of the river.
- b. A one-mile buffer zone in both directions of a species locality was included within the segment description, in order to account for possible disjunct populations of rare vascular plant species.

Once all localities of plant species were mapped, the river segments were analyzed to determine their overall significance for critical and rare plants, based on the diversity of species at the various levels of importance (National, New England, State).

A system of points was assigned to each of the particular levels of significance, as follows.

	Points
a. Species on the Federal Endangered and Threatened List. <i>Pedicularis furbishiae</i> (Furbish lousewort) is the only riverine plant species on the list at the present time.	5
b. Species under review for inclusion on the Federal Endangered and Threatened List. These species are: <i>Listeria auriculata</i> <i>Oxytropis campestris</i> var. <i>johannensis</i> <i>Viola novae-angliae</i> <i>Cardamine longii</i>	4
c. Other species with National level significance	3
d. Species with New England level significance	2
e. Species with state level significance	1

One half (0.5) points were deleted from the score for each species if a particular plant location of a species was based on historical records of botanists, and the location is only suspected and has not been verified in recent years by Critical Areas Program or other approved botanists. Thus, based on this scoring system, a river segment with a known location of *Oxytropis campestris* var. *johannensis* (National level significance), and suspected location of *Gentiana amarella* (New England level of significance) would be awarded a score of 5.5 points (4+ 1.5 points).

Based on this system of scoring, the following rivers were judged to be clearly outstanding on the basis of critical/rare vascular plant species, and identified with an asterisk on the Final List of Rivers;

**St John River**, between Hamlin and Hafford Brook

**Arroostook River**, between the Canadian Border and Pudding Rock

Information was also gathered on ecologic plant areas which have been recognized as having national significance by the Department of the Interior under the National Natural Landmarks Program. The following rivers with related National Natural Landmarks have been highlighted on the Final List of Rivers with an asterisk:

**Dennys River** – Meddybemps Heath, in the headwaters of Meddybemps Lake

**Mattawamkeag River** - Thousand Acre (Crystal) Bog, along Fish Stream & East Branch Molunkus Stream

**Passadumkeag River** – Passadumkeag Marsh, along Cold Stream

**West Branch Pleasant River** – The Hermitage Old Growth White Pine Stand

## 5. Information Sources and Expert Review

The following references were used by the study team to identify and document resource values.

**Rare Vascular Plants in Maine**, Critical Areas Program Report, June, 1981

**A Preliminary Listing of Noteworthy Natural Features in Maine**, Maine Critical Areas Program, June 1976

Mr. Harry Tyler and Ms. Susan Gawler of the Critical Areas Program within the State Planning Office provided information and review to the study team.

## ZOOLOGIC CRITICAL / ECOLOGICAL RESOURCES

### 1. Definition

The reduction and deterioration in habitat of many species of river related wildlife is of major concern to the scientific community in the perpetuation and continued viability of these resources. When a type of habitat or significant ecologic area having certain necessary and indispensable qualities is destroyed or degraded, certain zoologic species suffer a reduction in abundance and may ultimately be threatened with extinction. For the purposes of this report, the following definition of critical or endangered zoologic species is offered.

**a. Endangered** – A species whose prospects of survival and reproduction are in immediate jeopardy. Its peril may be the result of a single cause or variety of causes, including the following:

1. Habitat: loss or change of habitat, high specialization of habitat, and restricted distribution.
2. Reproduction: small size of litters, long period of gestation, slow maturation of young
3. Behavior Patterns: poor adaptability to changing conditions.
4. Competition and predation
5. Over exploitation
6. Disease

**b. Rare or Critical** – A species, not presently threatened with extinction, but having such a small population or area of habitat throughout its range that it could face endangered conditions in the future if its environment worsens.

### 2. Significance

Critical zoological resources are of importance to the environment in the State of Maine by insuring the preservation of natural diversity in an ecosystem. The maintenance of a heterogeneous species pool allows a particular species to more readily adapt to changing environmental conditions. The preservation of critical and endangered species has a cultural significance as well, which comes from a deep-seated psychological and philosophic evaluation of the environment, including a refined reverence for life. This view holds that all plants and animals have value as intrinsic components of the living part of our planet and should not be destroyed through man's intentional or inadvertent activities upon the environment. In this view, species extinction brought about by man's activities is considered a cultural disaster.

### 3. Evaluation Method and Criteria

Due to the absence of a well developed data base a comprehensive assessment of river related wildlife and ecologic areas was not possible in the time allocated for this study. Where information was available on the statewide distribution and significance of certain species (such as bald eagles), then this data was incorporated into the study. Some wildlife resource experts did contribute information on regionally significant river related ecologic areas, which was noted in the documentation section of this report for the study's "A" and "B" rivers.

#### a. Federal Endangered Wildlife Species

The State of Maine has the only significant population of bald eagles in the northeast United States. The northern subspecies of bald eagles was officially listed as endangered in the state in February 1978. Coastal areas and river estuaries provide important habitat for the majority of Maine's wintering and breeding populations of eagles; Inland rivers, ponds, and lakes also have seasonal importance to nesting and summering eagles, although the use of these areas undergoes a marked decline during the winter months when ice cover limits their opportunities for foraging.

Wildlife biologists from the University of Maine at Orono have assessed river-related areas in the state for the presence of important habitat for bald eagles.

Important rivers are those with a significant concentration of birds for a particular region of the state, including:

- a. Areas with active nesting sites
- b. Areas with historic nesting sites
- c. Areas which are used by significant concentrations of wintering eagles

Based on these criteria, the following rivers have been rated as outstanding for the presence of very significant concentrations of nesting and/or wintering populations of bald eagles and have been identified with an asterisk on the matrix with the Final List of Rivers:

**Lower Kennebec River:** including Merrymeeting Bay

**Main Stem Penobscot River:** Bucksport to Old Town

**Dennys River:** Hinkley Point to headwaters of Meddybemps Lake

#### **b. Critical Zoologic Species with Statewide Significance**

The Critical Areas Program is involved in an ongoing process of assessment of critical zoological species in the state. At the present time heron rookeries, horseshoe crabs, and American oysters are the only river-related critical species that it has evaluated on a statewide basis. Significant habitat areas for these species (such as nesting areas and breeding grounds), have been listed on the Maine Register of Critical Areas.

When assessing the significance of a particular zoologic species, the Critical Areas Program uses the following criteria:

- 1) **Peripherality:** the degree to which a species is at the edge of its typical geographic breeding range.
- 2) **Endemicity:** the range of distribution to which species is restricted (i.e. Found only in Maine out of the entire Northeast, out of the entire U.S., out of North America, out of the entire world).
- 3) **Relative Scarcity:** the number of sites where a particular species is known to be found
- 4) **Probable Status Change:** a measure of a species trend in population and sites of location over a specified period of time.
- 5) **Relative Specialization of Habitat:** the environmental requirements of a particular species and its degree of specialization to certain habitats; including its vulnerability to loss of habitat.
- 6) **Scarcity of Habitat:** the relative scarcity of potential or actual suitable habitat of a species.
- 7) **Susceptibility to Disturbances:** the relative degree of tolerance of a species to immoderate human presence.
- 8) **Relative Knowledge:** the amount of information available on the distribution and scarcity of a particular species.
- 9) **Relative Use:** the general level of public interest in a species.
- 10) **Spatial Distribution:** a measure of the pattern of distribution of a species over its geographic range.
- 11) **Probable Site Persistence:** the relative probability of species presence at a certain location for a majority of years over a given span of time (usually 20-25 years).
- 12) **Seasonal Mobility:** the conditions of seasonal movements of a species
- 13) **Area Size Needs:** the area required by a species for all life needs (breeding sites, feeding grounds, territory) during its breeding season.

#### **c. Critical Ecological Areas**

The Maine Department of Inland Fisheries and Wildlife has identified and inventoried eight inland and six coastal types of wetlands located around the state. The Land Use Regulation Commission has also zoned fish and wildlife protection sub-districts for deer wintering yards and wetlands in the unorganized territories. Regional biologists associated with the Department of Inland Fisheries and Wildlife were able to document the more important ecologic areas for many of Maine's rivers. These areas included critical coastal salt marshes important for shorebirds and migratory and wintering waterfowl, significant acreages of inland wetlands and their associated fauna, and large deer wintering areas.

#### **4. Information and Expert Review**

The following references were used as sources of information for this study:

##### **A Preliminary Listing of Noteworthy Natural Areas in Maine:**

Center for Natural Areas; South Gardiner, Maine 1976

##### **Register of Critical Areas,**

Maine Critical Areas Program, Maine State Planning Office

##### **An Ecological Characterization of Coastal Maine,**

U.S. Department of the Interior, Fish & Wildlife Service; Newton Corner, Mass., 1980

##### **Bald Eagle Management Plan,** Ray Owen and Charlie Todd,

University of Maine at Orono, School of Forest Resources

Expert opinion and review was provided by Ray Owen and Charlie Todd from the University of Maine at Orono, resource biologists from the Maine Department of Inland Fisheries and Wildlife, and the U.S. Fish and Wildlife Service.

#### **C. UNDEVELOPED RIVER AREAS**

##### **1. Definition**

Any physical alteration of the land surface will influence the natural processes along the river corridor. Construction activities can cause increased soil erosion and runoff to enter a stream; septic tank effluent from seasonal homes along river banks can cause changes in water quality. Development in the river corridor may have a negative or positive impact on the resources of a river depending upon how it alters the essential elements which compromise it.

##### **2. Significance**

Undeveloped lands contiguous to the rivers of Maine represent some of the more significant natural resource areas in the State. The interface between the adjacent land and the flowing water of a river is an important area, providing food, cover, and habitat for a variety of fauna and flora. Wetlands associated with rivers have special importance in the hydrologic and biological systems, serving as areas for aquifer recharge, acting as catch basins for flood waters, filtering out pollution, producing oxygen by photosynthesis, and providing species habitat. Forests and ground cover lining the river banks cool the waters by providing shade, and prevent soil erosion. River corridors in the natural state often have high quality scenery for recreational users of the river. It is clear for all these reasons that undeveloped corridor lands warrant the conservation and protection of their special qualities.

##### **3. Standards for Inclusion**

Rivers and river segments in Maine which were evaluated for the amount of existing corridor development must have met the following qualifying criteria.

- a. The main stem of a segment must be greater than 10 miles in length (tributaries to the main segment could be less than 10 miles in length) .
- b. The river or river segment must be free from significant hydrologic impoundments, modifications, and diversions.

Once the river evaluations were conducted, a cutoff value of 30 development points per mile was used to define the more significant undeveloped rivers in Maine. An explanation of the development point system of evaluation follows in the next section.

#### 4. Evaluation Method and Criteria

The National Park Service of the Department of the Interior developed a process for evaluating the undeveloped character of a river corridor in its work on the Nationwide Rivers Inventory. The method used for the Inventory was adapted for use in this study. The assessment of land use development in river corridor areas was made using the most recent USGS 7.5' or 15' quadrangle maps available. This information was supplemented in some cases with aerial photos and local road maps and atlases.

Each river and river segment was measured on the map and divided into one mile intervals beginning with the downstream segment boundary. The study river corridor (defined as contiguous lands within one quarter mile of each river bank) was also defined on the map.

Using data sheets, all land use development was recorded for each mile interval, and numerical values were assigned to the various land uses. Development having a greater impact on natural values, (i.e. bridge crossings, parallel railroads and power lines, and small towns) were given more points than lower impact development (i.e. footpaths and unpaved roads).

The following is a list of land use features typically found within river corridors and their corresponding development points.

<u>Land Use Development Features</u>	<u>Points</u>	<u>Land Use Development Features</u>	<u>Points</u>
Primitive road ending	1	Railroad parallel	20
Footbridge	2	Paved road parallel (red)	
Gaging station		Pipeline parallel	25
Primitive road parallel (trail)	3	Powerline parallel	
Small dock	4	Water storage tank	
Unpaved road ending (plain)		Bulkhead	
Orchards, farms, dwellings, cemetery	5	Rip rap	
Abandoned rail line ROW	6	Small Tributary reservoir	
Outfalls		Gravel pits	
Railroad ending	8	Developed recreation area	30
Powerline ending		Marina (site check)	
Fire tower		Country club	
Outbuildings, schools		Swimming pool	
Unpaved road		Radio tower	35
Light duty bridge (plain)		Power substation	
Paved road ending (red)	10	Pumping station	
Paved boat ramp		Paved road bridge (4 lanes)	40
Campground		Sewage plant	
Picnic area		Apartment building	
Unpaved road parallel (plain)		Hospital (site check)	
Pipeline and powerline crossing	15	Village (up to 499 pop / site check)	
Railroad bridge	18	Dam (small)	
Paved road bridge (red)			

After the land use development features for the river segment were identified, the numerical scores for each one mile interval were tabulated. By totaling all interval scores, and dividing through by the number of intervals (river miles), an average mile by mile index of the river's corridor development was calculated.

### **Outstanding River Segments**

Examination of previous National Park Service work for the Nationwide Rivers Inventory has shown that rivers with an average of less than 15 point per mile are equivalent to the least developed rivers in the northeast United States. Outstanding undeveloped rivers in the State with a corridor development index of 15 points or less and a length greater than 25 miles were identified with an asterisk on the matrix accompanying the Final List of Rivers; and are as follows:

- Allagash River Aroostook - Machias System
- East Machias River
- Machias River (Washington County)
- East Branch Penobscot – Seboeis River System
- Upper West Branch Penobscot River
- Pleasant River (Washington County)
- St Croix River
- St Francis River
- St John River (including the Big Black, Little Black, and Baker Branch)

### **5. Information Sources and Expert Review**

The following references were used as sources of information for this study:

**Wild and Scenic Rivers System Study – Northeast Region**, US Department of the Interior, Heritage Conservation and Recreation Service, Northeast Region, Philadelphia, Pennsylvania.

**Wild and Scenic Rivers System Study – Northeast Region, Guidelines for Evaluating Wild, Scenic and Recreational Rivers.**

**Nationwide Rivers Inventory, Criteria for River Evaluation**; US Department of the Interior, Heritage Conservation and Recreation Service, Northeast Regional Office, J. Glenn Eugster, October, 1979

**Nationwide Rivers Inventory – Final List of Rivers, State of Maine**, US Department of the Interior, Heritage Conservation and Recreation Service, Northeast Regional Office, January 1981

**Nationwide Rivers Inventory, Criteria for Establishing River Priorities**; US Department of the Interior, Heritage Conservation and Recreation Service, Northeast Regional Office, J. Glenn Eugster, April, 1980

J. Glenn Eugster from the National Park Service in Philadelphia provided information and expert review for this portion of the study.

### **D. SCENIC RIVER RESOURCES**

#### **1. Definition**

Different river areas in Maine possess different types of scenery. Traditionally, scenic river resources have been identified by user preference studies and professional evaluations. To determine user preferences, groups of people are usually shown a series of river area photos, and asked to rate them according to preference or quality. Results are then analyzed to determine which river and landscape corridor elements or mix of elements correlate highly with preferred areas.

In professional evaluations, river areas are analyzed by trained planners according to a set of fixed criteria using either design principles, ecological and cultural criteria, or a quantitative scale.

In both instances the objective is to focus on specific variable river and river corridor characteristics which have been determined to be major influences on perceived scenic or landscape quality.

## 2. Significance

For many years there has been a growing recognition of the concept that certain landscape elements such as scenery are unique resources worth identifying and protecting. In fact, there are many federal and state laws and regulations which address the growing need for management of visual resources. Until the 1960's the area of public environmental management and policy related to scenic resources developed mostly in the context of outdoor recreation. The focus was predominantly on the management and preservation of specific areas with unique or outstanding scenic attributes. Concern with scenic values in the context of a larger landscape area or the relationship of scenic values to a wider range of resource issues are a side effect of environmental legislation within the last 15 years. For example, at the federal level, scenic and aesthetic considerations were addressed in the National Environmental Policy Act of 1969, the Coastal Zone Management Act of 1972, and the Wild and Scenic Rivers Act of 1968. The State of Maine followed the approach of these laws when it formulated the Mandatory Shoreland Zoning Act and Site Location of Development Act.

Scenic values and qualities have been recognized for years in the real estate field, which has assigned higher market values based on public demand to certain scenic features, such as properties with mountain views, or locations on river or lake waterfront areas. The Maine tourism industry also recognizes the scenic qualities of the State's river environment in many of its programs.

## 3. Minimum Standards for Inclusion

Initially rivers, river segments and other landscape areas were identified using recognized sources of scenic or visual information such as the Nationwide Rivers Inventory, various Critical Areas Program reports, canoe guides, travel information and other documents. To be placed on the Preliminary Draft List of Rivers Under Evaluation, rivers had to be recognized or documented as being scenic or possessing a high degree of visual quality due to a specific feature, characteristic or element. All sources of information, whether subjective or objective, were treated equally.

## 4. Evaluation Method and Criteria

The two basic components of the scenic river resource assessment are land form and pattern. The quality of any scenic river experience is dependent on the synthesis of land pattern into the overall land topography.

Land forms are the natural forms of the surface of the earth, the mountains, rolling hills and valleys which form the overall context of a natural landscape. The study of land forms constitutes an important part of a scenic river resource assessment, through the visual impact of dominant landscape forms, as well as affecting the patterns and distribution of other components of scenic river areas.

Land use pattern is the interlocking texture of fabric of the landscape including man and the by-products of his technology and culture. Patterns of land uses are a function of combinations of the parts of the natural and built environment and their overall composition. The composition of these parts is an important determinant of the visual quality of a landscape. For example, a small New England river hamlet against a steeply forested mountain range, or a sandy floodplain area next to a large rock outcrop are examples of contrasting combinations of texture which create patterns that are visually interesting. The nature of our perceptions depends upon the combination of natural and built pattern within the existing landform. The scenic quality of the river environment will depend on the quality of both the natural pattern and built pattern, and on the extent to which the two patterns are meshed or harmonized with one another.

The perceived scenic quality of a river and its corridor will also be a function of the frequency and diversity of the various natural and man-made components which combine to form a landscape (such as geomorphic and hydrologic features, vegetation, and cultural values), as well as the interrelationships among these components. Scenic resource values can be defined based on general relationships among components of a landscape. These relationships, which become the basic principles upon which assessment of river-related scenic resources is based, include the following:

- As the relief increases, the scenic quality of the river corridor increases
- As the landscape becomes more rugged, the scenic quality of the river corridor increases
- As the amount of enclosure by vegetation increases, the scenic quality of the river corridor increases
- As the diversity of land uses increases, the scenic quality of the river corridor increases
- As the naturalness of a landscape increases, the scenic quality of the river corridor increases.

- As the amount of tree cover increases, the scenic quality of the river corridor increases.
- As the density of land use edges increases, the scenic quality of the river corridor increases.
- As the diversity of land use edges increases, the scenic quality of the river corridor increases.
- As the compatibility of land use increases, the scenic quality of the river corridor increases.
- As the water surface and water edge increases, the scenic quality of the river corridor increases.
- As the size and length of the view increases, the scenic quality of the river corridor increases.

In general, spatial variety and three-dimensional contrast are positive values within a given river corridor's landscape composition. The greater the contrast and variety in spatial landforms and patterns, the higher the perceived scenic value. Spatial variety is judged on the shape of spaces, the degree of enclosure by landform or vegetation, and the diversity of shape, pattern, and enclosure which exist in a landscape.

Once relationships among compatible parts of a landscape have been defined, it is possible to proceed with the analysis by identifying the presence of specific landscape components or combinations of components which have scenic value. The following are river and landscape features and components which were identified in this analysis:

### 1) Landscape Physiography

This qualitative evaluation of physiographic relief will give an index of three dimensional contrast in a river-related landscape. The topography surrounding a river corridor is classified into one of the seven categories of form, representing a continuum of physiography from flatland to mountains. The underlying assumption is the greater the amount of relief in a river corridor, the greater the scenic quality.

### 2) Landscape Diversity

The amount of spatial variety is another measure of scenic value in a landscape. The scenic value of a river corridor will be enhanced when there is a diversity of hydrologic, geomorphic, and vegetative elements present. A general rule is the greater the diversity of landscape elements (land, water, vegetation) the higher the scenic quality.

**a) Hydrologic features** inventoried included channel shape, the presence of waterfalls, cascades, and whitewater rapids, tributary confluences, ponds and lakes, river islands, and complexity of water edges. The presence of hydrologic features (such as waterfalls and rapids) that have universal public appeal will enhance the scenic qualities of a river corridor. Scenic quality will also increase as the complexity of hydrologic elements increases. The greater the sinuosity of a river channel, the greater the visual carrying capacity of recreational users at the river's surface. In a similar manner, the more irregular or complex a river's shoreline or corridor (from the presence of river island complexes or tributary confluences for example), the higher its visual quality.

**b) Vegetative features** inventoried on the rivers included the percentage of tree cover, diversity of vegetative types, presence of forest edges, and forest wetland contacts. The underlying assumption was that scenic quality increases with the increased amount of tree cover, density of forest edges, and diversity of vegetation.

**c) Outstanding geomorphic landforms and landscape features** were identified for each of the three physiographic sections in Maine (Seaboard Lowland, New England Upland, and White Mountains) and then inventoried for each of the evaluated rivers. These representative and unique scenic features, by physiographic section, included:

#### - Seaboard Lowland

Landforms: undulating topography, worm clam flats, tidal marshes, beaches, and dunes

#### - New England Upland

Landforms: rolling topography, bold dome-like hills, soft round hilltops, steep side slopes and V-shaped gullies.

Drainage: curved dendritic, right-angle tributaries, glacial ponds and swamps, oxbow lakes

Landscape Features: eskers, kames, moraines, monadnocks, glacial erratics fields

### **- White Mountains**

Landforms: V-shaped valleys, conical peaks in rows, eroded cliff and bench topography.

Drainage: radial, dendritic, deranged,

Landscape Features: ravines, escarpments, monadnocks, eskers, drumlins, kames, lake deltas, other glacial features.

In addition to inventorying these specific features which are thought to increase a river corridor's scenic quality, other geomorphic elements were identified which by their complexity of form or shape, add to river scenery. These elements of form are defined as relief enclosure.

**- Relative Relief:** the scenic quality of the river corridor will increase with greater relative relief. To calculate, elevation points were selected at quarter-mile intervals on a topographic map for a river area, and the lowest elevation point was subtracted from the average high elevation.

**- Enclosure:** as the amount of enclosure increases, scenic quality increases. Enclosures were measured by calculating the percentage of area enclosed by (lying below) the median of relative relief.

### **3) Land Use Diversity and Compatibility**

Land use diversity relates to the number of different land use types, their areas, and the length of their edges. Compatibility of land use is a measure of the visual congruence (the visual fit) of adjacent land uses. Land use includes visually distinctive types of surface cover such as agricultural fields or forest, which may support more than one use.

#### **b. Evaluation Methodology**

The National Park Service of the Department of the Interior developed this process of scenic assessment outlined in the previous section for its work on the Nationwide Rivers Inventory. Evaluation of scenic river landscapes was conducted for the Inventory using the most recent USGS 7.5' of 15' quadrangle maps available, supplemented by field work, videotapes and slides from low-altitude helicopter flights over many of these rivers. Substantial use was made of this existing data base which was modified and expanded where appropriate for the Maine Rivers Study.

For this study's scenic river assessment, each river or river segment was measured on a topographic map and divided into one mile intervals beginning with the downstream segment boundary.

Using data sheets, all significant scenic landscape components were recorded for each mile interval. Greater value was assigned to segments with an outstanding diversity of components, or those riverscapes with a highly compatible combination of vegetative, hydrologic, geomorphic, and cultural values.

### **5. Information Sources and Experts**

The following references were used as sources of information for this study;

**Nationwide Rivers Inventory – Criteria for River Evaluations:** US Department of the Interior, Heritage Conservation and Recreation Service, Northeast Regional Office, Philadelphia, Pa. 1979

**Study of Visual and Cultural Environment for North Atlantic Region:** Research Planning and Design Associates, Amherst, MA, published as Appendix N, North Atlantic Water Resources Study, November 1970

**Guidelines for Identifying and Evaluating Scenic Resources; Hudson River Basin;** Water and Related Land Resources Study, Technical Paper 4, October 1978

**A Preliminary Listing of Noteworthy Natural Features in Maine:** Center for Natural Areas, South Gardiner, Maine, June 1976

J. Glenn Eugster from the Mid-Atlantic Regional Office of the National Park Service provided information and review for this section of the study.

## **E. HISTORICAL RIVER RESOURCES**

### **1. Definition**

The rivers of Maine have long served a vital role in the colonization, development, and industrial growth of the state. This part of the Maine Rivers Study focused on the identification of river related historic places and sites which have achieved recognition as national Historic Landmarks or are listed on the National Register of Historic Places. It is realized that many of the rivers of Maine have historical and cultural value other than these recognized on the national level, such as the historic use for logging runs, the presence of archaeological sites, building with state or local importance, or settlements which represent unique cultural values. However, a lack of expertise and state agency assistance did not permit a more comprehensive survey by the study team. Thus, this discussion will focus on National Historic Landmark and National Register sites associated with rivers in the state.

### **2. Significance**

River-related national historic landmarks and places in Maine are visible reminders of the events, places, and objects which have affected broad patterns of American history and reflect the evolution of industry and culture in this state and the US. They contain prehistoric and historic villages of the American Indian and early colonists, fortifications for the protection of access to waterways, sites of industry and resource extraction activities, and bridges with unique architectural styles. All historic areas designated as National Historic Landmarks are of national significance; other properties which are nominated by the State of Maine and placed on the National Register of Historic Landmarks after approval by the Secretary of the Interior are of national, state, or local significance. In recent years, building districts which possess a composite quality and evoke a special feeling and association have been added to the National Register. Such districts may contain individual buildings which of themselves may not be outstandingly significant but which, as an assemblage representing a special character of an urban or rural waterfront or port, possess national, state, or local significance.

### **3. Standards for Inclusion**

There are many National Historic Sites which are found along rivers in Maine. However, only those sites which have a direct connection to the river, in terms of industrial, economic, or cultural importance (such as former significant winter ports or fortifications at the mouths of rivers for the defense of upstream settlements) were noted as significant by this study.

### **4. Evaluation Methods and Criteria**

To attain the designation of National Historic Landmark, a property must be studied by National Park Service historians, architects, or archaeologists, usually as a part of a major theme in American history such as Social and Humanitarian Movements or Agriculture. The property should meet three general criteria:

- 1) significance in a given field
- 2) association with individuals and events
- 3) integrity, the latter meaning that original and intangible elements which contribute to national significance must remain intact

Potential landmarks are brought semi-annually before two advisory boards of scholars and national leaders – the Consulting Committee for the National Survey of Historic Sites and Buildings, and the Advisory Board on National Parks, Historic Sites, Buildings, and Monuments. These boards review the presentations of National Park Service professionals. Those properties which meet the approval of the Secretary's Advisory Board are recommended for landmark status. The actual designation is effected when the Secretary of the Interior, acting upon the counsel of his Advisory Board, approves landmark designation. The National Historic Landmarks Program is the only honorary historic preservation program of its kind in the Nation.

Because of their recognized national significance, National Historic Landmarks associated with particular rivers in Maine have been noted on the matrix accompanying the Final List of Rivers with an asterisk, to highlight their outstanding historic value.

A variety of criteria have been defined to guide the State, Federal agencies, and the Secretary of the Interior in evaluating potential entries in Maine for addition to the National Register of Historic Places, and include the following:

The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- a. That are associated with events that have made a significant contribution to the broad patterns of the state's history; or
- b. That are associated with the lives of persons significant in the state's past; or
- c. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- d. That have yielded, or may be likely to yield, information important in prehistory or history.

Before submission to the National Register, all nominations must be approved by a State review board whose membership includes professionals in the fields of architecture (or architectural history), history, and archeology. If the property meets the National Register criteria, the board recommends it for nomination. The nomination form is then signed by the State Historic Preservation Officer and forwarded to the National Register, which reviews the potential entry and decides whether to accept or reject it.

## 5. Information Sources and Expert Review

The following references were used by the study team to identify and document resource values:

**National Register of Historic Places**, US Department of the Interior, Heritage Conservation and Recreation Service, Washington, DC, 1976

**Annual Listing of Historic Properties, National Register of Historic Places**; US Department of the Interior, Heritage Conservation and Recreation Service, Federal Register; Tuesday, February 6, 1979

\_\_\_\_\_ ; Federal Register, Tuesday, March 18, 1980

\_\_\_\_\_ ; Federal Register, Tuesday, February 3, 1981

The State Historic Preservation Office was requested to participate in the identification, documentation, and review of significant historic and cultural rivers but declined.

### Unique Recreational Rivers – Overview

Both the economically important tourist industry and the life style of Maine residents rely heavily on the recreation use of the state's natural resources. Rivers are important components of this recreational use, providing diverse recreational experiences to a variety of interests. Recreational activities associated with rivers include camping, picnicking, fishing, boating, hiking, sightseeing, swimming, hunting, skating, and sailing.

While each of these activities is important to varying degrees, the Maine River Study has restricted its recreational analysis to activities which are:

- 1) directly dependent on free-flowing river resources
- 2) highly popular throughout the state, and
- 3) engaged in by large and readily identifiable user groups.

The recreational categories chosen for analysis include recreational boating (canoe touring, white water boating, and extended back country boating), inland fishing, and anadromous fishing.

For each recreational category, rivers were evaluated according to resource significance, economic importance, and user priority. This evaluation process recognized that user preference ultimately plays a dominate role in the determination of a river's value as a recreational resource. Input from concerned user groups was therefore sought throughout the process, with a strong attempt made to arrive at a consensus of opinion among users regarding the recreational significance of specific rivers.

This user input, coupled with objective analysis by resource experts, resulted in the category findings detailed in this report. The specific method used for each recreational category follows.

## A. ANADROMOUS FISHERIES

### a. Definition

Fresh water and tidal rivers which empty into the ocean or salt water estuaries provide vital habitat for anadromous fish. An anadromous fish species is characterized by its migratory nature, spending much of the life cycle in salt water but returning to fresh water to spawn. Catadromous fish species (e.g. the American eel) reverse this pattern by migrating to the ocean to spawn. For the purpose of this study, catadromous fish are considered to be included in the anadromous category.

The Maine River Study has identified important anadromous fishery rivers and isolated those that are of highest value to the state and its residents.

### b. Significance

Historically, anadromous fish were of high importance to Maine's commercial fishing industry and were a dependable food source for coastal river inhabitants. While extensive commercial fishing depleted this resource, it was the increase in industrial pollution and the construction of impassable dams which most seriously depleted anadromous fish populations. The creation of the Atlantic Sea Run Salmon Commission in 1947, as well as the state Department of Marine Resources' strong commitment to anadromous fish restoration beginning in the mid-1960's, provide evidence that Maine recognizes the tremendous ecological and recreational significance as well as the commercial value of the state's anadromous fish.

**a. Ecological Importance** – Many of Maine's coastal rivers are characterized by their exceptional potential to support anadromous fish, both in numbers and species diversity. Of special note are the rivers which provide habitat for the more sensitive species. The shortnosed sturgeon found in a limited number of rivers is listed as an endangered species by the federal government. The American shad and Atlantic sea run salmon have also had their numbers severely reduced and depend on Maine rivers for their survival.

Maine's six rivers with fishable self-sustaining Atlantic salmon runs are unique, as no other state can claim even one. At least three additional rivers in the state are recognized as having high potential for restoration of historic Atlantic salmon fisheries.

**b. Recreational Importance** – The Atlantic sea run salmon fishery is recognized as a statewide high priority resource of value to Maine's recreational fishing interests as well as to the state's tourist industry. The Penobscot River is the most heavily fished Atlantic salmon river in the country; the value of this one river to the tourist industry is estimated to be a half million dollars per year. The American shad and rainbow smelt also are potentially of high recreational importance. Smelt are currently popular as a winter fishing resource. Overall, more user-days are expended fishing smelt than any other of the state's anadromous fish species.

**c. Commercial Importance** – Salmon, smelt, shad, and alewife were historically of high value to the commercial fishing industry. While the depletion of salmon, shad, and smelt have lessened their commercial importance, the alewife, which is an essential lobster and trawling bait, continues to be an important commercial fishery. According to the Maine Department of Marine Resources, landing of alewife doubled between 1970 and 1977, with total catch tripling during this time. With successful restoration, shad and smelt could also contribute significantly to Maine's commercial fishery industry.

Restoration efforts by the State Department of Marine Resources and the Salmon commission, assisted by federal funding, are beginning to produce results. Restoration, coupled with improvements in water quality and proper planning for future impoundments, will ensure that the ecologic, recreation, and commercial potential of Maine's rivers as anadromous fish resources will be realized.

## 3. Standards for Inclusion

Rivers were included in the Preliminary Draft List of Rivers Under Evaluation if they met the following standards:

- a. The river must be a viable anadromous fishery resource. It therefore must either currently support a substantial anadromous fish population or have realistic potential for restoration as evidenced by:
  - a) current restoration efforts, or
  - b) management plans which call for timely restoration.

b. The river must drain a minimum of 25 square miles before discharging into tidal waters. (Thirty of Maine's sixty coastal rivers meet both of these standards).

#### 4. Evaluation Method and Criteria

The criteria used to evaluate anadromous fishery river significance include:

- a. Habitat quality and quantity
- b. Presence of threatened, endangered, or sensitive species
- c. Species diversity
- d. Recreational importance
- e. Commercial importance
- f. Evidenced restoration efforts
- g. Unique characteristics (i.e. self-sustaining Atlantic sea run salmon runs)

Note: The migratory nature of the resource makes specific anadromous fish segment identification difficult. Both the major thoroughfares and the spawning areas are essential to species survival. Therefore, when labeling segments for rivers in the anadromous category, the entire length of the river migration cycle was identified.

Rivers meeting the minimum standards were evaluated with the assistance of the Maine Department of Marine Resources' anadromous fish experts. The Preliminary Draft List was reviewed by private fishing interests and Atlantic Sea Run Salmon Commission staff. Because of the unique value of the Atlantic salmon, all rivers which support self-sustaining salmon runs were given high priority. All of these salmon rivers are, however, of importance to other species and to the state's overall anadromous fish program.

The rivers in Maine which were judged to be of highest significance include the following. Each river is identified by an asterisk in the Final List of Rivers section of this report.

**Damariscotta River:** high commercial alewife importance

**Dennys River:** self-sustaining Atlantic salmon run

**East Machias River:** self-sustaining Atlantic salmon run

**Kennebec River:** high habitat quality and quantity, species diversity and abundance, presence of endangered species, high recreational importance.

**Machias River:** (Washington County): the state's largest self-sustaining Atlantic salmon run, recreational importance

**Narraguagus River:** self-sustaining Atlantic salmon run

**Penobscot River:** high recreational importance, high restoration expenditure, habitat quality and quantity

**Pleasant River** (Washington County): self-sustaining Atlantic salmon run

**Sheepscot River:** self-sustaining Atlantic salmon run, endangered species

**St George River:** high commercial alewife importance

#### 5. Information Sources and Expert Review

Information and expert opinion was provided to the study team by the following agencies and organizations.

Maine Department of Marine Resources  
(fisheries biologists' input and review, species management plans)

Maine Department of Inland Fisheries and Wildlife  
(Atlantic Sea Run Salmon Commission staff biologist review, miscellaneous publications)

Trout Unlimited

Maine Sportsman Magazine

## **B. RIVER-RELATED INLAND FISHERIES**

### **1. Definition**

Inland fish include all fish species which inhabit a fresh waters environment throughout their life cycle, in contrast to the migratory anadromous fish which require both fresh and salt water habitats. Included in the general category of inland fisheries are both cold water and warm water species. This analysis is restricted to river fisheries and does not consider lake fisheries. However, rivers which derive their major importance from their support of lake fisheries are given recognition.

While factors such as ecological importance (i.e., critical habitat) are given strong consideration, the focus of the study is the identification of inland fishery rivers and streams which are judged to be of high recreational importance.

### **2. Significance**

The State of Maine has approximately 32,000 miles of flowing water, all of which support sport fisheries. Major cold water species include the native brook trout (the most abundant and certainly one of the most important cold water species), and native landlocked salmon (a highly prized fish found in a limited number of rivers), and the introduced brown trout (an adaptable species capable of providing a sport fishing resource where other cold water species will not thrive). Rivers which provide principal habitat for cold water species total 23,000 linear miles with an average of 153 legal sized fish per mile. Landlocked salmon are found in 64 rivers covering 635 miles. Nearly 200 miles of Maine's rivers provide exceptionally high quality habitat for this species.

Major stream-related warm water species include the native white perch and the introduced smallmouth and largemouth bass. All have self-sustaining populations. Warm water species predominate in 6400 miles of Maine's rivers and streams.

Sport fishing for inland species has witnessed a large increase in popularity over the past few years among Maine's residents, and approximately 190,000 resident fishing licenses are sold annually. When non-resident licenses and youth (who are not required to obtain a license) are taken into account, the Department of Inland Fisheries and Wildlife projects that 385,000 people fish Maine waters. Studies using creel census expansion techniques estimate 460,000 angler-days are spent annually on Maine's rivers and streams, accounting for one-third of the total inland fishing use. Cold water fish harvest in rivers and streams totals 532,000 fish annually, and the Department of Inland Fisheries and Wildlife estimates that there is potential for doubling both the use and take figures. The Department currently stocks 316,000 cold water fish annually in 105 streams totaling 826 linear miles.

Inland fisheries have economic as well as recreational value. Seventy to eighty thousand out-of-staters annually purchase fishing licenses and a number of in-state fishing guides and outfitter businesses depend on Maine inland fisheries. The overall dollar value of inland river and stream fishing has not been established, but it is definitely an important component of Maine's natural resource-related tourist industry.

### **3. Standards for Inclusion**

Preliminary inland fish resource data was obtained with the assistance of the Maine Department of Inland Fisheries and Wildlife. Using a questionnaire accompanied by guidelines for evaluation, fisheries biologists in each of Maine's seven wildlife management regions were asked to identify approximately ten river and/or stream segments which they determined to be of high importance to that region's recreational fisheries program. A total of 81 river segments totaling 1487 miles was identified through this process. These results were reviewed by state level fisheries biologists from the Department of Inland Fisheries and Wildlife, and four additional segments were added due to their statewide significance. These 85 rivers and river segments comprise the Preliminary Draft List of Rivers Under Evaluation.

The list of rivers developed should not be construed to represent all rivers of significance for inland fisheries in each region. A limitation was placed on the number to be listed per region, and the emphasis was on importance for recreational fisheries. It should be clearly stated that all other rivers, brooks, and streams not on the list have at least some significance to the overall inland fisheries resources of Maine. Also, recreational demands upon these resources can be expected to change over time, with consequent shifts in significance for recreational fisheries uses and relative importance.

#### 4. Evaluation Method and Criteria

The Department of Inland Fisheries and Wildlife's regional biologists evaluated the rivers which they selected according to the following criteria:

- a. **Species Composition** – The existence of fish species of major importance by virtue of being:
  - 1) rare in the region
  - 2) highly preferred by anglers
  - 3) of major ecological importance
- b. **Water Quality** – The extent to which overall water quality is capable of sustaining preferred fish resources.
- c. **Aquatic Habitat Quality** – The existence of natural features favorable to fish production and sustenance of preferred fish species (adequate flow, cover, etc)
- d. **Fishing Quality** – An evaluation of recreational fishing results (success rate, size of take, desirability of species taken, etc.)
- e. **Quality of Recreational Use** – The ability of a river segment to provide a satisfying recreational fishing experience (scenery, solitude, challenge, variety, etc)
- f. **Existing Recreation Use** – The popularity of a river segment as a recreational fishery resource.
- g. **Economic Importance** – The importance of recreational fishing on the river segment to the regional economy (use of local guides, retail sales, etc)

Using comparative analysis, rivers which were preliminary judged to be of highest statewide significance were identified. The regional lists were then distributed to Maine fishing interests for review and comment. Each of Maine's local Trout Unlimited chapters evaluated rivers on the Preliminary Draft List according to the criteria of fishing quality, recreational quality, and current use. Again using comparative analysis, rivers were ranked by region and the highest priority rivers were noted. Trout Unlimited's Maine Council combined local chapter findings and produced a comprehensive list of that organization's statewide fishery priorities.

The study's final determination of the state's outstanding inland fishing rivers incorporated the Department of Inland Fisheries and Wildlife's preliminary findings, Trout Unlimited's review and evaluation, and comments from other recognized resource experts and interested individuals who reviewed the study's Preliminary Draft List.

Rivers which were identified as being the States' most significant recreational inland fishery rivers follow. Each is identified with an asterisk in the Final List of Rivers section of this report.

**Crooked River**  
**Fish River Lake Thoroughfares**  
**Grand Lake Stream**  
**Kennebago River**  
**Penobscot River, Upper West Branch**  
**Penobscot River, West Branch (Ripogenus Gorge Section)**  
**Penobscot River, East Branch**

Other highly significant recreational fisheries include the:

**Moose River**  
**Narraguagus River**  
**Rapid River**  
**Roach River**  
**Saco River**  
**St John River**  
**Sheepscot River**  
**Nahmakanta Stream**  
**Presque Isle Stream**  
**Wassataquoik Stream**

Trout Unlimited efforts and expenditures on the Little Ossipee River and the Pleasant River (Cumberland County), and the Maine Department of Inland Fisheries and Wildlife's stocking and management efforts on a number of additional rivers throughout the state attest to these rivers' significance. Those rivers identified by this study as being of high importance are, however, the result of a consensus of expert and public opinion and are representative of high quality resources of a type not found in this abundance in other states in the eastern United States.

## 5. Information Sources and Expert Review

Information and expert opinion were provided to the study team by the following agencies and organizations:

Maine Department of Inland Fisheries and Wildlife (state fisheries biologists, regional fisheries biologists, species management plans)

Trout Unlimited (local chapters and Maine Council)

Maine Sportsmen Magazine

Sportsman's Alliance of Maine

Regional and state biologists from the Maine Department of Inland Fisheries and Wildlife performed the preliminary identification and assessment of inland fisheries, and provided comment and review throughout the study. Species management plans were the source of information on habitat and significance of particular species. The Maine Council and local chapters of Trout Unlimited, as well as Maine Sportsmen Magazine and Sportsman's Alliance of Maine provided review and comment on the study.

## C. RIVER-RELATED RECREATIONAL BOATING

### 1. Definition

The present study focuses on river-related recreational boating which is dependant on flowing waters and the use of a "waterway trail". Consequently, river resources were identified which were of importance mainly to recreational activities using open and closed canoes, kayaks, and inflatable rafts. In order to represent a broad range of recreational boating interests, the general recreational boating category has been subdivided into three more specific categories, which identify distinct recreational boating activities and river users. These three categories are as follows:

- a. **Canoe Touring** – Rivers and river segments which are navigable in an open canoe by novice to intermediate paddlers and which contain predominantly flat water, quickwater, and Class I rapids.
- b. **Whitewater Boating** – Rivers and river segments which are navigable in canoes, kayaks, or rafts by intermediate to expert boaters and which contain a significant number of Class II to Class V rapids.
- c. **Backcountry Excursion Rivers** – Rivers located in natural environments which are of adequate length to provide an extended river camping experience. These rivers may contain any combination of white water and/or canoe tour boating.

### 2. Significance

Maine's natural amenities have long been the source of recreational opportunities for the people of the state as well as the principal generator of tourist industry revenue. While historically the coast has been the focus of tourist recreation attention, the 1970's saw a strong diversification in recreation use patterns, with river use in particular increasing at an unparalleled rate. Though comprehensive user statistics do not exist for most state rivers, those that do exist verify this marked increase in river recreation popularity. The Allagash Wilderness Waterway witnessed a 60% increase in use between 1966 and 1980, while use on the St John has more than doubled since 1975. Use on the Saco River increased 300% between 1971 and 1976, and recent analysis suggests that recreational boater use on the Saco has since increased by 25% annually. The most significant change in boating use has occurred in commercial rafting. In 1976 approximately 600 commercial passengers rafted the Kennebec Gorge and the West Branch's Ripogenus Gorge. In 1981 this figure approached 14,000, a 200-fold increase.

Even without future growth, commercial rafting will annually add approximately \$2,000,000 to Maine's tourist industry revenues. River recreation popularity has also made canoe outfitting a viable component of the tourist industry with significant use on the Allagash, St John, Penobscot, and coastal rivers in eastern Maine.

Maine's recreational river resources are extensive. For example, the Appalachian Mountain Club's canoe guide identifies 4,474 miles of boatable rivers and streams within the state. The Maine Rivers Study has determined that 1,750 of these miles represent significant boating areas of high resource quality and high use priority. 650 of these miles are predominantly associated with white water boating, 500 with flat water canoe touring, and 600 with back country excursion boating.

Included in these 1,750 miles of river are a number of river segments which possess unique features. Maine can boast New England's only two stretches of Class V white water as well as the region's longest stretch of continuous canoeable white water. It can also boast the Northeast's premier back country canoe trips and one of three federally designated wild and scenic rivers.

These river resources, combined with a number of lesser known rivers with significant recreation potential, provide the State of Maine with a recreational resource of extremely high value. Though 98% of the state's river corridors are privately owned, the prevalent multiple use concept at work in the state ensures that these resources will remain accessible to boating enthusiasts.

### **3. Standards for Inclusion**

To be included in the Preliminary Draft List of Rivers Under Evaluation, a river had to:

- a. Be listed as a prominent river trip in one or more of the recognized river guide books
- b. Be recommended by one of the state's recognized statewide recreational boating interests or organizations, or
- c. Show evidence of use by commercial outfitters

### **4. Evaluation Method and Criteria**

A list of rivers meeting the minimum standards for inclusion in the recreational boating category was distributed to representatives of recreational boating interest groups, commercial outfitters, and other knowledgeable sources. Experts were asked to review the list and to evaluate each river segment's statewide significance in relation to others on the list. They were then asked to group rivers in priority categories from high to low. The following criteria were offered as guidelines in making these determinations.

General criteria with relevance to all the boating categories included:

1. Existing use
2. Access
3. Navigability
4. Length of season and flow regularity
5. Scenery and aesthetic experience
6. Economic importance

Specific criteria for each of the recreational boating categories included:

- Canoe Touring – safety, use by organizations
- Whitewater Boating – presence of significant rapids
- Backcountry Excursion – length of trip, lack of corridor development, availability of camp sites

Concurrent with this expert review process, study team members assembled available river use statistics, identified commercially significant rivers, and researched each river segment in an attempt to identify unique recreational features. Individual expert evaluations were then combined, and a list which represented a consensus of opinion was developed. This list was cross checked with the study team's independent evaluation, and the final list of outstanding recreational rivers was produced.

The following rivers were identified as outstanding (the state's most significant) in each category, and identified with an asterisk on the Final List of Rivers.

Backcountry Excursion:

Allagash River  
Machias River (Washington County)  
East Branch Penobscot River  
Upper West Branch Penobscot River  
St Croix River  
St John River

Whitewater Boating

Carrabassett River  
Dead River  
East Branch Penobscot River  
Upper Kennebec River  
Machias River (Washington County)  
West Branch Penobscot River  
Rapid River  
Seboeis River  
Wassataquoik River

Canoe Touring

Moose River  
Saco River

Many other canoe touring rivers have importance to regional recreational boaters, including the following rivers:

Royal River  
St George River  
Kennebec River  
Aroostook River  
Upper Androscoggin River

## 5. Information Sources and Expert Review

Information and expert opinion was provided to the study team by the following agencies and organizations.

Appalachian Mountain Club, Maine Chapter  
High Adventure BSA  
Maine Audubon Society  
Maine Professional Guide's Association  
Maine State Planning Office  
Natural Resource Council of Maine River Committee  
Penobscot Paddle and Chowder Society  
White Water Outfitters Association of Maine

The following references were used by the study team to identify and document resource values.

**AMC River Guide**, Appalachian Mountain Club, Volumes 1 and 2, Boston: AMC, 1980

**New England White Water River Guide**, Gabler, Ray, New Canaan, Conn: Tobey Publishing Co., Inc., 1975

**Canoe Trails Directory**, Makens, James C., New York: Doubleday and Company, Inc., 1979

**Maine Rivers**, Thorndike, Maine: The Thorndike Press.

**Maine's Whitewater Rapids**, McMahon, Janet, Augusta, Maine: Maine State Planning Office, 1981

**Pole, Paddle, and Portage**, Riviere, William A., Boston: Little, Brown, and Company, 1969

**Canoeing Maine (#1 and #2)**, Thomas, Eben, Thorndike, Maine: The Thorndike Press, 1979

**Canoeing Racing: Hot Blood and Wet Paddles**, Thomas, Eben, Hallowell, Maine: Hallowell Printing Company, 1974.

**The Maine Atlas and Gazetteer**, Yarmouth, Maine: Delorme Publishing Company, 1981.

## V. Final List of Rivers

The following is the list of all rivers and streams in the state of Maine which have been determined through the study process to have significant and/or unique natural and recreational resource values. This list represents the product of the river evaluation, documentation, and expert and public review process and are judged to possess resource values of regional, statewide, and greater than statewide significance.

The list defines for each river the segment of the river with one or more resource values. The matrix accompanying the list identifies the total number of resource values associated with each river segment. Resource values which are the state's most outstanding in a particular resource category or greater than statewide significance are highlighted on the matrix with an asterisk.

The following guidelines were used to define the limits to the segment of river containing a significant resource value. The river segment for each specific resource value for a particular river is defined in the appendices following this report. River segments were defined by the following criteria:

1. Segments were described using readily identifiable physical locations.
2. Distinct river segments were identified for each natural and recreation value by determining the length of river required to preserve a given natural value or to support a given recreational activity.
3. Segments were identified such that each exhibits a relatively consistent level of resource quality throughout the segment.
4. A river segment could extend through a natural or man-made lake if the upstream and downstream portions of the river segment were of consistent resource quality and type, and if the lake did not significantly disrupt the river's natural values or recreational use. Rivers which flow through urban or other developed areas were handled in a similar manner.
5. In recognition of the importance of upstream tributaries to the resource value of a river segment, the designation "to headwaters" was used to describe segment boundaries whenever the segment location and resource values justify such a description.
6. Segment boundaries were determined by associated resource values alone and did not take into account jurisdictional boundaries or the location of potential development.

## Chapter 10 Key Insights

### *Insights from the Maine licensed and Traveling sportsmen surveys*

- The state of Maine is well positioned as one of the “Best” destinations among Maine licensed hunters and anglers across a majority of attributes that are important to them - ranging from climate, safety, pricing, and amenities. Maine’s particular strengths among Traveling sportsmen are its attractive natural setting and its sense of safety.
  - The state’s natural amenities, beauty and sense of security or safety are also identified to be among the most important characteristics of a site that hunters and anglers say are important when making the decision to hunt or fish.
- The abundance of game species and the ability to target native populations are critical factors that influence destination choices. Maine Department of Inland Fisheries & Wildlife supports management and conservation efforts aimed at maintaining healthy populations of native species.
- Interestingly, one of the key destination factors for hunters and anglers is the remoteness of the location. However, travel distance also factors into their decision. The geographical size and travel distance to the more remote areas can be a challenge to bring sportsmen to the state. Among traveling sportsmen, it may be important to highlight other services in the area for non-sportsmen to influence the travel decision.
- Maine’s primary market from which to recruit visiting hunters and anglers is the Northeast, North Atlantic, and mid-Atlantic regions. Findings indicate that, given the size of the traveling sportsmen market in those areas, there remains growth potential to increase the state’s level of penetration within that market.
- Word-of-mouth is an important marketing tool among Maine’s sportsmen. Both hunters and anglers rely on recommendations from friends or family about hunting and fishing destinations. Maine sportsmen report a high degree of satisfaction with their hunting and fishing trips in Maine and are likely to recommend the experience to friends and family
- Traditional media outlets such as television, magazine, and online are also effective means to reach sportsmen. Top media titles consumed by sportsmen in Maine’s market area include The Bassmasters (TV), Field & Stream (magazine), and North American Hunting Club (online), among others.
- When not hunting or fishing, sportsmen and their travel companions are typically enjoying the opportunity to relax and unwind and to see the local sights.

