

Note: this document was updated on November 2nd, 2020 to include additional letters at the end of the file that were submitted by September 24th

Dear Maine Climate Council Members,

Enclosed are public comments and letters submitted to the Governor's Office of Policy Innovation and the Future (GOPIF) for your consideration. The messages can be navigated by perusing the bookmarks embedded in the PDF file, and dates of the letters are indicated by "YMMDD" in the bookmark names. The letter originator and general topic of the message is also indicated in the bookmark name.

The messages enclosed generally do not include comments submitted to the working groups but includes those seeking to address the entire Maine Climate Council since the presentation of the working group strategy recommendations in June. Some organizations also collected signatures from the public and shared lists of signatories to their letters.

Also enclosed at the end of the attached PDF are notes from two in-person outdoor forums about the Coastal and Marine and Community Resilience Planning, Public Health, and Emergency Management working group recommendations held by Representative Lydia Blume in Cape Neddick and by Representative Jay McCreight on September 3 and September 10, respectively.

Where appropriate, we have redacted personal contact information from the enclosed messages if that information did not appear to be readily available public information (redacted information appears in black), based on the content of the message. Maine Climate Council members wishing to contact the letter writers may contact GOPIF staff.

Best regards,

Cassandra Rose

Senior Science Analyst & Climate Council Coordinator
Governor's Office of Policy Innovation and the Future
cassandra.rose@maine.gov

207-530-0424

Enclosed:

- 200202 UMaine Middens Letter
- 200508 Maine Association of Planners WG Strategies Feedback
- 200730 DBowen Biomass
- 200909 KCapron Microrail
- 200916 EKeen Freight by Rail
- 200708 Multiorg Letter WG Strategies Feedback
- 200707 SMOore Demonstration Projects
- 200722 Laborers International Union Renewable Fuel Standard
- 200728 JLesko Biomass Production
- 200807 NHathaway Mental Health Resilience

- 200806 Open Space Institute WG Strategies Feedback
- 200814 American Chemistry Council Hydrofluorocarbons
- 200814 DJones National Carbon Pricing
- 200821 Central Maine Power WG Strategies Feedback
- 200821 Historic Preservation Organizations Letter
- 200821 RLyles Electric Vehicles
- 200822 ME Coast Fishermens Association WG Strategies Feedback
- 200822 BBell Climate Plan Organization
- 200831 Wildlands Network WG Strategies Feedback
- 2009092 DWood Electric Vehicle Charging
- 200831 Nature Based Education Consortium Climate K-12 Education
- 200908 NHasenfus National Carbon Fee
- 200909 AWhite Energy and Forests
- 200909 KCapron Microrail, Waste
- 200909 KSutherland Zoning, Retrofitting Infrastructure
- 200908 ME Association of Realtors BIH WG Strategies Feedback
- 200909 ME Municipal Assoc and Towns -Municipal Separate Storm Sewer Systems
- 200910 2000 Mainers Petition Bold Climate Action Plan
- 200915 Multi-business letter WG Strategies Feedback
- 200915 FThiboutot MCC Feedback
- 200915 GrowSmart Maine WG Strategies Feedback
- 200915 KCapron Microrail, Waste, Energy Storage, Nuclear
- 200915 Maine Angels Letter
- 200916 S Le Public Education
- 200921 BParker Food letter
- 200920 DBowen Biomass
- 200921 ME Forest Products Council WG Strategies Feedback
- 200923 Agents for Built Environment BIH Strategies Feedback
- 200923 23-organization letter WG strategies feedback
- 200924 Acadia Center Draft Framework Feedback
- 200924 Greenlots Transportation WG strategies feedback
- 200924 Island Institute Small Communities and WG strategies feedback
- 200924 JGrew Used Electric Vehicles
- 200924 Maine Sea Grant WG strategies feedback
- 200924 ME Ocean and Coastal Acidification Partnership Letter
- 200924 Nature Based Education Consortium and supporters climate education recommendations
- 200924 NEWSME Landfill gas to Renewable Natural Gas
- 200903 Rep Blume In-Person MCC Forum York Event Notes
- 200910 Rep McCreight In-Person MCC Forum Brunswick Event Notes
- 200914 RGordon Transportation WG Strategies
- 200923 Downeast Institute Coastal Marine WG Strategies
- 200924 Renewable Natural Gas Coalition Renewable Fuel Standard
- 200924 Ocean Renewable Power Company Hydrokinetic Energy

FEB 26 2020

Governor

February 20, 2020

Dear Governor Mills,

Thank you for your forward looking and inspiring State of the State address. We were delighted to hear you mention coastal Native American middens as one of the treasures of Maine.

As the founders of the Maine Midden Minders project we are mobilizing citizens to help monitor and document the erosion of shell middens, an important cultural and scientific archive and archaeological of archaeological and environmental information. The program was established with funding from Maine Sea Grant and the Senator George Mitchell Center for Sustainability Solutions at UMaine, in collaboration with the Maine Historic Preservation Commission.

As you know, shell middens host associated artifacts, animal bones, plant remains, and indications of occupation such as hearths and house floors. As sea levels rise and storms increase in intensity and frequency, erosion is sweeping these irreplaceable records of Maine's indigenous peoples and past environments into the sea. We are actively working with conservation organizations, tribal members, school groups and individuals. Our volunteers use simple tools and a dedicated website to record this important information in a specially designed database for use by cultural resource managers and researchers.

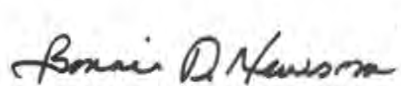
Our work is modeled on a successful citizen science cultural heritage program in Scotland (SCAPE) that involves monitoring, protection and rescue efforts for archaeological sites and other eroding Scottish coastal cultural resources. Perhaps you may see some of these projects during your upcoming trip to Scotland.

Enclosed is a copy of our Midden Minder brochure. We ask that the Maine Climate Council (Coastal and Marine Working Group or Community Resilience Working Group) consider the effects of climate change on cultural resources broadly, and mitigation of sea level rise erosion on coastal cultural resources as part of the planning for community resilience.

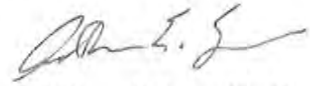
Sincerely,



Alice R. Kelley, Ph.D.
Assoc. Research Professor
Climate Change Institute
Instructor
School of Earth & Climate
Sciences University of Maine
University of Maine



Bonnie Newsom, Ph.D.
Assist. Professor
Department of
Anthropology &
Climate Change Institute
University of Maine



Arthur Spiess, Ph.D.
Senior Archaeologist
Maine Historic
Preservation Comm.
Augusta, Maine



Hannah Pingree, Director
Governor's Office of Policy and Management
State House Station 181
Augusta, ME 04333-0181

May 8, 2020

Dear Director Pingree:

The Maine Association of Planners, or MAP, is a nonprofit organization of professional public, private, and nonprofit planners, citizen volunteers serving on local boards, and Mainers from other professions like attorneys, landscape architects, professors, and developers. Though our membership works in diverse settings, we are all dedicated to enhancing the practice of planning in Maine.

Members of MAP have been following the Climate Council process and have taken note that land use issues are cross-cutting in the Council's work, spanning multiple working groups. As the Council digs in to identify areas of focus for recommendations and further work, MAP would like to offer some summary recommendations for your consideration. These recommendations are endorsed by MAP's Legislative and Policy Committee, and by the Board of Directors. Please distribute these as is helpful within the Climate Council structure and we would be pleased to answer any questions. Thank you for the opportunity to comment, and for the important work of the Maine Climate Council.

Sincerely,

A handwritten signature in black ink, appearing to be "S. Horn", with a long horizontal line extending to the right.

Samantha Horn, President
Maine Association of Planners

Cc: Sarah Curran, GOPIF
Brian Ambrette, GOPIF
Judy East, LUPC
Cassandra Rose, PhD, GOPIF

Maine Association of Planners Recommendations to the Maine Climate Council

Provide Flexible Ways for Communities to Do Climate Action Planning

1. While the federal government and the State have important parts to play, municipalities also have a critical role in helping Maine achieve its GHG emission goals.
2. This does not necessarily need to be done through Growth Management Program comprehensive plans, but the climate action strategies do need to be coordinated with land use, transportation, distributed power generation and grid development, housing, economic development, and related considerations.
3. Nor do municipalities need to do climate mitigation on their own and should be able to choose to participate in pairs or groups of communities or as part of regional plans that include actionable recommendations for each municipality.
4. Title 30-A and/or other relevant State statutes should be amended to require climate change mitigation and resilience planning with the flexibility described in Points #2 and 3.

Strengthen the Role of Regional and State Planning Organizations

5. Meeting the climate challenge will require a greater emphasis on regional planning in terms of renewable energy generation and grid investments, increasing in-state agriculture, linking transportation with village and other compact development, etc. Regional planning organizations need to be significantly more empowered and better funded.
6. State planning assistance programs that support regional and local planning and that serve to synchronize climate action across sectors need to be restored to previous levels with a significant increase in resources.
7. The original Growth Management Act legislation, as well as the former Land & Water Resources Council, should be reviewed as part of considering how to restructure community and regional planning in Maine to meet the climate challenge.

Provide Climate Action Planning Incentives

8. Technical assistance and planning grants need to be made available to inland as well as coastal communities and regional planning organizations for work on climate change mitigation and adaptation.
9. Regulatory incentives, such as Site Location of Development capacity, by which municipalities with strong comprehensive plans and site plan review mechanisms are allowed to approve larger development projects without duplicative DEP review, should also be implemented as incentives for communities to pursue climate action planning.

May 8, 2020

MAINE YOUTH VISION FOR THE MAINE CLIMATE COUNCIL WORKING GROUPS

The undersigned recognize that addressing the climate crisis in a way that will ensure a just and livable future for all will require addressing the root causes of the crisis, and making bold changes. Addressing climate change will require a new economy, a new energy system, a new democracy, and a new relationship to the planet and each other. It will also require rights to food sovereignty, expansion of human rights and rights of indigenous peoples, and solutions for the dignity of all people. Based on the science we learn in school, we know that **we must achieve zero emissions by 2030** in order to ensure this future. For more information and resources on these topics, you are welcome to read this document of our [demands to the Maine Climate Council](#).

Each of these asks to the climate council is applicable and necessary to the work of the working groups. The following is a set of recommendations and criteria that we implore the working groups to put forth to the Maine Climate Council. We must ensure that every Mainer, here today and here a hundred years from now, has a just and livable future. This includes listening to the voices of marginalized and low income communities of Maine, and ensuring that the voices of Maine people are put ahead of corporate influence and profit.

Thank you for your hard work, and please reach out to us with any questions on the proposals.

ENERGY WORKING GROUP

The Energy Working Group must work to ensure that Maine not only decreases its carbon emissions, but does so in an ethical and equitable manner. In order to have our transition to renewable energies be a just one, we must highlight marginalized and frontline communities who have historically been underserved and underrepresented in decision making. Minority, marginalized, low income, and indigenous people should be invited to be a part of the decision making process. In addition, the influence of corporations should be minimized. This is the only way to ensure that their voices of all Mainers are being heard and that they can be reassured that their needs will be met.

The undersigned ask the Energy Working Group to ensure that their strategies include:

1. A Consumer Owned Utility. This is an immediate option that will allow for us to be able to transition and afford to electrify our state. The majority of people in Maine are served by investor owned utilities, and would benefit from the lower cost investments, worker protections, and energy efficiency programs that COUs offer.
2. No new investments or expansions in fossil fuels, *including natural gas*, and recommendations to phase out fossil fuels by 2030.
3. Large expansion of renewable energy. This includes expansion of wind, solar, and other renewables (and excludes nuclear and large hydroelectric), and a green bank for investments in the green energy economy, including a 100 million dollar bond for energy infrastructure investments.

COASTAL AND MARINE WORKING GROUP

The Coastal and Marine Working Group must develop strategies, funds, and programs to protect Maine's coastal communities and workers in the event of environmental deterioration caused by climate change. Maine is economically dependent on its marine businesses and fishing, as well as its tourism, which is largely dependent on our marine environments and coastal communities. Coastal communities are one of Maine's frontline communities and are hit harder and faster by climate change than the rest of the state. Maine's coastal strategies must go beyond serving just our beaches and shoreline communities; they must also work to better our larger ocean waters and wildlife, and the fisherpeople who rely on their health and regularity.

The undersigned ask the Coastal & Marine Working Group to ensure their strategies include:

1. Allocation of funds for the adaptation of current coastal infrastructure, readily available and distributed equitably and considering intrinsic value, risk for future damage, and economic status of the community.
2. Shoreline protections from coastal erosion including vegetative breakwaters and traditional conservation breakwater systems.
3. Policies to ensure a just transition for fisherpeople and others that depend on marine ecosystems, such as job training and compensation for those who will lose their jobs.

TRANSPORTATION WORKING GROUP

The Transportation Working Group must work to make great strides in the improvement of Maine's transportation infrastructure, programs, sales, and education. This is necessary to decrease the state's greenhouse gas emissions from the transportation sector. Maine is greatly subject to urban sprawl, pushing our per capita driving miles above the national average. Major changes must be made by the state in order to alter the transportation technology available, and citizen behavior around transportation. An effort must be made to better help Maine's rural citizens access transportation for their everyday needs, especially those more marginalized citizens who may also be low income, senior citizens, otherly abled, etc.

The undersigned ask the Transportation Working Group to ensure their strategies include:

1. Sign on to the Transportation Climate Initiative (TCI) MOU.
2. Increase in funding for public transit, including having Maine invest 12 dollars per capita/year (like VT), a focus on rapid bus transit to connect Maine's rural communities, an emphasis on expanded transport for rural Mainers, and the creation of a larger rail and high speed rail presence in Maine.
3. Phase out the sale of gas and diesel vehicles by 2025, and eliminate fossil fuel use by 2030.

4. Limit the amount of time Mainers spend using their vehicles, including an expansion of the GoME program or other improvements for ride sharing, and restructuring school bus routes to include access to other citizens. In addition, these strategies should include increasing broadband, expanding safe and protected walking and biking paths, and conscious housing development and planning that takes into account proximity to transportation hubs and workplaces.

BUILDINGS, HOUSING, AND INFRASTRUCTURE WORKING GROUP

The Buildings, Housing and Infrastructure Working Group must guide the state to have higher environmental standards for all future buildings and housing. Perhaps more importantly, the state must also raise their standards for our current standing structures, and work to better the quality of all of our current buildings that are not meeting these standards. Around 80% of the homes that will be standing in 2050 are already built today. These pre-existing homes are most likely the ones that lower income and more marginalized people will be able to afford; thus making it unjust to leave these homes behind. Housing is a major struggle for many people, but especially lower income, marginalized, and young people. Environmental work and justice must include housing aid and justice.

The undersigned ask the Buildings, Housing and Infrastructure Working Group to ensure their strategies include:

1. A phase out of fossil fuels and home heating oil by 2030.
2. An equitable focus on rural and low income residents, including programs for renters and other non-homeowners. This includes the development of more low income housing for Maine residents, and establishing resources for energy audits, programs, for low income residents.
3. A focus on the expansion of deep energy retrofits and other programs for existing buildings, recognizing that a far majority of buildings that will be standing in 2030 and 2050 are already built. These programs should also focus on getting rid of mold, lead, bad roofs, and other barriers to weatherizing homes.

NATURAL AND WORKING LANDS WORKING GROUP

The Natural and Working Lands Working Group must work to protect the quality of Maine's land and natural resources in order to ensure that opportunities and work that rely on our land are still available and plentiful for our future generations. Maine has many working lands and farms, and food accessibility for those who have been hungry should be a cornerstone of any just suggested policies involving Maine's farms. The state should also be aiming to protect natural lands so that their intrinsic and historic value are preserved for our youth and future generations. We should not be treating this land as a place to market new carbon offsets and turn a profit. Our natural lands are lands that were stolen from ingenious nations, and to profit off of them or use them to offset our own emissions would be insincere and unacceptable.

The undersigned ask the Natural and Working Lands Working Group to ensure their strategies include:

1. The preservation of Maine farmland for sustainable agricultural production
2. Provide financial incentives for biodiverse open space
3. Uplift principles of food sovereignty, including access to food as a human right, localized food systems, and a food system in harmony with the natural world.
4. Protections against offset programs. Programs that allow for 'net zero' emissions will not reduce our state emissions to what is necessary: zero emissions by 2030.

COMMUNITY RESILIENCE, PUBLIC HEALTH, AND EMERGENCY MANAGEMENT WORKING GROUP

The Community Resilience, Public Health, and Emergency Management Working Group must work to guide the state in protecting all of Maine's citizens equally and equitably in the case of emergencies and sudden changes. Climate change has already, and will continue to, alter the patterns and regularity of our natural forces and occurrences. It is imperative that new aid and opportunities be offered to everyone, but that those who have been underserved or disadvantaged be prioritized. It is also crucial that the state work to better educate its community members on the changes and potential disasters that have already happened, and will undoubtedly continue due to our climate crisis. Our communities must be well educated on the dangers of climate change if they are to ever know how and when to ask their state for help.

The undersigned ask the Community Resilience, Public Health, and Emergency Management Working Group to ensure their strategies include:

1. Eligibility for all in safety and relief packages (regardless of status or income).
2. Just transition strategies, including job training and compensation for those who will lose their jobs, and strategies that will actively uplift marginalized and at risk communities. This includes worker protections such as overtime expansion, paid family medical leave, and ending forced arbitration.
3. Progressive tax structures.
4. An expansion of education and access, including education training for students and teachers.
5. Expanding broadband, which will allow more people to work and get an education at home.
6. Healthcare for all, with attention to the impact on mental health and physical health, including opportunities for paid sick leave and policies that lower the burden of healthcare costs.
7. Protections and expansions for indigenous sovereignty in Maine. "Native sovereignty, when minimal and unjust, is nothing more than a gag on a community that's been robbed of everything. Insufficient sovereignty of Native American communities is the equivalent of stealing someone's loaf of bread that feeds them for the week, and then giving them back a single slice and saying "you can eat it however you like!"¹ Sovereignty and land will ensure that tribes in

¹ Quote, Billy Yazzie, Navajo Nation (and former Maine Resident)

Maine will be able to not only recover their ways of life and emancipate themselves from colonial oppression, but also best prepare them for the climate crisis.

7/30/20

Hannah Pingree, Director of the Governor's Office of Policy Innovation and the Future

Dear Director Hannah Pingree,

As a member of the public and a small woodlot owner, I attended most NWL Working Group meetings. Expanding biomass energy, suddenly proposed midway through the NWL process, deeply concerned me. I included you in a letter I emailed to all MCC members two weeks ago sharing why I am opposed to it.

A belief widely propagated within MCC claims that biomass energy is carbon neutral. At the 5/6 NWL meeting Dr Ivan Fernandez reported conclusions reached by scientists that biomass energy is in fact a heavy emitter of CO₂, fueled by trees that could otherwise sequester carbon.

Unable to make a profit, Sappi Paper just ended biomass production in Maine. At the 6/5 MCC meeting, Dr Fernandez reported that lengthy research will be needed to establish if biomass can ever be marketable. Previous biomass efforts in Maine required subsidies, as does biomass energy in NH and across Europe today. The Forest Products Industry now says it may need funding for biomass production to counter low fossil fuel prices. Biomass can't seem to survive unless propped up by taxpayers.

Efforts to rescue the forest products industry should never have gone through the MCC process. But here we are. NWL recommends "consideration of" biomass energy. That is, discussion is necessary to make the right decision and must fully include consideration of the climate science and economic realities of biomass. Are you ready to follow through with that? I hope so.

My letter of 2 weeks ago suggests a fundamentally different approach to the industry that might help it, perhaps with state backing, to recover and thrive rather than continue a path of decline.

Thank you so much for reading this,

Douglas M. Bowen
Doug Bowen, [REDACTED]

From: KenCapron1

Sent: Wednesday, September 9, 2020 11:04 AM

To: MaineClimateCouncil <MaineClimateCouncil@maine.gov>

Cc: Burgess, Dan <Dan.Burgess@maine.gov>; Loyzim, Melanie <Melanie.Loyzim@maine.gov>; Pingree, Hannah <Hannah.Pingree@maine.gov>

Subject: The Alternate transportation NetZero solution

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

I have tried numerous ways to provide input to subcommittees and to the MCC in general about the research I am undertaking to develop an entirely new mode of transportation.

MicroRail will provide the same access and agility of any surface mode of transportation. It will do so without producing any carbon emissions and in fact will be more efficient than the Tesla and Prius currently. It will provide the most convenient, most safe and least costly form of transportation available.

Even with that introduction, none of the Climate Council workgroups have shown any interest in this technology. How any sincere climate effort could ignore what could become the future of personal transportation is beyond explanation. The message conveyed is that Maine is either not capable of supporting futuristic science and research, or Maine would be happy if this technology leaves Maine and becomes successful elsewhere with its jobs, beneficial add-on services (fiber optics, cable, phone and such), and 24/7/365 all-weather on-demand door-to-door service.

In closing, all I can say is that you ignore MicroRail at the risk of failing to meet your climate goals. MicroRail guarantees you will meet your climate goals. Early and cheaply.

On another note for consideration by the MCC and especially DEP/BEP, I have seen no mention of the life of solar panels and known hazards of solar waste. To advocate for solar without addressing disposal is simply irresponsible. The same is true for batteries. As with Washington State, we need to ban these products from the waste stream. Period.

[Kenneth A. Capron, ret. CPA, MCSE](#)

Rose, Cassandra

From: Elery Keene
Sent: Wednesday, September 16, 2020 4:21 PM
To: Rose, Cassandra
Cc:
Subject: RE: Maine Climate Council Sept. 16 Meeting Materials

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Thank you. I liked listening to the discussion of what the Maine Climate Council is doing. It is very important. I would like to have heard more about what can be done to reduce the amount of fossil fuel being used for transportation, especially by trucks, which use a lot of fossil fuel. I have an idea that could greatly reduce this if it can be done. It has been tried before. I will describe this below. I would like to get a response from someone who works on the committee that considers transportation matters. Please let me know if that can happen.

I know that transporting freight by railroad trains pulled by diesel locomotives uses only about 20% as much diesel fuel per ton of freight as using big trailer trucks on our highways. But at this time very little freight transportation is done on railroads. I think we should do more. Part of the problem is that most factories and warehouses now are not located next to a railroad siding track, as they used to be 60 years ago and more. It is a nuisance to have to load freight onto a truck, drive to a place to load it onto a railroad freight car, send it close to where it needs to go, then load it onto another truck to take it to its destination. It is easier to just load it onto a truck and take it to the destination.

But several years ago a friend of mine came up with a good idea. I will explain.

Load freight that needs to be sent a far distance into the trailer body of a diesel freight truck. Take it to a place where the trailer can be loaded onto a freight train flat car. Special equipment is needed to do this. Several trailers can be loaded onto one flat car. A diesel locomotive can haul several of these loaded flat cars to a far destination, fairly close to where the freight needs to go. The trailer bodies can be unloaded from the flat cars and hauled by a diesel truck to their destinations, some distance from the railroad tracks. This method would use a lot less fossil fuel for delivery. This reduced the cost of transportation.

This was done for a while. I think products produced by Huhtamaki in Fairfield and Sappi in Skowhegan were loaded onto flat cars at the Waterville railroad yards for delivery for places out of the state of Maine. I think this was also happening at a place in Auburn and probably at Portland also.

But after a couple of years or so it stopped. I went to the office of the Maine Central railroad to ask why it stopped. They told me that it worked well to move freight from Maine to places far away, but not enough freight was being sent from far away to destinations in Maine. So they had to haul flat cars with empty truck trailers back to Maine for the purpose of exporting freight in this way. This made it cost too much money as compared to letting the truck trailers be hauled by diesel trucks. So apparently our manufacturing companies were sending more products out of state than they were bringing from out of state to manufacture them.

I thought that other companies, such as large retail stores that sold groceries, and companies that need other products to manufacture things could use those trailers when they came back to Maine, instead of using trailer trucks on the roads to get them. But apparently this was not happening.

It seems to me that it should be possible to develop a system to help business owners understand that they can do this. I think the Maine Central railroad should have done this, in cooperation with other railroads that they connect with to bring freight into and out of Maine. But maybe the state needs to help them do it. This could significantly reduce the amount of fossil fuel used in Maine and other states also. This should be a national system, not just a Maine system. Has the Maine Climate Council thought about this possibility? Maybe it has been analyzed and not thought to be a good enough idea. If so, I would like to know about this analysis. It seems like a good idea to me.

Elery KeeneP

July 8, 2020

Maine Climate Council
Governor's Office of Policy Innovation and the Future
181 State House Station
Augusta, Maine 04333

Dear Members of the Maine Climate Council:

Thank you for the time, attention, and energy you have devoted to the Maine Climate Council. Like you, we listened to the Working Groups' presentations of their recommendations with great interest, attention, and pride. Clearly, Maine's commitment to climate action is strong.

As environmental, social justice, public health, and community organizations that regularly research, analyze, and advocate for addressing the impacts of climate change, reducing carbon pollution, and equitably transitioning our economy to clean, renewable energy, we recognize the challenge you face in reviewing and evaluating the large volume of information, data, recommendations, and big ideas that have been presented to you.

Using our collective climate policy knowledge and shared commitment to making Maine a better place for all people, we have identified 13 strategy recommendations, pulled from across the Working Groups, which we believe:

- are essential to meeting Maine's greenhouse gas emission reduction requirements of at least 45% by 2030 and at least 80% by 2050;
- will create and retain high-quality jobs that provide a living wage and secure benefits for Maine families;
- provide public health and ecological benefits; and
- show the most promise for addressing existing structural inequities, including racial and ethnic disparities, and can be equitably accessed by all to maximize long-term economic growth and prosperity.

The Working Groups have provided the Council with more than 650 pages of materials, including 35 strategies and more than 300 strategy-related actions and sub-actions. Many of these proposals meet the criteria above, but upon initial review, we have assessed the 13 strategies identified in the following pages as being the best of the best. Overall, we are impressed by the vast majority of Working Group recommendations and see within this impressive body of work the many threads of action that must be taken to achieve our climate requirements. But there is still work to be done.

In general, we are concerned that the recommendations, as drafted by the Working Groups, are not actionable, measurable, and ambitious enough to move expeditiously and effectively to optimize Maine's clean energy and climate action opportunities while avoiding what scientists have determined are likely to be the worst impacts of climate change. As such, we propose modifications to some of the Working Group strategies to add metrics and mechanisms that begin to achieve the clarity and strength we would like to see the Climate Council include in Maine's updated Climate Action Plan. Regarding the Transportation Working Group, we have provided a revised recommendation that we believe holds strong potential to meet the requirement of reducing emissions from the transportation sector, the largest source of Maine's greenhouse gas emissions.

This document provides an initial assessment and we reserve final judgment on the strategies until the details of how they will be implemented are further fleshed out. Our organizations are committed to achieving a just, clean energy and climate adaptation transition that leaves no Maine person behind and creates opportunity, resiliency, and security across all ages, races, incomes, and geographies as we collectively face the challenges and opportunities created by a changing climate.

Our organizations look forward to remaining engaged and helpful as the Climate Council continues its vital work to develop a plan to adequately address the causes and consequences of climate change in Maine.

Thank you for committing your time, expertise, and important perspectives to this critical effort.

Signed,

350 Maine
A Climate to Thrive
Acadia Center
Appalachian Mountain Club
Atlantic Salmon Federation
Center for an Ecology-Based Economy
Community Action Works
Conservation Law Foundation
Environment Maine
Environmental Health Strategy Center
Islesboro Islands Trust
Maine Association of Conservation Commissions
Maine Audubon
Maine Conservation Alliance
Maine Council of Churches
Maine People's Alliance
Maine Unitarian Universalist State Advocacy Network
Natural Resources Council of Maine
Physicians for Social Responsibility Maine Chapter
RESTORE: The North Woods
Sierra Club Maine
Southern Maine Conservation Collaborative
Trout Unlimited
Union of Concerned Scientists

Priority Climate Action Plan Strategy Recommendations

The recommendations listed below are based on strategies submitted by the Working Groups, but in some cases have been revised to be more actionable, measurable, or ambitious. We encourage the Maine Climate Council to consider these versions of the recommendations as you develop a new Maine Climate Action Plan to meet the statutory requirements for reducing greenhouse gas emissions through 2050.

Energy Working Group Strategies

- 1. Develop and implement new financing options by 2023 necessary to meet Maine's clean energy and emission reduction targets and requirements¹.**
 - a. Create the mechanisms or entities necessary to finance Maine's energy system effectively, through and including energy end-uses, and authorize their initial capitalization.
 - *Maine Green Bank*: Create a Maine Green Bank, based on the successful experience in other states and building on existing clean energy financing programs in Maine. A green bank would leverage significant, low cost private sector capital to finance clean energy projects and infrastructure.
 - *Increased Revenue Bonding*: Enable and encourage state and local revenue bonding to compete for any and all energy infrastructure investments that have a material impact on reducing carbon dioxide emissions. Remove legal impediments to the use of this low-cost, tax-exempt capital, enabling existing state and local entities to accelerate the pace and reduce the cost of new clean energy investments.
 - b. Pursue further investigation of structural approaches to reducing clean energy infrastructure costs in Maine, including but not limited to:
 - Consumer ownership and control of all, or the greater portion of, Maine's power delivery systems (e.g., as explored in 2019 via LD 1646) to enable less-costly financing of related infrastructure, as well as to refocus planning and investment priorities; and
 - Establishment of a "Maine Power Authority" as a quasi-independent governmental entity to serve as the primary energy planning and financing authority in the state.
 - c. Investigate the potential of multistate or national carbon pricing beyond the electric power sector. Economists generally believe that carbon pricing will be needed to address climate change; many also suggest that carbon prices need to increase over time and be accompanied by other complementary policies and measures.
- 2. Ensure adequate affordable clean energy supply to meet Maine's 100% RPS requirement and any increased load through the development of centralized generating resources, distributed energy resources, and other measures².**

¹ See Energy Working Group Strategy #1

² See Energy Working Group Strategy #5

Virtually all foreseeable new large-scale renewable generation development will require **power purchase agreements**. The energy storage, ocean energy, distributed generation resources, and infrastructure improvements and actions also delineated in this strategy are likely to be necessary to fulfill Maine's RPS requirements.

Transportation Working Group Strategies

- 1. Expand electrification of light-duty vehicles to 70% of sales by 2030, with interim milestones and a dedicated investment in associated infrastructure³.**

The Climate Action Plan should require a significant investment in electrification infrastructure and set clear, science- and modelling-based targets for the state in order to: ensure that policies developed and implemented to advance electrification are striving toward the same objective; enable clear metrics and evaluation of progress; send strong market signals and establish certainty in the marketplace.

- 2. Continue to participate in the TCI design and development conversations, including aspects of just revenue sharing, oversight, and actual emissions reductions⁴.**

Maine's TCI representatives should push for the TCI framework to ensure significant emission reductions and require equitable and targeted distribution of revenue. If the final model rule meets those thresholds, then Maine should join the other TCI states by signing the final MOU and implementing the program in 2022, allocating revenue to strategies that expand and enhance access to clean transportation options particularly in Maine's rural, underserved, and low-income communities while investing in the state's economy and creating and retaining high-quality jobs.

TCI proposes an overarching framework to reduce emissions from transportation fuels, and create a revenue stream that can be invested in the emission reduction strategies recommended by the Transportation Working Group, which are otherwise currently unfunded. Importantly, states will have discretion to expend the funds on transportation solutions targeted to help specific communities invest in their transportation-related priorities and reduce transportation-related pollution, including Maine's rural and low-income communities. A minimum percentage of TCI proceeds should be dedicated for investment to benefit rural and low-income communities, with input from those communities.

- 3. Expand public transportation options and access, particularly for rural and low and moderate-income communities, and increase public transportation funding to average at least \$5 per capita by 2025 to assist in supporting this expansion⁵.**

Public transportation is essential for work and other activities for persons who cannot afford or do not have access to an automobile. Public transportation also helps to reduce road congestion and travel times, air pollution, and energy and oil consumption, all of

³ See Transportation Working Group Strategy #1

⁴ See Transportation Working Group Strategy #3

⁵ See Transportation Working Group Strategy #5

which benefit both riders and non-riders alike. Maine's public transportation system is woefully underfunded and inadequate. Maine currently invests only 86 cents per person on public transportation, while our neighbors invest considerably more. Vermont, for instance, invests 12 dollars per resident.

Buildings, Infrastructure and Housing Working Group Strategies

1. Implement actions by 2022 that begin to markedly reduce energy burdens and create jobs through energy-efficient affordable homes⁶.

Maine can make its housing more affordable, safe, and healthy for all people—especially low- and moderate-income households—through a comprehensive approach to new and existing homes. This approach would help the State address its affordable housing shortage, reduce the energy burden on vulnerable households, and put Mainers back to work in construction and forest products/manufacturing, and should include:

- ramping up construction of ultra-efficient and highly cost-effective new affordable housing, through multifamily housing financed through MaineHousing;
- a new initiative to build zero-energy manufactured homes right here in Maine to replace aging, inefficient mobile homes;
- dramatically accelerating the successful low-income weatherization programs to tighten up leaky homes—which are also often unsafe and unhealthy; and
- increasing access to financing for home improvements.

These efforts can be paid for by fixing the loophole by which Maine uses an energy efficiency surcharge for electricity and natural gas but not heating oil. To advance sufficiently, this loophole should be fixed by 2022.

2. Significantly accelerate by 2022 Maine's transition to heating and cooling with clean, cost-effective, Maine-made energy⁷.

Maine can reduce its energy burden by transitioning to clean, cost-effective heating and cooling systems that rely on Maine-made renewable electricity. **Beneficial electrification** will accelerate the use of both new and market-ready technologies to replace high-carbon fossil fuels with cleaner electricity while lowering home and business owners' heating and cooling bills. This transition is already underway: Maine leads the region in adoption of high-efficiency electric heat pumps, and our Renewable Portfolio Standard requires the state's relatively clean electricity supply to become more renewable over time. To accelerate this transition, Maine should:

- ramp up support for heat pump adoption;
- require progressively tighter standards for space- and water-heating systems in residential and commercial buildings, and
- develop standards to ensure that those systems are installed and serviced with consistent quality control and safety.

In other words, we must change our way of producing and using electricity in a manner that embraces renewable, clean energy. This strategy is highly scalable, technically and

⁶ See Buildings, Infrastructure and Housing Working Group Strategies #1 and #3

⁷ See Buildings, Infrastructure and Housing Working Group Strategy #2

economically feasible, and has the potential to achieve very significant greenhouse gas emission reductions.

Natural and Working Lands Working Group Strategies

- 1. Create a dedicated, sustained public funding source by 2022 that generates at least \$15 million annually to conserve working forest, agricultural, and ecologically significant lands and results in increased carbon storage, avoided greenhouse gas emissions, enhanced climate adaptation resilience, and a more robust natural resource economy⁸.**

Farms, forests, wetlands, and other natural areas store vast amounts of carbon, have the capacity to sequester even more, and provide essential community resources like clean drinking water, as well as support a substantial portion of Maine's workforce, primarily in rural areas of the state. Dedicated funding will bring additional stability to Maine's forestry, agricultural, and outdoor recreation and tourism sectors, which are the economic backbone of many rural communities. Increased investment in conservation activities will also make working lands more affordable for agricultural producers, especially for younger, beginning, and New Mainers, and expand access to recreation opportunities for all Maine people, resulting in positive public health outcomes. This effort may also be coupled with less-traditional partners, like low-income housing and public health, in recognition of their collective contribution to the vitality of Maine people.

- 2. Vigorously support climate-friendly land management practices and infrastructure development on public and private lands to increase carbon storage, build resilience, reduce emissions, and keep farms as farms and forests as forests⁹.**

Maine's forests and working lands currently capture approximately 75% of the state's greenhouse gas emissions. Financial incentives can help landowners and managers offset the start-up costs associated with adopting practices that could increase that percentage while ensuring the resilience of these important rural economic sectors and realizing a host of other co-benefits:

- Incentivizing sustainable forest management by creating a **Maine forest carbon program**, for example, will send more wood to market, while keeping ecologically significant lands intact, particularly in southern and western Maine where development pressure is high.
- Expanding the state's **Ecological Reserve System** will improve resiliency for species and habitats that are vulnerable to climate change.

Investment is also needed for infrastructure development to reduce emissions and build climate resilience. Climate-friendly agricultural management practices increase the profitability of farms, enabling them to continue to be important contributors to both rural economies and to food security by providing access to healthy local food. Increasing support to improve aquatic connectivity will reduce flooding damage and support habitat functionality, leading to a more resilient relationship between infrastructure and ecosystem.

⁸ See Natural and Working Lands Working Group strategy #1

⁹ See Natural and Working Lands Working Group strategies #2 and #4

Coastal and Marine Working Group Strategies

- 1. Further enhance mitigation by 2022 by conserving and restoring coastal habitats that naturally store carbon (blue carbon optimization)¹⁰.**

Healthy coastal and marine areas provide vital benefits to the community, ecosystem, and economy, while performing long-term carbon storage and sequestration of greenhouse gases (GHGs) and ameliorating coastal acidification. Essential strategy components include inventorying Maine's blue carbon resources to inform baseline estimates of current storage and sequestration, tracking changes in sequestration/emissions over time, and increasing conservation and restoration of coastal ecosystems to optimize carbon burial and obtain climate mitigation benefits.

- 2. More vigorously promote by 2022 climate-adaptive ecosystem planning and management using nature-based solutions¹¹.**

This ecosystem-based adaptation strategy identifies actions that leverage a range of tools (regulatory, voluntary, incentive-based, best management practice) that promote coastal community and ecosystem resiliency through adapting to changing environmental conditions, harnessing our natural resources, and protecting jobs, infrastructure, and biodiversity.

Community Resilience Planning, Public Health, and Emergency Management Working Group Strategies

- 1. Markedly improve by 2022 the delivery (system) of technical assistance on resilience to municipalities¹².**

The magnitude of the impacts of climate change is significant, yet specific effects vary across the state. Some localities do not understand their current and future vulnerabilities, nor do they have the capacity to develop a resilience response. Others have a better understanding of their vulnerabilities but lack access to assistance. Indeed, about 75% of coastal communities have completed vulnerability assessments yet they often lack the capacity to secure funding or manage their response. This strategy establishes the institutional infrastructure at the state and regional levels to support resilience in all municipalities. It stresses the importance of using existing governance structures, providing access to the most recent data and tools, and tailoring assistance to municipal needs and capacity.

- 2. Establish by 2022 funding mechanisms to achieve resilience¹³.**

¹⁰ See Coastal and Marine Working Group Strategy #3

¹¹ See Coastal and Marine Working Group Strategy #4

¹² See Community Resilience Planning, Public Health, and Emergency Management Working Group Strategy #2

¹³ See Community Resilience Planning, Public Health, and Emergency Management Working Group Strategy #3

Funding resilience to the impacts of climate change will be expensive. Such investments in resilience, however, will cost less than responding to repetitive and increasing climate impacts that compound virtually all contemporary social problems. The profound economic disruption posed by the COVID-19 pandemic will demand even greater efficiency than was already obvious at the launch of the Maine Climate Council's work. Thus, the actions recommended in this strategy call for investment of dollars but especially for coordination, efficiency, collaboration, and incentivizing behavior.

The strategy recommends Executive Orders to establish cabinet-level coordination across state agencies so that funding priorities are consistent and can reach communities and regional organizations that are ready to implement adaptation solutions. The strategy also recommends assembly and maintenance of a clearinghouse of funding options from public and private sources and the development of, and participation in, creative financing ideas within and beyond Maine's border. A possible key funding mechanism would be the establishment of a non-disaster related **"State Infrastructure Climate Adaptation Fund"** that would allow municipalities and state agencies to access the funds needed to supplement the often-excessive local cost shares associated with adaptation projects.

Creation of this fund emphasizes the "whole-community" approach by emphasizing financial support across the federal, state, and local levels. With both a backlog of \$325 million in mitigation projects (listed across the sixteen County Hazard Mitigation Plans) and major state infrastructure at risk of changing climate conditions, there is a desperate need to address the current "gap" that restricts a large majority of these projects from moving forward.

Date: July 7, 2020
To: Maine Climate Council Energy Working Group
From: Steven A. Moore, Bartlett Cocke Regents Professor Emeritus,
The University of Texas

Re: **A Recommendation for Action**

With great interest, I participated in the Quarterly Reports of the seven working groups on June 17-18. I congratulate all working groups for succinctly summarizing their hard work over the past year. The results are impressive and have stimulated this response:

Below, I have first summarized key findings from the presentations. Second, I recommend a program of demonstration projects which can empirically test finding and goals through action:

- 1) **Key findings that easily cohere:** Although the preliminary conclusions stated in this section are your own, and thus very familiar to you, I rephrase them as cohering grounds for action:
 - a. The **health equity** impacts of climate change and the Coronavirus Pandemic are related - both threaten vulnerable populations most.
 - b. All **infrastructure systems** operate inter-dependently, but are managed in-dependently. To be resilient they require coordination through transformation of stakeholder relationships.
 - c. **Publicly funded projects** can be examples of social, technical and ecological innovation that inform regulation.
 - d. Although modernizing the electrical grid will be essential, **distributed energy production** can both reduce the cost of doing so and make the grid more resilient.
 - e. Reduction of vehicle miles traveled (VMT), transportation electrification and universal internet access are related **as rural planning goals**.
 - f. **Diversification of energy sources** (based on geographically distributed resources such as offshore and mountain wind; biofuels; combined heat and power; ground-source heat pumps and energy storage) contributes to system resilience.
 - g. **State-owned energy** production and distribution can best serve diverse stakeholder interests.
 - h. **Energy investment practices** are typically in a single sector. A “Maine Green Bank” can help overcome sector isolation and enable “a whole community approach” to the planning and operation of infrastructures. Authority follows cash-flow.
- 2) **Demonstration projects** can test and continuously update the key findings and goals stated above through innovative financing, construction, data collection and analysis. I recommend the following:
 - a. The Maine Climate Council and The Maine Legislature would form a **Demonstration Project Action Committee (DPAC)**.

