

Testimony before the Maine Department of Environmental Protection

By Rob Wood, Energy Policy and Projects Advisor, Andy Cutko, Director of Science, and Bryan Emerson, Mitigation Program Manager, for The Nature Conservancy in Maine

February 26, 2019

Re: Central Maine Power's New England Clean Energy Connect transmission proposal DEP Application: L-27625-26-A-N

Thank you for the opportunity to provide testimony on the proposed Central Maine Power (CMP or "the applicant") New England Clean Energy Connect (NECEC) transmission corridor. This testimony is provided by The Nature Conservancy in Maine staff Rob Wood, Energy Policy and Projects Advisor, Andy Cutko, Director of Science, and Bryan Emerson, Mitigation Program Manager.

The Nature Conservancy ("the Conservancy") is a science-based, global conservation organization dedicated to conserving the lands and waters on which all life depends. The Conservancy has been working in Maine for more than 60 years and is the 12th largest landowner in the state. We own and manage some 300,000 acres, all of which are open to the public for a wide variety of uses, including hiking, hunting, canoeing and fishing. We work across the state to restore rivers and streams, rebuild groundfish populations in the Gulf of Maine, and develop solutions to climate change. In 2017, we paid more than \$450,000 in property taxes statewide.

One of our properties, the Leuthold Forest Preserve, is directly adjacent to the proposed NECEC corridor. The Leuthold Preserve encompasses 16,934 acres of forest land southwest of Jackman, including Number 5 Mountain and the shorelines of seven ponds. Among the wildlife species found in the Leuthold Preserve are pine marten, Bicknell's thrush, gray jay, boreal chickadee, Blackburnian warbler, and blackpoll warbler. The proposed corridor would run along the southern border of our preserve.

In general, when new energy infrastructure is proposed, the Conservancy seeks to ensure that the planned infrastructure is well-sited and that projected impacts are appropriately addressed through the mitigation hierarchy, which includes avoidance, minimization, and compensation for unavoidable impacts. Although our position in this proceeding is "neither for nor against" a

permit being issued, it is our contention that if NECEC is permitted, it must be accompanied by mitigation measures that are commensurate with the projected impacts.

In our testimony below, we address three topics that speak to the siting of the proposed project and the applicant's proposed mitigation actions:

- 1. Wildlife Habitat and Fisheries (Habitat Fragmentation)
- 2. Alternatives Analysis
- 3. Compensation and Mitigation

I. Wildlife Habitat and Fisheries (Habitat Fragmentation)

The Department's second procedural order states that 38 M.R.S. § 480-D (3) and DEP Chapter 375 § 15 are within the scope of the NECEC hearing. DEP Chapter 375 § 15 provides significant latitude for the Department to consider cumulative, landscape-level impacts that extend beyond isolated impacts to specific resources. The relevant Chapter 375 § 15 language is:

"B) Scope of Review. In determining whether the developer has made adequate provision for the protection of wildlife and fisheries, the Department shall consider all relevant evidence to that effect, such as evidence that: ... (2) Proposed alterations and activities will not adversely affect wildlife and fisheries lifecycles." (Emphasis added.)

The phrase "all relevant evidence to that effect" is inclusive of the evidence we present below on the issue of habitat fragmentation. We also believe that the scale and cumulative impact of the habitat fragmentation caused by Segment 1 of the proposed NECEC corridor could potentially "adversely affect wildlife and fisheries lifecycles" for many years into the future.

38 M.R.S. § 480-D (3) provides additional direction to the Department to consider habitat fragmentation. Specifically:

"3. Harm to habitats; fisheries. The activity will not 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." (Emphasis added.)

Although the term "travel corridor" can sometimes refer to MDIFW-mapped deer travel corridors, we interpret the term to be applied here more broadly. 38 M.R.S. § 480-D (3) mentions "significant wildlife habitat" and "travel corridors" separately, suggesting that mapped deer travel corridors fall under the definition of "significant wildlife habitat," and the term "travel corridors" is referring to travel corridors for wildlife more generally. As is detailed below, as well as in the expert witness testimony of Dr. Hunter, there are hundreds of fish and wildlife species that use the forests and waters of the region, and many of these species (in addition to deer) would be affected by the cleared NECEC transmission corridor. Habitat fragmentation can deter movement of specific species and therefore consideration of fragmentation is also warranted under this provision.