## *Insights gained from other research about hunter and angler recruitment and retention*

- Nationally, only 15% of anglers typically purchase a license five out of five years.<sup>11</sup> Among hunters, 35% of resident hunters and 7% of nonresident hunters typically purchase a licensed five out of five years.<sup>12</sup> And, the number of hunters and anglers had been on the decline since the early 1990's.<sup>13</sup>
- Sportsmen cite a variety of reasons for not hunting or fishing. The most commonly cited reasons are: not enough time, takes time away from family, and other obligations such as work or family.<sup>14</sup> The argument of “not enough time” can actually be reflective of shifting preferences and other activities providing the same or more benefits than hunting or fishing had in the past.
- When hunters and anglers take a hiatus from the sport, the largest percent of sportsmen (41% for hunters and 38% for anglers) return within 3 years.<sup>15</sup> A recent effort, spearheaded by the Recreational Boating and Fishing Foundation, focused on lowering the rate of lapsing anglers or shortening the time away from the sport through used communication and outreach to encourage anglers to renew their license. Findings show that that these efforts have not been effective at reducing the rate of lapsing by a significant degree.
- What competes for free time among sportsmen? Among anglers, the most commonly cited preferred indoor recreational activity is relaxing or watching TV. The most commonly preferred outdoor activities included hiking, camping, hunting, and gardening.<sup>16</sup> A similar study has not been completed for hunters but it is possible the same preferences exist, particularly given the number of sportsmen who both hunt and fish.

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<sup>11</sup> Southwick Associates and Responsive Management. 2011. Understanding Activities that Compete with Recreational Fishing. Prepared for the American Sport Fishing Association under a U.S. Fish and Wildlife Service Grant VA M-24-R.

<sup>12</sup> Southwick Associates. 2010. *A Portrait of Hunters and Hunting License Trends: National Report*. Prepared for the National Shooting Sports Foundation.

<sup>13</sup> U.S. Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau. 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.

<sup>14</sup> American Sportfishing Association, Responsive Management, Oregon Department of Fish and Wildlife, and Southwick Associates. 2013. Exploring Recent Increases in Hunting and Fishing Participation. U.S. Fish & Wildlife Service Multi-state Conservation Grant F12AP00142.

<sup>15</sup> Ibid.

<sup>16</sup> Southwick Associates and Responsive Management. 2011. Understanding Activities that Compete with Recreational Fishing. Prepared for the American Sport Fishing Association under a U.S. Fish and Wildlife Service Grant VA M-24-R.



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1 **I. STATEMENT OF QUALIFICATIONS**

2 **Q. Please state your name, position, and business address.**

3 A. My name is Dean M. Murphy. I am a Principal with The Brattle Group in the Boston  
4 office, located at One Beacon Street, Boston, Massachusetts 02108.

5 **Q. Please describe your professional experience and educational background.**

6 A. I have over twenty-five years of experience in economic consulting, with the majority of  
7 my work focusing on the electricity sector. My work has encompassed topics such as  
8 resource and investment planning (including power and fuel price forecasting), valuation  
9 for contract disputes and asset transactions, climate change policy and analysis,  
10 competitive industry structure and market behavior, and market rules and mechanics. I  
11 have experience examining these and other electric-sector matters from the perspectives  
12 of investor-owned and public electric utilities, independent producers and investors,  
13 industry groups, consumers, regulators, and system operators. I hold a Ph.D. in Industrial  
14 Engineering and Engineering Management and an M.S. in Engineering-Economic  
15 Systems, both from Stanford University, and a B.E.S. in Materials Science and  
16 Engineering from the Johns Hopkins University.

17 **Q. Have you previously testified before any regulatory body?**

18 A. Yes. I have testified before the New Hampshire Public Utilities Commissions, the  
19 Connecticut Department of Public Utility Control, the New Jersey Department of Public  
20 Utilities, and the Public Utilities Board of Manitoba, and have presented to advisory  
21 committees to the Pennsylvania Department of Environmental Protection. I have  
22 testified before committees of the state legislatures in New Jersey, New York, and  
23 Pennsylvania. I have also testified before the United States Court of Federal Claims, the  
24 U.S. Bankruptcy Court (both New Jersey and Southern District of New York), and the  
25 United States District Court (Vermont). I have submitted written testimony on behalf of

1 the Massachusetts Attorney General’s Office addressing the procurement of offshore  
2 wind in the Section 83C proceedings. My CV is attached as Attachment 1.

3 **II. PURPOSE OF TESTIMONY**

4 **Q. On whose behalf are you testifying?**

5 A. I am testifying on behalf of the Massachusetts Attorney General’s Office.

6 **Q. What is the purpose of your testimony?**

7 A. Pursuant to Section 83D of the Green Communities Act, (“Act,” or “Section 83D”),  
8 Eversource, National Grid, and Unitil (collectively, the “Distribution Companies” or  
9 “EDCs”) jointly sponsored a competitive solicitation for Clean Energy Generation for an  
10 annual amount of electricity equal to approximately 9,450,000 MWh (9.45 TWh), to be  
11 procured by the Distribution Companies entering into cost-effective long-term contracts  
12 by 2022.<sup>1</sup> In accordance with Section 83D, the Distribution Companies issued a Request  
13 for Proposals (“RFP”) for Long-Term Contracts for Clean Energy Projects. Thereafter,  
14 the Evaluation Team received and evaluated the proposals.<sup>2</sup>

15 The New England Clean Energy Connect Hydro bid (“NECEC Hydro”) was ultimately  
16 selected for contract negotiations, following the siting denial of the Northern Pass  
17 Transmission Hydro bid (“NPT Hydro”), which had initially been selected. The NECEC  
18 Hydro bid consists of energy supplied by Hydro Renewable Energy, Inc. (“HRE”) and a  
19 new HVDC transmission line constructed by Central Maine Power (“CMP”) that  
20 interconnects Québec with the New England power grid in Maine.<sup>3</sup> The contract

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<sup>1</sup> Section 83D of Chapter 169 of the Acts of 2008 (the “Green Communities Act”), as amended by chapter 188 of the Acts of 2016, *An Act to Promote Energy Diversity* (the “Energy Diversity Act”).

<sup>2</sup> The Evaluation Team was comprised of the Distribution Companies and the Department of Energy Resources (“DOER”).

<sup>3</sup> HRE is a wholly-owned indirect unit of Hydro-Québec.

1 negotiations resulted in power purchase agreements (“PPAs”) for energy and  
2 Environmental Attributes (“EAs”) between the EDCs and H.Q. Energy Services (U.S.)  
3 Inc. (“HQ”), and Transmission Service Agreements (“TSAs”) between the EDCs and  
4 CMP. The PPAs specify the obligation of HQ to supply Qualified Clean Energy and  
5 Environmental Attributes from Hydro-Québec Power Resources (“HQPR”).<sup>4</sup>

6 The purpose of my testimony is to discuss the reasonableness of the Section 83D  
7 solicitation process and the resulting PPAs and TSAs.

8 **Q. What are the major findings from your analyses?**

9 A. The proposed contracts, as written, do not ensure that the Qualified Clean Energy  
10 acquired via the contracts will comprise fully incremental energy deliveries into New  
11 England, as the RFP specified. The RFP required that the Qualified Clean Energy under  
12 the contract should be incremental to (*i.e.*, in addition to) the hydroelectric energy that  
13 HQ has delivered to New England historically, or that would otherwise be expected to  
14 be delivered. The proposed contracts implement much weaker requirements for  
15 incrementality and would allow most (and potentially all) of the contract energy  
16 delivered to substitute for historical deliveries. This aspect of the contracts must be  
17 corrected in order to conform with the RFP requirements, and the overall purpose of the  
18 Act. This could be done by modifying the requirements of the proposed contracts,  
19 assuming HQ is able and willing to provide fully incremental Qualified Clean Energy  
20 into New England. If HQ is unable or unwilling to provide fully incremental Qualified  
21 Clean Energy, other sources of clean energy could supplement or substitute to satisfy this  
22 requirement. For example, the HQ deliveries of hydroelectric energy could be  
23 supplemented with some renewable energy that does meet the RFP’s incrementality

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<sup>4</sup> The PPAs define HQPR as “those existing hydroelectric generating stations, located in the Province of Québec and owned and operated as a system by Hydro-Québec or its subsidiaries from time to time, that produce electric energy, which consists predominantly of low-carbon and renewable hydro-electric energy services during the Services Term.” Exh. JU-3-B, at 14.

1 requirement, or the HQ energy could be replaced in its entirety with energy from other  
2 renewable bids (which might have different transmission requirements). There were  
3 several alternative bids comprised of new renewable generation (and transmission) that  
4 would provide fully incremental clean energy, and some of these alternative bids scored  
5 well in the evaluation.

6 In addition, I have concerns about the selection process. Neither of the two top-scoring  
7 bids, [REDACTED]  
8 [REDACTED], nor a potential portfolio comprised of just those two bids, were carried  
9 forward from the second stage of the evaluation into the third and final stage.<sup>5</sup> These  
10 alternatives that were dropped from consideration may have performed better than the  
11 NECEC Hydro project that was selected. This selection issue may be related to the  
12 previous question of whether the proposed contracts provide fully incremental clean  
13 energy, because the [REDACTED] projects would have fully satisfied the  
14 incrementality requirements of the RFP.

15 I am also concerned about the inclusion of bidders' affiliates in the Evaluation Team.  
16 This is generally considered inappropriate because it can bias the evaluation and selection  
17 process. Such concerns arose in multiple instances in the 83D evaluation process and  
18 were noted by the Independent Evaluator.<sup>6</sup>

19 My final concerns regard the potential for the scaling approach used in bid scoring to  
20 inadvertently and improperly affect the bid scores and ranking, and the metric used to  
21 calculate the Global Warming Solutions Act ("GWSA") benefits. Although these appear  
22 to be less important issues in this solicitation than the concerns noted above, they should  
23 be addressed in any future solicitations.

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<sup>5</sup> Revised Independent Evaluator Final 83D Report Confidential, at 68, 70 (August 7, 2018). These two high-scoring bids were included as components of portfolios that scored relatively poorly in the evaluation; the lower scores for these portfolios may have been due to the inclusion of still other, lower-scoring bids in those portfolios.

<sup>6</sup> See, e.g., *id.*, at 27-28, 32, 36, 48-49.

1 **III. REVIEW OF KEY DOCUMENTS IN THE PROCEEDING**

2 **Q. What documents have you reviewed in this proceeding?**

3 A. I have reviewed the RFP, the Independent Evaluator’s report submitted by Peregrine  
4 Energy Group, responses to Information Requests, and the direct Joint Testimony and  
5 accompanying exhibits submitted by the Distribution Companies, including the Tabors  
6 Caramanis Rudkevich (“TCR”) evaluation report, the bid selection letters, the scoring  
7 protocols, the qualitative scoring, portions of the bids, and the proposed contracts.

8 **IV. THE PROPOSED CONTRACTS DO NOT PROVIDE INCREMENTAL**  
9 **HYDROELECTRIC GENERATION AS CONTEMPLATED BY THE RFP**

10 **Q. What is your concern regarding whether these proposed contracts will provide**  
11 **incremental hydroelectric generation?**

12 A. The proposed contracts do not require that HQ provide incremental hydroelectric  
13 generation as specified in the RFP. The stated goal of the Act is to “facilitate the  
14 financing of clean energy generation resources.”<sup>7</sup> That is, the legislature intended to  
15 bring additional clean energy into the Commonwealth. This goal is reflected in the RFP,  
16 the stated intent of which, in the context of a hydroelectric bid, was to acquire  
17 “Incremental Hydroelectric Generation”<sup>8</sup> that would be incremental to historical  
18 hydroelectric energy deliveries into New England.<sup>9</sup> My understanding of the purpose of  
19 this RFP requirement is to ensure that the hydroelectric or renewable energy resources  
20 procured under the long-term contracts would not substitute for historical clean energy  
21 deliveries, but rather would provide a long-term net increase in the amount of clean  
22 energy delivered into New England. As written, the proposed contracts include much

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<sup>7</sup> Section 83D(a).

<sup>8</sup> Exh. JU-2, at 18.

<sup>9</sup> Bids for renewable resources were required to be provided from new generation, which would necessarily be incremental to historical energy. Hydro suppliers were permitted to offer “Incremental Hydroelectric Generation” from existing resources but were required to show that the generation would be incremental.

1 weaker requirements. Although each EDC's contract has its own incrementality  
2 provisions, even the most stringent contract requires that less than half of the newly  
3 contracted clean energy provided be incremental to historical average generation.

4 **Q. What did the RFP require in terms of incrementality?**

5 A. The RFP defines incremental hydroelectric generation:

6 "Incremental Hydroelectric Generation" means Firm Service Hydroelectric  
7 Generation that represents a net increase in MWh per year of hydroelectric  
8 generation from the bidder and/or affiliate as compared to the 3 year historical  
9 average and/or otherwise expected delivery of hydroelectric generation from  
10 the bidder and/or affiliate within or into the New England Control Area.<sup>10</sup>

11 That is, to be considered "incremental," the RFP requires the bidder to provide energy in  
12 addition to the bidder's 3-year historical average of deliveries into New England (or more  
13 than the bidder would have otherwise delivered). The 2014-2016, 3-year imports from  
14 HQ into New England is 14.8 TWh.<sup>11</sup> Thus, for the 9.55 TWh of Qualified Clean Energy  
15 from the contracts to be fully incremental energy delivery, total deliveries would need to  
16 be 24.35 TWh annually.

17 **Q. Do the proposed contracts adopt the RFP definition of incrementality?**

18 A. Although the preamble that appears in each of the proposed contracts asserts  
19 "WHEREAS, the output of the Hydro-Québec Power Resources, delivered through the  
20 New Transmission Facilities (as defined herein), shall constitute incremental  
21 hydroelectric generation during the Services Term,"<sup>12</sup> the contracts themselves do not  
22 define the term "incremental hydroelectric generation." Rather than repeating or  
23 referring to the definition in the RFP, or implementing equivalent requirements, each of  
24 the proposed contracts establishes considerably less stringent requirements.

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<sup>10</sup> Exh. JU-2, at 5.

<sup>11</sup> Exh. NEER-1-8.

<sup>12</sup> See, e.g., Exh. JU-3-A, at 7.

1 The contracts require two types of energy to be delivered: 1) “Guaranteed Qualified  
2 Clean Energy,” which is the contracted total of 9.55 TWh across the three contracts, to  
3 be delivered through the NECEC,<sup>13</sup> and 2) “Baseline Hydroelectric Generation Imports”  
4 (“Baseline Hydro”), which consists of all other power deliveries from Hydro-Québec to  
5 New England.<sup>14</sup> Exhibit H to the proposed contracts establishes Minimum Required  
6 Baseline Hydroelectric Generation Imports (“Minimum Baseline”) quantities.<sup>15</sup>  
7 Conceptually, to provide incremental generation, the Minimum Baseline should equal  
8 historical energy deliveries. But the values established for the Minimum Baseline  
9 quantities are substantially below the historical average, and so the contracts do not  
10 actually require the clean energy deliveries to be incremental.

11 The three EDCs’ proposed contracts establish different requirements for the Minimum  
12 Baseline quantity. The National Grid contract establishes a Minimum Baseline of 9.45  
13 TWh, which is substantially below the 14.8 TWh of historical deliveries.<sup>16</sup> This implies  
14 that HQ must deliver a total of 19.0 TWh annually to New England (9.45 TWh of  
15 Minimum Baseline plus 9.55 TWh from the contract). Even though the contracts

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<sup>13</sup> Exhibit B to the proposed contracts provides the Schedule of Guaranteed Qualified Clean Energy for each hour. For Eversource, this number is 579.335 MWh/hour (Exh. JU-3-A, at 72); for National Grid it is 498.348 MWh/hour (Exh. JU-3-B, at 80); and for Unitil it is 12.317 MWh/hour (Exh. JU-3-C, at 72). Summing across EDCs and multiplying by 8,760 hours/year yields total Guaranteed Qualified Clean Energy of 9.548 TWh/year.

<sup>14</sup> See, *e.g.*, Exh. JU-3-A, at 86. The Baseline Hydro amount refers to all other deliveries to New England, not the amounts that are specific to each EDC or their contracts.

<sup>15</sup> Exh. JU-3-B, at 92. While the Eversource and Unitil contracts do not use the phrase “Minimum Required Baseline Hydroelectric Generation Imports,” the contracts do require a minimum level of “Baseline Hydroelectric Generation,” against which damages are measured. Exh. JU-3-A, at 86.

<sup>16</sup> According to National Grid’s response to Exhibit NEER-1-8, due to “the difficulties of predicting what differences from HQ’s 3-year historical average annual delivery of approximately 14.8 TWh from HQ to New England from 2014-2016 could reasonably be expected over the twenty years following the targeted commercial operation date for this project, it is reasonable and acceptable to move forward with the contract based on HQ’s agreement to the 9.45 TWh Minimum Required Baseline Hydroelectric Generation Imports.”

1 nominally represent incremental hydro of 9.55 TWh annually, HQ will be required to  
2 deliver to New England only 4.2 TWh more than it has delivered historically. In other  
3 words, less than half the contract energy is required to be incremental; for the remainder,  
4 HQ can simply substitute contract energy at the contract price for energy that it has  
5 historically sold into New England. In fact, the Minimum Baseline for National Grid  
6 may be reduced further (though not increased) by several potential adjustments.

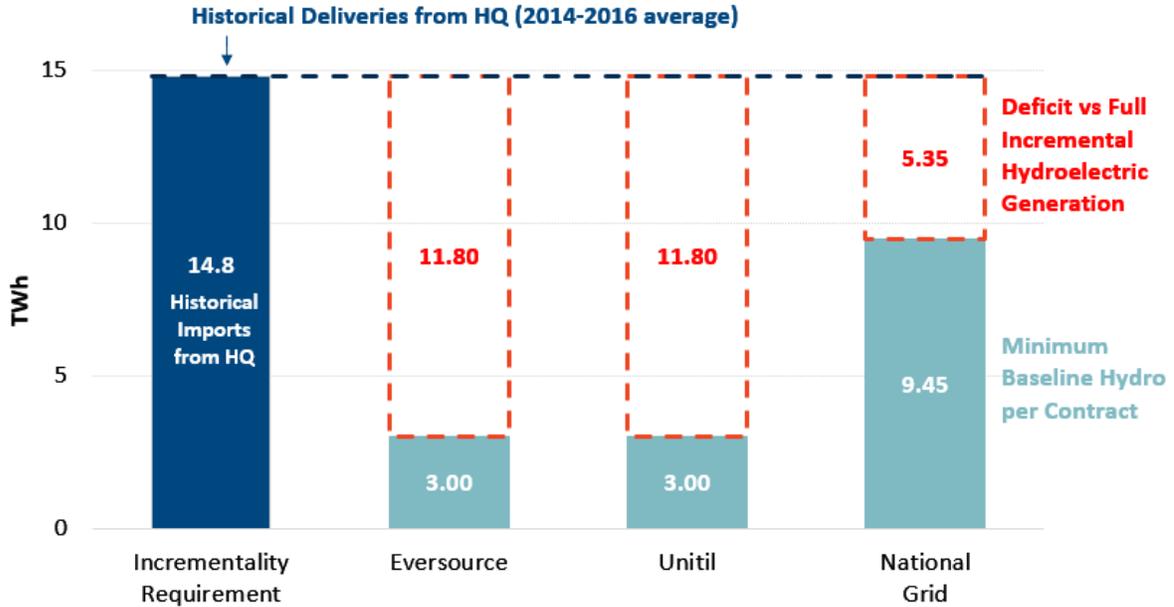
7 The incrementality requirements of the Eversource and Unitil contracts are even less  
8 stringent. They are based on a Minimum Baseline quantity of 3.0 TWh,<sup>17</sup> so that the total  
9 clean energy deliveries into New England, including deliveries under the new contract,  
10 can be below historical average deliveries. Thus, HQ could satisfy its long-term contract  
11 obligations by delivering only 12.55 TWh annually (9.55 contract + 3.0 Baseline), which  
12 would be 15% less clean energy than it has delivered historically. The difference could  
13 then, for example, be sold into the market to another buyer offering a higher price, which  
14 might include a premium for the fact that the hydro energy is clean.

15 Figure 1 below illustrates the contract quantity requirements, contrasting what would be  
16 required for full incrementality as described in the RFP, shown by the first column, with  
17 what is required by each of the proposed contracts. The figure shows that the Eversource  
18 and Unitil contracts require HQ to deliver just 3.0 TWh of Baseline Hydro to New  
19 England, 80% (11.80 TWh) below the historical average. The National Grid contract  
20 requires somewhat greater Baseline deliveries of 9.45 TWh, but still 36% (5.35 TWh)  
21 below the historical average. The Deficit indicated relative to each contract is the amount  
22 by which total hydro deliveries to New England (Qualified Clean Energy plus Baseline  
23 Hydro) can fall short of full incrementality without penalty.

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<sup>17</sup> According to Exhibit NEER-1-9, Eversource and Unitil found that the requirement to deliver incremental generation was met in the bid response, and the 3 TWh Minimum Baseline that was negotiated would not make “the administration of such a provision problematic.”

**Figure 1: Baseline Hydro Deliveries into New England  
Required by Proposed Contracts**



1 Sources and Notes: Minimum Baseline Hydro per Contract is from contracts (Exhs. JU-3-A, JU-3-B, JU-3-C).

2 **Q. Do the Minimum Baseline hydro generation levels established in the proposed**  
3 **contracts provide a reasonable assurance to Massachusetts ratepayers that the total**  
4 **clean energy delivered to the Commonwealth will increase if the proposed contracts**  
5 **are enacted?**

6 A. No. As discussed above, the contract provisions do not ensure that energy deliveries  
7 under the contracts will be fully incremental relative to historical imports from HQ. In  
8 the case of Eversource and Unitil, total clean energy deliveries could fall below historical  
9 levels without penalty. Furthermore, the stated goal of the Act is to “facilitate the  
10 financing of clean energy generation” through “cost-effective long-term contracts.”<sup>18</sup> If  
11 the proposed long-term contracts allow HQ to provide less clean energy to New England  
12 than it has historically, then it is not apparent that the contracts would be financing clean  
13 energy generation. It is also not clear that the contracts would be cost-effective, as  
14 ratepayers could be paying for energy and EAs as if they would be incremental to

<sup>18</sup> Section 83D(a).

1 historical deliveries, but the deliveries would not necessarily be fully incremental  
2 because the contracts do not require it.

3 **Q. How do the contracts enforce the Minimum Baseline requirements that they do**  
4 **include?**

5 A. The Minimum Baseline requirements are enforced by a damages calculation that  
6 penalizes any Shortfall, the amount by which Baseline Hydro is below the Minimum  
7 Baseline. The damages, which would be applied to the energy payment to HQ, are  
8 calculated as a share of the TSA payments proportional to the Shortfall. For National  
9 Grid, the damages share is the Shortfall divided by the Minimum Baseline (9.45 TWh);  
10 whereas for Eversource and Unitil, the damages share is the Shortfall divided by the  
11 Minimum Baseline (3.0 TWh) plus the contract energy, totaling 12.55 TWh. In both  
12 cases, the damage amount is the relevant share multiplied by the annual TSA payments,  
13 with some time averaging and rolling average adjustments. Several factors may reduce  
14 the damages amount and/or reduce the Minimum Baseline deliveries that are required to  
15 avoid damages.<sup>19</sup>

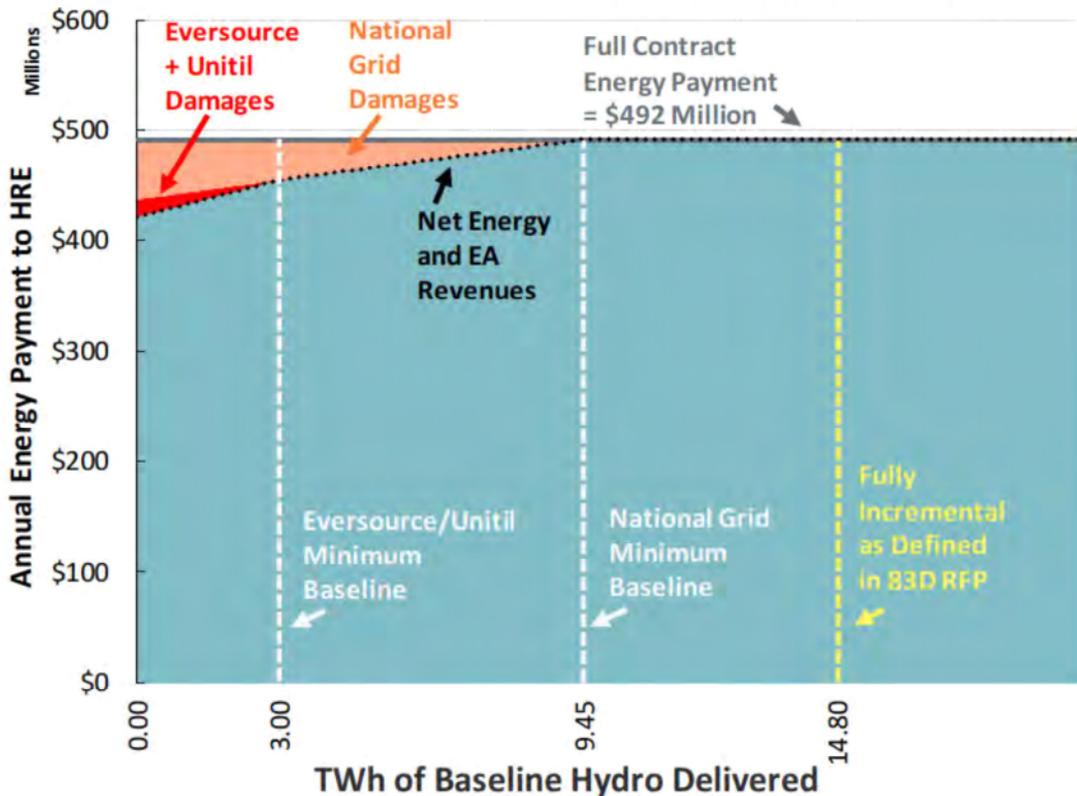
16 Figure 2 below illustrates the contract incentives facing HQ to provide incremental  
17 energy, showing how the aggregate contract payments for energy and EAs change as the  
18 level of Baseline Hydro delivered changes. If HQ delivers fully incremental Baseline  
19 Hydro (equal to the historical average of 14.8 TWh), there are no damages and no

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<sup>19</sup> Damages are only calculated if the Shortfall is positive (*i.e.*, HQPR delivers less than the Minimum Baseline). The Eversource and Unitil contracts provide a reduction in the Minimum Baseline subject to a *Force Majeure* provision, and a provision related to negative pricing in New England. Exhs. JU-3-A, at 86-87; JU-3-C, at 84-85. The National Grid contract provides for several factors that can reduce (but not increase) the Minimum Baseline, including on-peak prices relative to a floor, total transfer capabilities for deliveries into New England, total net electricity exports from Hydro-Québec, and changes in Hydro-Québec's firm transmission rights. The National Grid damages for Shortfall are also scaled down by 20% after each five years of the contract, starting at 100% of the Shortfall share times the TSA payment in the first 5 years, and falling to 40% in the last 5 years. Exh. JU-3-B, at 94.

1 reduction to the net revenues earned under any of the EDCs' contracts. Damages are  
2 incurred when Baseline Hydro deliveries drop below the Minimum Baseline of the  
3 National Grid contract, 36% below the level that would be fully incremental. As Baseline  
4 Hydro falls below this level, net energy and EA revenues from National Grid are reduced  
5 according to the Shortfall relative to the National Grid Minimum Baseline, at a rate of  
6 \$5.80/MWh of Shortfall. Below the 3.0 TWh Minimum Baseline of the Eversource and  
7 Unitil contracts, which is 80% below full incrementality, Eversource and Unitil damages  
8 begin to be incurred as well; total damages across all three contracts in this range are  
9 \$10.98/MWh of Shortfall. Even at zero Baseline Hydro, total energy and EA payments  
10 across the three contracts are reduced by only 14.3%. These measures do not account  
11 for any of the other adjustments noted above, which could reduce (but not increase) the  
12 damage amounts.

Figure 2: EDC Energy Payment vs. Baseline Hydro Generation



Source and Notes: Contracted energy prices, contracted clean energy delivery, and contract details in relation to Baseline Hydro are from Exhibits JU-3-A, JU-3-B, JU-3-C. Transmission unit price and contract capacity are from Exhibits JU-

4-A, JU-4-B, JU-5-C. For the purposes of this chart, it is assumed that all contracted clean energy (Guaranteed Qualified Clean Energy) is delivered. The chart reflects prices from contract year 1 (Nominal 2017 \$).

1 **Q. Do the damage mechanisms in the contracts give HQ sufficient incentive to provide**  
2 **fully incremental hydro deliveries?**

3 A. No, the damage mechanisms do not give HQ the proper incentives to provide fully  
4 incremental deliveries of clean energy. There is no disincentive for HQ to under-provide  
5 Baseline Hydro until it falls well below the historical average, and even then, the  
6 disincentives for further Shortfall are modest.

7 **Q. Has this potential for Massachusetts ratepayers to receive the same total clean**  
8 **energy generation but pay for it at an above market rate been raised previously?**

9 A. Yes. The Department of Public Utilities (“Department”) explicitly acknowledged this  
10 risk in response to HQ’s comments,<sup>20</sup> in which HQ proposed amending the  
11 incrementality requirements in the RFP by changing the definition of incremental hydro  
12 generation to require only the capability to deliver incremental power, rather than the  
13 actual delivery of incremental power:

14           The Department agrees that there would be a risk to ratepayers if an electric  
15           distribution company entered into a contract with a bidder based on the

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<sup>20</sup> HQ proposed that Incremental Hydroelectric Generation be defined as: “Firm Service Hydroelectric Generation that is capable of providing a net increase in MWh per year of hydroelectric generation from the bidder and/or affiliate as compared to the 3 year historical average delivery of hydroelectric generation from the bidder and/or affiliate within or into the New England Control Area.” *Fitchburg Gas and Electric Light Company d/b/a Unitil, Massachusetts Electric Company and Nantucket Electric Company d/b/a National Grid, and NSTAR Electric Company and Western Massachusetts Electric Company, each d/b/a Eversource Energy*, D.P.U. 17-32, Comments of H.Q. Energy Services (U.S.) Inc., at 8 (February 21, 2017). This proposed definition is aligned with HRE’s response to how it provides incrementality in its bid for this solicitation: “

\_\_\_\_\_” *Section 83D Request for Proposal Application Form, NECEC RFP Response* (HRE) Confidential, Section 4.2, at 20 (emphasis added).

1 bidder's capability to provide a net increase in MWh/year of hydroelectric  
2 generation. If the bidder subsequently failed to provide a net increase in  
3 generation, ratepayers would have paid for a service (*i.e.*, Incremental  
4 Hydroelectric Generation) that the bidder did not deliver.<sup>21</sup>

5 In its 2016 background document on regulations to limit greenhouse gases ("GHG"),  
6 including the Clean Energy Standard ("CES"), the Massachusetts Department of  
7 Environmental Protection ("DEP") explicitly expressed a concern that "resource  
8 shuffling" of Canadian hydro (*i.e.*, the contractual or transactional reassignment of clean  
9 energy without increasing the total amount of clean energy overall) could result in the  
10 CES delivering no additional clean energy to the Commonwealth:

11 Excluding existing resources from the CES would not be sufficient to prevent  
12 resource shuffling with respect to transmission of electricity from Canada.  
13 Currently, electricity imported from Canada is an important source of clean  
14 electricity for Massachusetts, but the ability to import additional electricity  
15 from Canada is limited by the amount of transmission capacity. Resource  
16 shuffling could occur if new hydroelectric generation resources were to  
17 displace existing hydroelectric resources as the source of the electricity  
18 traveling through existing transmission lines. In this case, CES compliance  
19 could occur without any change in the amount of clean energy available for  
20 use in Massachusetts.<sup>22</sup>

21 Although the DEP's comments were focused on the role of transmission, the issue of  
22 incrementality is not limited to transmission. Adding new transmission without requiring  
23 that deliveries be incremental would fail to address the issue, as illustrated in this  
24 proceeding and the development of the RFP.

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<sup>21</sup> D.P.U. 17-32, at 33 (2017).

<sup>22</sup> Massachusetts Department of Environmental Protection, *Background Document on Proposed New and Amended Regulations*, at 30 (December 16, 2016).

1 **Q. Does the fact that the contracts add significant transmission capacity to enable**  
2 **greater deliveries to New England alleviate the concern about whether the contract**  
3 **energy would be incremental?**

4 A. Energy deliveries from Québec are often constrained by the limits of the transmission  
5 interface between Québec and New England.<sup>23</sup> Thus transmission must be expanded to  
6 enable the delivery of incremental clean energy into New England. However, merely  
7 adding transmission does not ensure that clean energy deliveries will be incremental  
8 relative to historical deliveries, unless the contracts explicitly require this. As the  
9 proposed contracts are written, that will not necessarily be the case; clean energy  
10 deliveries could be far less than fully incremental and still satisfy the requirements of the  
11 proposed contracts.

12 **V. ADDITIONALITY AND OFFSETTING GREENHOUSE GAS EMISSIONS**

13 **Q. Must the contracts require full incrementality for the 83D clean energy to create**  
14 **the desired offset to greenhouse gas emissions?**

15 A. Even if the proposed contracts required energy deliveries to be fully incremental, this  
16 would not necessarily guarantee that GHG emissions would decrease by an amount  
17 corresponding to the Qualified Clean Energy of the contract. Incrementality is defined  
18 in the RFP only with respect to deliveries into New England, while GHG emissions must  
19 be measured at a global level.<sup>24</sup> It would be possible, at least in principle, to satisfy the  
20 requirements of full incrementality (*i.e.*, the Qualified Clean Energy is incremental to the  
21 full historical average deliveries into New England), and still not offset a corresponding  
22 amount of global GHG emissions. This could happen through resource shuffling—  
23 reassignment of a fixed amount of clean energy so as to increase the clean energy

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<sup>23</sup> *Section 83D Request for Proposal Application Form*, NECEC RFP Response (HRE) Confidential, Section 4.2, at 20.

<sup>24</sup> Exh. JU-2, at 5-6.

1 delivered to a particular destination without increasing the total amount of clean energy  
2 overall.

3 For instance, with the new NECEC transmission link, if HQ increased deliveries into  
4 New England by the contracts' 9.55 TWh relative to historical New England deliveries,  
5 this would achieve full incrementality as defined in the RFP. But if HQ accomplished  
6 this by reducing its exports to other neighboring regions rather than by increasing clean  
7 energy generation overall, then global GHG emissions would not necessarily be reduced.  
8 Diverting clean energy from other regions to New England would enable a reduction in  
9 fossil generation and emissions within New England, but the reduced deliveries to other  
10 regions may need to be replaced by additional fossil generation in those regions. This  
11 would effectively substitute fossil generation in other regions for fossil generation in  
12 New England, shifting emissions from one region to another, without causing a material  
13 decrease (the actual impact would depend on the relative emissions intensities of each  
14 region).<sup>25</sup>

15 **Q. What would be required to ensure a reduction in GHG emissions?**

16 A. For the 83D contracts, or any project, to reliably reduce GHG emissions, they would need  
17 to provide clean energy that is “additional.” Additionality is a commonly-used concept  
18 in the climate change discussions; it refers to emissions reductions that occur because of  
19 a proposed action, reductions that would not have occurred otherwise under “business as  
20 usual.” Importantly, it must involve overall global emissions reductions, not reductions  
21 in one region or sector that might be offset by a corresponding increase that is triggered  
22 elsewhere, or reductions that would have occurred regardless of the proposed action. For  
23 example, a PPA that supports the development of a new wind farm will generally be  
24 additional. The new wind farm produces clean energy that would not otherwise be

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<sup>25</sup> This shifting of emissions from one region to another through resource shuffling is analogous to “leakage,” defined as “the offset of a reduction in emissions of greenhouse gases within the commonwealth by an increase in emissions of greenhouse gases outside of the commonwealth.” G.L. c. 21N, § 1.

1 produced, displacing fossil energy and reducing emissions, so the clean energy and the  
2 emissions reductions are additional to what would have occurred without the PPA. Clean  
3 energy, however, is not always additional in this sense. If an existing wind farm with an  
4 expiring PPA signed a renewed PPA with a different buyer, the renewed PPA does not  
5 result in additional clean energy. The existing wind farm would have continued to  
6 produce clean energy even without the renewed PPA; the output may have been sold to  
7 a different buyer or in the spot market. The renewed PPA does not increase the total  
8 clean energy produced and consumed or reduce emissions; it just reallocates clean energy  
9 that would be produced in any case. It can sometimes be challenging to define and  
10 determine additionality in practice, primarily because doing so can require a very precise  
11 specification of the alternative “business as usual” circumstance—*i.e.*, additional to  
12 what? But for the purposes of the 83D procurement, the important point is that a global  
13 perspective is necessary. The RFP requirement that the contract energy be incremental  
14 to New England (even if the proposed contracts required full incrementality) does not  
15 ensure that it would be additional or necessarily result in corresponding GHG reductions.

16 **Q. Do the proposed contracts require the energy to be additional in this sense of**  
17 **offsetting GHGs globally?**

18 A. No, not necessarily. HQ has committed to using existing HQPR facilities to supply the  
19 contracted energy.<sup>26</sup> If these facilities were spilling significant amounts of water due to  
20 transmission constraints that would be relieved by the NECEC transmission, or if Hydro-  
21 Québec undertook investments to expand its system—to increase output from existing  
22 facilities or add new generation or storage capability—then a portion of the generation  
23 may be considered additional. But the contracts do not require this, nor has HQ indicated  
24 that it is the case.

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<sup>26</sup> See, e.g., Exhibit JU-3-A, at 70-71 for a list of existing facilities that will be used to provide the contracted energy.

1 **VI. POTENTIAL CHANGES TO THE PROPOSED CONTRACTS TO ENSURE**  
2 **INCREMENTALITY**

3 **Q. How could the proposed contracts be modified to ensure the energy provided is fully**  
4 **incremental relative to historical deliveries?**

5 A. Increasing the Minimum Required Baseline Hydroelectric Generation Imports quantity  
6 in Exhibit H to the proposed contracts will increase the amount of energy that is required  
7 to be incremental. Unfortunately, it may not be as simple as increasing this value to equal  
8 the 14.8 TWh historical average of deliveries into New England (and removing the  
9 provisions that can reduce the Minimum Baseline). This simplistic approach could create  
10 difficulties because the amount of hydroelectric energy that HQPR is able to produce can  
11 vary from year to year based largely on hydrologic conditions. Dry years will have less  
12 total energy available, and it may not be possible to export the historical average amount;  
13 similarly, the appropriate Baseline Hydro amount could exceed the historical average in  
14 years with above-average energy. Some further adjustment mechanisms may be  
15 necessary; these might include indexing the Minimum Baseline to water conditions or to  
16 total exports from Hydro-Québec, and/or making the Minimum Baseline a multi-year or  
17 rolling requirement (the National Grid contract contains some such adjustments). A  
18 desirable principle for defining the Baseline Hydro energy (as well as the 83D contract  
19 energy) is that it should take priority over HQ exports to other regions to ensure that the  
20 contract energy is incremental to what would have been delivered to New England absent  
21 the contracts. But the existing low minimum thresholds for Baseline Hydro delivery in  
22 the proposed contracts, and the modest incentives to meet even those minimum  
23 thresholds, are insufficient to ensure that Massachusetts ratepayers will receive the fully  
24 incremental clean energy that was solicited in the RFP.

25 **Q. Would HQ be able to provide fully incremental energy to meet such a contract**  
26 **requirement with its existing system?**

27 A. In Section 4.2 of its bid materials, HRE [REDACTED]  
28 [REDACTED]

1 [REDACTED]  
2 [REDACTED]  
3 [REDACTED]

4 **Q. If HQ is unable or unwilling to provide hydro production that is fully incremental,**  
5 **are there other options that could improve the performance of the contracts on this**  
6 **dimension?**

7 A. If HQ is unable or unwilling to provide fully incremental hydro, as that might be  
8 reasonably defined, then another option could be to include other energy sources that can  
9 provide incremental energy. For example, if some new renewable energy was used to  
10 supplement the HQ hydro supply, the demands on HQPR's existing hydro system could  
11 be reduced while maintaining the total amount of incremental energy provided to New  
12 England under the contract. An alternative bid included both wind and hydro generation  
13 with the NECEC transmission, the "NECEC Wind/Hydro" bid [REDACTED]  
14 [REDACTED]. In this bid, SBx (a joint venture of Gaz Metro and Boralex)  
15 would develop the wind generation as a complement to the existing hydro power. [REDACTED]  
16 [REDACTED]  
17 [REDACTED]

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<sup>27</sup> Section 83D Request for Proposal Application Form, NECEC RFP Response (HRE) Confidential, Section 4.2, at 20.

28 [REDACTED].  
29 [REDACTED] he  
difference between [REDACTED] and the [REDACTED] provided in the wind portion of the bid,  
leaves [REDACTED] TWh of the contract to be fulfilled by hydro generation.

1 **Q. Would this amount of supplemental wind energy enable HQPR’s existing hydro**  
2 **system to provide the balance of the energy requirements for fully incremental**  
3 **energy?**

4 A. It may, though it is possible that even with the [REDACTED]  
5 [REDACTED], HQ might not be able or willing to provide the lower [REDACTED]  
6 [REDACTED] of hydro required for incremental generation. In that case, it may be necessary to  
7 turn to other suppliers for the required amount of incremental energy. [REDACTED]

8 [REDACTED]  
9 [REDACTED].<sup>30</sup> If the NECEC Hydro bid cannot provide fully incremental  
10 energy, these other bids would be unable to do so. Fortunately, there were other bids that  
11 could supply the desired fully incremental clean energy requirements. In fact, because  
12 many of these other bids were based on new renewable generation, they would be  
13 additional, and thus would ensure that the clean energy delivered to New England would  
14 offset GHG emissions, which even fully incremental energy from existing hydro  
15 resources might not necessarily do, as discussed above. The Evaluation Team created  
16 and evaluated several portfolios of renewable energy projects in Stage 3 that could be  
17 candidates if the NECEC Hydro bid [REDACTED] could not provide  
18 incremental clean energy. In addition, the two highest-scoring bids in the Stage 2  
19 evaluation were [REDACTED] bids; although they were not  
20 evaluated on a standalone basis in Stage 3, they could be potential candidates.

21 **VII. PROJECT SELECTION**

22 **Q. What is your concern regarding project selection?**

23 A. There appear to be some issues regarding which projects and portfolios were selected to  
24 carry forward into Stage 3 of the evaluation. Specifically, the two highest-scoring  
25 projects in Stage 2, [REDACTED], were not carried forward into the

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30 [REDACTED]

1 Stage 3 evaluation individually. This may have been because each bid offers less clean  
2 energy than the 9.45 TWh desired in the solicitation, though that would not necessarily  
3 disqualify these projects as standalone bids, since there was no requirement that the full  
4 amount be acquired in a single solicitation, and multiple solicitations were contemplated.  
5 Further, a portfolio consisting of just these two projects would have provided about [REDACTED]  
6 of the energy targeted by the procurement and may have performed very well. These  
7 two projects were included as components in several larger portfolios, though these larger  
8 portfolios included other, lower-scoring bids that may have diluted their value.

9 **Q. Do your concerns regarding project selection relate to the question of whether the**  
10 **NECEC Hydro bid offers fully incremental clean energy?**

11 A. Yes. The [REDACTED] bids both [REDACTED], and so there  
12 is no concern about whether they would offer incremental energy to New England. In  
13 fact, they would be additional as well, in the sense discussed above, and are not subject  
14 to concerns over resource shuffling, so they would offer confidence regarding global  
15 GHG reductions.

16 **Q. Please briefly describe the evaluation of bids and bid selection process.**

17 A. The bids were evaluated in three stages, which was followed by bid selection. In Stage  
18 1, bids were evaluated against the RFP threshold requirements. Bids that met the  
19 threshold requirements were carried to Stage 2, where they were evaluated on both  
20 quantitative and qualitative dimensions. The Evaluation Team then selected several large  
21 proposals from Stage 2, plus several portfolios made up of multiple projects, for further  
22 evaluation in Stage 3, and ultimately project selection.

23 **Q. Were all the bids that were evaluated in Stage 2 also evaluated in Stage 3?**

24 A. No. As stated in the RFP, it was not expected that all bids from Stage 2 would be  
25 evaluated in Stage 3. The RFP provides three metrics for including bids in Stage 3:  
26 1) the rank order of the proposals at the end of the Stage 2 evaluation; 2) the cost

1 effectiveness of the proposals based on the Stage 2 quantitative evaluation; and 3) the  
2 total annual generation of the proposals relative to the procurement target.<sup>31</sup>

3 **Q. Were the proposals with the highest rank order and highest cost-effectiveness from**  
4 **Stage 2 brought forward into Stage 3?**

5 A. As standalone projects, no. [REDACTED] were the two most highly  
6 ranked large proposals in Stage 2. They received the highest Net Total Benefit scores  
7 and highest Net Direct Benefits scores.<sup>32</sup> Both the [REDACTED]  
8 [REDACTED], and thus would provide energy to New England  
9 that would be both incremental to New England and additional globally. [REDACTED]  
10 [REDACTED] was the top ranked bid in Stage 2, receiving a total score of 85.94; [REDACTED]  
11 was the second highest ranked bid in Stage 2, with a total score of 80.24. The NECEC  
12 Hydro bid was ranked third with a score of 79.95, more than 5 points below the top-  
13 ranked [REDACTED]

14 [REDACTED]  
15 [REDACTED] Each of these portfolios included between [REDACTED] other smaller  
16 projects that had lower net direct benefits and higher costs,<sup>33</sup> which may have depressed  
17 the portfolio scores. The Evaluation Team did not evaluate [REDACTED]  
18 bids individually or in a portfolio composed solely of these two projects.

<sup>31</sup> Exh. JU-2, at 41.

<sup>32</sup> [REDACTED]

<sup>33</sup> As previously discussed, the [REDACTED] is an exception. *See supra* note 32.

1 **Q. Is it likely that the [REDACTED] bids would have scored well in Stage 3,**  
2 **either individually or combined in a portfolio consisting of just these two bids?**

3 A. Yes. [REDACTED] bids were ranked first and second in the Stage 2  
4 evaluation. The Stage 3 scoring used the same quantitative and qualitative evaluation  
5 approaches as Stage 2, so these bids would have ranked first and second in Stage 3 as  
6 well, above the NECEC Hydro bid.<sup>34</sup> I believe that these two bids should have been  
7 considered on a standalone basis, so that an explicit tradeoff could be made [REDACTED]  
8 [REDACTED] and their better performance.

9 Further, a portfolio consisting of just these two bids would likely have scored quite well,  
10 and would have provided most of the energy targeted in the procurement. The Stage 3  
11 portfolios that included [REDACTED] along with other projects likely scored  
12 lower due to the inclusion of these other lower-scoring projects, and so do not offer good  
13 guidance regarding the value of a portfolio consisting solely of these two bids. To  
14 calculate the total benefits of this new portfolio would require a full evaluation, including  
15 a new simulation with TCR's Enelytix model, as requested in Information Request AG  
16 3-2.<sup>35</sup> I believe that a portfolio consisting of just the [REDACTED] projects  
17 would have been attractive and might have been preferred to the NECEC Hydro bid, and  
18 thus should have been evaluated. Further, these bids, either individually or in a portfolio,  
19 would provide greater confidence regarding the delivery of fully incremental clean  
20 energy to New England, and GHG emissions offsets.

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<sup>34</sup> The scaling of quantitative scores was performed independently in Stage 3, so the scoring would differ slightly from the Stage 2 scoring (*see* Section IX on the impact of scaling). The Stage 3 scaling slightly increases the advantage of the [REDACTED] bids over the NECEC Hydro bid.

<sup>35</sup> While the direct benefit portion of the total quantitative benefits should be additive and thus not require another simulation, and the qualitative benefits are not affected by inclusion in a portfolio, the indirect benefits may not be additive and would require a separate simulation to evaluate.

1 **Q. In combination, would the [REDACTED] bids satisfy the full clean energy**  
2 **procurement requirement under section 83D?**

3 A. [REDACTED]  
4 [REDACTED] the Act allows  
5 the EDCs to carry out multiple procurements to acquire the full 9.45 TWh of desired  
6 clean energy.<sup>36</sup> Had the EDCs selected a bid or a portfolio that did not satisfy the full  
7 9.45 TWh goal, a second procurement could have been held to acquire the remaining  
8 clean energy. In fact, several other portfolios evaluated in Stage 3 offered less than the  
9 9.45 TWh desired, though none fell short by as much as [REDACTED]

10 **VIII. EVALUATION TEAM COMPOSITION**

11 **Q. In your opinion, is it appropriate that the utilities participated in bid evaluation,**  
12 **given that their affiliates had submitted bids in this solicitation?**

13 A. In general, I do not find it appropriate that the Evaluation Team included the utilities  
14 whose affiliates had submitted bids. This apparent conflict of interest raises serious  
15 concerns, for several reasons.

16 **Q. Is this just a perceived conflict of interest, or are there reasons that this could**  
17 **influence the outcome of the procurement process?**

18 A. The perception of a possible conflict of interest is rooted in real reasons for concern. One  
19 concern is the possibility of information sharing that could offer the affiliate a bidding  
20 advantage. This is particularly relevant in this procurement, where bidders were not  
21 generally aware of the precise scoring mechanism that would be used to evaluate bids.  
22 The risk that bid evaluators might share information with some bidders and not others is  
23 increased if members of the bid Evaluation Team are affiliated with some bidders.

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<sup>36</sup> Section 83D(b).

1 **Q. Does walling off the Evaluation Team from direct or indirect communications with**  
2 **the bidding team alleviate the concerns regarding bidder affiliates on the**  
3 **Evaluation Team?**

4 A. An ethical wall can be established between members of the Evaluation Team and the  
5 bidding teams, with the intent of minimizing the possibility of inappropriate information  
6 sharing. I understand that Standards of Conduct were established to create such ethical  
7 walls in this instance, though I cannot attest to their efficacy.

8 But in addition to concerns about inappropriate information sharing, incentive problems  
9 can arise. If the EDC stands to benefit if its affiliate prevails in the procurement process,  
10 then the EDC members on the Evaluation Team may—consciously or subconsciously—  
11 be influenced by those incentives, and favor bids from the affiliate. An apparent bias in  
12 evaluation toward an EDC affiliate’s bid, either intentional or unintentional, occurred at  
13 several points in this 83D solicitation, and was explicitly identified and documented by  
14 the Independent Evaluator:

15 Based on our observations, Eversource favored, or had the appearance of  
16 favoring, NPT in various stages of the evaluation and selection process,  
17 especially toward the end. This included the deliberations with respect to the  
18 interest rate assumption in the quantitative evaluation and the qualitative  
19 evaluation with respect to several criteria, [REDACTED]  
20 [REDACTED]. This was also the  
21 case with respect to the Stage 3 and bid selection process, where Eversource  
22 focused on aspects of the evaluation, evaluation metrics and assumptions that  
23 supported selection of Northern Pass. It was perhaps even more apparent  
24 when Eversource sought to keep NPT in play for contract negotiations even  
25 after the required New Hampshire siting approval was denied, with a remote  
26 possibility for a prompt reversal in order for Northern Pass to be able to build  
27 the project anywhere near the timeframe proposed.<sup>37</sup>

28 The issue of favoritism toward an affiliate’s bid is clearly problematic both in theory, and  
29 in practice in this solicitation. Here, if it had not been for the removal of the NPT Hydro  
30 bid from consideration due to the siting denial, there might have been good reason to  
31 contest the final winner on these grounds.

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<sup>37</sup> Revised Independent Evaluator Final 83D Report Confidential, at 48–49 (August 7, 2018).

1 **Q. Did having affiliates on the Evaluation Team cause a problematic outcome?**

2 A. The possibility that affiliate favoritism may have influenced the evaluation and selection  
3 process in some subtle way cannot be ruled out, even after NPT Hydro was removed  
4 from consideration. Project selection was ultimately made by the DOER, as the EDCs  
5 did not agree on the selection. Eversource and Unitil favored NPT Hydro, a bid affiliated  
6 with Eversource. National Grid favored NECEC Hydro. After the DOER selected NPT  
7 Hydro, this bid was removed from consideration and the non-affiliated NECEC Hydro  
8 bid was selected. But this does not eliminate all concern, because the DOER only  
9 discussed the NPT Hydro and NECEC Hydro bids in its selection letter.<sup>38</sup> It did not, for  
10 example, consider the high-scoring [REDACTED] discussed above for  
11 potential final selection. In the end, I do not have enough evidence to either exclude the  
12 possibility that affiliate favoritism may have affected bid scoring or selection, nor to  
13 conclude that the outcome was tainted by having affiliates on the Evaluation Team.  
14 Nonetheless, I would not recommend this for any future solicitations.