- b. The DCPA would identify up to twelve **biophysical regions** of the state as sites of social, technical and ecological demonstration. The DCPA would also appoint a paid Director for each region.
- c. Each biophysical region would, in turn, assemble an interdisciplinary design team (not necessarily all being residents of the region) to define a **mixed-use building project** that might, for example, include a school, a library, affordable housing, a town office, a town garage, public garden, composting center and an energy generator). The project would be designed to demonstrate specific MCC goals as they are adopted citizens of the region. The interdisciplinary design team would necessarily include, but not be limited to:
 - i. The DCPA regional Director (who would manage and direct the project).
 - ii. Five citizens (representing diverse interests)
 - iii. A representative of each institutional building user (to inform program requirements).
 - iv. An ecologist (to assess ecological impact)
 - v. A social scientist (to assess social impact)
 - vi. A financial analyst (to assess financial impact and coordinate multiple funding sources)
 - vii. Selected engineering, architectural and landscape architecture professionals (to design the project as directed by the team)
- d. The DCPA would then select specific project proposals coming from the regions for financing and construction, based on criteria including, but not limited to:
 - i. Credibility of financial, energy, ecological and social performance models provided by the team.
 - ii. Credibility of post-occupancy testing and analysis plans over a three-year period.
 - iii. Demonstrated community support for the project as proposed.
- e. Finally, the DCPA would compare pre-construction performance models against data collected during three-years of post-occupancy data collection and testing. These analyses would subsequently be used to guide legislation, regulation and code development.

If this brief proposal is of interest, I would be pleased to work with the MCC Energy Working Group, and others, to develop it further.

Stefan R. Moore.

Chris Tucker
LIUNA, Local #327
66 North Belfast Avenue
Augusta, ME 04330

July 22, 2020

Governor Janet T. Mills
210 State Street
Augusta, ME 04333

Governor Mills,

Thank you for the opportunity to provide feedback and input on the recommendations from the Climate Council's various working groups.

My name is Chris Tucker and I am a Regional Organizer for the Laborers International Union of North America (LIUNA), Local #327. Nearly 350 members strong, LIUNA Local #327's working men and women are skilled and experienced union workers who are trained to safely execute building and constructing the state's energy infrastructure to power and heat Maine's homes and businesses.

In reviewing the recommendations from the Climate Council's Energy Working Group, I wish to express my strong support for the state to develop a Renewable Fuel Standard (RFS). At LIUNA, we support an "all-of-the-above" energy policy. We have been at the forefront of advocating for climate change legislation that supports efforts to reduce emissions while also enhancing economic growth and development. The RFS is a great example of sound policy that will drive new investments in energy infrastructure in Maine while encouraging the development of a domestic renewable energy source that supports Maine's agricultural industry. This helps the state reach its emission reductions goals and brings good paying jobs for skilled workers to Maine. Developing an RFS will benefit Maine's workers, businesses and industry.

I strongly encourage the Climate Council to move forward with this recommendation and incorporate it into its final report to the legislature later this year.

Investing in domestically-sourced energy will improve our economy, create jobs and enhance the resiliency of the state and country. The RFS could be a great step forward for Maine as we work to reduce emissions and become more energy independent.

Thank you in advance for your consideration. Please forward these comments as you see fit and do not hesitate to contact me with any questions you might have. I can be reached at [REDACTED]

In solidarity,

Chris Tucker

New England Regional Organizer
LIUNA, Laborers Local #327

CC:

Hannah Pingree, Director, GOPIF

Dan Burgess, Director, GEO

Matt Schlobohm, Executive Director, Maine AFL-CIO

Ken Colburn, Climate Council Energy Working Group Co-Chair

Melissa Winne, Energy Analyst, GEO

Cassandra Rose, Senior Science Analyst, GOPIF

Sarah Curran, Senior Policy Analyst, GOPIF



LABORERS' INTERNATIONAL UNION OF NORTH AMERICA

AFL-CIO

LOCAL UNION #327



Office of the

JUL 30 2020

Governor

Governor Janet T.
Mills 210 State
Street Augusta, ME
04333

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Thank you in advance for your consideration. Please forward these comments as you see fit and do not hesitate to contact me with any questions you might have. I can be reached at ctucker@lnerof.org or (207) 951-6280.

In solidarity,

Chris
Tucker
New England Regional
Organizer LIUNA, Laborers
Local #327

Rose, Cassaundra

From: Pingree, Hannah
Sent: Tuesday, July 28, 2020 8:34 AM
To: Burgess, Dan; kcolburn
Cc: Rose, Cassaundra; Curran, Sarah; Winne, Melissa
Subject: FW: Climat Council Strategies and Tactics

FYI

From: John Lesko [REDACTED]
Sent: Tuesday, July 28, 2020 8:32 AM
To: Pingree, Hannah <Hannah.Pingree@maine.gov>
Subject: Climat Council Strategies and Tactics

Hello Ms. Pingree:

Please do not fund or subsidize biomass production in any way. I make this plea because biomass has run its course and done its job in terms of helping to make the United States energy independent after the "Arab Oil Shock" but, like oil and coal, it contributes as much or more to global warming and climate change, according to a consensus of independent experts. Over the years, a false understanding has insidiously evolved in the industry, in our culture, and therefore in our politics that biomass is good for the environment when indeed it is harmful on all environmental and economics measures.

Alternatively, you folks on the Climate Council have an opportunity to create a silver lining in the Covid crisis and to help the employment crisis in Maine by investing in a change to our forest product mix from the low value added products like biomass to the higher value added forest products where the markets are growing and the jobs are better. That is, as we transition economically from pre Covid to post Covid, we can (and should) use the recovery investment dollars to create more and better jobs in the forest products, solar, and off shore wind industries while simultaneously mitigating global warming by letting the forest products industry phase out biomass by moving our subsidies into the alternatives.

Thank You,

John V. Lesko, PhD

Parsonsfield, ME

Rose, Cassaundra

From: [REDACTED]
Sent: Friday, August 7, 2020 2:03 PM
To: Curran, Sarah; Rose, Cassaundra
Subject: Message from Nancy Hathaway

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello, an email has been submitted to the Governor's Office of Policy Innovation & Future website:

Email: Hathaway.N@gmail.com
Name: Nancy Hathaway
Town/city: Surry
Message:
Hello.

I have read some of the report from the Maine Climate Council. In my reading I saw nothing about Mental Health Resilience. I did offer this outlook to the working group; however, I see no mention of it.

Mental Health is an important topic to address in many ways. Not only the depression and despair that is most likely to occur, but the emotions that come up for folks dealing with climate change issues, including resistance, openness, and the mental ability to take action.

I ask that you consider exploring mental health/emotional state of mind as they apply to Climate Change.

Thank you

Nancy Hathaway, M.Ed., Licensed (clinical) Pastoral Counselor, Associate Professor at USM teaching graduate courses to educators, undergraduate courses to all disciplines including counseling, lecturer at Colby College's JanPlan Semester and workshop leader. [REDACTED]



**Maine Climate Council
Comments on Strategy Recommendations
August 6, 2020**

Investing in Maine

The state of Maine can have an outsized impact on combatting climate change in the northeast because of our productive and abundant forests. As the Climate Council has heard from University of Maine scientists, Maine's forests already offset at least 55% of the state's emissions. Our colleagues from New England Forestry Foundation and The Nature Conservancy have shown that through improved forest management and increased land protection, our forests can sequester and store a much greater proportion of the region's carbon emissions while also sustaining a strong forest products industry. In addition as wildlife shifts in response to climate change, Maine's forests, rivers and wetlands will provide essential refuge for species moving northward and upslope. We encourage the Climate Council to boldly assert the essential climate mitigation and adaptation gains that Maine can make if we better manage and protect our forests.

We urge the Governor's Climate Council to move forward in investing in Maine's climate change solutions. Maine's leadership in implementing a holistic approach to combating climate change is critical to attracting investment from the private sector, from funders like OSI, and from the federal government. In light of the pandemic, we understand that the state will face enormous budget challenges. Yet investing in Maine's climate mitigation and adaptation efforts are all the more important now. The impacts of climate change are already negatively influencing our resource based economy and our communities. The current health crisis has pointedly illustrated just how essential our natural resources are to our livelihoods and way of life.

Natural and Working Land Strategies

The Open Space Institute (OSI) is writing in strong support of the Natural and Working Lands Strategies that the Maine Climate Council has put forth. OSI supports the recommendations in this area, however, given our expertise, we particularly want to emphasize the importance of recommendations #1 and #4.

Recommendation #1 calls for a permanent, durable source of land protection funding, which is essential to meeting our climate goals. Maine citizens overwhelmingly support land conservation, as evidenced by every Land for Maine's Future bond referendum and many polls. Land conservation funding will enable Maine's landowners, land trusts and natural resource agencies to store and sequester carbon and harbor wildlife habitat on their lands. We urge the Climate Council to consider an array of potential funding sources and not be limited by past approaches. We especially support those funding sources that don't draw on the state's general fund revenues.

To address pressing climate changes, it is essential that the state use and distribute scarce land protection funding based on sound science that ensures projects achieve the greatest mitigation and adaptation benefits. Thus we strongly support the substrategies that call for increased land protection and changes in the state's scoring criteria to include climate resilience and carbon sequestration. Specifically we would encourage the Council to recommend that Land for Maine's Future and other state grant programs, include criteria that favor projects – both forest and farming – on lands with high carbon stocks and/or that are likely to sequester significant carbon. Further we recommend that state funded projects include land management regimes that will maintain and/or increase the sequestration and storage of above and below ground carbon stocks.

OSI is also strongly in support of Recommendation #4, which calls for climate-friendly public land management practices. In addition to the key strategies listed in 4(a) we also recommend the following:

- Incorporate land management terms into state held conservation easements that encourage the sequestration and storage of carbon. Examples include protecting stream buffers and promoting improved forest management practices.
- Based on scientific data that shows the climate mitigation and adaptation values of reserve areas, increase the acreage limitations for the state's ecological reserve system. Establish and expand reserves on lands with high carbon storage and high climate resilience attributes. Identify and permanently protect areas with high below ground carbon stocks, such as wetlands and other organic soils, and forests with high above ground carbon stocks.
- Manage state owned conservation lands to increase carbon storage and maintain climate resilience.

Recommendation # 2 is not bold enough in including incentives for landowners, including not only small and mid-size landowners but also large forest owners, to increase the stocking on their lands. When compared with other east coast states, Maine's forests sequester and store relatively low amounts of carbon. Heavy cutting and short rotations are impacting Maine's forests ability to store and sequester carbon efficiently. There is room for Maine's forests to be much more affective carbon sinks, bringing a host of other benefits for wildlife and public health. We urge the Council to include strategies to encourage longer rotations and improved forest management for all woodland landowners.

About the Open Space Institute

OSI protects scenic, natural and historic landscapes to provide public enjoyment, conserve habitat and working lands, and sustain communities. Founded in 1974, OSI works throughout the eastern United States, where it has been a partner in the protection of over 2.2 million acres of land. In Maine OSI has provided over \$10 million in grants to help the state and land trusts protect more than 1 million acres. We have also provided technical assistance and capacity grants across Maine to help land trusts learn about and incorporate climate change considerations into their land planning efforts. OSI staff look forward to continuing to work with Maine citizens, land trusts and government agencies to further Maine's climate goals as we develop and implement our funding and outreach programs.



Center for the
Polyurethanes Industry

August 14, 2020

Cassandra Rose
Climate Council Coordinator
Maine Climate Council
Governor's Office of Policy Innovation and the Future
181 State House Station
Augusta, Maine 04333-0181

Anastasia Hediger
Program Assistant
Efficiency Maine
168 Capitol Street, Suite 1
Augusta, ME 04330-6856

Dear Ms. Rose and Ms. Hediger,

The American Chemistry Council's Center for the Polyurethanes Industry¹ (CPI) thanks the Maine Climate Council and Efficiency Maine for engaging stakeholders during the development of regulations to restrict the use of hydrofluorocarbon (HFC) refrigerants, foam blowing agents, and aerosol propellants. CPI has reviewed Maine Climate Council's *Strategy Recommendations to Mitigate Emissions and Support Resilience in Maine Buildings* report and had several conversations with Efficiency Maine staff. CPI is concerned with recommendation 8: ban high global warming potential (GWP) insulation products. CPI does not oppose bans of HFC foam blowing agents, but recommends focusing the restriction on HFCs rather than on products that previously contained high GWP foam blowing agents.

Recommendation 8 suggests that hydrofluoroolefin (HFO) foam blowing agents have a high GWP – 1,400x that of CO₂. This is likely an error. HFC, not HFO, foam blowing agents have a high GWP. The two major HFOs used in the polyurethane industry are: [HFO 1233zd](#) (GWP 1) and [HFO-1336mzz-Z](#) (GWP <2).

Recommendation 8 includes several discussion points. CPI would like to provide additional context to further Maine's efforts to implement its climate goals.

In the Climate Council's report, Recommendation 8 states:

- What problems/barriers will this strategy address?
 - Insulation products that save customers fuel but cause more damage to the atmosphere than the fossil fuels they replace.
 - Close a Regulatory gap for damaging building products.

Spray Polyurethane Foam (SPF) manufacturers are transitioning to low GWP formulations by reformulating with HFO or other low GWP foam blowing agents. Other polyurethane insulation products, such as polyisocyanurate board stock products, do not use HFC foam blowing agents. Today, there are many low GWP polyurethane insulation products available across the United States and in Maine. These products meet or exceed the performance of previous generations of polyurethane insulation in terms of energy savings. Maine should be confident that low GWP insulation products will continue to save fuel and not emit HFCs into the atmosphere.

¹ The Center for the Polyurethanes Industry's (CPI) mission is to promote the growth of the North American polyurethanes industry through effective advocacy, delivery of compelling benefits messages demonstrating how polyurethanes deliver sustainable outcomes, and creation of robust safety education and product stewardship programs.



Further, CPI believes that the statement that insulation products cause more harm than the fossil fuel savings is incorrect. The Spray Polyurethane Foam Alliance conducted a [life cycle assessment](#) on SPF insulation. The LCA determined that for new residential construction, the greenhouse gas (GHG) avoided to GHG embodied ratios for HFC-based closed-cell foam range from approximately 8 to 21 times depending on the heating and cooling requirements in each climate zones. This ratio demonstrates that the benefits of using SPF outweigh the negative impacts of manufacture and HFC emissions. In the worst case, HFC based foams save 8 times more GHG than are emitted during application and use. Based on the typical 75 year life span for insulation, negative environmental impacts can be accounted for in as little as 3 years. CPI expects an even greater environmental payback from the use of low GWP foam blowing agents.

Recommendation 8 states:

- Is there a model for this strategy, either in Maine or in other jurisdictions?
 - The EU has banned these products already and they have ready replacements from major manufacturers.

The European Union (EU) has not banned polyurethane insulation products. The EU has banned the use of high GWP (HFC) foam blowing agents in polyurethane insulation products. More information about the EU's efforts to ban HFCs can be found here: https://ec.europa.eu/clima/policies/f-gas/legislation_en. Several other states have or are planning to restrict the use of HFC foam blowing agents. No state, the EU, or any other jurisdictions has banned the use of polyurethane insulation products. Only the use of high GWP foam blowing agents has been banned. More information on efforts to restrict HFC foam blowing agents can be found below, in sections 2 and 3.

Recommendation 8 states:

- What are the benefits of this strategy?
 - Immediately reduce the global warming created by the construction of new & renovated buildings.

Maine can accomplish its goals by banning the use of high GWP foam blowing agents, such as HFCs. Maine should implement bans per the model rule developed by the U.S. Climate Alliance and other states already regulating HFC foam blowing agents. Maine should continue to rely on air impermeable insulations, like SPF, to meet its climate goals. More information on the benefits of SPF can be found below, in section 5.

Additionally, based on my conversations with Efficiency Maine, CPI would like to provide additional background information on foam blowing agents and the polyurethane industry.

1. Foam Blowing Agents and Polyurethane Foam

Foam Blowing Agents are substances added to polyurethane products that function as a source of gas to generate bubbles in the mixture during the formation of foam. This process allows the foam to form a cellular structure during the application process. Generally, the polyurethane foam industry can use water, hydrocarbon, or fluorocarbon foam blowing agents. Each potential option provides different performance outcomes for the foam product. Different polyurethane products can take advantage of the performance benefit of each foam blowing agent. However, they are not drop-in substitutes or replacements for each other. Polyurethane products are highly optimized and need to meet specific performance criteria set by building codes and other third party organizations. Closed-cell spray polyurethane foam (SPF), which is primarily used as building insulation, is applied in the field. Closed-cell SPF is heated and applied using proportioning pumps, therefore hydrocarbon foam blowing agents are not an appropriate option due to flammability concerns. Water is ideal option for open-cell SPF, but is not an option for closed-cell SPF.

Further, because closed-cell SPF is used as building insulation, fluorocarbons are an ideal choice due to their thermal resistance properties. In this instance, the fluorocarbon foam blowing agent also improves the R-value (a measure of thermal performance) of the closed-cell SPF.

2. SNAP, HFCs, and *Mexichem Fluor v EPA*

The United States Environmental Protection Agency (EPA) administers the Significant New Alternatives Policy (SNAP) program under Section 612 of the Clean Air Act. The SNAP program requires products used as refrigerants, foam blowing agents, and aerosol propellants to be listed as “acceptable” substitutes. These substances are designated “substances” compared to the substances that were currently on the market when the SNAP program was developed. SNAP also gives EPA the authority to determine certain substances are “unacceptable,” which requires manufacturers to replace an “unacceptable” substance with an “acceptable” substance. Generally, products listed as “acceptable” under the SNAP program are substitutes to ozone depleting substances (ODS). However, EPA can use many environmental impacts to determine a chemistry is or is not an “acceptable” refrigerant, foam blowing agent, or aerosol propellant.

In 2007, EPA issued SNAP Rule 13, changing the listing of hydrochlorofluorocarbons (HCFC) for foam blowing agents from “acceptable” to “unacceptable” due to their ozone depleting potential (ODP). SNAP Rule 13 required manufacturers to replace HCFCs with another acceptable substitute. Continuing with the closed-cell SPF example, manufacturers selected hydrofluorocarbon (HFC) foam blowing agents. Where technical and safety issues could be addressed, other sections of the polyurethane industry transitioned to hydrocarbon foam blowing agents or water.

In 2015, and 2016, EPA issued SNAP Rules 20 and 21, changing the listing of HFC foam blowing agents from “acceptable” to “unacceptable” due to their high global warming potential (GWP). SNAP Rules 20 and 21 required manufacturers to replace HFCs with another acceptable substitute that was both low-ODP and low-GWP. For closed-cell SPF, manufacturers selected HFO foam blowing agents.

SNAP Rules 20 and 21 were challenged in two separate cases (*Mexichem Fluor v EPA* – USCA Case No. 15-1328 and *Mexichem Fluor v EPA* – USCA Case No. 17-1024). The U.S. Court of Appeals for the D.C. Circuit heard both cases and issued a partial *vacatur* of both SNAP rules, in two separate decisions. The Court decided that EPA had the authority to change the listing of HFCs to “unacceptable” based solely on GWP, but also decided that EPA did *not* have the authority to require manufacturers to replace a refrigerant, foam blowing agent, or aerosol propellant based solely on GWP. The decision stated that EPA only has the authority to require manufacturers to cease use and replace substances based upon their ODP. Given that the entire polyurethane foam industry had already replaced a chemistry with high ODP (HCFCs) with a low-ODP chemistry (HFCs), the Court’s decision effectively eliminated the Federal requirement for polyurethane manufacturers to replace HFCs under SNAP Rules 20 and 21.

3. State Restrictions on HFCs

In response to the partial *vacatur* of SNAP Rules 20 and 21, the states began to regulate the use of HFCs. To date, California, New Jersey, Vermont, and Washington have adopted SNAP-like legislation that restricts the use of HFCs based upon dates enumerated in the subsequent state regulations. CPI has developed a [website](#) to help track the development of new HFC regulations.

CPI supports consistency across all states that are regulating the use of HFC foam blowing agents in the polyurethane foam sector. CPI advocates for consistency in four areas: definitions, disclosure, recordkeeping, and sell-through periods. CPI believes our recommendations, below, will help further align the draft regulations with other state rules prohibiting the use of HFC foam blowing agents and provide manufacturers with enough clarity to ensure they are compliant with the final rule.

At a high level, CPI supports consistent and technically accurate definitions. CPI supports the use of the following on-product or on product packaging disclosure “Where sold, compliant with State HFC regulations.” This statement is being adopted by several states, such as Maryland and Delaware, and is helping to align requirements so manufacturers can comply with HFC restrictions without state specific labels. CPI opposes the use of recordkeeping, in favor of on-product disclosures. Finally, CPI supports sell-through periods that allow product manufactured before the date of restriction to remain in commerce.

CPI encourages Maine to follow the lead of other states restricting the use of HFC foam blowing agents, not restricting the use of foam insulation products.

4. Low GWP Polyurethane Products

The polyurethane industry has low-GWP options available in most polyurethane foam end uses. Low pressure SPF manufacturers are reporting formulation issues and may not have alternatives on the market at this time. However, it is noteworthy that the original restriction for low pressure SPF in SNAP Rule 21 was January 1, 2021. No state has adopted a deadline earlier than January 1, 2021 for the low pressure SPF end use. It is likely that low pressure SPF manufacturers may begin to roll out new products during the 3rd or 4th quarters of 2020. Low GWP foam blowing agents include water, hydrocarbons, and HFOs. Manufacturers need to have these options available to ensure they can comply with state-based HFC restrictions.

Maine Climate Council’s [*Strategy Recommendations to Mitigate Emissions and Support Resilience in Maine Buildings*](#) suggests promoting the use of wood-fiber insulation instead of rigid foam or other approaches and a ban of high GWP insulation products. There are many low-GWP SPF insulation and roofing products on the market across the United States and in Maine. Accordingly, a broad ban of foam plastic insulation is not appropriate. Maine should focus on the restriction of HFC foam blowing agents, not foam insulation products.

5. Benefits of Spray Polyurethane Foam Insulation

SPF insulation and other foam plastics are air impermeable, while most other insulation products are air permeable. Because SPF is air impermeable, it functions as an air barrier and prevents movement of air through the building envelope. SPF is unique because it is the only insulation product that functions as insulation and as an air barrier at typical install thicknesses without the use of additional materials.

Installing insulation is only one piece of the energy efficiency puzzle. Installing an air barrier, like SPF, provides a more complete building envelope that provides additional energy efficiency gains. As much as 40 percent of a building’s energy is lost due to air infiltration.² Gaps, holes, and air leaks can make energy bills unnecessarily high and let valuable resources (*i.e.* conditioned air) go to waste. The potential energy savings from air sealing a home range from 5% to 30% per year.³ Limiting air leakage with air barriers is generally accepted as good building science, in fact, the International Energy Conservation Code (IECC) has had requirements to limit air leakage since 2012.

Because SPF is installed on site as a liquid, the foam can adhere and form to the structure as it expands and hardens. This allows SPF to seal small gaps and cracks in the building envelope, further improving

² https://www.energystar.gov/ia/home_improvement/home_sealing/AirSealingFS_2005.pdf

³ <https://www.energy.gov/eere/why-energy-efficiency-upgrades>

energy efficiency. The use of air barriers is further supported by the U.S. Department of Energy's [Building Envelope Campaign](#).

Notably, the California Energy Commission (CEC) Efficiency Division recognizes that preventing unwanted airflow is fundamental to creating energy efficient buildings. The CEC recently published a [document](#) on the importance of sealing the building's envelope. The envelope is the exterior components of a building that enclose the conditioned space, separating the conditioned space from unconditioned spaces like attics and garages.

SPF is also a highly effective thermal insulation. Typical R-values are:

Product	High Density	Medium Density	Low Density
Density	3 lbs./cubic ft., closed-cell foam	2 lbs./cubic ft., closed-cell foam	0.5 lbs./cubic ft., open-cell foam
R-value	R-Values start at 6.2 per inch*	R-Values start at 6.2 per inch*	R-Values start at 3.6 per inch*
*R means resistance to heat flow. The higher the R value, the greater the insulating power. Ask your seller for the fact sheet on R-value.			

More information on the benefits of spray foam can be found at www.whysprayfoam.org.

If you have any questions or need additional information, please contact me at

[REDACTED]

Sincerely,



Stephen Wieroniey
Director

Comments submitted by Central Maine Power on the Buildings, Infrastructure, and Housing survey

Maine Climate Council

Building, Infrastructure, and Housing Working Group Survey

“Please consider the following strategies, then answer the questions below.”

Lists strategies:

- 1) Improve the design and construction of new buildings
- 2) Transition to cleaner heating and cooling systems
- 3) Improve the energy efficiency of existing buildings
- 4) Promote “Lead by Example” programs in existing and new publicly-funded buildings
- 5) Reduce greenhouse gas emissions from industrial processes
- 6) Modernize Maine’s electric grid

Questions:

1. How would each of these strategies fit your community? (multiple choice) (if answer, in **bold**)

Improve the design and construction of new buildings (Great fit, Good, **Neutral**, Not a good fit)

Transition to cleaner heating and cooling systems (Great fit, **Good**, Neutral, Not a good fit)

Improve the energy efficiency of existing buildings (Great fit, Good, **Neutral**, Not a good fit)

Promote “Lead by Example” programs in existing and new publicly-funded buildings (Great fit, **Good**, Neutral, Not a good fit)

Reduce greenhouse gas emissions from industrial processes (Great fit, **Good**, Neutral, Not a good fit)

Modernize Maine’s electric grid (Great fit, **Good**, Neutral, Not a good fit)

Comments

Recommended Strategy 1

The MCC should clarify the timeframe and scope over which “net zero” emissions 2035 building codes refer. Is it the building life cycle, annual, monthly, daily, or other timeframe? Is the scope of “net zero” emissions the building itself or does it include secondary and/or tertiary emissions (e.g., Scope 2 and 3 emissions)? These are unclear and yet have potentially significant implications. Perhaps these are considerations for the contemplated roadmap to reach net zero emission buildings by 2035.

Recommended Strategy 2

Electrification of heating through heat pumps should be a key strategy to decarbonizing Maine’s economy. Heat pumps are a thermodynamically efficient technology when properly deployed.

Recommended Strategy 3

CMP supports the concept of extending the energy efficiency surcharge now levied on electricity and natural gas to heating oil and propane to raise revenues to fund reductions in GHG emissions. The existing construct acts as an implicit subsidy to use more oil and propane and less electricity, perversely incentivizing more carbon pollution.

Weatherization of existing homes may not be a cost-effective strategy for reducing GHG emissions. A recent study on weatherization assistance found that, even when accounting for broader societal benefits from reduced carbon emissions, costs outweigh the benefits, with an average rate of return of -7.8% annually (Fowlie, Meredith, Michael Greenstone, and Catherine Wolfram, 2018. “Do Energy Efficiency Investments Deliver? Evidence from the Weatherization Assistance Program,” *The Quarterly Journal of Economics*, Volume 133, Issue 3, August 2018, Pages 1597–1644, available at https://economics.harvard.edu/files/economics/files/ms24260_f.pdf). The MCC should consider the implications of this study in considering implementing this strategy for Maine.

Recommended Strategy 4

CMP supports the Maine government providing leadership in cost-effective reduction in carbon pollution.

Recommended Strategy 5

As mentioned previously, CMP supports the concept of extending the energy efficiency surcharge now levied on electricity and natural gas to heating oil and propane to raise revenues to fund reductions in GHG emissions.

Recommended Strategy 6

The MCC should consider refocusing this strategy or moving this strategy to the Energy Working Group. The BIH Working Group has stated in its summary that the “BIH primarily considered behind the meter (BTM) strategies to maximize opportunities for end-use customers to benefit from renewable energy resources, including customer-sited distributed energy resources, while Energy considered front of the meter systems such as renewable energy generation, transmission, and distribution.” Yet the strategy is entitled “modernize Maine’s electric grid”, which ostensibly refers to the front of the meter system, not behind the meter. This is confusing. Further the detailed recommendations contain statements such as to “approach this transition in a thoughtful, coordinated manner and take steps to modernize, stabilize, and right-size the electric grid.” Again, the

electrical grid is a front of the meter issue, although certainly integrated with behind the meter load and injection patterns.

While essential that we plan for the potential scenarios of increased electrification of building heating loads in Maine and increased bidirectional flow of electricity from DERs, the suggestion that the grid planning timeframe for integrating DG should be extended to the scale of the system asset life (30-50 years) introduces significant issues. Does Maine want to invest in grid infrastructure planned at the scale of system asset life (e.g., 40 years)? Perhaps long-term planning may be helpful in identifying future situations that are not evident in shorter planning horizons, but investment based upon longer term planning horizons introduces greater risk for misallocation of investment. As such, this suggestion seems to contradict other suggestions to, for instance, “develop grid scale payment structures supporting and incentivizing DER projects that promote and enhance stabilization of the grid on a least cost basis...”. The MCC should clarify.

It is not clear in the details of this recommendation whether the MCC BIH Working Group realizes that CMP has had TOU delivery rates for decades for both for residential (kWh) and commercial (kW) customers. To the extent the recommendation is referring to TOU supply rates, for example, as might be procured by the Maine PUC for standard offer energy supply, this should be clarified. This is an instance where this recommendation may benefit from working with or integrating with the MCC Energy Working Group.

2. Are there any ideas or other thoughts about Maine’s energy strategies you would like to share with the Council?

Climate change is a serious threat and one of the most significant challenges of the 21st century. Scientific evidence shows that greenhouse gas emissions have accelerated global warming and that action to address climate change must occur. CMP seeks to contribute actively and decisively to a low-carbon and sustainable future, delivering clean, low emission energy, minimizing the environmental impact of our activities and supporting and promoting actions that address climate change. Such efforts must be compatible with social and economic growth.

For example, in assessing and prioritizing strategies across all working groups for GHG emission reductions, the MCC may want to consider a table ranking akin to the McKinsey greenhouse gas marginal abatement curve <https://www.mckinsey.com/business-functions/sustainability/our-insights/impact-of-the-financial-crisis-on-carbon-economics-version-21>. Such a curve, or something similar, could be constructed with the cost-benefit analyses the MCC conducts on each strategy. While an incomplete story since only the marginal and not the total GHG reduction potential is evident in this particular metric, it is an example of a type of approach that might help Maine focus on pursuing the most economically sustainable solutions.

3. After reading these strategies, are there actions that you personally would like to be able to take?

CMP has already begun pursuing activities that address some of these strategies. For example, CMP has TOU delivery rates for residential and commercial customers and continues to seek improvements in these and other rate designs in its rate cases to better reflect cost-causation. CMP has deployed advanced metering infrastructure that provides a data backbone to enable components of these strategies and continues to seek further grid automation investments in its rate cases. CMP is ready to do more when given the authorization by the Maine PUC.

Please tell us more about yourself

4. What is your zip code?
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Maine Climate Council

Energy Working Group Survey

“Please consider the following strategies, then answer the questions below.”

Lists strategies:

- 1) Ensure adequate affordable clean energy supply to meet Maine’s energy and climate goals
- 2) Transition and modernize Maine’s electric grid
- 3) Encourage CHP facilities
- 4) Institute a Renewable Fuel Standard (RFS) for all heating fuels
- 5) Ensure equitable transitions and benefits in shift to a lower carbon economy
- 6) Develop and implement new financing options necessary to meet Maine’s clean energy and emission reduction targets

Questions:

1. How would each of these strategies fit your community? (multiple choice) (if answer, in **bold**)

Ensure adequate affordable clean energy supply to meet Maine’s energy and climate goals (Great fit, Good, **Neutral**, Not a good fit)

Transition and modernize Maine’s electric grid (Great fit, **Good**, Neutral, Not a good fit)

Encourage CHP facilities (Great fit, Good, **Neutral**, Not a good fit)

Institute a Renewable Fuel Standard (RFS) for all heating fuels (Great fit, Good, **Neutral**, Not a good fit)

Ensure equitable transitions and benefits in shift to a lower carbon economy (Great fit, **Good**, Neutral, Not a good fit)

Develop and implement new financing options necessary to meet Maine’s clean energy reduction targets (Great fit, Good, Neutral, **Not a good fit**)

Comments

Recommended Strategy 1

Maine and the New England electricity market to which most of Maine belongs needs a more affordable clean energy supply. An RPS standard is a market-based mechanism providing RECs as additional revenue to subsidize renewable generation. An RPS is alternative mechanism to PPAs/LTCs intended to reflect in a REC the difference between the electricity market clearing price and the weighted average electricity price of RPS certified renewables. PPAs/LTCs have a tendency to lower REC prices as they reduce risk for the renewable developer and transfer that risk to the purchaser (electricity customers). Such a risk transfer may increase the overall costs of clean energy rather than ensuring more affordable clean energy supply, as asymmetrical information in energy supply costs

between developer and purchaser may lead to less economically efficient deployment of renewables. However, RPS markets, as spot markets, are a misaligned market construct for incentivizing what are high upfront capital costs, low long-term operating costs renewables (hydro, wind and solar). It is not clear why PPAs/LTCs “will be necessary for virtually all foreseeable new large-scale renewable generation development” when there is a functioning REC market. For instance, today’s RPS in Maine has very little ACPs, with the average REC price for Class I below \$10. More background and explanation of the relationship between the RPS and REC market and LTCs/PPAs should be included, as well as MCC or other consultant (e.g., Sustainable Energy Advantage) modeling.

While ostensibly stating the recommendation is “ensuring adequate affordable clean energy supply,” the detailed support stating new resources should include offshore wind, distributed generation, and energy storage is a riskier, potentially less affordable path towards adequate clean energy supply than focusing on scaling up existing proven and affordable renewable resources. However, at scale offshore wind or, in future, energy storage, may become more affordable. The MCC needs to balance its considerations for economic benefits for the state of Maine and the promise of future potential technologies with the need to ensure realization of actual, significant, and economically sustainable clean energy supply in the relatively near-term to support aggressive beneficial electrification of the transportation and building sectors and avoid widening the gap between electricity and fossil fuel costs.

CMP agrees that additional transmission, distribution, and generation infrastructure is needed and needs to be deployed efficiently. Permitting challenges do delay projects, sometimes constructively, to improve the environmental and economic performance of the project, and sometimes non-constructively, when lack of coordination amongst permitting agencies and sheer time for review of all permits leads to inefficient and unnecessary delay of clean energy projects. CMP has conducted prospective wind integration studies in the past to explore both existing network system capacities and potential additional network needs.

Recommended Strategy 2

CMP agrees a rigorous study of the impacts of beneficial electrification on the electrical grid is warranted. Continual improvement of scenario modeling of technological diffusion in Maine of heat pumps, electric vehicles, electricity storage, and distributed energy resources will help inform prudent levels and timing of investment into Maine’s electrical grid.

Recommended Strategy 3

The MCC should consider the level of GHG emission potential that long-term contracting for CHP facilities could achieve before endorsing it fully as an independent recommended strategy. For instance, GHG emission reductions could be marginal from these thermal process efficiency gains

versus pursuing a strategy that focuses on decarbonizing the underlying fuel utilized. Costs of CO₂e saved from additional thermal process efficiency gains versus fuel decarbonization should be analyzed so Maine can pursue the most cost-effective strategies to reduce carbon pollution.

Also, it is not clear why this strategy is distinct and separate from Recommended Strategy 1, which also recommends LTCs/PPAs. For instance, Maine's original 30% RPS for existing renewable resources includes RECs for efficient CHPs. Again, the relationship between Maine's RPS and LTCs/PPAs for CHP facilities is not evident in the explained rationale for this strategy.

Recommended Strategy 4

Electricity produced from renewable energy is also a renewable fuel. It is not clear from this recommendation how electricity would be included in the RFS as a heating fuel. Not including renewable electricity as a heating fuel would be distortionary to the market of decarbonized heating options and could result in higher costs for heating and/or higher costs for GHG emission reduction. The MCC should clarify how renewable electricity, fueling such electrical heating technologies like heat pumps, would be included in an RFS.

Recommended Strategy 5

CMP strongly supports the need to ensure equitable transitions and benefits in shift to a lower carbon economy. For instance, the company continues to pursue rate design improvements that more equitably allocates costs of delivery service among customers.

Recommended Strategy 6

A fee on carbon pollution should continue to receive due consideration for raising money to pay for the investments needed to meet Maine's GHG emission reduction targets. Unlike other options considered, this option provides a double benefit, both raising revenue and discouraging the use of fossil fuels by internalizing the carbon pollution cost environmental externality. For more information, please see <https://www.iberdrola.com/environment/green-and-environmental-taxes>

Consumer ownership of Maine's power delivery system should not be further pursued as an idea to meet Maine's GHG emission goals. Publicly owned electricity generation and water utilities have been shown to be as a group less compliant with Clean Air Act and Safe Water Drinking Act environmental regulations than privately owned entities (Konisky, David M. and Manuel P. Teodoro, American Journal of Political Science, Vol. 60, No. 3, July 2016, Pp. 559–574, available at <http://mannyteodoro.com/wp-content/uploads/2016/08/Konisky-Teodoro-AJPS-2016-Govt-Reg-Govt.pdf>). As such, a public entity may reduce the likelihood that Maine achieves its greenhouse gas

reduction targets. Further, achieving Maine's greenhouse gas reduction targets will require significant levels of investment, requiring attraction of significant amounts of capital. Capital, by its nature, seeks out its highest risk adjusted return, so capital that may have otherwise come to Maine would go elsewhere to fund decarbonization investments. Furthermore, government condemnations of investor owned utilities in other jurisdictions have demonstrated that it is a lengthy and litigious process, frequently requiring many years for acquisitions far smaller than a multi-billion dollar purchase of Maine's utilities. This extensive litigation and its chilling effects on infrastructure investment could occur at the very time that the utilities and the State should be collaborating on the extensive investment required to meet the challenges of climate change and the demands of beneficial electrification. Maine should be out in the lead producing economically sustainable solutions to climate change, not falling further behind. Finally, severing CMP's ties with its existing affiliates would significantly reduce its access to knowledge and experience on T&D smart and clean energy initiatives, given what is occurring across AVANGRID

(<https://www.avangrid.com/wps/portal/avangrid/sustainability>) and Iberdrola (<https://www.iberdrola.com/sustainability>).

2. Are there any ideas or other thoughts about Maine's energy strategies you would like to share with the Council?

Climate change is a serious threat and one of the most significant challenges of the 21st century. Scientific evidence shows that greenhouse gas emissions have accelerated global warming and that action to address climate change must occur. CMP seeks to contribute actively and decisively to a low-carbon and sustainable future, delivering clean, low emission energy, minimizing the environmental impact of our activities and supporting and promoting actions that address climate change. Such efforts must be compatible with social and economic growth.

For example, in assessing and prioritizing strategies across all working groups for GHG emission reductions, the MCC may want to consider a table ranking akin to the McKinsey greenhouse gas marginal abatement curve <https://www.mckinsey.com/business-functions/sustainability/our-insights/impact-of-the-financial-crisis-on-carbon-economics-version-21>. Such a curve, or something similar, could be constructed with the cost-benefit analyses the MCC conducts on each strategy. While an incomplete story since only the marginal and not the total GHG reduction potential is evident in this particular metric, it is an example of a type of approach that might help Maine focus on pursuing the most economically sustainable solutions.

3. After reading these strategies, are there actions that you personally would like to be able to take?

CMP has already begun pursuing activities that address some of these strategies. CMP is ready to do more when given the authorization by the Maine PUC. For example, CMP proposed in its last rate case to modernize Maine's electrical grid by making climate change resiliency investments in order to adapt to the growing threats of climate change. CMP proposed incremental investments in system

hardening, circuit topology changes, automation, and enhanced vegetation management to make the grid better prepared for increased storm severity. However, the Maine PUC denied this investment program, stating “increased storm activity and the effects of a rapidly changing global climate have shone a light on the importance of reliability and resiliency planning. But these improvements come with a price tag, and ratepayers can only bear so much of the cost.”

Please tell us more about yourself

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Maine Climate Council

Transportation Working Group Survey

“Please consider the following strategies, then answer the questions below.”

Lists strategies:

- 1) Increase electric vehicle (EV) use
- 2) Reduce emissions from gas and diesel engines
- 3) Enable Mainers and tourists to drive less
 - a. Decrease the number miles Mainers must drive
 - b. Enhance public transportation and shared transportation options
 - c. Reduce commuting
- 4) Adapt critical transportation infrastructure for climate change impacts

Questions:

1. How would each of these strategies fit your community? (multiple choice) (if answer, in **bold**)

Increase electric vehicle (EV) use (**Great fit**, Good, Neutral, Not a good fit)

Reduce emissions from gas and diesel engines (Great fit, **Good**, Neutral, Not a good fit)

Decrease the number miles Mainers must drive (Great fit, **Good**, Neutral, Not a good fit)

Enhance public transportation and shared transportation options (Great fit, **Good**, Neutral, Not a good fit)

Reduce commuting (Great fit, Good, **Neutral**, Not a good fit)

Adapt critical transportation infrastructure for climate change impacts (Great fit, **Good**, Neutral, Not a good fit)

Comments

Recommended Strategy 1

Maine should pursue transportation electrification as a pathway for decarbonization. CMP can contribute to building out EV infrastructure via “make-ready” EV infrastructure investment. CMP is already launching a Level 2 make-ready pilot for 60 Level 2 plugs with authorized funding of \$240K. CMP had proposed a larger, more comprehensive Pilot program, but the Maine PUC did not authorize a larger pilot. In contrast, CMP’s affiliate AVANGRID companies in New York State, NYSEG and RG&E, have recently been authorized by the New York PSC to launch a comprehensive “make-ready” investment program, investing up to \$118M through 2025 to support installation of over 13K Level 2 plugs and over 500 Level 3 DCFC plugs. CMP urges the MCC to consider ways to guide the Maine PUC to allow authorization of “make-ready” investment at the scale necessary to meet the challenge of

electrifying Maine's transportation sector, Maine's most carbon polluting sector. As experience with proposing an initial "make-ready" EV Pilot has shown, reliance on voluntary proposals from the utilities may not go far with the Maine PUC if there are not mandates or other strong guidance pushing for infrastructure to support transportation electrification. CMP looks forward to contributing to the development of the suggested EV Expansion Study / Plan and the EV Roadmap.

Recommended Strategy 2

While society should continue to seek efficiency gains in fossil combustion engines and pursue economically sustainable alternatives to fossil fuels, recent technological development trends suggest that electrification of transportation will be the path forward for substantial and sustainable reductions in GHG emissions from transportation.

Recommended Strategy 3

CMP can assist in the financing of electrification of expanded public transport by "make-ready" investment in EV infrastructure and/or by utility-owned storage solutions to facilitate minimizing the impact of public EV transportation charging demands and thus costs to the grid. These and other solutions are possible to support public transportation if given the authorization.

Recommended Strategy 4

Adaptation to climate change is critical as society also seeks to mitigate its impacts. As transportation becomes more electrified, it is important to include in the statewide transportation infrastructure vulnerability assessment electrical network infrastructure, as it will play a growing supportive role to the transportation network. CMP has already identified climate resiliency investments that will help the network better adapt to climate change; however, the Maine PUC has not authorized incremental funding for these investments. CMP looks forward to contributing any desired and available information that could help enhance the statewide infrastructure vulnerability assessment and increase Maine's ability to adapt to climate change impacts should they arise.