The global importance of western Maine

Maine's western forest is unique in the eastern United States for its concentration of wellconnected and climate-resilient wildlife habitat. The Conservancy is concerned about the potential of NECEC Segment 1 to contribute to new and unprecedented fragmentation of this connected and resilient landscape. In a suburban or developed area, we would be less concerned about habitat fragmentation.

TNC Exhibit 1 displays Conservancy data on the connectedness of landscapes in eastern North America. Landscape connectedness is a measure of how easily wildlife may move from one place to another. It is determined through remote imagery and is strongly influenced by the lack of permanent fragmenting features such as paved roads and development. Western Maine is unique in the eastern United States for lands with above-average to high-connectivity scores. Additional details on these factors, including the data used to create Exhibit 1, is available in Anderson et al (2016).¹

TNC Exhibit 2 provides the Conservancy's base data layer for connected and resilient lands in the northern Appalachian region, again demonstrating the concentration of well-connected landscapes in western Maine.²

TNC Exhibit 3 shows unfragmented forest block data from the State of Maine (the proposed NECEC route is superimposed). At more than 500,000 acres, the forest block through which NECEC would traverse is one of the largest unfragmented forest blocks in the region.

Moreover, western Maine is the core of one of the world's last remaining contiguous temperate broadleaf-mixed forests. **TNC Exhibits 4 and 5** show the original extent (pre-colonization-era) and the current extent of broadleaf-mixed forests globally. This work was informed by a global assessment, using remote imagery, of land uses, forest loss and conversion, and forest cover.³ Maine has successfully maintained forest connectivity over time while other regions have become increasingly fragmented. The western Maine mountains remain approximately 97 percent forested, well-above the statewide and national average.⁴

Largely for this reason, the western Maine region supports exceptional biodiversity.⁵ It contains a diverse range of connected forest ecosystems—including floodplain hardwood forests, boreal forests, alpine tundra, ribbed fens—that provide habitat for roughly 140 rare species and the last stronghold for wild native brook trout in the eastern U.S. As shown in TNC Exhibit 6, the

¹ Anderson, M.G., Barnett, A., Clark, M., Prince, J., Olivero Sheldon, A. and Vickery B. 2016. Resilient and Connected Landscapes for Terrestrial Conservation. The Nature Conservancy, Eastern Conservation Science, Eastern Regional Office. Boston, MA.

² Anderson et al. 2016.

³ Haselon, B, Bryant, D., Brown, M and C. Cheeseman. 2014. Assessing Relatively Intact Large Forest Blocks in the Temperate Broadleaf & Mixed Forests Major Habitat Type. The Nature Conservancy, NY.

⁴ New England Forestry Foundation (NEFF) (in press). Landscape scale resource inventory and wildlife habitat assessment for the Mountains of the Dawn. New England Forestry Foundation, Littleton, Massachusetts.

⁵ McMahon, J. 2018. The Environmental Consequences of Forest Fragmentation in the Western Maine Mountains. Occasional Paper No. 2. Maine Mountains Collaborative, Phillips, Maine.

region has also been mapped by the National Audubon Society as a globally important bird area, providing crucial nesting habitat for more than 30 northern woodland songbird species.

Western Maine is expected to be especially effective at maintaining biodiversity as the climate changes. This resilience to climate change is a function of the region's connectedness, as well as its topographical diversity and resulting diversity of landforms, such as wetlands, floodplains, mountaintops, and steep slopes. These diverse landforms create a variety of microclimates (a range of microclimates will allow species to persist by moving to adjacent microclimates as temperatures change). Connected forests allow for greater species movement over time in response to climate change, and western Maine will serve as a key wildlife linkage in the northern Appalachian region.

Habitat fragmentation effects of the proposed NECEC corridor

Habitat fragmentation occurs when continuous habitat is broken into smaller, more isolated patches. Segment 1 of the proposed NECEC corridor would create a new linear fragmenting feature in what is currently a large, mostly unfragmented forest block. We contend that this new fragmentation will have unpredictable implications for the health and viability of wildlife and plant species over time, and that such implications could be significant.

A growing body of research presents findings on the negative impacts of habitat fragmentation, ranging from edge effects (caused by sharp transitions from one habitat to another), to spread of invasive species, to increased pressure from associated uses (such as motorized vehicle use), to changes in species composition and behavior over time from reduced habitat patch sizes. Fragmentation is of particular concern for wildlife species that require mature, closed-canopy forest cover, such as the American marten and many interior forest nesting birds. (Additional information on habitat fragmentation effects is provided in Dr. Hunter's expert witness testimony).