15 **IX. SCALING OF QUANTITATIVE NET BENEFIT**

16 **Q. Please summarize your analysis and findings regarding the scaling of quantitative**  
17 **net benefit in Stage 2 and Stage 3.**

18 A. The quantitative net benefit calculated for the proposals in the evaluation process is  
19 scaled onto a 75 point scale, with qualitative scoring accounting for up to another 25  
20 points.<sup>39</sup> The scaling approach implies that the dollar value of each point depends on the  
21 particular values of the Net Total Benefit of the proposals, and the dollar value of a point  
22 affects the relative importance of quantitative vs. qualitative dimensions. The value of  
23 Net Total Benefit depends in turn on other analytic assumptions used in the evaluation.  
24 Thus using this scaling approach means that the choice of analytic assumptions could  
25 alter the relative importance of the qualitative vs. quantitative dimensions in the

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<sup>38</sup> Exh. JU-10, at 1.

<sup>39</sup> Revised Independent Evaluator Final 83D Report, at 11 (August 7, 2018).

1 evaluation, potentially influencing the ranking of proposals in ways the Evaluation Team  
2 may not intend or even understand.

3 In this solicitation, quantitative and qualitative scores are negatively related among  
4 several of the higher-scoring proposals, with bids that scored high on quantitative  
5 measures scoring low qualitatively, and vice versa. For example, [REDACTED]  
6 [REDACTED] had a Stage 3 quantitative score of 65.69 and a qualitative score of 19.13.  
7 Conversely, the NECEC Hydro bid had a higher Stage 3 quantitative score of 75, and a  
8 lower qualitative score of 15.63.<sup>40</sup> These are conditions under which the scaling  
9 approach, with its potential to influence the relative weighting of quantitative and  
10 qualitative factors, could influence the ranking of portfolios, and potentially the outcome  
11 of the solicitation. While the weighting would have had to change significantly in this  
12 case to influence the ranking of these two bids, this potential impact illustrates why this  
13 scaling approach should be reconsidered for future energy solicitations.

14 **X. EVALUATION OF GWSA BENEFITS**

15 **Q. Please describe the metric used to evaluate the GWSA impact of the proposals.**

16 A. The GWSA metric is designed to measure “the value of the Proposal’s contribution  
17 toward meeting the Global Warming Solutions Act (GWSA) over and above compliance  
18 with the RPS and CES.”<sup>41</sup> It was calculated in the 83D bid evaluations as the dollar value  
19 of the difference between the emissions decrease (relative to the Base Case) and the  
20 amount of RECs or CECs created by the project and used for compliance with the RPS  
21 or CES. According to the Evaluation Team (excluding National Grid), the RECs and  
22 CECs are subtracted off in an attempt to avoid double-counting the REC and CEC value  
23 of the projects.<sup>42</sup>

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<sup>40</sup> Exh. JU-6, at 25.

<sup>41</sup> *Id.*, at 31.

<sup>42</sup> Revised Independent Evaluator Final 83D Report Confidential, at 17–18 (August 7, 2018).

1 **Q. Does the GWSA metric accurately reflect a proposal's contribution toward meeting**  
2 **GWSA requirements?**

3 No. The GWSA requires an economy-wide reduction in GHG emissions. The  
4 appropriate metric regarding GWSA benefits involves the GHG reduction attributable to  
5 the project relative to the Base Case, without deducting the REC/CEC quantity.<sup>43</sup> This  
6 is the same position that National Grid has expressed.<sup>44</sup> Ultimately, the GWSA  
7 calculation error did not impact the ranking of NECEC Hydro as the highest ranked bid.<sup>45</sup>

8 **Q. Does this conclude your current testimony?**

9 A. Yes.

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<sup>43</sup> D.P.U. 18-76/18-76/18-78, Exh. AG-DM-1, at 17 (November 5, 2018).

<sup>44</sup> Revised Independent Evaluator Final 83D Report Confidential, at 18; D.P.U. 18-77, Exh. NG-TJB-1, at 6 (November 30, 2018).

<sup>45</sup> Exh. AG-2-2-C, Attachment.

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**Dr. Dean Murphy** is an economist with a background in engineering. He has expertise in energy economics, competitive and regulatory economics and finance, as well as quantitative modeling and risk analysis. His work centers on the electric industry, encompassing issues such as resource and investment planning (including power and fuel price forecasting), valuation for contract disputes and asset transactions, climate change policy and analysis, competitive industry structure and market behavior, and market rules and mechanics. He has addressed these issues in the context of business planning and strategy, regulatory hearings and compliance filings, litigation and arbitration. Dr. Murphy has examined these matters from the perspectives of investor-owned and public electric utilities, independent producers and investors, industry groups, regulators, system operators, and consumers.

Dr. Murphy holds a Ph.D. in Industrial Engineering and Engineering Management and an M.S. in Engineering-Economic Systems, both from Stanford University, and a B.E.S. in Materials Science and Engineering from the Johns Hopkins University. Prior to joining The Brattle Group in 1995, Dr. Murphy worked as an associate with Applied Decision Analysis, Inc.

## **AREAS OF EXPERTISE**

- Resource Planning, Investment, and Forecasting
- Valuation for Energy Contract Disputes and Energy Asset Transactions
- Climate Policy Analysis
- Market Structure and Competitiveness
- Electricity Markets: Energy, Capacity, and Ancillary Services
- Procurement and Restructuring

## **EXPERIENCE**

### **Resource Planning, Investment, and Forecasting**

- For Manitoba Hydro, which is evaluating large investments in hydroelectric capacity and transmission expansion that would facilitate significant off-system sales, Dr. Murphy testified in a public hearing regarding the potential evolution of long-term power prices in the export market. He also developed a set of future scenarios based on the possible future evolution of several key market drivers, and forecast long-term market prices of power for each scenario. The scenario drivers included fuel prices, climate policy, coal plant retirements, renewable energy portfolio standards, and load levels, which are affected by price feedback and active demand management programs. This assignment has been repeated in subsequent years to

understand how changing market drivers have influenced the potential range future of power prices.

- Dr. Murphy assisted the investor-owned utilities and regulators in Connecticut in complying with a legislative mandate to develop annual resource and procurement plans for the state, over several annual cycles. He focused particularly on the development of a set of scenarios against which alternative resource plans were evaluated, in order to illuminate the risks that might be associated with such plans. Key issues were potential federal climate legislation, natural gas prices, electricity demand, and demand side management strategies, and the complex interplay between these factors. He also evaluated energy security issues, including interactions between natural gas availability and electric reliability, as well as the potential role of nuclear power and emerging technologies, and their impacts on energy security.
- For a consortium in the initial stages of developing a major long-distance offshore DC transmission link designed to integrate multiple thousands of megawatts of new wind generation into several electric markets, Dr. Murphy performed a preliminary evaluation of the potential energy and capacity value of the project, and the approximate customer cost impact. These analyses were designed to assist in securing FERC approval for incentive rate treatment and abandoned cost recovery.
- For a merchant electric generator contemplating renewing or replacing an expiring output contract for a gas-fired generator, Dr. Murphy used a power market simulation model to forecast potential long-term power price trends under several scenarios involving fuel costs, generator retirements and renewable additions. Using the forecasts of potential long-term trends, he simulated the plant's short-term operations and its resulting financial performance. A key factor that had a significant effect on the plant's value in this analysis was characterizing the short-term volatility of power prices and the plant's ability to respond to capture short periods of attractive prices.
- Dr. Murphy developed a long-term forecast of Renewable Energy Credit (REC) prices across multiple states and interconnected electricity markets for a renewable generation developer. He considered state-level Renewable Portfolio Standard (RPS) requirements over time, as well as potential federal renewable requirements, looking at the cost and geographic availability of several potential renewable resource types and incorporating the effect of in-state requirements and alternative compliance payments.
- Dr. Murphy worked with a manufacturer of an energy storage technology to estimate its value on several dimensions across a range of potential applications. He used simulated charge-discharge cycles with historical prices in several markets to demonstrate not only the technology's energy and capacity value, but also its potential ancillary service and reliability benefits.
- For the Tennessee Valley Authority (TVA), Dr. Murphy assisted in the development of TVA's long-range Strategic Plan to deal with the development of competitive markets and a changing regulatory environment. He organized and performed numerous operational and financial analyses to understand TVA's performance under a wide variety of scenarios, and

integrated the results into a strategic framework, considering numerous potential outside influences (e.g., fuel price scenarios) and TVA responses (e.g., product unbundling or changes to TVA's pricing structure).

- For a utility client interested in building a merchant transmission line, Dr. Murphy evaluated the benefits of the line, designed and implemented an auction for the rights to use the line once constructed, and evaluated the bids received in the auction.
- For an entrepreneurial client investigating the opportunities for an electric storage technology in the deregulated electric market, Dr. Murphy developed a model that optimizes facility operations with respect to a set of forecasted electric commodity price profiles. The model was used to evaluate the technology's potential profitability on several different electricity systems. Commodity price profiles for each system were projected by integrating historical real-time system marginal cost data with the projected cost of additional capacity.

### **Valuation for Energy Contract Disputes and Energy Asset Transactions**

- In a bankruptcy hearing, Dr. Murphy testified regarding the fair market value of the post-petition energy services (electricity, chilled and hot water) provided under contract by a creditor, in order to determine the debtor's responsibility for these costs.
- Dr. Murphy assisted the Staff of the New Hampshire Public Utility Commission in understanding the customer cost savings associated with a proposed utility divestiture of generating assets, as assessed by the utility. Key issues were whether the utility's analysis had correctly represented the operational benefits of the assets to customers in reducing their energy costs, and whether the capacity value of the assets had been accurately captured.
- Dr. Murphy assisted an Asian energy company in deepening their understanding of U.S. electricity and natural gas markets, as part of their plan to acquire assets in the region. Brattle helped to characterize market rules, including recent and proposed changes, in several regional ISOs, and how these rules may affect the financial opportunities of generators located in these ISOs.
- In a major arbitration dispute, Dr. Murphy assisted a merchant generating company in determining the value lost when the government agency with whom it had contracted to develop a gas-fired power plant decided to terminate the contract before the plant was completed. A key contributor to the value lost was the potential riskiness of the contract revenues. The contract's unusual structure insulated the merchant generating company from many of the risks normally associated with electricity markets, transferring these risks to the government agency over the contract's twenty-year term. This transfer of risk had a major effect on the value of the contract and thus on the magnitude of the arbitration claim.
- Dr. Murphy calculated the damages that resulted from several partial derates of a nuclear plant. The plant's owner had a unit-contingent output contract with a regional utility, and during the derate events, the plant delivered less power than it would have if it had operated normally. The utility had to replace the missing power (or equivalently, in some hours lost

the opportunity to resell the power) at higher market prices, and also lost some of the capacity value of the plant in the regional capacity market.

- For an investor exploring the acquisition of several gas-fired generators in markets without retail deregulation, Dr. Murphy helped to analyze the potential profitability of the assets under a range of assumptions about future natural gas and CO<sub>2</sub> allowance prices. Building on simulation results developed by another consultant, Dr. Murphy and the Brattle team were able to investigate several factors specific to the individual assets in question but not captured by a broad market simulation model.
- Dr. Murphy advised a committee of bondholders of a foreign subsidiary of a U.S. merchant power company that was undergoing restructuring. He advised regarding the value of several power contracts and assets in which the subsidiary had an interest, including a potential damage claim for a terminated long-term contract.
- In a dispute related to a terminated long-term power contract for an electric generating facility, the original contract contained clauses that may be triggered in the event of a default, based on the value of available replacement opportunities. For a group of bondholders of the facility, Dr. Murphy prepared an affidavit regarding the market value of the available replacement opportunities, and how they related to the facility's debt and operating costs.
- For an independent power producer, Dr. Murphy supported expert testimony to value damages due to termination of a long-term electric generator tolling contract, requiring power market forecasting and finance valuation techniques. Key to this case was the increase in risk caused by the loss of the contract, in an environment (following the collapse of the power sector in 2001) in which it was not possible to obtain a long-term replacement contract.
- For a bondholder of a power marketing company, Dr. Murphy evaluated the likely outcome of an arbitration hearing regarding damages due as a result of the termination of a long-term generation contract.
- For an independent power producer forced into bankruptcy by the rejection of a long-term power contract by its counterparty, Dr. Murphy assessed the economic damages due to the loss of the contract.
- In the context of a dispute over damages in a terminated gas supply contract, Dr. Murphy analyzed and provided written testimony regarding the potential to resell contracted natural gas that could not be utilized by the purchaser.
- For a utility client attempting to acquire a partially completed generating station to be held as a utility affiliate, Dr. Murphy analyzed the acquisition and affiliate transaction to determine whether there would be any violation of market power regulations.

## **Climate Policy Analysis**

- With a Brattle co-author, Dr. Murphy evaluated the contributions of nuclear plants to the U.S. economy, as well as their environmental effects in reducing carbon and other emissions. This study used a power sector simulation model in combination with a dynamic input-output model of the U.S. economy, and found that the primary economic effect was that nuclear plants hold down power prices, reducing what all consumers pay for electricity. This savings, because it is significant and widespread, gives a substantial boost to the economy overall.
- Similar to the study described above, Dr. Murphy and his co-author have performed more detailed evaluations at the level of several individual states where nuclear is an important generation source. They have examined specific nuclear plants that are facing financial challenges to determine how these plants affect electricity prices, economic activity, and emissions of CO<sub>2</sub> and other pollutants within their state.
- Dr. Murphy helped the senior executives of a major coal producer to assess the long-term implications of U.S. climate policy on the electricity generating infrastructure. He characterized the effects of different potential policy structures and stringency on CO<sub>2</sub> prices, the economics of existing and future electric generating technologies, and likely generation expansion and retirement decisions over several decades, in order to forecast power sector costs and CO<sub>2</sub> emissions under these policy approaches. The project also involved estimating the long-term effects on CO<sub>2</sub> emissions in the transportation and other sectors.
- In seeking regulatory approval for a generation expansion plan, an investor-owned utility engaged Dr. Murphy to help understand the interrelationship between potential climate policy, the cost of natural gas, and the cost of generation technologies. He helped the client to incorporate these interacting factors into the client's existing planning models.
- Dr. Murphy assisted the executives of a major U.S. electric company in developing a proposed policy structure to mitigate greenhouse gas emissions (carbon dioxide) that would be economically efficient, effective, and manageable for industries and the economy. The research evaluated the impact on the electric industry, addressing overall, regional, and company-level effects of alternative policies and stringency of legislation. It also addressed the effects on consumers and other industries.

## **Market Structure and Competitiveness**

- Dr. Murphy leads the Brattle team as the Independent Auction Monitor for the Southern Companies' Energy Auction, which has been in operation since April 2009. The auction is governed by FERC tariff, which is designed to mitigate potential market power. The tariff requires Southern to administer auctions for standard day-ahead and hour-ahead energy products for delivery "Into SoCo," and to offer its available capacity at a cost-based rate into these auctions. The Brattle team has developed data structures, monitoring protocols and automated tools to track Southern Companies' load forecasting, purchases and sales, outage declarations, and unit capabilities and costs. On this basis, Brattle monitors Southern's offers

into each auction to ensure in compliance with the FERC cost-based tariff. Brattle also ensures that the auction functions and clears properly, and monitors the behavior of third party participants in the Auction. Monitoring is done on a daily basis, with reports annually on auction performance and tariff compliance to the FERC.

- Dr. Murphy participated in a market power analysis in the context of a major electric utility merger, focusing on the analysis of how transmission availability and constraints affect the potential for the exercise of market power. He coordinated the collection and interpretation of transmission data from numerous utilities. To correct for the inherent data weaknesses, he designed and oversaw a separate, integrated transmission modeling effort to determine the ability of the grid to support short-term power transactions.
- Dr. Murphy evaluated the potential anti-competitive effects of a merger between a major regional natural gas company and an electric utility in a region where electric generation is highly dependent on natural gas as a fuel. He examined the potential for the merged company to exercise vertical market power by manipulating the price of natural gas to influence the competitive price of electricity, and what effect that would have on the competitiveness of the electric market.
- In several other cases, Dr. Murphy analyzed whether proposed energy company mergers or acquisitions would create the potential for the exercise of horizontal and/or vertical market power, developing mitigation strategies where appropriate.
- In a proposed merger involving an East Coast electric utility, Dr. Murphy assisted senior management in evaluating the effects of retail access on the financial health of both the client company and the potential merger partner, taking into account projected operating costs, the timing of open access, market prices for power, customer loss, and stranded cost recovery.

### **Electricity Markets: Energy, Capacity, and Ancillary Services**

- For a competitive energy supplier and generation owner, Dr. Murphy analyzed the role of demand-side resources, such as interruptible load, in an ISO-sponsored capacity market. He examined the extent to which demand-side resources could supply capacity needs, and the risk that frequent utilization of such resources might dissuade their participation in the market.
- Dr. Murphy assisted a U.S. electric ISO with understanding the implications of expanding ISO membership on the ancillary service requirements of both existing and proposed new ISO members.
- For a major hydroelectric generator, Dr. Murphy assessed the planning and decision system used to determine when and how to allocate energy (e.g., in spot or forward markets). Both value and risk implications are important, and both are affected by large uncertainties and correlations in forward and spot prices, weather, energy (water) availability, and non-electric restrictions, among other factors. Dr. Murphy developed a number of recommendations for improving the accuracy of the utility's forecasts and models, thus improving the decisions based on them.

- Dr. Murphy assisted a major Northwest hydroelectric generator in understanding the role of electric ancillary services, including voltage control and reserve generating capacity, in a restructured electric market. Issues included the interaction between the energy market and the ancillary services market, and the implications of embedded cost pricing as compared to competitive market-based pricing of ancillary services. This engagement involved coordinating work across the generation and transmission groups within the client organization to determine appropriate tariff rates for these ancillary services.
- In a series of projects for the Electric Power Research Institute (EPRI), Dr. Murphy examined the potential for hydroelectric generators to provide reserve generating capacity in a restructured electricity market. Dr. Murphy developed an economic framework for understanding how the markets for electric energy and reserve capacity interact, and whether hydro's technical advantages in providing reserve capacity are likely to make reserves a natural niche market for hydro. Dr. Murphy also evaluated the probable effect of industry restructuring on the value of hydroelectric power assets, taking account of their technical capabilities to store and release energy according to market conditions, and provide ancillary services.
- For a utility client, Dr. Murphy evaluated the effects of pricing structure on demand for electricity, load shape, and revenues. Changes in pricing structure can stimulate electric demand, increasing revenue without increasing the per unit electricity price. This may be a useful mechanism for mitigating a utility's stranded costs as the industry is restructured.

### **Procurement and Restructuring**

- Dr. Murphy assisted the Staff of the New Hampshire Public Utility Commission in an analysis of customer savings that would result from the divestiture of a New Hampshire utility's remaining generation assets. Concerns and disagreements about an earlier analysis had led to disputes over whether to move ahead with the divestiture, including a split within the PUC Staff. Dr. Murphy's analysis and his testimony before the NHPUC helped to unite the parties in support of moving ahead with the divestiture.
- Dr. Murphy assisted an electric utility client with regulatory strategy regarding a state proposal to allow utilities to earn a "premium" on long-term power purchases, in order to account for the risks involved in committing to purchased power contracts.
- Dr. Murphy assisted a California utility in hearings before the California Public Utilities Commission regarding the establishment of a process for the California utilities to resume power procurement in the wake of the western power crisis of 2000-2001.
- In several engagements, Dr. Murphy assisted utility clients facing potential customer loss through municipalization. As part of these analyses, he determined the stranded costs (unrecovered investment) that municipalization would involve.
- Dr. Murphy assisted an electric utility client in planning for industry restructuring by characterizing alternative paths that restructuring could take, and developing potential strategies that respond to a competitive market and regulatory changes. He developed a

detailed spreadsheet-based system and financial model to evaluate the effects of various strategies and scenarios on the magnitude of stranded costs and the client's financial performance. This modeling effort required analysis and forecasting of the changes in the structure of the market for electricity, as well as probable regulatory changes and their implications. The model served as the basis for several follow-up studies addressing more specific decisions and issues, performed by the client and by The Brattle Group.

### **Other Engagements**

- In eight different litigation cases involving 14 nuclear reactors at 11 plants, Dr. Murphy has evaluated the Department of Energy's (DOE) failure to honor its commitment to remove spent nuclear fuel from U.S. nuclear plants. He led the analytical effort in all of these cases, and provided expert witness testimony in one of them, to characterize how the government should and would have carried out its contractual obligation. Dr. Murphy simulated a nationwide market for the exchange of spent fuel removal rights, as was enabled by the contract, which made it possible to determine the timing of spent fuel removal from each individual plant in the non-breach world. The results of these analyses were used to support the damage claims of the client nuclear owners for ongoing spent fuel storage costs that would have been unnecessary if the DOE had performed its contract obligations.
- Dr. Murphy assisted in a review of the auction of an ownership share in a nuclear generating plant, in order to determine whether the sale was performed using commercially reasonable means to ensure mitigation of the regulated seller's stranded costs.

### **PUBLICATIONS AND PRESENTATIONS**

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**GREENWASHING AND CARBON EMISSIONS:  
UNDERSTANDING THE TRUE IMPACTS OF  
NEW ENGLAND CLEAN ENERGY CONNECT**

Prepared by: Energyzt Advisors, LLC

Prepared for: Maine Renewable Energy Association  
Natural Resources Council of Maine  
Sierra Club

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## EXECUTIVE SUMMARY

### GREENWASHING AND CARBON EMISSIONS: UNDERSTANDING THE TRUE IMPACTS OF NECEC

This report was commissioned by the Maine Renewable Energy Association, Natural Resources Council of Maine, and Sierra Club to understand the potential impacts of the New England Clean Energy Connect (“NECEC”) on carbon emissions.

NECEC is a proposed transmission line with a capacity of 1,200 MW that would import around 9.5 TWh of energy from Québec into New England for purchase by Massachusetts utilities under Section 83D of the *Climate Protection and Green Economy Act*.<sup>1</sup> Although Central Maine Power (“CMP”) and Hydro-Québec<sup>2</sup> claim that the electrical energy delivered via NECEC would be “clean energy” from Québec’s existing hydroelectric system, there are a number of reasons why the energy flowing through NECEC may not be “clean,” may not be hydroelectricity, and may not even be sourced from Québec. Furthermore, the NECEC project – a high voltage direct current (“HVDC”) transmission line crossing 145 miles in Maine, including 53.5 miles of pristine areas – also could hinder Maine’s efforts to develop its own renewable energy resources which otherwise could reduce carbon emissions and create local jobs and economic opportunities. This report examines the impacts of NECEC on carbon emissions and concludes that NECEC will not result in a significant reduction in greenhouse gas emissions, and may even increase them.

Hydro-Québec has a financial incentive to sell as much excess energy that it can, subject to water and generation constraints, and divert exports from other markets into NECEC to achieve a higher price. Given its system characteristics and profit goals, Hydro-Québec could even purchase energy from other markets during low-priced hours in order to retain energy in the form of water waiting in its reservoirs for subsequent sale at higher prices to New England through NECEC. Furthermore, the significant inflow via a 1,200 MW transmission line into Maine could adversely affect the economic prospects for Maine renewables, which are likely to be deferred or delayed as a result of the project’s impacts

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<sup>1</sup> Mass. Gen. Laws Ch. 21N, Section 3 (a – d).

<sup>2</sup> Hydro-Québec refers to the parent company of Hydro Renewable Energy, Inc. (“HRE”) which submitted a bid in response to the Massachusetts Section 83D request for proposal and Hydro-Québec US, the entity that is the counterparty to the Massachusetts contracts. Hydro-Québec is a provincially-owned company that manages the Québec power system via Hydro-Québec Power (generation), Hydro-Québec TransÉnergie (Transmission) and Hydro-Québec Distribution (distribution system delivery and retail services).

on the local transmission network. The net result would be a minimal impact on efforts to reduce total carbon emissions.

**NECEC could divert energy sales from another market into New England; shifting flows between markets may not reduce total greenhouse gas emissions and could even increase total carbon injections into the atmosphere.**

It is important to note that intertie capacity from Québec into other markets is not a constraining factor for Hydro-Québec exports. Even during 2017 when Hydro-Québec exports reached a record high, there was a significant amount of unused transmission capacity throughout the year, indicating that the constraint on increasing exports from Québec into other markets is due to limited availability of water to produce energy or other production constraints, not the amount of transmission capacity. Therefore, a new intertie merely allows Hydro-Québec to access a higher-priced, long-term contract with Massachusetts instead of selling into competitive spot markets at lower, more uncertain prices. The NECEC transmission line is not necessary to export additional clean energy from Québec into external markets.

Hydro-Québec's proposal in response to the Massachusetts Clean Energy RFP explicitly states that it would supply energy to NECEC from existing generation resources, and not from new sources of renewable energy developed to serve the line. Given that Hydro-Québec would maximize its exports without NECEC and sell whatever excess energy that it had into external markets,<sup>3</sup> Hydro-Québec would supply NECEC by simply shifting those exports into New England via NECEC at a higher contracted price. This shift in energy flows could create an offsetting impact in the other markets which would have to produce replacement energy, potentially resulting in offsetting carbon emissions. While Maine power plants would be forced to shut-down to accommodate energy flowing into NECEC, fossil fuel plants in other markets (including oil, natural gas and coal units), would fire-up in response to Hydro-Québec's shifting its energy sales, negating any potential climate benefits.<sup>4</sup>

**Hydro-Quebec can and does buy energy from low-priced markets and then sells its "clean energy" at a higher price into other markets, potentially creating a similar impact**

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<sup>3</sup> External markets into which Hydro-Québec sells energy includes Ontario, New Brunswick, New York, Mid-Continent ISO, PJM, and New England.

<sup>4</sup> The relative carbon emissions impact of displacing New England generation with new generation in other markets depends on the carbon intensity of power plants on the margin in each market.



**on carbon emissions in the atmosphere as if Hydro-Québec were generating power from fossil fuels directly.**

As a result of its reservoir storage capability, Hydro-Québec can buy lower cost energy from markets where fossil fuel generators are operating, retain water in its reservoirs and then sell that water as hydropower at higher priced periods back into the same or other markets. This strategy was described publicly by the government of Québec back in 2004:

. . . Hydro-Québec is able to purchase electrical energy from neighbouring markets at lower prices during certain periods, and then resell it later to neighbouring networks at higher prices.<sup>5</sup>

Hydro-Québec continues to declare its ability to engage in the buy-low/sell-high arbitrage opportunities in its Annual Reports.<sup>6</sup> At the Maine Public Utilities Commission (Maine PUC), CMP admitted on the record that the proposed power purchase agreements for energy via NECEC allow Hydro-Québec to use its existing resources and import/export interties to optimize profits.<sup>7</sup> In this way, Hydro-Quebec can claim that the electricity it sells is “clean” hydropower even if it is buying fossil fuel electricity to enable those energy sales. There is no way for anyone in New England to know when this happens, even though Hydro-Quebec has publicly acknowledged that this is their business model. So long as NECEC can assign energy from its dams to New England, the Massachusetts contracts ignore how Hydro-Québec is managing its system to meet its energy sales obligations.

**NECEC would suppress the development of new renewable energy generation in Maine which, in contrast to Hydro-Québec’s market-switching strategy, actually could lower greenhouse gas emissions and provide more local jobs and economic benefits than NECEC.**

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<sup>5</sup> Ministère des Ressources naturelles, de la Faune et des parcs, Gouvernement du Québec. 2004. “The Energy Sector in Québec, Context, Issues and Questions,” p. 41.

<sup>6</sup> Hydro-Québec Annual Report 2017, p. 48, “Hydro-Québec supplies the Québec market with electricity and also sells power on wholesale markets in Canada and the United States. In addition, it is active in arbitrage transactions.”

<sup>7</sup> *Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Technical Conference Transcript (Aug. 1, 2018), pp. 21-25.



The proposed transmission project is a direct line from Québec into New England via Maine that does not allow other renewables in Western Maine to interconnect. NECEC is anticipated to consume the existing transmission availability and could make the cost of interconnection by in-state renewable resources to the ISO-NE system at a different point in Maine more expensive. This means that new renewable energy projects, such as solar arrays and wind projects, would not be able connect to the grid as easily and could be unable to compete with renewables in other states. In contrast to Hydro-Québec's energy flows through NECEC, potential Maine-based renewable energy projects would result in greenhouse gas reductions, would employ people in Maine and New England, and provide greater environmental benefit.

The Massachusetts contracts pay a higher price for energy than Hydro-Québec otherwise would earn by selling into other markets under current conditions. Although there are certain penalties if threshold levels of hydroelectric energy are not delivered, the contracts do not require the energy to be incremental to historical levels or to what Hydro-Québec currently can produce. Hydro-Québec is allowed to replace its "clean energy" with substitutes, even if it results in higher emissions.

**Adjusting CMP's model to reflect lower runoff conditions while maintaining Hydro-Québec's exports at historical levels illustrates how and why Hydro-Québec would have to resort to diverting exports and greenwashing.**

CMP's model assumes that heavy water conditions would continue throughout the term of the contract. Changing one simple assumption in CMP's model of Hydro-Québec's system while maintaining exports at levels experienced during the past five years indicates that energy supplied via NECEC could be required to divert exports into other markets and even engage in greenwashing to meet its obligations.

The reality, however, is that Hydro-Québec is not confined to a single strategy or objective over the course of the contract. Hydro-Québec will manage its system, sales, exports and opportunities according to water conditions, market prices and production constraints. Such optimization will include diverting sales into other markets and greenwashing, as required to optimize profits.

The Massachusetts contracts do not preclude Hydro-Québec from engaging in purchasing energy from other markets to supply NECEC. The net result could be higher emissions.

## GREENWASHING AND CARBON EMISSIONS: UNDERSTANDING THE TRUE IMPACT OF NECEC

This report examines the environmental impact of the proposed New England Clean Energy Connect (“NECEC”) project on carbon emissions.<sup>1</sup>

NECEC is a 1,200 MW high voltage direct current (“HVDC”) transmission line that would cross 145 miles of Maine natural resources from Bettie Township on the Québec border to Lewiston, Maine – of which 53.5 miles in Somerset Country would require construction of a new clearing along a previously undeveloped right of way. While this transmission project would have significant impacts on Maine’s natural resources and ecosystems, the focus of this report is on whether the project would have a net impact on carbon emissions globally.

### Greenwashing

The term greenwashing was created in 1986 in response to an increase in marketing and advertising that created the perception that a company’s products, aims or policies were sustainable, clean and/or green, regardless of reality. The term greenwashing subsequently was applied to the electricity sector with respect to concerns that renewable energy claims did not reflect the true nature of the underlying energy source.

Hydro-Québec claims that NECEC will deliver 100% clean energy 100% of the time via NECEC.<sup>2</sup> This claim, however, is unsupported by the terms of the contracts with the Massachusetts utilities. Given Québec’s interconnections with other markets, NECEC effectively allows Hydro-Québec to divert its energy sales from other markets into New England for a higher contractual price. In addition, under the terms of the contracts with

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<sup>1</sup> This report was commissioned by the Maine Renewable Energy Association (“MREA”), Natural Resources Council of Maine (“NRCM”), and Sierra Club.

- MREA: According to its website, “MREA leads the local and statewide policy debate on renewable energy generation in Maine, and works to ensure its efforts are united with those of its member companies.” <https://www.renewablemaine.org/>
- NRCM: NRCM is a “nonprofit membership organization protecting, restoring, and conserving Maine’s environment,” <https://www.nrcm.org/>
- Sierra Club: With over 3.5 million members and supporters focused on “defending everyone’s right to a healthy world,” the Sierra Club is “the most enduring and influential grassroots environmental organization in the United States.” <https://www.sierraclub.org/home>

<sup>2</sup> Commonwealth Magazine, John Carroll and Lynn St. Laurent, “Hydro-Quebec, Central Maine Power respond to critics,” September 8, 2018,

<https://commonwealthmagazine.org/opinion/hydro-quebec-central-maine-power-respond-to-critics/>

Massachusetts utilities, Hydro-Québec would not be precluded from purchasing energy from other markets to sell directly into NECEC or for purposes of conserving water in its reservoirs for future supply to NECEC at a later time.

The practice of purchasing energy from one market in order to sell it into another market as hydroelectric energy at a later time can be referred to as “greenwashing.” In effect, Hydro-Québec can procure supply from other markets in order to meet its clean energy obligations delivered via NECEC even though the environmental impact in those other markets could be the same as if the energy were supplied directly from fossil fuel generating resources. Massachusetts ratepayers effectively could be paying above-market prices for energy from existing resources outside of Québec that provide no incremental environmental benefit and could even increase carbon emissions.

There are many indicators that this project would not reduce carbon emissions and could even increase them. Hydro-Québec’s interconnected system with significant reservoir storage, makes the origin of the energy being sold through NECEC into Massachusetts difficult to confirm, and thus the true impact on carbon dioxide emissions impossible to measure. The following factors make it likely that this proposed transmission line will have adverse environmental consequences despite being marketed as a “clean” energy project:

- **Incentive and Opportunity to Buy Low and Sell High:** Hydro-Québec’s highly interconnected system configuration, especially with respect to other markets, creates opportunities for Hydro-Quebec to source the energy sold to Massachusetts via NECEC from other markets, where nuclear energy and fossil fuel generation is operating and effectively would supply Hydro-Québec’s purchases.
- **Potential for Increased Carbon Emissions in other markets:** The diversion of existing sales of hydroelectricity from other markets, for example in New York, New Brunswick or Ontario, could increase carbon emissions in those markets, offsetting or even exceeding claimed carbon benefits of NECEC in New England.<sup>3</sup>

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<sup>3</sup> The ultimate impact on total carbon emissions will depend on the relative carbon emissions intensity of the last plant required to generate energy or shut-down in response to Hydro-Québec’s activities. If the states in the Northeast pursue their stated carbon reduction goals, the relative impact should go to zero as relative carbon emissions across markets converge.



- **Displacement of Existing and New Maine Renewable Resources:** Maine’s potential for new renewable resources will be adversely impacted, delayed and deferred as a result of NECEC.

The outcomes described in this report are not theoretical. Under realistic assumptions about water conditions, Hydro-Québec would not be able to maintain exports at 2017 levels with NECEC unless it diverted sales from other markets and engaged in greenwashing during the first half of the contract. Hydro-Québec has engaged in the described behavior in the past and has every incentive to engage in this behavior to optimize its profits going forward.

## 1. OVERVIEW OF NECEC

Central Maine Power is proposing to build a new transmission line to bring existing Canadian hydroelectric energy into New England via Maine. NECEC was developed in response to the Massachusetts solicitation for clean energy under Section 83D of the *Climate Protection and Green Economy Act*.<sup>4</sup>

Of the forty-six submissions to the Massachusetts Section 83D Request for Proposal (“RFP”), NECEC is one of three projects that proposed to supply existing hydroelectricity from Hydro-Quebec via new transmission lines into New England. Northern Pass Transmission (NPT) was selected initially and offered 1,200 MW; NECEC was the next choice after New Hampshire refused to site Northern Pass, also offering 1,200 MW; and TDI’s New England Clean Power Link (NECPL) would have transmitted up to 1,000 MW of energy from Québec’s existing hydroelectric power system.<sup>5</sup> Aside from one other transmission project proposed by Emera, the forty-two (42) other projects included wind, solar, hydroelectricity or some combination, and includes renewable energy projects being developed in Maine.<sup>6</sup>

The assertion that NECEC supply would come from existing resources appears multiple times in Hydro-Québec’s proposal in response to the Massachusetts clean energy request for proposal, as illustrated by the following excerpt.<sup>7</sup>

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<sup>4</sup> Mass. Gen. Laws Ch. 21N, Section 3(a – d).

<sup>5</sup> See the public versions of the bid submitted for each project located on the Massachusetts Clean Energy website: <https://macleanenergy.com/83d/83d-bids/>.

<sup>6</sup> Ibid.

<sup>7</sup> See for example, pages 4, 6 and 56.



All of the hydroelectric generation units that comprise the HQ Hydropower Resources are in operation and, therefore, have already been constructed. Although new hydroelectric generation units may be added to the HQ Hydropower Resources portfolio in the future, **no new facilities or capital investments for hydroelectric generation units are required as part of this Proposal.**<sup>8</sup>

(emphasis added).

The RFP initially required bidders proposing to supply from existing projects to explain how the delivered energy would be incremental to historical levels. The requirement that the delivered energy be incremental also was incorporated into the template for the Power Purchase Agreement which defined “Qualified Clean Energy” to include “Incremental Hydroelectric Generation,” defined as:

“Incremental Hydroelectric Generation” means hydroelectric generation that represents a net increase in MWh per year of hydroelectric generation from the Seller as of the Effective Date as compared to the three-year historical average for the period January 1, 2014 through December 31, 2016 and/or otherwise expected delivery of hydroelectric generation from the Seller within or into the New England Control Area.<sup>9</sup>

Following negotiations between Hydro-Québec and the Massachusetts utilities, however, the signed version of the contract dropped the definition of “Incremental Hydroelectric Generation” and changed the definition of “Qualified Clean Energy” to exclude any reference to incremental hydroelectric generation.<sup>10</sup> Furthermore, there is no requirement that total deliveries into New England versus the historical averages be incremental, only

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<sup>8</sup> HRE Section 83D Application Form, submitted July 27, 2017, p. 63 (emphasis added).

<sup>9</sup> DRAFT\* POWER PURCHASE AGREEMENT FOR FIRM QUALIFIED CLEAN ENERGY FROM HYDROELECTRIC GENERATION BETWEEN [\_\_\_\_\_] [Buyer] AND [\_\_\_\_\_] [Seller] As of [\_\_\_\_\_] , 201\_ , p. 7.

<sup>10</sup> See for example, *Central Maine Power Co., Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232*, Exhibit No. NECEC-16, POWER PURCHASE AGREEMENT FOR FIRM QUALIFIED CLEAN ENERGY FROM HYDROELECTRIC GENERATION BETWEEN MASSACHUSETTS ELECTRIC COMPANY AND NANTUCKET ELECTRIC COMPANY d/b/a NATIONAL GRID AND H.Q. ENERGY SERVICES (U.S.) INC., as of June 13, 2018, [REDACTED].



penalties if Hydro-Québec fails to meet the new set of requirements, which is described in Exhibit H to the power purchase agreement. Although Exhibit H is redacted, CMP witnesses testified before the Maine PUC in public session that Hydro-Québec does not have to make incremental delivery of power into New England, but can pay penalties instead.<sup>11</sup>

The Maine PUC Technical expert, London Economics, testified that this ability to trade between markets and obtain a higher price is a “key motivator” for NECEC.<sup>12</sup>

### Key Insight

The signed contracts do not require Hydro-Québec to deliver incremental energy from its existing hydroelectric projects. Instead, if it is economic or strategic to do so, Hydro-Québec can choose to not deliver incremental energy and pay penalties instead. The contracts do not monitor or preclude Hydro-Québec from engaging in purchases from other markets for its own domestic use to allow for sales of its hydroelectricity at a premium to Massachusetts utilities under the contracts.

The NECEC project, as submitted to the Section 83D RFP, is a collaboration between CMP and two wholly-owned subsidiaries of Hydro-Québec -- Hydro-Québec TransÉnergie (HQT) and Hydro Renewable Energy (HRE). HRE subsequently was replaced by Hydro-Québec US in the signed power purchase agreements, placing the obligation on a US-based affiliate of Hydro-Québec that has limited assets in the event of default.

Under publicly available contracts and proposals, the NECEC transmission line would have a capacity of 1,200 MW. HQT would build and operate the transmission line on the Québec side and CMP would build and operate the portion of the transmission line located in Maine. Hydro-Québec would make available to Massachusetts a minimum of 8.5 TWh up to 9.5 TWh of electricity per year at the discretion of the Massachusetts distribution utilities engaged in the procurement.<sup>13</sup>

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<sup>11</sup> *Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Technical Conference Transcript (Aug. 1, 2018), pp. 28 – 35.

<sup>12</sup> *Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Technical Conference Transcript (Sep. 19, 2018), pp. 21-25.

<sup>13</sup> Section 83D, Request for Proposal Application Form, submitted by Hydro Renewable Energy Inc., p. 3, <https://macleanenergy.com/83d/83d-bids/>

**Figure 1** illustrates the proposed path of the NECEC project and interconnection between Québec and Lewiston, Maine.

**Figure 1: Proposed NECEC Project<sup>14</sup>**



The injection point at Lewiston, Maine, is not ideal. Maine is connected to the ISO-NE system through a long high voltage AC line and energy must pass through at least four interfaces before arriving in Massachusetts. The Maine generation system produced only 11.5 TWh of energy in 2017 compared to 17 TWh in 2010. According to the U.S. EIA,

<sup>14</sup> NECEC, <https://www.necleanenergyconnect.org/map>



electricity imports from Québec that already have occurred are one of the reasons for the reduction in Maine generation:

Maine’s Renewable Portfolio Standards (RPS) require electricity providers to fuel 30% of their electricity generation with renewable resources. In addition to policy initiatives, electricity imports from Canada—notably from Quebec—have been contributing an increasingly larger share to Maine’s total generation, displacing natural gas-fired generation as the primary source. Since 2012, electricity imports from Canada have more than tripled . . .<sup>15</sup>

Imports into Maine from Québec already have displaced a significant portion of Maine’s natural gas plants. NECEC would continue the trend of displacement by nearly matching the total amount of energy generated by Maine power plants in 2017. If NECEC were to proceed injection of such a significant amount of energy into Maine, Maine’s existing generators, including biomass plants, will be displaced. NECEC also will have an adverse impact on transmission availability, congestion and losses. As a result, new renewable energy generation would find it more costly to connect to the system in Maine for delivery into the rest of New England. These higher interconnection costs would make it more difficult for Maine renewable resources to compete with the rest of New England.

Under the agreement with Hydro-Québec, CMP would build the transmission line on the Maine portion of the line. CMP anticipates the need to invest in a number of transmission upgrades to incorporate NECEC into the system; a critical part of the existing ISO-NE transmission system, Surowiec-South, currently has only 200 MW of availability for incremental energy flows without upgrades.<sup>16</sup> CMP’s proposed upgrades, however, would simply move congestion down to the Maine-New Hampshire Interface which has an interface limit of around 1,900 MW and does not have enough capacity to flow NECEC out of Maine in all hours without the additional cost of congestion and incremental line losses.<sup>17</sup>

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<sup>15</sup> EIA Form 923 data, [https://www.eia.gov/naturalgas/weekly/archivenew\\_ngwu/2018/09\\_27/](https://www.eia.gov/naturalgas/weekly/archivenew_ngwu/2018/09_27/)

<sup>16</sup> ISO-NE, Final Maine Resource Integration Study (“MRIS”), March 2018, Available at [https://www.iso-ne.com/staticassets/documents/2018/03/final\\_maine\\_resource\\_integration\\_study\\_report\\_non\\_ceii.pdf](https://www.iso-ne.com/staticassets/documents/2018/03/final_maine_resource_integration_study_report_non_ceii.pdf)

<sup>17</sup> *Central Maine Power Co., Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232*, Exhibit No. TLB-1, “Testimony of Tanya L. Bodell,” April 30, 2018.



The total cost for CMP’s transmission line build-out and upgrades is estimated to be \$950 million. Under the proposed structure, Maine ratepayers would not be responsible for any payments to build the transmission line. However, Maine ratepayers also would not obtain any direct rights to capacity on the transmission line or energy being delivered across NECEC. Therefore, any benefit to Maine that could result from the proposed transmission line would be indirect impacts.

Given the global nature of carbon emissions, the impact on Maine’s carbon emissions alone or even New England’s carbon emissions across the broader region cannot be examined without consideration of the impact on surrounding areas. In assessing the net impacts of NECEC on carbon dioxide emissions, therefore, it is necessary to consider the total impact of NECEC across multiple markets.

### **Key Insight**

NECEC does not offer any direct benefits to Maine residents. Whereas Massachusetts is estimated to receive hundreds of millions of dollars in direct benefits, Maine would not receive any direct benefits associated with energy deliveries dedicated to Maine ratepayers. Instead, the potential impact of NECEC to Maine includes the net impact of NECEC on global emissions and should be examined across multiple markets.

## **2. SOURCE OF QUÉBEC HYDROELECTRIC SUPPLY**

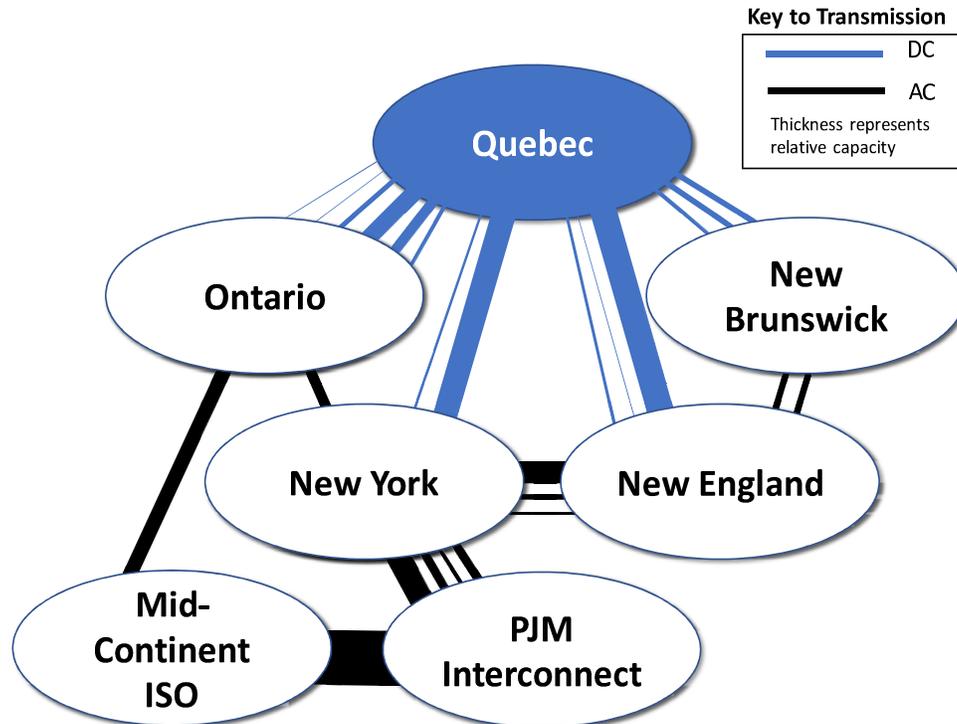
Hydro-Québec owns and operates a large system of hydroelectric generation and other power generating capabilities along with an extensive transmission network. In order to understand how Hydro-Québec is likely to supply energy via NECEC, it is important to understand the current and anticipated state of its system, the amount of excess energy it could produce with or without NECEC and what Hydro-Québec otherwise would do with that energy in the absence of NECEC.

This section provides a high-level summary of the Hydro-Québec system; Appendix B provides a more detailed overview.

### **2.1 Québec is interconnected with multiple markets**

Québec is physically interconnected to four other markets via DC tielines – New England, Ontario, New York and New Brunswick (**Figure 2**).

**Figure 2: Interties and transmission lines between Québec and major markets**



In addition, by wheeling through other markets, Hydro-Québec can sell into PJM and the Mid-Continent ISO – two markets that are explicitly listed in Hydro-Québec’s application for a blanket export license.<sup>18</sup> Both New York and New Brunswick connect with New England via an AC transmission interconnection, allowing Hydro-Québec to sell energy into New England via New York and New Brunswick. In addition, Hydro-Québec can and does sell into New York via Ontario.<sup>19</sup>

The ability to purchase from other markets and store an equivalent amount of energy by

<sup>18</sup> National Energy Board, Application by Hydro-Québec, “Application for a Blanket Electricity Export Permit Pursuant to s.119.03 of the National Energy Board Act and s.9 of the National Energy Board Electricity Regulations,” Application Submission Date 19/02/2010, p. 4.

“(3) Provide a brief description of the export markets (e.g. geographic area, NERC region, etc.) to be served. Les marchés visés sont les marchés nord-américains desservis par le New York Independent System Operator, Inc., l’ISO New England Inc., le Midwest Independent Transmission System Operator, Inc. et la PJM Interconnection, LLC.”

<sup>19</sup> National Energy Board, Analysis of Commodity Tracking System Data,

<https://apps.neb-one.gc.ca/CommodityStatistics/Statistics.aspx?language=english>

reducing flow through its turbines provides valuable flexibility to Hydro-Québec. This flexibility is particularly profitable during low water conditions when Hydro-Québec would have less energy to sell into external markets or high-priced years when the difference between peak and off-peak energy prices is greater.

The higher-priced, long-term NECEC contract is an example of the way Hydro-Québec can arbitrage between markets – buying low in one market and then reselling that energy at a higher price elsewhere. The above-market price of the contracts with Massachusetts utilities also would allow Hydro-Québec to maximize profits through optimization of its imports and exports while selling under a lucrative long-term contract.

## 2.2 The National Energy Board issues energy export licenses

In order to sell any energy commodity products into the US, Hydro-Québec must obtain a license from the National Energy Board (NEB). The NEB considers a number of factors before issuing a license, including:

- **Other Provinces:** Whether or not there could be adverse consequences to other provinces in Canada; and
- **Environment:** Impact on the environment.

As explained below, these requirements, combined with the characteristics of Hydro-Québec's system, makes it very clear that Hydro-Québec would have to divert sales from other markets in order to deliver electricity products via NECEC (thereby negating any impact on carbon emissions) and/or purchase electricity products from other markets in order to meet its firm commitments under the Massachusetts contracts (i.e., greenwashing).

### 2.2.1 Other Provinces

Specific export licenses for Hydro-Québec indicate that the NEB also looks at whether or not there would be an adverse impact on other provinces. The license issued to Hydro-Québec for contractual sales to Vermont specifically notes in the preamble:

AND WHEREAS the Board is satisfied that the parties interested in buying electricity for consumption in Canada have been given fair market access to any electricity proposed for export under this permit;

AND WHEREAS the Board is satisfied that the proposed exports will not cause any unacceptable effects on provinces other than those from which exports will occur;<sup>20</sup>

The focus on potential impacts on other Canadian provinces could make it difficult for Hydro-Québec to reduce sales into Ontario or New Brunswick or engage in behaviors that could adversely impact those provinces. Therefore, the bulk of the export reductions could come from New York.

### **2.2.2 Environment**

The NEB also is tasked with considering the environment and would be required to perform a detailed review of potential environmental impacts if the proposed source of energy sales is to come from new generation facilities. In the case of the 10-year blanket export license issued to Hydro-Québec in 2010 for up to 30 TWh of firm and interruptible energy for export, the NEB specifically noted:

Regarding the impact of the proposed exportation on the environment, the Board is of the view that there is no nexus between the proposed export and new facilities, changes to existing facilities, or modifications to the operation of existing facilities and environmental effects. As a result, the Board is satisfied that further consideration of the environmental effects of the proposed export is not required.

To ensure that a potential nexus would not arise in the future, the Board has incorporated a condition into the permit, which in relation to any single export contract, limits the ability of the Applicant to rely on the permit to a maximum period of five years. The Board is of the view that a sales contract of five years or less is not sufficient to support the construction of new facilities or modifications to existing facilities, to serve the demands of an export contract.<sup>21</sup>

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<sup>20</sup> National Energy Board, Permit EPE-370, IN THE MATTER OF section 119.03 of the National Energy Board Act (the Act) and the regulations made thereunder; and IN THE MATTER OF an application by Hydro-Québec for authorization to export electricity to H.Q. Energy Services (U.S.) Inc. dated 4 March 2010 by Hydro-Québec for authorization to export electricity to H.Q. Energy Services (U.S.) Inc., pursuant to section 119.03 of the National Energy Board Act (the Act), Issued August 18, 2011.

<sup>21</sup> National Energy Board, "Letter accompanying the issuance of a licence in response to Application dated 19 February 2010 for authorization to export electricity pursuant to Section 119.03 of the National Energy Board Act (Act)1 by Hydro-Québec," October 29, 2010, p. 3.

In this context, it is understandable why Hydro-Québec so clearly indicated that it would only supply energy from its existing portfolio of hydroelectric projects that already are built for purposes of the Clean Energy RFP – to say otherwise may run afoul of the NEB licensing requirements. If supply were to be from new construction, the NEB could require an extensive environmental review.