2. Are there any ideas or other thoughts about Maine's energy strategies you would like to share with the Council?

Climate change is a serious threat and one of the most significant challenges of the 21st century. Scientific evidence shows that greenhouse gas emissions have accelerated global warming and that action to address climate change must occur. CMP seeks to contribute actively and decisively to a low-carbon and sustainable future, delivering clean, low emission energy, minimizing the environmental

impact of our activities and supporting and promoting actions that address climate change. Such efforts must be compatible with social and economic growth.

For example, in assessing and prioritizing strategies across all working groups for GHG emission reductions, the MCC may want to consider a table ranking akin to the McKinsey greenhouse gas marginal abatement curve <https://www.mckinsey.com/business-functions/sustainability/our-insights/impact-of-the-financial-crisis-on-carbon-economics-version-21>. Such a curve, or something similar, could be constructed with the cost-benefit analyses the MCC conducts on each strategy. While an incomplete story since only the marginal and not the total GHG reduction potential is evident in this particular metric, it is an example of a type of approach that might help Maine focus on pursuing the most economically sustainable solutions.

3. After reading these strategies, are there actions that you personally would like to be able to take?

CMP has already begun pursuing activities that address some of these strategies. CMP is ready to do more when given the authorization by the Maine PUC. For example, CMP's proposed EV make-ready infrastructure investment pilot program was to invest in EV charging delivery infrastructure up to the charging pedestal for 360 Level 2 plugs and in various investment levels for 32 Level 3 fast charging plugs. The Maine PUC authorized an EV make-ready investment program for 60 Level 2 plugs that CMP will be launching in 2020.

Please tell us more about yourself

4. What is your zip code?
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August 21, 2020

Director Pingree, Commissioner Reid, Mr. Stoddard, Ms. Meil, Dr. Shah, Ms. Fuchs, Ms. East, Ms. Boulos, Ms. Leyden, Ms. Leslie, and Members of the Maine Climate Council:

We, the undersigned, thank the Maine Climate Council and the Working Groups for their efforts to prepare Maine and its residents to become more resilient in the face of climate change. The historic preservation sector is deeply concerned about the impact of climate change on our communities and have been closely following your efforts as attendees at many working group and council virtual meetings. Our organizations and businesses consider climate change a top priority. We, like many Mainers, understand the need for immediate action to reduce greenhouse gases, better manage our buildings and make our communities more resilient.

We encourage the Maine Climate Council to acknowledge that we cannot rely on new construction alone to respond to the climate crisis; preservation of our historic building stock is a critical component of Maine's response to the climate crisis. More than half of Maine's building stock is over 40 years old, and we are concerned by language in the Buildings, Infrastructure, and Housing Working Group's report that characterizes Maine's housing as 'outdated'. The use of this term could be misunderstood. Certainly, many mechanical, electrical, and other systems can be outdated in Maine's older building stock, but the buildings themselves are able to be retrofitted for enduring use. The rehabilitation of properties that qualify for historic rehabilitation tax credits, with more than half-a-billion dollars invested in Maine since 2009, demonstrate that good preservation practices result in substantial energy savings. We assume the intent of the word "outdated" was not to imply older buildings should be demolished. We encourage the Maine Climate Council to look at these buildings as assets in developing a climate action plan for Maine's communities including our historic downtowns and neighborhoods, agricultural landscapes, and working waterfronts.

Embodied Energy & Greenhouse Gasses

In the 1970s Maine became a leader by enacting the "Bottle Bill" and changing the culture of recycling in Maine. Maine should build upon its assets and lead yet again, with a plan that recognizes the importance of conserving older and historic buildings for climate resilience. Many newer building materials have short life spans and are produced at a high environmental cost. Measuring the impact of extraction, manufacture, transport, and construction of new materials must be part of the calculation in assessing greenhouse gas savings. This would be a significant step forward towards achieving Maine's climate goals.

National studies have shown that an average three-story brick downtown building has the embodied energy of 1.3 million aluminum cans. In Portland, Oregon a scientific study concluded that a new high-performing single-family house takes 50 years and a commercial building takes 42 years to produce less energy impact than an average-performing existing building of the same kind. If the 1% of their building stock expected to be demolished in the next 10 years was *instead* retrofitted and reused, 15% of their total CO2 reduction targets could be met.¹ In recognition of their embodied energy, the City of Portland, OR also mandates that historic buildings being removed be carefully dismantled so their old-growth wood and other materials can be reused.

¹ *The Greenest Building: Quantifying the Environmental Value of Building Reuse.*

Implementation Strategies & Technical Assistance

Most of Maine's downtowns and intown neighborhoods are listed as National Register Historic Districts and 27 communities participate in the Main Street Maine program. As such, implementation of recommendations for technical assistance, particularly those put forth by the Community Resilience Planning and Coastal & Marine Working Groups, should include the following:

- Maine Historic Preservation Commission
- Greater Portland Landmarks
- Maine Downtown Center
- Other preservation organizations
- Maine Preservation

Our organizations currently help local communities, regional planning associations, and property owners identify vulnerable structures and offer guidance on rehabilitation, energy efficiency improvements, building reuse and adaptation strategies. We also help guide stakeholders in comprehensive and other planning initiatives that affect their community's culture, historic buildings, and heritage sectors.

Historic Preservation is Economic Development

Maine uses its historic buildings to drive economic activity and increase tourism throughout the state. Our historic built environment is as much part of Maine's brand as our natural landscapes. The enormous economic value of our historic assets was highlighted in the Brookings Institution report, "Charting Maine's Future: An Action Plan for Promoting Sustainable Prosperity and Quality Places," over a decade ago. Doing all we can to preserve these assets is more important than ever as other coastal regions that compete with us for tourist dollars are facing these same challenges. Maine needs to be the state that saves its historic character while confronting the challenges of climate change.

Maine faces well-known challenges in responding and adapting to a changing climate, but in working together we can identify and strategize how our older and historic buildings can be assets in developing bold solutions. Our historic communities, downtowns, and buildings are economic and cultural assets, and a rich store of embodied energy. The historic preservation sector is increasingly implementing courses of action that protect and enhance these assets, and we look forward to extending this conversation to members of Maine's Climate Council.

Sincerely,

Sarah Hansen, Executive Director
Greater Portland Landmarks, Inc.

Deborah Andrews, Historic Preservation Program Manager
City of Portland, Maine

Scott Hanson, Consultant & Author
Restoring Your Historic House

Greg Paxton, Executive Director
Maine Preservation

John Turk, AIA
TURK Architecture

cc:

Ms. Anne Ball, Senior Program Director
Maine Downtown Center/Maine Development Foundation

Mr. Kirk Mohny, Director
Maine Historic Preservation Commission

Rose, Cassaundra

From: LaBrecque, Taylor S
Sent: Friday, August 21, 2020 1:29 PM
To: Rose, Cassaundra; Curran, Sarah
Subject: Fwd: climate council--transportation comments

From: Richard Lyles [REDACTED]
Sent: Friday, August 21, 2020 1:24:09 PM
To: LaBrecque, Taylor S <Taylor.S.LaBrecque@maine.gov>
Subject: climate council--transportation comments

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Taylor LaBrecque:

I “attended” the zoom presentation that you and your colleagues made to the Green Ellsworth/Green Plan on Wednesday, 19 August. I enjoyed the presentation and was impressed with the knowledge of the staff. That being said, I wanted to pass on a couple of comments that I had on the transportation strategy recommendations. Some of the following may well have been already considered (and solved or discarded) by your working groups. (And I confess in advance to not thoroughly reviewing all of the background materials on the website.)

- While I certainly have no problem per se with either the first (expand electrification of transportation) or third (reduce vehicle miles of travel) strategies, I would point out that there is some conflict between them. Having more EVs is laudable but is basically a fleet replacement strategy (i.e., an EV for a standard gas-powered passenger vehicle). This replacement will not result in much change in the consumption of transportation services (VMT). Indeed, if running EVs turns out to be cheaper than gas-powered vehicles, more transportation services (VMT) will likely be consumed as a result of the replacement. In addition, having ubiquitous EVs will not do much to change the inefficient land use patterns that we have now (e.g., suburban areas are still easily accessible, just with a different kind of low-occupancy vehicle). Finally, if EVs are actually an addition to (rather than replacement for) a household’s available vehicles, adding EVs is like adding a new mode of transportation—this will lead to even more VMT.
- It is not clear what the equity issues are related to increased numbers of EVs. Clearly, it will take some time for EVs to be available to lower-income groups who typically buy used and not new vehicles—i.e., it will be some time for the first wave of used EVs to

become available to lower-income groups. If EV usage is somehow a benefit for their owners/drivers, the benefits will be accrued disproportionately (i.e., richer people first).

- It is not clear what will happen to household energy bills w/increased EV usage. While paying for power consumption is similar to a user tax/fee (much the same as gas taxes are), it is not clear if all charges for increased power demand are all paid for by the user and some not passed on to anyone getting power from the grid. If that is the case, there is a further adverse impact on lower-income groups who will be disproportionately impacted and, effectively providing a subsidy to EV (and higher income) users.
- While EV use will no doubt reduce internal combustion-related emissions in Maine (which is good), the real saving (in terms of air pollution) depends on how broad the definitions of the transportation and energy systems are. Reductions in Maine may be offset or reduced by increases elsewhere—if your system boundary is Maine, that’s one thing; if your system is the entire Northeast, that’s another; and so on. So, while emissions due to EV use may be better in Maine (or part of Maine), they might be offset by increased emissions due to increased power demands in Maine and elsewhere or even the construction of new EV assembly plants. The consumption of power and natural resources to provide increased EV usage also needs to be considered.
- In a similar vein to energy consumption in Maine and elsewhere, what does the demand for different materials (e.g., for batteries) look like if EVs become prevalent? Are we trading short-term gains for Maine from EV use for deficits in consumption of other resources down the line (and in some other state)?

By the way, I was heartened to see the “dismissal” of trains as a transportation alternative in the context of your recommendations. Notwithstanding that train service would be nice (who doesn’t like a train ride), provision of service would be incredibly expensive including a high environmental cost to say nothing of not providing any relief for the transportation disadvantaged, especially in rural areas and small cities/towns. Now, if you had unlimited funds...but you obviously don’t.

Anyway, thanks for taking the time to read these meanderings. If you find any of the comments useful, good; if not, lose them.

Good luck on completing this mission...very, very difficult to do well (and you and your colleagues seem to up to the task).

Stay safe!



Rick Lyles, PhD, PE
transportation consultant

[REDACTED]

telephone (cell): [REDACTED]

e-mail: [REDACTED]

TO: Hannah Pingree and Jerry Reid
Co-Chairs, Maine Climate Council
Governor's Office of Policy Innovation and the Future
181 State House Station
Augusta, Maine 04333
Submitted electronically



August 22, 2020

RE: Comments on the Maine Climate Council's Strategies – Refinements and additions designed to support Maine's commercial fisheries

Esteemed co-Chairs and members of the Maine Climate Council,

The Maine Coast Fishermen's Association (MCFA) works to identify and foster ways to restore the fisheries of the Gulf of Maine and sustain Maine's iconic fishing communities for future generations. Established and run by Maine fishermen, the objectives of the Association are to provide a voice for our fishing communities, to rebuild the Gulf of Maine ecosystem, and to support diverse fishing businesses throughout Maine. As such, climate change and its impacts on Maine's fishermen and working waterfront communities are of great concern and building solutions that create real change is of the utmost priority. MCFA passionately believes that fishermen are an important part of the solution-creation process as we work together to reduce Maine's greenhouse gas footprint and invest in the opportunity of the blue economy. The Maine Climate Council has a difficult task and we submit these comments in the hope that they will assist your work developing policies and priorities that will add strength and resilience to our state's coastal economy while helping to solve our climate crisis.

Without question we are operating during precarious times for both the climate and Maine's seafood industries. The Council's statutory mandate to develop adequate mitigation and adaptation strategies is broad, and it is a challenge that we should continue to work together to meet. The strategies developed by working groups pertaining to the marine and seafood sectors are laudable, but at this point we fear they will fall short in meeting the goals of the Council. To reduce Maine's greenhouse gas emissions and create opportunity along the working waterfront we must include real and tangible programs, which go beyond what has currently been proposed.

The comments below reflect our organization's belief in enfranchising and engaging the fishing industry in developing real and impactful solutions. Maine's commercial fishermen and women are willing and able to contribute in meaningful ways to reducing vessel emissions, de-carbonizing our seafood supply chain, reducing greenhouse gas emissions from our food system, and embracing ambitious technological strategies to meet this moment. We propose two new strategies for the Council's consideration that can be amalgamated with the existing Coastal and Marine Working Group's proposed strategies. We also provide comments on strategies developed by that working group and others that will ensure the fishing industry's participation in developing solutions is enhanced, its needs recognized and supported, and impacts to its members and operations fairly and equitably considered.

I hope these comments are helpful as the Council works towards achieving its mandate. I, as well as our organization's staff and leadership, would be pleased to discuss the issues identified here, along with anything else, with you. Thank you for your consideration.

Sincerely,

Ben Martens
Executive Director

Comments on Working Group proposed strategies

I. Offshore energy development

The entirety of the Gulf of Maine is important to Maine fishermen. Whether it be for the harvest of our sustainable fisheries resources, transit and safe navigation, or protected fish spawning and habitat areas, traditional maritime users use this entire Gulf. The displacement of any fishermen from areas in which they operate warrants due consideration and deliberation. We are seriously concerned that the Energy Working Group has not appropriately considered the policies or structures necessary to ensure that **Maine's offshore renewable energy discussion is an equitable one. The Maine Climate Council should not** leave fishermen behind, or out of the picture, when it comes to offshore wind.

We are concerned **that the Energy Working Group's recommendations for offshore wind energy** contributions to address Maine's renewable energy needs contradicts the Renewable Portfolio Standard analysis conducted by Synapse for the Council. The Synapse analysis determined that offshore wind should comprise an insignificant contribution to the renewables mix in a cost-optimized approach to achieving the RPS by 2050. Despite this finding from the Synapse report, the Energy Working Group has decided focus on the development of offshore wind as a significant part of our energy solution. Offshore wind is most likely in our future, but we hope that if the Climate Council embraces this approach that there is more clarity given to the justification behind this decision and an analysis of what is lost to our fishermen, working waterfront communities, and seafood consumers in that approach. Not all choices to address climate change are going to be cost-effective, but we would hope that the concerns, voices, and ideas of those directly impacted by those choices will be invited to the table to join in building a solution that can work for all parties.

To date, there have been no American offshore wind energy development processes that have approached siting in a manner that respects and incorporates the fishing industry. This is driven by two primary factors: a lack of incentive from developers to include fishermen, and a lack of processes at state and **federal agencies requiring the inclusion of fishermen's perspectives.** This has led to the consistent failure by private and public interests to address the fundamental issues that fishermen have concerning energy projects proposed to be sited in fishing grounds.

Maine has a unique opportunity, and the expertise, to create a new standard for offshore wind siting and fisheries engagement. To date, proposed projects have incorporated **fishermen's perspectives** in very limited ways and the poor communication around those processes has taken something that would be controversial and made it adversarial. Discussions surrounding **Diamond Energy's proposed** offshore wind installation represent a key opportunity to reframe the fisheries outreach and siting processes by including **fishermen's perspectives.** **This shouldn't be limited just to where** the site should be, but also sharing of real-lived experiences on the Gulf of Maine, the limitations certain technology might place on certain fisheries, research project design and implementation to evaluate the impacts of offshore wind in the Gulf of Maine, and building solutions that invest in increased opportunities and access that make up for what is being lost. Maine, as a major partner in **Diamond's** proposed Gulf of Maine offshore renewables project, has the position to include fishermen in a meaningful way and design and implement a robust fisheries-focused program. This is an opportunity for Maine to lead and show the rest of the country how to appropriately build offshore infrastructure, while embracing and empowering current users.

This framework must include real benchmarks for siting and cable routing decision making and progress towards fishing industry engagement, and real backstops against inequitable siting decisions. Cumulative impacts scoping for proposed projects must take place *before* siting decisions are finalized; the recommendations relating to offshore renewables should include a requirement for environmental impact review at this key early stage before lease sales are complete.

We believe that a report to the Legislature that recommends offshore energy development and does not contain specific recommendations for a robust statutory framework for siting decisions would be an incomplete report. We are ready and willing to be of assistance in developing this framework.

II. Working Waterfronts

We are grateful that the Coastal and Marine Working Group included support for working waterfronts (WW) in its recommended strategies. For our organization, this is the most important and most **promising of the Working Group's six recommendations. In the recently completed ten year "Maine's Economic Development Strategy, their vision statement outlines the opportunity of Maine's marine resources. "As the world demands ever-greater sources of protein, Maine has its extensive coastline and abundant resources from the sea."** Without the access that working waterfront creates for those natural resources, Maine will be throwing away one of its clear advantages and opportunities.

Expanding access to capital for WW properties and projects beyond traditional sources would have a meaningfully positive impact to the future resilience of Maine's coastal-dependent citizens. **Maine's** maritime heritage values and legacy working waterfront dependent industries are the foundation that newer industries, like tourism and offshore energy, will build upon. In our outreach efforts, it has become clear that a significant factor in what makes Maine special to visitors and a destination for those looking to bring their talents to Maine is the **"realness" of our coast** that simply **doesn't** exist elsewhere. Other types of coastal development and users benefit **when Maine's 20 miles of Working Waterfront is protected** and enhanced. We strongly endorse the recommendation that revolving loan funds and trust funds be established for WW projects. The Climate Council can look to municipalities like Stonington, which has created ordinance-based funds for sea level rise and harbor maintenance projects.

We believe that the WW strategy should be strengthened in two important ways:

- Maine's Working Waterfront Access Protection Program (WWAPP) should be reformed/expanded and recapitalized.
- WW infrastructure protections should be expanded to include associated critical infrastructure and enhanced by statutory requirements.

The WWAPP has been an effective tool for protecting privately owned WW infrastructure. However, as Maine's own WW report makes clear, it is not a good fit for all working waterfront properties. For some wharf owners, the decision to sell development rights is simply too onerous, whereas other capital improvements are either too large or too small for the program. We note that the WWAPP program itself does not contain specific metrics for prioritization or eligibility, making it difficult for applicants to engage with certainty. And of course, funding for the WWAPP has lapsed along with **Land for Maine's Future**.

WWAPP should be expanded to include 'discrete working waterfronts'. These smaller wharves or piers are often used by one or two fishermen, represent some of the oldest wharves in a community, typically do not offer berthing, may be home to small fish houses, and are usually used for gear maintenance and storage rather than access to the water. They are often quite old and would likely not meet requirements of the Army Corps of Engineers if they needed any permitting in order to be replaced or repaired. While challenging in a regulatory sense, supporting discrete working waterfronts means supporting a unique **component of Maine's WW infrastructure, one that serves the needs of rural and remote fishing communities and stakeholders.**

Representative Pingree has introduced legislation that would create research funds, grant funds, and a revolving low-interest loan program to support working waterfront. Unfortunately, due to the current dysfunction in Washington, that bill has little chance of passing in the near future, but it is a model for

what Maine could adopt which is adaptive and can support a variety of businesses and access points along our coast.

Additionally, **the Climate Council's recommendations should include opportunities for properties in WWAPP to continue to benefit from the program in meaningful ways.** This can either be marketing **(celebrate Maine's protected working waterfront- like the Maine Farmland Trust "Forever Farm"** program; or, prioritization of properties that are protected for small grants and low-interest loans so they can continue to adapt, invest in themselves, and become climate ready as our oceans rise and storms become stronger.

For Maine commercial fishermen, the working waterfront includes not just shoreside infrastructure but the bait, fuel, ice, trucking, gear storage, and local parking needed to operate their businesses. These important WW components should be considered and protected as the Climate Council contemplates coastal infrastructure resilience. We endorse the Coastal and Marine **Working Group's recommendation** that tax assessments for these WW components and properties be valued protectively. The recommendation should be expanded to include zoning recommendations that explicitly protect WW infrastructure, inclusive of ancillary components including those listed above. We also propose a recommendation to the legislature to commission a State Bureau of Insurance study on the adequacy of sea level rise insurance coverage for non-WW coastal development.

We would also note, that as sea levels rise and storm surges become more severe, having working waterfront that is built and ready to be flooded is a much better investment and use of our coastline than hotels or restaurants that will cost municipalities and Maine money as they become unusable in the future.

III. **Create a 'Deadbeat Dams' List**

We propose that the Coastal and Marine Working Group's nature-based solutions strategy expand upon the harm posed by poorly designed road/stream crossings (as noted by the Working Group) and larger facilities including dams that impede fish passage as well as the extraordinary benefits restoration of fish passage and connectivity can have to freshwater and marine ecosystems. As the Working Group noted, there are hundreds of small crossings that are in need of retrofit. However, larger dam removal projects should be envisioned to complement these smaller proposals. The Climate Council should recommend to the Legislature **the creation of a 'deadbeat dams' list that prioritizes projects for decommissioning and removal.** Such a list should contemplate factors including ownership and licensing, upstream restoration potential, public safety and water supply issues, and cost, among other factors. This list would align Maine with states like Oregon, Washington, and California that are recognizing the value of restoring anadromous fish passage to their coastal communities and the aquatic food webs threatened by climate change. The benefits of removal to upstream communities as well as commercial fishing businesses are likely to be significant. Creating a list of projects to target for removal is the first key step Maine can play in advancing significant comprehensive restoration efforts.

Maine Coast Fishermen's Association Proposed Strategies

I. Fishing vessel efficiency, emissions reduction, and renewable fuel programs

1. **Describe the Recommended Strategy and how it addresses Maine's climate resiliency and mitigation goals.**

Diesel engines currently comprise the optimal approach to marine propulsion in US fisheries because of low costs and low specific fuel consumption, mechanical simplicity, and high degree of reliability. The combustion of diesel fuel is a significant source of emissions in the marine fisheries and seafood sectors, along with transportation of product (which scales with distance). It has been long-recognized that marine diesel repower programs and associated emissions reductions can reduce the carbon footprint of fisheries, although modern 'high tier' diesel engines are often too large to fit in engine compartments designed around older engines or lower tiers, and overall fuel consumption is sometimes increased as newer designs run hotter and operate at relatively higher speeds in order to reduce particulates and burn fuel more cleanly. Additionally, with the deferral of the Environmental Protection Agency's Tier 4 implementation requirements for certain vessels commonly used in Maine by several years, and the possibility of additional waivers should engine designs be developed more slowly than anticipated, Maine can develop incentives programs structured and designed to result in higher adoption rates of Tier 4 engines. Many of Maine's aging fishing vessels would require retrofits in order to accept Tier 4 engines. Other approaches designed to reduce the carbon intensiveness of small engine marine diesel propulsion include vessel efficiency enhancements, the use of biofuels, and voluntary/operational incentives approaches and programs.

Here we propose several approaches that can be taken in Maine's fisheries sector to reduce emissions and fuel consumption and increase fishing vessel efficiency. This is an inherently different strategy from the Transportation Working Group's second recommendation, because marine internal combustion applications inherently differ from the rest of the transportation sector. To the extent that strategy is compatible with these recommendations, we urge the Climate Council to find ways to combine and enhance them accordingly.

- a. For adaptation strategies, what climate impacts does it address? How will this strategy reduce the vulnerability of Mainers to the impacts of climate change?
- b. List any site-specific geographies where the strategy would be applied.

This strategy would focus on the coastal communities of Maine

2. What is your measurable outcome for this strategy, assuming all recommended actions to implement the strategy are achieved?

Outcomes will be measured in tons of CO₂e and gallons of fuel saved

- a. For mitigation strategies:
 - i. What is the estimated CO₂e savings (metric tons) by 2025, 2030, 2050?

Unknown; possibly tens of thousands of metric tons within ten years. Use of biodiesel at B5-B20 mixtures is attended by proportional savings in petroleum products used and the requisite carbon budget savings; the purchase of new diesel engines may result in significant emissions reductions over the lifetime of an engine. Over a typical useful lifetime of 5000 operational hours, a marine diesel engine might emit close to 1000 tons of CO₂e. Marginal efficiency gains applied throughout the Maine fishing fleet, amortized

over one or more repower cycles through the end of the decade or longer, could yield significant emissions savings by 2050.

- ii. What is the cost effectiveness of those reductions (cost per ton of CO₂e reduced) and the total cost?

Unknown; depending upon the level of implementation and compliance, ranging from near-zero for incentives programs and efficiency audits to hundreds of dollars per ton for complete repower grants.

- b. Are outcomes measurable with current monitoring systems?

Yes, for robust emissions savings accounting, agency resources may be required to track implementation, utilization, and compliance

3. What specific actions would be required to implement the strategy, including but not limited to legislation or regulation. Examples include: establish a program or a fund, conduct additional research, provide education or training, coordinate with other parties/agencies/states, etc. Considering the recommended actions listed, who, if they can be named, are the specific actors needed for implementation?

Program development

- a. *Establish a marine efficiency audit and rebate program.* Marine efficiency audits conducted by marine architects or professionals with related expertise can have meaningful positive impacts to vessel efficiency. Explore contracting with auditors to develop a no-cost or low-cost audit program for state licensed commercial fishermen to evaluate vessel efficiency. Develop a list of efficiency retrofits or improvements and a schedule for reimbursement or tax rebates if vessel owners install retrofits or improvements within Maine.
- b. ***Enhance DEP's Maine Clean Diesel Program and augment DERA match with retrofit grants to increase participation in repower programs; establish advanced propulsion technology grants program.*** Maine should provide supplemental programmatic support to increase participation and broaden eligibility for its Clean Diesel Program using low-cost financing, tax rebates, or, ideally, grant funding for marine diesel repower projects or vessel redesign/repower projects for older vessels, using applications operating at higher-than-required efficiency standards, resulting in earlier adoption of efficient low emissions engines. Maine should provide low-cost financing, tax rebates, or, ideally, grant funding for next-generation marine propulsion technology applications (diesel-electric hybrid, fuel cell, z-drive/low shaft angle designs, etc.) in Maine-built fishing vessels or Maine-based retrofit/installation projects.
- c. *Develop a biodiesel reimbursement and warranty gap coverage program.* Biodiesel in marine propulsion applications is a promising direction for the achievement of emissions reductions and reducing fossil fuel use. Many modern engines are rated to operate on various biodiesel fraction blends, whereas older engines may require retrofits to replace engine components susceptible to the solvent properties of the fuel. Some modern engine manufacturers provide warranty limitations for biodiesel users. Maine is in a reasonable position to explore research on biodiesel applications in a wide variety of engines in order to establish a general standard for biodiesel use in fishing vessels. Additionally, Maine should facilitate the development of biodiesel distribution in Maine, explore tax incentives for biodiesel wholesalers and retailers in Maine as well as retail purchasers, and explore development of a warranty protection program for verified users of biodiesel in marine applications for qualifying engines.

- d. *Advocate for a removal of baseline restrictions for federally permitted boats.* For boats which have federal groundfish or monkfish permits, attached to those permits is a baseline which includes the length of the vessel to which the permit can be attached and a horsepower restriction. These baselines were enacted to ensure consolidation of the fleet did not take place and to help control catch. At this point though, it is an outdated regulation as we exist in a world with limited allocations and other means to control effort. What it has done is force many boats to continue to operate old engines as they cannot upgrade appropriately. These are federal regulations, but the New England Fishery Management Council sets those regulations and Maine is a very influential member of the NEFMC.

4. What is the timeframe for this strategy?

	Short-term (2022)	Mid-term (2030)	Long-term (2050)	2070 -2100
To implement	X	X		
To realize outcomes	X	X	X	

5. Please analyze the Recommended Strategy against the following criteria. (Each Working Group can add its own sector-specific criteria as appropriate.)

Workforce - Will the strategy create new jobs, prevent job loss, or cost Maine jobs?	The strategy will create Maine jobs. Economic activity associated with retrofits and biodiesel distribution and sales would increase retail, wholesale, marine construction, and specialized labor activity.
Benefits (non-workforce) - What are the expected co-benefits of this strategy (e.g., improved health, increased economic activity, wildlife habitat connectivity, reduce natural hazard risk, increased recreation, avoided damage)?	The strategy would achieve improved public health associated with higher air quality in harbors and reduced exposure to small particulate emissions.
Costs – What are the estimated fiscal costs and other costs to carry out this program. To Maine? To municipalities? What resources do you anticipate needing to inform Mainers about the strategy and the opportunity/costs of the strategy? Where would financing likely come from?	Achieving full implementation of this strategy and all recommendations would result in significant costs to Maine, ranging in the tens of thousands to millions of dollars. It would likely require one or more additional FTE at Maine DEP for program administration. Informing stakeholders of program availability and benefits could be accomplished using existing public fora, processes, and organizational networks. Maine could engage with the congressional delegation to develop additional federal programmatic support as federal fiscal priorities potentially shift towards supporting vessel efficiency upgrades and retrofits. Financing could also come from users or bond funding; costs to Maine could be incurred in the form of tax rebates if implemented.
Equity - Is this strategy expected to benefit or burden low-income, rural, and vulnerable residents and/or communities?	The strategy is expected to benefit all coastal front-line communities. Initial scoping could determine likelihood of participation and extent of qualification at various schedules, which could attenuate budgeting.

What outreach has been/will be undertaken to understand the impact of the strategy on front-line communities?	
Proven strategy & feasibility – Has this strategy been implemented successfully elsewhere? Is it feasible with today's technology? What barriers to implementation exist (e.g., financial, structural, workforce capacity, public/market acceptability)?	This strategy has been implemented in part in various other states. Private sector efficiency auditors have been operating for years; Alaska began a vessel efficiency audit program early last decade; the Carl Moyer Program in California provides significantly higher levels of capital for diesel repower projects than the Maine Clean Diesel Program. The proposal is feasible, with the least likely/most ambitious approaches including emerging technologies support/financing. The fishing industry has been broadly accepting of efficiency programs and retrofit/repower programs in Maine and elsewhere.
Legal authority - Does the strategy require new statutory (legal/legislative) authority?	The strategy would require new DEP funding and implementation authority for many programmatic approaches contained in this strategy.
Other?	
Other?	

6. Rationale/Background Information

Alaska Sea Grant: Fuel Saving Measures for Fishing Industry Vessels (2011). Available from <https://seagrant.uaf.edu/bookstore/pubs/ASG-57.html>

Noor, CW Mohd, M. M. Noor, and R. Mamat. "Biodiesel as alternative fuel for marine diesel engine applications: A review." *Renewable and Sustainable Energy Reviews* 94 (2018): 127-142.

II. Creative capital for Maine caught, Maine bought seafood & underwriting resilience

1. **Describe the Recommended Strategy and how it addresses Maine's climate resiliency and mitigation goals.**

The global food system's environmental impact is large and growing. Nearly a quarter of all greenhouse gas emissions come from food production. The World Research Institute has been examining the impacts of food production and, in a report from 2017, stated, "The world population is expected to approach 10 billion people by 2050. With this projected increase in population and shifts to higher-meat diets, agriculture alone could account for the majority of the emissions budget for limiting global warming below 2°C (3.6°F). This level of agricultural emissions would render the goal of keeping warming below 1.5°C (2.7°F) impossible". They also point out that fish, depending on the species, can have a lower greenhouse gas footprint than any other meat protein source. That means that by embracing our local seafood and changing local diets, we have an opportunity to dramatically impact almost a quarter of our emissions. We just have to eat more local seafood.

The impacts of the COVID-19 emergency to the Maine seafood industry have been profoundly disruptive, resulting in major supply and market challenges and impacts to profitability and socioeconomic resilience at every single level. Fishermen and fishing businesses have had to rely in part on disaster payments from the Federal government, which are administered under the inefficient and ineffective fishery disaster program under the Magnuson-Stevens Act. It has become clear that the solutions we develop to increase resilience to climate change-related disturbances in the fishing and seafood industries must also be designed to increase robustness to significant short-term challenges, both in terms of moving seafood to consumers and providing for the capital needs of fishing businesses. The businesses that have withstood the current economic emergency most robustly are those that are able to shorten the supply chain and re-localize product that was once exported or sold to the restaurant market.

Most seafood landed in Maine is exported. After emissions from marine diesel engines, emissions associated with the transportation of seafood to processing facilities and/or to market represents the second highest contribution of carbon from the fishing industry. These emissions are relatively small compared to the carbon footprint of virtually all other protein sectors and some plant-based agricultural sectors of the agricultural economy, but they can nonetheless be addressed in Maine's climate adaptation strategies in a manner that provides benefits to the seafood economy and the health of Maine people.

Here we propose the development of approaches to incentivize shortening the seafood supply chain, increase local consumption of carbon friendly fish, and exploring new risk management programs. These approaches would operate by incentivizing consumption of Maine-caught seafood at home in Maine and exploring private-sector approaches to disaster insurance.

- a. For adaptation strategies, what climate impacts does it address? How will this strategy reduce the vulnerability of Mainers to the impacts of climate change?

This strategy addresses climate impacts to Maine fisheries and fishing communities associated with population variability and geospatial shifts in fish stocks

- b. List any site-specific geographies where the strategy would be applied.

This strategy would focus on all parts of Maine.

2. What is your measurable outcome for this strategy, assuming all recommended actions to implement the strategy are achieved?

Outcomes will be measured in tons of CO2e and gallons of fuel saved

a. For mitigation strategies:

- i. What is the estimated CO2e savings (metric tons) by 2025, 2030, 2050?

Although this is primarily an adaptation strategy, potential tangible, currently unknown levels of CO2e savings may be achieved; possibly hundreds to thousands of metric tons within ten years if significant increases in Maine-caught, Maine-consumed seafood are realized. Replacing a hamburger or a steak with local haddock, pollock, or hake will have a appreciable and profound impact if done on a large enough scale.

- ii. What is the cost effectiveness of those reductions (cost per ton of CO2e reduced) and the total cost?

Unknown

b. Are outcomes measurable with current monitoring systems?

Unlikely without a complex carbon life cycle audit or analysis for this and potentially other industries

3. What specific actions would be required to implement the strategy, including but not limited to legislation or regulation. Examples include: establish a program or a fund, conduct additional research, provide education or training, coordinate with other parties/agencies/states, etc. Considering the recommended actions listed, who, if they can be named, are the specific actors needed for implementation?

a. Supporting new models for a local seafood supply

- i. *Establish a low-cost capital program for Maine-caught, Maine-bought seafood sales and processing to shorten the supply chain.* Increasing retail sales of seafood caught in Maine can increase market resilience, reduce the distance product travels, and buoy prices by enhancing demand upmarket. Enhancing our re-localized seafood supply can be achieved with incentives and state-focused marketing programs that can be used by traditional retailers, foodservice providers including restaurants and food trucks, and newer models like Community Fishery Associations and other subscription plan-based approaches. Providing low-cost loans for startup or expansion to qualifying businesses that purchase Maine seafood and maintain a Maine customer base for that seafood would allow this promising new segment of the seafood economy to thrive here while buoying price and providing more market certainty, in emergency situations as well as during stable periods. Capital programs should be made available to small-scale, Maine-based processors who participate in local retail or distribution, whether vertically integrated or operating separately, to allow for the re-localization of the entire supply chain.

- ii. *Partner with Maine Sea Grant to create a direct seafood sales guide and templates for interested businesses.* Direct-to-consumer seafood sales are increasingly enabled by technology and could comprise a small but important and visible component of re-localizing Maine's **seafood** supply. Other states including California and Alaska have sponsored the development of direct sales guides and templates to assist fishermen and their families in navigating permitting (HACCP plans, zoning, local ordinances, etc.) and gaining access to website templates and social media guides. These challenges are often daunting, and they require an understanding of local procedures and laws that many fishing families have not been deeply familiarized with. Lowering the barriers to accessing this information would make

a significant difference to fishing communities looking to adapt to the modern seafood landscape.

- iii. *Create an institutional foodservice rebate program for Maine seafood.* **Maine's primary and secondary education institutions and private companies that offer prepared meals to staff are often forced to choose between selecting local products or minimizing costs. Schools are often forced to select the cheapest, less nutritious, more carbon-intensive protein options sourced from out-of-state. Additionally, research shows that seafood is critically important for children's nutrition. Maine should explore the development of capital assistance programs for Maine schools and other institutions to select and promote Maine-caught seafood**
- b. Establish a pilot program for fishery disaster insurance. Commercial fishermen generally do not have access to adequate capital reserves or disaster insurance protection and, therefore, are reliant on a combination of debt and disaster relief to keep their businesses open during catastrophic events. Since the establishment of the commercial fisheries disaster program in 1976, Congress has appropriated a total of \$1.465 billion for fishery disaster assistance, mostly within the past two decades. In addition, Congress has appropriated \$300 million to the fishing industry during the COVID-19 emergency, with proposals for an additional \$500 million in development. However, the process is onerous and complex, often requiring months to several years before funds are delivered. This risk exposure incentivizes overfishing and increased pressure on sensitive stocks during disaster situations when stocks are least able to handle it, and it threatens the long-term resilience of Maine's fishing communities.

The *status quo* approaches to risk management in fisheries are not financially sustainable and put the existence of the fisheries in jeopardy. **Maine's** commercial fisheries are comprised of heterogeneous, highly specialized businesses that present unique insurance design challenges. As such, traditional insurance programs, **including the USDA's crop insurance program**, have not, to date, managed programs that address the needs of fisheries. However, we believe that significant progress has been made in establishing improved fisheries data collection and management policy which may improve the opportunity to implement a sustainable fishery disaster insurance program.

We believe that, in addition to a risk management benefit that increases resilience, fishery insurance has the potential to achieve significant fishery conservation and seafood market stability benefits by disincentivizing overharvest during times of disaster. Whether driven by market or resource challenges, disasters almost always require reduction in fishing effort, but unless businesses can access a safety net, there will always be an incentive to increase harvest to make up for losses associated with disruption.

We propose that the Maine Climate Council include a recommendation that DMR and the Bureau of Insurance develop a pilot study for a fishery disaster pilot program.

4. What is the timeframe for this strategy?

	Short-term (2022)	Mid-term (2030)	Long-term (2050)	2070 -2100
To implement	X	X		
To realize outcomes		X	X	

5. Please analyze the Recommended Strategy against the following criteria. (Each Working Group can add its own sector-specific criteria as appropriate.)

Workforce - Will the strategy create new jobs, prevent job loss, or cost Maine jobs?	The strategy will create Maine jobs and buoy prices paid for Maine products, ensuring socioeconomic resilience. A successful insurance pilot could prevent workforce shrinkage during/after disaster periods.
Benefits (non-workforce) - What are the expected co-benefits of this strategy (e.g., improved health, increased economic activity, wildlife habitat connectivity, reduce natural hazard risk, increased recreation, avoided damage)?	The strategy would achieve improved public health associated with increased seafood consumption, increased economic activity associated with a diversified and re-localized seafood supply chain.
Costs - What are the estimated fiscal costs and other costs to carry out this program. To Maine? To municipalities? What resources do you anticipate needing to inform Mainers about the strategy and the opportunity/costs of the strategy? Where would financing likely come from?	Costs to Maine would consist of expenditures associated with rebate program payout and administration. Maine could offset these costs by assessments on imported seafood products or other high-carbon-intensive activities associated with foodservice. The establishment and promotion of a 'Maine-caught, Maine-bought' program would add visibility to this effort, through branding, advertising, or other mechanisms.
Equity - Is this strategy expected to benefit or burden low-income, rural, and vulnerable residents and/or communities? What outreach has been/will be undertaken to understand the impact of the strategy on front-line communities?	The strategy is expected to benefit all coastal front-line communities. Initial scoping could determine likelihood of participation and extent of qualification for certain sectors or business types.
Proven strategy & feasibility - Has this strategy been implemented successfully elsewhere? Is it feasible with today's technology? What barriers to implementation exist (e.g., financial, structural, workforce capacity, public/market acceptability)?	Support programs for re-localized food supplies have been implemented in whole or in part in various other states including Maine. Fishery insurance program pilots have been undertaken in Alaska, Japan, and Iceland. The proposal is feasible, with the least likely/most ambitious approaches including emerging technologies support/financing. The fishing industry has been broadly accepting of efficiency programs and retrofit/repower programs in Maine and elsewhere.
Legal authority - Does the strategy require new statutory (legal/legislative) authority?	The strategy would require new spending and regulatory authority and legislation to commission pilot projects.
Other?	
Other?	

6. Rationale/Background Information

Fishery Insurance Pilot Proposed Work Plan:

The fishery insurance pilot project should include the design of a preliminary insurance structure that would provide immediate payouts to insureds in the event of a fisheries closures. Maine should work with stakeholders to select a pilot fishery to develop an insurance structure and insurance facility for the project. In addition, there should be a preliminary assessment of the risk and data requirements. There is value in the development of a “hindcast” analysis with several selected fishermen who represent the spectrum of operational configuration and risk exposure in the pilot fishery. This step will confirm that the initial design and data inputs are acceptable for further pursuit of the pilot. Engagement and dialogue with selected fisheries has indicated 1. strong interest from fishermen that the coverage would be well received and that 2. Fishermen are willing and interested in supporting an initiative to establish the program. We will work with commercial fishermen participating in the pilot fishery to design a commercial fisheries insurance product. The workplan for the pilot includes five key steps to bring the insurance program from initial concept to a national template for multi-sector implementation.

Preliminary Project Overview	
Initial Fisheries Engagement:	<ul style="list-style-type: none">- Engage with diverse/representative group of fishermen of varying permit sizes across geographic ports with whom we will collaborate.<ul style="list-style-type: none">o Explain scope of project;o Receive preliminary feedback on key metrics from initial design work (qualification standards; coverage amount; budget considerations; timing; payout mechanism);o Receive authorization to pull data to run design and pilot program
Data Structuring:	<ul style="list-style-type: none">- Engage with management agencies to design process to pull important data in scalable/consistent method;
Product Design:	<ul style="list-style-type: none">- Work with experts to develop preliminary expectation of future HAB events; develop expected loss return-periods;- Finalize product design and program structure:<ul style="list-style-type: none">o Timingo Product electionso Capital requirementso Operational requirements
Market Test / Validation:	<ul style="list-style-type: none">- Meet with selected commercial insurer(s) to review program design. The purpose is to 1. receive third party validation on the design and 2. Understand appetite to provide capacity to the broader insurance program.
Fisheries Engagement Follow up:	<ul style="list-style-type: none">- Review program design and data results with participating fishermen.- Present proposal and recommendations to launch program and make program widely available to the fleet.