The applicant acknowledges the potential for habitat fragmentation and associated impacts on page 7-23 of the NECEC Site Location of Development Application. The application cites numerous studies and states that, "Transmission line corridors present potential direct impacts, as they may affect species movement, dispersal, density, nesting success and/or survival... For the undeveloped corridor of Segment 1, impact may include fragmentation and creation of new linear edges... Habitat conversion along transmission line corridors results in a loss of habitat types which, in turn, may adversely impact species that are reliant on the original habitat types." *However, the applicant does not propose any measures to avoid, minimize, or compensate for these impacts*.

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⁶ Anderson, M.G., M. Clark, and A. Olivero Sheldon. 2012. *Resilient sites for terrestrial conservation in the Northeast and Mid-Atlantic Region*. The Nature Conservancy, Eastern Conservation Science.

⁷ Anderson, M.G., M. Clark, C.E. Ferree, A. Jospe, and A. Olivero Sheldon. 2013. *Condition of the northeast terrestrial and aquatic habitats: A geospatial analysis and tool set*. The Nature Conservancy, Eastern Conservation Science. Boston, Massachusetts.

⁸ Trombulak, S.C., and R.F. Baldwin (eds.). 2010. Landscape-scale conservation planning. Springer, New York.

⁹ See McMahon, J. 2018 references for a full literature review.

On page 7-25 of the Site Location of Development Application, the applicant suggests several reasons for choosing not to address habitat fragmentation. For example, the applicant states, "Some bird species within the NECEC Project area that may be sensitive to forest fragmentation are the long distance, neotropical migrants that rely on forest interior habitats, but plentiful suitable habitat is available near the NECEC Project areas for these interior forest species." While it is true that suitable habitat would remain for these species regionally, our concern is that the linear nature of the cleared right-of-way, coupled with the edge effects that may extend hundreds of feet into the forest, create a permanent area of unsuitable habitat that is several hundred feet wide and more than 53 miles long.

Furthermore, several of the bird species in question that require interior forest—specifically the wood thrush, Canada warbler, black throated blue warbler, and Blackburnian warbler—have been listed as Species of Greatest Conservation Need in the Maine State Wildlife Action Plan due to regional declines in populations, the importance of Maine in the overall breeding range of the species, or both. ¹⁰ Therefore, special attention is warranted to impacts to these species' habitat.

Additionally, the applicant states, "Most of the terrestrial mammal species that are likely to be found near the proposed transmission line corridors are likewise not dependent on mature forest." This is partly true; however, as noted in Dr. Hunter's testimony, the American marten does require mature forest and is particularly susceptible to forest clearing,¹¹ and the marten is considered an "umbrella species" that requires a large home range.¹² Therefore, it is reasonable to assume that a linear corridor, over time, could have negative effects on marten populations.

Finally, the applicant states, "[Segment 1] is located in an intensively managed timber production area and therefore not likely to significantly alter existing fragmentation." The right-of-way will indeed traverse working forest; however, our concerns about habitat fragmentation stem from the linear and permanent nature of the corridor. While there are long-term forest management roads in proximity to the project, these roads are much narrower (typically 20-40 feet wide) than the proposed transmission line. As a result, sustainable forestry does not fragment large forest blocks in the same manner as a wide, linear corridor, which bisects the landscape. A 53.5-mile corridor would create 107 miles of new habitat edge, while business-as-usual timber harvesting will result in significantly less edge—and, moreover, timber harvesting edge will change over time, whereas edge from a new transmission corridor will likely be permanent.

Ultimately, the Conservancy is most concerned about the unknown and largely unpredictable long-term impact of linear habitat fragmentation across a currently well-connected and resilient landscape. The fragmenting effects of utility corridors are less certain, in general, than the effects of paved highways, whose impacts are more readily studied (e.g., species mortality from

¹⁰ Maine Dept. of Inland Fisheries and Wildlife. 2015. Maine's wildlife action plan. Maine Dept. of Inland Fisheries and Wildlife, Augusta, ME.