### 2.3 Québec's energy versus capacity

In order to understand the source of Hydro-Québec's energy into New England via NECEC, an examination of Hydro-Québec's system – both energy and capacity -- is in order. Capacity is provided by existing or planned generating plants that could be available to generate electrical energy when needed. Energy is the electricity that flows when those generating plants are operating. The distinction is important because the contracts with Massachusetts are for energy only – not capacity.<sup>22</sup>

Furthermore, the contracts are for firm energy; firm energy that is not backed by specified resource capacity needs to be firmed with another resource. In this case, Hydro-Québec's system and the ability to optimize energy purchases and sales across its four system interties could provide the firming without the need to dedicate specific hydroelectric units to the contract. This section explains further why the contracts with the Massachusetts utilities are for firm energy only and the implications for greenwashing and carbon emissions.

Québec's system is a winter-peaking system and, as such, Hydro-Québec is required to maintain generation capability above its peak demand in the winter. However, water flow is at its lowest during the winter months, requiring Québec to rely on stored water in its reservoirs to produce energy. Therefore, Hydro-Québec's energy production capacity is limited by its already-built generation capacity and reservoir levels.<sup>23</sup>

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<sup>22</sup> Although the contracts require Hydro-Québec to attempt to qualify to provide capacity into the ISO-NE market, there is no penalty if such capacity is not available or does not clear the market, "For the avoidance of doubt, but without limiting the condition set forth in Section 3.4(b)(ii), **Seller shall have no obligation during the Services Term** to pay for such Network Upgrades or **to complete the Forward Capacity Auction qualification process**" (emphasis added).

<sup>23</sup> As with any large hydroelectric system operator, Hydro-Québec manages its reservoir levels to be able to meet its energy needs over the course of the year and under adverse run-off conditions over multiple years as well as during peak periods.

The North American Electric Reliability Council (NERC) projects that Québec could be short of its required reserve margins by 2024 unless another 1,100 MW of prospective resources are obtained.

Under the Prospective Scenario, a total of 1,100 MW of expected capacity imports are planned by the Québec area. These purchases have not yet been backed by firm long-term contracts. However, on a yearly basis, the Québec area proceeds with short-term capacity purchases (UCAP) in order to meet its capacity requirements if needed.<sup>24</sup>

In other words, Québec is projected to require nearly the equivalent of NECEC's potential capacity by 2023 according to NERC. If Hydro-Québec must purchase capacity to meet its own provincial needs, it would not be able to sell capacity into another market such as ISO-NE unless it is purchasing sufficient capacity from other markets.<sup>25</sup> In fact, Hydro-Québec already appears to be engaging in capacity arbitrage – purchasing short-term capacity from New York's UCAP market and Ontario (500 MW), and selling 462 MW into the higher-priced ISO-NE Forward Capacity Market ("FCM") for FCA9 (June 2018 –May 2019).<sup>26</sup>

ISO-NE explicitly requires that a resource bidding into the capacity market as a New Import Capacity Resource backed by an external control area such as the Québec system to show that its load and capacity projections for the external Control Area has sufficient excess capacity to back the bid.<sup>27</sup> If Hydro-Québec intends to rely on specific generating

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<sup>24</sup> NERC, 2017 Long-term Reliability Assessment, pp. 55-56, Under the prospective scenario, a total of 1,100 MW of expected capacity imports are planned by the Québec area, although these purchases have not yet been backed by firm long-term contracts.

[https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC\\_LTRA\\_12132017\\_Final.pdf](https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_12132017_Final.pdf)

<sup>25</sup> Ibid., pp. 53-54. Ontario also will not be in a position to renew the current sale of 500 MW of capacity to Québec.

<sup>26</sup> ISO-NE, "Forward Capacity Auction Capacity Obligations," <https://www.iso-ne.com/markets-operations/markets/forward-capacity-market/>

<sup>27</sup> See ISO-NE Market Rules (Effective Date, 9/28/2018 - Docket # ER18-2078-000), Market Rule 1, Section 13, paragraph III.13.1.3.5.3:

III.13.1.3.5.3. Imports Backed by an External Control Area. . .

If the New Import Capacity Resource will be backed by an external Control Area and the capacity will be imported over an Elective Transmission Upgrade and the capacity will be imported over an interface that has not achieved Commercial Operation as defined in

resources to bid power, those resources must be identified and shown to be unencumbered from other capacity supply obligations.<sup>28</sup>

The shortfall in capacity does not correspond to a shortfall in energy because Québec has reservoirs and can store water to generate excess energy across the year whereas capacity requirements are an instantaneous need at the point of peak demand on the system. Given the natural flows of precipitation and snow melt in Québec, the province is flush with water in the late spring and early summer months. That water is used to produce energy as well as to replenish the reservoirs for the winter. Water is converted into energy and sold into other markets in order to maximize profits.

In addition to energy sales, Hydro-Québec also engages in arbitrage opportunities where it purchases from one market at a lower price and either sells directly into another market or stores the purchased energy in the reservoir in order to sell energy at a later time.

**Figure 3** illustrates how Hydro-Québec has used purchased energy imported into Québec historically to support its export sales into other markets. For example, in 2010, imports supported nearly half of its exports (10.7 TWh imported versus 23.3 TWh exported). Without those purchases, Hydro-Québec either would have had to reduce exports or fall below minimum reservoir levels.<sup>29</sup>

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Schedule 25 of Section II of the Transmission, Markets and Services Tariff, the provisions regarding site control (Section III.13.1.1.2.2.1) and critical path schedule (Section III.13.1.1.2.2.2) shall apply in addition to the requirement that the Project Sponsor **submit system load and capacity projections for the external Control Area showing sufficient excess capacity during the Capacity Commitment Period to back the New Import Capacity Resource for the length of the multi-year contract** (emphasis added).

<sup>28</sup> Ibid, Section III.13.1.3.5.2.

<sup>29</sup> *Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Response to NRCM-002-021, Attachment 1.

**Figure 3: Hydro-Québec total exports and imports<sup>30</sup>**

Year	[1] Exports (TWh)	[2] Imports (TWh)	[3] Net Exports (TWh)
2008	21.3	6.1	15.2
2009	23.4	4.9	18.5
2010	23.3	10.7	12.6
2011	26.8	6.0	20.8
2012	31.8	1.7	30.1
2013	32.2	1.4	30.8
2014	26.6	1.2	25.4
2015	29.9	0.6	29.3
2016	32.7	0.1	32.6
2017	34.9	0.5	34.4

NOTES:

[1] See “Hydro-Québec at a Glance, p. 2 across the Annual Reports for a consistent set of data on electricity sales outside of Québec. For 2012 and earlier, there is conflicting information in other areas of the report, which is ignored for purposes of developing this table.

[2] Derived as the difference between reported Exports and Net Exports.

[3] Net Electricity Exports, p. 12 (2016 Annual Report), p. 12 (2014 Annual Report).

As a general proposition, Québec has excess energy over the course of the year that it can sell into other markets at a profit and already is doing so. Revenue from sales to external markets has exceeded \$1.5 billion over the past few years.<sup>31</sup> In 2017, Hydro-Québec earned \$1.575 billion from electricity exports and issued more than \$2 billion back to the Québec government as a dividend for the fifth consecutive year.<sup>32</sup> Selling exports has become a necessity for Hydro-Quebec, as indicated by Hydro-Québec CEO Éric Martel’s recent comment, “Without exports, our profits are in trouble.”<sup>33</sup>

<sup>30</sup> Compiled using Hydro-Québec Annual Reports 2012 – 2017.

[www.hydroquebec.com/about/financial-results/annual-report.html](http://www.hydroquebec.com/about/financial-results/annual-report.html)

<sup>31</sup> Hydro-Québec Annual Reports.

<sup>32</sup> 2017 Hydro-Québec Annual Report, p. 3,

<http://www.hydroquebec.com/data/documents-donnees/pdf/annual-report.pdf>

<sup>33</sup> Financial Post, “Without exports our profits are in trouble: Hydro-Quebec plugs into U.S. markets for growth,” April 20, 2018, <https://business.financialpost.com/commodities/energy/without-exports-our-profits-are-in-trouble-hydro-quebec-plugs-into-u-s-markets-for-growth>.

The Massachusetts contracts represent a higher value opportunity for Hydro-Québec than their existing exports because it is an above-market, fixed price contract. It is an arbitrage opportunity across markets that Hydro-Québec describes in its Annual Reports as an activity in which it engages. As the Maine PUC Technical Expert noted,

With a new outlet for its energy, such as NECEC, HQP will have an increased ability to capture higher energy prices in ISO-NE's energy markets, forfeiting sales to other lower-priced markets . . . This arbitrage opportunity is the core of HQP's exporting strategy and the key motivator for HQP in contracting with NECEC.<sup>34</sup>

## 2.4 Economic Incentives to Buy, Divert or Build

There are multiple ways that Hydro-Québec could meet its firm energy commitment to NECEC:

- 1) **Buy:** Purchase energy directly from other markets.
- 2) **Divert:** Reduce energy sales into other markets.<sup>35</sup>
- 3) **Upgrade:** Invest in existing hydroelectric facilities to obtain higher maximum output levels.
- 4) **Build:** Invest in new impoundments and associated hydroelectric facilities to increase system output.

Hydro-Québec's response to the RFP indicated that Hydro-Québec would use only existing facilities; there would be no upgrades or new facilities required to meet the requirements in the contracts.<sup>36</sup> A new license with the NEB also would have to use existing facilities or be subject to an extensive environmental impact review. According to

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<sup>34</sup> *Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Technical Conference Transcript (Sep. 19, 2018), pp. 21-25.

<sup>35</sup> Rob Ferguson, *The Star*, "Ontario signs deal for electricity from Quebec in bid to defuse anger over hydro bills," October 21, 2016, <https://www.thestar.com/news/queenspark/2016/10/21/ontario-signs-deal-for-electricity-from-quebec-in-bid-to-defuse-anger-over-hydro-bills.html>.

<sup>36</sup> HRE Section 83D Application Form, submitted July 27, 2017, pp. 4, 6, 56, and 63.

Hydro-Québec's own study, a new facility would cost more than the contract price for at least the first half of the contract, making it an uneconomic solution at least initially (see Appendix B, **Figure B - 10**). Furthermore, a new hydroelectric facility in Québec would take around 10 years to build, well into the NECEC contract period even if it could be economically justified.

Hydro-Québec would not be able to use the upgrades for NECEC. The response to the RFP explicitly noted that no new upgrades would be required.<sup>37</sup> Furthermore, Hydro-Québec's own load projections indicate that it would need around 6.2 TWh of upgrades to meet incremental load by 2023; additional load growth through 2034 would require the entirety of potential upgrades to keep sales into other markets constant during the 20-year NECEC contract period.<sup>38</sup>

CMP has argued that Hydro-Québec has sufficient water in storage to supply NECEC without diverting sales into other markets.<sup>39</sup> This conclusion, however, is based on the assumption that recent high water conditions will continue; under an assumption of lower runoff conditions, Hydro-Québec would need to divert sales to meet its obligations to supply NECEC (see Appendix B, section B.5). Furthermore, there is no reason why Hydro-Québec would not sell any available energy that it had in the absence of NECEC, subject to economic prices and transmission availability, which is plentiful and has not been fully utilized in the past (see Appendix B, section 8.3).

Therefore, in order to supply NECEC, Hydro-Québec would either have to divert sales that otherwise would occur and/or purchase energy from other markets.

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<sup>37</sup> Ibid., p. 63.

<sup>38</sup> Hydro Québec, *Deep Decarbonization in the Northeastern United States and Expanded Coordination with Hydro-Québec*, April 2018, pp. 27-28 ("Load in Québec was assumed in all scenarios to grow by 0.42% per year for a total increase of 28.7 TWh between 2015 and 2050."). If, as reported in footnote 5, 144 TWh of hydroelectricity is available, there would be only 13 TWh of additional energy available through upgrades. This amount would be consumed by Québec load growth by around 2034 given the 0.42% load growth assumed by the study.

<sup>39</sup> *Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Rebuttal Report of Dickinson, et. al., July 13, 2018, pp. 30 – 35.

### Key Insight

It would be uneconomic for Hydro-Québec to build new hydroelectric facilities to meet the need of NECEC energy supply under current conditions. This buttresses the case that Hydro-Quebec would not provide new renewable energy and therefore NECEC would not lower greenhouse gas emissions.

Under the Massachusetts contracts, Hydro-Québec receives an energy price that starts at \$51.50 / MWh in 2023 and rises to around \$82.40 / MWh in 2042. The starting price is lower than the cost of building new facilities which Hydro-Québec assumes to be \$70/MWh.<sup>40</sup> Instead, Hydro-Québec would simply divert energy from other markets which have been trading at between \$20 and \$40/MWh, consistent with futures prices for energy to be delivered into New York (see Appendix B, **Figure B - 12** and **Figure B - 13**). Although upgrades could cost less, those reported upgrades already are required to meet Québec's domestic load growth. Therefore, it would be more economic for Hydro-Québec to divert lower-priced energy sales from other markets into NECEC or greenwash low-priced purchases.<sup>41</sup>

### Key Insight

Given the stated source of this energy and economic incentives, the natural source of supply would be a diversion of energy away from other markets.

## 3. GREENWASHING: SOURCING PURCHASES FROM OTHER MARKETS

Hydro-Québec also could purchase energy from markets with low or even negative prices to meet its energy commitments. The ability to purchase imports in order to conserve water in its reservoirs for use during higher-priced periods creates a profit-maximizing opportunity that Hydro-Québec is uniquely positioned to pursue. The impact on the environment could be the same as if Hydro-Quebec were generating energy in those

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<sup>40</sup> Energyzt confirmed that all dollar figures in the Deep Decarbonization study are in US dollars via conversation with Evolved Energy Research, one of the authors of the report.

<sup>41</sup> Hydro-Québec notes in its Section 83D application form that it may upgrade or build new facilities in the future, but that these are not required to supply NECEC. Given Hydro-Québec's need for new capacity, if any upgrades or capacity additions could occur regardless of NECEC, then they should be incorporated into the scenarios with and without NECEC when estimating the impact of NECEC on carbon emissions.

markets from fossil fuels directly. This section describes how Hydro-Québec has engaged in greenwashing in the past and is incentivized to continue to do so in the future.

### 3.1 Hydro-Québec's strategic plays across markets

The ability to buy-low and sell high is an arbitrage opportunity, and is cited in Hydro-Québec's annual reports as an activity that it engages in along with selling energy into other markets.<sup>42</sup> Hydro-Québec has engaged extensively in such arbitrage opportunities in the past, purchasing nearly 50 percent of its exports in 2010 (Appendix B, **Figure B - 6**). Such purchased energy is likely to include carbon-emitting resources.<sup>43</sup>

This strategy has been a long-standing approach for Hydro-Québec, referenced in 2004 by the Government of Québec:

Hydro-Québec is able to purchase electrical energy from neighbouring markets at lower prices during certain periods, and then resell it later to neighbouring networks at higher prices. If rainfall conditions permit, and once Québec's own energy security has been guaranteed, Hydro-Québec Production's unused supplies can be exported (net export sales) to neighbouring markets.<sup>44</sup>

While this type of arrangement can help Hydro-Quebec to maximize its profits, it also creates a “greenwashing” situation where Hydro-Quebec can create the perception that its energy is clean and renewable when it is not. Specifically, Hydro-Quebec's interconnectedness would allow the NECEC energy to appear to come from Hydro-Québec's hydroelectric plants when, in reality, such excess energy was only enabled through purchases from fossil fuel plants.

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<sup>42</sup> For example, see 2017 Hydro-Québec Annual Report, Notes to Consolidated Statements, p. 50 of 94.

<sup>43</sup> Many of the surrounding markets have stated objectives to decarbonize the grid in order to achieve lower carbon emissions from the power sector. This decarbonization would make the impact of import/export optimization converge over time.

<sup>44</sup> Ministère des Ressources naturelles, de la Faune et des parcs, Gouvernement du Québec. 2004. The Energy Sector in Québec, Context, Issues and Questions. p. 41.

### **3.2 Greenwashing is possible under the contracts**

The Massachusetts contracts have no way to monitor, prevent, or penalize Hydro-Québec for engaging in purchases from other markets in order to conserve water in its reservoirs for sale through NECEC. Although the Massachusetts contracts do require Hydro-Québec to “tag” its electrons through the ISO-NE Generation Information System (GIS), the tracking system simply tags imports from Hydro-Québec as coming from a specific hydroelectric facility. However, the GIS does not track Hydro-Québec’s total system dispatch or decisions.

Under the contracts with Massachusetts utilities, Hydro-Québec is not required and therefore is unlikely to provide the details for its entire system operations, energy imports and energy sales. Without an understanding of Hydro-Québec’s entire system, it will look as if the Massachusetts utilities are purchasing hydroelectricity when, in fact, those purchases may be enabled by purchases from other markets that allowed Hydro-Québec to conserve the water in its dams for production when NECEC supply was required.

The inability to track energy flows into and out of Hydro-Québec’s system allows Hydro-Québec to effectively “greenwash” any energy it purchases from other markets and convert it into “clean energy” for purposes of its contracts. At best, Hydro-Québec would be receiving the system mix which would include whatever was operating at the time of the purchases. In reality, Hydro-Québec’s purchases from other markets could be enabling carbon-emitting resources to operate when they otherwise would be turned off. For example, low cost coal from New Brunswick or natural gas from New York could be the incremental plant’s fuel source that effectively allows Hydro-Québec to purchase from another markets in order to conserve water to service NECEC. Under such conditions, NECEC actually would be increasing fossil fuel use in other markets outside of ISO-NE that would not have occurred in the absence of NECEC.

There is no reason to assume that Hydro-Québec would not engage in the same strategy that it described in 2004, and clearly executed upon from 2008 through 2012, referenced in its annual reports as recently as 2017 and could pursue without penalty under the Massachusetts contracts. As a result, Massachusetts ratepayers would be paying multiples on the market price for something that is not truly Québec hydroelectricity. Hydro-Québec effectively would be an expensive broker purchasing energy that Massachusetts ratepayers otherwise could obtain through competitive markets.

### Key Insight

The higher price in the NECEC contract and the inability to accurately account for the Hydro-Quebec system creates perverse incentives for Hydro-Québec to engage in arbitrage opportunities by purchasing cheaper and, potentially, higher emitting energy from other markets to meet the NECEC firm energy supply obligations.

### 3.3 NECEC energy may not come from Québec

The risk of Hydro-Québec engaging in buy-low/sell-high opportunities is not theoretical. Futures prices in New York for peak hours are trading at around \$41/MWh for 2023; off-peak prices would be even lower.<sup>45</sup> It therefore would be economic for Hydro-Québec to divert energy away from New York to sell via NECEC.

The estimated energy price discrepancy between market prices and energy prices in the NECEC contract undoubtedly will incentivize Hydro-Québec to ensure that there is enough water in its reservoirs to meet the requirements of the GIS tracking system and contract requirements to be able to claim that its energy supply via NECEC is “clean energy.”<sup>46</sup> Although it would appear that the energy was coming from Québec, it actually would have been sourced from another market either via diversion of exports or purchases from lower-priced markets.

### Key Insight

Hydro-Québec has every incentive to arbitrage between markets, and already does so. The lucrative arrangements under the NECEC contract create an even greater incentive for Hydro-Québec to greenwash energy by buying from other markets to supply NECEC.

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<sup>45</sup> CME Group, NYISO Zone A Day-Ahead Peak Calendar-Month 5 MW Futures Quotes, October 11, 2018, <https://www.cmegroup.com/trading/energy/electricity/nyiso-zone-a-5-mw-peak-calendar-month-day-ahead-lbmp-swap-futures.html>.

<sup>46</sup> The actual price for energy under the NECEC contract has been disclosed to the public as part of the filings to the Massachusetts Department of Public Utilities. The energy price starts at around \$51 / MWh in 2023, rising to around \$82 in 2043. Adding in transmission charges over NECEC, the delivered energy price in Lewiston starts at \$66/MWh, rising to around \$103/MWh in 2042. In addition, Massachusetts ratepayers would have to pay for the cost of transmission, including congestion and losses, required to bring the energy from Lewiston, Maine into Massachusetts.



### 3.4 No guarantee that NECEC would be incremental to New England

The Massachusetts contracts do not guarantee that energy flowing through NECEC would be incremental.

The Massachusetts RFP originally required hydroelectric imports to be “incremental to New England” and required a showing of what Québec’s imports into New England has been over the prior three years.<sup>47</sup> The template for the contract included as part of the RFP also included a definition for incremental energy to be delivered:

“Incremental Hydroelectric Generation” means Firm Service Hydroelectric Generation that represents a net increase in MWh per year of hydroelectric generation from the bidder and/or affiliate as compared to the 3-year historical average and/or otherwise expected delivery of hydroelectric generation from the bidder and/or affiliate within or into the New England Control Area.

However, the final contracts excluded the entire definition of “Incremental Hydroelectric Generation.” Although the contract does include penalties for Hydro-Québec’s failure to deliver adequate amounts of “clean energy” under the Attachment H to the contract, the penalties are limited, allowing Hydro-Québec to make an economic decision as to how to manage its system to optimize profits taking into account the opportunity costs of sales into other markets versus NECEC.

#### Key Insight

Hydro-Québec’s system characteristics plus the AC transmission connections between those interconnected markets and a contract that does not even have a definition for “Incremental Hydroelectric Generation” makes it difficult to track and ascertain the true source of Hydro-Québec’s energy that would flow via NECEC. There is no guarantee that the energy would be incremental. There is no guarantee that it would come from Québec. There is no guarantee that it would be “clean” and there is no guarantee that total carbon emissions would be reduced.

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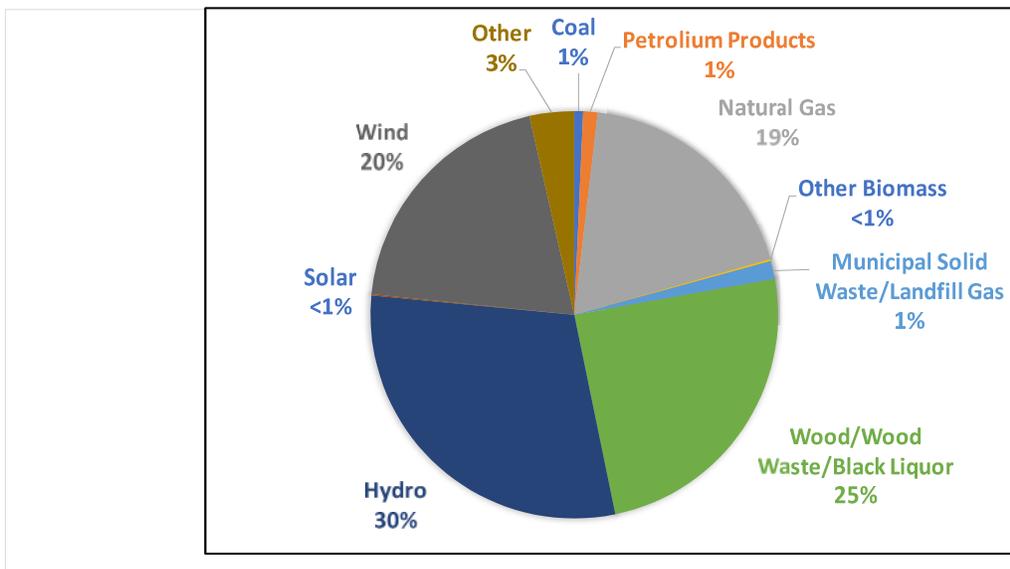
<sup>47</sup> NECEC Section 83D Application Form, p. B (redacted).

#### 4. ADVERSE IMPACT ON MAINE RENEWABLES

Another adverse environmental impact of NECEC relates to its consequences on the development of renewable resources in Maine. According to the U.S. Energy Information Administration, Maine’s in-state retail customers consumed around 11.5 TWh of energy in 2016.<sup>48</sup> ISO-NE’s load forecasts underlying the 2018 CELT report project that Maine load will total around 13.5 TWh in 2023.<sup>49</sup> Regardless, adding 9.5 TWh to a system with nearly equivalent amount of supply and demand could be extremely disruptive to existing and new resources.

In 2017, approximately 75 percent of the electrical energy produced was from renewable resources (**Figure 4**).<sup>50</sup>

**Figure 4: Maine generation mix by fuel type**<sup>51</sup>



<sup>48</sup> U.S. EIA, State Profiles, Maine, <https://www.eia.gov/electricity/state/maine/>

<sup>49</sup> ISO-NE, 2018-2027 Forecast Report of Capacity, Energy, Loads, and Transmission (CELТ), <http://isonewswire.com/updates/2018/5/8/2018-forecast-of-capacity-energy-loads-and-transmission-is-p.html>

<sup>50</sup> U.S. EIA, State Profiles, Maine, <https://www.eia.gov/state/?sid=ME>

<sup>51</sup> Energyzt analysis of <https://www.eia.gov/electricity/data/eia923/> and <https://www.eia.gov/state/print.php?sid=ME>

Maine frequently exports energy from its diverse system mix to the rest of New England across long transmission lines, especially when natural gas supply is constrained during extreme winter conditions.

According to the US EIA, the amount of Maine-based generation output declined over the past decade partially due to increasing imports from Québec.

Maine’s Renewable Portfolio Standards (RPS) require electricity providers to fuel 30% of their electricity generation with renewable resources. In addition to policy initiatives, electricity imports from Canada—notably from **Quebec—have been contributing an increasingly larger share to Maine’s total generation, displacing natural gas-fired generation as the primary source. Since 2012, electricity imports from Canada have more than tripled**, increasing from 0.8 GWh in 2012 to 2.7 GWh in 2017.<sup>52</sup>

(emphasis added).

NECEC would bring even more Québec imports directly into Maine and would have adverse impacts on existing and future renewable developments in Maine. Existing renewable resources – primarily biomass and hydroelectric dams in Maine – could face reductions to energy margins as a result of NECEC. New renewable developments would face higher costs to connect and higher price premiums, making them less competitive than potential similar renewable developments in other New England locations outside of Maine.

#### **4.1 Reduced operating margins**

Adding around 9.5 TWh into Maine’s system would have adverse consequences for Maine’s existing renewable resources, particularly biomass and hydroelectric generators. NECEC would decrease energy prices that those plants receive from ISO-NE for energy they generate and reduce the energy margins required to keep the plants operational.<sup>53</sup>

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<sup>52</sup> US EIA, Natural Gas Weekly Update, “Renewables surpass natural gas as the primary electricity-generating source in Maine,” [https://www.eia.gov/naturalgas/weekly/archivenew\\_ngwu/2018/09\\_27/](https://www.eia.gov/naturalgas/weekly/archivenew_ngwu/2018/09_27/).

<sup>53</sup> *Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Exhibit No. TLB-1, Prepared Surrebuttal Testimony of Tanya L. Bodell, August 17, 2018, p. 8.



The total impact of potentially lower prices would be less than 0.6 percent of an average Maine residential ratepayer bills.<sup>54</sup> Most of the decrease in energy prices to Maine ratepayers would be due to increased congestion and losses tied to transporting so much more energy out of Maine into the rest of New England.<sup>55</sup> In effect, the majority of any potential energy price reduction resulting from NECEC is due to inefficiencies tied to the higher waste of energy through increased losses.<sup>56</sup>

### Key Insight

NECEC would adversely impact existing renewable resources in Maine for very little economic and carbon emissions benefit.

## 4.2 Higher costs for Maine renewables to connect to ISO-NE

A recent study performed by ISO-NE estimated that there is currently around 200 MW of capacity available for new renewables to connect in Western Maine and an additional 600 MW of estimated transmission capacity that can be accessed with upgrades.<sup>57</sup> NECEC's Section 83D Application Form claims that it can increase the capacity at the Surowiec-South line with upgrades by 1,000 MW. Regardless, the fact that NECEC would use the 200 MW of existing headroom and add only the incremental amount it requires leaves little excess transmission capability for Maine renewables under development.<sup>58</sup>

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<sup>54</sup> This calculation assumes a delivered retail rate of around \$130/MWh.

<sup>55</sup> *Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Exhibit No. TLB-1, Prepared Direct Testimony of Tanya L. Bodell, April 30, 2018, Figure 8, p. 23.

<sup>56</sup> *Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Technical Conference, September 7, 2018, pp. 37, 50, 53, 68. See also EXM-004-006\_Uplan Results.xlsx.

<sup>57</sup> ISO-NE, *Maine Renewable Integration Study*,

*Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Exhibit No. NECEC-36 originally submitted as Attachment 1 to CMP-014-001.

<sup>58</sup> This argument was posed by Francis Pullaro from RENEW in his submission on April 30, 2018, to the *Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232.



Furthermore, congestion would simply shift from the Surowiec-South Interface to the Maine-New Hampshire Interface, where no new upgrades are planned.<sup>59</sup> The Maine-New Hampshire Interface currently allows for up to around 1,900 MW of energy flows at any point in time. The addition of NECEC pushes those flows to the maximum level more often, increasing losses and congestion charges.

In addition, NECEC increases losses that would be incurred by all generators in Maine. Losses represent wasted energy that is lost because of transmission line inefficiencies. As current increases, losses increase by the square of the energy flows. The exponential relationship ensures that losses increase as flows increase. Higher losses mean that more energy has to be produced to deliver the same amount to demand.

In ISO-NE, this translates into a lower price for energy produced at the generator site in Maine. Lower prices are a market signal that discourages new generation plants from being built. Therefore, NECEC's adverse impact on losses and congestion effectively will send the signal to renewable resource developers that they should not build in Maine, all else equal.

Currently, several western Maine renewable developments are in front of NECEC. Some of the renewable resource developments slated for northern Maine already have fallen behind NECEC in the queue as of May 22, 2018. Although the renewable developments in front of NECEC would not face higher upgrade costs, CMP in its Section 83D Application Form noted that it expects to supersede most of the Maine renewable resources in the ISO-NE queue.<sup>60</sup>

These other generation projects are instead being evaluated as part of the ISO-NE MRIS in a "clustered" basis. As discussed in Section 6.9, CMP believes that these projects will fall below the NECEC Transmission Project in the queue through the cluster study process that ISO-NE is seeking to implement, thereby leaving the NECEC Transmission Project only behind

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<sup>59</sup> *Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Exhibit No. TLB\_1, Testimony of Tanya L. Bodell, April 30, 2018.

<sup>60</sup> Both the northern and western clusters were ahead of NECEC in the queue when it issued its proposal in response to the Massachusetts Clean Energy RFP. Since then, the northern cluster did not fund a cluster study and fell behind NECEC in the queue.



the three queue projects included in the NECEC system impact study performed by the Avangrid transmission planning group.<sup>61</sup>

...

Should each of these projects decline to commit to fund the necessary transmission upgrades in order to participate in the cluster study, they will drop down in the queue (or drop out entirely), thereby significantly reducing the number of projects holding queue positions before the NECEC Transmission Project and expediting the timeline for ISO-NE to complete the required system impact studies for the NECEC Transmission Project.<sup>62</sup>

For those renewable resources that are behind NECEC in the queue, the net impact would be increased costs for Maine renewable resources to upgrade transmission as part of their interconnection requirements if NECEC were to proceed. Such renewable resources would be deferred or delayed – potentially indefinitely – with a lost opportunity to create a net reduction in carbon emissions.

### **Key Insight**

Because of the increased cost of upgrading transmission due to the NECEC, development of renewable resources in Maine could be deferred or indefinitely delayed.

## **5. IMPLICATIONS FOR CARBON EMISSIONS**

Given the interconnectivity of Québec and New England, the analysis of NECEC's impact on carbon dioxide emissions must extend beyond the boundaries of New England to other interrelated markets. Such an analysis requires a detailed production cost model that can run a projection of what the markets would do with and without NECEC and the associated diversion of Québec excess energy exports.

Two studies are in the public domain that apply two different production cost models to analyze the impact of carbon dioxide emissions under the assumption that total excess

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<sup>61</sup> NECEC Section 83D Application Form, p. 83, footnote, 21.

<sup>62</sup> Ibid., p. 85.

energy available for export into other markets by Hydro-Québec is held constant:<sup>63</sup>

- **Energyzt Analysis:** Assessment of the impact of NECEC on carbon emissions, presented in the testimony of James M. Speyer before the Maine PUC Docket No. 2017-00232, April 30, 2018; and
- **ESAI Study:** “Analysis of Greenhouse Gas Emissions Impacts: New Class I Resources vs. Existing Large Hydro,” Prepared for GridAmerica Holdings, Inc., September 2017, focused on the impact of Northern Pass Transmission.

Even though the ESAI study examines the impact of Northern Pass Transmission, the findings are relevant to NECEC which is a similar type of project that includes a new 1,200 MW transmission line between Québec and New England, as well as around 9.5 TWh of baseload energy flows from Hydro-Québec under contract with the Massachusetts utilities.

These studies make four significant conclusions that are consistent with the discussion above:

- 1) **Excess energy is the same with or without a new Intertie (e.g., NECEC or Northern Pass):** Hydro-Québec exports into other markets are limited by water availability, not transmission delivery capability. Therefore, the total amount of excess energy that Hydro-Québec has available to sell into external markets will remain the same with or without NECEC.
- 2) **Hydro-Québec would divert external sales to meet new energy requirements:** In order to meet new firm energy requirements associated with a long-term power purchase agreement to be delivered over a new tieline such as NECEC or Northern Pass, Hydro-Québec would reduce energy sales into other markets.<sup>64</sup>
- 3) **Higher carbon emissions elsewhere offset the impact in New England:** As a

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<sup>63</sup> Interestingly, both CMP’s expert (Daymark) or the Maine PUC Expert (London Economics) calculated the impact on carbon emissions for New England only, and did not present an estimate of how NECEC would impact total carbon emissions across other markets that would be impacted by NECEC.

<sup>64</sup> The Maine PUC Technical Expert, London Economics Incorporated, makes the same assumption for purposes of its analysis of the NECEC Minimum Offer Price Rule. *Central Maine Power Co., Request for approval of CPCN for the New England Clean Energy Connect*, Maine P.U.C. No. 2017-000232, Transcript (Sep. 19, 2018).

result of Hydro-Québec's diversion of energy sales from other markets into New England via a new transmission line from Québec, carbon dioxide emissions would be higher in other markets from which energy sales are diverted.

- 4) The offset in other markets could result in higher total emissions in some years:** The amount by which carbon emissions would exceed the savings in New England depends on where Québec sources its energy. However, it is NECEC could result in higher total carbon emissions than otherwise would occur if the transmission line were not to proceed.

Each of these points is elaborated upon below with respect to the impact on total carbon dioxide emissions from importing Québec hydroelectricity across a 1,200 MW HVDC transmission line into New England.

### **5.1 Excess energy is the same with or without a new intertie**

Both the Energyzt Analysis and the ESAI Study conclude that Hydro-Québec has a limited pool of excess energy that already is and would continue to be optimized subject to constraints such as water conditions, reservoir management decisions, and firm commitments.

Intertie capacity into other markets is not a constraining factor. Both studies conclude that it is economical for Hydro-Québec to export all of its surplus energy and that Hydro-Québec has a low marginal cost of production and sufficient transmission capacity into external markets to continue to do so going forward. Therefore, a new intertie merely allows Hydro-Québec to access a higher-priced, long-term contract market in Massachusetts and is not necessary to transport clean energy that otherwise would be wasted.

The total amount of excess energy available to Hydro-Québec to sell into other markets varies between the studies, but would be somewhere between 33 to 38 TWh per year, of which between 20 and 25 TWh would be exported to the United States in the base case.<sup>65</sup> Hydro-Québec's own study assumes that exports to the U.S. would remain constant at

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<sup>65</sup> ESAI provides a projection for 2017 to 2026 that ranges from 36.2 to 38.2 (ESAI, p. 5). The Energyzt Analysis projects that there would be 33.5 TWh in 2023 if purchases were reduced to reflect Romaine-3 coming online.

22.4 TWh without a build-out of new hydroelectric facilities.<sup>66</sup>

The Technical Expert of the Maine PUC estimates that the amount of firm energy that would be available to flow into the US would total 21.5 TWh in 2021 based on a supply and demand comparison.<sup>67</sup> Existing transmission lines would allow for the entirety of this amount of excess energy to be sold into US markets. Therefore, there appears to be consensus about the amount of excess energy that Hydro-Québec would have available for sale into the United States. Regardless of the estimate, the NECEC energy supply obligation of up to 9.4 TWh would be a sizable portion of any available excess energy that Hydro-Québec would sell.

**Key Insight:**

A new transmission line from Québec into New England such as NECEC would not create an incremental increase in total exports of hydroelectric power from Quebec into other markets.

## 5.2 Hydro-Québec would divert exports to meet new energy requirements

Accepting that Hydro-Québec's excess energy is the same with or without a new intertie, each study applies a different methodology to divert energy from other markets into the new intertie.

The Energyztt Analysis used historical averages for the base case flows from Québec into the U.S.. Assuming that exports to the U.S. would remain the same, the Energyztt analysis then removed the equivalent of the NECEC flows from New York into NECEC, starting with the lowest-priced hours first.

ESAI created a base case that: 1) held contractual flows fixed; and 2) applied the remaining excess energy into the highest priced markets during the highest-priced hours first, followed by the next highest priced hours/markets until the surplus energy was allocated. For the case with a new transmission line and flows from Québec, ESAI then reallocated energy from the base case starting with the lowest-priced hours in the lowest-priced markets first. The result is that energy tends to be diverted predominantly from

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<sup>66</sup> Deep Decarbonization Study, p. 30.

<sup>67</sup> See *Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, London Economics response to GINT-001-049.



New York and Ontario into Northern Pass.<sup>68</sup>

The models were then rerun with the reallocated energy to calculate total carbon dioxide emissions generated by each power plant in the model.

### 5.3 Higher carbon emissions incurred elsewhere offset emissions in ISO-NE

In both analyses, higher emissions in other markets resulting from Québec’s diversion of exports into those markets offset the impacts from the proposed transmission line and Québec energy supply in New England. A comparison of the results of the two analyses for 2023 under projected low gas price and low carbon price conditions is presented in **Figure 5**.

**Figure 5: Impact on carbon emissions in 2023 under low gas and low carbon prices**

Market	Change in Carbon Emissions by Market (Million MT)	
	ESAI Analysis <sup>69</sup>	Energyzt Analysis <sup>70</sup>
New England	(2.4)	(3.3)
NYISO	1.0	2.3
PJM	0.1	0.5
MISO	0.2	0.5
Ontario	1.0	0.1
<b>TOTAL Across Markets</b>	<b>(0.1)</b>	<b>0.1</b>

<sup>68</sup> ESAI, Table 5, p. 15.

<sup>69</sup> ESAI Study, Table 5, p. 15. For comparative purposes, the signs have been switched. ESAI denotes decreases in carbon emissions as a positive number whereas Energyzt denotes it as a negative value. In addition, the ESAI results were presented in short tons and converted to metric tons for comparison with the Energyzt Analysis results using a conversion rate of 0.9072 metric tons per one short ton.

<sup>70</sup> *Central Maine Power Co., Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Exhibit No. JMS-4.*



**Key Insight:**

Under low natural gas and low carbon price conditions, an increase in carbon emissions from the diversion of Québec exports from other markets into a transmission line into New England offsets the impact from the proposed transmission line and Québec energy supply into New England, resulting in no net impact, and in the case of the Energyzt Analysis, results in an increase in total carbon emissions.

The impact that NECEC has on total carbon emissions will depend on market conditions. The Energyzt analysis also examined an alternative case of high natural gas prices and high carbon prices that were assumed by the NECEC expert in its application to the Maine PUC. Under those conditions, carbon dioxide emissions in New England would be lower than the low natural gas-price case due to the fact that less efficient units would be more expensive and therefore displaced by operating the more efficient units more often. Under this scenario, diverting exports from Québec from New York into Massachusetts tends to have a much greater impact on carbon emissions, resulting in an increase in total carbon emissions of 0.4 million metric tons in 2023 (Figure 6).

**Figure 6: Carbon emissions impact in 2023 under high gas and high carbon prices**

State/Region	Carbon Emissions (Million MT)		Net Carbon Emissions Impact (Million MT)
	No NECEC	With NECEC	
ISO-NE	26.8	23.8	(3.0)
NYISO	25.8	28.1	2.3
PJM	396.8	397.8	1.1
MISO	351.0	350.9	(0.1)
Ontario	3.6	3.7	0.1
<b>Total</b>	<b>804.0</b>	<b>804.4</b>	<b>0.4</b>

As noted in the Energyzt testimony summarizing the results of the analysis, the increase in total emissions is the equivalent of building “a new 250 MW combined cycle gas power plant running at a 40 percent capacity factor or average emissions from around 80,000 automobiles averaging 4.75 metric tons of carbon emissions over the course of a year.”<sup>71</sup>

<sup>71</sup> Central Maine Power Co., Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Exhibit No. JMS-1.

**Key Insight:**

Under conditions of higher natural gas prices and higher carbon prices, carbon emissions could increase.

In summary, NECEC would have a negligible impact on total carbon emissions and could even increase them when the effect on other markets is considered. Hydro-Québec's diversion of energy exports from other power markets to service NECEC results in incremental carbon emissions as power plants in those markets fire-up generators to make up the missing energy flows. In effect, there is no net impact to carbon emissions, and possible adverse consequences, when Hydro-Québec diverts its surplus energy resources into NECEC.

## 6. ANALYSIS OF GREENWASHING POTENTIAL USING CMP's MODEL

As part of the Maine PUC hearing, CMP offered a model to assess the ability of Hydro-Québec to meet its NECEC obligations while maintaining exports at historical levels. The model purports to determine whether or not Hydro-Québec's sales via NECEC can be incremental.<sup>72</sup>

The simplistic model suffers from three fundamental flaws (described in more detail in Appendix B):

- 1) **The CMP Model Answers the Wrong Question:** The real question is whether NECEC reduces global emissions, and the CMP model does not address this question at all. To do so would require an analysis of what carbon emissions would be with and without NECEC, which the model does not do.
- 2) **CMP Assumes a Sudden Availability of Incremental Exports:** CMP assumes that Hydro-Québec does not sell its excess energy into other markets unless NECEC is built. In fact, there is plenty of excess transmission capacity servicing the interconnected markets that Hydro-Québec could use to sell its excess energy that currently is stored in its reservoirs and the incentive to do so prior to NECEC coming online.
- 3) **Sensitivity to Key Assumptions:** The model is incredibly sensitive to key

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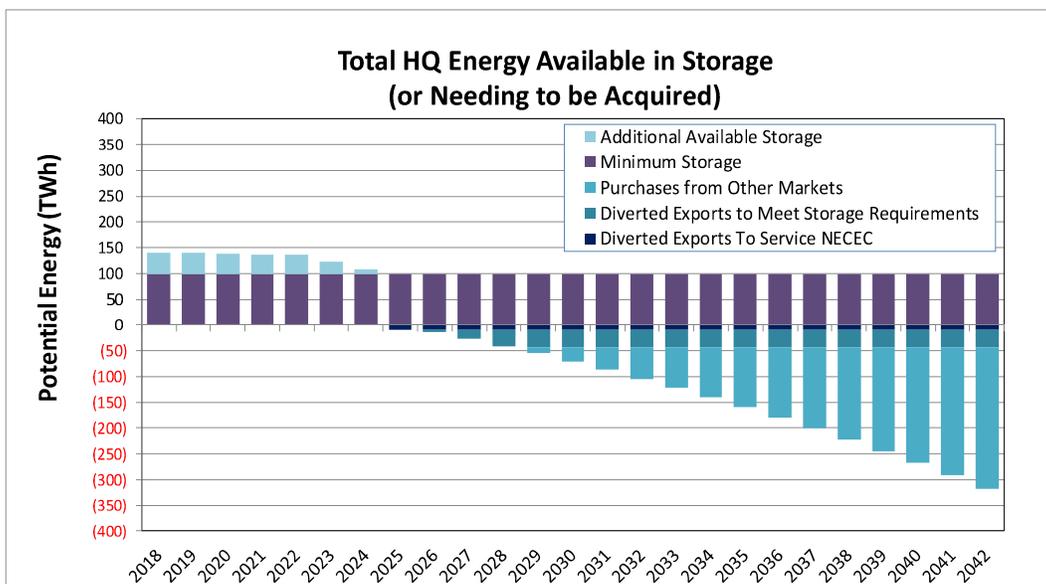
<sup>72</sup> Central Maine Power Co., Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, CMP Response to NRMCC-032-021, Attachment 1.



assumptions, including how much runoff would Hydro-Québec receive. CMP implicitly assumes high water conditions that have been experienced in 2017 and the years before will continue for the entirety of the contract, allowing for high levels of energy availability that allows incremental exports compared to historical levels. Making a small adjustment to this assumption has a significant impact.

Adjusting a single assumption -- the assumed availability of water and potential generation output by only six percent to reflect lower runoff than the high water conditions experienced in 2017, it is clear that Hydro-Québec would not be able to service NECEC without diverting energy from other markets and engaging in greenwashing through purchases from other markets (Figure 7).

**Figure 7: Hydro-Québec operations per the CMP Model with lower runoff**



In reality, Hydro-Québec is not confined to a single strategy over the course of the contract. Hydro-Québec will manage its system, sales, exports and opportunities according to water conditions and market prices. NECEC simply imposes another fixed obligation onto the system against which Hydro-Québec will optimize its operations. Such optimization will include diverting sales into other markets and greenwashing, as required to optimize profits.

This activity is allowed under the “clean energy” contracts with Massachusetts utilities.

## 7. CONCLUSION

Under the terms of the contracts with Massachusetts utilities, Hydro-Québec would not be precluded from purchasing energy from other markets to sell directly into NECEC or for purposes of conserving water in its reservoirs for future supply to NECEC at a later time. Massachusetts utilities would have no ability to monitor or prevent this possibility from occurring. Massachusetts ratepayers effectively could be paying above-market prices for power from existing resources outside of Québec that provide no incremental environmental benefit and could even increase carbon emissions.

CMP's own model of the Hydro-Québec system does not include realistic assumptions. Adjusting the model to reflect lower runoff conditions and an objective of maintaining exports at historical levels illustrates a realistic scenario under which Hydro-Québec would have to divert energy and engage in greenwashing behavior. Under these conditions, Hydro-Québec would have to do both in order to maintain exports at 2017 levels.

Hydro-Québec's sales via NECEC do not have to be incremental to Québec's historical hydroelectric generation sales into New England. The energy does not have to be incremental to what Hydro-Québec otherwise would sell into other markets. There is no guarantee that Massachusetts ratepayers would receive 100% "clean energy" given the greenwashing game that Hydro-Québec is able to play. There is no guarantee that the environment would receive a net reduction in carbon emissions; total carbon emissions in other markets could increase to a level that any reduction in New England carbon emissions would be negated or even exceeded. If NECEC were allowed to proceed, the only guarantee is that Québec would receive billions of dollars in future dividends and Maine's renewables industry will be adversely impacted.

It is unlikely that NECEC will benefit the climate. At best, the NECEC could have negligible impact on global greenhouse gas emissions. However, there are a number of conditions under which NECEC actually could increase global carbon emissions as Hydro-Québec engages in profit-maximizing behavior around its firm rights to capacity on the NECEC transmission line and contracts with Massachusetts utilities.

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## APPENDIX B: OVERVIEW OF QUEBEC'S ELECTRICITY SYSTEM AND EXPORTS

Hydro-Québec owns and operates a large system of hydroelectric generation and other power generating capabilities along with an extensive transmission network. Hydro-Québec's generating capacity in 2017 was 37,309 MW from 87 generating stations. Additional sources, such as wind, solar and purchases from third parties create total nameplate capacity of 47,857 MW.<sup>1</sup>

In understanding what electricity products are likely to be sold via NECEC, it is important to distinguish between energy and capacity. Capacity is provided by existing or planned generating plants that could be available to generate electrical energy when needed. Energy is the electricity that flows when those generating plants are operating. The distinction is important because the contracts with Massachusetts are for energy – not capacity.<sup>2</sup>

Furthermore, the contracts are for firm energy; firm energy that is not backed by capacity needs to be firmed with another resource – in this case, Hydro-Québec's ability to optimize energy purchases and sales across its four system interties. This section explains further why the contracts with the Massachusetts utilities are for firm energy only and the implications for greenwashing and carbon emissions.

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<sup>1</sup> Hydro-Québec - TransÉnergie, Plan Directeur, 2020,  
<http://www.hydroquebec.com/data/transenergie/pdf/hqt-plan-directeur-2020.pdf>

<sup>2</sup> Although the contracts require Hydro-Québec to attempt to qualify to provide capacity into the ISO-NE market, there is no penalty if such capacity is not available or does not clear the market (see NECEC-16, section 7.5., "For the avoidance of doubt, but without limiting the condition set forth in Section 3.4(b)(ii), **Seller shall have no obligation during the Services Term** to pay for such Network Upgrades or **to complete the Forward Capacity Auction qualification process**" (emphasis added).

## B.1 QUÉBEC’S CAPACITY

In order to meet reliability standards, each region is required to maintain an amount of generating resources above its maximum demand for power. In Québec, where the system peaks in winter, Hydro-Québec strives to maintain a level of installed and purchased capacity above its winter peaking load. Targeted reserve requirements are 12.9 percent above peak demand.<sup>3</sup> However, waterflow is at its lowest during the winter months, requiring Québec to rely on stored water in its reservoirs to produce energy in addition to its normal flows. Its energy production capacity is limited by its available generation capacity and reservoir levels.

The North American Electric Reliability Council (NERC) projects that Québec will be short of its required reserve margins by 2024 unless another 1,100 MW of prospective resources are obtained.<sup>4</sup> Québec is not in a position to sell 1,200 MW of capacity into New England or any other market during the winter months. If anything, Québec will need to purchase that level of capacity resources from other markets to meet its required reserve margins. Assuming that NECEC will provide 1,090 MW of capacity into New England results in an immediate shortfall for Québec against its targeted reserve margins, as shown in **Figure B-1**.<sup>5</sup>

This is particularly problematic for New England which requires capacity to be sold year-round. In other words, Québec will not be in a position to commit capacity into New England via NECEC– which is why the contracts with Massachusetts are for firm energy only. Therefore, Québec either would have to withdraw its current capacity sales into New England and New York to meet its own reserve requirement

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<sup>3</sup> NERC, 2017 Long-term Reliability Assessment, pp. 55.

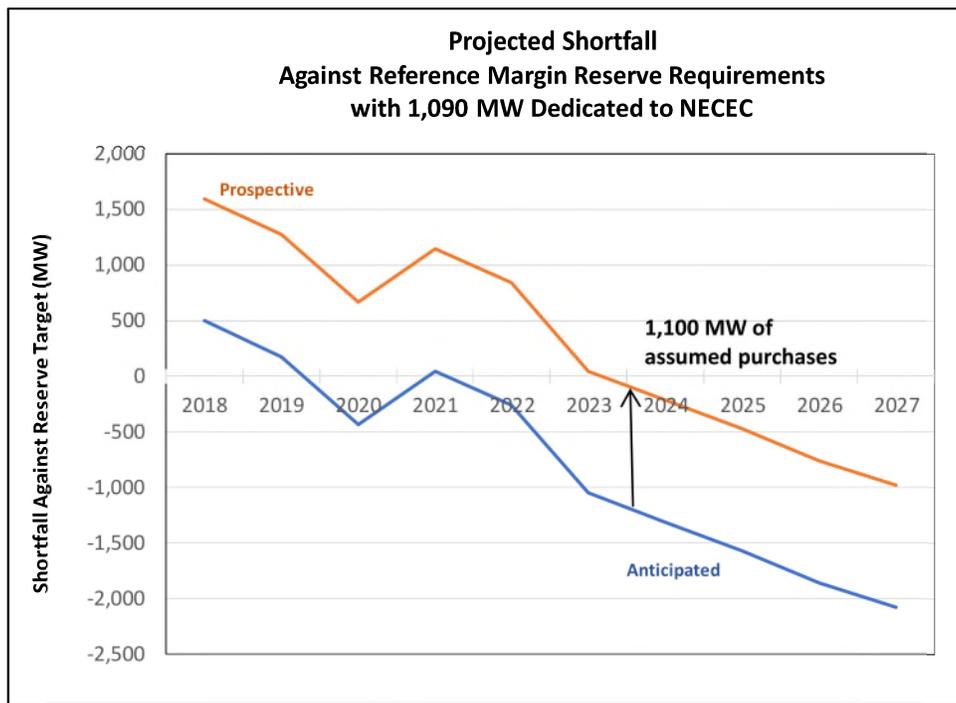
<sup>4</sup> NERC, 2017 Long-term Reliability Assessment, pp. 55-56, Under the prospective scenario, a total of 1,100 MW of expected capacity imports are planned by the Québec area, although these purchases have not yet been backed by firm long-term contracts.