Post Pilot Objective: Permanent Program Structure

Following the Pilot, we anticipate pursuing one of two potential paths for implementation of a full-scale and permanent risk management program for any additional qualifying/appropriate fisheries whose participants desire to underwrite disaster risk: 1) a dedicated facility sponsored and overseen by the

Maine Bureau of Insurance in coordination with DMR or; 2) a USDA program administered by the Risk Management Agency. Private brokerages will offer and administer policies on a sector-by-sector basis.

1. State-Sponsored Facility	
<ul style="list-style-type: none"> ➤ Maine as lead agency, funding and policy lead; ➤ Dedicated capital facility (“Facility”) – collateralized programs; further capacity by third-party reinsurers; ➤ State governance / oversight of Facility; policy input on level of premium support from Facility; ➤ Third Party Program Administrator: facilitates qualification; distribution; education; program design. 	<pre> graph TD Admin[Administrator] --> CF[Commercial Fisheries] Admin --> Facility[Facility] GO[Governance / Oversight] -.-> Facility CF -- "[Subsidized] Premiums / Fees" --> Facility Facility -- "Indemnity Payments" --> CF Facility <--> Capital Support TPR[Third Party Reinsurance] </pre>
2. RMA Sponsored and administered under USDA; State as co-lead agency	
<ul style="list-style-type: none"> ➤ RMA designed programs and rates; ➤ Premium and distribution subsidies; ➤ Programs administered by RMA’s Approved Insurance Providers (AIPs); ➤ Federal reinsurance capacity through FCIC; ➤ State to assist with fishery by fishery design input – consistent with fisheries management policies. 	

Rose, Cassaundra

From: Pingree, Hannah
Sent: Monday, August 24, 2020 9:13 AM
To: Curran, Sarah; Rose, Cassaundra; Ronzio, Anthony
Subject: FW: MCC's Draft Plan, public input, editorial commentary

From [REDACTED]
Sent: Saturday, August 22, 2020 10:51 PM
To: Pingree, Hannah <Hannah.Pingree@maine.gov>; Reid, Jerry <Jerry.Reid@maine.gov>
Subject: MCC's Draft Plan, public input, editorial commentary

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

To Whom It May Concern at the Maine Climate Council (MCC)—

MCC has asked “the public” for input on a set of strategies and recommendations presented in various types and formats of documents on the MCC website that, put together, amount to a first draft of MCC’s Climate Action Plan for Maine. I’ll call these current documents the “Draft Plan” (DP). More specifically, MCC has asked “the public” to take the surveys that are included in the DP, which you say will help the Council prioritize the strategies and recommendations. I did the surveys. I found it hard to express my priorities through them, but will address that problem in a different forum. I also had no opportunity to give you editorial input on the DP: I offer that below.

The Council’s expertise is evident in every part of this endeavor, and the strategies/recommendations cover a very large subject area. Overall, they’re thoughtful, comprehensive, data-based, and practical. That such an impressive work product was produced in the middle of a pandemic is amazing to me, actually. Many officials at the municipal level in Maine weren’t able to look climate change in the face before the pandemic, but for months now even the ones who were able have had to look away. To paraphrase a political meme, “Nevertheless, the Climate Council persisted.” With excellent energy!

Now that you’re finished with the DP, though, and are asking for public input via the surveys, I have an alternate suggestion about the way to prioritize. Also, on a different scale, I’d like to suggest a new way of thinking about the DP that may help you write the Final Plan.

I. THE “DRAFT PLAN” (DP) AS A WHOLE, ITS FORM AND FUNCTION

Whoever has been drafting the DP as a whole for the Council (staff? a group of Council members?) appears to be thinking of the whole collection of documents contained on the Council’s website as a single DP.

Would the drafters be able to conceive of it as 3 different versions of the DP written for 3 different audiences? I’d argue that’s actually what the current DP is. Furthermore, I’d argue that if the Council recognizes it as such the drafters will have a much easier time prioritizing the strategies and getting to a Final Plan.

The 3 different versions

A. The first version is made up of the general introduction to the strategies plus each of the six Working Groups’ proposed strategies as outlined in text.

--**The audience** for this version is the general public.

--**The form** for this version is simplified. It contains little to no data, little to no reasoning behind the strategies, and no detail. Some data is sprinkled in to grab attention, and some reasoning is given in the strategies themselves, but basically the strategies are stated in summary form, and that’s it.

--**The function** of this version is to provide a basis for the surveys, and the function of the surveys, as stated, is to assist the Council with prioritizing the strategies.

These functions dictate the simplified form, because a survey is a simple tool, and simple is really all the general public will tolerate by way of reading anyway. The trouble with such simplified material, however—whether the

summarized strategies or the simple questions on the surveys—is that it's all so generic and so “vanilla”, without any context or detail, that it's hard for the public to figure out what impacts the strategies might have in the first place, and even harder to prioritize one strategy over any other on a given Working Group's list, much less over strategies on other WG's lists! This audience just doesn't have enough to go on.

In my opinion, the function of the stated strategies alone, as well as the surveys, is that they educate the general public, and maybe even excite them, by demonstrating a range of possible strategies and leading them to think about possible local impacts. Input from that audience on the substance of the strategies, though, is necessarily limited.

B. The second version is the collection of six videos supporting each Working Group's proposed strategies.

--**The audience** for this version consists of more knowledgeable and engaged members of the public, ones familiar with the subject matter at hand and the underlying issues, people who might be employed or who volunteer in environmental fields.

--**The form** for this version is more sophisticated and lively. The strategies are presented with quite a bit of added graphic data (charts, photos). Experienced emphasis is provided by speakers who the audience may know. Arguments are outlined in favor of each strategy. Overall, a whole lot of context is provided.

--**The function** of this version, same as the first version, is to provide a basis for the surveys, and the function of the surveys, as stated, is to assist the Council with prioritizing the strategies.

Here, the audience has more to go on in their own backgrounds, and has been given more, too, and so they actually may be too “advanced” for the surveys; nonetheless, even if limited by the surveys, they'll use other means of communications to help the Council prioritize.

C. The third version is the collection of pdfs, called “Draft Recommendations” (DR), behind each of the Working Group's strategies.

--**The audience** for this version is the most specialized audience of all, probably the people who will become responsible for implementing the recommendations at one level of government or another, one branch or another. This audience will likely read the DR they're particularly concerned with after the Final Plan has been published, not before, because the DRs are just too hard to read.

--**The form** of this version is comprehensive. It includes all the data (some of it not yet available, but promised), all the pros and cons, and all the details. Two different formats are used in each DR: one tabular, the other normal text. Although two of the DRs are tightly organized, the rest are “loose and baggy monsters.” All are all long and dense. Despite having common interests and basically similar guidelines, the six DRs differ widely in their readability, and they don't always match up with the first version of the strategies, the one offered to the public.

--**The function** of this version is to turn the strategies into actionable recommendations and actions, not just by providing the materials described, but also providing all the underlying references, so the audience will be able to research examples and instructions re actual projects.

II. GETTING TO the FINAL PLAN

A. Keeping the versions but reframing them. The versions are there already. For the Final Plan, they just need to be reworked and introduced separately.

--The first version can give the final list of strategies for each group, pared down to the basics without context, as it is now.

--The second-version videos can't be revised, but the date of their filming should be given, and the occasion, with an explanatory note about inconsistencies due to the videos' having been filmed and “published” at an earlier date than the Final Plan.

--The third version could repeat the full list of strategies, this time with their associated recommendations. This version would need major editing. Each Working Group's section could be written as a discursive text with footnotes or endnotes, no tables. The six texts could follow the models of the Coastal and Marine Working Group or the Energy Working Group, both of which are relatively short and well-organized, thus easy to read.

--Any “raw material” currently in the DRs but not incorporated in the Final Plan, such as the tables, can be archived in an Appendix, so as not to lose valuable bits and pieces.

B. Determining the priorities

Readers going through each set of six Working Group strategies can see quickly that some of them repeat, perhaps not verbatim, but in substance. Of course, some overlaps are simply mistakes, and should be omitted. Often, however, overlaps arise at points of priority, meaning that the overlaps should be highlighted rather than “fixed.” Specifically, in the Final Plan the Working Groups' strategies that overlap could be formatted in some way--through sectioning or color, say—and then a major section of the document at the end would outline and discuss the priorities thus revealed. The more overlaps on a strategy (e.g. “find a method of funding”), the greater its priority.

C. Centering on relevance to Maine

Some of the strategies are already worded in this way. The overall purpose of this suggestion for the Final Plan is to give readers pride in building on what's already been accomplished by Maine, or in what Maine has a special chance to

improve. To paraphrase a refrain from Governor Mills's State of the State address this year, "We're not the rest of the country: we're Maine."

D. Assessing the strategies

This isn't the place for me to make substantive comments about particular strategies and recommendations. Here, I'd simply like to list general points that the Council should carefully consider so as to avoid a built-in tendency toward emphasizing strategies only at the level of the state.

--jurisdiction: is this a strategy the state has the authority to carry out or would be best at carrying out?

--collaboration: is this a strategy on which the Council has the possibility not just to consult, but to collaborate with local or non-government stakeholder groups?

Thank you for your outreach to the public. I hope some part of this extended editorial commentary has been useful.

Barbara Currier Bell, Belfast
Interested member of the public

August 22, 2020



August 31, 2020

Maine Climate Council
Governor's Office of Policy Innovation and the Future
181 State House Station
Augusta, Maine 04333-0181
c/o Cassandra Rose - Cassandra.rose@maine.gov

Thank you for the opportunity to submit comments regarding the Maine Climate Council's Recommendations.

I am the Eastern Program Director of [Wildlands Network](#), a national organization dedicated to creating connected landscapes that ensure the survival of wildlife, native habitats and ecosystem functions. Our work is founded in science, driven by fieldwork and furthered through strategic policy and partnerships. We are in the process of establishing an office in Maine this fall.

As background: With staff based across the United States and in Mexico, Wildlands Network has been at the forefront of continental-scale conservation for nearly 30 years. The core principle of all we do is this: if protected areas are connected with healthy habitats on a continental scale, our treasured native plants and animals will thrive—as will life-supporting ecological processes like carbon storage and pollination. Our work has inspired the establishment of similar organizations across the world, and our commitment to the prosperity of wildlife and wild spaces is emboldened in the face of the challenges of our rapidly developing world.

Please find below our consolidated comments on the Maine Climate Council's working group recommendations. We have also submitted survey comments and are presenting our top priorities in this letter. We applaud the council for its work in this last year, despite COVID and meeting constraints. The time for action is now, and there are many strategies that provide multiple benefits to communities, as well as build state capacity to provide a long-absent leadership direction to reduce the human and ecological impacts of climate change on the Maine landscape. Wildlands Network looks forward to participating in implementation of the final recommendations and prepared to lend support in several areas as noted in this letter. Only through partnerships can the goals and strategies for GHG emissions reductions be met and Maine's natural and working landscape offers a rich opportunity for collaboration.

Wildlands Network is in support of adopting and strengthening the following recommendations, organized by working group strategies. We recognize that many of these strategies are intertwined and complementary and support those synergies. The three most important considerations for us are:

- 1) To stress the importance of a serious review of shoreland zoning for both protect aquatic and terrestrial species and habitat connectivity, and for flood protection that advances multiple community benefits.
- 2) To solidify funding streams and policy guidance to incentivize landowner action in support of Carbon sequestration, wildlife habitat conservation and preserving ecological values through current use taxation policies such as Farmland and Open Space designation, Tree Growth

designation and designation of ecological reserves on public lands. In addition, securing more permanent funding for Land For Maine's Future is a priority.

- 3) To re-commit to and adequately fund state, regional and local community planning for climate resilience through state guidance and incentives, funding for community level planning, training in community resilience strategies including Stream Smart principles, and more. In particular, increasing funding for Beginning with Habitat and Maine Natural Areas Program would support local planning for habitat and species resilience, carbon sequestration, and public safety.

Natural and Working Lands Working Group recommendations:

Wildlands Network generally supports all of the recommended strategies prepared in the WG report. We agree that our forests, farms and wetlands provide climate resiliency through Carbon sequestration, habitat and species conservation and connectivity, and aquatic resilience in the face of disruptive climate events and trends. Natural lands provide important ecosystem services that have ecological, public health and safety and economic benefits.

In particular, WN would like to emphasize our support for the following:

- We support the establishment of a permanent funding source to support land acquisition and conservation efforts for habitat, biodiversity and working lands, especially the Land for Maine's Future Fund. State conservation funds should include criteria that reflect climate mitigation and resilience goals.
- Since there will never be enough public or private dollars for the degree of land protection needed, WN supports a review of current use taxation mechanisms to incentivize carbon storage and conservation including the Farmland and Open Space guidelines. In particular operationalizing and funding the "wildlife habitat" criterion of the Farm and Open Space law to support conservation of land and water resources that provide high biodiversity values including for species and habitats at risk of decline from climate change is strongly endorsed. Furthermore, the Maine Tree Growth Tax law should incentivize carbon storage and older and natural woodlands as a legitimate and climate resilient forest management objective for this category.
- The Mandatory Shoreland Zoning law should be seriously strengthened to provide better flood protection and public safety, protect valuable habitat and travel routes for wildlife and refugia for all riparian plant and animal species and to support natural ecosystem dynamics/function. This is one arena where there are multiple overlapping benefits, as noted throughout the working group reports.
- Maine needs to adequately fund, maintain and enhance ecological, biodiversity and habitat information housed in state agencies including Beginning with Habitat and Maine Natural Areas Program. These agencies provide critical data for towns and planners to promote accurate resiliency planning with co-benefits of carbon sequestration, habitat and species protection and related public safety benefits. These agencies should have increased funding to support their ability to provide technical assistance to towns, communities and planners. Wildlands Network is poised to support and complement the expanded role of these programs to serve communities and connected landscapes.
- We strongly support strategy 2f to increase funding to improve aquatic connectivity using Stream Smart principles. Protection of riparian and shoreland zones provides multiple benefits for climate resiliency including habitat protection, wildlife movement (including fisheries) and related economic, social and environmental benefits using natural lands for natural climate solutions. Funding for projects and for technical assistance and planning support (as noted in the Community resilience recommendations) is paramount.
- Maine's Ecological Reserve System should be expanded as we look at the need to maintain long-term storage of Carbon in addition to working forests. The dearth of truly sustainable forestry practices across the landscape elevates the importance of both improving land management

practices and sustaining ecological reserves that have climate adaptation incorporated into their design and management.

- We support the strengthening of U Maine's capacity to support the climate resiliency of Maine's natural and working lands through research, education, monitoring and planning.

Community Resilience Planning, Public Health and Emergency Management Working Group recommendations

Wildlands Network supports all three Community Resilience Strategies. Maine has suffered a deep erosion of funding and technical assistance to towns for comprehensive planning. This is exacerbated by an absence of state support or mandate to incentivize local planning that could achieve multiple benefits - public safety, infrastructure protection, habitat connectivity, watershed and riparian protections, fisheries restoration, flood protection, etc. The limited funding that exists is only for coastal communities and all communities in Maine are vulnerable and could benefit from planning support.

We believe that the proposed strategies are a realistic reflection of the current need. Ultimately, responsibilities will lie with local towns and communities to undertake climate resiliency planning. Ensuring that planning laws are internally consistent and recognize climate as a necessary element of sound planning, is the right place to start. Offering technical assistance and funding to build community capacity would go a long way to preparing communities and the state as a whole for the inevitable disruptive consequences of climate change.

Furthermore, the detailed recommendation that funds be available to offer resilience training to town officials would enable community organizations and residents to work together on implementing strategies with shared goals. Integrating Stream Smart principles into planning for removal of barriers and upgrading culverts is already in practice across the state and funding should be increased to continue this work.

We strongly recommend that Maine review the planning capacity in Vermont and the guidance documents for regional and local planning and for discouraging forest fragmentation (Act 171 guidance).

Lastly, as hard as it may be, these inevitable disruptions to our infrastructure, land, water and energy systems will grow. We need to be prepared to think about where development and construction is allowed in terms of climate suitability as well as soils and slope. By moving development away from waterways and flood zones, we are ensuring greater flood protection and less property damage, and additionally, better protections for species that utilize riparian corridors for movement while improving habitat quality and reducing the threat of habitat fragmentation.

We also believe that all of the above should apply to both organized and LUPC territories.

Coastal and Marine Working Group Recommendations

WN supports Coastal and Marine WG recommendations and in particular those pertaining to conservation of coastal ecosystems through Blue Carbon sequestration efforts, coastal habitat restoration and promoting climate adaptive ecosystem planning. It is long known that wetlands offer flood protection and that natural habitats can contribute to flood and storm protection while also providing important habitat values. The multiple benefits of coastal community resiliency include storm and flood protection, habitat protection, Blue carbon sequestration and related conservation values. Tidal rivers are already being restored and anadromous fisheries returning to headwater lakes and streams. The Council should ensure that its final recommendations take into account the multiple social, ecological and economic benefits that arise from climate resilience planning, especially along coastal waterways.

Transportation Working Group recommendations

In adapting Maine's Infrastructure critical to the State, we support conducting a statewide infrastructure vulnerability Assessment (see pp 39-40). When designing ways of preventing infrastructure damage, we endorse proactive inclusion of best practices considerations for enhancing wildlife and habitat connectivity. Wildlands has expertise in this field.

Energy Working Group Recommendations

While reducing GHG emissions and decreasing fossil fuel use in favor of renewable energy is a laudable goal, renewable energy projects can still have a climate-negative cost on the landscape. Centralized industrial scale renewable energy projects have long-term costs to communities, habitats and the Maine economy if sited poorly, as is the proposed CMP Corridor. Renewable energy projects seeking state approvals should be mandated to conduct a full life cycle analysis to determine the true costs of renewable energy development and transmission. Transmission lines themselves clear forest, require extraction of metals for transmission and impact recreational economic opportunity. Smaller scale and distributed renewable energy solutions should be given priority for funding, tax incentives etc.

In closing, we appreciate the thousands of hours invested by the Maine Climate Council members, staff, consultants, partner and organizations to prepare these working group reports. The pandemic that has forced a streamlining of the Council's work also points to the urgency for action, and to find the means by which our diverse natural landscape can contribute to both climate resilience for communities and ecosystem health, connectivity and resilience.

We look forward to being a partner in the implementation of final strategies consistent with the above recommendations.

Sincerely,

Christine Laporte
Eastern Wildway Director
christine@wildlandsnetwork.org



Wildlands Network
14 O'Henry Street, Suite 306 A
Asheville, NC 28803

wildlandsnetwork.org



Nature Based Education Consortium
Maine Climate Education Task Force

August 31, 2020

Governor's Office of Policy, Innovation, and the Future
Maine Climate Council
181 State House Station
Augusta, Maine 04333

Dear Climate Council:

Through the impressive work completed thus far by the Maine Climate Council, it was shown there was an opportunity and need to better include education in Maine's aggressive plan to address climate change. The Climate Education Task Force, representing the Nature Based Education Consortium, has developed proposals intended to build education into this plan.

We believe:

- Climate resilience and mitigation education needs to begin in public schools throughout Maine.
- Curriculum is most effective when it is developed organically as a team, involves real life experiences, provides opportunities to learn first hand from experts, centers on overarching open-ended questions, and makes connections to community.
- Young people need to feel hopeful about making a difference in fighting climate change. Education is key to that agency.

The urgent need to use education as a tool to produce a more climate literate, proactive, just, and equitable society can not be overstated. It is an honor to present to you three proposals to achieve the necessary goal of providing professional development opportunities for educators, developing curriculum, and empowering students to work on relevant, organic, and localized projects that will positively impact the climate, society, and them as individuals.

The first proposal is to create a Maine Climate Education program, based around professional development for educators, support for school-community organization partnerships, and including a climate justice perspective.

The second proposal is to develop a Governor's Academy for Climate Education. Much like Maine's popular and successful STEM program, and using the funding and organization structure of this program, the Governor's Academy for Climate Education would equip Maine

educators and students to co-develop and become confident teachers of relevant and rigorous climate education curriculum projects and learning experiences.

The third proposal is to create a statewide climate education task force to assess and make recommendations on how to achieve comprehensive, multidisciplinary climate education in K-12 schools in Maine by 2030.

The Maine Climate Council states that many communities need state support and partnership for important resilience planning. [A 2018 study found \\$1 invested in prevention or preparation for natural disasters, such as a storm, flood or fire, saves about \\$6 in rebuilding.](#) Not investing in the long-term future of Maine communities and people risks much greater costs and complicated recoveries in the future. We would add that investing in the climate education of Maine youth is an investment in the future of Maine. We need our young people to be prepared to lead our state through the necessary changes we need to make as our world warms in order to protect the natural beauty of Maine and to meet the needs of Earth's inhabitants, grappling with a warming planet. Furthermore, youth versed in climate issues become bold leaders, equipped to address climate injustices, and thus social injustices, making for a more balanced and equal society.

The human species is at a crossroads. One road leads to even greater inequality, more division, a more unstable climate, mass extinction and lost biodiversity, and significantly higher seas - all of which will severely impact Maine and its people. A second road leads to a more just and equal society and a plan to address and solve the global problems created by our species. In order to navigate the road we must travel, we need to develop informed leaders that are capable of managing this monumental task. It is through education that these leaders will be born. It is through education that science will guide our decisions and empower us to shift our priorities as one society and one people. If we fail to get this right and act quickly, the results will be catastrophic. If we strategically align experts, educators, and students with a singular, yet multifaceted objective, we will prevail.

Sincerely,
The NBEC Climate Education Task Force
Kosis Ifeji, Co-chair
Riley Stevenson, Co-chair
Amara Ifeji
Ania Wright
Diana Allen
Drew Dumsch
Gus Goodwin
Kaitlyn Bernard
Laura Lano

Leia Lowery
Luke Truman
Meghan Young
Melissa Tian
Ogechi Obi
Olivia Bean
Olivia Griset
Paige Nygaard
Stefanie Ordway

Revised MCC Working Group June Deliverable Template

Working Group Recommended Climate Strategies, Actions and Measurable Outcomes

Working Group Co-Chairs, please complete a template for each of the 4-6 strategies your Working Group is recommending to the Maine Council. Please submit strategies to GOPIF by June 5, 2020 with a cover letter summarizing your approach and prioritized strategies. You may also submit an optional Appendix with any additional background material, including decision-process explanations, issue statements, maps and data.

1. Describe the Recommended Strategy and how it addresses Maine's climate resiliency and mitigation goals.

Maine is a national leader in community based environmental learning and has recently adapted the Next Generation Science Standards, which include climate education. In 2019 a statewide Census for Community Based Environmental Learning was implemented. The Census found the top professional learning need in environmental teaching and learning by Maine teachers was more support and training to effectively teach climate change education. Furthermore, advancing equity and justice in education is a widespread and urgent goal. The following strategy would provide the support and training needed for Maine educators to successfully implement the NGSS, improve educational impact through partnerships with local community organizations and climate scientists, educate Maine youth on both climate science and justice, and result in a more climate literate citizenry.

Modeled off Washington State's successful ClimeTime program, a systemic climate science education effort, this strategy would create a Maine Climate Education program facilitated by the Maine Department of Education, in collaboration with the Nature Based Education Consortium's Climate Education Task Force. The Maine climate education program will include funding to support partnerships between school districts in all 16 counties and community-based organizations to launch programs for teacher training, linking Next Generation Science Standards (NGSS) and common core with climate science and justice education, tailored by and for each community. In addition to teacher professional development around implementation of the Next Generation Science Standards, the project will support schools and districts to work with community partner organizations, climate scientists and climate justice experts, to develop sharable instructional materials, design related assessment tasks and evaluation strategies, and facilitate student-led climate education projects. Washington State's successful ClimeTime program, a systemic climate science education effort found great success in supporting professional learning for teachers around broad climate adaptation and mitigation strategies, as well as for climate science in a locale setting.

The goal(s) of this statewide strategy are to:

1. Build the infrastructure needed for Maine PreK-12 educators to confidently teach about climate science and justice with co-developed curricula that are tied to the local environment and community and aligned to existing state standards.

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2. Increase skills for Maine youth to enter the Green Jobs workforce.
3. Increase capacity of educators in all regions to help Maine youth understand climate science and promote a thriving and sustainable environment.

Outcomes: A climate literate public is key to continued advancement of the Climate Council's recommendations over time, and particularly imperative in meeting mid and long range goals set forth by the council. If successful, we will also see an increased support of pro-CO2 reduction strategies statewide, such as the adoption of electric vehicles, home heating alternatives, increased support at the local level for implementing and financing resilience community planning measures, a general and widespread understanding of how climate change disproportionately impacts the most vulnerable community members, increased support of equity-based community solutions, and an increased number of educated workers prepared to enter the Green Jobs sector and/or motivated to pursue additional post-secondary training.

Widespread implementation of systemic Climate education in Maine schools will better prepare Mainers to respond to current and future impacts of climate change, thus creating a scenario where Maine communities are forward thinking and less vulnerable to what lies ahead.

2. What is your measurable outcome for this strategy, assuming all recommended actions to implement the strategy are achieved?

- a. Using educational assessment tools developed through the program, we will be able to measure student understanding of climate science and justice. These same tools will allow us to measure the effectiveness of the teacher's professional learning programs, measuring things such as an educator's knowledge of topics related to climate science and justice, and ability to translate that knowledge into effective curricula and programming.
- b. The Maine State Economist or the Maine Department of Labor's Center for Workforce Research & Information can track and report the numbers of Maine youth entering the local Green Workforce post-graduation.
- c. Student outcomes can be measured by teachers implementing assessment tools at the classroom level. These can include both formative and summative assessments. The teacher training program will need evaluation to understand the effectiveness of the strategy. Maine has many excellent education evaluators, such as the Maine Math and Science Alliance and researchers in the University of Maine System that have the capability of evaluating the effectiveness of this teacher education program.

3. What specific actions would be required to implement the strategy, including but not limited to legislation or regulation. Examples include: establish a program or a fund, conduct additional research, provide education or training, coordinate with other

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parties/agencies/states, etc. Considering the recommended actions listed, who, if they can be named, are the specific actors needed for implementation?

1. *Collaboration between the Maine Department of Education, The Nature Based Education Consortium Climate Education Task Force, outside education evaluator (like University of Maine or Maine Math and Science Alliance) and the Governor's Office of Innovation and the Future to develop a program modeled after the Washington State Climate Time Program*
2. *Funding: Potential Legislative Action to approve budget for program, perhaps public-private partnership model*
3. *Education about grant program purpose and protocol to districts and partner organizations, listening sessions and feedback incorporation in early stages of design*
4. *Open application to districts and community partner organizations*
5. *A representative/government appointed advisory body will select proposals from districts and community partners.*
6. *Teacher training and curricula development and pilot testing (with community partner support)*
7. *Teachers implementing new curricula in Maine preK-12 classrooms and sharing of curricula between districts on open access web portal.*
8. *Assessment of effectiveness*
9. *Continued teacher training with open-sourced materials created through the program*

4. What is the timeframe for this strategy?

	Short-term (2022)	Mid-term (2030)	Long-term (2050)	2070 -2100
To implement	2022			
To realize outcomes	2023 and beyond			

5. Please analyze the Recommended Strategy against the following criteria. (Each Working Group can add its own sector-specific criteria as appropriate.)

Workforce - Will the strategy create new jobs, prevent job loss, or cost the state jobs?	The strategy will create new jobs in the community partner organizations to support the teacher training and development. It will also create a coordinator position potentially at the Department of Education. The outcomes of quality climate education will be a better trained young cadre of individuals ready to enter the green jobs sector in Maine. This strategy will likely lead to higher retention of Maine-raised, college educated, professionals.
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<p>Benefits (non-workforce) - What are the expected co-benefits of this strategy (e.g., improved health, increased economic activity, wildlife habitat connectivity, reduce natural hazard risk, increased recreation, avoided damage)?</p>	<p>High Quality climate science and justice education that is rooted in community partnerships will increase student academic achievement and motivation and will increase general public climate literacy. The long term benefits of a climate literate population are increased civic engagement, increased support of activities that reduce greenhouse gas emission, pro-climate health behavior change such as buying EV, insulating houses, heat pump adoption etc., increased stewardship ethic, and a deeper commitment to building a more just and equitable society.</p>
<p>Costs – What are the estimated fiscal costs and other costs to carry out this program. To the state? To municipalities? What resources do you anticipate needing to inform Mainers about the strategy and the opportunity/costs of the strategy? Where would financing likely come from?</p>	<p>The Washington State Clime Time program in 2018 cost \$4 million dollars in year 1. \$3 million was given to districts and \$1 million to community partners to support the teacher professional learning and curriculum development. Washington State has 2,370 schools and Maine has 620 schools so this program could be significantly cheaper in Maine. If we implemented a similar program design and scaled back for our number of schools and teachers this statewide program could be implemented for 1.5 million. It would be possible to pursue an even more scaled back version as a pilot where Maine focused on districts of highest need rather than the entire state.</p>
<p>Equity - Is this strategy expected to benefit or burden low-income, rural, and vulnerable residents and/or communities? What outreach has been/will be undertaken to understand the impact of the strategy on front-line communities?</p>	<p>Students, the ultimate stakeholder, and representatives from front line communities were integral in the development and design of this strategy as members of the Maine Climate Education Task Force of the Nature Based Education Consortium. This strategy will improve the quality of public education in Maine, helping to ensure equitable access to quality climate science and justice education for all Maine students.</p>
<p>Proven strategy & feasibility – Has this strategy been implemented successfully elsewhere? Is it feasible with today's technology? What barriers to implementation exist (e.g., financial, structural, workforce capacity,</p>	<p>This strategy has been successfully implemented in Washington State. After the first year of implementation 2018-19, 99% of educators who were part of the project agreed or strongly agreed that participation prepared them with the necessary skills to try something new or different in their professional practice. 95% of participants agreed that they have broadened or deepened their understanding of research-based instructional practices and 88% of participants shared that they have broadened or deepened their knowledge of topics related to climate science. The</p>

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public/market acceptability)?	house and senate approved an additional 3 million per year for the following two years so the project is still ongoing. The Maine Environmental Education Association who serves on the Maine Climate Education Task Force has a very good working relationship with the Washington Environmental Education Association (E3) and they would be more than willing to meet with folks in Maine to assist us in further development and advancing a similar program in Maine. Using technology such as Zoom for teacher training, it would be possible to do the curricula development work and the necessary teacher training supported by this strategy, reducing the costs associated with travel, and circumnavigating COVID-19 concerns. The biggest barrier to implementation is the financial component. We have strong networks and relationships in the climate education sector between schools and community partners in Maine to build a successful program. The NGSS have already been adapted in Maine and contain climate science requirements, so this program would be the support system needed for Maine educators to feel confident and equipped to better teach the required standards. The climate justice elements help support a continued need in the state for more education on Wabanaki studies, as well as additional curricula that are culturally competent and advance equity and justice.
Legal authority - Does the strategy require new statutory (legal/legislative) authority?	To design and implement a grant program to advance climate education in Maine there would not need to be new statutory authority. However, the state funding for this program may require legislative approval. The program could also be set up as a public-private partnership, where philanthropy could help support the cost.
Other?	
Other?	

6. Rationale/Background Information

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If you are interested in learning more about Clime Time the program in Washington State this recommendation is modeled after please visit: <https://www.climetime.org>

****Please footnote substantive disagreements among the Working Group members**

Governor's Academy for Climate Education

"We all have what it takes to combat climate change, to protect the irreplaceable earth we share and care for. What is more precious than water, air, soil, the health and happiness of our children and our children's children and yours? For all of them, today, by Executive Order, I am pledging that Maine will be carbon neutral by 2045."

-Governor Mills

"Tackling climate change requires action at all levels of society, from individuals and educators to policymakers and businesses. By fostering awareness, capacity building and innovation climate change learning helps communities and individuals to reduce greenhouse gas emissions and effectively adapt to the changing climate.

Learning and skills are essential if countries are to achieve their stated policy goals on climate change."

-The One UN Climate Change Learning Partnership

A Governor's Academy for Climate Education would help Governor Mills reach the goal for Maine to be carbon neutral by 2045 by educating and making connections between Maine citizens, climate scientists, students, business leaders and policy makers.

The Climate Education Task Force, representing the Nature Based Education Consortium, is pleased to present the Governor's Academy for Climate Education. As a consortium, we believe:

- **Climate resilience and mitigation education needs to begin in public schools throughout Maine.**
- **Curriculum is most effective when it is developed organically as a team, involves real life experiences, provides opportunities to learn first hand from experts, centers on overarching open-ended questions, and makes connections to community.**
- **Young people need to feel hopeful about making a difference in fighting climate change. Education is key to that agency.**

This proposal is designed with a multi-generational and cross disciplinary approach from middle, high school and college school students, young professionals to retired professionals, with each bringing their passions, experiences, and expertise to the table with the purpose of learning from one another and working together to design and implement authentic climate education curriculum projects and learning experiences for students throughout Maine. In the 2019 Statewide Census of Community Based Environmental Learning, the most requested support by responding teachers was professional development on Climate education - this recommendation is a response to that request. The ultimate goals of the Governor's Academy for Climate Education are two fold. One is to develop relevant and easily digested Maine-centered, cross disciplinary curriculum to be used throughout the public school systems of Maine. The

second is to empower students to become well informed climate and environmental justice advocates and leaders, positively impacting their communities.

Throughout the school year an academy cohort group will include students and educators from middle, high school and college level from communities throughout the entire state. Academy partners will include environmentalists, scientists, non-profit organizations, renewable energy professionals, politicians, and government agencies. The academy cohort group and partners will gather multiple times throughout the school year to share the most current news and information on climate change as they work together to develop relevant and rigorous climate education curriculum projects and learning experiences. The Academy will culminate with a Climate Education Summit where groups will present their final projects and how these projects can be used to educate others .

Throughout the process and upon completion, academy fellows (the educators and students) will become leaders and ambassadors for climate education and contributors to climate education partners in Maine. They will leave with knowledge to be viable climate change board and commission members able to bridge the education and government agencies. The potential for this academy to break divides and generate collaboration between diverse communities throughout the entire state of Maine is significant, as is the potential for the specific climate issues facing inland vs. coastal communities to be taught in conjunction through the curriculum developed by the academy.

1. Describe the Recommended Strategy and how it addresses Maine's climate resiliency and mitigation goals.
 - a. For adaptation strategies, what climate impacts does it address? How will this strategy reduce the vulnerability of Mainers to the impacts of climate change?
 - b. List any site-specific geographies where the strategy would be applied.

The Center for Climate and Energy Solutions defines climate resiliency as the ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate. Improving climate resilience involves assessing how climate change will create new, or alter current, climate-related risks, and taking steps to better cope with these risks.

The United Nations Environment Programme defines Climate Change Mitigation as efforts to reduce or prevent emission of greenhouse gases. Mitigation can mean using new technologies and renewable energies, making older equipment more energy efficient, or changing management practices or consumer behavior.

We believe:

- Climate resilience and mitigation education needs to begin in public schools throughout Maine.
- Curriculum is most effective when it is developed organically as a team, involves real life experiences, provides opportunities to learn first hand from experts, centers on overarching open-ended questions, and makes connections to community.
- Young people need to feel hopeful about making a difference in fighting climate change. Education is key to that agency.

The Maine Climate Council states that many communities need state support and partnership for important resilience planning. [A 2018 study found \\$1 invested in prevention or preparation for natural disasters, such as a storm, flood or fire, saves about \\$6 in rebuilding.](#) Not investing in the long-term future of Maine communities and people risks much greater costs and complicated recoveries in the future.

We would add that investing in the climate education of Maine youth is an investment in the future of Maine. We need our young people to be prepared to lead our state through the necessary changes we need to make as our world warms in order to protect the natural beauty of Maine and to meet the needs of Earth's inhabitants, grappling with a warming planet. Furthermore, youth versed in climate issues become bold leaders, equipped to address climate injustices, and thus social injustices, making for a more balanced and equal society.

2. What is your measurable outcome for this strategy, assuming all recommended actions to implement the strategy are achieved?

a. For mitigation strategies:

- i. What is the estimated CO₂e savings (metric tons) by 2025, 2030, 2050?
- ii. What is the cost effectiveness of those reductions (cost per ton of CO₂e reduced) and the total cost?

b. Are outcomes measurable with current monitoring systems?

Outcomes for a Governor's Academy for Climate Education would be measured by various levels of community engagement and understanding of climate change in Maine. Governor's Academy fellows (grads) will make an impact in schools and

communities throughout the state through education, sharing their curriculum, environmental awareness, and climate change projects.

3. What specific actions would be required to implement the strategy, including but not limited to legislation or regulation. Examples include: establish a program or a fund, conduct additional research, provide education or training, coordinate with other parties/agencies/states, etc. Considering the recommended actions listed, who, if they can be named, are the specific actors needed for implementation?

Specific actions required:

- a. Get the thumbs up from Governor Mills and the Climate Council.
- b. Establish funding
- c. Put together a Governor's Academy for Climate Education design team
- d. Design team develops the program.
- e. Line up speakers, experts, presenters, partners. Work out logistics, on site learning locations, etc...
- f. Invite students and educators to apply
- g. Select cohort group for the 2021-22 school year
- h. Run the Governor's Academy for Climate Education
- i. Maine Climate Education Summit (with curricula developed shared open sourced online for other Maine Educators to Access)
- j. Evaluate the program (throughout) to influence future design

4. What is the timeframe for this strategy?

December 2020	Get approval from Governor Mills and the Climate Council.
January 2021	Establish a Governor's Academy for Climate Education team
February-April 2021	Design the Governor's Academy for Climate Education Program
May-June 2021	Promote and invite educators and students to apply
July 2021	Announce cohort for the 2021-22 Governor's Academy for Climate Education
Early October 2021	Kick-off (session 1)
December 2021	Session 2
February 2022	Session 3
April 2022	Session 4

June 2022	Governor's Academy for Climate Education Climate Summit
October 2022- June 2023	Governor's Academy for Climate Education Cohort #2
October 2023- June 2024	Governor's Academy for Climate Education Cohort #3
October 2024- June 2025	Governor's Academy for Climate Education Cohort #4
October 2025- June 2026	Governor's Academy for Climate Education Cohort #5

Brainstorm! Here is a table of ideas for possible themes for Governor's Academy projects

idea	Brief description
Carbon sequestration through forest management.	A forest managed with the intent of sequestering as much carbon as possible will be healthier and sequester more carbon than a typical managed forest. This forest will also have a higher value/higher yield over a longer timeline. Curriculum could include facts about forests and how they go about sequestering carbon. What types of trees do so most efficiently. Also how a habitat improves with longer periods between disruptions and how the plants in a forest interact. How to identify tree and plant species. This section could include a field trip and art and writing projects.
How can offshore wind impact Maine and the World?	Connect with UMaine and design, build and test model floating offshore wind turbines.
Why design matters: How does energy efficient design impact Maine and the world?	Site visits, discussions with architects and research with climate scientists to design and build model net zero/ energy efficient homes and buildings.
Can we Talk about Climate Change Through Art?	Students , artists, climate scientists and environmentalists work together to discuss and research a local environmental issue. Create a piece of artwork or performance art to educate the community.

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Working Group Recommended Climate Strategies, Actions and Measurable Outcomes

Working Group Co-Chairs, please complete a template for each of the 4-6 strategies your Working Group is recommending to the Maine Council. Please submit strategies to GOPIF by June 5, 2020 with a cover letter summarizing your approach and prioritized strategies. You may also submit an optional Appendix with any additional background material, including decision-process explanations, issue statements, maps and data.

1. Describe the Recommended Strategy and how it addresses Maine's climate resiliency and mitigation goals.

- a. For adaptation strategies, what climate impacts does it address? How will this strategy reduce the vulnerability of Mainers to the impacts of climate change?
- b. List any site-specific geographies where the strategy would be applied.

The recommended long-term strategy is that interdisciplinary climate education be taught in all Maine public schools (prek-12). In order to achieve comprehensive interdisciplinary climate education in Maine public education, a statewide climate education task force should be developed to solicit stakeholder input and plan an equitable pathway to systemic adoption of climate education. While climate science education is already part of Maine's Next Generation Science Standards, the study of climate change and its impacts must be as diverse and multidisciplinary as climate change's effects on our environment and society if we hope to rise to the scale of the challenge over the long term. Climate education should be addressed with an interdisciplinary approach, with climate studies integrated across content areas - beyond science to subjects such as language arts, technical education, social studies, and Wabanaki Studies. As a long term, statewide recommendation to advance climate education in Maine, systemic and equitable access to quality climate education will be critical to building a climate-literate citizenry that is equipped to uphold the climate plan's vision of a carbon neutral Maine by 2045. Equitable access to quality climate education will enable all young Mainers who are interested to enter the growing green jobs workforce, boosting our economy and increasing the resilience of our communities.

2. What is your measurable outcome for this strategy, assuming all recommended actions to implement the strategy are achieved?

- a. The measurable outcome would be the creation of a climate education task force that plans and builds stakeholder input and support structures to ensure by 2030 climate education is taught in every Maine public preK-12 school. By 2030, all Maine teachers will have access to training, community partnerships, and curricula to ensure implementation of teaching climate education preK-12.

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- b. To measure this outcome the Maine Department of Education and/or appointed task force would need to survey all Maine schools to understand implementation and needs and monitor the data. A new system would need to be implemented to track this data over time.

What specific actions would be required to implement the strategy, including but not limited to legislation or regulation. Examples include: establish a program or a fund, conduct additional research, provide education or training, coordinate with other parties/agencies/states, etc. Considering the recommended actions listed, who, if they can be named, are the specific actors needed for implementation?

- a. *The Department of Education and GOPIF should convene a statewide climate education task force (and/or work with the existing statewide climate education task force at the Nature Based Education Consortium)*
- b. *The task force should include legislators and stakeholders representing the full range of those impacted by multidisciplinary climate education, including superintendents, principals, teachers across disciplines (science, social studies, english, etc), students, community-based organizations and school partners. There should be equitable representation from across all 16 counties, and from schools level K-12.*
- c. *The task force should meet, assess needs and make recommendations to the Department of Education and GOPIF on a periodic basis.*

What is the timeframe for this strategy?

	Short-term (2022)	Mid-term (2030)	Long-term (2050)	2070 -2100
To implement		x		
To realize outcomes			x	

Please analyze the Recommended Strategy against the following criteria. (Each Working Group can add its own sector-specific criteria as appropriate.)