¹¹ Legaard K.R., Sader, S.A., and E.M. Simons-Legaard. 2015. Evaluating the impact of abrupt changes in forest policy and management practices on landscape dynamics: analysis of a Landsat image time series in the Atlantic Northern Forest. PLoS ONE 10(6): e0130428. https://doi.org/10.1371/journal.pone.0130428.

¹² Hunter, M.L., Jr., and J. Gibbs. 2007. *Fundamentals of conservation biology* (3rd ed.). Blackwell Publishing. 482 pp.

automobile collisions). Furthermore, there have been few (if any) projects like the proposed NECEC corridor (53.5 miles through well-connected forest), so there have been few opportunities to study long-term impacts. However, there is ample evidence that habitat fragmentation from a variety of fragmenting features can have cumulative, and significant, negative effects on ecosystems over time, as well as ample research on specific species (e.g., American marten) that are averse to forest edges. Moreover, NECEC could potentially allow for new fragmenting features to develop in the future that could exacerbate habitat fragmentation—for example, new roads to access and service the NECEC line or new energy infrastructure development in the additional 150' of the Segment 1 right-of-way.

We recommend that the Department consider the full scope of potential habitat fragmentation impacts in its review of the NECEC application. We also recommend that the Department consider approaches to mitigating habitat fragmentation impacts to the maximum extent practicable. For example:

- 1. Edge effects could be minimized by significantly narrowing the cleared width of the corridor or portions of the corridor. This could be accomplished, for example, by burying additional sections of line and/or using vegetation management techniques to create a narrower, V-shaped corridor (as required for the Bingham Wind Project, DEP application L-25973-24-A-N/L-25973-TG-B-N). Co-location of the corridor or portions of the corridor with the Spencer Road could also reduce new habitat edge.
- 2. Fragmentation could be minimized using additional wildlife travel corridors similar to those proposed in the Segment 1 Deer Wintering Area. The applicant has proposed allowing 25-35' vegetation to grow under the wires in this Deer Wintering Area and has proposed raising pole heights in Roaring Brook Mayfly and Northern Spring Salamander habitat to allow forest canopy under the wires. We recommend that these measures be extended to other portions of the corridor. Using remote imagery and in consultation with other wildlife biologists, the Conservancy has identified nine areas totaling 21 miles within Segment 1 where habitat connectivity is a high priority. These high-priority connectivity areas are shown in **TNC Exhibit 7**.
- 3. Remaining habitat fragmentation could be compensated for through additional land conservation in the affected region (beyond what is proposed as compensation for wetland and other natural resource impacts). Land conservation could minimize the effects of existing habitat fragmentation and/or prevent future fragmentation.

II. Alternatives Analysis

Among the three action alternatives presented in the NRPA Application, the applicant makes a reasonable case that NECEC would be the least damaging. We especially appreciate that the applicant explicitly considers habitat fragmentation in its analysis. On page 2-4, the applicant states:

CMP's analysis identified the total length, in miles, of previously-undeveloped transmission line corridor to be developed and considered. To minimize wildlife habitat

conversion, loss, or fragmentation, the analysis favored transmission line routes that minimized previously undeveloped land requiring clearing and development as a transmission line corridor.

To this point, Alternative 1 was rejected partly based on the projected magnitude of habitat fragmentation impacts (see NRPA Application page 2-10). The applicant also considered total acreage of tree clearing required within the proposed NECEC corridor versus alternatives when conducting its analysis.

We believe the applicant's emphasis on habitat fragmentation in its Alternatives Analysis provides additional rationale for the Department to consider mitigation measures for NECEC's potential habitat fragmentation impacts. In this vein, we believe that it would be reasonable for the Department to request an alternative to be analyzed that includes additional line burial in Segment 1 of the corridor, particularly if line burial were administered in conjunction with alignment of the corridor more closely with the Spencer Road. The Alternatives Analysis already contains an "underground transmission alternative" specific to the Kennebec Gorge; understanding the practicability of underground transmission in Segment 1 of the corridor more generally could be useful in evaluating the proposed NECEC route, especially given that other proposed corridors in northern New England—such as Northern Pass and New England Clean Power Link—have included significant portions of buried line, suggesting that line burial may be logistically, technologically and financially practicable.