[https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC\\_LTRA\\_12132017\\_Final.pdf](https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_12132017_Final.pdf)

<sup>5</sup> NERC, 2017 Long-term Reliability Assessment, pp. 53-54. Ontario will not be in a position to renew the current sale of 500 MW of capacity to Québec. However, the Maritimes, New York and New England are projected to have excess capacity that could be sold to Québec.

levels or optimize its purchases and sales of capacity across the interconnected markets. NECEC could be used to meet Québec’s shortfall in capacity, not the other way around.

**Figure B - 1: Hydro-Québec shortfall against reserve margins with NECEC<sup>6</sup>**



NOTE: Anticipated resources reflect what already exists or is being built; prospective resources include potential purchases that could be used to meet the targeted levels.  
 Reference Margin Level = Installed Reserve Margin Requirement

Therefore, if Québec is going to build any new upgrades or new impoundment structures, it would be because of its own need for new capacity, not to service other markets. Those additional capacity investments would occur regardless of NECEC.

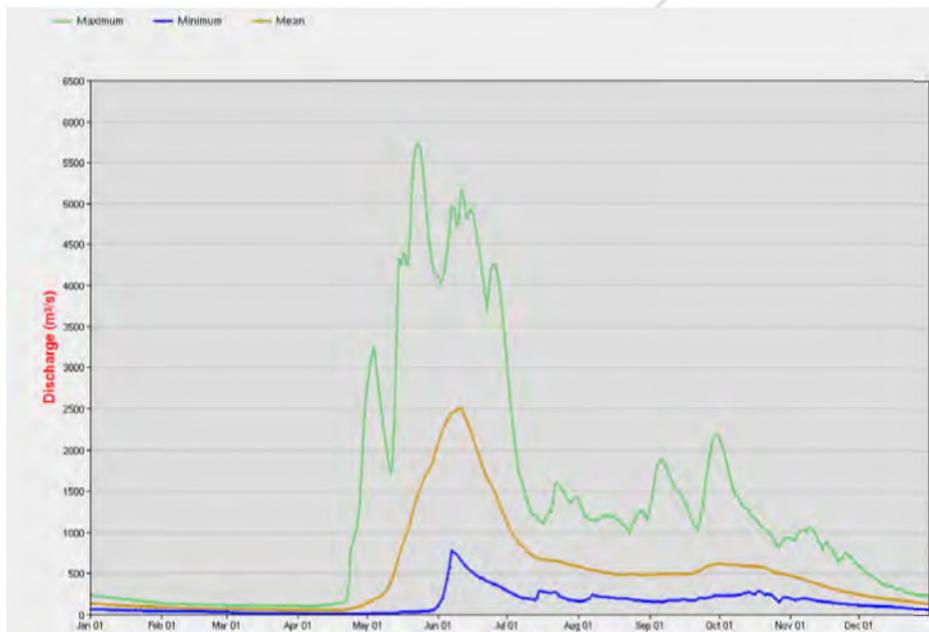
<sup>6</sup> NERC, 2017 Long-Term Reliability Assessment, p. 55 adjusted for 1,090 MW reduction for potential NECEC commitments.

## B.2 HYDRO-QUÉBEC’S ENERGY

The shortfall in capacity does not correspond to a shortfall in energy because Québec can store water to generate excess energy across the year whereas capacity requirements are an instantaneous need at the point of peak demand on the system. Québec’s generation capacity is dominated by large hydroelectric generation, some renewable resources predominantly purchased from third parties, and small percentage of thermal plants located in remote regions.

Given the natural flows of precipitation and snow melt in Québec, the province is flush with water in the late spring and summer months (**Figure B - 2**). That water is used to produce energy as well as to replenish the reservoirs for the winter.

**Figure B - 2: Daily flow for Baleine River (1956 – 2013)<sup>7</sup>**



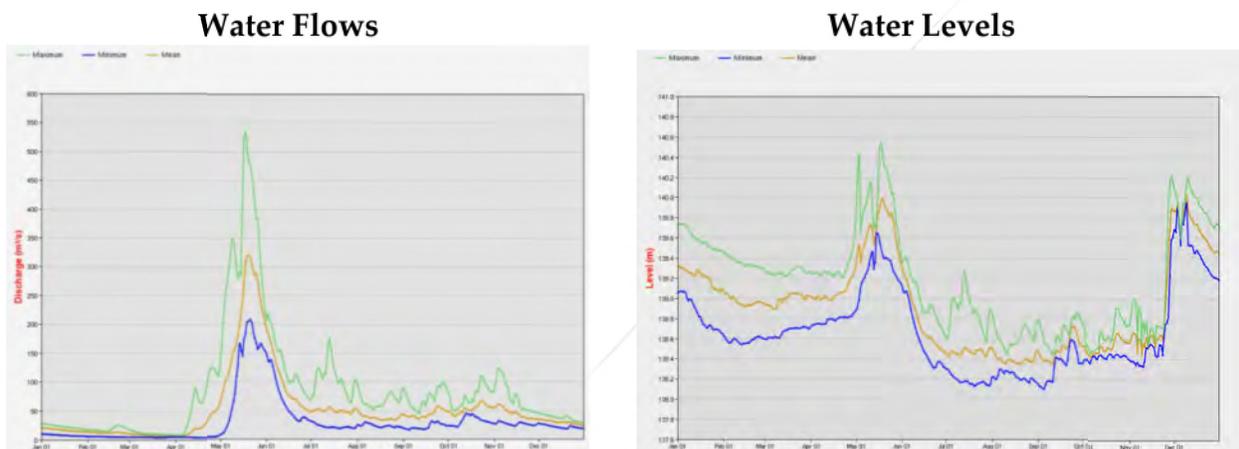
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<sup>7</sup> Government of Canada, Hydrometric Flow Data, Daily Discharge Graph for BALEINE (RIVIERE A LA) À 40,2 KM DE L'EMBOUCHURE (03MB002) [QC],

[https://wateroffice.ec.gc.ca/mainmenu/historical\\_data\\_index\\_e.html](https://wateroffice.ec.gc.ca/mainmenu/historical_data_index_e.html)

Reservoir management is a critical function of Hydro-Québec, which must meet its firm commitments while balancing between ensuring that reservoir levels do not drop below optimal levels for production in the winter and early spring while ensuring that snow melt does not exceed reservoir capacity and spill in the summer months. **Figure B - 3** illustrates the management of reservoir levels versus average snowmelt for Churchill Falls, the largest single resource that Hydro-Québec Power has access to (5,428 MW under contract). Although waterflows are negligible November through March and peak in May and June, reservoir management allows Hydro-Québec to draw down on its reservoirs during the winter periods and maximize generation during peak periods as require.

**Figure B - 3: Daily discharge for Churchill Falls (2009 – 2014)<sup>8</sup>**



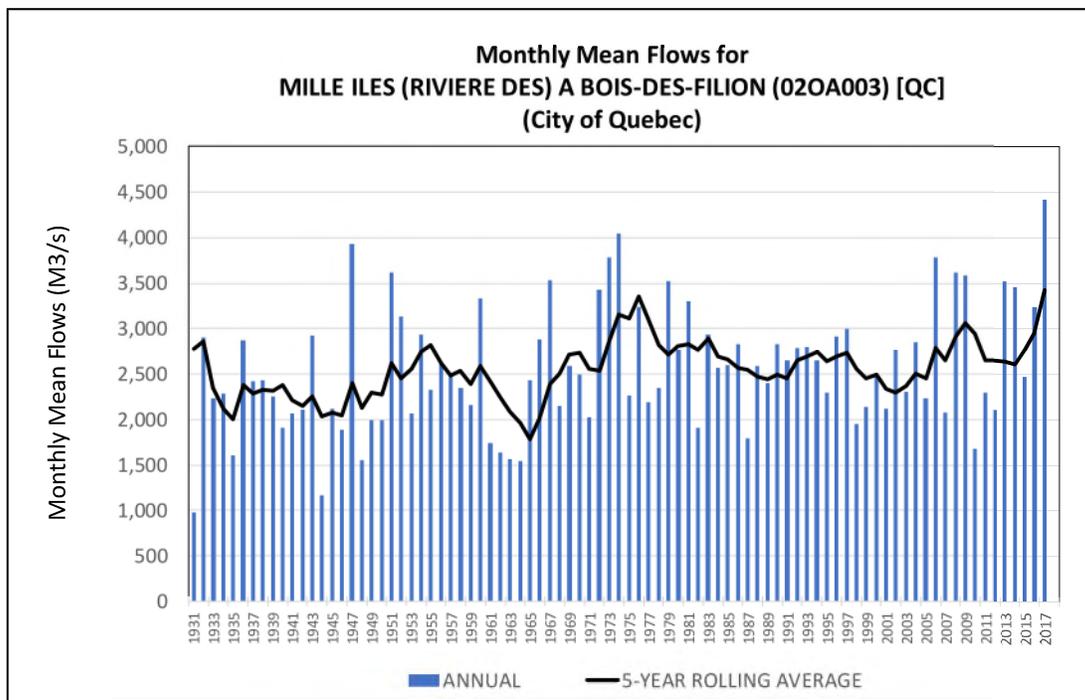
Hydro-Québec also manages its reservoirs to ensure that potential energy is optimized. If reservoirs cannot be too low or the water will fall below the generator intake tunnels, preventing the production of electricity. If too high, water may have to be spilled – released through upstream chutes without producing electricity. Reservoir management allows Hydro-Québec to manage the energy available in its system over multiple years.

The ability to manage across multiple years is important as the average precipitation varies on a year-by-year basis, as illustrated above with the range of water flows at Baleine

<sup>8</sup> Government of Canada, Hydrometric Flow Data, Daily Discharge Graph for CHURCHILL RIVER ABOVE CHURCHILL FALLS TAILRACE (03OD008) [NL], [https://wateroffice.ec.gc.ca/mainmenu/historical\\_data\\_index\\_e.html](https://wateroffice.ec.gc.ca/mainmenu/historical_data_index_e.html)

and Churchill Falls. **Figure B - 4** shows variation in monthly flows at Québec City, the location with the most consistent records of monthly water flows. The bars are annual water flows; the line represents a 5-year rolling average for the past 90 years. As can be seen, 2017 was a record water flow year and the five-year average flows ending 2017 exceed the previous high set in 1976.

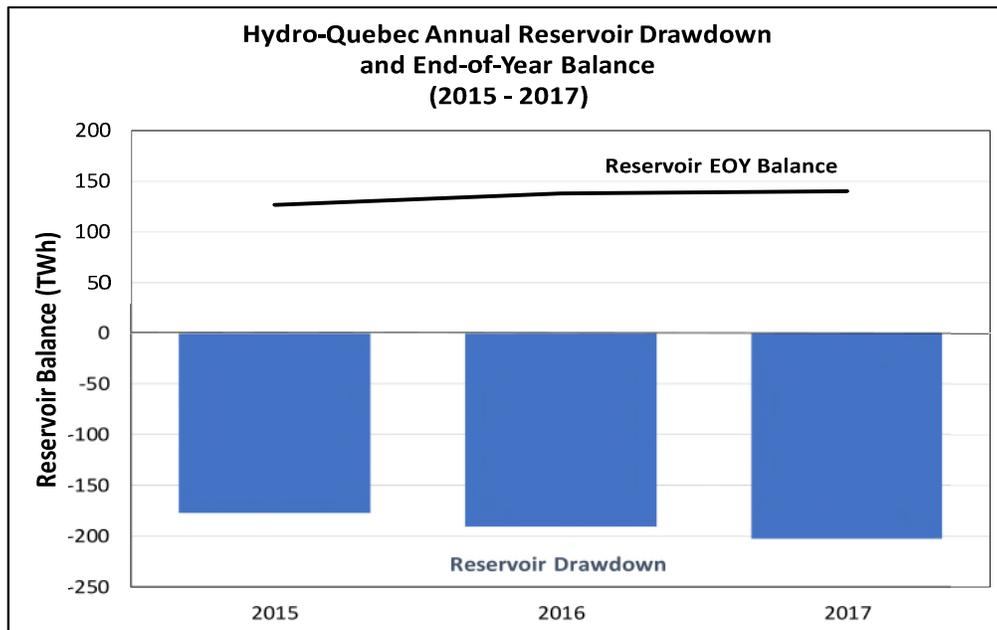
**Figure B - 4: Daily flows for Québec City (1931-2017)<sup>9</sup>**



The high precipitation and flow levels required significant drawdown on its reservoirs to maintain levels below maximum. Despite the increasing draw-down, year-end levels remained higher in 2017 than at the end of the previous three years (**Figure B - 5**). This is indicative of heavy water conditions through precipitation and snow melt.

<sup>9</sup> Government of Canada, Hydrometric Flow Data, Daily Discharge Graph for Monthly Discharge Statistics Data for MILLE ILES (RIVIERE DES) A BOIS-DES-FILION (02OA003) [QC], [https://wateroffice.ec.gc.ca/mainmenu/historical\\_data\\_index\\_e.html](https://wateroffice.ec.gc.ca/mainmenu/historical_data_index_e.html)

Figure B - 5: Hydro-Québec reservoir draw-down (2015-2017)<sup>10</sup>



Hydro-Québec’s annual reports support the fact that 2017 and the prior years experienced high runoff conditions.

**Per the 2017 HQ Annual Report:**

In 2017, net electricity exports reached a historic volume of 34.4 TWh and contributed \$780 million to net income. As a result of an effective sales strategy, smooth operation of generating and transmission facilities **and high runoff**, net exports increased by 1.8 TWh over the previous record, set in 2016.<sup>11</sup>

(emphasis added).

<sup>10</sup> Calculated based on Hydro-Québec Annual Reports.

<sup>11</sup> Hydro-Québec Annual Report 2017, p. 22.

Per the 2016 HQ Annual Report:

EXPORTS REACH A HISTORIC HIGH Net electricity exports rose by 3.3 TWh compared to 2015, reaching a historic high of 32.6 TWh and contributing \$803 million to net income. This is a 1.8-TWh increase over the previous record, set in 2013, made possible by the smooth operation of generating and transmission facilities, in particular, **as well as high runoff and favorable weather conditions**. These factors, combined with the skillful development and deployment of the sales strategy, enabled the company to take advantage of business opportunities on external markets. The record volume of exports is all the more remarkable given the unavailability of a major power transmission link between Québec and New England in April and May 2016 due to scheduled maintenance. Finally, **because of the high runoff in 2016**, Hydro-Québec ended the year with record reservoir storage of 138.2 TWh.<sup>12</sup>

(emphasis added).

These annual reports also make it clear that variability in runoff is one of the key uncertainties and one which Hydro-Québec manages in various ways:

**One of the principal uncertainties that Hydro-Québec faces relates to natural water inflows . . . It therefore manages its reservoir storage on a multiyear basis and maintains an adequate margin between its generating capacity and its commitments.** This allows the division to compensate for variations in runoff, replenish its reserves or take advantage of business opportunities.<sup>13</sup>

(emphasis added).

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<sup>12</sup> Hydro-Québec Annual Report 2016, p. 25.

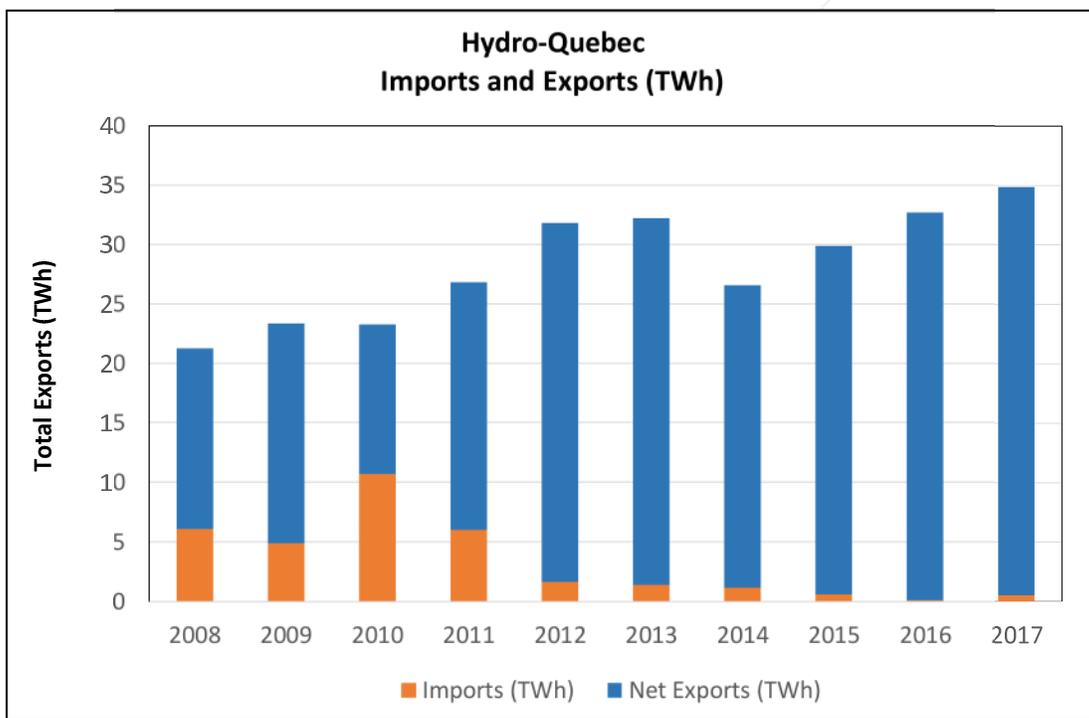
<sup>13</sup> Ibid., pp. 42, 44.

### B.3 HYDRO-QUÉBEC’S EXPORTS

Given the extensive water flows that had occurred in 2017 and the previous five years, it is not surprising that Hydro-Québec exported a record amount of energy at around 34.4 TWh for 2017. This record amount included annual snowmelt as well as significant draw-down of its reservoirs to maintain appropriate reservoir levels. In addition, Hydro-Québec imported less energy than it had in the past.

Hydro-Québec’s annual reports show the historical amount of excess energy it has sold into external markets, net of imports (Figure B - 6).

Figure B - 6: Hydro-Québec total exports and imports (2008-2017)<sup>14</sup>



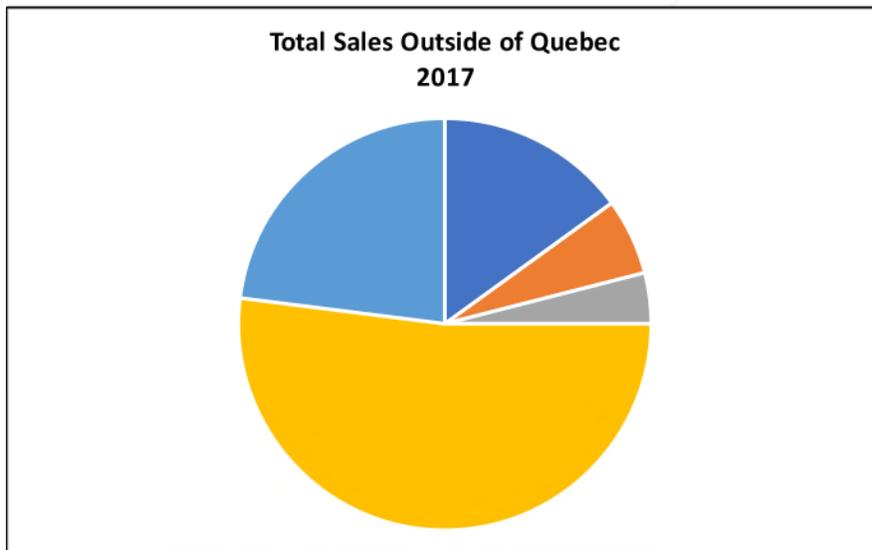
In general, Québec has excess energy over the course of the year that it can sell into other markets at a profit. This was especially true during the past five years when water flows

<sup>14</sup> Calculated based on Hydro-Québec Annual Reports.

were particularly heavy. During the mid- to late-2000s, when water flows were not as heavy, Hydro-Québec exported less and purchased from other markets. Between 2008 and 2012, imports were approximately one-third of Hydro-Québec’s total exports; in 2010, Hydro-Québec purchased nearly half of the energy that it exported.

The percentage of imports as a portion of exports has declined over the past few years, as a combination of heavier water conditions and increased capacity build-out has allowed Hydro-Québec to engage in greater export transactions without purchases. However, history shows that Hydro-Québec is in a position to arbitrage between markets – buying low-priced energy from one market and selling stored reservoir water converted into energy into higher-priced markets.

**Figure B - 7: Sales Outside of Québec in 2017<sup>15</sup>**



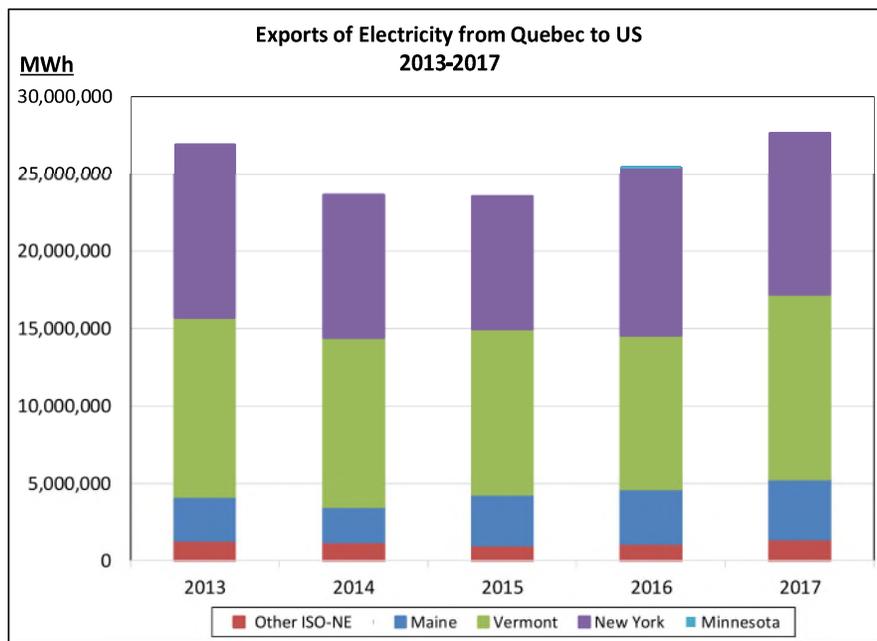
**Figure B - 8** illustrates the level of exports from Québec over the past five years into the US. Total electricity exports into New York, New England and other markets ranged from 23.5 TWh to 27.7 TWh between 2013 and 2017. This is consistent with Hydro-Québec’s website which claims, “Every year, Hydro-Québec has approximately 25–30 TWh

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<sup>15</sup> Hydro-Québec 2017 Annual Report.

available for sale to markets outside Québec.”<sup>16</sup> Approximately 90 percent of all exports into the United States from Québec are sold by Hydro-Québec or one of its affiliates.<sup>17</sup>

**Figure B - 8: Electricity exports from Québec to the US on an annual basis<sup>18</sup>**



Revenue from sales to external markets – which has ranged from \$750 million to \$1.5 billion over the past few years<sup>19</sup> -- is paid as a dividend to the Québec government. This level of profitability relies on exports, as indicated by Hydro-Québec’s CEO Éric Martel.<sup>20</sup> The vast majority of Hydro-Québec’s energy exports are sold to the United States.

<sup>16</sup> Hydro-Québec website: FAQs about exports, [www.hydroquebec.com/international/en/faq.html](http://www.hydroquebec.com/international/en/faq.html)

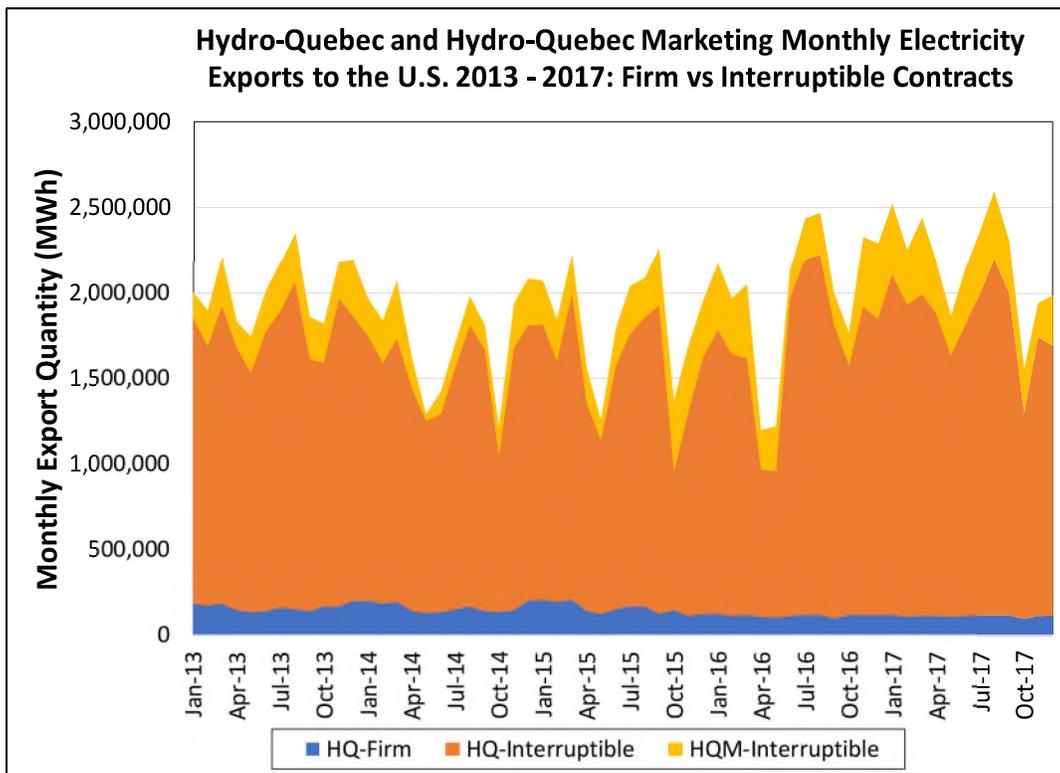
<sup>17</sup> Energyzt analysis of National Energy Board, Monthly Electricity Export Reports for Canada to the US.

<sup>18</sup> National Energy Board, Monthly Electricity Export Reports for Canada to the US; New England ISO represents sales into ISO-NE outside of flows into Maine and Vermont.

<sup>19</sup> Hydro-Québec Annual Reports.

<sup>20</sup> Financial Post, “Without exports our profits are in trouble: Hydro-Quebec plugs into U.S. markets for growth,” April 20, 2018, <https://business.financialpost.com/commodities/energy/without-exports-our-profits-are-in-trouble-hydro-quebec-plugs-into-u-s-markets-for-growth>

**Figure B - 9: Electricity exports from Québec to the US on a monthly basis<sup>21</sup>**



**Figure B - 9** graphs sales from Hydro-Québec into U.S. markets on a monthly basis. Most of Hydro-Québec’s sales are interruptible, which means that they are non-firm energy sales into non-firm spot markets. This chart also illustrates seasonal increases in sales during higher priced seasons (i.e., summer and winter). This pattern is consistent with opportunistic sales into other markets in the summer and winter peaks. Hourly flows from Québec into external markets (not shown) tell the same story -- exports generally increase during peak hours and fall during off-peak hours, illustrating Hydro-Quebec’s profit motive to maximize sales during higher-priced periods.

Although total energy sales vary from year to year and month to month based on weather conditions, new capacity, reservoir management decisions and market conditions, Hydro-

<sup>21</sup> Energyzt analysis of National Energy Board, Monthly Electricity Export Reports for Canada to the US.

Québec has an incentive to maximize its available energy sales to the highest-priced markets during the highest-priced periods. Such sales are subject to Hydro-Québec’s own firm commitments, water management decisions, generation capacity limits, and transmission constraints.

#### B.4 PROJECTED LOAD GROWTH IN QUÉBEC

There are multiple ways that Hydro-Québec could meet its firm capacity commitments going forward: Buy, divert, upgrade and build. **Figure B - 10** presents Hydro-Québec’s own estimates of potential expansion opportunities and estimated costs (reported in US Dollars) to compare the cost of these alternatives.

**Figure B - 10: Cost comparison of meeting NECEC obligations<sup>22</sup>**

Hydro Bin	Potential (TWh)	Levelized Fixed Cost (\$/kW-yr)	Levelized Cost of Electricity (\$/kWh)
1	157	Current: 106 Post-2030: 133	Current: 0.02 Post 2030: 0.025
2	10	372	0.07
3	10	531	0.10
4	15+	690	0.13

Although upgrades are the least costly option, this option is not available to Hydro-Québec for purposes of exports. Upgrades only offer 13 TWh of additional energy all of which is required to meet Hydro-Québec’s growing load through 2034 (half of that amount is required through 2023, when the NECEC contract takes effect).<sup>23</sup> Furthermore, some of

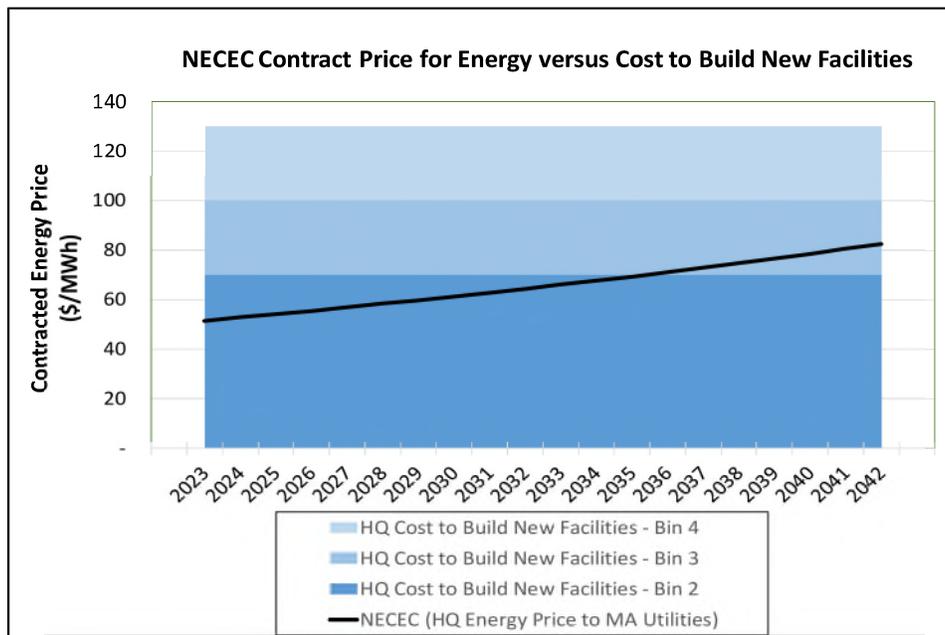
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<sup>22</sup> Ibid., p. 28. All dollar values are reported in US Dollars per Energyzt conversation with Evolved Energy Research, one of the authors of the report.

<sup>23</sup> Hydro Québec, Deep Decarbonization in the Northeastern United States and Expanded Coordination with Hydro-Québec, April 2018, pp. 27-28. Per Footnote 5 which indicates 144 TWh already is available, there would be only 13 TWh of additional energy available through upgrades. This would be consumed by Québec load growth by around 2034 given the load growth assumed by the study:

the potential for increased storage depends on wetter conditions than historically has been the case.<sup>24</sup>

**Figure B - 11: Comparison of NECEC contract price to a new hydro facility<sup>25</sup>**



The cost of building new impoundments is significantly higher – around \$70 to \$130 / MWh. The energy price in the contracts with Massachusetts utilities starts at \$51/MWh and rises to around \$82/MWh. As the contracted energy price is higher than the NECEC contract price for energy, it would be uneconomic for Hydro-Québec to build new facilities to meet its obligations under the contracts with Massachusetts utilities (**Figure B - 11**).

In contrast, Hydro-Québec has only been making between \$20 to \$40 / MWh on its exports

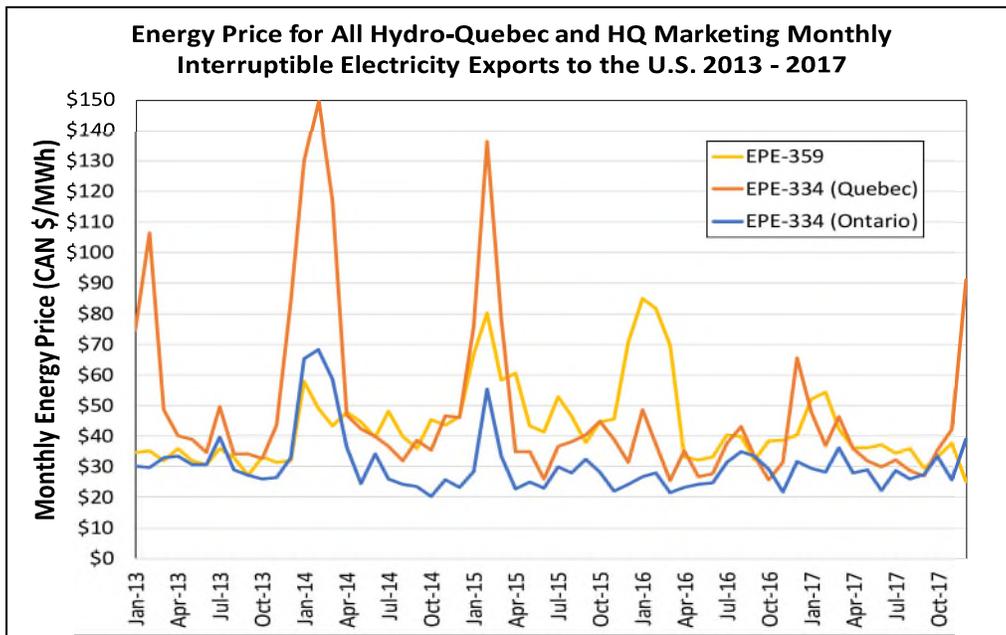
“Load in Québec was assumed in all scenarios to grow by 0.42% per year for a total increase of 28.7 TWh between 2015 and 2050.”

<sup>24</sup> Hydro-Québec et. al., “Deep Decarbonization in the Northeastern United States and Expanded Coordination with Hydro-Québec,” April 2018, p. 28.

<sup>25</sup> Contract prices derived from publicly-available information concerning the price under the Massachusetts contracts presented to the Massachusetts Department of Public Utilities. Cost to build new facilities is based on the Deep Decarbonization Study

(peak and off-peak) except during winter price spikes (**Figure B - 12**). Off-peak hours, the periods when Hydro-Québec would be most likely to divert energy for sales to NECEC, is likely to be on the lower end of this range.

**Figure B - 12: Hydro-Québec average price for interruptible energy by license<sup>26</sup>**



The futures market indicates a projection of electrical energy prices in New York that is consistent with historical prices, and would be significantly below the contract price. Futures for New York peak prices for zone A, which tend to be higher than the North Zone where Hydro-Québec interconnects into New York, are averaging around \$41/MWh for 2023. If off-peak hours are considered, Hydro-Québec could make money by simply diverting the entirety of its exports into New York into NECEC, or buying from other markets during off-peak hours to conserve its water for sale via NECEC.

<sup>26</sup> Energyzt analysis of National Energy Board, Monthly Electricity Export Reports for Canada to the US.

**Figure B - 13: CME Group, NYISO Zone A – Peak Hour Futures Contract Price<sup>27</sup>**

	Trading	Clearing	Regulation	Data	Technology	Ed				
DEC 2022	OPT	Price Chart	-	-	37.30	-	-	0	No Limit / No Limit	16:45:00 CT 11 Oct 2018
JAN 2023	OPT	Price Chart	-	-	50.60	-	-	0	No Limit / No Limit	16:45:00 CT 11 Oct 2018
FEB 2023	OPT	Price Chart	-	-	48.25	-	-	0	No Limit / No Limit	16:45:00 CT 11 Oct 2018
MAR 2023	OPT	Price Chart	-	-	37.55	-	-	0	No Limit / No Limit	16:45:00 CT 11 Oct 2018
APR 2023	OPT	Price Chart	-	-	34.20	-	-	0	No Limit / No Limit	16:45:00 CT 11 Oct 2018
MAY 2023	OPT	Price Chart	-	-	35.60	-	-	0	No Limit / No Limit	16:45:00 CT 11 Oct 2018
JUN 2023	OPT	Price Chart	-	-	38.70	-	-	0	No Limit / No Limit	16:45:00 CT 11 Oct 2018
JUL 2023	OPT	Price Chart	-	-	54.60	-	-	0	No Limit / No Limit	16:45:00 CT 11 Oct 2018
AUG 2023	OPT	Price Chart	-	-	50.50	-	-	0	No Limit / No Limit	16:45:00 CT 11 Oct 2018
SEP 2023	OPT	Price Chart	-	-	38.80	-	-	0	No Limit / No Limit	16:45:00 CT 11 Oct 2018
OCT 2023	OPT	Price Chart	-	-	34.50	-	-	0	No Limit / No Limit	16:45:00 CT 11 Oct 2018
NOV 2023	OPT	Price Chart	-	-	34.20	-	-	0	No Limit / No Limit	16:45:00 CT 11 Oct 2018
DEC 2023	OPT	Price Chart	-	-	38.75	-	-	0	No Limit / No Limit	16:45:00 CT 11 Oct 2018

Legend: OPT Options Price Chart [About This Report](#)

Given where market prices are trading, it generally would be more economic for Hydro-Québec to simply divert sales away from markets with prices below that level in order to service NECEC or, if it is more economic to do so, purchase energy from lower priced markets to generate energy to sell to Massachusetts under a long-term contract.

<sup>27</sup> CME Group, NYISO Zone A On-peak Price as of October 11, 2018,  
<https://www.cmegroup.com/trading/energy/electricity/nyiso-zone-a-5-mw-peak-calendar-month-day-ahead-lbmp-swap-futures.html>

Hydro-Québec notes in its Section 83D application form that it may upgrade or build new facilities in the future. Given Hydro-Québec’s need for new capacity, any upgrades or capacity additions that do occur would happen regardless of NECEC, and should be incorporated into the scenarios with and without NECEC when estimating the impact of NECEC on carbon emissions.

## **B.5 RECALCULATION OF CMP’S PROJECTIONS**

In response to claims that Hydro-Québec would supply NECEC by diverting sales from other markets, CMP presented a calculation of energy available from Hydro-Québec’s system going forward.<sup>28</sup> The calculation purports to show that Hydro-Québec would have a sufficient amount of incremental energy as a result of higher storage levels and therefore would not have to decrease exports into other markets below historical levels.

The simplistic model suffers from three fundamental flaws:

- 1) **The CMP Model Answers the Wrong Question:** The real question is whether NECEC reduces global emissions, and the CMP model does not address this question. To do so would require an analysis of what carbon emissions would be with and without NECEC. Given the recent set of high water conditions, Hydro-Québec has stored energy that it could use to generate energy going forward. This does not mean that sales via NECEC would be incremental over the entire term of the contract or that the stored water would not otherwise be sold as exports into other markets in the absence of NECEC. Therefore, the model cannot address what the net effect on emissions would be.
- 2) **CMP Assumes a Sudden Availability of Incremental Exports:** According to the CMP model, Hydro-Québec does not sell its excess energy into other markets unless NECEC is built. This results in reservoir levels remaining high up to the point where NECEC comes online. In fact, there is plenty of excess transmission

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<sup>28</sup> *Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Rebuttal Testimony of Thorn Dickinson, Eric Stinneford, and Bernardo Escudero on Behalf of Central Maine Power Company, July 13, 2018; CMP Response to NRMCMC-032-021, Attachment 1.

capacity servicing the interconnected markets that Hydro-Québec could use to sell its excess energy that currently is stored in its reservoirs. Historically, there has been around 16 to 18 TWh of unused transfer capacity across the tielines that Hydro-Québec could have used to sell its energy.<sup>29</sup> Intertie capacity is not the constraint for Hydro-Québec exports. Furthermore, by conserving water in storage to service NECEC, there would be an adverse impact on environmental emissions in other markets that otherwise could be mitigated if Hydro-Québec were to sell that energy prior to the NECEC contract.

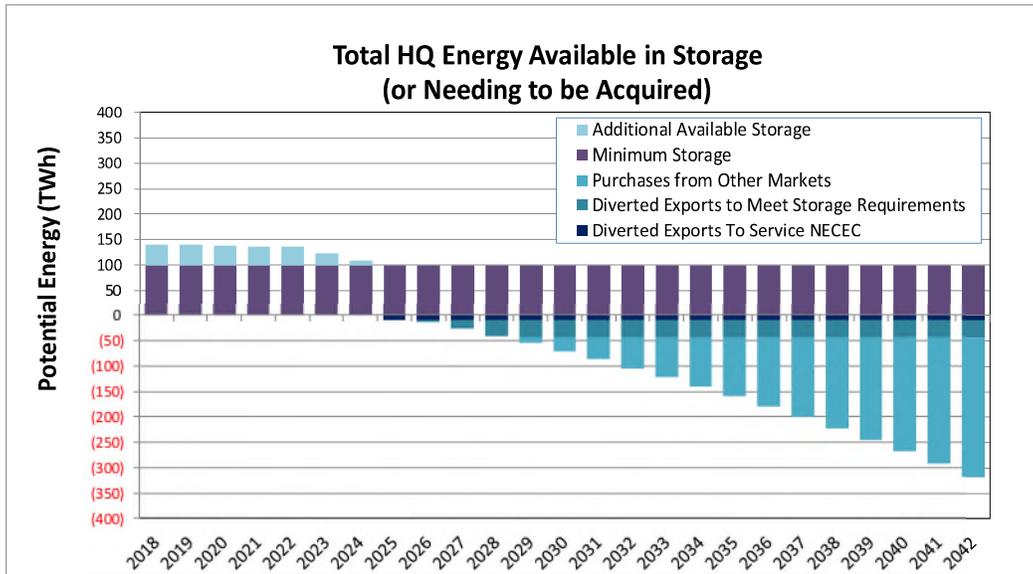
- 3) **Water Conditions:** The model is incredibly sensitive to one key assumption – how much runoff would Hydro-Québec receive implicitly assumes high water conditions that have been experienced in 2017 and the years before will continue for the entirety of the contract, allowing for high levels of energy availability that allows incremental exports compared to historical levels. Assuming that Hydro-Québec will enjoy lower run-off levels – even a small reduction in the CMP assumption of 6 percent – dramatically changes the result. With this one change, Hydro-Québec would be unable to meet NECEC obligations while maintaining historical export levels without having to reduce exports and purchasing energy from other markets to meet its obligations.

Addressing only the assumed water conditions to reflect lower runoff conditions going forward compared to the recent high water years confirms that there are conditions under which: 1) Hydro-Québec would not have the excess energy required to maintain exports at recent levels; and 2) if Hydro-Québec did not divert energy from other markets into NECEC or reduce its exports to below historical levels, it would have to make other adjustments. Specifically, Hydro-Québec would have to divert exports into NECEC for sale into New England almost immediately under the contract and would have to begin greenwashing sometime during the first half of the contracts (**Figure B - 14**).

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<sup>29</sup> *Central Maine Power Co.*, Request for approval of CPCN for the New England Clean Energy Connect, Maine P.U.C. No. 2017-000232, Exhibit No. JMS-3, Technical Report: Hydro-Québec Exports, April 2018, Figure 6, pp. 7-8.

**Figure B - 14: Hydro-Québec operations with lower runoff conditions**



In other words, doing nothing more to the CMP model other than reducing the assumed starting point for generation to reflect reasonable runoff conditions shows that Hydro-Québec will need to add new capacity to the system which is counter to what Hydro-Québec has stated NECEC would require and would be uneconomic given the NECEC contract prices for energy. Therefore, Hydro-Québec would have to manage its total export levels to meet its NECEC obligations and/or greenwash purchases from other markets.

In reality, Hydro-Québec is not confined to a single strategy over the course of the contract. Hydro-Québec will manage its system, sales, exports and opportunities according to water conditions and market prices. NECEC simply imposes another fixed obligation onto the system against which Hydro-Québec will optimize its operations. Such optimization will include diverting sales into other markets and greenwashing, as required to optimize profits.

## B.6 CONCLUSIONS ON QUÉBEC’S SYSTEM AND SALES

According to NERC’s long-term reliability assessment projections, Québec’s system currently is projected to be short on capacity – without another acquisition of 1,100 MW of

potential capacity resources, the province will be short of its targeted reserve requirements by 2023. Therefore, it would be unlikely that Hydro-Québec would be able to sell additional capacity into the ISO-NE market via NECEC unless it increases purchased capacity from other markets beyond what is required to maintain its own targeted reserve margins.

In contrast to its projected shortfall in capacity, Hydro-Québec has excess energy. Hydro-Québec maximizes its profits by selling that excess energy into other markets. Historically, there has been a significant amount of unused capacity on the transmission interties between Québec and other markets indicating that the constraint is not transmission, but Hydro-Québec’s availability of energy (i.e., water). Therefore, if NECEC were built, the energy would be supplied by diverting energy sales from other markets.

Hydro-Québec has issued public statements that it could meet NECEC requirements with existing reservoir storage and upgrades. Any energy available through reservoir storage could be, and most likely would be, sold into other markets. The entirety of the upgrades are required to meet projected domestic load growth through 2034. Therefore, NECEC would be supplied by diverted energy.

CMP has testified that Hydro-Québec has enough water in its reservoirs to meet its obligations to NECEC while maintaining exports into other markets at historical levels. Their conclusions, and the underlying model supporting those conclusions, assumes that the high water conditions of 2017 and the previous years would continue indefinitely. This is unrealistic. Simply changing the assumed level of potential energy to reflect alternative conditions indicates that Hydro-Québec would be unable to maintain its sales into other markets plus its energy obligations into NECEC without diverting exports and greenwashing energy purchased from other markets.

Understanding Québec’s system is key to understanding potential environmental impacts of NECEC. Hydro-Québec is not likely to upgrade its system to meet incremental sales into other markets as those upgrades are needed to meet its own projected load growth. Hydro-Québec is not likely to sell capacity via NECEC as it requires an incremental 1,100 MW of capacity in order to meet its projected requirements in 2023. Lastly, Hydro-Québec is not likely to sell incremental energy into NECEC as it has the incentive to maximize sales of its excess energy into other markets and divert the lowest-priced hours into NECEC.

NECEC reflects an alternative way for Hydro-Québec to sell energy into an existing market in which it already trades. The large size of NECEC and associated energy supply commitment would enable Hydro-Québec to convert roughly one-third of its existing sales into low-priced spot markets into a higher-priced contract. In order to meet this commitment, Hydro-Québec will be able to manage its system, reservoirs, exports and imports given water conditions and market prices. The net impact on carbon emissions in the environment could be negligible and may even have adverse consequences if NECEC diverts energy from markets with higher emissions on the margin compared to New England.

**Greg Caruso Testimony**

**February 28, 2019**

**(Supplemental Evidence – Redacted Version in Record,  
Unredacted Version Not In Existing Record)**

THE STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

APPLICATION FOR SITE LOCATION OF DEVELOPMENT ACT PERMIT  
AND NATURAL RESOURCES PROTECTION ACT PERMIT  
FOR THE NEW ENGLAND CLEAN ENERGY CONNECT  
FROM QUÉBEC-MAINE BORDER TO LEWISTON  
AND RELATED NETWORK UPGRADES

PRE-FILED DIRECT TESTIMONY OF

GREG CARUSO

FEBRUARY 28, 2019

**TESTIMONY OF GREG CARUSO**

1 **Please state your name and address.**

2 My name is Greg Caruso. My address is 81 West Shore Rd, Caratunk, Maine 04925.

3 **What is the name of your organization and business address?**

4 Maine Guide Service, LLC, PO Box 81, Caratunk, Maine 04925.

5 **What occupations have you had in the Caratunk area?**

6 For the past 26 years, I have worked as a Maine guide in the outdoor industry, and  
7 twenty-four of those years as a whitewater guide, Master Maine Guide and year-  
8 round manager in charge of hiring, training, staffing, and scheduling for one of the  
9 largest outfitters in New England. Working as a hunting, ATV and snowmobile  
10 guide, I have brought hundreds of guests up to Johnson and Coburn mountains. As a  
11 whitewater and fishing guide, I have brought thousands of guests through the  
12 Kennebec River gorge. In addition to that, I have logged thousands of hours as a  
13 snowmobile groomer operator and have groomed every trail from the Forks to Grand  
14 Falls, to Bald Mountain, to Parlin Pond, Greenville, Rockwood and Bingham. I also  
15 work as a contractor for the ATC on the Appalachian Trail, ferrying over 6000 hikers  
16 the last 3 years. I hope that you would consider me an expert in my field.

17 **Why did you choose to intervene in these proceedings?**

18 One thing that all of these years have revealed to me, is that people come to Maine to  
19 get away from the modern industrial world, to escape if only for a few hours or days  
20 from the super highways of traffic, the madness of work and schedules, tall steel and  
21 concrete structures, and never-ending noise and bright lights. Where else can you

1 travel only a few hours to get complete solitude, and peace from those things? In all  
2 of my interactions with the thousands upon thousands of guests, the comments  
3 remain the same, “Wow! This is amazing!” or “Such a beautiful place!” or “It’s so  
4 quiet here!” or “This is unspoiled wilderness!” or “Such an incredible getaway!”  
5 There has never been anyone that said, “Looks like great place for a power line!” or  
6 “These ridges should have some wind towers!” or “I’d like to see some blinking red  
7 light at night over that mountain!” or “We need some red balls hanging over this  
8 awesome gorge!”

9 Our most critical assets in this region for tourism are our mountains and waterways.  
10 This is hallowed ground. It’s absolutely critical that we keep these places intact,  
11 particularly in those remote towns or villages that rely on it for their livelihoods.  
12 Is there a public need for this project? I am here to give a resounding NO to that  
13 question. To answer anything other than that ignores all of the facts surrounding this  
14 project. Maine does NOT need this and neither does Massachusetts. They have  
15 plenty of their own natural resources they could exploit, but they chose not to. In  
16 addition, Vermont has a ready and waiting, permitted corridor, underground and  
17 under water, from Canada to Massachusetts.

18 There is no price that we can put on Maine’s most critical natural resources, which  
19 give us our livelihoods and quality of place. How can we say to our guests “This is a  
20 wild and scenic stretch of river...but ignore this part here.”? or “This is a national  
19 scenic byway...umm, but not over here.” Or - “Let’s ride to top of Coburn Mountain  
20 for a view of some amazing mountains and lakes... but don’t look when you get to  
21 the top.” I guarantee the guests comments will be “Hey, what’s that about down

1 there?”, or “Too bad they had to put that there!” or “What’s up with that power  
2 line?” Nobody can know for certain what the long term negative economic impacts  
3 would be, but I can tell you that this would be at least many nails in the coffin to our  
4 tourism industry. Our large working forest has been almost worked to death, and if  
5 you add giant transmission line to fragment that forest even more, or add a bunch of  
6 grid scale wind farms to that, our way of life as a tourist attraction will be buried in  
7 the ground. Our brook trout habitat will be lost, our deer yards shrunk away to  
8 nothing, and our view shed destroyed.

9 We simply cannot in good conscience sacrifice these things for a few short-term  
10 jobs, or money for a bike trail (like we need more trails up here). Every waterbody in  
11 this state, belongs to the people of this state, and the view shed in this state, belongs  
12 to everyone.

13 Common sense needs to prevail here. We don’t need this! Remember that this is  
14 vacationland! The way life should be.

15 CMP has not shown that there is no alternative. I would like to cite laws that are  
16 relevant in these proceedings:

17 Site Location of Development Law – 30 M.R.S. § 484. Applicable Licensing Criteria

18 30 M.R.S. § 484(3). No adverse effect on the natural environment.

19 CMP has not “made adequate provision for fitting the development harmoniously  
20 into the existing natural environment and that the development will not adversely  
21 affect existing uses, scenic character, air quality, water quality or other natural  
22 resources in the municipalities along the transmission line or in neighboring

1 municipalities.” CMP’s proposed project will likely have significant negative  
2 impacts on existing whitewater rafting, hiking, hunting and fishing activities on  
3 rivers remote ponds, lakes and on land, as well as on the scenic character of the Old  
4 Canada Scenic Byway and the Appalachian Trail.

5 These significant negative impacts on our natural environment correlate to our  
6 residents' way of life, livelihoods and the community's economic viability which is  
7 dependent on the lure of tourists to visit the very attributes which will be taken away.

8 30 M.R.S. § 484(3)(A).

9 The Department should consider the effect of noise from the construction and  
10 operation of the proposed transmission line. It is impossible for it to not disturb the  
11 wildlife and recreational users.

12 30 M.R.S. § 484(3)(H).