Workforce - Will the strategy create new jobs, prevent job loss, or cost the state jobs?	Comprehensive public education on the complex causes and impacts of climate change will be key to preparing Maine youth to engage in a Green Economy born of many of the Climate Council's recommendations.
Benefits (non-workforce) - What are the expected co-benefits of this strategy (e.g., improved health, increased economic activity, wildlife habitat	Ensuring that Maine youth, the workers, citizens, and leaders of tomorrow, have complex and comprehensive understanding of climate change and its impacts is necessary for the continued support and implementation of Climate Council recommendations in order to meet all long term goals. In this

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connectivity, reduce natural hazard risk, increased recreation, avoided damage)?	way, it is the foundation for the successful long term impacts of all working group recommendations.
Costs – What are the estimated fiscal costs and other costs to carry out this program. To the state? To municipalities? What resources do you anticipate needing to inform Mainers about the strategy and the opportunity/costs of the strategy? Where would financing likely come from?	Convening a statewide task force will require some coordination and potential support for stakeholders with financial barriers. It's cost should be nominal, and can be conducted mostly online.
Equity - Is this strategy expected to benefit or burden low-income, rural, and vulnerable residents and/or communities? What outreach has been/will be undertaken to understand the impact of the strategy on front-line communities?	The public education system is a vehicle for truly equitable climate education. In order to ensure that climate education is not solely available to students in districts with the resources and inclination to teach about climate change, multidisciplinary K-12 climate education should be made available to all Maine students. This will improve representation of lower-income and marginalized students in green jobs post-graduation, and will better enable those most impacted by climate change in Maine to take a leadership role in facing and responding to those impacts.
Proven strategy & feasibility – Has this strategy been implemented successfully elsewhere? Is it feasible with today's technology? What barriers to implementation exist (e.g., financial, structural, workforce capacity, public/market acceptability)?	<p>In 2020, New Jersey is the first state to institute a K-12 climate education requirement. While not to be implemented until 2021, every school district will decide on an appropriate method for teaching students about the climate change's effect and how to respond to them.</p> <p>A requirement is only one approach among many however - a task force made up of a wide range of stakeholders will be best able to design strategies that are well-tailored to educator' needs and those of each community. Similar task forces have been used for public engagement and oversight in Maine and around the country.</p>
Legal authority - Does the strategy require new statutory (legal/legislative) authority?	The creation of a stakeholder task force requires no new legal or legislative authority.

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Other?	
Other?	

Rationale/Background Information

**Please footnote substantive disagreements among the Working Group members

Rose, Cassandra

From: Burgess, Dan
Sent: Tuesday, September 8, 2020 9:19 AM
To: Nancy Hasenfus
Cc: Rose, Cassandra; Winne, Melissa
Subject: RE: En- ROADS- scientific computer simulation prediction tool for how to affect climate change

Thanks, Nancy.

Adding Cassy and Melissa who can ensure this is included in the comments provided to the MCC.

Dam

From: Nancy Hasenfus [REDACTED]
Sent: Friday, September 4, 2020 5:51 PM
To: Burgess, Dan <Dan.Burgess@maine.gov>
Subject: En- ROADS- scientific computer simulation prediction tool for how to affect climate change

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Dan,

I understand that the mission of the MCC is to come up with an environmental plan for Maine but I believe the MCC could also make National recommendations. Since we are one of many states and we all share the same atmosphere, it seems to me recommending a National Carbon Fee makes sense. I am sending you a link to a simulation program that I find fascinating. If you slide the bars along their tracks it shows you what affects many interventions would have. You will see that a carbon fee is clearly the most effective single intervention although many will need to be done.

<https://en-roads.climateinteractive.org/scenario.html?v=2.7.29>. I hope you find it interesting.

Best wishes,

Nancy

Rose, Cassandra

From: Pingree, Hannah
Sent: Wednesday, September 9, 2020 4:31 PM
To: Taylor, Joyce; LaBrecque, Taylor S
Cc: Curran, Sarah; Rose, Cassandra
Subject: FW: The Alternate transportation NetZero solution

Public comment on micro rail.

From: KenCapron1 [REDACTED]
Sent: Wednesday, September 9, 2020 11:04 AM
To: MaineClimateCouncil <MaineClimateCouncil@maine.gov>
Cc: Burgess, Dan <Dan.Burgess@maine.gov>; Loyzim, Melanie <Melanie.Loyzim@maine.gov>; Pingree, Hannah <Hannah.Pingree@maine.gov>
Subject: The Alternate transportation NetZero solution

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

I have tried numerous ways to provide input to subcommittees and to the MCC in general about the research I am undertaking to develop an entirely new mode of transportation. MicroRail will provide the same access and agility of any surface mode of transportation. It will do so without producing any carbon emissions and in fact will be more efficient than the Tesla and Prius currently. It will provide the most convenient, most safe and least costly form of transportation available.

Even with that introduction, none of the Climate Council workgroups have shown any interest in this technology. How any sincere climate effort could ignore what could become the future of personal transportation is beyond explanation. The message conveyed is that Maine is either not capable of supporting futuristic science and research, or Maine would be happy if this technology leaves Maine and becomes successful elsewhere with its jobs, beneficial add-on services (fiber optics, cable, phone and such), and 24/7/365 all-weather on-demand door-to-door service.

In closing, all I can say is that you ignore MicroRail at the risk of failing to meet your climate goals. MicroRail guarantees you will meet your climate goals. Early and cheaply.

On another note for consideration by the MCC and especially DEP/BEP, I have seen no mention of the life of solar panels and known hazards of solar waste. To advocate for solar without addressing disposal is simply irresponsible. The same is true for batteries. As with Washington State, we need to ban these products from the waste stream. Period.

Kenneth A. Capron, ret. CPA, MCSE
[REDACTED]
[REDACTED]

Phone: [REDACTED]
MagLev-Maine dba MicroRail
Email: [REDACTED]



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Rose, Cassaundra

From: Kevin Sutherland [REDACTED]
Sent: Wednesday, September 9, 2020 11:57 AM
To: Rose, Cassaundra
Subject: MCC Comments sent

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Cassaundra,

I submitted the comments below today via the google form. I share them with you because, if the Council/staff wishes to consider expanding on them (as the first member who spoke after returning from the breakout session (I didn't get her name) suggested about the planning piece), I would be willing to help provide my expertise; through writing, resources, and a professional network, etc.

Happy to see under A3 - Reduce Vehicle Miles Traveled, "support development in priority areas" - this could be further flushed out by advocating for zoning changes that encourage further development in areas where infrastructure already exists and is in locations that can withstand flooding/sea level rise. Personally, I believe planning/zoning should be Part 1: D because it really is a primary driver (no pun intended) we are in the mess we are in today.

Another area – that could be flushed out - B5: While weatherization is a piece of this, the broader, more tactical effort/language on this (especially for the construction industry) would be to focus on retrofitting rather than replacing aging infrastructure. Yesterday was the CarbonPositive Reset! 1.5C Global Teach-In. <https://carbon-positive.org/agenda/> Carl Elefante gave a great presentation on this – (Re)Design: Repurpose, Re-Skin, Renovate. Other takes on the vocab: Embodied Carbon: Reduce, Reuse, Sequester. I hope the Climate Council will consider some of these thoughts and strengthen the language from just weatherization.

Kevin

Kevin L. Sutherland, Director of Business Development

Hardypond Construction
7 Tee Drive
Portland, ME 04103

[REDACTED]
[REDACTED]
[REDACTED]



19 Community Drive • Augusta, Maine 04330 • (207) 622-7501 • Fax: (207) 623-3590

September 8, 2020

Acting Commissioner Loyzim and Director Pingree:

I'm writing on behalf of my client, the Maine Association of REALTORS®, which is a professional trade association with about 5700 members statewide. My members represent both buyers and sellers and are involved in both residential and commercial transactions. Our membership also includes affiliates, which are those professions tied to real estate transactions, such as bankers, closing agents, title agents, appraisers, building inspectors, surveyors, etc. The Maine Association is a member of the National Association of REALTORS® (NAR) which is the largest trade association in the world.

We would like to respectfully express our strong concern with some of the Buildings, Infrastructure, and Housing Working Group's recommendations in their "Strategy Recommendations to Mitigate Emissions and Support Resilience in Maine Buildings" dated June 5, 2020. (hereinafter "Report") These concerns center around three recommendations: I. Proposed Changes to the Maine Uniform Building and Energy Code (MUBEC); II. Energy Audits; and III. Commercial Building Benchmarking.

I. Proposed Changes to the Maine Uniform Building and Energy Code (MUBEC)

The Report considers various mechanisms "to expand and increase code compliance across the state" (Page 10), including incentives and government mandates. We believe that incentives to encourage voluntary improvements are more appropriate than mandates promulgated through changes to the MUBEC. Our position is shared by others including the Maine Municipal Association (MMA). The Report notes that MMA "supports the use of incentives rather than government mandates" (Page 10, Footnote 22).

II. Energy Audits

One of the strategies in the report is to "Improve the Efficiency and Resiliency of Existing Building Envelopes." The report states one of the options for weatherization improvements is to "[e]ncourage or require energy audits at the time of sale for residential buildings...." (Page 35) Although we support the work of the Maine Climate Council generally, we strongly oppose any effort to mandate a required energy audit at the time of sale for residential or commercial buildings.

The difference between encouraging and requiring is very significant for real estate transactions. There are numerous items that a buyer or seller may negotiate based on their individual needs, ability to pay, skills, and interests – it is critical that buyers and sellers be able to decide for themselves what items they want included and when in a negotiation. Furthermore, the Working Group incorrectly states that audits must occur at the time of sale because this "informs any home buyers about the energy improvement needs of the home at a time when they can act on it, by financing the efficiency or clean energy improvements into their mortgage through an Energy Efficient Mortgage, 203(k) or FHA Solar Loan." This supposition is misleading for several reasons:



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September 8, 2020

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- First, it incorrectly assumes most buyers/borrowers have excess borrowing capacity at the time of sale sufficient to not only purchase the home but also implement meaningful, and potentially costly, energy-saving improvements.
- Second, a borrower should be able to choose any mortgage product that best fits their needs and not be limited to the three products mentioned by the Working Group because those products cannot be combined with other mortgage products at the point of sale.
- Third, the point of sale is by no means the only “time when they can act” on the information obtained by an energy audit. Most homeowners make improvements throughout their time owning a property – at a time of their choosing and financial ability.
- Finally, the Report inaccurately states “[m]ost home buyers are unaware of the utility expenses or inefficiencies of a home before it is purchased.” In fact, the Property Disclosure Statement, which Maine law requires the seller to provide to all potential buyers in every residential real estate transaction in Maine, includes disclosure of energy costs to operate the home.

We have long been strong supporters of improving Maine’s housing stock – including incentives to encourage homeowners to adopt weatherization and energy improvement measures. For this reason, we strongly support consumer education and voluntary energy audits to assist in decisions to purchase property or upgrade efficiency.

Another concern not considered by the Working Group is stigmatization of properties – especially older properties. In the Working Group Report’s Appendix they state: “[the] strategy calls for requiring an energy audit including a Home Energy Rating System (HERS) Score for every residential building at the time of sale. This provides a benchmark for the efficiency of the home, similar to the gas mileage of a car.” (Page 57) but the score could stigmatize a property and discourage potential buyers from considering its purchase. This could cause the listing to go stale creating economic hardship for the seller and the property to potentially fall into disrepair. This scenario is more apt to occur with an older home, which is more likely to be owned by elderly or lower-income populations thereby inappropriately having a disproportionate impact on those populations.

We suspect that our concerns were shared by members of the Working Group itself. Indeed, Footnote 65 of the Report notes: “The Working Group did not reach consensus around whether to encourage or require the energy audits at the time of sale, but agreed that energy audits should be an on-ramp for long-term solutions.”

III. Commercial Building Benchmarking

The Report recommends requiring “commercial building energy benchmarking and labeling/disclosure.” (Page 36) We would oppose the labeling/disclosure of commercial buildings for the same reason we oppose HERS Scores for residential buildings: they risk stigmatizing a property and discouraging potential buyers from considering the commercial building at all.

In conclusion, we respectfully encourage the Maine Climate Council to adopt modified recommendations from the Working Group’s Report, specifically: 1) the use of incentives rather than mandates through changes in MUBEC; 2) voluntary not mandatory energy audits; 3) not adopt labeling standards for commercial buildings.

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There are real consequences to making policy decisions based on incomplete information. For many people, their home or commercial building is their only savings for retirement - a “score” could diminish this resource for their livelihood. For young families, and for those with student loan debt, added costs will push ownership beyond their reach.

This report has raised interesting policy issues, and Maine’s REALTORS® would like the opportunity to provide added insight. We look forward to a dialog with you toward balanced solutions. Thank you for your time and attention to these important matters.

Thank you,

J. Andrew Cashman
Partner
Preti Flaherty
jcashman@preti.com
207.623.5300

Rose, Cassaundra

From: Ivy Frignoca <ifrignoca@cascobay.org>
Sent: Wednesday, September 9, 2020 8:11 PM
To: Rose, Cassaundra
Cc: Lydia Blume; Kristie Rabasca
Subject: FW: MS4 Support and Recommended Strategies from CMWG and CRWG Maine Climate Council

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Cassy,

Please see the below comments submitted in support of the proposed strategies to revise state laws pertaining with the coastal and marine environment consistent with the recommendations of the CMWG and the Community Resilience working group. Would you please share these comments with the MCC?

Ivy
Ivy L. Frignoca, Casco Baykeeper
Friends of Casco Bay
43 Slocum Drive
South Portland, ME 04106
Cell: (207) 831-3067
ifrignoca@cascobay.org

-----Original Message-----

From: Kristie Rabasca [mailto:krabasca@integratedenv.com]
Sent: Wednesday, September 9, 2020 4:37 PM
To: Lydia Blume <lydiablume@gmail.com>
Cc: Ivy Frignoca (ifrignoca@cascobay.org) <ifrignoca@cascobay.org>; Abbie Sherwin (asherwin@smpdc.org) <asherwin@smpdc.org>; Rebecca Graham <RGraham@memun.org>; Steve Eldridge (townmanager@berwickmaine.org) <townmanager@berwickmaine.org>; James Bellissimo <jbellissimo@berwickmaine.org>; Milligan, Tom <Tom.Milligan@Biddefordmaine.org>; Jay Reynolds <jay.reynolds@capeelizabeth.org>; Laura Neleski (Ineleski@cumberlandmaine.com) <Ineleski@cumberlandmaine.com>; Town Manager <townmanager@eliotme.org>; Justin Early <jearly@falmouthme.org>; mlacroix@gorham.me.us; Jessa Kellogg (jkellogg@kitteryme.org) <jkellogg@kitteryme.org>; Doug Roncarati <dar@portlandmaine.gov>; Joseph A. Laverriere <JLaverriere@sacomaine.org>; Perry Ellsworth <pellsworth@sbmaine.us>; Jennifer Bickford <jbickford@sbmaine.us>; Fred Dillon (fdillon@southportland.org) <fdillon@southportland.org>; Lynn Leavitt <lleavitt@westbrook.me.us>; Steve Johnson (sjohnson@yarmouth.me.us) <sjohnson@yarmouth.me.us>; Leslie Hinz (lhinz@yorkmaine.org) <lhinz@yorkmaine.org>
Subject: MS4 Support and Recommended Strategies from CMWG and CRWG Maine Climate Council

Good Morning Ms. Blume,
I am sorry I missed the 9/3/2020 meeting to review and discuss the recommended strategies from the Coastal Marine Working Group and the Community Resilience Working Group of the Maine Climate Council. This email provides you with information that I would have shared at that meeting regarding the recommended strategies.

As Ivy informed you, I currently work with 20 of Maine's 30 municipalities that are regulated by the Maine General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). The municipalities I work with are located in York and Cumberland County, and include two of the communities that were the focus of your 9/3/2020 meeting (Kittery and York), however these comments apply to all of the 20 MS4 communities that I have worked with over the years, and have been specifically review and are supported by the communities who have signed on to this email.

As part of their MS4 Permit requirements, these communities are required to take action above and beyond the Maine DEP requirements for development specified in Statutes and Rules. For the first 15 years of regulation under the MS4 General Permit (2003 to 2013), the municipalities were able to act as "eyes and ears" to the Maine DEP, assisting in watching over implementation of state development regulations. These communities have also individually been pro-actively incorporating additional requirements for development and climate change into local ordinances, so clearly the need and desire to address these issues is present.

For the past 3 years, we have been reviewing drafts of the next Maine MS4 General Permit, and as part of that work, watching what other states are doing regarding MS4 permitting and overall development regulation. Our MS4 peers in Massachusetts, New Hampshire, and other states are being made to take more costly and time consuming measures to address the adverse effects of development, but have been assisted on the state level by coordinated efforts to update and improve regulations to address the compounding effects development and climate change. Maine would benefit from a statewide approach to addressing climate change in development regulations to provide consistency throughout a watershed and throughout the state.

In Maine, the MS4 communities have commented time and again on the Draft MS4 General Permit that improved regulation to address development pressures and climate change should be made at the state level, not the local level. We recently received a Grant from the Maine Coastal Program to review and summarize the Erosion and Sediment Control recommendations from the Maine Climate Council Working Groups to allow municipalities the option to incorporate these recommendations into local ordinance individually. But incorporation of these and the other Working Group recommendations into State Rules and Statutes (rather than local ordinances), so that they apply everywhere in the state, would be more beneficial to and protective of the environment and infrastructure in all areas of Maine.

MS4 communities are keenly aware that regulatory requirements need to prevent water quality degradation in undeveloped areas because it is much more cost effective to do so than it is to correct water quality issues once they have occurred. Similarly, as has been shown by the Maine Climate Council Working Groups, it is much more cost effective to prevent the adverse impacts of Climate Change rather than correct those impacts after the fact (a.k.a. the "cost of doing nothing"). The recommendations from the Working Groups regarding the needed changes to Maine DEP Chapter


500 and the associated development statutes are exactly the kinds of statewide regulatory changes the MS4s have been pushing for (including addressing larger storms, more incentives for Low Impact Development and green infrastructure, promotion of infiltration to minimize runoff, and references to more current precipitation data).

In particular, the MS4s recommend that DEP begin a state-lead stakeholder process to provide updates to both Chapter 500 and the development-related Maine Statutes incorporating the recommendations of these two MCC Working Groups. The outcome of the Maine Coastal Program Grant work by the MS4s could inform the stakeholder process. Please pass these thoughts along to the broader Council.

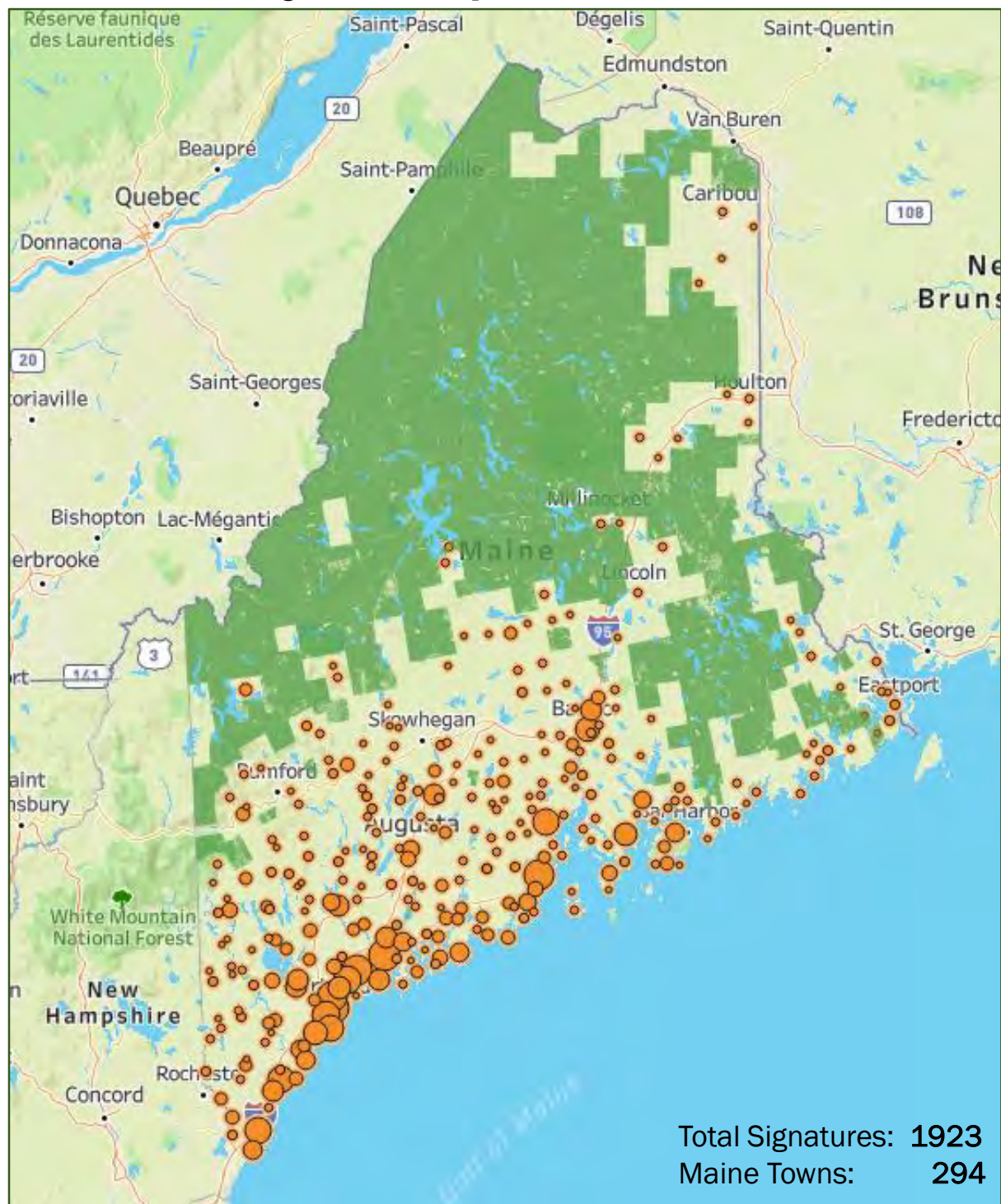
We appreciate your efforts on this important work. This letter is provided on behalf of the following communities and entities, who support the recommendations:

Maine Municipal Association
Berwick
Biddeford

Cape Elizabeth
Cumberland
Eliot
Falmouth
Gorham
Kittery
Portland
Saco
South Berwick
South Portland
Westbrook
Windham
Yarmouth
York

[cid:image001.png@01D6843D.500A6BA0]
Kristie L. Rabasca, P.E
Integrated Environmental Engineering, Inc.
12 Farms Edge Road
Cape Elizabeth, ME 04170


MCC Petition Signatures by Town



Signatures Urging the MCC to Adopt a Bold Climate Action Plan

Note to Maine Climate Council Members: an additional letter and signatures were also submitted by the Sierra Club separately, but as part of the same petition. The letter and list of signatures and comments begins on pg 147.

Dear Climate Council and Working Group members,

We urge you to adopt a bold, new Climate Action Plan that will strengthen Maine's economy, reduce air pollution, and build healthy, equitable communities.

In order to reduce carbon pollution by at least 80% before 2050, we urge you to support concrete action steps that:

- Expand local renewable energy projects and create new, long-lasting clean energy jobs for Maine workers;
- Deliver safe, clean, and affordable transportation options for moving people and goods throughout the state;
- Increase the energy efficiency of homes and businesses;
- Give Maine people, communities, and resource-based industries like farming, forestry, and fishing the tools to become more resilient and promote solutions that will reduce carbon pollution; and
- Ensure equity by providing solutions that are fair and accessible to all.

A strong and effective Climate Action Plan that lays out a roadmap to a clean energy economy is a once-in-a-lifetime opportunity to build a better future for Maine people.

Signed,

Kraus	A.		
Sharon	Abair	Nobleboro	4555
Beverly	Abbott-Rowe	Belgrade	04917-3900
Mark	Abdallah	Portland	4103
Willa	Abel	Bath	4530
Hannah	Ackerman	Brunswick	4011
Chrissy	Adamowicz	Brunswick	04011-2918
Evan	Adams	Gorham	4038
Barnett	Adinah	Portland	4101
Smith-Reiman	Adrienne	Portland	4101
Niru	Aggarwal	Portland	4101
Cheryl	Ahearn	Gorham	4038
Derek	Ahl	South Berwick	3908
Aboubakar	Akilimali		
D'Andrea	Al	Portland	4103
Willemsen	Alan	Falmouth	4105
Linda	Albert	Freeport	04032-6380
John	Albertini	Charleston	4422
Marcelo	Albuquerque	Islesford	4646
Kathy	Alcott	South Portland	4106
Susan	Alexander	Friendship	04547-4325
Rick	Alexander	Blue Hill	04614-6440

Anesko	Alexander	Brunswick	4011
Turnbull	Alexandra		
Mary Ellen	Alicandri	Yarmouth	04096-7952
Rand	Alice	Cape Elizabeth	4107
Tefft	Alicia	Portland	4101
Stark	Alison	Cumberland Center	4021
Barkley	Alison	Beaver Cove	4441
Freeman	Alison	Georgetown	4548
Dolloff	Alita	Cumberland	4021
Arthur	Allen	Brewer	04412-1707
Browne	Allen	Falmouth	4105
Anastasia	Alley	South Thomaston	04858-3049
Susan	Allison	Greene	04236-4119
Garth	Altenburg	Cape Elizabeth	4107
Gerencer	Alyssa	North Yarmouth	4097
Watson	Amanda	Falmouth	4105
Wesson	Amy	West Bath	4530
Kantner	Ananda		
Maureen	Anderson	Windham	4062
		Cumberland	
Nancy	Anderson	Foreside	4110
Pamela	Anderson	Old Orchard Beach	4064
Raymond	Andresen	Camden	4843
Bryan	Andrew		
Penelope	Andrews	Hermon	04401-0567
Kayo	Andrews	Washington	4574
Jennifer	Angelone	Norway	04268-5389
Donald	Angevine	Bethel	04217-3641
Hancock	Ann	Scarborough	4074
Savitt	Ann	Brunswick	4011
Barry	Ann	Brunswick	4011
Goggin	Ann	Falmouth	4105
Newton	Anna	Portland	4101
Alexander	Anne	Windham	4062
Kendall	Anne	Portland	4101
Liguori	Anthony	Kennebunk	4043
Jessica	Antonez	Portland	04103-4884
Janet	Arens	Stoneham	04231-0149
Rosemary	Armstrong	Brunswick	04011-3413
Jennifer	Armstrong	Gloucester	1930
Hallie	Arno	Lincolnville	4849
Benson	Arthur	Hampden	4444
Bell	Arthur	Yarmouth	4096
Penny	Asherman	Cumberland	4021
Godin	Ashlee	South Portland	4106

Angela	Atherton	Bucksport	4416
Lucy	Atkins	Bowdoinham	4008
Daniel	Atkins	Brunswick	4011
Joan	Atkinson	Vassalboro	04989-3329
Tom	Aversa	Unity	04988-4035
Tim	Avirett	Rockland	4841
Susan	Avis	Kittery	3904
Nancy	Babcock	Newry	04261-3069
Gwynn	Babette	Bar Harbor	4609
Louise	Backer	Portland	4101
Joyce	Bailey	Windham	04062-4408
Morgain	Bailey	Kingfield	04947-4261
Kim	Bailey	Gorham	4038
Ingrid	Baily	Parsonsfield	04047-6753
Krisanne	Baker	Waldoboro	4572
Janis	Balda	Thorndike	4986
Amanda	Ball		
Julie	Balsamo	Auburn	04210-5829
Sharon	Balzer	Cape Elizabeth	4107
David	Bannister	Rockport	4856
Lynn	Bannister	Rockport	4856
Stephen	Bara	Waldo	04915-3112
Ryland	Barbara	South Portland	4106
Harper	Barbara	Falmouth	4105
Haring	Barbara	Orland	4472
Bayerle	Barbara	Kittery Point	3905
Buerger	Barbara	Dover Foxcroft	4426
Toomey	Barbara	Cape Elizabeth	4107
Brown	Barbara	Portland	4101
McIntosh	Barbara Rose		
Bonnie	Barclay	Bangor	04401-3830
Phoebe	Barnes	Southwest Harbor	4679
Ronald	Barry	Lewiston	04243-0471
Cook	Barry	Wells	4090
Nicholas	Bartenhagen	Kennebunk	04043-7778
Erica	Bartlett	Portland	4102
Grace	Bartlett	Bangor	4401
Lucie	Bauer	West Rockport	4865
John	Beaman	Cumberland Center	4021
Jasper	Beardslee	Lewiston	4240
Mary Jane	Beardsley	Minot	4258
Nika	Beauchamp	Bath	04530-2836
Peggy	Beck	Lewiston	04240-3801
Laurie	Beck	Bath	4530
Linda	Beck	Farmington	4938

Bruce	Becque	Mount Desert	4660
Deb	Bedard	Acton	4001
Caryn	Beiter	Wells	4090
Zachary	Bell	Norway	04268-4865
Rebecca	Bell	Round Pond	4563
Pamela	Bell	Milford	04461-3230
Mathes	Ben	Rome	4963
Sharon	Benoit	Auburn	4210
Lori	Benson	Bath	4530
Sam	Bergman	Hancock	04640-3510
Charles	Bernacchio	Falmouth	4105
John	Bernard	South Portland	04106-2727
Vanessa	Berry	Old Orchard Beach	4064
Katherine	Bessey	Sumner	4292
Chris	Betit	Brunswick	4011
Taylor	Betsi	Portland	4103
Spares	Beverly	Limington	4049
Eberle	Bill	Thomaston	4861
David	Bilski	New Harbor	4554
Corey	Birdsall	Yarmouth	4096
Lucy	Birkett	Freeport	4032
Sarah	Bischoff	Cape Elizabeth	04107-1812
Barbara	Bixby	Winthrop	4364
Briana McLeod	Bizier	Raymond	4071
Annika	Black		
Jack	Black		
Mary	Blackstone	Ellsworth	04605-3200
Charmarie	Blaisdell	Rockport	04856-4267
Pam	Blake	Freeport	4032
Antonio	Blasi	Hancock	4640
Jennifer	Blastow	Otisfield	04270-6245
Cynthia	Blease	Orono	4473
Karen	Blennerhassett	Lamoine	4605
Patti	Blevins	Phillips	4966
Elijah	Bliss	Oquossoc	4964
Keith	Blizzard	Camden	04843-2229
Kimber	Bob		
Miller	Bob		
Lennie	Bobbi	Portland	4103
Carol	Boden	Bethel	4217
Annie	Boissevain	Gray	4039
Rachel	Bolender	Westbrook	04092-2120
Kim	Bolshaw	Brunswick	04011-7287
Caroline	Bond	Jefferson	04348-0907
Alexus	Bond	Freeport	4032

Erno	Bonebakker	Portland	4101
Craig	Bonnie	Portland	4103
Will	Bonsall	Industry	4938
Susan	Borg	Bristol	4539
Helen	Boucher	Brunswick	04011-3213
Brooke	Boucher	Kennebunkport	4046
Gail	Boukary	Rockland	04841-3233
Sandra	Boutin	Standish	4084
Douglas	Bowen	Porter	4068
Fiona	Boyd		
Hannah	Bradish	Wells	4090
Katherine	Branch	South Paris	04281-6026
Stephen	Brandon	Kittery	03904-1210
David	Brass	Eastport	4631
Seth	Braun	Bangor	4401
Andrea	Breau	Lewiston	4240
Robert	Breen	Bar Harbor	04609-0334
Morrow	Brenda		
Brush	Brenda		
Rita	Breton	Scarborough	4074
Engler	Brett	Bryant Pond	4219
Austin	Brett	Cumberland Center	4021
Roberta	Brezinski	Durham	4222
Jackson	Brian	Charleston	4422
Guy	Brianna	Orono	4473
Holme	Brie		
William	Briggs	Windham	04062-4121
Martha	Briggs	Windham	04062-4121
Ella	Briman	Cape Eliz	4107
Steven	Brinn	Cape Elizabeth	4107
Kenneth	Brinnick	New Gloucester	4260
Joan	Bromage	Mount Desert	4660
Miller	Brooke	Falmouth	4105
William	Brooke	Whitefield	4353
Ellen	Brouillet	Berwick	03901-2523
Octavia	Brown	Sebago	04029-0298
Peggy	Brown	Brunswick	04011-2320
Elise	Brown	Liberty	04949-3405
Mark	Brown	Marshfield	04654-5131
Lucas	Brown	Casco	4015
Mark	Brown	Machias	4654
Anna	Brown	South Freeport	4078
Luiza	Brown	Gardiner	4345
Mary	Brown	Kennebunk	4043
Sarah	Brown	Kittery	3904

Val	Brown	Cape Elizabeth	4107
Joel	Brownstein	Kennebunkport	4046
Found	Bruce	Brunswick	4011
Albiston	Bruce	Carrabassett Valley	4947
Barbara	Brusila	Warren	4864
O'Herin	Buck		
Karolyn	Buck	Portland	4101
Norvie	Bullock		
Sezen	Burak	Portland	4103
Tim	Burch	Damariscotta	4543
Anne	Burg	Lewiston	4240
Laurie	Burhoe	Bath	4530
Martha	Burke	Portland	04103-2778
John	Burke	Jonesport	04649-3145
Gary	Burke	East Wilton	04234-0354
Jean	Burnett	Portland	4101
Nathan	Burnett	Hiram	4041
Bruce	Burnham	Old Town	4468
Anne	Burt	Edgecomb	4556
Kelli	Burton	Waldoboro	04572-6351
Taylor	Carol	Harpswell	4079
Don	Bush	Cherryfield	4622
Barbara	Buss	Camden	04843-2048
Lindsey	Cadot	Roque Bluffs	04654-3105
Andrew	Cadot	Portland	4101
Cassie	Cain	Saco	4072
Grace	Cain	Kennebunk	4043
Silvio	Calabi	Camden	04843-2102
Aram	Calhoun	Amherst	4605
Morgan	Cameron	Gray	4039
Julie	Cameron	Falmouth	4105
Delisio	Candace	Kittery Point	3905
Maryellen	Carew	Freeport	4032
Little	Carl	Ellsworth	4605
Kruger	Carl	Windham	4062
Skinder	Carla	Saint George	4860
Christine	Carlson	Passadumkeag	4475
Ann	Carman	Scarborough	04074-9473
Weatherbie	Carmen	Cape Elizabeth	4107
Branning	Carol	Winthrop	4364
		Cumberland	
Dean	Carol	Foreside	4110
Jean	Carole	Portland	4102
Cirincione	Carole	Winter Harbor	4693
McGoldrick	Carolyn	Scarborough	4074

Sawyer	Carolyn	Belgrade	4917
John	Carpenter	Rockland	04841-2266
Karl	Carrigan	Saco	4072
Julie	Carter	Scarborough	04074-7414
Amy	Cartmell	Freeport	4032
Andersen	Casey	Yarmouth	4096
Sally	Cassell	Belfast	04915-6129
Donna	Cassidy	Gorham	4038
Anthony	Castro	New Gloucester	04260-3814
Anderson	Cathy	Orono	4473
Walter	Cathy	Gorham	4038
Fontaine	Cecile	Falmouth	4105
Berry	Cedric	Thorndike	4986
Roberge	Celeste	South Portland	4106
Shirley	Chace	Brunswick	4011
Marc	Chadbourn	Portland	4101
Carl	Chadwick	Camden	4843
Jackson	Chadwick	Camden	4843
Ingrid	Chalufour	Brunswick	4011
Nick	Chalupa	Kittery	3904
Doug	Chamberlin	Belfast	4915
Fausphoul	Chanda	Morrill	4952
Nancy	Chandler	Topsham	04086-1717
Jim	Chandler	Bryant Pond	4219
Jonathan	Chappell	Bridgton	04009-3427
Joshua	Charest	Greene	4236
Dyke	Charles	Brunswick	4011
Andre	Cheryl	Windham	4062
Herr-Rains	Cheryl	Vienna	4360
Dana	Chevalier	Eastport	4631
Patricia	Chick	Farmington	04938-6215
Bill	Child	Newcastle	4553
Bradley	Chris	Belgrade Lakes	4918
Sewall	Chris	Hope	4847
Bouchard	Christina	Cumberland Center	4021
McHenry	Christina	Blue Hill	4614
Braceras	Christine	Portland	4101
Lyman	Christine	Brunswick	4011
Lajoie	Christopher		
Cloe	Chunn	Swanville	4915
Lewis	Cisle	Belfast	4915
Leslie	Clapp	Blue Hill	4614
Rebecca	Clark	Whitneyville	04654-4232
Christine	Clark	Lyman	4002
William	Clarke	Brunswick	04011-3443

Len	Clarke	Port Clyde	4855
Rullman	Claudia	Phippsburg	4562
Hayward	Claudia	Georgetown	4548
Weatherford	Claudine	Peaks Island	4108
Barbara	Cleveland	Belfast	04915-6311
Robert	Clifford	Mount Desert	4660
Charlie	Cobb	Waterville	5494
Susan	Cochran	Skowhegan	04976-5244
Harpswell	Coffin	Arundel	4046
Barrie	Colbath	Fayette	4349
Sarah	Cole	Belfast	4915
Holme	Colin	Waterford	4088
Maxine	Collins	Wilton	4294
Beth	Comeau	Richmond	04357-3723
Elizabeth	Como	Lovell	4051
Susan	Conard	Northport	4849
Kent	Connie & Stan		
Hatch	Conny	Belfast	4915
Taumi	Conohan	Portland	4101
Susan	Conover	Rockport	4856
Marlin	Conrad	North Yarmouth	04097-6544
Kenneth	Copp	Thorndike	04986-3006
Katrina	Cornish	Topsham	4086
Gerald	Cosenza	Sanford	4073
Robert	Cote	China	4358
Joelle	Cote-Powell	Gray	4039
Linda	Cousens	Newburgh	4444
Susan	Coveney	Sanford	04073-4013
Naomi	Coviello	Machias	4654
Susan	Covino	York	3909
Freshley	Craig	Brunswick	4011
Norton	Craig	Fayette	4349
Carl	Cramer	Portland	4102
Jennifer	Crandall	Bar Harbor	4609
Bruce	Craven	Lincolnville	4849
Jared	Crawford	Brooks	04921-3711
Dara	Crawford		
Laura	Cromwell	South Berwick	3908
Beryl	Crosby	Scarborough	4074
Holly	Culloton		
Noah	Cummings	Freeport	4032
Sharon	Cunningham	Standish	04084-6316
Paul	Cunningham		
		Cumberland	
Anne B	Cunningham	Foreside	4110

Randall	Curtis	Blue Hill	04614-0839
Anthony	Cushman	Yarmouth	4096
Wilcox	Cynthia	Cumberland	4021
Glidden	Cynthia		
Beth	Daley	Belfast	4915
John	Daly	Hot Springs	71901
Meaghan	Daly	Biddeford	4005
Kathleen	Damon	Freeport	4032
Sue Ellen	Damour	Brunswick	4011
John	Damren	Hallowell	04347-1254
Michael	D'Arcangelo	Raymond	04071-6442
Shannon	Darr	Eliot	3903
Lee	Dassler	Otisfield	4270
Strelitz	Dave		
Rawls	Davian	Portland	4103
Kuchta	David	Portland	4102
Langdon	David	Falmouth	4105
Crouthamel	David	Wells	4090
Findlay	David	Falmouth	4105
Beane	David	Waterboro	4087
Crabtree	David	Cherryfield	4622
Jacqueline	Davidson	Deer Isle	04627-3756
Jenny	Davidson	Freeport	4032
Shonna	Davis	Houlton	04730-1126
Corliss	Davis	Belfast	04915-6215
Mike	Davis	Freeport	04032-1207
Carl	Davis	Acton	04001-4405
Nancy	Davis	Owls Head	04854-0043
Katherine	Davis	Brunswick	4011
Mandi	Davis	Freeport	4032
Ronald	Davis	Orono	4473
Sally	Davis	South Portland	4106
Sara	Davis	Falmouth	4105
Shirley	Davis	Orono	4473
Eric	Davison	Auburn	4210
Gale	Davison	Waterville	4901
Diana	Day	Camden	4843
Fran	Day	Bangor	4401
Wayne	Day	Exeter	4435
Donanne	Dean	Stoneham	4231
Bonnie	Dean	Blue Hill	04614-1232
Sharon	Dean	East Machias	4630
Blank	Debi	Bar Harbor	4609
Reifsnyder	Deborah	Falmouth	4105
Bastian	Deborah	New Gloucester	4260

Landry	Deborah	Yarmouth	4096
Bailly	Deborah	Belfast	4915
Rollins	Deborah	Brewer	4412
Bloomer	Deborah	Arundel	4046
Coyman	Debra	Falmouth	4105
Katie	Deegan	Portland	4101
Nathan	Deitcher	Lewiston	4240
Emmett	Deitcher	Lewiston	04240-6010
Daryl	DeJoy	Penobscot	4476
Adair	Delamater	Bath	04530-2823
Perley	Delene	Portland	4101
Janet	Dempsey	Bremen	4551
Benedict	Denise	Saco	4072
Jepson	Dennis	Chesterville	4938
Kepner	Dennis	York	3909
Andrea	Denny	Rockport	4856
Marjorie	DeSanctis	Scarborough	04074-9754
Marshall	Desjardin	Winterport	4496
Liv	Detrick	Searsmont	04973-3520
Jacqui	Deveneau	Portland	4101
Maggie	Dewane	Pemaquid	4558
Benjamin	D'Haiti		
Miskill	Diana	Orrs Island	4066
Zavotsky	Diane	Embden	4958
Ballon	Dianne	Portland	4103
Kopec	Dianne	Old Town	4468
Anna	Dibble	Freeport	4032
Anita	DiCrecchio	Scarborough	04074-9383
Pete	Didisheim	Brunswick	04011-3445
Amos	Diehl	Orrington	4474
Corey	Dilts	Sumner	04292-3802
Emily	Dingman	Turner	4282
Linda	Dobbins-Tarbox	Springvale	4083
Richard	Doherty	Portland	4103
George	Dole	Bath	4530
Gladden	Don	Lyman	4002
Gow	Don	Monroe	4951
Kale	Donald	Portland	4103
Lacey	Donle	Lisbon Falls	4252
Wilhelm	Donna	Casco	4015
Cheney	Donna Lee	Falmouth	4105
Barry	Donohue	Bethel	04217-4864
Deidre	Donovan	East Waterboro	4030
Kristen	Dorsey	Freeport	4032
Kelly	Dot	Phippsburg	4562