Finally, the Conservancy notes that there is an inconsistency in the delineation of the project's "purpose and need." On page 2-1 of the NRPA application, the "purpose and need" is framed in terms of the general purpose to deliver clean energy from Quebec to New England: "The purpose of the NECEC Project is to deliver up to 1,200 MW of Clean Energy Generation from Québec to the New England Control Area1 via a High Voltage Direct Current (HVDC) transmission line, at the lowest cost to ratepayers." On page 2-2, however, the framing shifts from a general purpose to a specific purpose of CMP delivering the energy:

The no-action alternative, however, would not meet the NECEC Project's purpose of allowing CMP to deliver 1,200 MW of the clean energy generation from Quebec to the New England Control Area at the lowest cost to ratepayers. In addition, even if a non-CMP project could be permitted elsewhere and could economically deliver 1,200 MW of clean energy generation from Quebec to the New England Control Area, such a project would not meet CMP's need to deliver that energy, and such a project would have unknown environmental impacts.

On page 2-3, the frame shifts back to a general purpose: "The three HVDC transmission line routes, which have been considered as part of this analysis, would all meet the purpose and need to deliver clean energy generation from Québec to the New England Control Area." This discrepancy also arose in correspondence between the applicant and the Army Corps of

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¹³ DEP Chapter 310, section 5, paragraph A requires, "The 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."

Engineers (March 23, 2018 Response to February 23, 2018 USACE Information Request). Clarification of the purpose and need could be useful in evaluating the application and fully understanding the alternatives analysis.

III. Compensation and Mitigation

The Nature Conservancy administers the Maine Natural Resource Conservation Program (MNRCP) under contract with DEP; therefore, we cannot comment on the applicant's proposed compensation and mitigation for wetland and vernal pool impacts. Below we provide testimony on the applicant's proposed mitigation and compensation for cold water fisheries habitat, as well as additional testimony on mitigation pertaining to habitat fragmentation.

Cold Water Fisheries Habitat

Replacing undersized culverts with Stream Smart culverts, as proposed by the applicant, can improve aquatic habitat connectivity. We appreciate the applicant's recognition of the benefits of Stream Smart culvert projects and their proposed funding for such projects.

However, based on our experience, the proposed funding amount of \$200,000 will not go as far as the applicant estimates. The applicant's Revised Compensation Plan states that this amount will be "sufficient to replace approximately 20-35 culverts on lands outside of CMP's ownership." The cost of one Stream Smart replacement can range from \$50,000 (on logging roads) to several hundred thousand (in high-traffic areas), with an average cost around \$120,000. Therefore, if funds are applied directly, the applicant could expect \$200,000 to cover a maximum of four culvert replacement projects (or eight if matching funds are leveraged). Achieving the desired number of culvert replacements (20-35) would realistically require a minimum commitment of \$1 million, and likely a higher commitment.

The Conservancy also appreciates the applicant's proposal to allow vegetation to grow up to 10 feet in stream buffers (Site Location of Development Application, Exhibit 10-1, pp. 8-9). However, we encourage the applicant to follow MDIFW's recommendation that a "100-foot buffer be maintained along all streams, including perennial, intermittent, and ephemeral streams, within the Project area." (March 15, 2018 MDIFW project review comments, p. 12). The applicant currently proposes riparian buffers within 100 feet of "all perennial streams within the greenfield (Segment 1) portion of the Project, outstanding river segments, or rivers, streams, or brooks containing Threatened or Endangered species... (Site Location of Development Application, Exhibit 10-1, p. 8). At a minimum, more information on the practicability of 100-foot buffers along all streams should be provided.

Extending the scope of the applicant's compensation plan

Page 1 of the applicant's revised Compensation Plan states, "This Plan achieves a *no-net-loss* of ecological functions and values..." (Emphasis added by the applicant.) The Conservancy believes that for no-net-loss of ecological functions and values to be achieved for the proposed project, habitat fragmentation impacts must be addressed alongside impacts to protected natural resources regulated under NRPA.

We believe it is within the Department's discretion to apply the mitigation hierarchy to habitat fragmentation. The Department, in consultation with MDIFW, has required that the applicant propose mitigation for impacts for which mitigation and compensation are not explicitly required in law or regulation, for example impacts to cold water fisheries.

There are approximately 800 species of vertebrate wildlife in Maine and thousands of species of invertebrates, and most of these are present in the region affected by this corridor. While habitat fragmentation affects different species in different ways, many other species would be affected in addition to those specified in the applicant's Compensation Plan.