13 CMP’s proposed project may adversely impact significant vernal pool habitat.

14 CMP’s application indicates that there are at least 42 significant vernal pools and 23  
15 potentially significant vernal pools wholly or partially located within the proposed  
16 action area. The herbicides CMP would use to keep the corridor clean would  
17 inevitably enter and pollute the vernal pools.

18 30 M.R.S. § 484(5). Ground Water.

19 CMP’s proposed project may “pose an unreasonable risk that a discharge to a  
20 significant ground water aquifer will occur.” CMP’s application indicates that  
21 “potential sources of groundwater contamination will include fuel and hydraulic and  
22 lubrication oils used in the operation and maintenance of vehicles, as well as the  
23 application of herbicides to control vegetation.” NECEC Site Location of

1 Development Application at 15-1.

2 Chapter 375: No Adverse Environmental Effect Standards of the Site Location of  
3 Development Act.

4 06-096 Ch. 375, § 3. No Unreasonable Alteration of Natural Drainage Ways.

5 CMP's proposed project "will cause an unreasonable alteration of natural drainage  
6 ways" through improper drainage right-of way and drainage that may result in  
5 adverse impact to adjacent parcels of land. CMP's application indicates that their  
6 project will cross 115 streams, 263 wetlands, and impact 76.3 acres of mapped  
7 wetlands. This corridor is crossing some very significant terrain with heavy  
8 equipment. This terrain includes the areas I guide for fishing and hunting.

9 06-096 Ch. 375, § 6. No Unreasonable Adverse Effect on Surface Water Quality.

10 CMP's proposed project could cause the pollution of surface waters through both  
11 point and non-point sources of pollution. CMP's application indicates that their  
12 project will cross 115 streams, 263 wetlands, and impact 76.3 acres of mapped  
13 wetlands.

14 06-096 Ch. 375, § 9. Buffer Strips.

15 CMP's proposed project will not adequately utilize natural buffer strips to protect  
16 water quality, wildlife habitat, and visual impacts from the proposed transmission  
17 line. At this time, it does not appear that CMP's proposed buffers are sufficient to  
18 avoid these impacts.

19 06-096 Ch. 375, § 10. Control of Noise.

20 CMP's proposed project will not adequately control excessive environmental noise  
21 from construction, operation, and maintenance of the proposed transmission line

1 which could degrade the health and welfare of nearby neighbors. This is especially  
2 true for noise from the transmission lines themselves.

3 Specifically, during the long construction period, our fishing, hunting, rafting, hiking  
3 trips will be invaded by the industrialized noise. Peace and quiet and the sounds of  
4 nature are integral parts of the outdoor experience that people expect and are  
5 attracted to.

4 06-096 Ch. 375, § 12. Preservation of Unusual Natural Areas.

5 CMP's proposed project will harm numerous land and water areas that contain  
6 natural features of unusual geological, botanical, zoological, ecological,  
7 hydrological, other scientific, educational, scenic, or recreational significance.

8 CMP's proposed project will impact at least 8 deer wintering areas (44.3 acres) and  
9 12 inland waterfowl and wading bird habitats (22.7 acres). The project will cross and  
10 degrade the scenically and recreationally significant Kennebec Gorge.

11 As for the proposed mitigation to IF&W for the deer, in my experience as a guide,  
12 deer need large swaths of wood to survive the winter. Wintering areas cannot be  
13 limited to a few small strips of wood along a powerline. In addition, these powerline  
14 areas would be polluted with strong herbicides that these deer would be ingesting.

15 06-096 Ch. 375, § 14. No Unreasonable Effect on Scenic Character

16 And NRPA 38 M.R.S. § 480-D (1). Existing uses.

17 CMP's proposed project will definitely and unreasonably interfere with existing  
18 scenic, aesthetic, and recreational uses as indicated above.

19 CMP's proposed project will have an unreasonable effect on the scenic character  
20 along the proposed transmission line. For example, the line will cross the

1 Appalachian Trail, the Old Canada Scenic Byway, the Kennebec Gorge, and many  
2 other important scenic sites - most importantly Coburn and Johnson mountains and  
3 the critical snowmobiling and hunting areas. I have attached a visual rendering of  
4 the Coburn and Johnson Mountain area via Google Earth with the snowmobile trail  
5 system drawn (*See Exhibit 1*). As the successive pictures reveal, a large portion of the  
6 snowmobile trail system between Jackman and The Forks will be directly and severely  
7 impacted by this transmission corridor should permits be granted. The Coburn and  
8 Johnson mountain trail system is at the very heart of our small town economy. A permit  
9 in area would be the worst thing possible for our snowmobile tourism. It's the "mecca"  
10 of snowmobiling in Maine.

11 Outdoor recreation hub - I have been grooming The Forks Area snowmobile trails  
12 since 1998. I've groomed, guided and ridden and hunted in and around the area of  
13 Johnson and Coburn Mountains for 20 years. I know the area and lay of the land  
14 intimately. I understand the location of the power line and also understand the  
15 importance of protecting the area of Coburn and Johnson mountains. That area in  
16 particular is a hub for outdoor recreation for all of our tourism activities. From  
17 snowmobiles to ATVs to hikers to animal watchers to sightseers, it is central to our  
18 whole area and our livelihoods.

19 4 trails collide with the corridor - There are four different trail systems that merge in  
20 the same location - at the Coburn Mountain parking lot. ITS 89 West comes from  
21 Eustis; the Coburn Connector comes off of ITS 87 from The Forks/Bingham; ITS 89  
22 North comes from Jackman; and the north shoulder bypass from Lake Parlin also  
23 connects to ITS 87 bringing guests from Rockwood in the East. Anyone traveling

1 through this destination area will be inundated with powerline in every direction. It  
2 will be impossible for this corridor/line not to be in-your-face and obtrusive to your  
3 experience.

4 Impacting every trip - If you ask any snowmobiler that's ever been up here, if  
5 they've been to Coburn Mountain, over 90% would say "yes". It is the first choice in  
6 destination. A typical ride from The Forks would be ITS 86 along the Dead River to  
7 ITS 89 to Grand Falls, then from Grand Falls back on ITS 89 to Coburn Mountain  
8 over the north shoulder and to Parlin Pond. Then from Parlin Pond back to ITS 87  
9 and down to The Forks. The Entire time, Johnson and Coburn Mountain are central  
10 to that trip. Scenic views of these mountains from far to near are key guiding stops  
11 along the way. If the powerline would be put into place, literally the poles and lines  
12 will be observable from every scenic viewpoint.

13 Scenic destination area. Usage and Impact.

14 In the last ten years, traffic in that area has exploded. It is one of the most popular  
15 destinations anywhere in the state. NECEC would be similar to running a powerline  
16 up and around Cadillac Mountain in Acadia. The value and character and area has  
17 been overlooked by the designers of this project and has purposely been ignored. No  
18 studies have been done to know the amount of traffic that goes through these routes  
19 during the winter. The Department and Commission should not even consider this  
20 until studies are done to determine facts related to usage and economic impact of this  
21 area.

22 Personal Financial Harm. No studies have been done to understand the economic  
23 impact that Coburn Mountain and the snowmobile trails have in our communities.

1 To shut down Coburn during construction, would force many of the local residents,  
2 like myself, to find work in another part of the state.

3 The very presence of this powerline invading our snowmobile trail system is enough  
4 to ward off the visitors and regulars that I guide and know. It will change the  
5 landscape to the point of no return. This area will forever be raped of its uniqueness  
6 and allure and all that makes it a treasure.

7 Powerline trails. In terms of the quality of snowmobile trails under transmission  
8 lines, I have had years of experience maintaining trails and grooming trails. They  
9 don't hold the snow. They are hard on equipment because they are an unimproved  
10 surface. They are windswept and sun exposed. They are the first trails to be melted,  
11 and consequently closed. Nobody enjoys riding under a powerline but simply uses  
12 them as a means of egress. No surveys have been done, aside from Sandra  
13 Howard's, to see if snowmobilers enjoy riding on powerlines. But in my experience,  
14 powerlines are simply used as a means of egress and are not the preferred trails to  
15 ride or maintain.

16 Lights. Designers failed to take into consideration that any towers that are high  
17 enough to require blinking red lights to aerial visibility are creating light pollution to  
18 the very people who come up to our area to get away from it. These lights would be  
19 a desecration of the view shed and outdoor experience.

20 06-096 Ch. 375, § 15. Protection of Wildlife and Fisheries.

21 CMP's proposed project does not adequately protect wildlife and fisheries. CMP's  
22 proposed project does not contain buffer strips of sufficient area to provide wildlife  
23 with travel corridors between areas of available habitat, will adversely affect wildlife

1 and fisheries lifecycles, and will result in unreasonable disturbance of deer wintering  
2 areas, significant vernal pools, waterfowl and wading bird habitat, and species  
3 declared threatened or endangered.

4 Natural Resources Protection Act – 38 M.R.S. § 480-D. Applicable Licensing  
5 Criteria. 8 M.R.S. § 480-D (3). Harm to habitats; fisheries.

6 CMP's proposed project may unreasonably harm significant wildlife habitat,  
7 freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or  
8 adjacent upland habitat, travel corridor, and aquatic life. CMP's proposed mitigation  
9 may diminish the overall value of significant wildlife habitat and species utilization  
10 of the habitat in the vicinity of the proposed transmission line.

11 38 M.R.S. § 480-D (8). Outstanding river segments.

12 CMP has not demonstrated that no reasonable alternative to crossing outstanding  
13 river segments, such as the Kennebec Gorge, exists which would have less adverse  
14 effect upon the natural and recreational features of the river segment. Although CMP  
15 doesn't consider this section of the crossing as "particularly unique or wild", citing  
16 "... the Preferred Alternative location, which as described above is not particularly  
17 unique or wild, would not adversely affect existing uses of the Kennebec River."

18 This section is where I stop with my fishing guests for lunch. It is just above Cold  
19 Stream, a major tributary and significant spawning waterway. It is hard to believe  
20 that this much disruption and heat will not interfere with the fisheries' viability.

21 Chapter 310: WETLANDS AND WATER BODIES PROTECTION

22 06-096 Ch. 310, § 5. General Standards.

23 CMP has not adequately minimized the amount of wetland to be altered. I believe  
24 that CMP's proposal may result in an unreasonable impact because the project will

1 cause a loss in wetland area, functions, and values, and CMP has not demonstrated  
2 that there is not a practicable alternative to the proposed project that would be less  
3 damaging to the environment.

4 Chapter 315: Assessing and Mitigating Impacts to Existing Scenic and Aesthetic  
5 Uses 06-096 Ch. 315.

6 CMP's proposed project is likely to unreasonably interfere with existing scenic and  
7 aesthetic uses, and thereby diminish the public enjoyment and appreciation of the  
8 qualities of a scenic resource, and that any potential impacts have not been  
9 adequately minimized.

10 Chapter 335: Significant Wildlife Habitat  
11 06-096 Ch. 335, § 3(A). Avoidance.

12 CMP's proposed project will have an unreasonable impact because it is will degrade  
13 significant wildlife habitat, disturb wildlife, and affect the continued use of  
14 significant wildlife habitat by wildlife. CMP has not demonstrated that there is not a  
15 practicable alternative to the project that would be less damaging to the environment.

16 CMP has indicated that the placement of the corridor is based on land CMP owns.  
17 This is not avoidance.

18 06-096 Ch. 335, § 3(B). Minimal alteration.

19 CMP has not minimized the alteration of habitat and disturbance of wildlife.

20 06-096 Ch. 335, § 3(C). No Unreasonable impact.

21 One or more of the standards of the NRPA at 38 M.R.S. § 480-D will not be met and  
22 that therefore CMP's project will have an unreasonable impact on protected natural  
23 resources and wildlife.

**Janet McMahon Testimony**

**February 28, 2019**

**(Supplemental Evidence – Redacted Version in Record,  
Unredacted Version Not In Existing Record)**

**STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**and**

**STATE OF MAINE  
LAND USE PLANNING COMMISSION  
IN THE MATTER OF  
CENTRAL MAINE POWER COMPANY**

**Application for Site Location of Development Act permit and Natural  
Resources Protection Act permit for the New England Clean Energy Connect  
("NECEC")**

**L-27625-26- A-N**

**L-27625-TB-B-N**

**L-27625-2C-C-N**

**L-27625-VP-D-N**

**L-27625-IW-E-N**

**SITE LAW CERTIFICATION SLC-9**

**Testimony of Janet S. McMahon**

## **Testimony of Janet S. McMahon**

### ***Intro/Qualification Questions***

#### **Q. Please state your name and business address.**

Janet McMahon, PO Box 302, Waldoboro, Maine 04572

#### **Q. Please describe your current employment.**

I am a consulting ecologist. I conduct natural resource inventories and prepare management plans and regional conservation plans for conservation groups, government agencies, and private landowners. I am also on the faculty of Watershed School, an independent high school in Camden, Maine, where I teach a course on Global Climate Change.

#### **Q. Please describe your education and professional background and experience.**

I have a B.S. in biology and geology from Colby College and an M.S. in plant ecology from the University of Maine. My masters thesis, The Biophysical Regions of Maine, and my professional career have focused on conservation at the landscape scale. I helped develop Maine's Ecological Reserves system, worked at The Nature Conservancy as a conservation planner, and more recently have worked with land trusts to identify conservation focus areas and wildlife corridors that are most likely to be resilient to the impacts of climate change and to prepare management plans that take these and other considerations into account. My resume is attached (Group 1 Exhibit 2)

**Q. Please describe any publications you have authored or co-authored (papers, chapters of books, etc.).**

A list of publications is attached (Group 1 Exhibit 3). Two that are particularly relevant to this topic include:

McMahon, J. 2016. Diversity, Continuity and Resilience: The Ecological Values of the Western Maine Mountains. Occasional Paper No. 1. Maine Mountains Collaborative, Phillips, Maine.

McMahon, J. 2018. The Environmental Consequences of Forest Fragmentation in the Western Maine Mountains. Occasional Paper No. 2. Maine Mountains Collaborative, Phillips, Maine.

***Summary of Testimony***

**Q. What is the purpose of your direct testimony in this proceeding?**

To describe the adverse impacts of habitat fragmentation that would be caused by the New England Clean Energy Connect Project.

**Q. On whose behalf are you offering testimony in this proceeding?**

Friends of the Boundary Mountains

**Q. Please summarize your testimony.**

The proposed NECEC Project transmission corridor would be the largest fragmenting feature in the Western Maine Mountains region. This region is significant at a continental scale for a variety of reasons. It includes more than half of the United States'

largest globally important bird area, which provides crucial habitat for 34 northern woodland songbird species. It provides core habitat for marten, lynx, loon, moose and a host of other iconic Maine animals. Its cold headwater streams and lakes comprise the last stronghold for wild brook trout in the eastern United States. Its unfragmented forests and complex topography make it a highly resilient landscape in the face of climate change. It lies at the heart of the Northern Appalachian/ Acadian Forest, which is the largest and most intact area of temperate forest in North America, and perhaps the world (Haselton et al. 2014; Riitters et al. 2000). Most importantly, the Western Maine Mountains region is the critical ecological link between the forests of the Adirondacks, Vermont and New Hampshire and northern Maine, New Brunswick and the Gaspé.

My comments focus on the negative impacts of the 53.5 mile stretch of the transmission corridor that would cross the Western Maine Mountains region. The impacts associated with a project of this scale are huge. The 150-foot wide 53.5 mile long NECEC proposed transmission corridor would directly impact approximately 973 acres of the region through forest and wetland species mortality and habitat alteration and destruction associated with the corridor footprint. It would negatively impact between 20,000+ and 40,000+ of additional acres due to edge effects and hydrologic changes that would extend from 0.5 to 1 km (1640 to 3280 feet) from the high contrast edges of the corridor into adjacent forest land. In addition, the corridor would have significant negative regional and long term impacts because it would reduce connectivity in a critical ecological linkage, fragment large habitat blocks into smaller ones, and compromise headwater stream water

quality and function. The applicant does not address any of these negative regional and long term impacts in their application.

It is also worth noting that fragmentation almost always leads to more fragmentation. As access roads are built and corridors are widened over time (as is happening in other parts of the NECEC corridor), these typically create new nodes of development.

**Q. Are you including exhibits as part of this filing?**

Yes, the following four exhibits are attached:

Group 1 Exhibit 2 Resume of Janet S. McMahon (JSM)

Group 1 Exhibit 3 List of Publications, JSM testimony

Group 1 Exhibit 4 for JSM testimony

McMahon, J. 2016. Diversity, Continuity and Resilience: The Ecological Values of the Western Maine Mountains. Occasional Paper No. 1. Maine Mountains Collaborative, Phillips, Maine.

Group 1 Exhibit 5 for JSM testimony

McMahon, J. 2018. The Environmental Consequences of Forest Fragmentation in the Western Maine Mountains. Occasional Paper No. 2. Maine Mountains Collaborative, Phillips, Maine.

**Q. Upon what materials did you rely in reaching the opinions set forth in your direct testimony?**

See literature cited and analyses summarized in the two exhibits listed above and

the citation below:

Smith, M.P., R. Schiff, A. Olivero, and J. MacBroom. 2008. *The Active River Area: A Conservation Framework for Protecting Rivers and Streams*. The Nature Conservancy, Boston, Massachusetts.

Also, I've drawn from first-hand on the ground experience as an ecologist working in all corners of the state for the past 40 years, and I reviewed the relevant parts of CMP's application.

### ***Detailed Information***

#### **Q. Please describe the significance of the region through which the proposed transmission line would pass.**

The Western Maine Mountains region, which would be bisected by Segment 1 of the NECEC transmission corridor, is exceptional because it remains a largely unfragmented, lightly settled and connected landscape. The region is significant at a continental scale for many reasons. It lies at the heart of the Northern Appalachian-Acadian Forest Ecoregion, which is the largest and most continuous area of temperate forest in North America, and perhaps the world (Haselton et al. 2014; Riitters et al. 2000). This high degree of connectivity, combined with large elevation gradients and a diversity of physical landscapes, makes the Western Maine Mountains a highly resilient landscape in the face of climate change and a critical ecological link between undeveloped lands to the north, south, east and west.

Resilient sites are those that are projected to continue to support biological diversity, productivity and ecological function even as they change in response to climate

change. In The Nature Conservancy's Conservation Gateway climate resilience map of the eastern United States, the Western Maine Mountains stand out in terms of biodiversity, climate flow and climate resilient sites. Eighty percent of the region is of above-average resilience, based on geophysical setting and local connectedness. This compares to 60% for the state as a whole and an average of 39% in southern Maine. A review of The Nature Conservancy's Conservation Gateway maps for the rest of New England and the eastern United States indicates that resiliency is even lower outside of Maine, making the Western Maine Mountains one of the most resilient and connected landscapes east of the Mississippi. Most importantly, the Western Maine Mountains region is the critical ecological link between the forests of the Adirondacks, Vermont and New Hampshire and northern Maine, New Brunswick and the Gaspé.

The Western Maine Mountain region includes more than half of the United States' largest globally important bird area, which provides crucial habitat for 34 northern woodland songbird species. The region provides core habitat for umbrella species such as American marten and Canada lynx, loon, moose and a host of other iconic Maine animals. Its cold headwater streams and lakes comprise the last stronghold for wild brook trout in the eastern United States (Whitman et al. 2013; DeGraaf 2014).

**Q. Please explain the concept of forest fragmentation.**

Habitat fragmentation occurs when habitats are broken apart into smaller and more isolated fragments by permanent roads, utility corridors, buildings, clearings or changes in habitat conditions that create discontinuities in the landscape. These features not only reduce the total amount of forest in a landscape, but they alter the environment

in adjacent habitat because of edge effects. Fragmenting a forest landscape by a transmission corridor creates an abrupt edge between the corridor and adjacent forest edge which greatly increases the total amount of land impacted. Different species are affected by fragmentation in different ways, depending on biological attributes such as habitat specialization, niche specialization, home range size, dispersal ability, mobility and a host of other factors (Lindenmayer and Fischer 2006). Some effects are temporary and local in extent, such as clearings created by timber harvests, while others such as permanent roads and utility corridors occur at a landscape scale and are cumulative, playing out over decades or more. Research in Maine, the Northeast and around the world demonstrates unequivocally that fragmentation degrades native terrestrial and aquatic ecosystems and reduces biodiversity and regional connectivity over time.

**Q. Would the proposed NECEC transmission line cause forest fragmentation?**

Yes. The 53.5 miles of new transmission corridor between Beattie Twp and Wyman station (Segment 1) would be the largest fragmenting feature in the Western Maine Mountains region. To put this in context, a 150-foot wide cleared corridor is about two times as wide as Route 201 or Route 1, and about as wide as the I-95 Turnpike (including pavement and cleared verges). The transmission corridor would permanently remove ~973 acres of forest habitat, it would divide large forest habitat blocks into smaller ones, and it would create 107 miles of high contrast edge between the cleared corridor and adjacent forest. Associated edge effects would impact thousands of additional acres of forest land. The impacts of forest fragmentation at this scale are regional in scope. The corridor would have a profound negative impact on forest connectivity of the region.

**Q. What would be the negative impacts of forest fragmentation caused by the NECEC transmission line?**

The proposed corridor would negatively impact both terrestrial and aquatic ecosystems processes, habitats and species on a regional scale. Regional and long term impacts of the proposed corridor such as forest fragmentation are not addressed in the application. The most severe effects are summarized below:

*1) Direct forest habitat loss and species mortality from corridor construction.*

Approximately 973 acres of upland and wetland forest will be cleared and then maintained in an early-successional (scrub shrub or meadow) condition, through regular cutting of capable trees and herbicide application. Forest plant and animals in the corridor will be destroyed during construction. Forest and undisturbed wetland ecosystems support a completely different suite of species than artificially maintained meadow and scrub shrub habitat.

*2) Direct impacts on headwater stream and catchment areas associated with infrastructure during and after construction.*

Segment 1 crosses or includes portions of approximately 89 perennial streams, 215 intermittent streams and 480 wetlands (from application). Almost all of these are located in the uppermost reaches of their watersheds. It is within these small watersheds that 1st order streams are formed from overland flows, intermittent and zero order streams and gullies, and from springs (Smith et al. 2008). The catchments and riparian areas along these streams contribute inorganic and organic material and large woody debris which

serve as the basic building blocks for the food web of the entire stream system. Large woody debris originating from trees within 50 meters of the channel influences local channel structure and habitat (Smith et al.). In addition, in headwater wetlands, the accumulation, processing, and eventual downstream transport of organic material is an important energy transfer process that influences the entire watershed. A transmission line that converts forest to scrub or meadow vegetation in material contribution areas of this many headwater streams will negatively impact downstream water quality and habitat conditions for brook trout and other cold water species, as well as downstream aquatic biodiversity and processes in general. The overall impact of clearing and maintaining shrubby vegetation in narrow stream buffer areas, as opposed to closed canopy forest in the catchment area, is not addressed in the application. Also not addressed are the impacts of herbicide application on overall water quality. In addition, many wetlands, streams, and vernal pool boundaries extend beyond the corridor boundary. Because habitat alteration within the corridor would impact portions of these features that extend outside of the corridor, the total acreage of wetlands and stream catchment areas impacted by the project would be significantly greater than indicated in the application.

3) *Increased mortality and other direct impacts to wildlife associated with infrastructure after construction is complete.*

*Negative* impacts such as avian and bat collisions with transmission poles and wires over a new corridor of this length are likely to be substantial. There is a growing body of research suggesting that electromagnetic radiation from transmission lines can affect behavior, reproduction and development of bird and other species groups. This is not

addressed in the application.

4) *Changes in species composition and reduced habitat quality from edge effects.*

The transmission corridor will create ~ 107 miles of high contrast edge where the maintained corridor meets adjacent forest. Forest abutting the corridor will be windier, warmer and drier than the forest interior. Increased sunlight, changes in air temperature and humidity, altered plant, animal and microbial species composition, and species invasions are typical edge effects. Penetration distances range from 20-50 meters to more than a kilometer, depending on the edge effect. For example, the decline of many ground-nesting, forest-interior species in the Northeast, such as the oven bird and wood thrush, have been attributed to increased predation pressure from raccoons and other generalist species that thrive along forest edges (Ortega and Capen 1999; De Camargo et al. 2018). Increased nest predation and reduced reproductive success can extend more than 2,000 feet into adjacent forest. The habitat lost or altered by edge effects will be many times greater than the footprint of the transmission corridor itself. This is not addressed in the application. The application states that generalist species diversity can increase in the early-successional habitat that will be maintained in the corridor. This is at the expense of forest plant species which typically have low dispersal capacities compared to disturbance-adapted “weedy” plants (Harper et al. 2005). There is no shortage of early successional habitat in the Western Maine Mountains. In fact, 2017 U.S. Forest Inventory and Analysis data indicates that 98.6% of the forest is in an early to mid-successional condition and that total forest acreage in the region declined by approximately 12,000 acres.

*5) Changes in species composition and behavior as habitat patch size decreases.*

A habitat patch is a relatively homogeneous habitat area that differs from its surroundings. Large habitat patches have more species than small ones for several reasons. First, a large patch will almost always have a greater variety of environments than a small fragment, and each will provide niches for different species. Second, a large patch is likely to have both common and uncommon species, but small fragments are likely to have only common species. For instance, species with larger home ranges, such as black bear or bobcat, are unlikely to survive in smaller fragments. Finally, small fragments will, on average, have smaller populations that are more susceptible to being extirpated than a large population. In Maine, patch size appears to be particularly critical for species associated with mature forest conditions, larger patch sizes and forest interiors. Many Maine birds, such as red-shouldered hawk, black-throated blue warbler, Canada warbler, ovenbird and wood thrush, require hundreds of acres of continuous, relatively closed-canopy forest to reproduce successfully, as do mammals with large home ranges, such as moose, bobcat, black bear and American marten (Charry 1996; Askins 2002). For example, Chapin et al. (1998) found that resident American martens established home ranges in areas where median intact forest patch size ranged from 375 to 518 acres, for males and females respectively. These area-sensitive and habitat specialist species will start disappearing when the size of habitat blocks falls below a certain threshold (Askins 2002; Blake and Karr 1984; Whitcomb et al. 1981). The proposed transmission corridor will fragment some of the largest remaining habitat blocks in the region, with unknown impacts on area-sensitive species. The application does not provide a habitat block map with the corridor overlay,

which makes it impossible to determine the exact number and extent of intact habitat blocks affected. Animals from Maine's populations are currently replenishing "sink" populations in New Hampshire. The corridor could compromise the Western Maine Mountain region function as a source area for marten and lynx.

*6) Introduction and spread of exotic species.*

Invasion by exotic plant species is a common and widespread negative impact of fragmentation that can result in displacement of native species. In general, non-native invasive plant species thrive in disturbed and early successional habitats and frequently become established in utility corridors. Common traits of invasives include rapid growth, light and drought tolerance, bird-disseminated seeds, and the ability to outcompete native plants (Webster et al. 2006). In addition, invasive woody and herbaceous plants rapidly colonize forest edges and may penetrate more than 330 feet into the forest interior, altering or eliminating habitat for native plants (Charry 1996). Wetland and aquatic invasives pose a similar threat in wetland and aquatic ecosystems. Other impacts include changes in soil chemistry and biota—which may suppress native tree regeneration—and reduced or eliminated foods used by pollinators, fruit and seed eaters and herbivores (Silander and Klepeis 1999; Charry 1996; Webster et al. 2006; Burnham and Lee 2010; Ehrenfield et al. 2001; Heneghan et al. 2006; Hunter and Mattice 2002). Large forest blocks appear to resist woody plant invasions better than small blocks due to the deep shade created by mature trees and the buffering effect of large block size, which serves to isolate interior portions of the forest from invasive seeds.

Many terrestrial invasive plant species and wetland invasives, such as glossy buckthorn, oriental bittersweet, purple loosestrife and phragmites, are already well established in southern Maine and have expanded to the edges of the Western Maine Mountains. These disturbance-adapted species thrive in utility corridors and roadside ditches, where they out-compete native species. With roughly one third of Maine's flora comprised of non-native plant species (and most of these already established in the southern part of the state), the cause-and-effect relationship between fragmentation and the establishment of non-native plant species poses a significant threat to native species and habitats in northern Maine (Mosher et al. 2009; Charry 1996).

The applicant proposes controlling invasives that become established in the transmission corridor through manual removal and herbicide application. The negative impacts of herbicides on other species are not addressed, nor is the fact that the corridor would increase suitable habitat for invasives outside of the corridor ROW in areas impacted by edge effects.

**Q. What would be the long-term consequences of forest fragmentation caused by the NECEC transmission line?**

The magnitude and permanence of the land-use changes associated with this project would have negative long-term consequences on connectivity in the Western Maine Mountain region. Fragmentation, by definition, is a continuous and cumulative process that leads to degraded habitats and loss of species over time. There is a growing body of research that suggests that the ecological dynamics in fragmented landscapes are a stark contrast to the dynamics in intact landscapes (Haddad et al. 2015). Research shows strong

and consistent responses of organisms and ecosystem processes to fragmentation arising from decreased habitat patch size, decreased connectivity and the creation of habitat edges (Haddad et al. 2015; Lindenmayer and Fischer 2006). In general, the greater the difference between forested patches and their surrounding environment and the smaller and more isolated patches become, the greater the adverse impact on biodiversity and ecosystem function.

In the Western Maine Mountains, changing land use patterns resulting from fragmentation have already caused changes in species composition and will likely cause changes in plant and animal abundance over time. Two of these changes include the increased proportion of early successional species and the large-scale reduction in the structural complexity of forest stands on which other forest organisms and ecological processes may depend (Rowland et al. 2005; Hagan and Whitman 2004). The transmission corridor would significantly exacerbate both of these trends.

Large tracts of forest are important because they are relatively free from the variety of plant and animal population dynamics that might take place near new edges, including the encroachment of individuals displaced by habitat loss. This immigration lag may also mask the risk of invasion by exotic species since there may be a long lag between introduction, colonization, and rapid range expansion of some invasive species (Webster et al. 2006).

Ecosystem functions, such as nutrient cycling and decomposition rates, can also be reduced or lost over time—a process called ecosystem function debt. Evidence suggests that during forest succession, this delayed loss of function is greater in smaller, more isolated

fragments (Cook et al. 2005; Billings and Gaydess 2008). The mechanisms for this are complex. Functional debt can result when fragmentation causes food webs to be simplified as species are lost, or when altered forest succession patterns resulting from permanent fragmentation cause changes in tree density, light and moisture, which impair ecosystem function (Haddad et al. 2015).

Increased fragmentation is expected to exacerbate the negative impacts of climate change on biodiversity and connectivity in the region. Forest fragmentation increases the vulnerability of Maine's native flora and fauna to climate change (Fernandez et al. 2015; Rustad et al. 2012). For example, declines in the diversity of native flora in New England's mixed northern hardwood forests are attributed to a high degree of habitat specialization, a highly fragmented range, depauperate understories and barriers to dispersal (New England Wildflower Society 2015). Three of the top four stressors are caused or aggravated by forest fragmentation, including habitat conversion, invasives and succession. All of these stressors are expected to become more pronounced as the climate changes. The resiliency of the Western Maine Mountains in the face of climate change is largely due to the extent and connectivity of its forests. These would be adversely affected by the proposed NECEC transmission corridor.

The application focuses on direct and immediate impacts and fails to address long-term and regional impacts of the corridor on connectivity and biodiversity.

## ***Conclusion***

### **Q. Please summarize your testimony.**

The proposed NECEC Project transmission corridor would be the largest fragmenting feature in the Western Maine Mountains region. This region is significant at a continental scale for a variety of reasons. It includes more than half of the United States' largest globally important bird area, which provides crucial habitat for 34 northern woodland songbird species. It provides core habitat for marten, lynx, loon, moose and a host of other iconic Maine animals. Its cold headwater streams and lakes comprise the last stronghold for wild brook trout in the eastern United States. Its unfragmented forests and complex topography make it a highly resilient landscape in the face of climate change. It lies at the heart of the Northern Appalachian/ Acadian Forest, which is the largest and most intact area of temperate forest in North America, and perhaps the world (Haselton et al. 2014; Riitters et al. 2000). Most importantly, the Western Maine Mountains region is the critical ecological link between the forests of the Adirondacks, Vermont and New Hampshire and northern Maine, New Brunswick and the Gaspé.

The negative impacts of a 53.5 mile stretch of the transmission corridor crossing the Western Maine Mountains (Segment 1) would be regional in scale and would have long term negative ecological implications. The 150-foot wide transmission corridor would directly impact approximately 973 acres through forest and wetland species mortality and habitat alteration and destruction associated with the corridor footprint. It would negatively impact between 20,000+ and 40,000+ of additional acres due to edge effects and hydrologic changes that would extend from 0.5 to 1 km (1640 to 3280 feet) from the high contrast edges of the corridor into adjacent forest land. In addition, the corridor would

have significant negative regional and long term impacts because it would reduce connectivity in a critical ecological linkage, fragment large habitat blocks into smaller ones, and compromise headwater stream water quality and function. The applicant does not address any of these negative regional and long term impacts in their application.

It is also worth noting that fragmentation almost always leads to more fragmentation. As access roads are built and corridors are widened over time (as is happening in other parts of the NECEC corridor), they typically create new nodes of development.

**Q. In your opinion:**

**1. Would this project have an unreasonable adverse effect on the existing natural resources of the Western Mountain region of Maine? If so, how?**

Yes. The NECEC transmission corridor would be the largest infrastructure project in the history of the WMM. It would have direct negative impacts on upland forest, wetlands, vernal pools, streams and stream catchment areas. Forest conversion and maintenance of land within the corridor in an early-successional condition would permanently fragment this forested region. This would contribute to the simplification of forest structure and negatively impact native biodiversity (particularly cold water aquatic species) in the region. Forest simplification would, in turn, reduce the current high climate resiliency of the region. The proposed transmission corridor would compromise the region's value as the key ecological linkage between forests in New Hampshire and the Adirondacks and those of Northern Maine and the Gaspé. The application does not address these regional and long-term impacts.

**2. Would this project fit harmoniously into the existing natural environment?**

**If not, why not?**

No, this transmission corridor would require habitat conversion, and then vegetation maintenance in an early successional condition through herbicides and regular removal of “capable” trees<sup>1</sup>. It would create a permanent high contrast edge on either side of the 53.5 mile corridor, an artificial feature that would impact thousands of additional acres of adjacent forest land due to edge effects. It would fragment large forest blocks into smaller more isolated ones. It would cross large wetland complexes such as those along Gold Stream and Moxie Stream, and would impede movement of some wildlife species. There is no way new energy infrastructure at this scale can fit harmoniously into one of the more remote and environmentally intact areas of the state.

**3. Would this project have an unreasonable adverse effect on water quality in the townships where it is located or in neighboring townships? If so, please explain.**

Yes. See page 5, bullet 2.

**4. Would this project have an unreasonable adverse effect on any undeveloped land or water area which is undeveloped and which contains natural features of unusual geological, botanical, zoological, ecological, hydrological, or other**

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<sup>1</sup> Applicant describes capable trees as “those plant species and individual specimens that are capable of growing tall enough to violate the required clearance between the conductors and vegetation established by NERC” (North American Electric Reliability Transmission Vegetation Management, Standard FAC 003-3). Follow-up maintenance when the line is operating will require the removal of capable species, dead trees as well as hazard trees along the edge of the corridor.

**scientific, educational, scenic or recreational significance? If so, please explain.**

Yes. Many species and discrete ecological features, such as jack pine stands, vernal pools, and deer yards would be negatively impacted. My testimony focuses primarily on the adverse regional and long term impacts of fragmentation that would be caused by the transmission corridor.

**5. Will this project provide buffer strips with adequate space for movement of wildlife between important habitats? If not, why not?**

No. Proposed buffer strips along streams and around wetlands are insufficient to maintain functioning catchments around these important headwater systems.

**6. Will this project maintain suitable and sufficient habitat to provide wildlife with travel lanes between areas of available habitat? If not, why not?**

No. By definition, transmission corridors are major fragmenting features on any landscape. The large extent of this corridor means it will reduce connectivity on a regional scale, especially because it of its east-west orientation. As the climate warms, species are expected to move from south to north and upslope.

**7. Will this project unreasonably harm any significant wildlife habitat, freshwater wetland plant habitat, threatened or endangered plant habitat, aquatic or adjacent upland habitat, travel corridor, freshwater, estuarine or marine fisheries or other aquatic life?**

Yes. A project of this scale will have a direct negative impact on hundreds of individual vernal pools, headwater streams, wetlands and other habitats, including the portions of these that lie outside of the corridor footprint. Reducing canopy height and closure, altering vegetation structure and composition, and application of herbicides will harm terrestrial and aquatic habitat within and adjacent to the corridor. In addition, because the corridor will impact the catchment areas of headwater streams and wetlands, it will impact the watersheds that these feed. Looking at discrete impacts on only state significant features masks the regional and cumulative impacts of the corridor as a whole.

**Notarization**

I, Janet McMahon being first duly sworn, affirm that the above testimony is true and accurate to the best of my knowledge.

Date: February 28, 2019 Name: Janet S McMahon

Personally appeared the above-named Janet S McMahon and made affirmation that the above testimony is true and accurate to the best of her knowledge.

Date: February 28, 2019 Name: Colleen G Jones  
Notary Public

My Commission Expires: Dec 16, 2019

**COLLEEN G. JONES**  
Notary Public • State Of Maine  
My Commission Expires Dec. 16, 2019

**Roger Merchant Testimony**

**February 28, 2019**

**(Supplemental Evidence – Redacted Version in Record,  
Unredacted Version Not In Existing Record)**

THE STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

APPLICATION FOR SITE LOCATION OF DEVELOPMENT ACT PERMIT  
AND NATURAL RESOURCES PROTECTION ACT PERMIT  
FOR THE NEW ENGLAND CLEAN ENERGY CONNECT  
FROM QUÉBEC-MAINE BORDER TO LEWISTON  
AND RELATED NETWORK UPGRADES

PRE-FILED DIRECT TESTIMONY OF

ROGER MERCHANT

ON BEHALF OF INTERVENOR GROUPS 2 AND 10

FEBRUARY 28, 2019

1 **Please state your name and business address.**

2 Roger Merchant. 1018 Pushaw Road, Glenburn, Maine.

3 **What is the name of your organization?**

4 Roger Merchant, Place-Based Photography

5 **What is your current position?**

6 Photographer and Forestry Naturalist

7 **What are your qualifications?**

8 I am a Licensed Professional Forester ME #727. From 1965-1972 I managed forestry  
9 operations on a 100,000-acre working forest. I hold lifelong experience interpreting  
10 aerial photographs and am also a photographer and forest resource documentarian. I had  
11 a thirty-two-year career with the UMaine Cooperative Extension, now retired, with  
12 program specializations in: 1) forestry and woodlot management, 2) environmental and  
13 outdoor education, 3) small business and community development, 4) community-based  
14 natural resource and cultural heritage tourism.

15 **What is the purpose of your testimony?**

16 The purpose of my testimony is to present a clear picture of current forest conditions  
17 along the proposed power line between Coburn Mountain and the Quebec border,  
18 including the existence of pre-existing forest fragmentation, then highlighting evidence  
19 on selected, interpreted aerial photographs demonstrating how NECEC will increase  
20 fragmentation and edge effects deeper in the woods adjacent to the line.

21 **Please state the introduction to your testimony.**

22 This written testimony illustrates the impact the NECEC corridor will have on forested  
23 lands in the headwaters of the Upper Moose River between the Quebec border and  
24 Coburn Mtn. to the east. For the reader-viewer, interpreted aerial photographs of sections

1 of this landscape provide visible evidence of: 1) the power line track, 2) the deeper edge  
2 effect of the corridor, 3) extent of headwater streams, 4) the mix of continuous forest  
3 cover and fragmented forest cover, and 5) the extent of permanent logging roads that will  
4 intersect the proposed corridor, contributing to increased fragmentation and habitat  
5 degradation.

6 My field knowledge as a forester from the Maine Woods began in 1965. Over half a  
7 century I've witnessed many changes in forestry and logging practice. For example, with  
8 the cessation of river drives in 1976, extensive networks of gravel roads now provide  
9 access and transportation. These permanent road and yard alterations mark the beginning  
10 of forest fragmentation, township by township. The NECEC corridor is simply the latest  
11 iteration of landscape fragmentation by infrastructure that will impact habitat conditions  
12 on and adjacent to the power line.

13 **Please provide an overview of basic aspects of forest fragmentation.**

14 Managed forests continually produce trees for forest products. Forest cover creates and  
15 sustains wildlife habitat while providing recreational opportunities, now and in the  
16 future.

17 Concerns about fragmentation are warranted. A de-forested power line corridor opens up  
18 the landscape, permanently. They require large scale, long-term use of herbicides, can  
19 lead to disruption of wildlife habitat and behavior, and compromise water quality for key  
20 cold-water species like Eastern brook trout. Fragmented landscapes can facilitate  
21 additional fragmentation from commercial development and expanded subdivision.

22 According to Michael Snyder, Forester and Commissioner of Vermont Department of  
23 Forests, Parks and Recreation, "forest fragmentation is the breaking of large, contiguous,  
24 forested areas into smaller pieces of forest; typically, these pieces are separated by roads,

1 agriculture, utility corridors, subdivisions, or other human development.”<sup>1</sup> (see Northern  
2 Woodlands, 2014)

### 3 **Can you describe Maine’s forest cover change?**

4 Forest Cover Change 1942-2016: There was a time when continuous forest cover was the  
5 norm for conditions in the Maine Woods. Aerial photographs taken in 1942, compared to  
6 the same exact aerial view in 2016, reveal very different patterns in the forest over 74  
7 years of forest change (The 1942-2016 Forest Project)<sup>2</sup>. What’s abundant in the 1942  
8 views is the presence of largely unbroken, continuous forest cover. And indeed, over the  
9 longer span of time-change, trees and forests continue to prevail. However, when  
10 contrasting the same aerial views, 1942 - 2016, very distinct patterns of open blocks,  
11 patches and strips characterize today’s view of the forest. The extent of continuous forest  
12 cover in 2016 has been reduced by a larger, more extensive patchwork pattern from  
13 newer forest practices. This pattern reveals evidence of significant alteration and  
14 fragmentation of forest cover. Change is the one constant in life and this mirrors just as  
15 true for any forest. Further examples of 74 years of forest change can be found at The  
16 1942-2016 Forest: (<https://www.facebook.com/The-1942-2016-Forest>). Accelerated  
17 Forest Cover Change 1989-1997: Fast forward from 1942 to the 1989 Maine Forest  
18 Practices Act (MFPA). Changes in forests, forestry practice and logging technology  
19 prompted concerns about the impact of clear cutting on forests and habitat. Questions  
20 emerged about the mandates of the 1989 MFPA and whether or not they were  
21 contributing to forest and habitat degradation. Research suggests these concerns were

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<sup>1</sup> Hagan, John M. and Boone, Randall B. 1997. *Harvest Rate, Harvest Configuration and Forest Fragmentation*, Manomet Center for Conservation Sciences Rpt.#MCDCF-97001

<sup>2</sup> Merchant, Roger, ME LPF-727. 2016. *The 1942-2016 Forest Project*, A social media page developed to illustrate forest changes from 1942 to and 2016 within the entire Piscataquis Watershed. (<https://www.facebook.com/The-1942-2016-Forest>)

1 not superfluous. In 1997, the Manomet Center for Conservation Sciences conducted  
2 research on these effects from the allowances and restrictions dictated by the 1989  
3 MFPA. They found that, *“a many-small-clearcut strategy, allowed more harvesting than  
4 a fewer-large-clearcut strategy, and that the many-small-clearcut strategy led to greater  
5 fragmentation<sup>3</sup>”*.

6 **Can you describe the continuous forest cover and fragmented forest cover as it  
7 relates to NECEC in 2019?**

8 Field observations from Coburn Mtn. to the Quebec border reveal a mix of largely  
9 coniferous, and a smaller portion of deciduous forests, each composed of regenerating,  
10 younger, and middle-aged stands. Older growth forests are rare. Robust regeneration  
11 involves both coniferous and deciduous species. NECEC’s characterization of this  
12 landscape as simply “cutover land” diminishes the value of what actually grows there  
13 forest-wise; a robust, ever-changing, multiple-use, transitionally fragmented working  
14 forest, as well as associated fisheries and wildlife habitats, streams, lakes and wetlands.

15 When you look closely at the photographs attached with this testimony, you will see the  
16 patterns of small blocks, patches and strips that provide visible evidence of the extent of  
17 forest fragmentation concerns. The red dash-dot lines on each photograph, distinguishes  
18 areas of continuous forest cover, cut and uncut, from the visible patchwork areas of more  
19 fragmented forest cover.

20 Forest fragmentation from forest practices has a transitional life. For example, when a  
21 clear cut is made, that patch and its’ edges are open and obvious. Over time, natural or  
22 artificial regeneration fills in the harvested space and edges, so the initial fragmentation

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<sup>3</sup> Hagan, John M. and Boone, Randall B. 1997. *Harvest Rate, Harvest Configuration and Forest Fragmentation*, Manomet Center for Conservation Sciences Rpt.#MCDCE-97001

1 and edge effects are somewhat mitigated, softened.

2 On the longer-term effects of this transitional fragmentation from newer forest practices,  
3 I think the jury is still out. In forest time, we haven't lived long enough in this new age to  
4 account for the long-term impacts.

5 Nevertheless, with respect to the distinction between continuous forest cover and more  
6 fragmented forest cover, the NECEC corridor will carve through equal portions of both  
7 types of forest cover. Fragmented forests occupy 40% of the landscape on and around the  
8 power line from Quebec to Coburn.

9 An argument made by proponents of NECEC is that this project will create no greater  
10 environmental impact than logging. They insist the power line will pass through "cut  
11 over" industrial forestland that has been actively logged for years, and so, what's the  
12 difference?

13 I argue there is a huge difference when you consider the area in question includes a  
14 significant portion (40%) of forest landscape and habitat that has been transitionally  
15 fragmented by block, patch and strip cuts. Factor in the extensive network of permanent  
16 gravel roads and yards, the second fragmentation; then factor in the third NECEC  
17 fragmentation, a permanent 150-foot-wide corridor with some 300 feet of effects deeper  
18 in the woods either side of the corridor, then you are looking at a landscape that is being  
19 subjected to three fragmentations.

20 **Can you describe potential negative impacts of NECEC with regard to forest**  
21 **fragmentation?**

22 The extent and negative impacts of forest fragmentation are well addressed in Maine  
23 Mountain Collaborative, Occasional Paper #2. "Research in Maine, the Northeast and  
24 around the world demonstrates unequivocally that fragmentation – whether permanent or  
25 temporary – degrades native terrestrial and aquatic ecosystems, and reduces biodiversity

1 and regional connectivity over time and in a number of ways<sup>4</sup>.

2 The NECEC corridor will expand deforestation and fragmentation from Quebec to  
3 Coburn Mtn. and south to Moxie. The 300-foot right of way holds great potential for  
4 future power line expansion to meet the growing needs of Massachusetts customers, the  
5 primary beneficiaries of this distributed power. In return, Maine is expected to shoulder  
6 and absorb all the costs - the impacts - of environmental degradation and destruction that  
7 will occur as a result of this project.

8 The NECEC proposal will permanently eliminate forest cover and habitat protections in  
9 the cleared corridor, and will significantly impact ecological and habitat conditions  
10 deeper within forests adjacent to both sides of the deforested power line corridor.  
11 Fragmentation upon fragmentation seems an unwise course for sustaining forest diversity  
12 and habitat continuity.

13 With two fragmentation strikes already in place, the third NECEC pitch will be a huge  
14 contributor to forest and habitat fragmentation. I believe it is deserving of that third  
15 classic call, “three strikes - NECEC is out”.

16 **Can you provide representative examples that illustrate NECEC’s environmental**  
17 **impacts?**

18 I would like to present Aerial Photography Documentation. Three sections of the  
19 NECEC Project were selected to illustrate and highlight existing forest and  
19 environmental conditions on the ground, between Coburn Mtn. and the Quebec border to  
20 the west, as well as to reveal environmental impacts including NECEC.

21 The photos were extracted from Goggle Earth and edited to enhance and make clear the  
22 variety of forest conditions, including permanent gravel roads and streams. The three

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<sup>4</sup> McMahan, Janet M.S. 2018. *The Environmental Consequences of Forest Fragmentation in the Western Maine Mountains*, Maine Mountain Collaborative, Occasional Paper #2.

1 sections selected are approximately 6 miles x 3 miles on each photo. The map scale is in  
2 the lower right corner. Interpreted examples for you to investigate further are:

3 Spencer Road - Coburn Mountain

4 Rock Pond - The Notch -Tumbledown

5 Lowelltown - Beattie

6 A close examination of the aerial photographs will show you field details relevant to this  
7 testimony. The photos were converted to black and white to highlight forest conditions.

8 Dark areas are coniferous forest; light areas are deciduous forest. When you look closely  
9 at the photographs you will note areas that show patterns of blocks, patches, and strips.

10 This is pre-existing fragmented forest cover. Other areas of forest don't have this patch-  
11 work pattern. Those are areas of continuous forest cover. The red dash-dot lines on each  
12 photo delineate fragmented forest cover, from continuous forest cover.

13 Additional details were interpreted from the photos and USGS maps, and highlighted in  
14 color to illustrate additional features relevant to the impacts of NECEC. The cold-water  
15 streams network is shown in blue, but do not include all the first order streams crucial to  
16 brook trout habitat. The network of permanent, gravel roads is shown in brown on each  
17 photo.

18 Last and not least, with the most significant environmental footprint, is the proposed  
19 power line, the light-yellow swath across each photo. The approximate 750-foot width on  
20 the photos, accounts for the 150-foot wide cleared corridor, plus, an additional 600 feet  
21 of environmental impact deeper within the forests adjacent to either side of the power  
22 line (300 on each side).

23 Each photograph is presented with two views: 1) a small image and interpretive notes on  
24 the front side, 2) a larger view of the same image on the back side to help you better see  
the field details addressed on the front.

1 As was said by a tree sage, a forest picture is worth a thousand words. So, follow the  
2 stream and roads and the yellow swath in each photo to discover where they all intersect,  
3 and particularly the environmental fragmentation that will occur between the Quebec  
4 Border and Coburn Mtn.-Route 201 as a result of NECEC.

5 Seeing is believing...

6 First, I present Exhibit 1 - CMP-HQ-NECEC Project - Forest Fragmentation: Spencer  
7 Road Pond-Coburn Mtn-Rte 201<sup>5</sup>. Here, you can see continuous forest cover is evident  
8 across the heights of Coburn Mt. just above the southern border in the center (S) of this  
9 aerial photograph. Dark, unbroken coniferous forests dominate the heights of Coburn,  
10 which runs SW – NE to Route 201 at Parlin Pond.

11 The balance of the landscape in this photo is fragmented forest; blocks, patches, strips.

12 The red dash-dot lines delineate fragmented from continuous forest cover types. With the  
13 exception of wetlands and partial cuts next to Spencer Road, which runs E-W from  
14 Parlin Pond, the bulk of the remaining landscape is fragmented forest cover. From an  
15 eagle's eye view, continuous forest cover occupies 40% of this area, fragmented forests  
16 60%.

17 Blue indicates the network of streams; brown shows the network of permanent gravel  
18 roads. The light-yellow swath (750') across this photo is the track of the proposed power  
19 line. This width accounts for the 150-foot cleared corridor, plus 300 feet either side of  
20 the corridor to account for ecological impacts deeper within the forests adjacent to both  
21 side of the corridor... The larger photo on the next page shows the fragmentation, upon  
22 pre-existing fragmentation that will result from NECEC<sup>6</sup>.

23 Next, I direct you to MP/HQ/NECEC Proposal - Forest Fragmentation: North of

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<sup>5</sup> Merchant Aerial Photography Documentation Exhibit 1

<sup>6</sup> Merchant Aerial Photography Documentation Exhibit 2

1 Tumbledown-The Notch-Rock Pond<sup>7</sup>. This view of NECEC impact reveals the extent of  
2 visible, pre-existing forest fragmentation north and west of Tumbledown Mtn. Highly  
3 visible blocks, patches and strips characterize fragmented forests in this rugged area.  
4 Continuous forest cover of conifers occupies the north slopes of Tumbledown Mtn.,  
5 extending across the bottom of the photo to Rock Pond.

6 Continuous forest cover extends from No.6 Mtn. in the NE corner, SW to the Spencer  
7 Road west of The Notch (*green circle*). Forest conditions west of the Notch show the  
8 extent of forest fragmentation as well as where the power line swath will further  
9 fragment the fragmented.