Caldwell	Dotty	Penobscot	4476
David	Doubleday	Kennebunk	4043
Emmah	Doucette	Fryeburg	4037
David	Dowley	Roque Bluffs	04654-3022
Amy	Dowley	Belmont	4952
Deirdre	Drennen	Windham	4062
Seth	Dresser	Bridgton	4009
Janet	Drew	York	3909
Linda	Drew	Cape Neddick	3902
Janice	Drinan	Scarborough	4074
David	Driver	West Bath	4530
Juliana	Dubovsky	Portland	04102-3728
Veronica	Dudar	Portland	04102-1816
Zopp	Dudley	Lincolntonville	4849
	Dugan-		
Linda	Woodbury	Brunswick	04011-2981
Peter	Dugas	Portland	04101-2383
Sarah	Duggan	Boothbay Harbor	4538
Drew	Dumsch	Saco	4072
Joanne	Dunlap	Rangeley	4970
Jeff	Dunlop	Windham	4062
Michael	Dunn	Harrison	04040-3810
Regina	Dunn	York	3909
Kathleen	Dunne	Rockland	4841
Eve	Duplissis	Lewiston	04241-2364
William	Durkin	Biddeford Pool	4006
Colin	Durrant	Yarmouth	
Hubert	Dwane	Brunswick	4011
Stephanie	Dykema	Dedham	4429
Myra	Eachus	Harrington	4643
Nancy	Earle	Bangor	04401-4039
Jo	Eaton	Gorham	4038
Betsy	Eaton	Topsham	4086
Kelly	Eaton	Litchfield	4350
Susan	Ebersten	Washington	4574
Emily	Ecker	Woodstock	4219
Tatyana	Eckstrand	Waldoboro	04572-6110
Conery	Ed	Hudson	4449
Terri	Eddy	Scarborough	4074
Kristin	Ede	Gouldsboro	4607
Lynne	Edmonds	Brunswick	4011
Claxton	Edmund		
Beers	Edna	Augusta	4330
Fogarty	Edward		
Caryl McIntire	Edwards	Harrison	4040

Shane	Eherts	Old Town	04468-5502
Tom	Eickenberg	Liberty	4949
Johnson	Elaine	Portland	4102
Erica	Eliot	Camden	4843
Cone	Elizabeth	Portland	4103
Loewald	Elizabeth	Brunswick	4011
Faulkner	Ellen	South Portland	4106
Chris	Elliott	Damariscotta	04543-4254
Bennett	Ellison	Camden	4843
Kitty	Ellyson	Cumberland Center	4021
Walter	Elsmore	Harpswell	4079
Trask	Elwood	Auburn	4210
Alpers	Emily	Portland	4103
Frank	Engert	Oakland	4963
Brian	Englishman	Portland	04101-4412
Jaki	Erdoes	Mount Desert	04660-0475
Linnette	Erhart	Franklin	4634
Tweedell	Eric	Standish	4084
George	Erikson	Bridgton	4009
Amy	Eshoo	North Yarmouth	4097
Richard	Esten	Deer Isle	4627
Stephen	Estes	Hampden	04444-3329
O'Brien	Eugenia	Portland	4102
Howard	Evand	Blue Hill	4614
Cheryl	Evangelos	Warren	04864-4149
Dirk	Faegre	Belfast	4915
James	Fagan	Brunswick	4011
Gail	Fanjoy	Millinocket	4462
Frederick	Farquhar	Falmouth	04105-2902
Edward	Farwell	Ellsworth	4605
Theodore	Faugno	Waterville	4901
Kristine	Federle	Camden	04843-1831
Beverly	Feldt	Tenants Harbor	04860-0051
Michael	Fenderson	Freeport	4032
Becca	Ferguson	Portland	4101
Kirk	Fernald	East Millinocket	04430-1219
Matthew	Fernald	Falmouth	4105
Lily	Fernald	Kevil	42053
Julie	Ferneer	North Berwick	3906
Anthony	Ferrara	Blue Hill	4617
Sarah	Fesler	Dresden	4342
Pamela	Fischer	New Gloucester	04260-4823
Brenda	Fisher	Camden	4843
	Fitzgerald-		
Zoe	Beckett	Appleton	4862

Kristin	Fitzpatrick	Kennebunkport	4046
Allison	Fleck	Castine	04421-0568
Jimmy	Fleming	Bridgton	4009
Judith	Fletcher	Kennebunk	4043
Mark	Flomenbaum	Hallowell	4347
Morrison	Florence	Falmouth	4105
		Cumberland	
White	Florence	Forside	4110
Melissa	Flye	Hermon	4401
Deborah	Fobes	Berwick	3901
Ltcol Thomas	Foley	Cape Porpoise	4014
Mark	Follansbee	Scarborough	04074-8389
Anne	Follweiler	Brooklin	4616
Cynthia	Fontneau	Lebanon	4027
Anna	Ford	Camden	4843
Haydée	Foreman	Blue Hill	4614
Paul	Forman	Albion	04910-6024
Jaynes	Forrest	Windham	4062
Dell	Foss	Sweden	4040
Mary B.	Foster	Kennebunk	4043
Alex	Fouliard	Jonesport	4649
Marty	Fox	Wiscasset	04578-4493
Day	Frances	Bangor	4401
Galluccio-Steele	Francesca	Portland	4102
Irja	Frank	Orono	04473-4404
Read	Frank	Cumberland Center	4021
Paul	Frank	Portland	4103
Daggett	Frank	Harrison	4040
Pierce	Fred	Lubec	4652
Joyce	Freedman	Brunswick	4011
Katherine	Freeman	Winthrop	4364
Sara	Freshley	Portland	4101
Daniel	Freund	S Freeport	4078
Julie	Freund	Freeport	4032
Gary	Friedmann	Bar Harbor	04609-1010
Albert	Friend	Harrison	04040-0456
Farquhar	Fritz And Cyndi	Falmouth	4105
Barbara	Fudala	Freeport	4032
Krista	Gagne-Haskell	Bridgton	4009
Brown	Gail	Thorndike	4986
Patrick	Gallant	China	4358
Stanley	Galvin	Pemaquid	4558
Bill	Garcelon	Portland	04103-3486
Kathryn	Gardner	Oxford	4270
Dan	Gardoqui	Cape Neddick	3902

Sophie	Garland-Doré	Cape Elizabeth	4107
Elizabeth	Garnett	South Portland	04106-6545
Peter	Garrett	Winslow	4901
Mascher	Gary	Litchfield	4350
Poisson	Gary	Bradley	4411
Enos	Gary	Gorham	4038
Geir	Gaseidnes	Belfast	04915-7621
Pamela	Gay-Donehower	Thomaston	4861
Studinski	Gayle	Lubec	4652
Lisa	Gent	Cape Elizabeth	4107
Tilden	Geoffrey	Wiscasset	4578
Smith	George	Mount Vernon	4352
McGinty	George		
	George And		
Vandemark	Joan		
Mark	Germer	Topsham	4086
Joshua	Gerritsen	Lincolnville	4849
Susan	Gerry	Friendship	4547
Teri	Gerson	Prospect Harbor	4669
Linwood	Gilbert	Turner	4282
Nancy	Gilbert	Durham	4222
Brian	Giles	Alexander	4694
Marie	Gill	Sabattus	4280
Larry	Gilman	Southwest Harbor	4679
Laurie	Gilman	North Yarmouth	4097
Susan	Gilpin	Falmouth	04105-1299
Nina	Gimond	Waterville	04901-5226
Bonnie	Ginger	Boothbay	04537-4840
Jones	Ginger	Portland	4103
Remeika	Ginny	Pownal	4069
Lea	Girardin	Waterville	4901
Milly	Girardin	Brunswick	4011
Clark	Gisele	Caribou	4736
Susan	Glick	York	3909
Robert	Godfrey	Eastport	04631-0222
Emery	Goff	Portland	4101
Roz	Gold	Hampden	4444
Donna	Gomez	Kennebunk	04043-7343
Sara	Gooch	Cape Elizabeth	04107-9515
Martha	Goodale	Westbrook	04092-2713
Fiona	Gordon	Freeport	04032-6912
Maureen	Gordon	Camden	4843
Hope	Gordon	Saco	4072
Ann	Gosline	Litchfield	04350-4121
Julie	Gosse	Orono	4473

Abigail	Gosselin	Biddeford	4005
Chris	Gosster	Georgetown	4548
Simonson	Grace	Camden	4843
Elizabeth	Grady	Gardiner	4345
Andrew	Graham	Unity	04988-4005
Leda Beth	Gray	Blue Hill	4614
Douglas	Green	Gorham	4038
Holly	Greene	Brunswick	04011-7302
David	Greenfield	Bar Harbor	4609
Gregory	Greenman	South Portland	04106-3851
John	Greenman	Orland	4472
Dobrich	Greg	York	3909
Simmel	Gregg	Sullivan	4664
Tracy	Gregoire	Topsham	4086
H. William	Gregory	Yarmouth	04096-5320
Linda	Grenfell	Wells	4090
Harriette	Griffin	Harpswell	04079-4619
Larry	Griffin	Waterford	04088-0022
Edward	Griffith	Fairfield	04937-3019
Mary	Griffith	Freeport	04032-6508
Shelley	Griffith	Phillips	4966
Claudia	Griffiths	Camden	4843
Susan	Griffiths	Bar Harbor	4609
Jacqueline	Grohoski	Ellsworth	04605-3080
Geraldine	Gross	Bangor	4401
Les	Gross	Perry	4667
Lyn	Grotke	Unity	04988-0193
Jocelyn L	Grover	Yarmouth	4096
Gabrielle	Grunkemeyer	Damariscotta	04543-4109
Brittany	Grutter	Millinocket	4462
Arthur	Guerin	Old Orchard Beach	4064
David	Gulick	Cumberland Center	4021
Gina	Gutman	Lebanon	4027
Jonathan	Hachey	Fairfield	4937
Robert	Haddad	Orono	4473
Rebecca	Hagen	Thorndike	4986
Levi	Hahn	Gardiner	04345-2111
Frances	Haines	Orono	04473-3850
Rebecca	Halbrook	Falmouth	4105
Seth	Hall	Waldoboro	4572
Violet	Hall	Houlton	4730
Mitch	Halper	East Machias	4630
Nicole	Hamlin	Augusta	04330-7824
Hollie	Hamlin	Windham	4062
Bill	Hammond	Trevett	4571

Kimberlee	Hammond	Frankfort	4438
Frank	Hample	Somerville	4348
Terry	Hanlon	Chapman	04757-4742
Pingree	Hannah		
Connie	Hanson	Augusta	4330
Joseph	Hardy	Wells	04090-7412
Jane	Hardy	Lincolntonville	04849-5616
Louis	Hargan	Cape Neddick	3902
Julia	Harper	Lewiston	4240
William	Harper	Bangor	4401
Henry	Harrell	Augusta	4330
Kate	Harris	Belfast	04915-6512
Gil	Harris	Limerick	4048
Jane	Harrison	West Bath	04530-6625
Leslie	Harroun	Portland	4101
Rombach	Harry		
Nelson	Harry	North Yarmouth	4097
Cynthia	Hartofelis	Gardiner	4345
Linda	Harvie	Kennebunk	4043
Hugh	Harwell	Albion	4910
George	Haselton	Rockport	4856
Hadriane	Hatfield	Montville	4941
Julia	Hathaway	Veazie	4401
Elaina	Hatsis	Kittery	03904-1736
Mary Ann	Haxton	Sumner	04292-3441
Elizabeth	Hays	Portland	04101-2733
Liz	Hays	Portland	4101
Doug	Hayward	Hope	4847
Suzanne	Hedrick	Nobleboro	4555
Hollauer	Helena	Falmouth	4105
Ann M	Hellstedt	Yarmouth	4096
Pamela	Helmstadter	Alexander	4694
Joe	Hemes	South Portland	4106
Charlotte	Henderson	Washington	4574
Michelle	Henkin	New Harbor	04554-4856
Michelle	Henkin	Andover	1810
Ruth	Hennig	Portland	4101
Thomas	Henry	South Freeport	4078
Kathryn	Henry	South Harpswell	4079
Richard	Hero	Brooklin	04616-0294
Amalia	Herren-Lage	Lewiston	4240
Barbara	Herrgesell	Sanford	04073-5947
Ronald	Herring	Wells	4090
Jane	Hersey	Falmouth	04105-1217
Hirschkop	Hershey	South Berwick	3908

Choquet	Herta	Auburn	4210
Michael	Herz	Damariscotta	4543
Anna	Hewitt	Beverly	1915
Alicia	Heyburn	Brunswick	4011
Eliza	Hill	Brooksville	4617
Schultz	Hillary S.	Rome	4963
Nathaniel	Hilliard	Bar Harbor	4609
Susan	Hillman Bourne	Waterville	4901
Gwendolyn	Hilton	Anson	4911
Mary Anne	Hinckley	Southwest Harbor	04679-1142
Charles	Hinds	Augusta	4330
Cheryl	Hoffman	Lebanon	4027
Jeffrey	Hoffman	Monroe	4951
Julie	Hofheimer	Edgecomb	4556
Andrew	Hoglund	Thorndike	04986-3408
Hannah	Holbrook	Orono	4473
Roger	Hollins	Rockport	04856-5952
Faubel	Holly	Belfast	4915
Sally	Holm	Waterford	4088
Tim	Honey	South Portland	4106
Ellen	Hopkins	Farmington Falls	4940
Jonathan	Hopps		
Fred	Horch	Brunswick	4011
Janet	Hough	Edmunds Twp	4628
Laurent	Hourcle	Saco	4072
Brian	Houseal	Brunswick	4011
Bob	Houston	Yarmouth	4096
Carolyn	Houtz	Old Town	4468
Bliss	Howard	Brunswick	4011
Sherry	Howard	Madison	4950
Marcia	Howell	Portland	04103-3110
Gunnar	Hubbard	Falmouth	04101-1913
Michael	Hudak	Hallowell	04347-0382
Richard	Hudak	Freeport	4032
Leslie	Hudson	Orono	4473
Martha	Huestis	Boston	2101
Virginia	Hughes	Falmouth	4105
Kc	Hughes	Cumberland	4021
Joanne	Hulsey	Kennebunk	4043
Lee	Humphreys	Rockland	4841
Katie	Hungtingon	Newcastle	4553
George	Hunt	Augusta	4330
George	Hunt	Gardiner	4345
Bruce	Hunter	Readfield	4355
Sue	Huseman	Burnham	4922

Arlene	Husman	Brunswick	4011
Ellen	Hutcheson	Boothbay	4537
Pat	Ianni	Falmouth	4105
Amarachukwu	Ifeji	Bangor	4401
Amara	Ifeji	Bangor	4401
Renee	Igo	Buckfield	4220
Sue	Inches	North Yarmouth	4097
Donna	Inglehart	Guilford	04443-6136
Silverstein	Iris	Portland	4102
Paradis	Irvin	Ocean Park	4063
Rosalind	Ivens	Bucksport	04416-4821
Fournier	Jackie		
Elizabeth	Jackson	Robbinston	04671-3013
Kristin	Jackson	Portland	4101
P. Jaine	Jacobs	Union	04862-5060
Mark	Jacobs	Shapleigh	4076
West	Jacqueline	Kennebunk	4043
Stowell	Jaime	Yarmouth	4096
Graves	Jake	South Portland	4106
Nickelson	James	Camden	4843
Thorne	James	Portland	4101
McConnell	James	Auburn	4210
Warren	Jan		
Brox	Jane	Brunswick	4011
Hersey	Jane	Falmouth	4105
Berry	Jane	Topsham	4086
Adams	Jane	South Berwick	3908
Ordway	Janet	Old Orchard Beach	4064
		Cumberland	
Clough	Janet	Foreside	4110
McAteer	Janice	Naples	4055
Mark	Jarratt	Tenants Harbor	4860
Sideris	Jean	South Portland	4106
Adamson	Jean	Hampden	4444
Bolan	Jean	Winterport	4496
Smith	Jeanette	China	4358
Meuse	Jeanne	New Gloucester	4260
Tulis	Jeff	Warren	4864
Fowler	Jeff	Buxton	4093
Connie	Jenkins	East Blue Hill	4629
Nancy	Jenkins	Camden	4843
Gifford	Jenkins-Davis	Lisbon Falls	4252
Farrell	Jennifer	East Boothbay	4544
Craig	Jennifer		
Jespersen	Jennifer	Mount Vernon	4352

Barbara	Jennings	Rangeley	04970-0075
Sheaffer	Jeremy		
McConville	Jessica	Yarmouth	4096
Catherine	Jewell	Lincoln	04457-4824
Briggs	Jim	North Yarmouth	4097
Josephson	Jo		
Ray	Joan	Bremen	4551
Smaldone	Joan		
Testa	Joanna	Portland	4103
Wallin	Joanne	Portland	4101
Richmond	Jody	Dover Foxcroft	4426
Meredith	Jody	South Portland	4106
Hart	Johannah	Portland	4103
Correa	John	Trenton	4605
Berry	John	Topsham	4086
Burrows	John	Waterboro	4087
Chapin	John	South Portland	4106
Coldren	John	South Freeport	4078
Grew	John	Scarborough	4074
Kruger	John	Windham	4062
Coughlin	John	Kennebunk	4043
Randall	John	New Gloucester	4260
McKee	John	Brunswick	4011
Fitzgerald	John	Brunswick	4011
Stormer	John	Brunswick	4011
Nancy	Johnson	Union	04862-6030
Valarie	Johnson	Somerville	04348-3018
Cathy	Johnson	Alna	04535-0551
Alisa	Johnson	Oakland	4963
Allison	Johnson	East Winthrop	4343
Ernie	Johnson	Tenants Harbor	4860
Lily	Johnston	Pownal	4069
Southern	Jon	Perry	4667
Williamson	Jonathan	Camden	4843
Robert	Jones	Bridgton	04009-4548
Clayton	Jones	Gorham	4038
Cornelia	Jones	South Portland	4106
Robin	Jordan	Trevett	04571-3113
Paul	Josephson	Auburn	4210
Lawor	Josie	Seal Cove	4674
Noel	Jost-Coq	Friendship	4547
Peter	Joyce	Richmond	04357-3813
Cecily	Judd	Sullivan	4664
Boucher	Jude	North Berwick	3906
Lamb	Jude		

Braley	Judith	Limington	4049
Katz-Leavy	Judith	Portland	4101
Moll	Judith		
Brown	Judith		
Olivier	Judith	Belgrade	04917-3111
Frederick	Judith & Bob	Beaver Cove	4441
Coleman	Judy	Standish	4084
Johnston	Julia	Durham	4222
Nolon	Julie	Bath	4530
Levasseur	Julie	Brewer	4412
Howison	Julie		
Nichols	Justin	Portland	4101
Keri	Kaczor	Union	4862
Mary	Kane	Hallowell	04347-1207
Richard	Kane	Sedgwick	04676-3410
Alan	Kane	Gouldsboro	4607
Mary	Kane	Hallowell	4347
Harrell	Karen	Falmouth	4105
Wieczoreck	Karen	Biddeford	4005
Anderson	Karin	Cape Elizabeth	4107
Draper	Karin	Raymond	4071
Earle	Kasregis	Roxbury	04275-3203
Pinkerton	Kate	Portland	4101
Beever	Kate	Falmouth	4105
Aroneau	Katharyn	Camden	4843
Floyd	Katherine		
Theodore	Katherine	Saco	4072
Potrepka	Kathleen	South Portland	4106
Haggerty	Kathleen	Cape Elizabeth	4107
O'Neill	Kathleen	Dayton	4005
Porter	Kathryn	Falmouth	4105
Kessler	Kathryn		
Hooke	Kathy	Portland	4101
Greenman	Katie	Orland	4472
Satya	Kaur Khalsa	Franklin	4634
Peter	Kaurup	Norway	4268
Linda	Keady	Ellsworth	4605
Walter	Keene	Winslow	04901-7261
Elery	Keene	Waterville	4901
Rosenberg	Keith	Portland	4102
Lisa	Kelley	Freeport	04032-6336
Daryl	Kelley	Portland	4101
Tillinghast	Kelly	Yarmouth	4096
Bohni	Kempton	Searsport	4974
Lageroos	Kenneth	Falmouth	4105

Karl	Kenyon	Saco	4072
Susan	Kepner	York	03909-5237
Jessica	Kerr	Dover Foxcroft	4426
Jessa	Kerre	Dover Foxcroft	04426-1346
Satya Kaur	Khalsa	Franklin	4634
Tyler	Kidder	Winthrop	4364
Clark	Kif		
Vicki	Kilborn	Freeport	04032-1106
Jonathan	Kimball	Georgetown	4548
Greg	Kimber	Temple	04984-3417
Andrea	Kimmich	Kennebunk	04043-7110
Bd	Kingsley	Southwest Harbor	4679
Thomas	Klak	Saco	4072
Megan	Kline	Kittery	3904
Ambria	Klingler	Surry	4684
Emilie	Knight	Fairfield	4937
Robert	Kohl	Liberty	4949
William	Kolodnicki	Princeton	4668
Greg	Koski	Nobleboro	4555
Linda	Koski	Nobleboro	4555
Stanley	Koski	Augusta	4330
Anne	Kozak	Bar Harbor	4609
Nam	Kristin	Durham	4222
Susan	Kroll	Portland	04103-3553
John	Krueger	Northport	4849
Muriel K	Kruppa	South Portland	4106
Brigitta	Kunz Wiesel	Portland	4101
Janet	Laird-Lagassée	Auburn	04210-6509
Howard	Lake	Readfield	4355
Larry	Landau	Kennebunkport	4046
Lydia	Landesberg	Waterford	04088-3864
Steve	Langdon	Newcastle	04553-3424
Peri	Lanoue	Orrs Island	4066
Burkett	Larry	Rockland	4841
	Larry And		
Howerton	Marilyn		
Sandra	Larsen	Milbridge	04658-0568
Melody	Larson	New Gloucester	4260
Varley	Laura	South Portland	4106
Maine	Laurel		
Farnsworth	Lauren	Freeport	4032
Chiasson	Laurie	Portland	4102
Lee Ann	Lawler-Don	Mexico	04257-1194
Vinnedge	Lawrence	West Baldwin	04091-3002
Chern	Lawrence	Scarborough	4074

Kaye	Lawrence	Pownal	4069
Thomas	Lawton	Freeport	04032-6454
Dence	Leah		
Lawrence	Leanne		
Joanna	Leary	Westbrook	04092-3127
Carla	Leathem	Fryeburg	4037
William	Leavenworth	Searsmont	04973-3812
Carole	LeBlanc	Wells	04090-6201
Christian	Leger	Bath	4530
Charles	Lehmann	Bridgton	4009
Lucas	Leighton		
Roger	Leisner	Augusta	4330
Jolene	Lemelin	Kennebunk	4043
Donald	Lennon	Yarmouth	04096-8313
Deb	Leon	Holden	4429
Greenhalgh	Leonard	Spruce Head	4859
Abrons	Leslie	Portland	4102
Wendy	Lessard	Ellsworth	04605-3216
Alan	Letourneau	Tenants Harbor	4860
Claudette	Levesque	Sargentville	4673
Nancy	Lewis	Machias	4654
Nick	Lewis		
Bailey	Lewis	Skowhegan	4976
Fiona	Libby	North Yarmouth	4097
Dan	Libby	York	3909
Catherine	Liberti	Boothbay	4537
Peyton Hancock	Lin		
Snow	Linda	North Yarmouth	4097
Atherton	Linda	Portland	4101
Eastman	Linda	Biddeford	4005
Coombs	Linda	Newcastle	4553
Murnik	Linda	Blue Hill	4614
Stevens	Linda	Scarborough	4074
Anderson	Linda	Eliot	3903
Kristen	Lindquist	Camden	4843
Steven	Linnell	Portland	4103
Jill	Linzee	New Harbor	4554
Caitlin	Lipert	Springvale	4083
John	Lippitt	Standish	4084
Fuller	Lisa	Portland	4103
Alan	Liska	Portland	04104-6867
Henrietta	List	Hanover	04237-0126
Jenkins	Liz	Warren	4864
Victoria	Lloyd	Gorham	4038
Sarah	Lockridge	Windham	04062-4358

Christine	Lomaka	Portland	4101
Alan	Long	Wells	4090
Leland	Lora	Portland	4104
Washburn	Loraine	Brunswick	4011
Hussey	Lorraine	Biddeford	4005
Janice	Lowe	Bar Harbor	4609
Jacquelyn	Lowe	Whiting	4691
Sarah	Lozanova	Belfast	04915-8114
Blackwell	Lucinda	Falmouth	4105
Schmidt	Lucy	Boothbay	4537
Bergen	Lucy	Portland	4102
Carolyn	Lucy	Portland	4103
Abby	Lucy	South Portland	4106
Wendy	Lull	Berwick	3901
Benjamin	Lund	Monmouth	4259
Doris	Luther	Hollis Center	04042-0297
Margarethe	Lutz	Penobscot	04476-0082
Jennifer	Lyford	Brunswick	4011
Elizabeth	Lykling	Fairfield	04937-3219
Nicholas	Lykling	Fairfield	4937
Bob	Lyman	Freeport	04032-6713
Paige	Lyman	Norridgewock	4957
Darcy	Lynch	Wells	4090
Janet	Lynch	Pownal	4069
Jaremy	Lynch	Brownfield	4010
Shannon	Lynch	Belgrade	4917
Seabury	Lyon	Bethel	4217
Norton	M.L.		
Emma	Macailen	Orono	04473-5041
Libby	Maccarthy	Old Orchard Beach	04064-5103
Jeffrey	MacDonald	Brownville	04414-3524
Jennifer	MacDonald	Cape Elizabeth	4107
William	MacDowell	Blue Hill	04614-6221
Amanda	Macleod	Portland	04101-5350
Amanda	MacLeod	South Portland	4106
Amanda	MacLeod	Southwest Harbor	4679
George	MacLeod	Bucksport	4416
Sandra	Macmahon	Temple	04984-3004
William	Macomber	Saco	4072
Glen	MacWilliams	York	3909
Rachel	Madsen	Georgetown	04548-3654
Dewane	Maggie	Pemaquid	4558
David	Mahoney	Hebron	04238-0133
Dean	Mallar	Lincoln	4457
Samantha	Mallory	Bethel	4217

Patricia	Maloney	Topsham	04086-1940
Nadeau	Malorrie	Bath	4530
Fowler	Mandy		
John	Manganello	Freeport	4032
Lynn	Manley	North Berwick	03906-6107
Doreen	Mann	Lisbon	04250-6040
Sweet-			
Demetriou	Marcella	Windham	4062
Huber	Margaret	Windham	4062
Handville	Margaret	Seal Cove	4674
Albright	Margaret		
Puglisi	Margie	Holden	4429
Battle	Mark	Brunswick	4011
Victoria	Markiewicz	Rockland	4841
Anthony	Marple	Whitefield	04353-3603
Diane	Marquis	Harpswell	4079
Geoffrey	Marshall	Little Deer Isle	4650
Jeffrey	Marshall	Harpswell	4079
Sharon	Martin	Turner	04282-3920
Kathy	Martin	Topsham	4086
Thruston	Martin	Islesboro	
Mary	Martisius	Hamden	6517
Anthony	Marvin	South Portland	4106
Cling	Marvin	Pleasant Point	4667
Lorrie	Marx-Adams	Hollis Center	04042-3655
Arthur	Mary	Topsham	04086-1766
Kaldenbaugh	Mary	Belfast	4915
Fogg	Mary	Gorham	4038
Ross	Mary	Ogunquit	3907
Raimondo	Mary	Falmouth	4105
Wheelwright	Mary	Camden	4843
Morris	Mary	Scarborough	4074
Stevens-			
Ovecoglu	Mary	Rockport	4856
Coyne	Mary	Leeds	4263
Foster	Mary B	Kennebunk	4043
Carew	Maryellen	Freeport	4032
Rodda	Maryellen	Hampden	4444
Meghan	Maseman	Castine	4420
Kathy	Massimini	Lamoine	4605
Sam	Matey	Gorham	4038
Linnell	Mather	Vinalhaven	4863
Adam	Matthews	York	03909-5854
Hyslop	Maureen	Portland	4103
Sugden	Maureen		

Marjorie	Maxcy	Owls Head	04854-0367
Natasha	Mayers	Whitefield	4353
Michael	Mayhew	Boothbay Harbor	4538
Andrew	Mazer	Yarmouth	4096
Susan	McBride	Camden	4843
Debbie	McCarthy	Phillips	04966-4340
Debbie	McCarthy	Avon	4966
Thomas	McClain	Kennebunkport	4046
Barbara	McClure	Hancock	4640
Dale	McCormick	Augusta	04330-5421
Kelly	McCormick	Portland	4102
Doug	McCown	Bustins Island	4013
Linda	McCullough	Brunswick	4011
Carrie	McCusker	Cape Elizabeth	04107-5105
Michael	McDonald	Belfast	4915
Audrey	McGlashan	Bristol	04539-3211
Richard	McGonagle	Hollis Center	04042-0336
Jillian	McGrath	Buckfield	4220
Annica	McGuirk	Lisbon Falls	4252
Sharon	McHold	Yarmouth	4096
Heidi	McInerney	Cape Elizabeth	4107
Kathleen	McKay	Benton	4901
Aleta	McKeage	Belfast	4915
Colleen	McKenna	Brunswick	04011-7911
Melissa	McKenzie	Waterville	4901
Gary	McLaughlin	Bangor	4401
Lana	McNamee	Fort Fairfield	4742
Gabrian	McPhail	Vinalhaven	4863
Elizabeth	McPherson	Damariscotta	04543-0292
Foley	Meaghan	Bridgton	4009
Holland	Meg	Topsham	4086
Hartman	Megan	Brunswick	4011
Susanne	Meidel	Whitefield	04353-3730
Kathleen	Meil	Camden	4843
James	Melloh	South Portland	04106-3808
Jennifer	Melville	Freeport	4032
Erik	Mercer	Portland	4102
Roger	Merchant	Glenburn	04401-1252
Sally A	Merchant	South Thomaston	4858
Hamilton	Meredith	Portland	4102
Catherine	Merrow	South Portland	4106
Richard	Mersereau	Brunswick	4011
Patricia	Mew	South Portland	04106-4935
Hanley	Michael	South Portland	4106
Dank	Michael		

Hayashida	Michael	Auburn	4210
Durocher	Michelle	Vienna	4360
Borodinsky	Michelle	Topsham	4086
Claudette	Midgley	Kennebunk	4043
Cathleen	Miller	Scarborough	4074
Rhonda	Millett	Gorham	4038
Perrin	Milliken	Brunswick	4011
Cheryl	Mills	Wells	4090
Barbara	Minges		
Sandra	Minnesang	Monmouth	4259
Seth	Mirsky	Westport Island	04578-3009
Henry	Mitchell	Bowdoinham	04008-4825
Mary Anne	Mitchell	Peaks Island	04108-1149
Sidney	Mitchell	Dover-Foxcroft	4426
Camelia	Mitu	Hampden	4444
Lindy	Moceus	Vienna	04360-3002
Delehanty	Monica	South Portland	4106
Linda	Monroe	Blue Hill	4614
Marjorie	Monteleon	Southwest Harbor	04679-1302
Lori	Montgomery	Wells	04090-4563
William	Montgomery	Belfast	04915-6706
Nancy	Montgomery		
Stanley	Moody	Topsham	04086-5103
Denis	Moonan	Camden	04843-2228
Jeannie	Mooney	Bangor	4401
Courtney	Mooney	Vinalhaven	4863
Janine	Moore	Waterville	04901-5441
Melanie	Moore	Kittery Point	3905
Ananda	Moor-Jankowski	Portland	04101-4412
Brenda	Moot	Winterport	04496-4602
Julian	Moran	Cornish	4020
Jackie	Moreau	Portland	04103-3463
Keith	Morehouse	Casco	04015-3026
Ann	Morrill	South Portland	04106-6874
Curtis	Morris	Brewer	4412
Will	Morris	Pownal	4069
Robert	Morrison	Palermo	04354-7507
Abi	Morrison	Rockland	4841
John	Morrissey	Harpswell	4079
Robert	Morse	Ogunquit	3907
Miranda	Moss	Dresden	4342
	Moss		
Marilyn	Rockefeller	Camden	4843
Leora	Mosston	South Portland	4106
Christopher	Moulton	Kennebunkport	4046

Quincy	Moy	Kennebunk	4043
Mary	Mraz	Freeport	04032-6253
Molly	Mulhern	Camden	4843
George	Muller	South Berwick	3908
Lisa	Munderback	South Portland	04106-3322
Leigh	Mundhenk	Ocean Park	4063
Carolyn	Murray	Falmouth	4105
Elona	Muwin	Indian Twp	04668-5027
E. Donald	Naber	Westbrook	04098-0124
Hermos	Nadia	Casco	4015
Maryann	Nahf	Bailey Island	4003
Ozog	Nancy	Bangor	4401
Jensen	Nancy	Orrington	4474
Austin	Nancy	Chesterville	4938
Morris	Nancy	Ellsworth	4605
Snow	Nancy Lee	Falmouth	4105
Colannino	Nathan	Topsham	4086
Barnes	Nathaniel	Falmouth	4105
Wheelwright	Nathaniel T.	Harpswell	4079
Margaret	Nation	Waterford	04088-3552
Ben	Nault	Gorham	4038
John	Neal	Greene	4236
Elizabeth	Neale Pollock	Manchester	04351-0295
Peter	Neill	Sedgwick	4676
Robert	Nelson	Newcastle	04553-3812
Richard	Nelson	Friendship	4547
Judith	Nelson	Peaks Island	4108
Richard	Nelson	Friendship	4547
Maranda	Nemeth	Brunswick	4011
Doris	Neptune	Exeter	04435-3405
Charlotte	Neuberger	South Casco	4077
Marianne	New	Blue Hill	4614
Henry	Newhouse	New Harbor	4554
Sue	Newlin	Deer Isle	04627-3420
Paul	Newlin	Deer Isle	4627
Vivian	Newman	South Thomaston	04858-0388
Mike	Newsom	Otisfield	4270
Lund	Nicholas	Cumberland	4021
Tammy	Nicholas	Yarmouth	4096
Ron	Nicholas-Siviski	Yarmouth	4096
Sheila	Nichols	Portland	4103
Leadley	Nick	Rangeley	4970
Danielson	Nicole		
Caroline	Niederman	Houston	77098
Bronda	Niese	Brunswick	04011-7414

Zorymar	Nieves	Farmington	4938
Patricia	Nobel	Lincoln	4457
Lisa	Noreen	Jonesport	04649-3320
Bergeron	Norman	Falmouth	4105
Mary Jane	Northrop	Yarmouth	04096-7952
Libby	Norton	Bangor	04401-3336
Lilian	Nowak	Bangor	4401
Andrea	Nurse	Avon	04966-3058
Liesbeth	Nuyts		
Dave	Oakes	Hope	4847
Randall	Oakley	Mount Vernon	4352
Margaret	Ober	Ellsworth	4605
Constance	Obrient	Montville	4941
Judith	O'Callaghan	Deer Isle	04627-3493
Kevin	O'Carroll	Harpswell	4079
Jennifer	O'Connell	Portland	04101-3294
Brian	OConnor		
Patricia	O'Day-Senior	Parsonsfield	04047-6860
Elisa	Olds	Lincolntonville	4849
Theresa	Oleksiw	Freeport	4032
Stanton	Oliver	Portland	4103
Rachel	Olsen	Camden	4843
Jon	Olsen	Jefferson	4348
Sandy	Olson	Troy	04987-3223
Maggie	O'Neil	Saco	4072
June	Oneill	Cape Elizabeth	4107
Andrea	O'Neill-Knarr	Carmel	04419-3707
Eileen	Opie	Bethel	4217
Cynthia	Orcutt	Kingfield	4947
Richard	Osann	Bar Harbor	04609-7311
Hannah	Osborne	Freeport	4032
Laurie	Osher	Orono	4473
Kaitlin	Overlock	Waterville	4901
Lynette	Owen	Camden	4843
Tony	Owens	Cape Elizabeth	04107-1009
Nancy	Packard	Scarborough	4074
Lisa	Pagano	Kennebunk	4043
Pam	White	South Portland	4106
Bosco	Pamela	South Portland	4106
Jackson	Pamela	South Portland	4106
John	Pangiochi		
Alexandra	Pappano	Mattawamkeag	4459
Gehrild	Paris	Gray	4039
Beedy	Parker	Camden	4843
Carole	Parker	Lewiston	4240

Stephanie	Parker	Wales	4280
Susan	Pastore	Portland	4103
Jennifer	Paszkowski	Wells	4090
Ianni	Pat	Falmouth	4105
Boston	Patricia	Biddeford	4005
McHold	Patricia	East Boothbay	4544
Jennings	Patricia	Bristol	4539
Mark	Patricia	Old Town	4468
Campbell	Patricia L.	Scarborough	4074
Charles	Pattavina	Winterport	4496
Haertel	Paul	Southwest Harbor	4679
King	Paul	Brunswick	4011
Cereste	Paul	West Bath	4530
Erica	Paul	Portland	4103
Rosalie	Paul		
Lepore	Paula	Berwick	3901
Haddow	Paula	Standish	4084
Bennell	Pauline	South Portland	4106
Beth	Pauls	Falmouth	4105
Cynthia	Pawlek	Kittery Point	3905
Erik	Pearson	Old Town	4468
John	Peck	Brunswick	4011
Valerie	Peer-Cort	Otis	4605
Stacey	Pellerin	Augusta	4330
Don	Pendleton	Dixmont	04932-3703
Belinda	Pendleton	Belfast	04915-0304
Debbie	Pennesi	Belfast	4915
Edward	Perrin	Hallowell	4347
Jamie	Perron	Kittery	3904
Ignacio	Pessoa	Mount Desert	4660
Fraday	Peter	Arundel	4046
Stoops	Peter	Falmouth	4105
Dublin	Peter	Bath	4530
Baecher	Peter	Brunswick	4011
Higgins	Peter	Bangor	4401
Hall	Peter	Falmouth	4105
Moulton	Peter	South China	4358
Richard	Peterson	Portland	04102-1751
Janis	Petzel	Islesboro	4848
Kit	Pfeiffer	Whitefield	4353
Pendleton	Philip	Portland	4101
Glaser	Philip	Deer Isle	4627
Leelaine	Picker	North Yarmouth	4097
Jeffrey	Pidot	Brunswick	4011
P	Pierce	Saco	4072

Elizabeth	Pierson	Brunswick	4011
Paula	Pietrowski	Old Town	04468-5922
Roy	Pinette	Caribou	4736
Nicole	Pires	Farmington	4938
Suzanne	Plaut	Trescott Twp	4652
David	Plimpton	Cape Elizabeth	4107
Kari	Plouffe	Hollis Center	4042
Janice	Plourde	Cape Neddick	3902
Steve	Podgajny	Brunswick	4011
Leslie	Pohl	Portland	04102-3954
Dennis	Pollock	Manchester	4351
Mahoney	Polly	Newry	4261
Ashley	Pomelow	Raymond	04071-6028
Laura	Pope	Eliot	3903
David	Pope	Limington	4049
Ellen	Pope	Southwest Harbor	4679
Jennifer	Porter	Buxton	4093
Michael	Porter	Chebeague Island	4017
Karen	Povec	Camden	4843
Alix	Pratt		
Theo	Pratt	South Thomaston	4858
Gail	Presley	Rockland	4841
Martha	Price	York	3909
Nichole	Price	East Boothbay	4544
David	Pride	Hollis Center	04042-3850
Nancy	Prince	Wilton	4294
Jane	Pringle	Windham	4062
Michele	Putko	Cape Neddick	3902
Murray	Putnam	Peru	4290
Pappano	Rachael	Mattawamkeag	4459
Osborn	Rachel	Portland	4103
Perry	Rachel	Cape Elizabeth	4107
Rioux	Rachel	Arundel	4046
Crouch	Ramon	Cumberland Center	4021
Paul	Rawson	Old Town	04468-1245
Whittemore	Ray	Standish	4084
Gregg	Raymond	South Portland	04106-3023
Cooper	Raymond	Buxton	4093
Nathaniel	Raymond	Kittery Point	3905
Kerry	Read	South Paris	04281-1438
Gervais	Rebecca	Cumberland Center	4021
Laflam	Rebecca	Falmouth	4105
Anne	Rebello	Ogunquit	3907
Richard	Record	Buxton	4093

Deborah	Redding-Sampson	Kennebunk	4043
David	Reece	Kennebunk	4043
Judee	Reel	Lubec	4652
Deanna	Reeves Korey	Westbrook Lakewood	4092
Lawrence	Reichard	Township	8701
Jay	Reighley	S Freeport	4078
Jenni	Reis	Corinth	04427-3218
Michael	Remsen	Camden	04843-4328
Petra	Remsen	Camden	04843-4328
Cote	Renee	Portland	4102
Marlies	Reppenhagen	Portland	04101-4460
Douglas	Reusch	Farmington	4938
Jeff	Reynolds	Bangor	04401-5933
Razzaboni	Rhiannon Rae	York	3909
Carolyn	Rhoads	Denmark	04022-0340
Katherine	Rhoda	Boston	2101
Linda	Rice	Smithfield	04978-0074
Ellen	Rice	Brunswick	04011-7840
Bard	Richard	Portland	4102
Doyle	Richard	Raymond	4071
Jagels	Richard	Winterport	4496
Klyver	Richard	Bar Harbor	4609
Hall	Richard	Portland	4103
Anderson	Richard	Topsham	4086
Packard	Richard	Bridgton	4009
Mozeleski	Richard	Knox	4986
Correia	Richard	Orrs Island	4066
Wilfred	Richard	Georgetown	4548
Steven	Richardson	Patten	4765
Vicki	Richardson	Patten	4765
Gerber	Rick		
Nancy	Ridley	Lisbon	04250-6244
Kathy	Rielly	Buxton	4093
Kimberly	Rigano	York	3909
John	Riley		
Cynthia G.	Riley	Wells	4090
Kate	Riser	Edgecomb	4556
MacKenzie	Rob	Gorham	4038
Randy	Robb	Lebanon	4027
Audrey	Roberge	Raymond	4071
Cheryl	Roberston	Orono	4473
Duchesne	Robert	Old Town	4468
Lorenz	Robert	Sidney	4330

Howe	Robert	East Machias	4630
Halliday	Robert	Brunswick	4011
Hover	Robert	York	3909
Adamski	Robert	Swanville	4915
Goeken	Robert	Saco	4072
Marshall	Robert	Brunswick	4011
Capers	Robert	Fayette	4349
MacKenzie	Colleen	Gorham	4038
Tucker	Roberta	Brunswick	4011
Beavers	Roberta	South Berwick	3908
Nureck	Robin	Otisfield	4270
Swennes	Robin	Arundel	4046
Mason	Robin	Bridgton	4009
Brooks	Robin		
Brian	Robinson	Camden	4843
Jasmin	Robinson	Standish	4084
Goshorn	Robyn	South Portland	4106
Karen	Rockwell	Bangor	4401
Anthony	Roderick	Hiram	4041
Jim	Rodrigue	Pittston	04345-6641
Margaret	Rodriguez	Portland	4103
Rittmaster	Roger	Camden	4843
Akeley	Roger	Camden	4843
Ruth	Rogers	Woolwich	04579-5048
Bronwen	Rogers-Venema	Ellsworth	4605
Ed	Rogowski	Wells	04090-6234
Wendy	Rolfe	Detroit	4929
Melissa	Romac	Mount Vernon	04352-3459
Beyna	Ronald	Cumberland	4021
Debby	Ronnquist	York	3909
Stanek	Rosemary	Tenants Harbor	4860
Rima	Rosenthal	Ellsworth	4605
Ken	Ross	Robbinston	4671
Carol	Rothenberg	Waterford	04088-3840
Judith	Rothschild	Harrison	4040
Laurie	Rowan	Kittery	3904
Robert	Rowe	Lewiston	4240
Spicer	Ruby	Portland	4103
Francine	Rudoff	Litchfield	4350
Alicia	Ruiz Ojeda	Walpole	4573
Denise	Rule	Lubec	4652
Rick	Rumba	Harpswell	4079
Gail	Ruscetta	Caribou	4736
Kala	Rush	Sherman	4776
John	Russell	Bucksport	4416