It is notable that the applicant's proposed mitigation strategies acknowledge that NECEC would impact habitat connectivity. Specifically, the Compensation Plan proposes allowing 25- to 35-foot softwood stands to grow under the lines in the Segment 1 Deer Wintering Area and raising pole heights to allow for greater forest growth in Roaring Brook Mayfly and Northern Spring Salamander habitat. These strategies are certainly a step in the right direction. However, these strategies apply only to a very small portion of the 53.5-mile Segment 1 corridor.

Accounting for habitat edge effects, we estimate that Segment 1 of the proposed NECEC corridor could directly and permanently impact more than 5,000 linear acres of habitat for species that require mature forest. Steps could potentially be taken to avoid, minimize and compensate for this habitat fragmentation impact. As mentioned above, the Conservancy recommends that the Department consider approaches to mitigating habitat fragmentation impacts to the maximum extent practicable. For example:

- Reducing edge effects by significantly narrowing the cleared width of the corridor or
 portions of the corridor, either by burying additional sections of line or changing
 vegetation management practices to narrow the corridor. For example, the Bingham
 Wind Project was required to narrow its transmission corridor in places and to use Vshaped vegetation management (See DEP application L-25973-24-A-N/L-25973-TG-BN, Final Order, page 18). Requiring co-location of the line or portions of the line with the
 Spencer Road would also significantly reduce new habitat edge.
- 2. Minimizing habitat fragmentation by requiring additional wildlife travel corridors. These would be similar to the applicant's proposed areas of increased vegetation height under the wires in the Segment 1 Deer Wintering Area and Roaring Brook Mayfly and Northern Spring Salamander habitat. We recommend that these measures be extended to other sections of corridor identified as high-priority habitat connectivity areas in TNC Exhibit 7.
- 3. Compensating for remaining habitat fragmentation by reducing or preventing fragmentation elsewhere in the affected region through land conservation. Conservation could come in the form of preservation, working forest conservation easements, or a combination of the two. Applying a 8:1 multiplier for the approximately 5,000 affected acres would indicate compensation of approximately 40,000 acres, and applying a 20:1 multiplier would suggest compensation of approximately 100,000 acres.

Thank you again for the opportunity to provide testimony on the proposed NECEC transmission project. We are happy to answer any questions now or in the future.

Dated: 2/26/19

Rob Wood

And ew Cutko

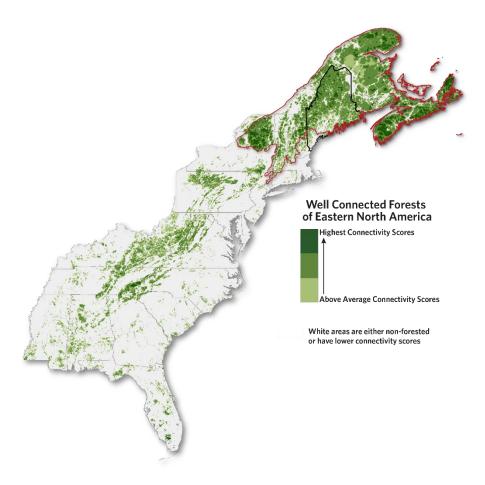
The above-named Rob Wood, Andrew Cutko, and Bryan Emerson did personally appear before me and made oath as to the truth of the foregoing pre-filed testimony.