10 Additionally, the proximity of the power line to the blue-ribbon trout waters of Rock  
11 Pond and tributaries is evident in the SE corner of this aerial photograph.

12 A crow's eye view of this landscape estimates that continuous forest cover, uncut and  
13 partially cut, occupies about 60% of this rugged, scenic landscape. Heavily fragmented  
14 forests and habitat occupy about 40%. Beyond the edges of the corridor, this permanent  
15 fragmentation will impact forest and habitat conditions 300 feet deeper into the woods  
16 either side of the cleared zone<sup>8</sup>.

17 Now look at CMP/HQ/NECEC Proposal - Forest Fragmentation – Lowelltown/Beattie  
18 Pond<sup>9</sup>. This image shows forest patterns where NECEC, *yellow swath*, will cross the  
19 Quebec-Maine border west of Lowelltown on the CMQ RR, a mile north of Beattie  
20 Pond. The dark areas are coniferous forests; lighter are deciduous forests. Blue shows the  
20 network of headwater streams, but not all of the first-order streams crucial for Eastern  
21 brook trout.

22 Red dot-dash lines delineate two primary types of forest conditions: 1) uncut and

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<sup>7</sup> Merchant Aerial Photography Documentation Exhibit 3

<sup>8</sup> Merchant Aerial Photography Documentation Exhibit 4

<sup>9</sup> Merchant Aerial Photography Documentation Exhibit 5

1 partially cut areas that retain continuous forest cover, 2) fragmented forests - visible  
2 blocks, patches, strips of harvested forestland. Permanent logging roads are shown in  
3 brown.  
4 The small summit, left of center, covered in dark conifers shows continuous forest cover  
5 on top and all around the summit, southwest of the power line. The forests in the NE and  
6 SW corners, and along the south border are areas of continuous forest cover.  
7 Note where NECEC intersects streams and roads, as well as where it will cause further  
8 fragmentation of forest habitat disruption in a landscape that is highly fragmented.  
9 A crows-eye cruise of this landscape estimates that fragmented forests occupy 45% of  
10 the area; continuous forest cover occupies 55%. The fragmenting corridor will impact  
11 forest and habitat conditions, 300 feet deeper into the woods either side of the cleared  
12 zone<sup>10</sup>.

13 **Can you provide representative examples from this region to illustrate forest**  
14 **fragmentation and continuous forests?**

15 Yes. I would also like to submit a series of supplemental photographs from the Quebec  
16 Border to Coburn Mountain-Route 201. These photos cover the entire landscape between  
17 the Quebec and Coburn Mtn. They show only the yellow-black power line track,  
18 providing an open-view of the percent forest fragmentation versus continuous.  
19 Quebec border - Beattie Pond: Extensive fragmentation from strips, blocks, patches  
20 occupies 45% of this landscape; the other 55% is in continuous forest cover, coniferous  
21 and deciduous<sup>11</sup>.  
22 Wing Pond - S. Branch Moose River – West of Tumbledown: Fragmented block and  
23 strip cuts account for 45% of forest cover, the other 55% is in partial and uncut

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<sup>10</sup> Merchant Aerial Photography Documentation Exhibit 6

<sup>11</sup> Merchant supplemental photo 1

1 continuous forest cover<sup>12</sup>.

2 Tumbledown Mtn. to Rock Pond: Strips, patches, light and heavily cut blocks account  
3 for approximately 40% of this landscape, 60% is continuous cover, high elevation  
4 conifers<sup>13</sup>.

5 Rock Pond – Whipple Pond: A mix of blocks, patches, and continuous forest cover,  
6 conifers (dark green) plus some deciduous (light gray). Fragmented forests occupy 35%  
7 of this landscape, continuous forest cover, 65%<sup>14</sup>.

8 Moore Pond: The intensity of fragmented blocks is less in this section of forested  
9 landscape, 70% continuous forest cover, mostly conifers. Extensive permanent road and  
10 yard patterns, plus blocks and patches occupy 30%. Extensive wetland and stream at the  
11 top (N)<sup>15</sup>.

12 Coburn Mtn North: Block cuts are older and not as obvious, however extensive large  
13 angular patches east of Gracie Pond suggest large, older patch cuts. Factor in extensive  
14 roads and yards, this area is 60% fragmented, 40% continuous forest cover including  
15 extensive conifers on Coburn Mtn. to the south (S)<sup>16</sup>.

16 Coburn Mtn South: SE of Coburn Mtn, upper left corner, extensive block cutting in this  
17 view shows extensive fragmentation 75%; continuous forest cover 25%<sup>17</sup>.

18 **What is your conclusion about impacts of this project?**

19 The NECEC Project will significantly add to the base of forest fragmentation that  
20 already exists in the working forests between Coburn and Quebec, and it will further  
21 degrade habitat, fisheries and wildlife, in and around the power line corridor. I can speak  
22 to general impacts from my knowledge and literature review, but I am not a wildlife or

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<sup>12</sup> Merchant supplemental photo 2

<sup>13</sup> Merchant supplemental photo 3

<sup>14</sup> Merchant supplemental photo 4

<sup>15</sup> Merchant supplemental photo 5

<sup>16</sup> Merchant supplemental photo 6

<sup>17</sup> Merchant supplemental photo 7

- 1 fisheries biologist and cannot speak in great detail to those aspects.
- 2 From my interactions with others concerning NECEC, I sense and hear concerns about
- 3 how NECEC will impact forests and habitats.
- 4 It is my view that NECEC is intent upon minimizing their impact overall and
- 5 everywhere, and, minimizing and dismissing any concerns about the environment in the
- 6 public arena. They are on mitigation buy-out-frenzy to assure their will prevails,
- 7 regardless. Economic benefit to NECEC- CMP-HQ-AVENGRID is the sole driving
- 8 force in this project, and their intent to mitigate all environmental costs, their tool of
- 9 choice you could say.
- 10 **Does this conclude your testimony?**
- 11 Yes.

## **COMMENTS ON NON-HEARING TOPICS**

### **Protect the Scenic and Environmental Values Of the Upper Moose River Basin and Kennebec River**

I walked into the Maine Woods as a forester and photographer in 1965 and spent the next fifty years exploring, appreciating and learning from these woods. Maine natural resources contribute to our rural quality of life, our tourism and forest economies. CMP's proposal to construct a new 53-mile corridor through the woods of the Upper Moose River Basin will degrade these treasured natural assets. And NECEC expects us to absorb and carry the costs of the visual and environmental impacts that will result from the CMP-HQ project, and all in the name of delivering power to Massachusetts?

I recall a conversation with colleague Peter Lammert, prior to his retirement from the Maine Forest Service. I asked him what he thought would be the biggest threat to the future of the Maine Woods. His response, "more and more powerlines." They carve up the woods, fragment and degrade forest cover and wildlife habitat, and they erode, if not destroy, the value of magnificent, scenic viewsheds.

During a 32-year career with UMaine Cooperative Extension, I participated in county and regional nature-based tourism initiatives. Maine's forested landscape, full of beautiful streams and lakes, rivers and mountains, are natural golden eggs that draw people to our remote regions and rural communities. Tourists are not coming here to experience power line views and other industrial scale intrusions.

CMP's line will chop up a vast and beautiful forest landscape, eroding and degrading remote scenic viewsheds like Attean View, Coburn and Sally Mountains, Greenlaw Cliffs, The

Notch, No. 5 and Tumbledown, all in the Upper Moose River Basin. There will be similar impacts at the Kennebec Gorge and Lake Moxie, adjacent to Bald Mountain and the Appalachian Trail. My photographs of this unique, scenic region speak to the permanent fragmentation this proposal will have on the forest environment and natural beauty found here. All of this loss will be in the service of CMP feeding Massachusetts hunger for more Hydro Quebec (HQ) generated power.

CMP, HQ, Massachusetts insist this is about sustainable hydropower. Think about where this power is generated from, a massive impoundment the size of the State of New York east of James Bay. Do we dare speak to the uncomfortable truth that this power comes at high ethical and environmental cost, where HQ dammed, diverted and destroyed life-sustaining rivers that had sustained First Nations people in Quebec? Google Earth exposes HQ's destructive footprint. The Rupert, Eastmain, La Grande, Caniapiscou, Great Whale and other free flowing rivers, all are gone, dead. Calling this power "sustainable" is misleading if not dishonest.

Opposing NECEC is not about opposing clean energy sources, including locally generated solar, which CMP and the large Mega Electric Industry have been squashing out, state-by-state. And what do they fear? That the public is waking up to the fact that we can save some bucks on other alternatives while protecting our larger environment, by stepping off the antiquated coal, oil, gas, HQ, CMP grid. We already have enough power lines and wind farms intruding into this beautiful landscape. With the CMP line paving the way, what's next? Yet another expanded power line in the accommodating 300-foot right of way? A re-located East-West Highway? A pipeline? The industrial scale incubation possibilities are endless once the first cut is made. The impacts from these possibilities will destroy the value of the natural golden eggs that nourish our rural quality of life, valued irreplaceable assets that feed our rural forestry, tourism, small business base.

To do nothing to protect these natural assets and our legacy of community-based forestry, tourism and environmental protection is to let CMP-HQ "pave over paradise and put up the power line parking lot" in one of the last unique, remote scenic viewsheds in Maine, the Upper Moose River Basin.

I offer this protective possibility; that the communities, counties, tribal nations, and people associated with the Moosehead Region and the Upper Moose River Basin get together to talk about landscape protection for these woods. Seek agreements and draft documents that officially declare and circumscribe Moosehead and the Upper Moose River Basin as a "Power Transmission-Wind Farm-E.W. Highway Free Zone in Maine."

Our neighbors in New Hampshire gave the HQ Northern Pass a "No Pass" and I hope Maine makes the same decision on the NECEC power line.

We need to protect the values provided by our environment that support our rural communities, values that feed small businesses, forestry and tourism, and the unbroken scenic beauty that feeds our hearts and souls on a quiet night, by the edge of a lake, on a starlit night.

*NOTE: When folks in Massachusetts look at rural Maine, they think there's nothing there. Looking at a NASA nighttime photo of New England, they see the familiar brightness of Boston and Portland. Further north, beyond Route 2 and the "Airline", they see that big black hole on the nighttime map of Maine, leading them to think there's nothing there, so what's the big deal anyway about running a power line through these dark empty woods?*

*I created this collection of photographs from the Upper Moose River Basin to illustrate the fact that this unique forested environment is Not Empty! It's full and rich in brook trout, wild flowing streams and rivers, wandering souls, magnificent wildlife and scenery to be seen from 'viewshed peaks' like Coburn, Sally, No.5, Tumbledown. Our rural communities as well as visitors, treasure these beautiful natural assets.*

*This rich natural legacy is in need of our care, attention, management and protection.*

*Enjoy the following scenic views that include power line tracks.....*



Looking west from the base of Tumbledown Mtn. the power line will carve through the gap north of Peaked Mountain on the left. Further west the line drops down and crosses the South Branch Moose River. Trending across the south flank of Moose Mountain in the far distance, the line will turn northwest to the Quebec border near Lowelltown.



Headwaters throughout the Upper Moose River Basin contain cold-water habitat like this that is crucial for the survival of wild Eastern brook trout. Well shaded from direct sunlight, this brook protects cool waters that support the excellent blue ribbon trout fishing found throughout the Upper Moose River Basin.



Concerns about NECEC opening up the forested landscape and warming headwaters, is well illustrated in this photo of a first-order-stream in the Upper Moose River Basin. Forest cover is absent, exposing the water to excessive heat, which in turn feeds and heats downstream cold water habitat. Applications of herbicides will be required to maintain a tree and brush-free power line. How will this impact water quality for brook trout, wildlife and humans? Many first order streams like this are found along the proposed power line pathway through the Upper Moose River Basin.



In between No.5 and Tumbledown Mtn. arises the dramatic remote viewpoint provided by Greenlaw Cliffs, which forms The Notch, just west of Rock Pond. The power line will skirt the north side of Rock Pond, then come straight up through The Notch destroying the rugged beauty found in this unique wild and scenic location.



Coburn Mtn. rises in the eastern end of the Upper Moose River Basin, just west of Rt. 201. In the 1960's, Enchanted Mountain Ski Area, over on the east slope was a wild, downhill ski for the brave and intrepid. Coburn provides for an amazing viewshed, 360 degrees around, when you stand on the summit lookout platform any season of the year.



The viewshed west of Coburn Mtn. looks up the Moose River Basin. Grace Pond and Camps are on the left. Beyond those waters in the distance rises No.5 Mtn. Just to the left of the magnificent view provided by No.5, you see where the NECEC line will come through The Notch. Attean and Sally Mountains rise above Attean and Wood Ponds in the center background. To the far right is lofty Boundary Bald Mtn. The yellow track of the power line carves across this extensive wild, working forest landscape and will be visible from both Sally and Attean Mtns.



Grace Pond with No.5 behind and Attean on the right, the power line track and impact will be even more noticeable in winter. Higher elevation viewpoints such as Coburn, Sally, No.5, Tumbledown, Peaked, Moose, Van Dyke, provide a more complete picture of the power lines visual impact. CMP photo-simulations tend to focus on lower elevation lakeside views that minimize the visual impact. These photos speak directly to the viewshed impacts that the NECEC project will have from multiple viewpoints within the Upper Moose River Basin.



The Coburn East viewshed looks down to Johnson Mountain, wrapped on the west and then the south by NECEC. The power line then extends further south, reaching across the Kennebec Gorge to Moxie Pond, and The Mosquito in the far, far distance. The power line to the left (north) will cross the northeast shoulder of Coburn Mtn, about a half-mile beyond the two unique, high elevation water bodies, Mountain Ponds.



The Attean viewshed looking south from Sally Mtn. begs the classic questions for each and all of us... What is beauty, only in the eye of one beholder? Or is it within the many eyes and hearts that have walked out into the woods, and up a mountaintop to see and touch, to feel and experience what the joy of beauty is about in this spectacular place?

*Beauty is boundless; it is not beholding to any boundary lines, public or private, town or county, yours or mine. Here it is limitless to the horizon, and beyond. A power line carved across a real and scenic landscape like this is in fact, the ultimate and deadly antitheses of Beauty.*

Indeed, carving up and fragmenting this incredible scenic landscape while compromising wildlife and wild brook trout habitat and further fragmenting the forest environment is the desired, coveted NECEC-CMP-HQ plan going forward with lavish rewards for all... What a loss of treasured natural values and diminishment of human experience that define the incredible outdoors and sense of place for people near and far, who wander the Upper Moose River Basin.

Will the CMP power line through the Upper Moose River Basin come to pass to feed energy hungry Massachusetts's consumers?

*Will we protect and govern what is unique about our particular, shared sense of place, or will we simply be left out, deselected and sold to industrial development by the higher bidders in the global market?*

**SIGNATURE**

Roger Merchant  
1018 Pushaw Road  
Glenburn, Maine  
04401

A handwritten signature in cursive script that reads "Roger Merchant". The signature is written in black ink and has a long horizontal line extending to the right from the end of the name.A second handwritten signature in cursive script, also reading "Roger Merchant". This signature is more compact and lacks the long horizontal line seen in the first signature.

Heidi Sanders  
Notary Public, State of Maine  
My Commission Expires October 17, 2023

A handwritten signature in cursive script that reads "Heidi Sanders". Below the signature, the date "2/22/19" is written in a simple, slightly slanted font.

**Roger Merchant**  
1018 Pushaw Road  
Glenburn, Maine 04401  
207-343-0969 (c)  
[rogmerch@gmail.com](mailto:rogmerch@gmail.com)

**A. Vision:** My enduring purpose is to contribute to change through initiatives that provide balanced attention to the social, economic and environmental aspects of sustainable development. These practices guide my work:

1. Community-based assessment of issues, opportunities and solutions
2. Facilitating open inquiry through an interactive process
3. Disseminating fact-finding relevant to local issues and decision making
4. Strengthening leadership through the development process

**B. Professional Credentials:**

*2012-Present: Place-Based Photographer, Rural Community Development Resource*  
Since retiring I devote time and energy to photography, community development and service to the environment.

*1980-2012: Associate Extension Professor, Natural Resources and Community Development, University of Maine Cooperative Extension.*

My Extension portfolio includes woodland stewardship, environmental and outdoor education, 4H adventure programs, rural development and tourism. Signature programs include: Taking Care of Your Forest, Penobscot Riverkeepers, Life Jackets, Piscataquis County Economic Development Council and Tourism Task Force.

The last decade of my extension career focused on natural resource and cultural heritage tourism in the Maine Highlands. I taught Community-based Tourism Planning at UMaine - College of Forest Resources.

*1976-79: Central Kentucky Re-ED, Lexington, Kentucky.*

In a community social worker role I coordinated services for children with learning and behavioral challenges. I facilitated parenting and human relations trainings, and provided backcountry leadership for outdoor programs.

*1974-76: Comprehensive Care Center, Winchester, Kentucky*

As youth services social worker, I provided counseling for children and adolescents, conducted human relations workshops and supervised graduate social work students.

*1965-72: Forester: Dead River Company, Bangor, Maine*

I administered all aspects of forestry on a 100,000 acre working forest: timber inventory, mapping, road layout, and implementation of forest practices. Ongoing harvest supervision provided quality assurance for sustainable forestry. I conducted field projects in forest nutrients, timber marketing, natural areas protection, and served as forestry liaison to a tribal project involving the Passamaquoddy's, Dead River Timberlands, and UMaine Cooperative Extension.

**C. Educational Credentials:**

- 1974 - Masters of Social Work, West Virginia University
- 1965 - Bachelors of Science in Forestry, University of Maine
- 1963 - AAS Forestry, Paul Smith's College, New York

**D. Other Credentials:**

- *2010-2012 Instructor: PRT470-Community Tourism Planning* included field-based community service learning as an integral part of the requirements for this advanced undergraduate course.
- *2002 Sabbatical: Community Approaches to Rural Tourism Development in Forested Regions East of the Mississippi.*
- *1994 International Exchange: Quebec Labrador Foundation - Landscape Stewardship Exchange in the Southern Czech Republic*
- *1988 Sabbatical: Adventure Education Strategies for Positive Youth Development via Outward Bound and Experiential Education Programs.*

**C. Public Service:**

- Co-Founder - Piscataquis Tourism Task Force
- Co-Founder - Piscataquis County Economic Development Council
- Founder and Former Board President: Life Jackets and Penobscot Riverkeepers 2000
- Board Membership: Hirundo Wildlife Refuge, Maine Highlands Corporation, Penquis Child Abuse Prevention Council, Maine Appalachian Trail Club
- Volunteer Trail Maintainer since 1980, Maine Appalachian Trail Club
- Maine Forest Service - Fire Lookout Volunteer, Burnt Mtn., Baxter State Park

**D. Professional Affiliations and Awards:**

- Maine Licensed Professional Forester #727
- NAI Interpretive Guide 2009-2019
- Registered Maine Guide 1993-2002
- Facilitator Project Learning Tree
  
- 2007 King Cummings Regional Leadership Award
- 2005 Pete Myrick-Piscataquis County Community Service Award

**E. Other Talents:**

- I authored collections of short stories in *Trust* and *The Maine Forest* for Literacy Volunteers of America in 1982. At my grandchildren's prompting, I am currently working on a collection of stories from my life. As a musician for 45 years, I occasionally gig at open-mic with the story-songs of our times.
  
- I'm an accomplished photographer of forestry, nature, rural life, railroads and the Maine Woods. I am currently developing a new website, My Encyclopedia of Place-based Photography
  
- I enjoy the outdoors, backpacking, lake and river canoeing. I'm a seasoned wilderness canoe paddler. Notable on my water travels are the Allagash, Dead River and Penobscot in Maine, the Spanish and Mississagi Rivers in Ontario.

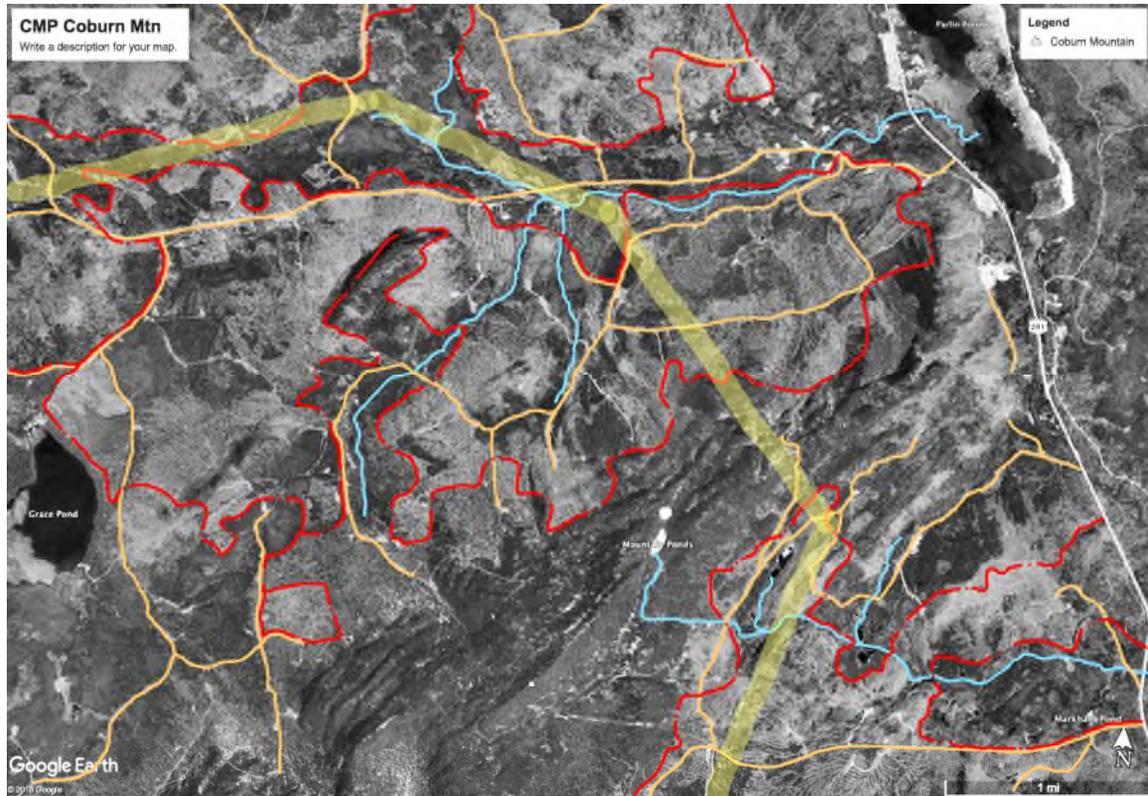
CMP-HQ-NECEC Project

Forest Fragmentation: Spencer Road Pond-Coburn Mtn-Rte 201

Merchant Aerial Photography Documentation Exhibit 1

NW

NE



SW

S

SE

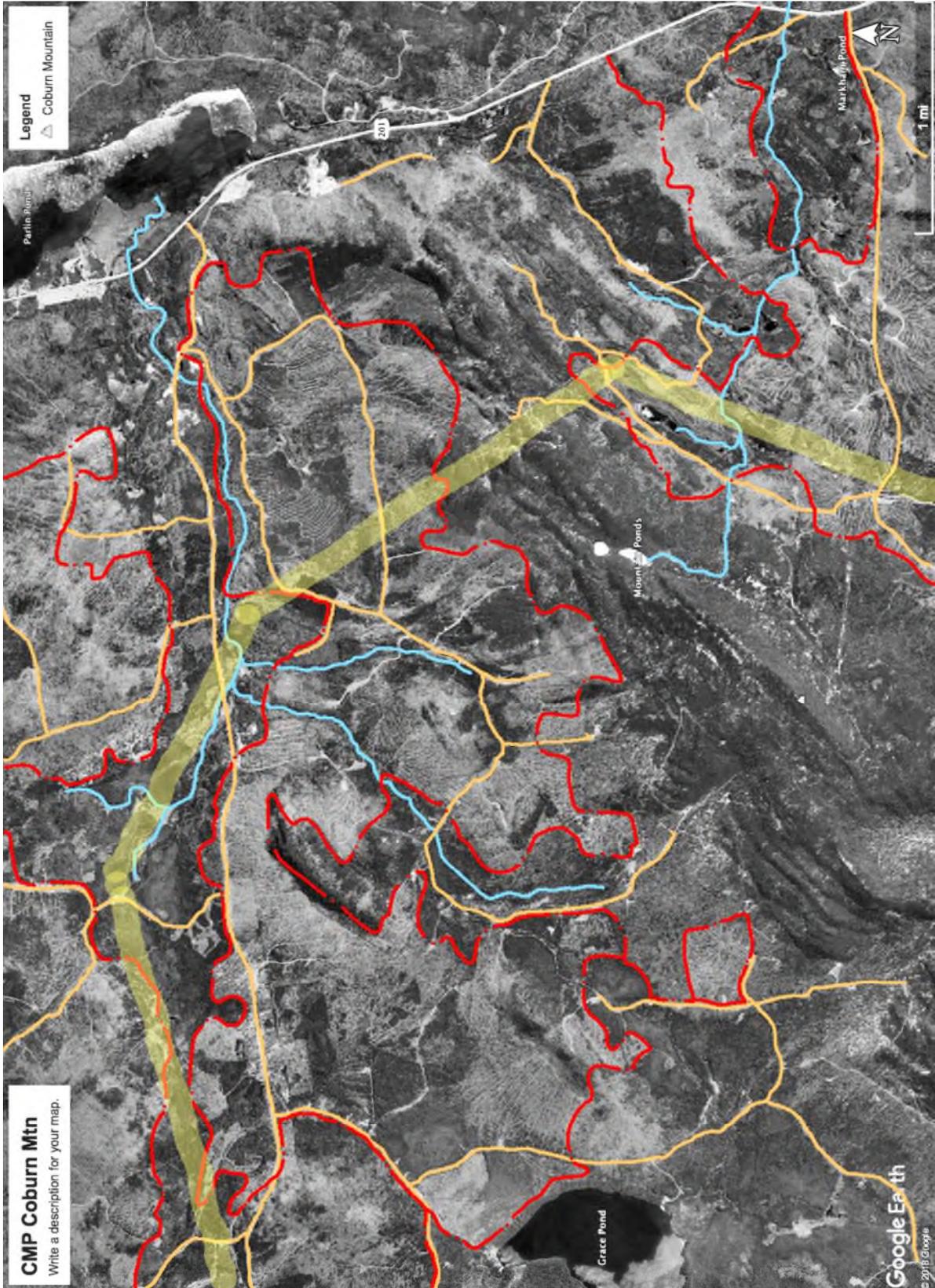
Continuous forest cover is evident across the heights of Coburn Mt. just above the southern border in the center (S) of this aerial photograph. Dark, unbroken coniferous forests dominate the heights of Coburn, which runs SW – NE to Route 201 at Parlin Pond.

The balance of the landscape in this photo is fragmented forest; blocks, patches, strips. The red dash-dot lines delineate fragmented from continuous forest cover types. With the exception of wetlands and partial cuts next to Spencer Road, which runs E-W from Parlin Pond, the bulk of the remaining landscape is fragmented forest cover. From an eagles eye view, continuous forest cover occupies 40% of this area, fragmented forests 60%.

Blue indicates the network of streams; brown shows the network of permanent gravel roads. The light yellow swath (750') across this photo is the track of the proposed power line. This width accounts for the 150 foot cleared corridor, plus 300 feet either side of the corridor to account for ecological impacts deeper within the forests adjacent to both side of the corridor... The larger photo on the next page shows the fragmentation, upon pre-existing fragmentation that will result from NECEC.

© *Roger Merchant, ME LPF 727, Glenburn, Maine*

Merchant Aerial Photography Documentation Exhibit 2



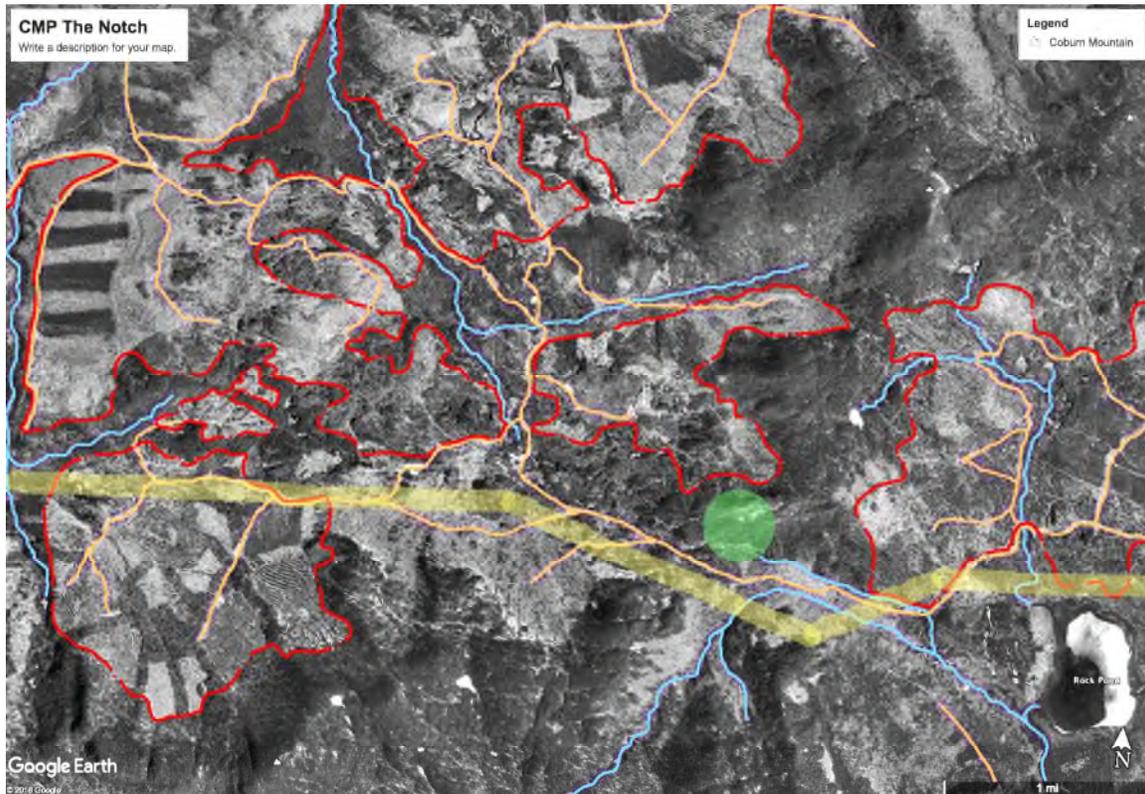
## MP/HQ/NECEC Proposal

### Forest Fragmentation: North of Tumbledown-The Notch-Rock Pond

#### Merchant Aerial Photography Documentation Exhibit 3

NW

NE



SW

SE

This view of NECEC impact reveals the extent of visible, pre-existing forest fragmentation north and west of Tumbledown Mtn. Highly visible blocks, patches and strips characterize fragmented forests in this rugged area. Continuous forest cover of conifers occupies the north slopes of Tumbledown Mtn., extending across the bottom of the photo to Rock Pond.

Continuous forest cover extends from No.6 Mtn. in the NE corner, SW to the Spencer Road west of The Notch (*green circle*). Forest conditions west of the Notch show the extent of forest fragmentation as well as where the power line swath will further fragment the fragmented.

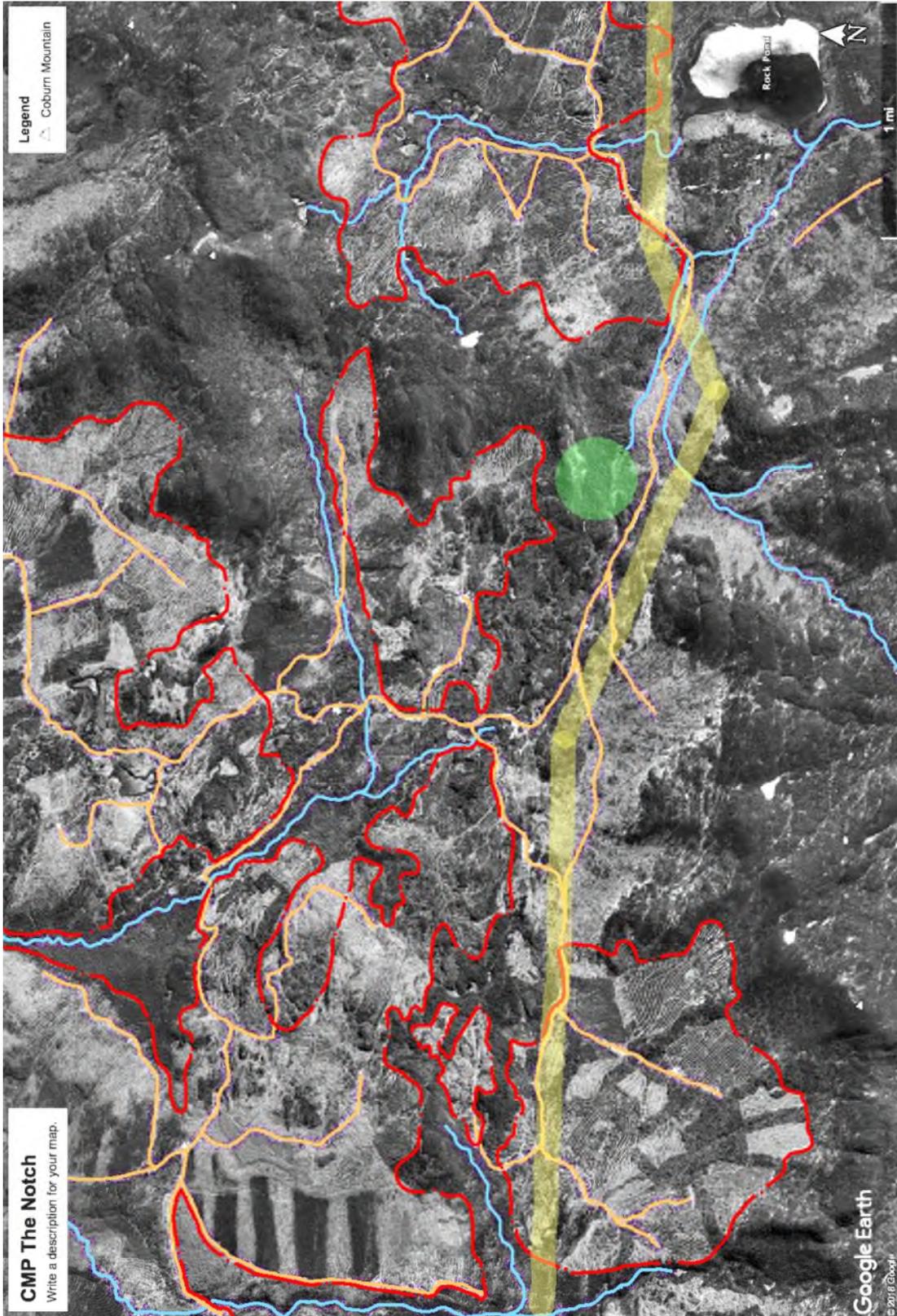
Additionally, the proximity of the power line to the blue ribbon trout waters of Rock Pond and tributaries is evident in the SE corner of this aerial photograph.

A crow's eye view of this landscape estimates that continuous forest cover, uncut and partially cut, occupies about 60% of this rugged, scenic landscape. Heavily fragmented forests and habitat occupy about 40%.

Beyond the edges of the corridor, this permanent fragmentation will impact forest and habitat conditions 300 feet deeper into the woods either side of the cleared zone.

© *Roger Merchant, ME LPF 727, Glenburn, Maine*

Merchant Aerial Photography Documentation Exhibit 4



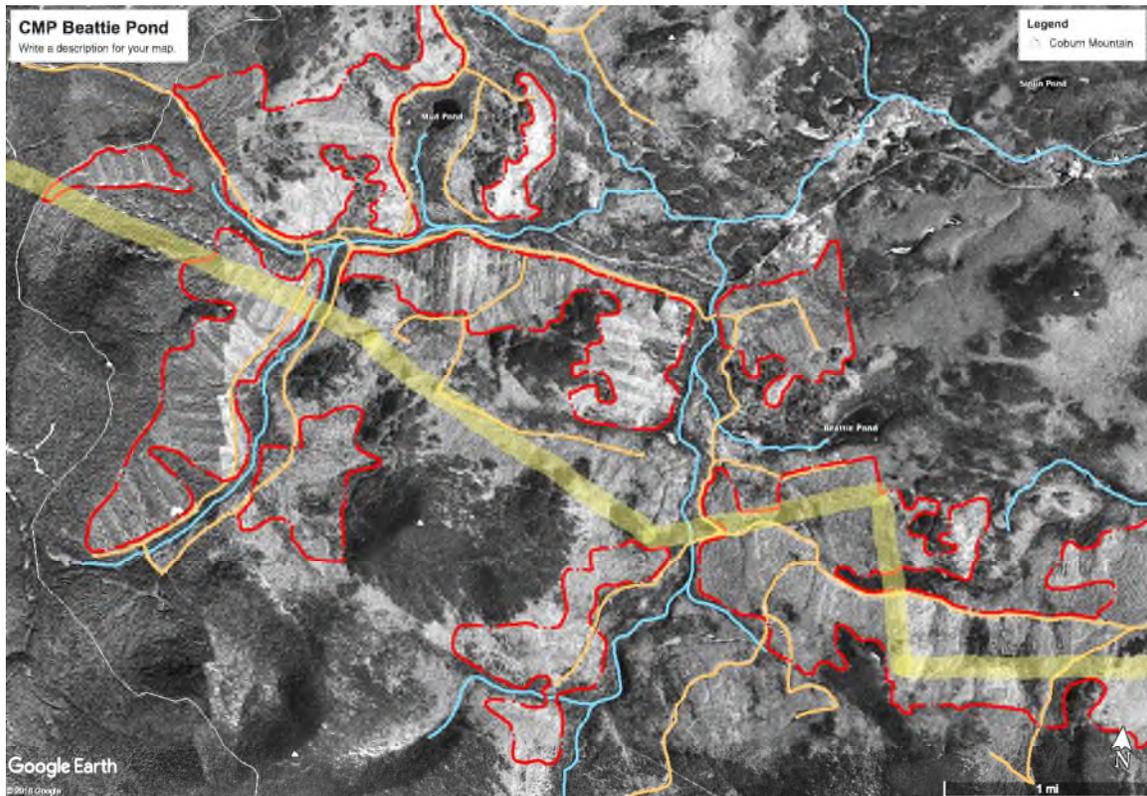
CMP/HQ/NECEC Proposal

Forest Fragmentation – Lowelltown/Beattie Pond

Merchant Aerial Photography Documentation Exhibit 5

NW

NE



SW

SE

This image shows forest patterns where NECEC, *yellow swath*, will cross the Quebec-Maine border west of Lowelltown on the CMQ RR, a mile north of Beattie Pond. The dark areas are coniferous forests; lighter are deciduous forests. Blue shows the network of headwater streams, but not all of the first-order streams crucial for Eastern brook trout.

Red dot-dash lines delineate two primary types of forest conditions: 1) uncut and partially cut areas that retain continuous forest cover, 2) fragmented forests - visible blocks, patches, strips of harvested forestland.

Permanent logging roads are shown in brown

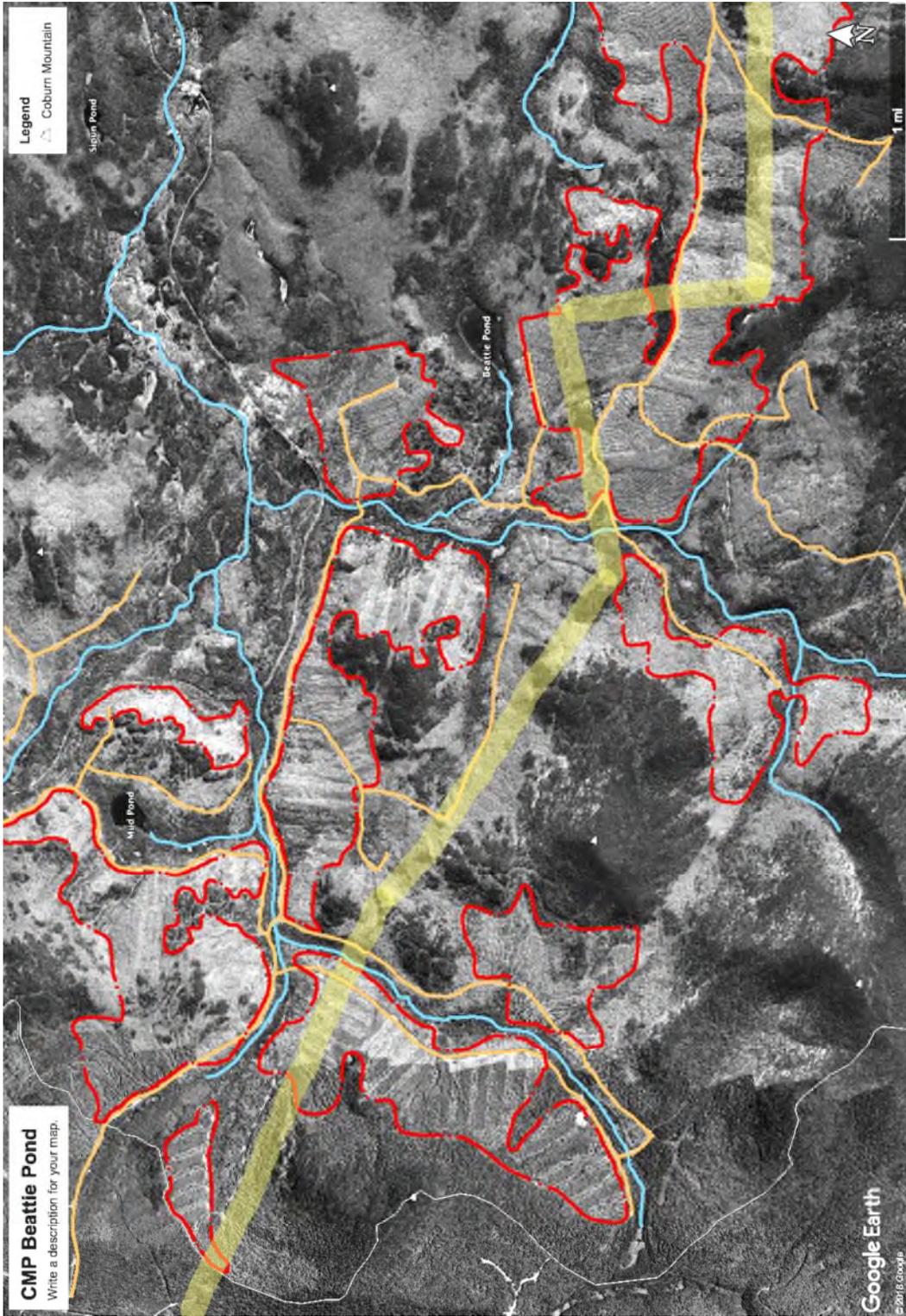
The small summit, left of center, covered in dark conifers shows continuous forest cover on top and all around the summit, southwest of the power line. The forests in the NE and SW corners, and along the south border are areas of continuous forest cover.

Note where NECEC intersects streams and roads, as well as where it will cause further fragmentation of forest habitat disruption in a landscape that is highly fragmented.

A crows-eye cruise of this landscape estimates that fragmented forests occupy 45% of the area; continuous forest cover occupies 55%. The fragmenting corridor will impact forest and habitat conditions, 300 feet deeper into the woods either side of the cleared zone.

© Roger Merchant, ME LPF 727, Glenburn, Maine

Merchant Aerial Photography Documentation Exhibit 6



**Supplemental Photographs: Quebec Border to Coburn Mountain-Route 201...** These photos cover the entire landscape between the Quebec and Coburn Mtn. They show only the yellow-black power line track, providing an open-view of the % forest fragmentation vs. continuous.

Quebec border - Beattie Pond: Extensive fragmentation from strips, blocks, patches occupies 45% of this landscape; the other 55% is in continuous forest cover, coniferous and deciduous.

#### SUPPLEMENTAL PHOTO 1



Wing Pond - S.Branch Moose River – West of Tumbledown: Fragmented block and strip cuts account for 45% of forest cover, the other 55% is in partial and uncut continuous forest cover.

SUPPLEMENTAL PHOTO 2



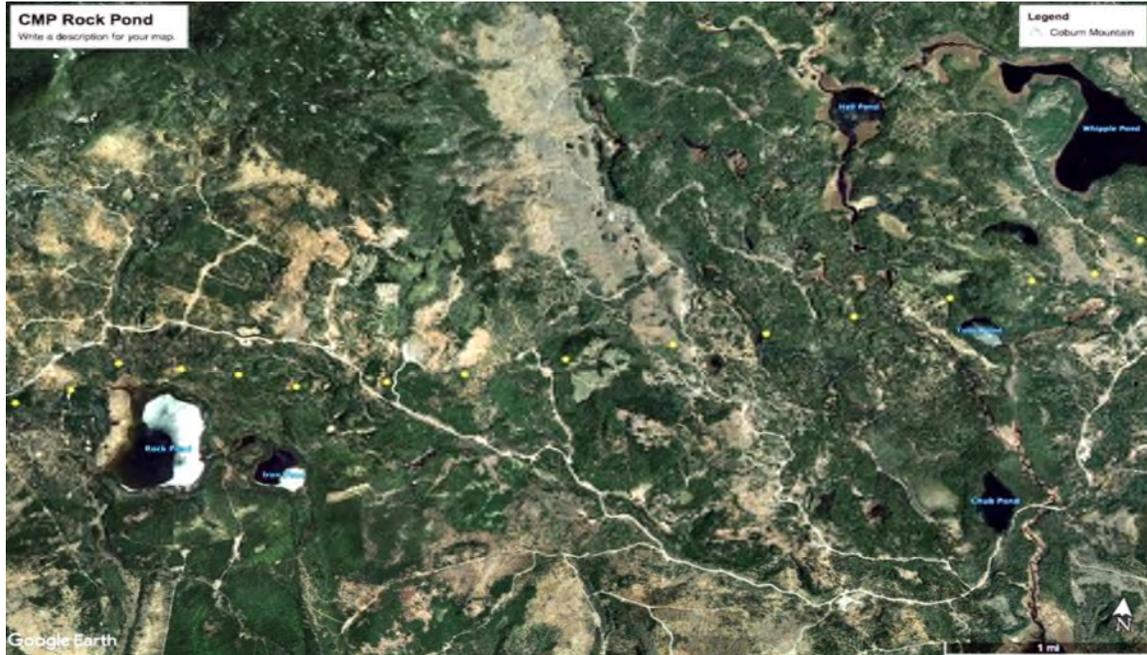
Tumbledown Mtn. to Rock Pond: Strips, patches, light and heavily cut blocks account for approximately 40% of this landscape, 60% is continuous cover, high elevation conifers.

### SUPPLEMENTAL PHOTO 3



Rock Pond – Whipple Pond: A mix of blocks, patches, and continuous forest cover, conifers (dark green) plus some deciduous (light gray). Fragmented forests occupy 35% of this landscape, continuous forest cover, 65%.

## SUPPLEMENTAL PHOTO 4



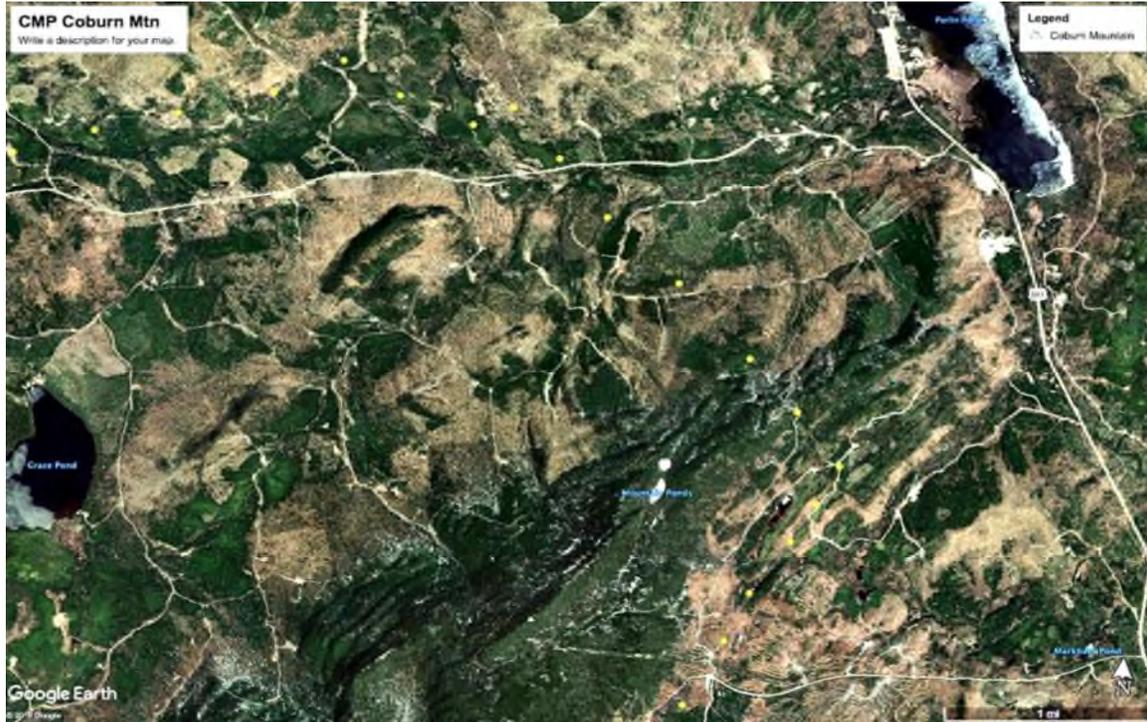
Moore Pond: The intensity of fragmented blocks is less in this section of forested landscape, 70% continuous forest cover, mostly conifers. Extensive permanent road and yard patterns, plus blocks and patches occupy 30%. Extensive wetland and stream at the top (N).

## SUPPLEMENTAL PHOTO 5



Coburn Mtn North: Block cuts are older and not as obvious, however extensive large angular patches east of Gracie Pond suggest large, older patch cuts. Factor in extensive roads and yards, this area is 60% fragmented, 40% continuous forest cover including extensive conifers on Coburn Mtn. to the south (S).

SUPPLEMENTAL PHOTO 6



Coburn Mtn South: SE of Coburn Mtn, upper left corner, extensive block cutting in this view shows extensive fragmentation 75%; continuous forest cover 25%.

SUPPLEMENTAL PHOTO 7



**LD 640 Testimony by Tom Saviello to the  
Joint Standing Committee on Environment  
and Natural Resources**

**March 15, 2019**

**(Supplemental Evidence)**

LD 640 testimony presented by Tom Saviello to the joint sanding committee on Environment and Natural Resources on 3-15-19.

Good morning. I am Tom Saviello. I am here representing myself and came to Augusta today because of the importance of LD 640. It is my first time testifying before any committee since being termed out after 16 years serving the people of Franklin County as both their State Rep and Senator. During that time I served on this committee 9 years, 6 as chair.(1)

Let me quickly give you my background: I have BS in Forestry from the University of Tennessee; a MS in Agronomy from the UM and a PHD in Forest Resources from UM. I was the manager of International Paper Northern Forest Research Center and the Environmental Manager at the Androscoggin Mill in Jay. I was instrumental in setting up the USFS climate change research site in Howland.

( <https://crsf.umaine.edu/forest-research/howland-research-forest/> )

I am sure all of you have heard about the New England Clean Energy Connect. Some know it as the "corridor". Some know it as the "one way" electric extension cord to Massachusetts. The proposed Corridor is supposed to bring so called green energy from Hydro Quebec's Dams to Massachusetts. The question remains is it really clean energy? I strongly believe the passage of this resolve will answer that question.

First we all must recognize all power generate has some environmental impact. Consider the following:

1. Solar needs panels....panels need metals.... Metals come from mining
2. Wind need wind mills..... windmill installation blasting the top of mountains off..... You and I have to look at them every day.
3. Hyrdo need flowing rivers..... Rivers need to be dammed... dams cause impoundments which destroy the habitat.

So nothing is "free". However, in the case of the hydro Quebec power source I actually am confused (easily done). Is it really green? Consider the following:

1. CLF is working to ensure that clean energy projects across New England do the most good and least harm for our climate and our communities – including emitting the lowest greenhouse gas emissions possible.  
The Northern Pass project fails to meet this test. It will make us reliant on big, carbon-emitting Canadian hydropower, undermining the market for New England's own home-grown, zero-carbon renewable energy. And the construction of enormous new transmission towers will spoil some of New Hampshire's most scenic and sensitive areas.