Amy	Russell	Camden	4843
Isaac	Russell	Newcastle	4553
Todd	Russell	Portland	4103
Clay	Ruth	Windham	4062
Ann	Ruthsdottir	Brunswick	04011-2124
Palma	Ryan		
Deane	Rykerson	Kittery Point	3905
Melanie	Sachs	Freeport	4032
Howlett	Sally		
Betsy	Saltonstall	Rockport	4856
Sam	Saltonstall	Brunswick	4011
Dorothy	Salvato	Clinton	4927
Thea	Sames	South Portland	4106
Greg	Sample	Brunswick	4011
Alfred	Sampson	Kennebunk	4043
Sarah	Sanborn	Standish	4084
Bria	Sanborn	Wellington	4942
Sandra	Sanborn	Canaan	4924
Louise	Sandmeyer	Kennebunk	4043
Beth	Sandmire	Kennebunk	4043
Stanton	Sandra		
MacDonald	Sandra		
Swinburne	Sandy	Seal Harbor	4675
Willcox	Sandy		
Kristin	Sant	Chamberlain	4541
Haggerty	Sarah	Falmouth	4105
MacKel	Sarah	Kennebunk	4043
Greene	Sarah	Brunswick	4011
Karen	Saum	Belfast	4915
Gina	Sawin	New Gloucester	4260
Martica	Sawin	Harpswell	4079
Eve	Sawyer	Portland	4103
James	Scanlon	Cape Porpoise	4014
Ann	Schaer	Waldoboro	4572
Stephanie	Scherr	Freeport	4032
Elizabeth	Schiller	Waterville	4901
Diane	Schivera	Appleton	4862
Annika	Schmidt	South Portland	04106-6322
Skip	Schnable	York	3909
Ellen	Schneider	Brunswick	4011
Ginny	Schneider		
Sheila	Schoolcraft	Garland	04939-4238
Brian	Schortz	Belfast	4915
Anneliese	Schultz	Gray	04039-9575
Rachel	Schumacher	South Berwick	3908

Labbe	Scott	Saco	4072
Thieme	Scott	Winterport	4496
Toni	Scribner	Charlotte	4666
Curran	Sean	Gorham	4038
Creagan	Sean	York	3909
Wendy	Segit	Eliot	3903
Christine	Seibert	York	3909
Priscilla	Seimer	Harpswell	4079
June	Sendrowski	Brooklin	4616
Claire	Sessions	Andover	4216
Goodman	Seth	Portland	4103
Hanson	Seth		
C. Thomas	Settle mire	Yarmouth	4096
Abbie	Sewall	Brunswick	4011
Deb	Sewall	Hallowell	4347
Julianne	Sexton	Edgecomb	4556
Linda	Shaffer	New Harbor	04554-4608
Craig	Shain	Saco	4072
Jaques	Shana	Freeport	4032
Heather	Sharkey	Brunswick	04011-7219
Pray	Sharon	Yarmouth	4096
John	Shepard	Union	4862
Madison	Sheppard	Waterford	4088
Delphine	Sherin	Washington	4574
Go	Sherri		
York	Sherrie	Bristol	4539
Elly	Shivel	Kennebunkport	4046
Sarah	Shmitt	Portland	4103
Laura	Sholtz	Exeter	4435
Jeff	Shula	Belfast	04915-6075
Mike	Shunney	Rockland	4841
Anna	Siegel	Yarmouth	4096
Robert	Siekman	Buckfield	4220
Brian	Simion	Auburn	04210-6200
Kimberly	Simmons	Portland	4101
Victoria	Simon	York	3909
Jennifer	Sinsabaugh	Naples	4055
Bob	Sipe	Auburn	04210-8548
Beckman	Siri	Bath	4530
Anneli	Skaar	Camden	4843
Priscilla	Skerry	Portland	04102-3781
Maryann	Smale	Steuben	04680-3110
John	Smedley	Lewiston	04240-6206
Amy	Smereck	Camden	4843
Barry	Smith	Island Falls	04747-4000

Gordon	Smith	Brunswick	04011-2801
JOHN-JOSEPH	SMITH	Georgetown	04548-3237
Bryce	Smith	Dedham	4429
Gordon	Smith	Brunswick	4011
Rick	Smith	Seal Cove	4674
Craig	Snapp	Brunswick	04011-2978
Liz	Snider	Belfast	4915
Gina	Snyder	Harpswell	4079
Alan	Solander	Falmouth	04105-2683
Lanni	Solochek	Rockland	4841
Lily	Solochek	Rockland	4841
Judith	Solomon	Hallowell	4347
Jody	Solow	Rockland	4841
Louise Lora	Somlyo		
Tracy	Sommers	Diamond Cove	4109
Kahlenberg	Sonya	Yarmouth	4096
DeMaio	Sophia	Bangor	4401
Deidre	Sousa	Waldo	4915
kathleen	spahn	Portland	04102-2235
Martin	Spahn	Hallowell	4347
Steve	Spencer	Whitefield	4353
Judy	Spiller	Kittery Point	3905
Jordi	St John	Portland	4530
Christopher	St John	Brunswick	4011
Jym	St. Pierre	Brunswick	4011
Adele	St.Pierre	Bangor	4401
Sue	Stableford	Brunswick	04011-3326
Rebecca	Stanley	Monmouth	04259-6624
Wakefield	Stanley	East Boothbay	4544
Linda	Stathoplos	Wells	4090
Sharon	Staz	Camden	4843
Andrew	Steinharter	Freeport	04032-6912
Medea	Steinman	Franklin	04634-3130
Smith	Stephanie	Scarborough	4074
Cook	Stephen	East Boothbay	4544
Greene	Stephen	Portland	4101
Hamilton	Stephen	Falmouth	4105
Lizzy	Stephenson	Buxton	4093
Brian	Steppacher	South Portland	4106
Susan	Sterling	Falmouth	04105-1874
Lauren	Sterling	Portland	4104
Underwood	Steve	Cape Elizabeth	4107
Neumeister	Steven	Oakland	4963
Trish	Stevens	Troy	04987-3036
Jacob	Stevens	Falmouth	4105

Alison	Stevenson	Waldoboro	04572-6122
Julie	Sthilaire	Minot	4258
Karen	Stickney	Lewiston	4240
Susan	Stickney	Brunswick	4011
Pamela	Stinson	Peru	4290
Susan	Stoddard	Brunswick	4011
Molly	Stone	Camden	4843
Holden	Stoner	Buxton	4093
Joanna	Stonesifer	Sidney	4330
Barbara	Storck	Buxton	4093
Catherine	Stott	Orono	4469
Christy	Stout	Holden	04429-0817
Donald	Stover	Poland	4274
Dianne	Strasser		
Abigail	Stratton	Augusta	4330
Elizabeth	Street	Portland	4101
Tina	Streker	Nobleboro	4555
Mary	Stuart	Canaan	04924-3504
Melanie	Sturm	Brunswick	4011
Williams-			
Lindgren	Suanne	Freeport	4032
Elizabeth	Sullivan	Portland	04103-5014
Susan	Surabian	Skowhegan	04976-4387
Myers	Susan	Cape Elizabeth	4107
Abt	Susan	Portland	4103
LoGiudice	Susan	Portland	4102
Howe	Susan	Falmouth	4105
		Cumberland	
King	Susan	Forside	4110
Drucker	Susan	Bowdoinham	4008
McCutcheon	Susan	Abbot	4406
Fenn	Susan	Arrowsic	4530
Teel	Susan	Springvale	4083
Leray	Susan	Alfred	4002
Guillette	Susan	Rockland	4841
Lee	Susan	North Yarmouth	4097
Willard	Susanne	Portland	4103
Dixon	Susie	Belfast	4915
Christopher	Sutherland	Cape Elizabeth	4107
Gerow	Suzann	Lincolnton	4849
McGinn	Suzanne	Cape Elizabeth	4107
Frank	Svatek	Biddeford	4005
Susan	Swain	Portland	04103-3019
Jim	Swan	Damariscotta	4543
Rachel	Swanson	Lewiston	04240-5904

Richard	Swett	Dover Foxcroft	4426
Tristan	Taber	Auburn	4210
Lynne	Tallsen	Newcastle	4553
Davis	Tara	Bangor	4401
Ellen	Tarbox	Acton	04001-4405
Burton	Taylor	Harpswell	4079
Van Leer	Ted		
Cullen	Teel	St. George	4860
Jennifer	Temple		
Shari	Templeton	Newcastle	4553
Barbara	Tennent	Holden	4429
Craig	Terrell		
Scriven	Terry	Cape Elizabeth	4107
Trisha	Terwilliger	Bath	4530
David	Thanhauser	Swanville	4915
Emmie	Theberge	Hallowell	04347-1410
Theresa	Therrien	Biddeford	4005
Austin	Thibeau	Presque Isle	4769
Charles	Thomas	Camden	04843-1643
Barrington	Thomas	Bath	4530
Bjorkman	Thomas	Blue Hill	4614
Richard	Thomas	Waterville	4901
Jean	Thompson	Kennebunk	04043-6523
Ann	Thompson		
Adeline	Thompson	Scarborough	4074
Sarah	Thomson	Belfast	4915
Sylvan	Thorncraft	Scarborough	04074-9345
Gary	Thorne	Bath	04530-4011
Caroline	Thorne-Lyman	Freeport	04032-6713
Elizabeth	Tibbetts	Hope	4847
Tom	Tietenberg	Waterville	4901
		Cumberland	
Mills	Tiffany	Forside	4110
DiPaolo	Tim	Portland	4102
Seeley	Tim		
Paradis	Timothy	Portland	4103
Kathleen	Tims	Orono	4473
Sharon	Tisher	Orono	4473
Abrahams	Tod	Cape Elizabeth	4107
Andrews	Tolman	Readfield	4355
Bonnie	Tomash	Skowhegan	4976
Joel	Tompkins	Brunswick	04011-7840
Todd	Towle	Kingfield	04947-0442
Booth	Tracy	Yarmouth	4096
Jessi	Tracy	Hodgdon	4730

Barbara	Trafton	Brunswick	4011
Tamie	Trainer	Fairfield	4937
Kaylee	Trefethen	Richmond	4357
Courtney	Tregurtha-Nairn		
Sally	Trice	Portland	04102-1103
Benjamin	Troutman	Montville	4941
Mariana	Tupper	Yarmouth	04096-7982
William	Turner	Harrison	04040-4340
Adam	Turner	Augusta	04330-5128
Lily	Turner	Harrison	04040-4340
L. M.	Turner	Biddeford	4005
Brittany	Turner	Albion	4910
Holly	Twining	Orono	4473
Molly	Ungs Evans	Rockport	04856-4258
Thomas	Urquhart	Falmouth	4105
Mark	Ustach	South Portland	4106
David	Vail	Brunswick	04011-3013
Libby	Valencia	Blue Hill	4614
Maureen	Valentine	Portland	4102
Medora	Van Denburgh	Medford	4463
Jenifer	Van Deusen	Bath	04530-2904
Harvey	Van Sciver	West Paris	04289-0223
	Van		
Paul	Steenberghe	Old Town	4468
Roger	Varney	Windham	4062
Harriett	Varney	Mercer	4957
Gary	Vencill	Prospect	04981-3124
Julia	Ventresco	Ellsworth	04605-3614
Shri	Verrill	Edgecomb	04556-0244
Tarling	Vickie	Standish	4084
Langelo	Victor	Topsham	4086
Borko	Victor	Rangeley	4970
Sarah	Victor	Freeport	4032
Howe	Vivian	Scarborough	4074
Wormwood	Vladimir	Kennebunk	4043
Scott	Vlaun	Otisfield	04270-6050
Julia	Von Ehr	Fairfield	4937
Mary	Voskian	Bremen	04551-3037
Kendra	Vyr	Falmouth	4105
Sandra	Wachholz	Yarmouth	4096
Darrah	Wagner	Winterport	04496-4606
Katharine	Waitt	Sebec	4481
Victor	Wakefield	Limerick	4048
Rhoda	Waller	Freedom	4941
Thomas	Walling	Bowdoinham	04008-5220

Hilary	Wallis	West Newfield	4095
Megan	Walsh	Wells	04090-6234
Mugdan	Walter	Greenville	4441
Nancy	Walters	Wilton	04294-0905
Edward	Walworth	Lewiston	4240
Hilary	Ware	Norway	4268
Greta	Warren	South Freeport	4078
Jan	Warren	Camden	4843
Lari	Washburn	Wiscasset	4578
Brian	Wasser	Portland	4101
Kate	Weatherby	New Sharon	4955
Judith	Webber	Lewiston	04240-2466
Susan	Weems	Brunswick	04011-3026
Francis	Weld	Scarborough	04070-0242
Gabrielle	Wellman	Blue Hill	04614-0148
Lynn	Wells	New Harbor	4554
Martha	Welty	Portland	4103
Andresen	Wendy	Camden	4843
Alpaugh	Wendy	Stonington	4681
Love	Wendy	Topsham	4086
Jada	Wensman	Ellsworth	04605-3490
John	Werner	Kittery	3904
Sharon	Werner	Belfast	4915
Irene	West	Waterville	4901
Don	West	Warren	4864
Linda	West	Warren	4864
Mary	Wheat	Shapleigh	4076
Donna	Wheeler	Farmington	04938-5725
Pol	Wheelock	Fairfield	04937-1501
Mariellen	Whelan	Newcastle	04553-3403
Carol	Whitaker	Berwick	03901-2832
Joyce	White	Stoneham	04231-3012
Cliff	White	Portland	4102
Linda	White	Edgecomb	4556
Mike	White	Georgetown	4548
Thomas	White	Harpswell	4079
Jane	White-Hassler	Bangor	4401
Danika	Whitehouse	Kennebunk	04043-0964
Richard	Whitlock	Lewiston	4240
Jane	Whitney	Brooklin	04616-0294
Lucia	Whittelsey	Waterville	04901-7513
Barbara	Whittemore	South Paris	4281
Bryan	Wiggins	Cape Elizabeth	4107
Annie	Wilder	Boothbay Harbor	04538-1754
John	Wilder	Norridgewock	4957

Dana	Wilfahrt	Portland	4101
Jean	Wilhelm	Eastport	04631-1518
Peter	Wilk	Portland	4102
Dianne	Wilkins	Falmouth	04105-2486
Hannah	Wilkoff	Brunswick	4011
McCullough	William	Brunswick	4011
Bell	William	Saco	4072
Preis	William	Bridgton	4009
Bunn	William	Portland	4103
Brittain	William	Rangeley	4970
Lawlor	William	Freeport	4032
Pomper	William		
Janet	Williams	Searsport	04974-3370
Lisa	Williams	Yarmouth	4096
Lynne	Williams	Bar Harbor	4609
Richard	Williams	Yarmouth	4096
Susan	Williams	Scarborough	4074
Meg	Willing	Vienna	4360
Polly	Wilson	Portland	04103-4232
Douglas	Wilson	Little Deer Isle	04650-3010
Margaret	Wilson	Brunswick	4011
John	Winchester	New Harbor	04554-0242
Anne	Winchester	New Harbor	04554-0242
Susan	Wind	Rockland	4841
Lois	Winter	Portland	4102
Jayne & Hal	Winters	South China	04358-0398
Harold	Winters	South China	04358-0398
Maggy	Wolf	Portland	4101
Sarah	Wolpow	Brunswick	4011
Stephen	Wood	Brunswick	04011-7840
Karen	Wood	Durham	04222-5318
Ellen	Wood	Topsham	04086-1525
Linda	Woodard	Kennebunkport	4046
Robert	Woodbury	Winslow	04901-6959
Gregory	Woodring	Wiscasset	04578-4062
frances	woodring	Brunswick	4011
Michael	Woodruff	Brunswick	04011-7449
Linda	Woods	Waterville	04901-4344
Bethany	Woodworth	South Portland	4106
David	Woolsey	Ellsworth	04605-3471
Roxanne	Worster	Chesterville	4938
Jordan	Worthing	Wells	4090
Peter B	Wright	South Portland	04106-3856
Melinda	Wright	Brunswick	4011
Sandra	Wright	Mount Vernon	4352

Steve	Wright	Blue Hill	4614
Tonya	Wright	Rangeley	4970
Shantia	Wright-Gray	Ocean Park	4063
Katie	Yakubowski	Greenville	4441
Katherine	Yakubowski	Bowdoinham	4008
Lacey	Yates	Rockport	4856
Gregory	Yeaton	Sabattus	4280
Douglas	Yohman	East Waterboro	4030
Peggy	York	Portland	04103-2820
Melissa	York	Ludlow	4730
Meghan	Young	Bethel	04217-0663
Karen	Young	Northport	4849
Thomas	Young-Bayer	Newcastle	4553
Joseph	Yuhas	Biddeford	4005
Jeffrey	Zabik	Topsham	04086-1947
Lambert	Zachary	Scarborough	4074
Peter	Zack	Parsonsfield	4047
Zoie	Zanoni	East Machias	4630
Holland	Zeke	Brunswick	4011
Ellen	Zimmerman	South Portland	04106-4940
Roger	Zimmerman	Bethel	4217
Ashley	Zipp	Biddeford	4005
Croll	Zoltan	Cherryfield	4622

Dear Climate Council,

Please see the 146 individuals who signed on to our petition for a bold Climate Action Plan. There are also 61 individual comments below. Due to internal policies, we were not able to add these names to the rest of the names submitted by Safiya on behalf of our coalition. However, please note, that with these names, we have submitted over 2000 signatures to you.

Thank you for all your work!

-Matt Cannon, Sierra Club Maine

Please be BOLD

We urge you to adopt a bold, new Climate Action Plan that will strengthen Maine's economy, reduce air pollution, and build healthy, equitable communities.

In order to reduce carbon pollution by at least 80% before 2050, we urge you to support concrete action steps that:

- Expand local renewable energy projects and create new, long-lasting clean energy jobs for Maine workers;

- Deliver safe, clean, and affordable transportation options for moving people and goods throughout the state;

- Increase the energy efficiency of homes and businesses;

- Give Maine people, communities, and resource-based industries like farming, forestry, and fishing the tools to become more resilient and promote solutions that will reduce carbon pollution; and

- Ensure equity by providing solutions that are fair and accessible to all.

A strong and effective Climate Action Plan that lays out a roadmap to a clean energy economy is a once-in-a-lifetime opportunity to build a better future for Maine people.

full name	zip code	city	state
	04347-		
Martin Spahn	1393	Hallowell	ME
	04032-		
Abigail Gray	6706	Freeport	ME
	04609-		
Elizabeth Chen	1233	Bar Harbor	ME
	04473-		
Shirley Davis	3403	Orono	ME

Rep. Dick Farnsworth	04102-1935	Portland	ME
Lisa Jackson	04671-3013	Robbinston	ME
Anthony P Guay	04461-3545	Milford	ME
Wendy Wright	04472-3665	Orland	ME
Roberta Hill	4220	Buckfield	ME
Molly Mulhern	04843-1844	Camden	ME
Noel Jost-Coq	04547-4240	Friendship	ME
Joanne Therrien	04938-0851	Farmington	ME
Andrew Hoglund	04986-3408	Thorndike	ME
Dara Crawford	04049-3318	Limington	ME
Lucky Bistoury	04011-1906	Brunswick	ME
Janice Adler	04970-0462	Rangeley	ME
Marie Louise Zwicker	04664-0230	Sullivan	ME
Heather Scola	04038-2462	Gorham	ME
Alexus Bond	04032-6871	Freeport	ME
Cynthia Strout	04042-3121	Hollis Center	ME
Cliff Krolick	04047-6526	Parsonsfield	ME
Stephen Cook	04544-6015	East Boothbay	ME
Thyle Shartar	04578-4493	Wiscasset	ME
William Turner	04040-4340	Harrison	ME
Anthony F Marple	04353-3603	Whitefield	ME
Tom Tutor	04848-0289	Islesboro	ME

Dara Crawford	04049-3318	Limington	ME
Alex Mendelsohn			
Dot Kelly	04562-4017	Phippsburg	ME
Janet Lagassee	04210-6509	Auburn	ME
Erin Rowzee	4281	South Paris	ME
Robert Riffe	03908-1815	South Berwick	ME
Chris Furbay	04092-3371	Westbrook	ME
Carole Wise	04011-7389	Brunswick	ME
Nicholas Mediatore	04538-1748	Boothbay Harbor	ME
Anna Newton	04032-6912	Freeport	ME
Andy Despres	04222-5213	Durham	ME
Corrine Kucirka	04105-2836	Falmouth	ME
Nancy Earle	04401-4039	Bangor	ME
Karen Povec	04843-1956	Camden	ME
Elainna Hatsis	03904-1736	Kittery	ME
Suzanne Hedrick	04555-8830	Nobleboro	ME
Nancy Babcock	04261-3069	Newry	ME
Mary Anne Mitchell	04108-1149	Peaks Island	ME
Claire Mcdougald	04105-6069	Falmouth	ME
George Muller	03908-1224	South Berwick	ME
Eric Mcvay	04401-2964	Bangor	ME
Nancy Anderson	04110-1418	Cumberland Foreside	ME
Jody Richmond	04426-3410	Dover Foxcroft	ME

Ben Allen	04103-1705	Portland	ME
David Boyer Boyer	04915-6167	Belfast	ME
Justin Pease	04072-2718	Saco	ME
Frederica Chapman	04847-3031	Hope	ME
Paul Neve	03903-1220	Eliot	ME
Christie Rochette	04037-1217	Fryeburg	ME
Victoria Szatkowski	04092-2347	Westbrook	ME
Becky Bartovics	04853-3017	North Haven	ME
Nate Galway	04210-6518	Auburn	ME
Anne Booker	04572-5913	Waldoboro	ME
Katherine Nelson	4609	Bar Harbor	ME
Nancy Ridley	04250-6244	Lisbon	ME
Lauren Reiter	04101-3915	Portland	ME
Charlene Clukey	04090-7014	Wells	ME
Cynthia Howard	04006-0019	Biddeford Pl	ME
Jacqueline Davidson	04627-3756	Deer Isle	ME
Laura Sheinkopf	11747-3319	Melville	NY
Jane Hardy	04849-5616	Lincolntonville	ME
Jenni Lynn Reis	4614	Blue Hill	ME
Susan Messrschmitt	04005-2519	Biddeford	ME
Ey Bro	03901-2523	Berwick	ME
Gary Friedmann	04609-1010	Bar Harbor	ME
Deborah Lewis	04217-3029	Bethel	ME

W Keene	04901-7261	Winslow	ME
Kathleen Conrad	04097-6544	North Yarmouth	ME
Greg Kimber	04984-0525	Temple	ME
Susan Messrschmitt	04005-2519	Biddeford	ME
Pat Berger	04963-0667	Oakland	ME
Gerald Cosenza	04073-5327	Sanford	ME
Ey Bro	03901-2523	Berwick	ME
Dawn Diblasi	04903-2535	Waterville	ME
Suanne Williams-Lindgren	04032-6015	Freeport	ME
Nancy Ridley	04250-6244	Lisbon	ME
K Levin	04103-2607	Portland	ME
Joseph Skalecki	04862-4624	Union	ME
Nastasha Mayers	04353-3410	Whitefield	ME
Lynn Ritter	04096-8320	Yarmouth	ME
Anne Rosati	04103-4626	Portland	ME
Don Lennon	04096-8313	Yarmouth	ME
Ryan Paulu	04096-6323	Yarmouth	ME
Martha Fleishman	04938-5103	Farmington	ME
Michelle Laughran	04084-5217	Standish	ME
Alice Bunn	04939-5005	Garland	ME
Anneliese Schultz	04039-9575	Gray	ME
Richard Esten	04627-3532	Deer Isle	ME

Eve Duplissis	04240-4700	Lewiston	ME
Cheryl Denis	04103-2928	Portland	ME
Margaret Leitch Copeland	04530-4108	Bath	ME
Emmah Doucette	04037-1235	Fryeburg	ME
Raymond Eachus	04643-3463	Harrington	ME
Vinnedge Lawrence	04091-3002	West Baldwin	ME
Ashley Ouellette	04005-9785	Biddeford	ME
Therese Larochelle	04330-4333	Augusta	ME
Kelly Langlois	04282-3021	Turner	ME
Laura Sholtz	04435-3409	Exeter	ME
Richard Record	04093-6144	Buxton	ME
Sihaya Hopkins	04642-3028	Harborside	ME
Gerhild Paris	04105-2585	Falmouth	ME
Raymond Clark	04105-2317	Falmouth	ME
Robert Halliday	04011-7396	Brunswick	ME
Christopher Betit	04011-7124	Brunswick	ME
Leslie Clapp	04614-0341	Blue Hill	ME
J Brownstein	04046-6113	Kennebunkport	ME
Lenore Sivulich	04260-3854	New Gloucester	ME
Kimberly Phillips	04609-1704	Bar Harbor	ME
David Robinson	4063	Ocean Park	ME
Harold Harrison	04064-2810	Old Orchard Beach	ME

Stephanie Scherr	04032-6740	Freeport	ME
Medora Van Denburgh	04463-6123	Medford	ME
Christopher Kowalski	04614-6206	Blue Hill	ME
Susan Hall-Taylor	04472-4900	Orland	ME
Rosalind Ivens	04416-4821	Bucksport	ME
Paul Smith	04090-6352	Wells	ME
Douglas Wilson	04650-3010	Little Deer Isle	ME
Michele Bouchard	04901-5237	Waterville	ME
Marjorie Monteleon	04679-1302	Southwest Harbor	ME
Susan Alexander	04547-4325	Friendship	ME
Joanna Leary	04092-3127	Westbrook	ME
Deborah Fobes	03901-2749	Berwick	ME
Josh Norek	04284-3144	Wayne	ME
Karen Vasil-Busch	04220-4109	Buckfield	ME
Jane Hersey	04105-1217	Falmouth	ME
Mary Roehrig	04086-6151	Topsham	ME
Christine Gates	04015-3231	Casco	ME
Debbie Mccarthy	04966-4340	Phillips	ME
Ellen Callahan	04038-1900	Gorham	ME
Lenore Sivulich	04260-3854	New Gloucester	ME
Kristin Shearman	04348-3258	Jefferson	ME
Sandy Donahue	04103-5427	Portland	ME

Julia Hathaway	04401-7135	Veazie	ME
Linnette Erhart	04634-3133	Franklin	ME
Adam Casey	04574-4416	Washington	ME
Bryce Smith	04429-4222	Dedham	ME
Ruth Rogers	4579	Woolwich	ME
Jeff Donald	04414-3524	Brownville	ME
Shonna Davis	04730-1126	Houlton	ME
Ruth Rogers	4579	Woolwich	ME

Individual Comments (all of these names appear above as a petition signator):

full name	city	personal message
Martin Spahn	Hallowell	"We have forgotten that we ourselves are dust of the earth (cf. Gen 2:7); our very bodies are made up of her elements we breathe her air and we receive life and refreshment from her waters."--Pope Francis. Laudato Si #2
Abigail Gray	Freeport	Accelerate the transition to a future powered by local clean energy and set a clear pathway for meeting Maine,Âs 100% clean energy Renewable Portfolio Standard target.

Elizabeth Chen	Bar Harbor	With the dismantling of the EPA and all the positive changes from the Obama administration it is imperative for state level action to be proactively protective of our environment and push to slow climate change.
Shirley Davis	Orono	We need very strong climate action because our world is getting hot very fast and the storms are increasing in frequency and in force. Plus the glaciers are melting sea levels are rising and water is getting scarce in many parts of the world.
Rep. Dick Farnsworth	Portland	We need to stabilize our climate so that our grandchildren are able to live lives that are filled with the glory of being able to be outdoors in a healthy and safe environment.
Lisa Jackson	Robbinston	We need to preserve the clear skies clean water and healthy forests which Maine is famous for so that future generations can enjoy the same health benefits and beauty that we do.

Anthony P Guay	Milford	<p>We need a strong climate action plan now! The Green New Deal on steroids!! This pandemic is a perfect and horrific case study in not acting boldly following the consensus of scientific evidence when there's time to avoid the worse effects! We should have been transitioning to a carbon-neutral economy 40 years ago! This is WAY WAY beyond urgent - we must act boldly NOW!</p>
Wendy Wright	Orland	<p>We must protect what is left of our planet and the life all life that it sustains. Please fight for clean energy sustainable energy natural local organic food sources complete recycling to eliminate pollutants and landfills and ocean plastics. Help us create a living breathing nurturing clean and healthy sustainable future for all life.</p> <p>We have a choice between continuing on as before; consuming more than the earth can produce and spewing climate altering elements into earth,Â fragile atmosphere then descending into full blown global climate chaos or swiftly changing course toward a net zero carbon less energy intensive more sustainable more just future. COVID-19 has given us an opportunity to reset the status quo system that is killing our planet. Maine should be a leader in this important work.</p>
Roberta Hill	Buckfield	
Molly Mulhern	Camden	<p>We can not have a fossil fuel recovery. We need to start building our new world now.</p>

Noel Jost-Coq	Friendship	Time is of the essence! We don't have much time to get this right as the health and welfare of the people of Maine are at stake.
Joanne Therrien	Farmington	<p>This matters for the futures of our children who inherit our strengths and weaknesses and will encourage them to stay strong and keep our planet clean.</p> <p>This is no time for timid proposals. In a few years we will look back and say we really should have set much more aggressive goals in 2020 when we had more time. Maine should have a crash program (man on the moon) for distributed solar. Maine should be renovating the entire present building inventory now. These two steps alone would be a big step into the future of no carbon and job creation. Applying ideas that were developed yesterday and have already been subject to fossil fuel watering down is to little. There is need for urgency. The pace of warming is accelerating with out us which means it's moving to; out of control. When I let that sink in things look a little different.</p>
Andrew Hoglund	Thorndike	
Dara Crawford	Limington	There is simply no other choice now but to take bold action our children demand and deserve no less!

Lucky Bistoury	Brunswick	There is no better time than Now to protect our natural environment. As we have seen in the last couple of months Americans were caught off guard with this would Pandemic. Because the Federal Government response was soo weak to Covid-19 our economy and health are much worse than before Trump stepped in as #45.
Janice Adler	Rangeley	<p>The wild weather the world is experiencing will only get worse if we don,Äôt change our ways. It may already be too late.</p> <p>the planet is facing a climate crisis. the atmosphere is warming; the seas are warming.; life on Earth is being threatened by devastating changes to our environment. yet it appears that those in charge continue business as usual as if our lives were not in danger. serious steps must be taken to address the climate catastrophe. these steps must reduce carbon dioxide going into the atmosphere; they must reduce the amount of methane going into the atmosphere; the danger of factory farming air and water pollution (as well as breeding grounds for this and future pandemics) and destruction of rainforests for more ranching must be addressed by governments; ocean acidification as a direct result of increasing CO2 in our environment must be addressed; the list is almost limitless of the threats facing our planet and our health. steps must be taken immediately as we do not have the time to wait. the future of our lives and of the planet is at stake.</p>
Marie Louise Zwicker	Sullivan	

Heather Scola	Gorham	The people of Maine overwhelmingly support and deserve action today for a better future tomorrow. Acting on climate change will help strengthen our economy and build a healthier more resilient future for all of us. These are investments in our future we can't afford to pass up.
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Alexus Bond	Freeport	The environmental challenges facing us today are unprecedented and will only worsen without strong action. We need strong policies - elimination of single use plastics rigor around effective recycling and greater visibility to the environmental impacts of day to day decisions. Please help us do what is best for our future!
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Cynthia Strout	Hollis Center	The earth our home matters to me.
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Cliff Krolick

Parsonsfield

The best most effective and least costly means to moving Maine to 100% renewable energy that is produced in the state of Maine is to adopt mainepowerformainepeople.org CMP Plays Fiddle For Their Energy Corridor as Mainers Go Into Dark With Corona Virus full steam a little April snowstorm and another looming CMP can,Ã seem to get out of its,Ã own way. Why should nearly 260 000 Mainers lose power in April? Is it because CMP has not upgraded it,Ãs antiquated Grid ? Or maybe they,Ãre spending too much on ads advertising their Clean Energy Corridor? While a majority of Mainers are against this corridor the private foreign consortium that is CMP is spreading rumors and misinformation about so called benefits of this corridor and insulting Mainers,Ã intelligence. Maine people know the benefits of a Consumer Owned Utility. It,Ãs a non-profit Power Authority owned and operated by Maine people not Maines,Ã Gov,Ãt. Maine is already home to several COU,Ãs. Half the Town of Madison has

Stephen Cook

East Boothbay

Sustaining wildlife habitat fisheries and clean air are essential to me.

Thyle Shartar

Wiscasset

Since transportation is half the problem of fossil fuel emissions a bold strategy is need. Obtaining a good % of the electricity from biomass is not the solution is not a valid solution. Solar and wind need to be scaled up.

William Turner	Harrison	Require a full EIS on the power from Canada fiasco before proceeding. Foster alternative generation and batteries to reduce peak loads.
Anthony F Marple	Whitefield	Remember that NECEC is essential clean energy.
Tom Tutor	Islesboro	Please help Maine remain the wonderful place it is: natural beauty undeveloped wilderness accessible outdoor trails for everyone.
Dara Crawford	Limington	Our children deserve no less than bold action we must not fail them!

Alex Mendelsohn

Now!

Dot Kelly

Phippsburg

Now more than ever we can see the far-reaching benefits of investing in Maine for green jobs green energy and green infrastructure. Please be bold. Thanks.

Janet Lagassee

Auburn

No plan for the future will be effective or possible without environmental protections firmly in place. These protections must be strong enough to withstand another Paul LePage.

Erin Rowzee

South Paris

Nature is more important to me and my family than anything else. We want clean water clean air and zero pollution! America can be a leader in Environmental Living. We live these principles everyday. Join us!

Robert Riffe	South Berwick	My strongest concerns for Maine's dealing with climate change are mainly but not exclusively a stronger push for home solar panels to alleviate CMP's lock on fossil fuel energy use and a move toward bringing back some of the smaller rail lines (but more efficiently powered) to help reduce some of the trucking/highway inefficiency. Curb the idea of creating more and bigger turnpikes.
Chris Furbay	Westbrook	My daughter is 2. I want her and her children and her children,Ãs children to be able to enjoy the beauty and wonder of the great out doors. Please be bold in your actions for Maine today and for Maine,Ãs future.
Carole Wise	Brunswick	Maine leaders... I am grateful for your thoughtful and strategic thinking & planning... a life-long educator from Maine I believe in you... stay safe be well... and... continue authentic leadership... Maine Strong
Nicholas Mediatore	Boothbay Harbor	Maine is one of the more pristine states and should be kept so to the fullest extent possible. If not now when? It's easier to do our best now when we're somewhat ahead of the problem than later when clean-up will be more expensive and probably less effective.

Anna Newton

Freeport

It's important for the state of Maine to be a climate action leader. The state of Maine is one of the few states in the country that not only depends on a healthy natural world for its economy - in multiple ways its entire character is defined by the natural world. From the wonderful presence of the native American community to the coastline and fishing people boating life to the lakes and forests hiking trails and islands. We Are the wild here. Stewardship and climate action are vitally important.

It's great to do local work against climate on a micro level but we don't have the luxury of doing our small state "action" when scientists say 11 years to a point of no return on climate sustainability. We must unite as one voice across this literal world to demand that oil corporations are not "people" because they ultimately have no moral conscience and are in reality narcissistic sociopaths that only have their narrow members' interests in mind....the plight of the earth and humanity is not and never will be their concern. Corporate oil is the new slave master to all of us...and the planet and humanity face extinction because we allow Big Oil power over us. Every environmental group needs to act in tandem with each other worldwide so have unity together now in this historic moment. The deafening silence of no action in not really seriously and honestly discussing global sustainability now when all science points to extinction is beyond grief and sorrow. Danger/opportunity?

Andy Despres

Durham

It is very important to me as a citizen of Maine and the United States to fight climate change. It will benefit our state in the short and long-term to move quickly to green renewable energy which will provide much-needed well-paying jobs. It's the time to do the right thing for the right reasons and reap the benefits for everyone!

Corrine Kucirka

Falmouth

Nancy Earle	Bangor	It is very important that we work on citizens seeing the need for solar panels on their roof or property. I feel this is a must for really every commercial building and vehicle as well. We have solar panels and are very pleased with cutting way back on oil and saving money.
Karen Povec	Camden	In the end the most important issue for all of us is the environment. I'm impacted daily by the pollution generated by people driving their cars to work at the Portsmouth Naval Shipyard. I live between the two gates of the yard and get awoken every day at 6:30 from the traffic noise of commuters - one person per car! We desperately need more public transportation including public buses and railroads. We also need clean renewable local energy. The gas and oil industry is not only ruining our environment it is strong arming our politicians who are weakening our environmental laws.
Elainna Hatsis	Kittery	
Suzanne Hedrick	Nobleboro	I'm an 89 year old Mainer concerned about the future for my grandchildren. They are growing up in dire times not only with a virulent pandemic but a virulent president who is dismantling many environmental protections. PLease take strong climate actions to protect their future. WE do not have that many years. No CMP corridor to destroy the forests where I grew up in Western Maine

Nancy Babcock	Newry	I would love to see Maine lead the nation in clean energy standards and use! Thank you for leading the way in this.
Mary Anne Mitchell	Peaks Island	I think about generations to come and how important it is to change the way we treat the environment. Please support a strong action plan for the future of Maine and a model for our country. Thank you.
Claire Mcdougald	Falmouth	I moved to Maine 25 years ago from New York City because of it's natural beauty and the peoples respect for nature. I'm proud to say I live in Maine. I pray that it retains its culture of respecting nature and wildlife
George Muller	South Berwick	I have photovoltaic and collectors it is imperative that we support clean energy for all to help mitigate climate change and cleaner air

Eric Mcvay	Bangor	I have not recived the connection information for the meeting and my email is ericdonald240@gmail.com
Nancy Anderson	Cumberland Foreside	I have four dearly loved grandchildren and I want them to inherit the beauty of this Earth. Because I am watching them I will not have time to comment on your separate plans but urge you to choose the strongest actions. We are running out of time. Thank you.
Jody Richmond	Dover Foxcroft	I have an 8 year-old grandson born and bred in Maine. When he reaches adulthood I want there still to BE wonderful outdoors and clean energy jobs available to him so he may WANT to stay in Maine! I am the parent of an 8 year old and a 10 year old. I want them to be able to grow up in a place where the importance of protecting our environment is demonstrated to them through policies which encourage people to recycle more to use clean energy and take responsibility for the impact of their choices on the environment. We need to use State funding to make clean energy and electric vehicles a realistic option for every Mainer. Not just the top 5% of earners. In this way if we show our children that we value the environment they will carry that torch forward.
Ben Allen	Portland	

David Boyer Boyer	Belfast	Environmental security is national security it's as simple as that. Failure to protect environmental security is failure to protect national security it's as simple as that. The constitution requires you to protect the state/nation against all threats foreign and domestic it's as simple as that. Do your job!!
Justin Pease	Saco	Dirigo! Our state should show the nation how it's done!
Frederica Chapman	Hope	Dear policy-Makers As Mainers we are proud of our forests clean air and waters but Please help us to forge ahead with new policies that protect what we so value. Thank you for your work for our environment Frederica Chapman
Paul Neve	Eliot	Climate change is the biggest ecological threat to our way of life and we need to address it urgently before it,Ãs too late. Adopt the Climate Action Plan to help preserve Maine now and for many years to come.

Christie Rochette Fryeburg

Climate action should be our top priority! It is our responsibility to not only ourselves and the future generations of human beings but to this beautiful and bountiful planet that we get to have as our home and all of the other amazing creatures that inhabit it.

Victoria Szatkowski Westbrook

Build a stronger more self-sufficient Maine!
Be bold with the Climate Action. Go for 2030 not 2050.. I fear it is being watered down instead of seeking bold aggressive goals. Building a renewable energy micro grid economy will promote businesses that bring benefits to Maine while outsourcing supply to Big international corporations will have the exact opposite. The Climate Council should be dealing with the extremis that we are encountering and look to progressive unique solutions that will require some changes on all of our parts but which will keep Mainers and our environment healthy. Don't sell off our resources to non-Maine based large corporations. Use our incredible environmental heritage and legacy to provide for a clean environment that sustains the diverse populations of plants animals and humans of the future. Act to keep Maine's environment healthy and we will stay healthy along with it. Do the opposite and we will fail. The bottom line is- It's that simple. The precautionary principal!

Becky Bartovics North Haven

Nate Galway	Auburn	As the humans isolate the planet is responding . It is time to listen to constituents and rewrite the playbook
Anne Booker	Waldoboro	As a young person I am concerned about how climate change will make my life unpleasant when I am 50+ years old. Work for the young people who are inheriting this planet. Make your plan against climate change aggressive.
Katherine Nelson	Bar Harbor	As a retired scientist I understand the urgent need to keep carbon in the ground. Unless we correct the climate change crisis nothing else really matters.

September 15, 2020

Maine Climate Council
Governor's Office of Policy Innovation and the Future
VIA Email

Dear Members of the Maine Climate Council:

We represent a diverse segment of Maine's business community and urge your support for a Climate Action Plan that strengthens Maine's economy, creates and maintains jobs, reduces greenhouse gas emissions, and builds healthy communities for everyone. You have an extraordinary and unique opportunity to develop a Climate Action Plan that achieves significant, long-term economic, energy, environmental, and equitable benefits for the State and its citizens. We look forward to helping you to achieve these goals and implement the strategies needed to move Maine forward.

We call on you to prioritize strategies that create long-lasting clean energy jobs, increase energy efficiency in homes and businesses, expand renewable energy projects, and invest in safe, clean, and affordable transportation systems. It will be important to also plan and encourage thriving, affordable, and more livable communities that make our homes and offices more conducive to life, family, and work.