Notary Public/Attorney at Law

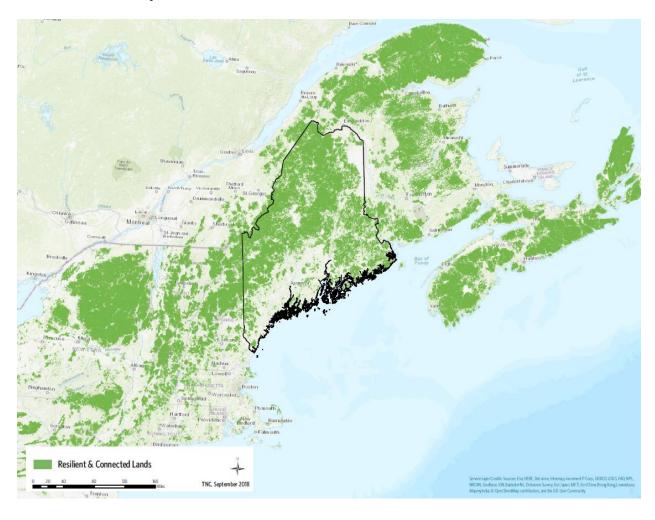
My Commission Expires: _

DANIEL J. GRENIER

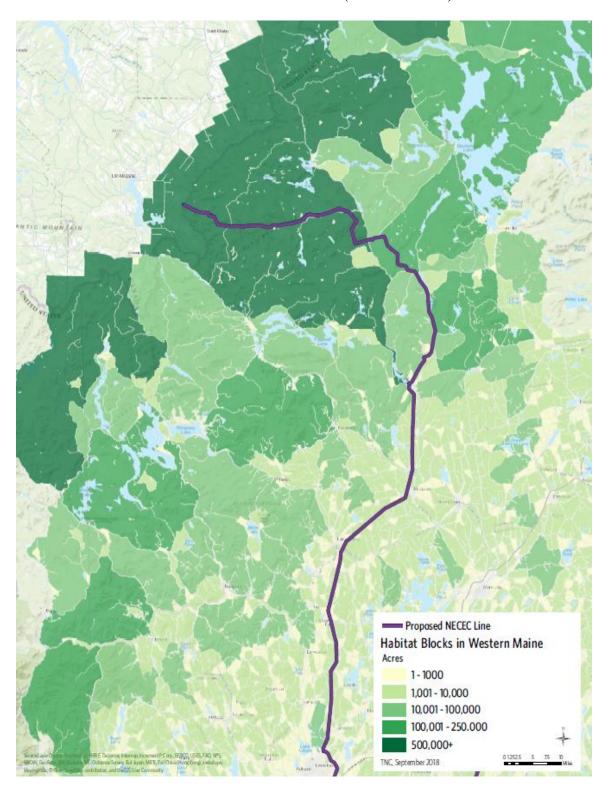
TNC Exhibit 1: Connected and resilient forests of eastern North America (The Nature Conservancy)



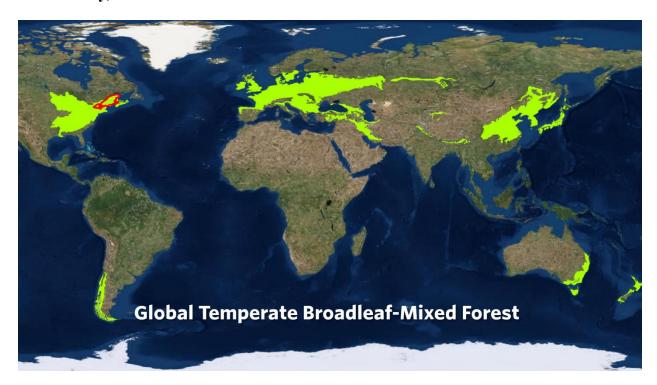
TNC Exhibit 2: Connected and resilient forests of the northern Appalachian region (The Nature Conservancy)



TNC Exhibit 3: Forest blocks in western Maine (State of Maine)



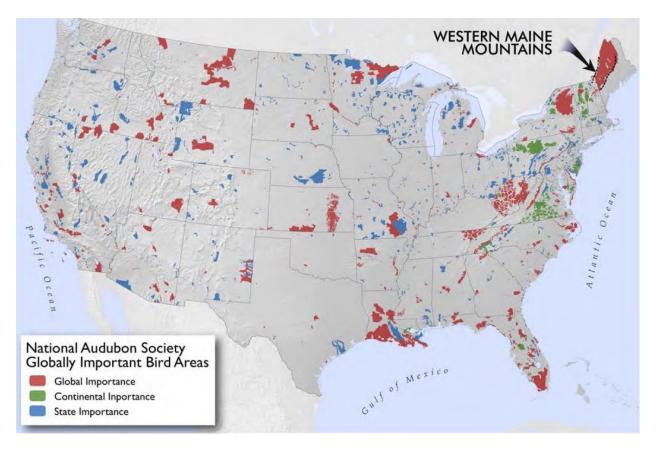
TNC Exhibit 4: Global temperate broadleaf-mixed forests, original extent (The Nature Conservancy)



TNC Exhibit 5: Global temperate broadleaf-mixed forests, current extent (The Nature Conservancy)



TNC Exhibit 6: Globally Important Bird Areas in the United States (National Audubon Society)



TNC Exhibit 7: Priority areas for habitat connectivity in the proposed NECEC corridor (The Nature Conservancy)