<https://www.clf.org/making-an-impact/stopping-northern-pass/>

Yet in Maine CLF is comfortable with this “carbon emitting “ hydropower. And now CLF has signed off on the NECEC settlement agreement. I guess electric car charging stations and heat pumps made the power green enough...

2 . Fred Langan Special to The Christian Science Monitor quoted Les Milford from CLF:

“Our major concern is that an energy glut, in this case caused by buying cheap power from Quebec, means there is not economic incentive for conservation measures in New England,” says Lewis Milford of the Conservation Law Foundation, a New England environmental group.”(2)

**3.Dams create greenhouse gases. When dams are built in Québec large areas of Boreal Forest are flooded. As a result, organic matter decomposes and releases methane and carbon dioxide. (I WILL COME BACK TO THIS)Currently, it is estimated that Canadian reservoirs contribute 12% to total**

**Canadian greenhouse gas emissions (Rosenberg et al., 1997).**

By the way to date HQ has flooded nearly 7 million acres, 41 % the size of Maine.

So is the hydro power clean?

First, bear with me and let me go a bit further. Let me talk about Forest Soils and Trees as carbon sinks.

*A.Forest Soil:*

Please look at the three soil diagrams I have provided.

Under these conditions the organic layer comprising the topsoil is usually thick and consists of a litter layer (L) (largely undecomposed), overlying a fermentation layer (F) in which there is some decomposition of the organic remains, and this in turn overlies a humus layer (H) in which decomposition of the organic remains is more or less complete. The turnover of plant remains into nutrients that can be re-used by the trees is very slow here, and is in strong contrast with the rapid turnover experienced in the tropical rainforest.

Ideal soil 5-6% organic matter

Forest soil can have top layers 100% Organic matter to 10-20% in lower soil horizons.

Boggy soils 100%

CARBON principle element

In the Boreal Forest OM is slow to decompose due to climate.... Holds carbon... sequesters carbon!(3)

[http://www.soil-net.com/dev/page.cfm?pageid=casestudies\\_boreal&loginas=anon\\_casestudies](http://www.soil-net.com/dev/page.cfm?pageid=casestudies_boreal&loginas=anon_casestudies)

Recognition of the vital role played by soil carbon could mark an important if subtle shift in the discussion about global warming, which has been heavily focused on curbing emissions of fossil fuels. But a look at soil brings a sharper focus on potential carbon *sinks*. Reducing emissions is crucial, but soil carbon sequestration needs to be part of the picture as well, says Lal. The top priorities, he says, are restoring degraded and eroded lands, as well as avoiding deforestation and the farming of peatlands, which are a major reservoir of carbon and are easily decomposed upon drainage and cultivation.

[https://e360.yale.edu/features/soil\\_as\\_carbon\\_storehouse\\_new\\_weapon\\_in\\_climate\\_fight](https://e360.yale.edu/features/soil_as_carbon_storehouse_new_weapon_in_climate_fight)

It's thought that the earth beneath our feet is holding up to three times as much carbon as is found in the atmosphere. If we can tap into its potential to suck even more carbon pollution out of the air, it would be a massive advantage.

<https://www.sciencealert.com/soil-minerals-could-be-huge-carbon-dioxide-sink>

## ***B. Trees/Forest***

Photosynthetic organisms are photoautotrophs, which means that they are able to synthesize food directly from carbon dioxide and water using energy from light

Don't be fooled by the name; a carbon sink is not where we go to wash carbon. Actually, it's something found in nature that holds or stores carbon — technically anything that absorbs more carbon than it releases.

Forests are great examples for carbon sequestration. In fact, U.S. forests alone store 14 percent of all annual carbon dioxide (CO<sub>2</sub>) emissions from the national economy. But how does it happen? You may know that trees survive by performing a process called photosynthesis, in which the tree actually consumes CO<sub>2</sub>. Being absorbed by trees is just one way that carbon moves through forests as part of the carbon cycle. This cycle is the process by which carbon travels from the atmosphere into the Earth and its organisms, and then travels back into the atmosphere

How? During photosynthesis, trees and plants “sequester,” or absorb, carbon from the atmosphere in the form of CO<sub>2</sub>, using it as food. The chemical equation for photosynthesis is: 6 CO<sub>2</sub> (the carbon they take in) + 6 H<sub>2</sub>O (the water they absorb) + sunlight = C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> (a sugar

called glucose) + 6 O<sub>2</sub> (the oxygen they release). The carbon from the CO<sub>2</sub> becomes part of the plant and is stored as wood. Eventually, when the plant or tree dies, the carbon it has been storing is released into the atmosphere.

<https://www.americanforests.org/blog/forests-carbon-sinks/>

## 4 Now let's talk about Hydro Quebec:

1. Last spring this committee held a hearing on the HQ corridor. One of the questions was about the actual "capacity" of HQ to supply this power.

*In the application to Mass they stated: The HQ Hydropower Resources are already in service and require no further procurement (HRE Section 83D Application., p. 6).*

Yet in a follow up email to Dan they stated:

**Hydro Quebec does not need to build any additional generation infrastructure because it is in the final stages of a significant hydropower capacity build out that has added over 5000 MW of new capacity to its system.** That the needed capacity would be on line by 2020. (see the email from Carolyn O'Connor HQ)

I suspect this is HQ's Romaine hydro sequence. The Romaine sequence of dams is to be completed in 2020. It will flood nearly 70,000 acres or the equivalent of 3 Maine unorganized townships.

”

When Hydro-Quebec dams rivers on northern Quebec's relatively flat terrain, it floods vast areas of forests and wetlands under shallow water. The amount of power Hydro-Quebec produces per acre flooded is among the lowest of any hydropower in the world. The trees, bogs and soils Hydro-Quebec floods have been storing carbon since the last Ice Age. When flooded, this stored carbon decomposes, releasing CO<sub>2</sub> and methane. Both add to climate change.

To make things worse, drowned trees are gone forever and cannot grow back to remove CO<sub>2</sub> in the future.

*Bradford H. Hager is a professor of earth sciences at MIT and a part-time resident of Mercer.*

<https://www.centralmaine.com/2019/01/12/maine-compass-what-hydro-quebec-gets-wrong/>

Here's an example of their own best available science that Hydro-Quebec did not provide to the newspaper: About a decade ago, Hydro-Quebec built dams to divert the Rupert River to the Eastmain hydro facility, flooding 175 square (5)miles of virgin forest and wetlands. As a result, the first year after flooding, as much CO<sub>2</sub> was released as would have been released by a coal-fired power plant generating the same amount of electricity.

Fortunately, the release of CO<sub>2</sub> slows with time. Unfortunately, it never becomes insignificant. After five years, the total emissions from these Hydro-Quebec dams and natural gas power plants are about equal; after 10 years, the total release from hydro is "only" two-thirds that of natural gas. Extrapolating for a century, Quebec's hydro is about half as dirty as gas — something of an improvement, but in no way "carbon free."

Right of way

I have not discussed the 300 foot right of way to be cut through the middle of Maine. This will be a about a 3000 acre clear cut that will not be allowed to grown back for at least 40 years. There will be no carbon sequestration in the soil and certainly none in the trees!

Now to the "punch line

So is hydro Quebec really green power? Personally I do not think so. But I have not put the numbers to the information I have presented. I believe the resolve Senator Carson will do this.

In closing I offer the following:

1. I believe what I have presented could be basis of the mass balance analysis identified in the Resolve, which would require the Department of Environmental Protection to review all relevant, verifiable evidence on the total net effect on greenhouse gas emissions from Central Maine Power Company's New England Clean Energy Connect project.
2. DEP must either do the work or be the facilitator.
3. CMP and HQ need to be forth coming with any information required to complete this study. Lack of participation is a clear sign there is something to hide.
4. I realize the project will require revenue. Today I believe I can offer money to assist in completing this project. However, HQ and CMP each needs to match every dollar I may be able to secure.

With that I close and thank the committee for it indulgence. May I answer any questions? (6)

## **Filing with Mass:**

... HQ probably wants to keep building more dams, but they went out of their way to tell Massachusetts they weren't going to have to build anything new to supply this contract. Building new dams is highly controversial and has its own environmental impacts because of the decomposition of all the forest that gets drowned.

## **WHY WOULDN'T HYDRO-QUÉBEC INVEST IN UPGRADES OF EXISTING UNITS TO MEET NECEC SUPPLY OBLIGATIONS?**

Hydro-Québec's application explicitly states that it is not going to invest in upgrades to meet its supply obligations via NECEC:

All of the hydroelectric generation units that comprise the HQ Hydropower Resources are in operation and therefore have already been constructed. Although new hydroelectric generation units may be added to the HQ Hydropower Resources portfolio in the future, no new facilities or capital investments for hydroelectric generation units are required as part of this Proposal (emphasis added, HRE Section 83D Application Form, pp. 62 and 82).

## **WHAT WILL BE THE SOURCE OF ENERGY SUPPLY PROVIDED INTO NEW ENGLAND VIA NECEC?**

NECEC is a joint venture between CMP and two of Hydro-Québec's subsidiaries: Hydro-Québec TransÉnergie ("TransÉnergie") and Hydro Renewable Energy, Inc. ("HRE"). The NECEC proposal would have HRE supply energy across a transmission line sited in Québec (built by TransÉnergie) and continuing into Maine (built by CMP). Both CMP and HRE submitted a completed application form as part of the NECEC Section 83D bid; only CMP's application was provided as part of the hearing before the Maine PUC. The public, non-confidential version of HRE's completed application form to Massachusetts (Exhibit No. JMS-5, "HRE Section 83D Application") makes it very clear that energy supplied via NECEC would come from existing hydroelectric facilities already built and operating in Québec, as illustrated by the following excerpts:

--The HQ Hydropower Resources are already in service and require no further procurement (HRE Section 83D Application., p. 6).

-- This Proposal offers a viable, low cost Clean Energy Generation delivery project with limited risk, because (i) there is no construction risk related to the generation resources which are already in service . . . (p. 4).

-- Because no new hydroelectric generation projects will be required, there will be no incremental environmental impacts from hydroelectric generation as a result of this Proposal (p. 56).1

Therefore, NECEC energy would be supplied from a portfolio of existing hydroelectric facilities already in operation located in Québec, and there would be no new incremental hydroelectric capacity built or upgraded for purposes of producing energy for delivery via NECEC.

When I pushed back we received this:

#### **Hydro Quebec capacity**

**From:** O'Connor, Carolyn [mailto:OConnor.Carolyn@hydro.qc.ca]  
**Sent:** Friday, May 25, 2018 4:56 PM  
**To:** Tartakoff, Daniel  
**Subject:** Follow up from Hydro Quebec

Good Afternoon Daniel,

I am writing at the request of Joel Harrington from Central Maine Power. Joel asked that I provide information to you and the Environment Committee about the generation that will support the energy contract with the Massachusetts utilities. I understand that you specifically asked if any new generation infrastructure would need to be built to supply the contract.

**Hydro Quebec does not need to build any additional generation infrastructure because it is in the final stages of a significant hydropower capacity build out that has added over 5000 MW of new capacity to its system.** The attached slide provides

a snapshot of the timing and amount of that capacity. As you will see, a final 245-MW unit is currently under construction and expected to become operational by 2020.

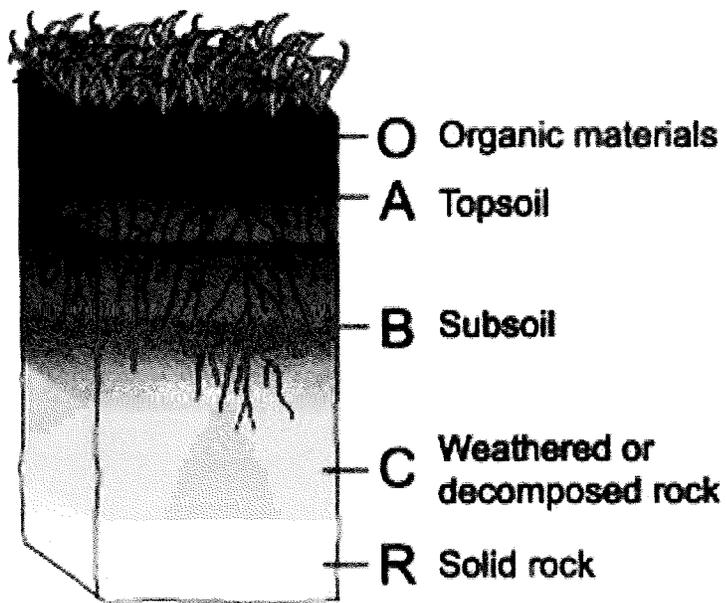
Please do not hesitate to contact me if you have any additional questions about this information.

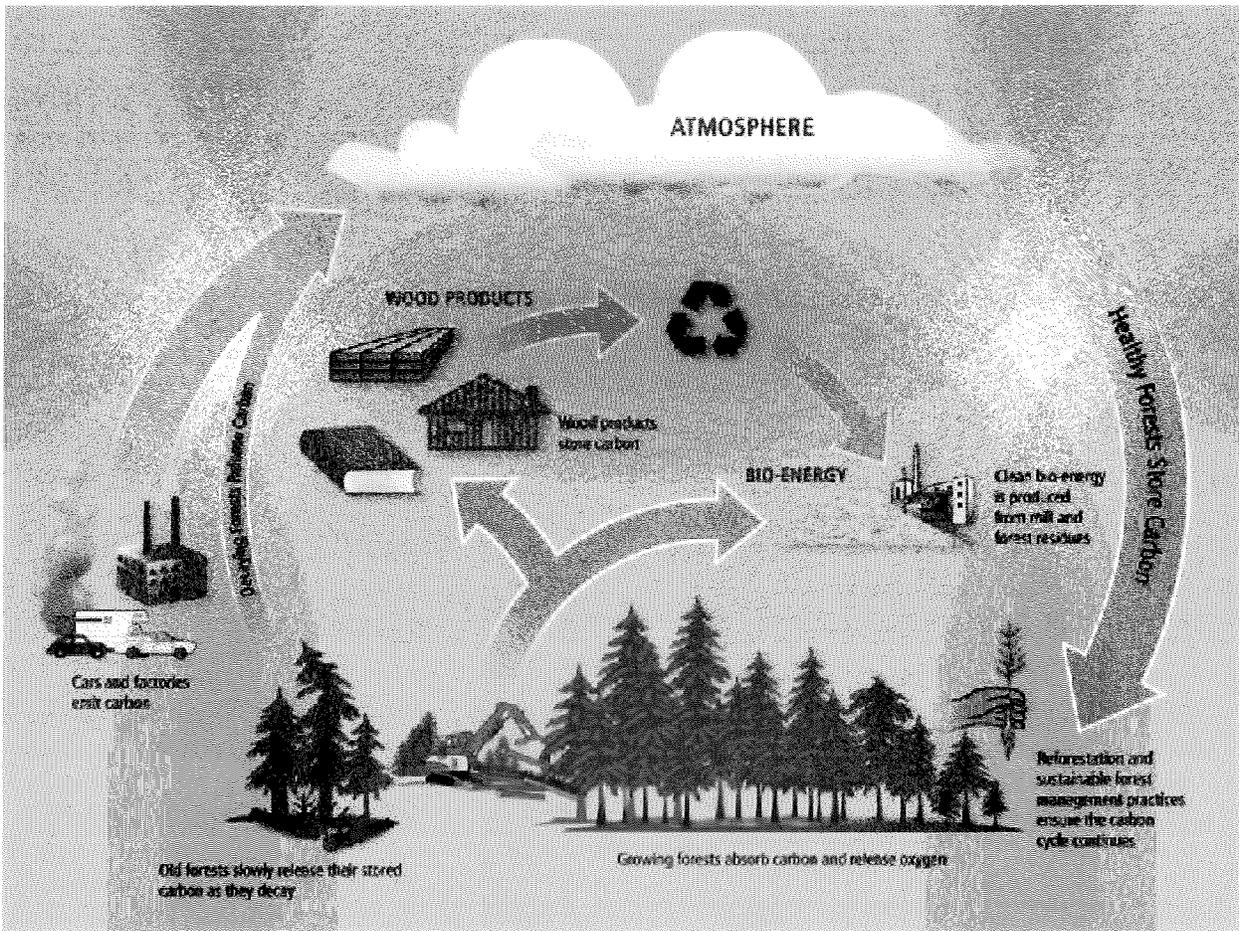
Carolyn O'Connor

External Affairs

HQUS

413-531-4353





**Testimony in Support of LD 640  
by Nick Bennett of  
Natural Resources Council of Maine**

**March 15, 2019**

**(Supplemental Evidence)**



**Testimony in Support of LD 640, “Resolve, To Require a Study of Greenhouse Gas Emissions Reductions from the Proposed Central Maine Power Company Transmission Corridor”**

**By Nick Bennett, Staff Scientist**

**March 15, 2019**

Senator Carson, Representative Tucker, and distinguished members of the Environment and Natural Resources Committee. My name is Nick Bennett, and I am the Staff Scientist at the Natural Resources Council of Maine (NRCM). NRCM is Maine’s largest environmental advocacy group with more than 20,000 members and supporters. I am testifying in strong support of LD 640.

We believe this bill is necessary to determine whether the Central Maine Power (CMP) transmission corridor would result in significant reductions in greenhouse gas emissions.

NRCM is skeptical of CMP’s claims that its proposed corridor (euphemistically called the New England Clean Energy Connect or “NECEC”) through Maine’s North Woods would provide any benefits for the climate. Members of this Committee, and the Maine Legislature as a whole, should be skeptical as well.

The New Hampshire Site Evaluation Committee (SEC) faced this same question of whether a transmission line from Hydro-Quebec (HQ) through New Hampshire to Massachusetts (called “Northern Pass”) would reduce greenhouse gas emissions. After years of study, the SEC concluded that there was no evidence that Northern Pass would have any greenhouse gas benefits. Specifically, it stated:

As to the savings associated with a decrease in carbon emissions, we agree with Counsel for the Public that no actual greenhouse gas emission reductions would be realized if no new source of hydropower is introduced and the power delivered by the Project to New England is simply diverted from Ontario or New York. The record is unclear as to whether the hydropower is new or will be diverted from another region.<sup>1</sup>

In the case of NECEC, the record is now clear that HQ will build no new hydropower facilities for generating electricity to send to Massachusetts. HQ stated the following in its application for a contract with the Massachusetts Department of Public Utilities:

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<sup>1</sup> New Hampshire Site Evaluation Committee. 2018. Decision and Order Denying Application for Certificate of Site and Facility. March 30. P. 161. Accessed at [https://www.nhsec.nh.gov/projects/2015-06/orders-notices/2015-06-2018-03-30\\_order\\_deny\\_app\\_cert\\_site\\_facility.pdf](https://www.nhsec.nh.gov/projects/2015-06/orders-notices/2015-06-2018-03-30_order_deny_app_cert_site_facility.pdf).

This Proposal offers a viable, low cost Clean Energy Generation delivery project with limited risk, because (i) there is no construction risk related to the generation resources which are already in service... ***Because no new hydroelectric generation projects will be required, there will be no incremental environmental impacts from hydroelectric generation as a result of this Proposal.***<sup>2</sup> (emphasis added)

Because HQ has stated that it will build no new generation specifically for NECEC, HQ will have to shift sales of energy to Massachusetts from other customers. Massachusetts ratepayers and Maine's North Woods would pay the price for this HQ electricity shell game.

Just last month, a witness for the Massachusetts Attorney General (AG), Dean M. Murphy, submitted rebuttal testimony in ongoing contract hearings at the Massachusetts Department of Public Utilities echoing our concern that HQ could meet its contractual obligations to NECEC by shifting electricity away from existing HQ customers, such as New York and New Brunswick. Because Massachusetts would pay more for HQ's electricity under the proposed contracts for CMP's corridor, HQ has a substantial incentive to do this. In his initial testimony in December 2018, Mr. Murphy stated that HQ and CMP could meet the requirements of these contracts:

through resource shuffling—reassignment of a fixed amount of clean energy so as to increase the clean energy delivered to a particular destination without increasing the total amount of clean energy overall. For instance, with the new NECEC transmission link, if HQ increased deliveries into New England by the contracts' 9.55 TWh relative to historical New England deliveries, this would achieve full incrementality as defined in the RFP. ***But if HQ accomplished this by reducing its exports to other neighboring regions rather than by increasing clean energy generation overall, then global GHG emissions would not necessarily be reduced. Diverting clean energy from other regions to New England would enable a reduction in fossil generation and emissions within New England, but the reduced deliveries to other regions may need to be replaced by additional fossil generation in those regions. This would effectively substitute fossil generation in other regions for fossil generation in New England, shifting emissions from one region to another, without causing a material decrease...***<sup>3</sup> (emphasis added)

The Massachusetts AG's witness stated that for any project to reduce greenhouse gas emissions it must be "additional," meaning that it provides greenhouse gas emissions reductions that would not occur without the project in question. This is important, because ratepayers should not pay

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<sup>2</sup> HRE Section 83D Request for Proposal Application Form. Pp. 4, 56. Accessible at <https://www.nrcm.org/wp-content/uploads/2019/01/HRERequestforProposal.pdf>.

<sup>3</sup> Testimony of Dean W. Murphy (Brattle Group), Witness for the Massachusetts Attorney General. Petition for approval by the Department of Public Utilities of a long-term contract for procurement of Clean Energy Generation, pursuant to Section 83D of An Act Relative to Green Communities, St. 2008, c.169, as amended by St. 2016, c. 188, § 12, p. 15 of 27, Dec. 21, 2018. See Attachment A.

for a project that is going to happen anyway under business as usual scenarios. Specifically, the AG's witness stated:

For the 83D<sup>4</sup> contracts, or any project, to reliably reduce GHG emissions, they would need to provide clean energy that is "additional." Additionality is a commonly-used concept in the climate change discussions; it refers to emissions reductions that occur because of a proposed action, reductions that would not have occurred otherwise under "business as usual".<sup>5</sup>

The AG's witness has even stated that the process that awarded contracts to CMP and HQ may have been unfair:

I am also concerned about the inclusion of bidders' affiliates in the Evaluation Team. This is generally considered inappropriate because it can bias the evaluation and selection process. Such concerns arose in multiple instances in the 83D evaluation process and were noted by the Independent Evaluator.<sup>6</sup>

I have attached Mr. Murphy's testimony from both February 2019 and December 2018 to my testimony as Attachment A.

NRCM has tried in meetings with representatives of CMP and Avangrid, and throughout the Maine Public Utilities Commission (PUC) process that is evaluating CMP's corridor, to gain information that would verify claims that the corridor would provide "additional" greenhouse gas reductions, as the Massachusetts AG has stated is necessary to guarantee real emissions reductions. CMP and HQ have refused to provide the specific information we have requested, such as:

- What facilities would HQ use to provide power to NECEC and where does power from these facilities currently go?; and
- What power sources would likely be used by existing customers if HQ reduces its exports to them in order to sell to Massachusetts?

These are the type of straightforward questions that HQ and CMP must to answer to prove that NECEC will reduce greenhouse gas emissions. They have refused, which is why passage of LD 640 is necessary. The Maine PUC consultant reports have also not looked at the impacts of NECEC on emissions from current Hydro-Quebec customers that would lose power as a result of NECEC.

NRCM also tried to make greenhouse gas emissions a hearing topic in DEP's Site Law hearing process, currently underway, for the proposed corridor. We described how CMP has made its claims about greenhouse gas reduction the key justification for putting a giant powerline through Maine's North Woods. Therefore, we argued, the topic of climate impacts should be relevant to

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<sup>4</sup> 83D is the section of law that requires Massachusetts to solicit bids for clean energy contracts.

<sup>5</sup> Dean M. Murphy, *Op. Cit.*, p. 15 of 27.

<sup>6</sup> *Ibid.*, P. 4 of 27.

whether DEP grants CMP a Site Law permit. CMP's attorney stated in his objection to NRCM's request to provide expert testimony on greenhouse gas emissions that NRCM:

asserts that CMP relies on the Project's GHG [greenhouse gas] reduction benefits as the Project's "purpose and need," and thus that the opposition intervenors should be able to rebut at the hearing CMP's statements concerning those benefits. In fact, *nowhere has CMP stated that the Project's purpose and need includes GHG emissions reductions.*<sup>7</sup> (emphasis added)

DEP upheld CMP's objections and greenhouse gas emissions will not be a topic of expert testimony in the Site Law hearings.

CMP and HQ have successfully kept their claims of greenhouse gas reductions from regulatory scrutiny in Maine. They may do so in Massachusetts as well. That is why LD 640 is so important. The public and the Legislature have a right to know with certainty whether CMP's transmission corridor would result in real, additional greenhouse gas benefits or not. There should be a clear answer to this before Maine allows CMP to cut a 53-mile gash through Maine's Western Mountains. The PUC and the Department have made clear that they will not seek a definitive answer to this question as part of regulatory processes. Therefore, the Legislature must intervene to ensure that this question is answered—so that lawmakers, Maine people, and Massachusetts ratepayers know if CMP is engaged in false advertising. Substantial evidence shows that CMP is likely engaged in false advertising. This bill makes a highly reasonable request to resolve that question decisively. We urge you to vote Ought to Pass on LD 640.

I would be happy to answer any questions now and at work session.

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<sup>7</sup> 2019. Matthew Mannahan. Letter to Susanne Miller, Maine DEP, Re: NECEC – NRCM, AMC, and TU Request to Include Greenhouse Gas Impacts in Public Hearings. P. 3. January 29. See Attachment B.

**Natural Resources Council of Maine Response to  
March 28, 2019 Memo of Thorn Dickinson to Members of the  
Environmental and Natural Resources Committee**

**April 8, 2019**

**(Supplemental Evidence)**



**To:** Members of the Environment and Natural Resources Committee  
**From:** Nick Bennett, Staff Scientist, Natural Resources Council of Maine (NRCM)  
**Re:** Response to March 28, 2019 memo of Thorn Dickenson on Central Maine Power's (CMP) proposed transmission corridor  
**Date:** April 8, 2019

Dear Senator Carson, Representative Tucker, and distinguished members of the ENR Committee:

I am writing in response to Thorn Dickenson's memo of March 28, 2019 about LD 640, "Resolve, To Require a Study of Greenhouse Gas Emissions Reductions from the Proposed Central Maine Power (CMP) Transmission Corridor."

Mr. Dickenson's memo actually justifies why LD 640 is necessary. In the second paragraph, he cites several studies backing CMP's claim that its proposed transmission corridor would "reduce carbon dioxide emissions in New England by at least 3 million tons per year." **Reducing greenhouse gas emissions in New England is irrelevant if they increase by a corresponding amount in other jurisdictions. Greenhouse gases are a global pollutant, and we must reduce them globally to have an impact on climate change.**

Maine needs LD 640 precisely because CMP and Hydro-Quebec have not provided the information necessary for policymakers and the public to know whether the transmission corridor would reduce *global* carbon emissions, not just *New England* carbon emissions. When asked about the global greenhouse gas impacts of this project, CMP invariably responds with a statement about emissions reductions in New England.

None of the studies that Mr. Dickenson cites in his March 28, 2019 memo examined the impacts of shifting electricity sales from Hydro-Quebec's current customers to Massachusetts. If Hydro-Quebec shifts sales of electricity from current customers, and those customers then need to increase fossil fuel generation in response, there will be no overall reduction in carbon emissions and no benefit to the climate from CMP's transmission corridor.

The expert witness for the Massachusetts Attorney General stated in his testimony in ongoing Massachusetts Department of Public Utilities (DPU) hearings on the contracts for CMP's transmission corridor that CMP and Hydro-Quebec could meet the requirements of the proposed contracts through:

resource shuffling—reassignment of a fixed amount of clean energy so as to increase the clean energy delivered to a particular destination without increasing the total amount of clean energy overall. For instance, with the new NECEC transmission link, if HQ [Hydro-Quebec] increased deliveries into New England by the contracts' 9.55 TWh relative to historical New England deliveries, this would achieve full incrementality as defined in the RFP. ***But if HQ accomplished this by reducing its exports to other neighboring regions rather than by increasing clean energy generation overall, then global GHG emissions would not necessarily be reduced. Diverting clean energy from other regions to New England would enable a***

***reduction in fossil generation and emissions within New England, but the reduced deliveries to other regions may need to be replaced by additional fossil generation in those regions. This would effectively substitute fossil generation in other regions for fossil generation in New England, shifting emissions from one region to another, without causing a material decrease...***<sup>1</sup> (emphasis added)

The Maine Public Utilities Commission (PUC) has not examined whether there will be global greenhouse gas reductions from the corridor project. Its expert, London Economics International, stated in its report to the PUC (which Mr. Dickenson attached to his March 28, 2019 memo) that:

For this analysis, LEI did not monetize the social benefits of the CO2 emissions reduction, ***nor did it analyze the emissions changes in other jurisdictions as a result of NECEC.*** (emphasis added)

Mr. Dickenson also asserts in his memo, with no evidence other than a translated video of a statement from Hydro-Quebec's president, that Hydro-Quebec is spilling water because of a lack of transmission capacity. There is solid evidence that this claim is false. For example, in an op-ed to the *Portland Press Herald*, Massachusetts Institute of Technology professor Bradford Hager stated:

Hydro-Quebec's assertion that it has "wasted" enough water to provide 10 terawatt hours of electricity because it lacks transmission capacity is not backed by documentation. In contrast, a 2017 study of Hydro-Quebec's export capacity found that the limiting factor for total energy output is generation, not transmission capacity.<sup>2</sup> This makes sense – why would Hydro-Quebec pay the high cost of building dams and installing generators and not also provide adequate transmission capability?

Like any hydropower operation, Hydro-Quebec must deal with large variations in rainfall. It is expensive to build enough generation to handle peak flows, and then let the generators stand idle during years that are either dry or have normal rainfall. During unusually wet times, the water is "wasted" because it is more economical to spill water occasionally than to waste generation capacity most of the time. While it may be true that enough water to generate 10 terawatt hours of electricity has been spilled during times of unusually high water, that in no way shows that the rate and timing of this spillage could have been used to fulfill a contract for a more steady supply of power.<sup>3</sup>

Moreover, we know that Hydro-Quebec will provide no additional generation to supply electricity through the CMP corridor to Massachusetts. Hydro-Quebec stated specifically in its response to the Massachusetts Request for Proposal for the CMP contract that:

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<sup>1</sup> Testimony of Dean W. Murphy (Brattle Group), Witness for the Massachusetts Attorney General. Petition for approval by the Department of Public Utilities of a long- term contract for procurement of Clean Energy Generation, pursuant to Section 83D of An Act Relative to Green Communities, St. 2008, c.169, as amended by St. 2016, c. 188, § 12, p. 15 of 27, Dec. 21, 2018. Accessed at <https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/10195907>

<sup>2</sup> ESAI. 2017. Analysis of Greenhouse Gas Emissions Impacts: New Class I Resources vs. Existing Large Hydro. P.1. September. Accessed at <https://granitestatepowerlink.com/wp-content/uploads/2017/10/ESAI-GSPL-CO2-Analysis-9-13-17-FINAL.pdf>.

<sup>3</sup> Bradford M. Hager. 2019. Commentary: Hydro-Quebec offers misleading claims about power's climate impact. *Portland Press Herald*. January 5. Accessed at <https://www.pressherald.com/2019/01/05/commentary-hydro-quebec-offers-misleading-claims-about-their-powers-climate-impact/>

This Proposal offers a viable, low cost Clean Energy Generation delivery project with limited risk, because (i) there is no construction risk related to the generation resources which are already in service... ***Because no new hydroelectric generation projects will be required, there will be no incremental environmental impacts from hydroelectric generation as a result of this Proposal.***<sup>4</sup> (emphasis added)

Hydro-Quebec and CMP have provided no information to the PUC that changes this fact and have offered no evidence, plan, or commitment to ensure that the power that goes through CMP's transmission corridor will come from new generation.

The goal of LD 640 is to ensure that an independent analysis is conducted to determine what the greenhouse gas impacts of the CMP corridor would be. The PUC has not verified whether the project will provide net greenhouse gas benefits. A thorough and independent study can be completed in a timely fashion that will not introduce any delay for CMP. In a recent *Bangor Daily News* article, Maine Department of Environmental Protection spokesperson David Madore stated that DEP will not issue a permit until late October or early November.<sup>5</sup> That means that there will be plenty of time for a consultant to conduct the study that LD 640 would require.

Please feel free to contact me with any questions at (207) 430-0116 or [nbennett@nrcm.org](mailto:nbennett@nrcm.org).

Sincerely,



Nick Bennett  
Staff Scientist

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<sup>4</sup> HRE Section 83D Request for Proposal Application Form. Pp. 4, 56. Accessible at <https://www.nrcm.org/wp-content/uploads/2019/01/HRERequestforProposal.pdf>.

<sup>5</sup> Lori Viligra. 2019. How and when Maine will decide whether to approve permits for CMP's \$1B transmission line. *Bangor Daily News*. April 5. Accessible at: <https://bangordailynews.com/2019/04/05/business/how-and-when-maine-will-decide-whether-to-approve-permits-for-cmps-1b-transmission-line/>.

**Surrebuttal Testimony of Dr. David Publicover**

**April 15, 2019**

**(Supplemental Evidence)**

STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

and  
STATE OF MAINE  
LAND USE PLANNING COMMISSION

IN THE MATTER OF

CENTRAL MAINE POWER COMPANY  
Application for Site Location of Development  
Act permit and Natural Resources Protection  
Act permit for the New England Clean  
Energy Connect (“NECEC”)

L-27625-26- A-N  
L-27625-TB-B-N  
L-27625-2C-C-N  
L-27625-VP-D-N  
L-27625-IW-E-N

SITE LAW CERTIFICATION SLC-9

SUR-REBUTTAL TESTIMONY OF  
GROUP 4 WITNESS DR. DAVID  
PUBLICOVER

April 15, 2019

This testimony is presented in sur-rebuttal to rebuttal testimony presented by CMP witness Kenneth Freye. Specifically, this rebuttal testimony focuses on the issue of the granting of a special exception for the Appalachian Trail P-RR zone. This rebuttal is relevant solely to issues before LUPC.

In response to my testimony that the construction of the new transmission line would have a significant negative effect on the experience of Appalachian Trail hikers, Mr. Freye states (p. 3), “*While Dr. Publicover may believe the Project will degrade the experience of hikers, this opinion is not supported by – and in fact is contradicted by – the visual impact analysis, the Easement, and NPS.*” He also states (p. 2) that my conclusions on the impact of the project on

## SUR-REBUTTAL TESTIMONY OF DAVID PUBLICOVER

AT users are “entirely subjective” and “incorrect”. However, it is Mr. Freye’s arguments that are incorrect.

As described in my pre-filed testimony, the visual impact analysis (Application Chapter 6 Appendix F, Scenic Resources Chart, 1/30/19) rates the visual impact of the project at the Troutdale Road crossing as “Moderate/Strong”, clearly indicating that there will be a negative impact on the scenic quality at this crossing. In addition, the visual impact analysis proposes, and the Applicant has accepted the need for, vegetative screening to mitigate this impact (although I question the effectiveness of this mitigation). Rather than contradicting my conclusion that the project would degrade the experience of AT users as Mr. Freye claims, the visual impact analysis supports it.

Mr. Freye also cites the National Park Service easement, going so far to claim that the impact of the project “cannot be considered unreasonable” because the easement allows for the construction of the proposed transmission line. The primary purpose of the easement was to secure the right of the AT to cross CMP’s property. The easement also recognizes and maintains CMP’s pre-existing rights to construct and maintain transmission lines on their property. The fact that CMP has the legal right to construct the proposed transmission line is relevant to the issue of right, title and interest. However, the fact that CMP has this right does not necessarily mean that this use is consistent with LUPC criteria – that is a separate question. The idea that the fact that the easement allows this use constitutes a determination that LUPC criteria are satisfied is nonsensical and would eliminate the right of LUPC to make this determination on their own.

Mr. Freye also states (p. 3) “*Neither the NPS nor the Appalachian Trail Conservancy (ATC), its agent, has stated that CMP’s proposed use of the Easement area is inconsistent with the purpose of the Easement.*” It would be very difficult for a party to an easement to claim that

## SUR-REBUTTAL TESTIMONY OF DAVID PUBLICOVER

a use which is specifically allowed by an easement was inconsistent with it. However, as I stated above, the fact that the easement allows this use is separate from the question of whether this use is consistent with LUPC criteria.

Finally, Mr. Freye notes the discussions that have been held with MATC and ATC regarding trail relocation and buffering. Mr. Freye states that CMP “would consider” additional plantings “should MATC and ATC so request”. However, an action that *may* be taken if requested by a third party that is not a party to the proceedings cannot be considered mitigation. This vague possibility should be disregarded by LUPC in its determination of whether the impact on the AT has been adequately buffered.

Dated: 4/15/19

by:   
David Publicover

Date: 4/15/19

The above-named David Publicover did personally appear before me and made oath as to the truth of the foregoing sur-rebuttal testimony.



Notary Public

My Commission Expires \_\_\_\_\_

  
DENISE M. HORNE  
Notary Public - New Hampshire  
My Commission Expires April 19, 2022

**Dr. Aram J.K. Calhoun Surrebuttal Testimony**

**April 19, 2019**

**(Supplemental Evidence)**

STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

and

STATE OF MAINE  
LAND USE PLANNING COMMISSION

IN THE MATTER OF

CENTRAL MAINE POWER COMPANY  
Application for Site Location of Development  
Act permit and Natural Resources Protection  
Act permit for the New England Clean Energy  
Connect (“NECEC”)

L-27625-26- A-N  
L-27625-TB-B-N  
L-27625-2C-C-N  
L-27625-VP-D-N  
L-27625-IW-E-N

SITE LAW CERTIFICATION SLC-9

SURREBUTTAL TESTIMONY OF GROUP  
4 WITNESS Dr. ARAM J.K. CALHOUN

April 19, 2019

**Introduction**

This surrebuttal testimony is in response to rebuttal testimony of Gary Emond. Throughout Mr. Emond’s rebuttal, he provides speculation in place of fact. He bases his statements on the survey work completed more than 10 years ago described in the TRC consultant position paper for the Maine Power Reliability Project (MPRP) he attached to his rebuttal testimony (Position Paper on the Presence of Significant Vernal Pools in or Adjacent to Transmission Line Corridors, TRC Engineers, LLC, March 2009). I will provide some of the most glaring examples of his overreaching statements and my responses to them below.

## **Responses to Mr. Emond's unsupported claims about vernal pools**

On page 5 of his testimony Mr. Emond asserts that: "Constructing and maintaining transmission line corridors does not negatively affect vernal pool hydroperiod<sup>1</sup>." Mr. Emond cites no evidence or reference for this statement. TRC did not study hydroperiod in the pools they surveyed. In fact, vernal pool hydrology is very sensitive to disturbances in vegetation cover. We have documented responses through peer-reviewed studies showing complex interactions with both surface and groundwater and amount of light exposure resulting from canopy removal (Cohen et al.2016; Calhoun et al. 2017).

Also on page 5 of his testimony, Mr. Emond asserts that: "The early successional habitat associated with transmission line corridors is permeable to amphibian migration." The TRC position paper Mr. Emond cites has no data on the movement patterns of adult and juvenile amphibians to and from breeding pools to terrestrial activity areas. Research at the University of Maine, through my lab and collaborations with Dr. Malcolm Hunter's lab, has rigorously shown the negative effect clear cuts and scrubby vegetation have on emigration at all life stages for amphibians. On Page 13 of the TRC position paper Mr. Emond cites in his testimony, TRC cites a publication on salamander crossings on Rhode Island golf courses conducted by a colleague of mine as proof that utility rights of way (ROW) will not pose an issue for wood frog and spotted salamander emigration. TRC missed the point of the paper by Montieth and Paton, 2006. The question was: Will salamanders cross golf course if they have to. Yes, some of them, some of the time. However, the take-home message of the paper is this:

Spotted Salamanders exhibited distinct preferences for terrestrial habitats by avoiding fairways and selecting forested uplands and forested wetlands... We documented adult Spotted Salamanders crossing fairways to adjacent forest patches; thus, fairways were not a dispersal barrier. Compared to random points, adult Spotted Salamanders selected cool microhabitats with greater leaf litter depth, more coarse woody debris, more canopy cover, less herbaceous cover,

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<sup>1</sup> Hydroperiod refers to the period of time in which a vernal pool is filled with water

and high densities of vertical and horizontal small mammal burrows. These results suggest that maintaining extensive upland and wetland forested habitats near breeding ponds, with significant amounts of deep leaf litter, coarse woody debris, and high small mammal densities will help sustain Spotted Salamanders (Montieth and Paton 2006).

A cleared ROW, such as the Central Maine Power (CMP) transmission corridor, will not do these things.

Furthermore, other peer-reviewed research contradicts Mr. Emond's assertion that transmission corridors are permeable to amphibian movement. The seminal power line study and edge effect study on wood frogs in Maine was published in highly respected peer-reviewed journals (deMaynadier and Hunter 1998 and 1999; Dr. deMaynadier currently works at the Maine Department of Inland Fisheries and Wildlife (IFW)). Since Mr. Emond did not address the findings of this research, I provide an excerpt from one abstract with the key relevant findings:

For amphibians that breed in temporary pools, juvenile emigration is an important life-history movement linking the aquatic habitat of larvae to the surrounding upland habitats occupied by maturing animals and adults. Among natural populations, the abundance of juveniles and adults of both species [wood frogs and spotted salamanders] declined sharply across a gradient running from relatively mature forest-interior habitat (70-90 yr old) to recently clear cut habitat (2-11 yr old). Similarly, in the **power line experiment**, juvenile wood frogs showed an emigration preference for closed-canopy habitat immediately upon metamorphosis, with the highest capture rates occurring in microhabitats characterized by dense foliage in both the understory and canopy layers (deMaynadier and Hunter 1998).

The key conclusion of the research of deMaynadier and Hunter's work is that edges such as transmission lines and clear cuts are stressors for pool amphibians at all life stages (deMaynadier and Hunter 1999). Multiple stressors lead to lower fitness and more vulnerable populations. Fragmentation through hard or soft edges is unfavorable to these amphibians. Mr. Emond completely ignores this pivotal research.

Also on page 5 of his testimony, Mr. Emond asserts: “The MPRP data strongly indicate that several generations of spotted salamanders have successfully reproduced in these vernal pools. It is therefore logical to conclude that their offspring continue to breed in these pools.”

The TRC position paper has no data on mark-recapture studies over three years that would be needed to document that the offspring continue to breed in these pools (they do not breed every year and most wood frogs breed after their second year). Because spotted salamanders may live beyond a decade, and because they have high natal fidelity, they may continue to breed in suboptimal pools (called ecological traps as they slowly reduce populations) for the rest of their lives. Because there are salamanders (or frogs for that matter) each year is not proof that there is (a) recruitment (referring to the return of juveniles to successfully breed in future years) and (b) enough recruitment to balance ecological traps. Adults are likely to continue to breed in less than ideal pools even if they dry early every year or are now permanent. Low-quality pools, such as those found in ROWs, also intercept animals heading to breed in more suitable habitats. In order to conclude that “Several generations” of spotted salamanders have bred in the pools along the MPRP corridor, it would be necessary to have 30-60 years of data on the pools in question. The TRC study had two years of data and no mark/recapture studies. Mr. Emond’s conclusion that several generations of spotted salamanders are breeding in these pools is completely unsupported by any data.

On page 6 of his testimony Mr. Emond asserts that: “The above findings and proposals demonstrate that maintained transmission line ROWs are compatible with, coexist with, and support healthy and productive vernal pools and do not result in fragmentation.”

This statement is pure conjecture. Demonstration requires research and peer review. The only findings TRC has are survey data and analysis of vegetative cover at the time of the study. What we do know is that wood frogs and ambystomatid salamanders are mature forest specialists; this has been documented in the peer-reviewed literature for decades. Vernal pools are recognized as specialized breeding habitat for

species highly sensitive to open canopies, predation by other amphibians, and by predators associated with edges and within-pool invertebrate predators (e.g. leeches, predaceous diving beetles) in higher densities in more open, longer hydroperiod pools. There are no genetic studies, studies of disease ecology or fitness (as we have done) in the TRC paper. This statement by Mr. Emond should be disregarded. We know that wood frogs and salamanders breed in substandard habitats including roadside ditches, skidder ruts, and ROWs. This does not speak to where their ideal habitat is. *Surviving* is NOT to be confused with *thriving*. The two-year TRC survey is not sufficient to support any conclusions about the health and long-term viability of vernal pool amphibian populations.

On page 8 of his testimony Mr. Emond asserts that: “There is no uncertainty in actual pool numbers and no uncalculated impacts to vernal pools in the project area.”

As a scientist, I am hesitant to speak in absolutes. To state that there is no uncertainty in actual pool numbers is a stretch, but, ultimately, unimportant as the greater issue regarding pool numbers and mitigation is one Mr. Emond has not addressed. The more we study vernal pools, the more questions we have about the animals and all the other functions they provide, particularly with regard to interactions with other ecosystems. To state that there are **no uncalculated impacts** to vernal pools is ignorant of the scientific process and of the complexity of ecological systems. There are almost certainly uncalculated impacts. Here are some of the key ones to consider relevant to this project:

1. Significant vernal pools (SVP) are defined by a political compromise. Using the simple metric of egg mass numbers undervalues the role of all the pools with lesser egg mass numbers that function as landscape elements in a complex system. We know pools contribute broadly to biogeochemical cycles beyond the pool footprint and that other taxa use pools for parts of their life history (e.g., more than 500 species of invertebrates alone and at least half of our amphibian and reptile species)...without counting the egg masses. Unforeseen ripple effects may occur.

2. The role of pool complexes in population dynamics and hydrological functions is not accounted for in assessment of potential ROW impacts.
3. The effects of fragmentation on pool-breeding amphibians has been heavily documented, but CMP has offered no compensation for this effect (Patrick et al, 2008 a,b).
4. The role of sub-standard habitat elements (the pool and the immediate habitat surrounding the pool where traditionally metamorphs may spend their first winter) on overall population health is unknown. We know there is a forest carrying capacity for the terrestrial activity area of pool breeders. As animals exposed to compromised post-breeding habitat (from the working forest and from the ROW) are forced into the remaining optimal habitat, there may be density dependent population effects we cannot predict at this point.
5. Edge effects in our region may influence the microclimate in the forest interior 25 - 35 meters from cleared areas (deMaynadier and Hunter 1999). This is another effect of fragmentation directly impacting prime post-breeding habitat that is not accounted for as an impact in CMP's compensation package.

Also on page 8 of his testimony, Mr. Emond asserts: "The Project ROW will provide valuable vernal pool habitat, as evidenced by the MPRP vernal pool study and will not have an unreasonable impact on significant vernal pools or adverse effects to vernal pool species."

This statement is completely undocumented. The TRC position paper showed no indication that ROWs or any open canopy situations provide valuable vernal pool habitat. They did not study the health and fitness of the animals in the pools.

The TRC study is not a peer-reviewed study. Peer-reviewed studies are subject to scrutiny by one's scientific peers. Only a subset of these studies is published and often after revision or even an addition of further data. That is the highest tier of scientific rigor. Next, there is grey literature that is reviewed by insiders and open to a broader audience as well but can't be rejected per se (e.g. species management

plans, annual reports, etc.). There is a final category that should be considered dark literature that does not receive any level of peer review or public input. The MRPR is dark literature; it is a snapshot survey of vernal pools in existing ROWs. It is *not* a scientific study.

The TRC position paper does not provide a before and after study of what the density or quality of natural pools was before the MPRP ROWs were constructed. There is no baseline of comparison to state that the current pools support a completely recovered and solid population of pool-breeding amphibians and that the pool habitat is “valuable vernal pool habitat.” It lends no insight into amphibian movement patterns, amphibian genetics, amphibian health, amphibian stress levels, amphibian recruitment, amphibian reproductive success rate, or effects on terrestrial activity areas. It provides no data on the microhabitat before and after in terms of density and condition of small mammal burrows, depth and nature of leaf litter, or quality of coarse woody debris. For example, stating that the ROW has burrows, has coarse woody debris, and has leaf litter gives no insight into the quality of these compared to mature forest habitat. It provides no insight on edge effects or other results of fragmentation. The fact that they found more than 600 created pools in the TRC study is alarming to me given what we know about created pools effects on natural pools and breeding amphibians. For example, created pools attract more “weedy” species (as they are often associated with changed hydrology and more open conditions) such as bull and green frogs and invertebrate predators (all prey on larvae and eggs of the pool-breeders and may transfer disease to wood frogs), they often serve as ecological traps intersecting breeders on their way to natal pools, and often suffer high rates of disease mortality owing to higher temperatures (Gahl and Calhoun 2010, Greenspan et al. 2012, Calhoun et al. 2014.)

On page 8 of his testimony, Mr. Emond asserts: “The NECEC will not result in fragmentation or adverse impacts to jurisdictional vernal pools and vernal pool species within or adjacent to the proposed ROW.”

This assertion is unfounded for reasons already provided in response to Mr. Emond's other unsubstantiated inferences. A 53-mile clear cut 150 feet in width going through vernal pools is nothing but fragmentation, and it presents all the unsavory ecological outcomes that come with fragmentation.

**Responses to Mr. Emond's specific objections to statements in my initial testimony**

In addition, Mr. Emond took issue with a number of statements I made in my initial testimony that I will address. On page seven, Mr. Emond objected to my statement that: "It is risky assessing pool quality based on egg mass abundances over short time periods." Mr. Emond appears to have assumed that I was questioning CMP's pool survey methods. However, I was making the larger point that when we developed the metrics for assessing SVPs, we knew that "snapshot" counts would likely underestimate pool usage as breeding populations fluctuate widely based on overwintering conditions and springtime temperature and precipitation patterns. Hence, mitigation only for SVP impacts is likely to underestimate the ecological impacts on the ecological complexes of vernal pool resources.

Also on page seven, Mr. Emond objected to my statement that: "From an ecological perspective, the losses should be well-compensated, not undercompensated, given the level of uncertainty in actual pool numbers and given the level of uncalculated impacts to all vernal pools in the study area." Mr. Emond spends a fair bit of text explaining that the mitigation provided meets the IFW requirements based on the assessed pools. He also states that no pools could possibly have been missed in their survey.

Even if the proposed mitigation meets IFW's minimum requirements for mitigation pool impacts, it is certainly possible a one-year survey, which CMP did for its Site Law application, would miss SVPs. Egg mass numbers in any given pool vary from year to year depending on winter and spring weather conditions. A number of pools in the area of the new corridor are close to the regulatory thresholds of significance, and the significance of some was not able to be determined at the time of the survey. Simply put, it is reasonable to think CMP may have underestimated the number of SVPs in the proposed 53-mile stretch of new corridor. Moreover, the proposed mitigation does not address the role of pool clusters

(groups of three or more pools that share a breeding population and hence often have egg mass numbers below the SVP thresholds; Calhoun et al. 2003) or habitat fragmentation (Patrick et al. 2008 a,b). As I have stated in my initial testimony and in this surrebuttal testimony, the literature is clear that clear cuts and transmission corridors will have a fragmenting effect on pool webs. DEP should require CMP to compensate for these effects, whether or not staff at IFW felt they had the ability to ask for this compensation.

Finally, I take great exception to Mr. Emond's statement on page 9 of his testimony that: "Dr. Calhoun's assertions on potential adverse effects on the NECEC Project on vernal pools are not supported by Maine-specific data or experiences..."

I was clear in my testimony that I have been researching vernal pools for more than two decades in Maine and published more than 60 peer-reviewed articles/books on vernal pools. During this time, I have been active in vernal pool education and outreach in our state, and in organizing national and international workshops on temporary wetlands. My practical experience includes working on wetland policy at all governmental levels and training the next generation of wetland ecologists. On page 15 of the TRC paper that Mr. Emond cites, TRC further states that they likely have the largest vernal pool dataset in Maine. It is clear he did not even scan the literature I provided from my lab, which would make this statement not only ludicrous, but insulting.

In summary, based on my extensive study of and experience with vernal pool ecosystems, I believe that a significant impact on vernal pool communities will result from the proposed project and that we can barely scratch the surface of accounting for the nature and extent of damages that will be incurred. What we can do is avoid or mitigate these damages as fully and responsibly as possible.

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Notarization

I, Aram Calhoun, being first duly sworn, affirm that the above testimony is true and accurate to the best of my knowledge.

Date: April 19, 2019



\_\_\_\_\_  
Aram Calhoun

The above-named Aram Calhoun made affirmation that the above testimony is true and accurate to the best of her knowledge.

Date: April 19, 2019



\_\_\_\_\_  
Susan Ely, Attorney-at-law