As responsible businesses and organizations that support Maine's economy and environment, we are committed to working with State and local governments to pursue innovative policies and partnerships in order to advance an innovative electricity grid, more energy efficient buildings, more fuel-efficient vehicles, and cleaner pathways for heating and powering homes and factories. It will be imperative to do so in a way that preserves and fortifies the State's farming, forestry, marine and fishery, and tourism industries and their workers.

Climate change poses a serious threat to Maine's economy, environment, and quality of life. Investing in job creation in renewable energy, energy efficiency, and sustainability-related projects will help provide jobs for thousands of the State's engineers, installers, fishermen, foresters, service and utility workers, and small and large business owners and their employees. Let's invest in a cleaner, resilient, and more sustainable economy and put the State of Maine to work for all.

Together, we can help companies and entrepreneurs confront climate challenges and identify opportunities to grow their businesses and workforces, market their products and services, and contribute to climate solutions. Our actions must be intelligent, bold, comprehensive, and inclusive. Maine companies are willing and able partners in the fight to confront the climate crisis by investing in energy and infrastructure projects and job creation and moving people and goods to drive our economy forward. A robust Climate Action Plan will be the roadmap to ensure our success.

Thank you for your service to our State and your partnerships with its business community!

Sincerely,

Allagash Brewing Company
Alodyne, LLC
Ameresco, Inc.
Americas Energy Services
Apex Clean Energy
ArchSolar
Atlantic Brewing Company
Beech Hill Consulting
Benchmark Real Estate
Bernstein Shur
BerryDunn
Bigelow Laboratory for Ocean Sciences
BioEnergy Revisioning, LLC
Biomass Power Association
BNRG Renewables Ltd
Brookfield Renewable
CAPE Technologies
CJTalbot Services
Cleantech Adoption LLC
Climate & Economy Center
Coastal Enterprises, Inc. (CEI)
Columbia Capitol Corporation
Correct Property Management, LLC
DBE Consulting Services
Definitive Brewing Company
Dirigo Solar LLC
Drumlin Environmental, LLC
East Brown Cow Management, Inc.
ECA Solar
EDF Renewables
EDP Renewables North America, LLC
Emerald Builders
Encore Renewable Energy
Energy Management, Inc.
ENGIE
Envision Maine
Federle Law
Flycatcher LLC

Foulmouthed Brewing
Foundation Brewing Company
Glenvale LLC
Howe, Cahill & Company
Hydrogen Energy Center
Introspective Systems LLC
IntWork, LLC
IPRE
Kaplan Thompson Architects
Katahdin Analytical Services
Lee Auto Malls
Lloyd's Register Americas Inc.
SGC Engineering, LLC
Longroad Energy Partners
Maine Center for Entrepreneurs
Maine Clean Carbon
Maine Community Power
Maine Composites Alliance
Maine Farmland Trust
Mainely Solar
Maine Manufacturing Partners (MMP)
Maine Marine Composites
Maine Organic Farmers and Gardeners
Association (MOFGA)
Maine Pellet Fuels Association
Maine Renewable Energy Association
(MREA)
Maine Society of CPAs
Mast Landing Brewing Company
Midcoast Regional Redevelopment
Authority (MRRA)
Midcoast Solar
Naomi Mermin Consulting
Next Phase Energy Services
North Light Energy, LLC
Novis Renewables
Nyle Water Heating Systems LLC
Orono Brewing Company

OPRC, Inc.
Parent Technology Group, LLC
Patriot Renewables, LLC
PowerMarket
Q-Team Tree Service
rbouvier consulting
Renewable Energy International LLC
Residential Energy Dynamics
Revision Energy
SMRT Architects and Engineers
Solar Fields LLC
Soltage, LLC
Stantec Consulting Services Inc.
Summit Natural Gas of Maine
SunRaise Investments
Swift Current Energy

SysSoln LLC
Tetra Tech, Inc.
The American Institute of Architects –
Maine Chapter
The National Association of Social
Workers – Maine Chapter
The SunriseGuide, LLC
The Sustainability Lab/Fork Food Lab
Treadwood
VEIC
VHB
Walden Renewables
WaterFurnace
Wood
Woodard & Curran

CC: Hannah Pingree, Director, Governor's Office of Policy Innovation and the Future
Melanie Loyzim, Acting Commissioner, Maine Department of Environmental Protection
Brian Ambrette, Governor's Office of Policy Innovation and the Future
Sarah Curran, Governor's Office of Policy Innovation and the Future
Taylor LaBrecque, Governor's Office of Policy Innovation and the Future
Anthony Ronzio, Governor's Office of Policy Innovation and the Future
Cassandra Rose, Governor's Office of Policy Innovation and the Future

Rose, Cassandra

From: Frank Thiboutot [REDACTED]
Sent: Tuesday, September 15, 2020 9:21 AM
To: Governor; Rose, Cassandra
Cc:
Subject: Things to consider about renewable energy

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

While the state has been in lockdown, the Maine Climate Council has been meeting regularly to push a Green Agenda which will destroy our economy more so in the long run than the Communist China Virus or the BLM Marxists and the Antifa anarchists.

I hope you will watch this 5 minute video below.

Frank Thiboutot

https://www.prageru.com/video/whats-wrong-with-wind-and-solar/?utm_source=Main+Mailing+List&utm_campaign=50f21f798c-EMAIL_CAMPAIGN_2020_04_09_06_29_COPY_01&utm_medium=email&utm_term=0_f90832343d-50f21f798c-169235585

September 15, 2020

2020

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Tim Hobbs
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Evan Richert

Response and Feedback to Climate Council Recommendations

GrowSmart Maine appreciates the extensive work of the Climate Council Working Groups and supports the recommendations as consistent with our work and mission. As an organization focusing on the interconnections of many of these strategies, GrowSmart Maine offers our collective experience and varied perspectives in this, our response to the draft recommendations developed by the Climate Council Working Groups. We hope that in the aggregation of findings, the Council will choose to proceed broadly and boldly. The following are initial responses from our board and staff, intended to be useful to the Climate Council in further developing Maine's overall plan to address climate change within the context of a myriad of complexly related challenges. We appreciate this opportunity to weigh in on the draft recommendations and have done so by first recommending a prioritization and then commenting by each "bucket" of issues addressed by the working groups.

➤ **Prioritization of Strategies**

➤ Looking for the common themes that span across many of the "buckets" may be a useful way to prioritize – by identifying those efforts that will affect change in the greatest number of areas of concern. For example, major categories that align with smart growth are environment, community and economy. To help pick off low-hanging, low cost efforts first, look for long-term economic benefit that is fiscally manageable, and considers economic, fiscal and social ROI of associated costs to provide an equity check. Some sample questions to test importance include:

- Does it mitigate climate change?
- Does it protect/enhance Maine's natural resources?
- Does it improve quality of life for citizens across all incomes, education levels, gender, race?
- Does it provide economic opportunity for Maine?
- Where does it rank in terms of cost for the next 10 years/20 years?

- Challenge the state to think about the structure of the executive branch to focus on the challenges of our time. The report-outs don't appear to consider (at least on a large scale) reorganization of state departments/bureaus to tackle climate change or other issues. The Brookings Report, commissioned by GrowSmart Maine a decade ago, spoke of the need to have a structure that best organizes people to meet current challenges. The Office of Policy Innovation and Future could be uniquely positioned to help redirect restructuring that may

reduce the size and expense of the government while focusing on a few key proactive challenges (migration/population and R&D come to mind).

- Maine's pledge is the most aggressive in New England. Those ambitions require outcomes and action immediately. Urgency of the COVID-19 pandemic and necessary economic recovery demand that climate action happen in tandem with these efforts.
- All of the topics call for developing education materials. Consider the strength of an umbrella "brand" – and acknowledging the links to related consequences as well as the primary highlight; helping to tie progress in one area to progress in another.

Buckets & Priorities

➤ Buildings, Infrastructure & Housing

- Strategy #3 Recommendations to Mitigate Emissions and Support Resilience in Maine Buildings focuses on energy efficiency of existing buildings. This is important, yet in addition, recommendations must recognize the climate resiliency value of reuse of existing buildings, beyond simply reuse of materials in new construction. The state's historic rehabilitation tax credit has proven its value for economic and community resiliency. It also supports rehab and reuse of existing buildings, with the climate advantage of repurposing embedded carbon in those materials compared with both demolition and new construction.
 1. Adaptive Reuse; embodied carbon of existing buildings – yes, improve efficiency, but also make them healthier, creating supportive environments which overlap with Resiliency, Public Health, energy – and if focused in downtowns or more walkable rural hubs, they will also impact transportation.
 2. While the report includes the use of construction materials with embodied carbon, it does not appear to make a priority of it. Adapted reuse is a strategy that limits the carbon footprint, but sequestration strategies work to pull carbon out of the atmosphere. There is an urgency needed to slow climate change that calls for more proactive measures. The use of bio-based construction materials can also be an economic benefit to Maine. Increase of R&D funding to the university system to expand their research in new materials would be a recommendation to support.
 3. An added benefit of this sort of program is that it could be made to add resiliency to existing housing stock without dependence on developers & large-scale property owners/landlords; There is so much more [than weatherization] needed to bring the aging housing stock up to usability such that it serves the needs of the population and supporting and empowering individual homeowners to do more.
- Public funding being tied to smart locations of new buildings – (eg. School funding still seems to encourage new construction schools on the edge of town with a big dropoff loop, rather than a walkable neighborhood school model where busses and cars still have access but are not the tail wagging the dog)

➤ **Building Codes**

1. Streamlining process of permitting and cost of permitting has been recognized as an effective way to incentivize building in specific locations for both commercial and residential construction, which contributes to walkability and reduced vehicle emissions. (So this is pertinent to transportation as well.) Municipalities should be provided with templates on how to do this for use as a land use planning tool.
2. Additionally, while we support uniform building and energy codes, concern for the emphasis on green and safe buildings, while clearly a good thing, can also be in direct conflict to the need for affordable housing and healthy buildings. How do we streamline adoption of building codes and other regulations to focus on sustainability (for planet + people) and energy conservation side by side with reducing the cost of construction?
 - a. One suggestion: Maine should broaden affordable housing calculations to take into account not only mortgage/rent, but also transportation and energy/utility costs. This broader view may reshape how MaineHousing and the public view what is affordable. This is building on the current thoughts on how housing funds are awarded - location matters, as does lifetime energy costs.
3. Statewide building codes could lead to regional/state building inspectors - compliance, training, staffing as significant costs to communities. Small town exceptions to MUBEC could be reduced/eliminated with regional inspection capacity.
4. Stricter buildings codes will reduce emissions, should consider additional requirements like installing solar panels on all new buildings as in CA. Recommendations include getting PV/EV ready, but orientation of rooflines might be important to consider too.
5. The recommendations tend toward Behind the Meter interventions - related to the buildings themselves, not the location/land use decisions related to siting new buildings/facilities. There is opportunity to get upstream for greater impact.
 - a. Related to location of development - find ways to incentivize combined heat and power generation (this is also in the Energy section)

➤ **Community Resilience Planning, Public Health & Emergency Management**

1. Strong ties with Buildings, Infrastructure & Housing – by providing supportive built environments, we lift the public health of communities, including psychological health. With greater partnership between these near silos, there is huge potential for moving the needle. GrowSmart Maine started a conversation to build these ties in Maine at our 2019 Summit.
2. Legal and Regulatory Clarity as well as the cross cutting theme of location of development- Maine is due for a major overhaul of the Growth Management statute. This should include more emphasis on Future Land Use planning (looking ahead) and implementation, with less emphasis on statistics and chasing data (looking back).
 - a. This has been looked at since at least a dozen years - state as well as non-profits. This is an area where GrowSmart could lead.

- b. In general, comprehensive planning is too expensive and takes too much time> How can this process be improved through streamlining and making resources available?
 - c. The certification process in which the state makes sure regional and state goals are addressed is valuable, but there is no capacity for follow up on how well plans are implemented. This should be corrected.
 - d. There should be more incentives (and maybe some penalties) in regard to eligibility for technical assistance and, funding related to implementation. Planning is a worthwhile community building activity, but the ultimate goal has to be implementation - changes that make a difference.
- 3. Much as the Building, Infrastructure & Housing group stated, goals related to energy and emissions and responsible materials standards – there are standards (WELL, Fitwel, Living Building Challenge, Assembly) for buildings, public spaces, municipalities/communities and organizations to positively impact human health and well-being.
 - a. A bold move would be incentivizing adoption of wellness supporting design (& policies) in parallel to the Efficiency Maine model for energy savings using some of the existing research-based standards.

➤ **Transportation**

- 1. Reduction of miles travelled through more strategic land use is smart growth.
 - a. How do we lean in hard to encourage/incentivize businesses to continue remote work as is currently being done, for as much of the workforce as possible for some portion of the work week. We expect this will significantly reduce vehicle emissions and reduce road maintenance costs for existing roadways.
 - b. Also, creating employee tax incentives for Work-From-Home remote equipment needs would help with equity of work from home feasibility.
- 2. Forward looking infrastructure investments.
 - a. Disincentivize non-resilient infrastructure practices (such as cul-de-sacs)
 - b. Move away from auto-centric design wherever possible, such as urban schools (see above).
- 3. When a new road is created or an existing road is expanded (use MaineDOT or MTA dollars), strongly recommend that the new infrastructure include facilities for bus-only lanes to be used now or in the future. Otherwise we are locking ourselves out of efficient bus transport in congested rural, suburban and urban corridors.

➤ **Natural & Working Lands**

- 1. Strategy #1 - “Protect and conserve working and natural lands and water through a dedicated, sustained funding source to support a robust forest products and agricultural economy, increase carbon storage opportunities, avoid future emissions and enhance climate adaptation and resilience.” We fully support this goal, and note the need to include access to fisheries.

➤ **Energy**

- 1. Energy conservation is the best clean energy - should be a high priority

2. Maine needs an energy grid based on distributed generation. Transmission projects (for electricity or pipelines) are expensive and subject to disruption. What if there were a way to require or incentivize solar panels on all roofs and battery storage at all properties so that all new properties could opt out of being connected to the grid?
 - i. How do we better incentivize community energy projects?
3. Electric vehicles has a strong focus in the plans, some thoughts for those:
 - i. Target rural and suburban incentives for electric/hybrid vehicles, as these are the places where overnight plug-ins will be easiest to adopt.
 - ii. Incentivize/require businesses locating in non-urban areas to install charging stations for employees. (suggest that all businesses, regardless of location should be installing at least one station, scaling up based on # employees/customers)

➤ Coastal & Marine

1. Infrastructure adaptations: nature-based solutions/models such as green infrastructure.
2. Strong overlap with community resilience planning:
 - a. One radical idea: Reverse grandfather (10-30 years?) residential/commercial building on land that will be directly affected by sea level rise and storm surge. (To some this sounds like a no brainer but it is still happening on a regular basis – while those affected may revolt).
 - i. What would that look like? (If not driven by the insurance industry?)
Taking away/denying permits or certificates of occupancy or condemning buildings in surge areas?
 - b. Strengthening flood zone/shoreland zoning to not only look back at areas that have been subject to flooding, but areas that are likely to be subject to flooding. No more buildings in areas likely to be flooded in by 2050 unless built for those conditions.
 - c. Consider the impact of Zero tax dollars invested in rebuilding areas affected by sea level rise and storm surge, including for sea walls and road repairs. This will have a huge financial impact on many Mainers, but we have to start talking about when to sunset this NOW. Tax dollars need to focus on movement or adaptation of threatened utility infrastructure.

Best,



Nancy E Smith
Executive Director

Rose, Cassaundra

From: Maglev [REDACTED]
Sent: Tuesday, September 15, 2020 4:02 PM
To: Rose, Cassaundra; Ania Wright
Cc: Bill Nemitz; Dieter Bradbury; WGME-TV; West End News; Todd Benoit; Randy Billings; Mo Mehlsak; Michael D Shepherd; Mainebiz; Maine Public Broadcasting; Keith Shortall; Greg Kesich; Gillian Graham; Cindy Castaline; Cliff Schectman
Subject: Re: Maine Climate Council Sept. 16

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Cass,

Thank you for this email.

There are several items missing from the various reports which I believe would have a substantial impact on the Governor's plans/goals.

1. Obviously, MicroRail is a new mode of transportation that has been excluded. There is no more energy efficient less polluting system on the drawing board.
2. The costs of recycling solar waste may be as much as 1.5 times the original costs of solar. Anyone who says the panels no longer contain CHC's (chemicals of high concern) would be outright lying. It is documented in my own research as well as the BEP Annual Stewardship Report and numerous state and Federal reports around the nation.
3. I could find no reference to methods for storage of alt-energy during high production times for use during non-generating hours. I have recommended a process similar to Liquid Energy Storage to be included in the CAD Cell Project upcoming in Casco Bay.
4. The NEW miniature Nuclear Power generation which produces more energy in a day than a wind tower can produce in a month or more. And it's getting smaller and cheaper. The "US gives first-ever OK for small commercial nuclear reactor". The small reactors can produce about 60 megawatts of energy, or enough to power more than 50,000 homes.

Kenneth A. Capron, ret. CPA, MCSE

[REDACTED]

Phone: [REDACTED]
MagLev-Maine dba MicroRail
Email: [REDACTED]

From: Cassaundra
Sent: Tuesday, September 15, 2020 1:18 PM
To: Kenneth Capron
Subject: Maine Climate Council Sept. 16 Meeting Materials

September 15, 2020

Maine Climate Council
Governor's Office of Policy Innovation and the Future
VIA Email

Dear Maine Climate Council Members:

Maine Angels represents a diverse segment of Maine's business community. Although our organization does not officially take positions on issues, we as individuals, and leaders in the community, do support this climate change initiative and urge your support for a Climate Action Plan that strengthens Maine's economy, creates and maintains jobs, reduces greenhouse gas emissions, and builds healthy communities for everyone. You have an extraordinary and unique opportunity to develop a Plan that achieves significant, long-term economic, energy, environmental, and equitable benefits for Maine companies and workers. We look forward to helping you to achieve these goals and implement the strategies needed to move Maine forward.

As business men and women in Maine, we call on you to support a Climate Action Plan that creates long-lasting clean energy jobs, increases energy efficiency in homes and businesses, expands local renewable energy projects, and invests in safe, clean, and affordable transportation systems. It will be important to also pursue smart land use planning that encourage thriving, affordable, and more livable communities that make our homes and offices more conducive to life, family, and work.

As responsible businesses and organizations that support Maine's economy and environment, we are committed to working with State and local governments to pursue innovative policies and partnerships in order to advance a 21st Century electricity grid, energy efficient buildings, fuel-efficient vehicles, and cleaner pathways for heating and powering homes and factories.

Climate change poses a serious threat to Maine's economy, environment, and quality of life. Therefore, it will be imperative to drive action that preserves and fortifies the State's farming, forestry, marine and fishery, and tourism industries and their workers. Investing in job creation in renewable energy, energy efficiency, and sustainability-related projects will help provide jobs for thousands of the State's engineers, installers, fishermen, foresters, service and utility workers, and small and large business owners and their employees. Let's invest in a cleaner, resilient, and more sustainable economy and put the State of Maine to work for all.

Together, we can help companies and entrepreneurs confront climate challenges and identify opportunities to grow their businesses and workforces, market their products and services, and contribute to climate solutions. Our actions must be intelligent, bold, comprehensive, and inclusive. Maine companies are willing and able partners in the fight to confront the climate crisis by investing in energy and infrastructure projects and job creation and moving people and goods to drive our economy forward. The Climate Action Plan will be the roadmap to ensure our success.

Thank you for your service to our State and your partnerships with its business community!

Sincerely,

Ralph Nodine, Maine Angels Chair
Matt Ware, Maine Angles Vice Chair
Audrey Lones, Maine Angels Treasurer
Ayres Stokly, Maine Angels Secretary

Rose, Cassandra

From: [REDACTED]
Sent: Wednesday, September 16, 2020 12:09 PM
To: Curran, Sarah; Rose, Cassandra
Subject: Message from S. Le

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello, an email has been submitted to the Governor's Office of Policy Innovation & Future website:

Email: [REDACTED]
Name: S. Le
Town/city: Bangor
Message:

Dear Maine Climate Council:

I am pleased to hear that Maine is tackling the climate crisis head on with a holistic approach. I watched the webinar on 9/9 and 9/16. I think the group has done a fabulous job. However, I worry that there is no public education working group. Students should be taught the science of climate change sooner rather than later. When I talk about superstorms and the polar vortex with my middle schooler who attends public school, she does not know what I am talking about. All school districts in Maine should implement climate education, as today's students are ones to take over the council in 2030, 2050.

The public education working group can also be the PR that translates technical ideas and words into layperson's terms. This way, there is more public buy in.

Keep up the great work!

Sincerely,
S. Le
Wed Sep 16 12:08:40 2020

Rose, Cassaundra

From: [REDACTED]
Sent: Monday, September 21, 2020 3:27 PM
To: Curran, Sarah; Rose, Cassaundra
Subject: Message from Beedy Parker Parker

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello, an email has been submitted to the Governor's Office of Policy Innovation & Future website:

Email: [REDACTED]
Name: Beedy Parker Parker
Town/city: Camden
Message:

Listened to last weeks report and wanted to agree strongly with the suggestion that paying attention to our being able to produce enough food as climate change makes it more difficult. And that the home gardening / homesteading level of producing food is as important as farms, big and small. Encouraging home food gardening can make a difference during the covid, when some people can't work, have time at home and are financial less secure. food gardening can make a good difference in that situation. and the sooner more of us learn how, and learn how to cope with difficult weather, the more resilient our families and communities will be as climate change moves in.

(this message should be for the land use and the community study groups) Mon Sep 21 15:26:40 2020

9/20/20 FINAL THOUGHTS ON INCREASING BIOMASS ENERGY TO REDUCE CARBON EMISSIONS

The Governor's Energy Office wants the Climate Council to recommend expanding biomass-burning combined heat and power plants (CHP) as a strategy "to drive innovation to reduce carbon emissions."

POWER MAGAZINE: NEWS & TECHNOLOGY FOR THE GLOBAL ENERGY INDUSTRY states, "CHP systems consist of electric (and heat) generation, most typically from natural gas, but also from BIOMASS, DIESEL and COAL..." (I added caps and words in parenthesis within the quote)

Biomass is as much a carbon-based fuel as coal or diesel. Like coal, it emits a lot of CO₂. It is NOT carbon neutral. It does NOT "reduce carbon emissions." It increases them. A CHP plant diagram shown by the Energy Office on 9/9/20 matches exactly the one displayed in POWER MAGAZINE. Both produce heat, energy and CO₂ emissions. No secret sauce exempts Maine plants from emitting carbon. As well, biomass plants emit brown smoke and haze containing harmful VOC's. Will CC assess that?

Will CC hear Dr Fernandez' and independent scientists' conclusions that biomass is not carbon neutral? Will CC question implications that biomass is somehow uniquely necessary to supplement renewables?

CO₂-emitting biomass already comes at the cost of cutting 1.9 million tons (MFS 2018) of carbon capturing trees per year that require 30 to 100 years to resume similar levels of capture. Right now, is when we need them the most to capture carbon. By how much will Industry increase production? The CC should find out. Too much increase would cancel out CC's efforts to increase forest sequestration.

Adding more biomass energy is no small deal. If a CC recommendation resulted in a doubling of production, 30% of all wood harvested each year in Maine would get burned - roughly 1.6 million cords. Or, a 4 by 4-foot stack of wood extending 298 miles from Portland to Presque Isle. (1 cord=2.4 tons)

Would increasing biomass burning create more jobs? Why squander our forests for their least valuable purposes when combining increased sequestration with CLT building and wood-based insulation would create greater added value and provide more and better jobs?

The NWL working group's primary recommendation, Commissioner Beal points out, promotes natural solutions that can emphasize the kind of forest growth best suited for sequestration as well as milled-out products these new technologies require.

Biomass operations survive on taxpayer subsidies nearly everywhere. The Industry says it may need subsidies to fund more CHP in Maine. Both ERG and Dr Fernandez report we need more research to find out if it can ever be competitive. Meanwhile, heat pumps and renewable energy cost less and less.

The many concerns I raise require further analysis not available within the CC process. Therefore, please remove biomass from your list of proposed strategy recommendations. Its removal makes real CC's commitment to take strong action to reduce carbon emissions and increase carbon capture.

Time's up for public comment. Thanks to all you CC and NWL members for your hard work, including those who read some of my comments. I hope they contribute to decisions that allow our forests to more fully capture carbon at a time when the climate threat has become too extreme for half-measures.

Please feel free to contact me. Doug Bowen, Porter, Maine



Maine Forest Products Council

The voice of Maine's forest economy

Companies represented on the MFPC Board

American Forest Mgmt.
Baskahegan Co.
BBC Lands LLC
Columbia Forest Products
Cross Insurance
Family Forestry
Farm Credit East
Fontaine Inc.
Hancock Lumber
H.C. Haynes
Huber Resources
Innovative Natural
Resource Solutions
J.D. Irving
Katahdin Forest Mgmt.
Key Bank
LandVest Inc.
Limington Lumber
Louisiana Pacific
Maibec Logging
ND Paper
Nicols Brothers
Pingree Associates
Pleasant River Lumber
Prentiss & Carlisle
ReEnergy
Richard Wing & Son
Robbins Lumber
Sappi North America
Southern Maine Forestry
Stead Timberlands
TD Bank
Timber Resource Group
Timberstate G.
Verso Paper
Wadsworth Woodlands
W.T. Gardner & Sons
Wagner Forest Mgt.
Weyerhaeuser

Sept. 21, 2020

Maine Climate Change Council
Governor's Office of Policy Innovation and the Future
181 State House Station
Augusta, Maine 04333-0181

Dear members of the Maine Climate Change Council,

The Maine Forest Products Council (MFPC) appreciates the efforts of Governor Mills' Maine Climate Change Council (MCCC) and offers the following perspectives from our organization's landowners, wood manufacturers and contractors concerning the draft recommendations established by the Working Groups. Citations to the individual working group strategies and sub strategies are indicated within brackets "[]".

A. LAND MANAGEMENT OPPORTUNITIES

The Natural and Working Lands (NWL) group supported increased permanent protection of forestland and farm land [NWL1.a.]. MFPC qualifies its support by emphasizing a priority on working forest easements with a limited focus on fee acquisitions. This has been a consistent position of MFPC over the years.

There was considerable discussion about carbon markets and MFPC prepared a white paper for the group outlining opportunities and concerns (see attached). Within MFPC there is an acknowledged right of landowners to participate in Carbon market deals, but a potential conflict if these deals limit access to wood for our manufacturers and negatively affect our forest economy. Forest growth models are currently evaluating land management techniques and the resulting carbon sequestration effects. The current regime of forest management practices results in significant carbon sequestration and carbon capture in wood products that currently offset 70% of Maine's emissions from fossil fuels. Maintaining Maine's working forest's must remain a key priority of the Climate Change Plan.

Large landowners have an economy of scale that allows them to participate in a growing variety of carbon markets; the NWL group focused opportunities for smaller land ownerships (10-5,000 acres) [NWL2.a.] MFPC supports an effort to review options for a State sponsored inventory-based and practice-based incentive programs for smaller landowners based on a working forest model.

MFPC supports efforts to inform all private landowners on forest carbon dynamics [NWL3.A] by increasing Maine Forest Service field forester positions to expand their capacity for education and outreach.

B. FOREST MANUFACTURING TRANSPORTATION

MFPC members believe maintaining a safe and well-maintained public road infrastructure is critical to increasing transportation efficiencies and reducing emissions from heavy duty truck sector [T5].

Prospective investors in Maine's forest economy are frequently evaluating our transportation network for its carbon footprint. They are frequently seeking sites with rail and port connections to move products to market. To expand Maine's manufacturing base and increase export markets we recommend emphasizing consideration of rail and port capabilities in climate change planning.

C. WOOD'S GROWING IMPORTANCE IN MAINE'S EMERGING BIOECONOMY

Among the working groups there are common references to a focus on bioproducts as an alternative to petroleum-based products.

Solid wood and wood panel composite construction is a traditional product of Maine's forests, but new carbon sinking products like Cross Laminated Timbers (CLT) and wood cellulose building insulation are emerging opportunities for Maine manufacturers. Marketing efforts are underway to promote manufacturing facilities in Maine that will serve a growing demand for carbon sinking building materials. Referenced in Natural & Working Lands Group [NWL4.e.] and Buildings Group [B.1.b.3; B4.a.1.] these opportunities are an important part of building Maine's bioeconomy and sustaining our forest industry.

Wood fiber products are also a mainstay of our economy with pulp and paper representing 65% of the economic contribution in Maine. Although media papers (newspaper, magazine, printing) demand has significantly decreased, mills are converting to packaging, container, label and textile markets. These products offer bio-based alternatives to petroleum-based products and position Maine as a strong leader in the circular economy focused on the long-term sustainable use of natural materials. This is an important development that needs inclusion in the MCCC plan.

Emerging wood-derived chemical products are part of the ongoing research at the University of Maine and an increasing area of interest by entrepreneurs throughout the world. The Forest Opportunity Roadmap (FOR/ME) project has been operational for four years as a collaborative effort to develop a strategic plan for Maine's forest industry and rural communities (link: formaine.org.)

Indufor, an international forestry consulting firm from Finland, has been hired by FOR/Maine to attract wood bio-based manufacturing facilities to the State to diversify wood markets, create jobs and meet consumer demands for carbon-friendly products. The project is entering the market attraction phase, bringing prospective investors to Maine to evaluate opportunities through the collaborative efforts of industry, community, the Maine Department of Economic and Community Development (DECD), Maine International Trade Center (MITC) and Maine & Company. This project is an important part of the MCCC plan and references to this strategy are found in NWL4.e & NWL5.d; T2.b. E4.

Liquid wood derived heating and transportation fuels should be considered in building infrastructure options and transportation sections of the CC recommendations. Passage of Maine bio-based chemical tax credit and reinstatement of the bio-fuel oil incentive should be acknowledged in the MCCC plan as an indication of Maine's support of capital investments in the bioeconomy.

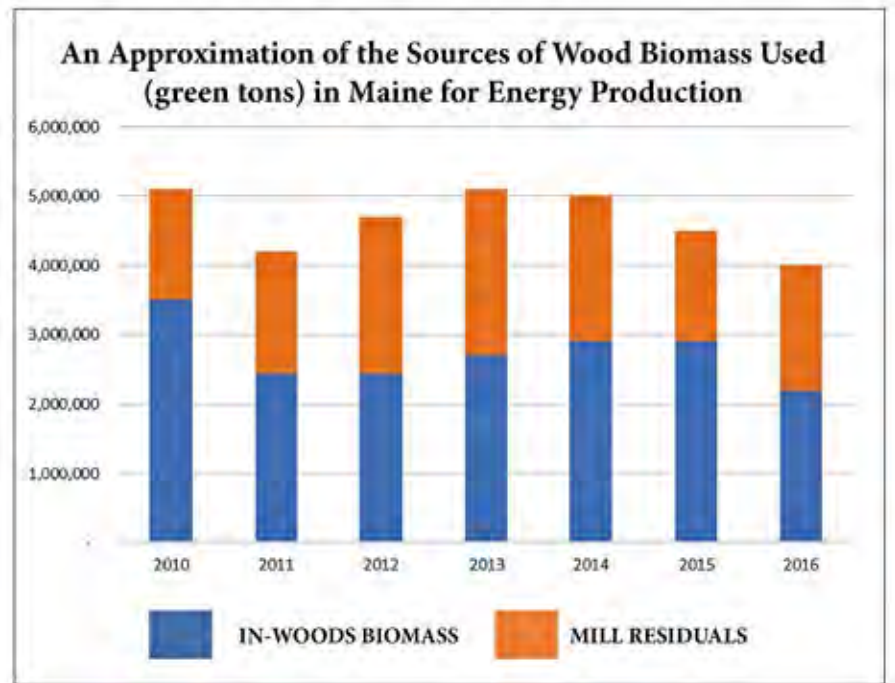
D. WOOD ENERGY

Wood energy includes biomass combustion from tree components (e.g. tops & limbs) and mill residuals (slab wood and bark) and wood liquid biofuels (e.g. pyrolysis oil and biodiesel).

Forest bioenergy is a common recommendation in a combined heat and power (CHP) platform in several working groups [NWL2.d; B2.iii.; B5.b; E3]. Although public comments refuted the sustainability of wood fuel and challenged the neutrality of its emissions, MFPC vigorously supports the long-standing policy of recognizing the importance of wood derived energy. These principals are accepted globally.

Maine has been sustainably managing the forest resource and operates within a biological carbon pool that has cycled with biomass energy production for more than 40 years.

Increasing the efficiency forest bioenergy has been an ongoing challenge. The economies of scale that have enabled pulp mills to operate efficient CHP facilities is now available through technological advances for smaller facilities. This is important because biomass fuel is composed of in-woods biomass (tree tops and limbs) and mill residuals (bark and sawdust). **Figure 1** illustrates the approximate volume.¹



The decreasing trend of in-woods harvested biomass has largely been the result of lower natural gas prices and a significant loss of low-grade wood markets. However, the figure also shows the significant amount of wood residuals that are used in energy production, (approximately one half of the volume of in-woods biomass). Without the ability to consume residual in energy production our paper mills and sawmills face a significant disposal problem and curtailment of operations.

An example of one company's vision for investing in the bioeconomy is Hancock Lumber's vision of an industrial campus (see **Figure 2, Page 4**) that brings together a number of the elements in the forest bioeconomy. Construction of a combined heat and power energy plant using waste wood; scaled to meet the needs of a manufacturing facility (4.5 MW) can additionally provide the thermal and electrical needs of biochar and liquid fuel refinery operations. The biodiesel manufactured on site can supply the company's delivery fleet. This project is similar to Robbins Lumber, (Searsmont) and Maine Woods Pellet (Athens) projects funded under the Public Utility Commission's Community Energy Pilot Program that is currently discontinued. As discussed within the draft recommendations of the current plan [B5; E1 & E3] support for these projects is a critical opportunity to support and grow Maine's bioeconomy.

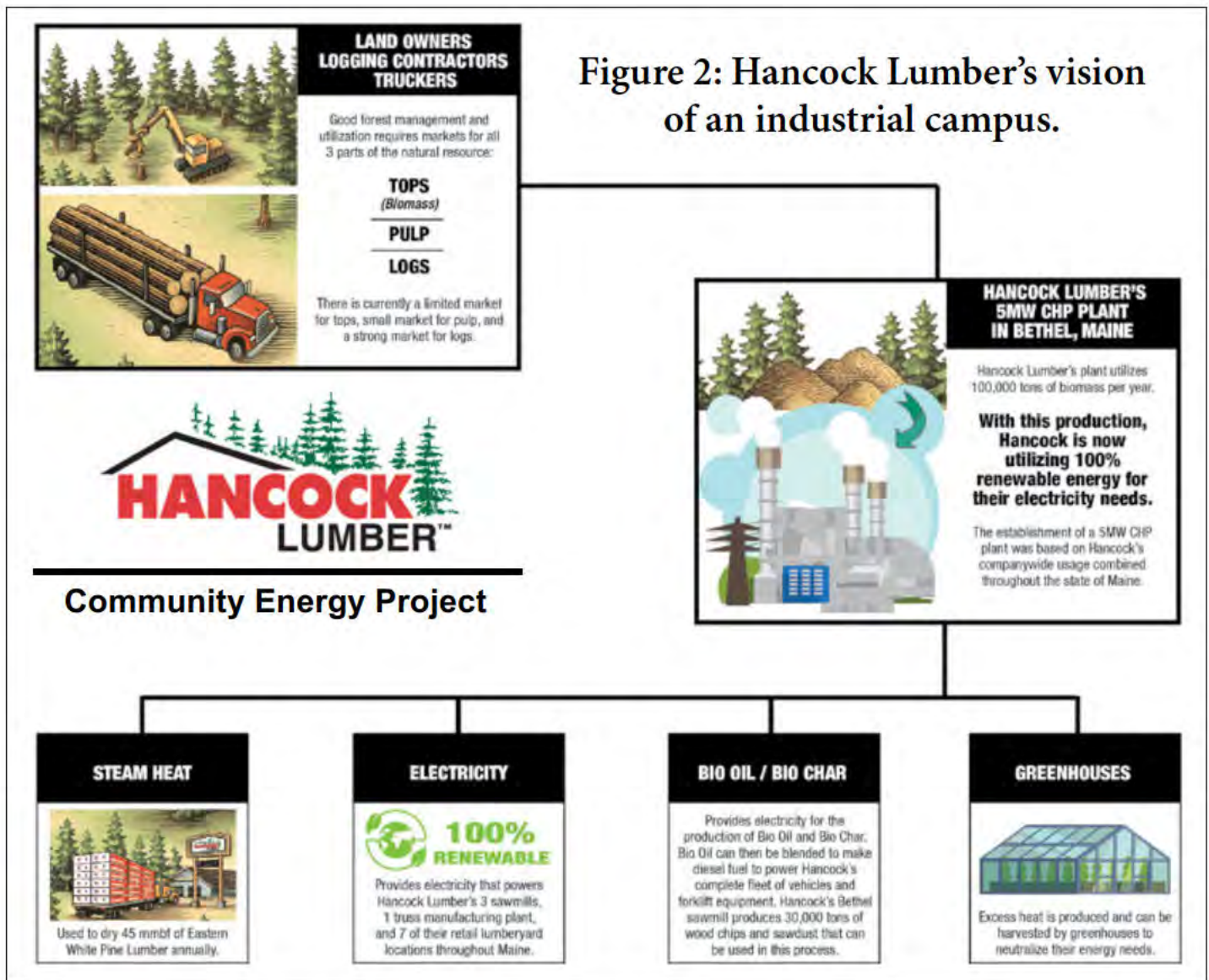
As we build Maine's forest economy from \$8.5 billion to \$12 billion (FOR/Maine's goal), we need to include provisions for wood residuals used in CHP technologies. In the long run, developing a stronger bio economy will present new markets for currently low-value wood used in bioenergy.

Thermal heating strategies using wood are an important part of a diversified climate change policy [B2.1.a.iii.; B5.b.]. Wood chip and pellet heating systems are important outlets for forest and mill residuals and numerous residential and institutional uses have been supported by Maine policy. A diversified portfolio of fossil fuel alternatives will establish resilient communities. Co-location of pellet plants on sawmill and wood manufacturing sites is a model of a circular bio-economy that needs to be included in the MCCC plan.

Liquid wood-derived fuel as a source of thermal heating is operational in Maine. Wood derived pyrolysis oil is currently used by Bates College with opportunities to build a wood refinery in Maine if sufficient off-take arrangements can be established. Other wood fuel processes are under development and included in the MCCC plan to demonstrate leadership by example [B4] and fuel switching opportunities [B5] to lower carbon fuels.

¹ MFPC analysis 2020, P Strauch. Compiled from (a) Wood energy Market Report INRS 2018, www.formaine.org (b) MFS Wood Processor Reports, 2010-2016

Figure 2: Hancock Lumber's vision of an industrial campus.



Wood Power Emissions: MFPC appreciates efforts by the Maine Department of Environmental Protection (DEP) to review the U.S. Energy Information Agency data that we believe significantly overstates the level of emissions from wood energy (Innovative Natural Resource Solutions (INRS) memo, 2020). These concerns need to be addressed if Maine is to appropriately understand the role of wood energy in Maine's climate policy.

Industrial Energy Industry Emissions. It is important that the MCCC plan recognize the significant reductions achieved to date by forest manufacturing energy consumers. Maintaining a healthy manufacturing base ensures the ongoing investments in healthy forests and therefore the linkage between energy costs and forest health is critical. It is also important to acknowledge in the MCCC plan that while some of the sectors reductions in emissions are a result of mill closures, efforts to rebuild lost manufacturing capacity in the forest sector will result in some level of increased emissions.

E. LAND USE REGULATION: Comprehensive Review of Maine Laws to Achieve Resilience and Economic Security in the Face of Climate Change [CR.1]

MFPC is concerned with recommendations to overhaul land use regulations to address climate change concerns without an understanding of the research and voluntary efforts that have been implemented to evaluate these threats.

For example, recommendations to review and revise **Chapter 375, Section 9, Buffer Strips, and Section 15, Protection of Wildlife Fisheries** place the cart before the horse. The forest industry has supported research on

riparian stream temperatures conducted by Manomet and currently being updated by the University of Maine, Cooperative Forestry Research Unit.

Good policy requires sound science and we suggest a thorough evaluation of climate change science before enacting land use changes. Additionally, the forest industry is part of the Fisheries Improvement Network (FIN), a forum where forest landowners and managers can interact staff from state and federal agencies and NGOs to improve Maine's fisheries resources. FIN has established an ongoing dialogue among these groups to evaluate scientific approaches to climate change adaptation.

SUMMARY

The Maine Climate Council's work is important to the forest industry. We believe our working forests significantly contribute to a growing bioeconomy and also to provide important opportunities for Maine's rural communities.

Maine's forests fit into a global strategy recognized by the United Nations Intergovernmental Panel on Climate Change, as reflected in their following statement:

"In the long term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fiber, or energy from the forest, will generate the largest sustained mitigation benefit."

The regulated community agrees with the need to evaluate climate change effects on the environment and various land use standards, but we recommend a comprehensive approach to this process and less reliance on a prescriptive regulatory remedy.

We appreciate the work of the Gov. Mills' Climate Change Council and look forward to participating the process as moves forward.

Sincerely,

A handwritten signature in dark ink, appearing to read "Gordon Gamble". The signature is fluid and cursive, with the first name "Gordon" being more prominent than the last name "Gamble".

Gordon Gamble
President, Maine Forest Products Council

Attachments:

MFPC Position Paper on Carbon Markets

INRS memo: June 5, 2020. Issues with Data on Wood Used for Energy in Maine. Cooperative Forestry Research Unit.

Agents for the Built Environment

We are a Maine-based group of multi-disciplinary building professionals. Our mission is to be a positive resource for the Maine Climate Council (MCC), our state government, the Maine Association of Realtors and National Association of Realtors, and the building community.

We strongly support all six of the strategies put forth by the Buildings, Infrastructure and Housing Working Group (BIH) to the MCC, particularly the first three: Improving the Building Energy Codes, Transitioning to Clean Heating and Cooling Systems, and Weatherization of Existing Building Stock.

Here are our thoughts from our discussions during and following a briefing from the BIH co-chairs on July 28, 2020.

Responses to the MCC BIH Working Group

1. Improve the Design and Construction of New Buildings

We believe the advancement of building energy codes is uniquely positioned to be the MVP of energy efficiency for new construction. Building energy codes advancement to Net Zero will save energy and money, reduce carbon emissions, and improve occupant health, lowering health care costs.

We support the BIH Working Group's goal of net zero emission building codes, however we believe the target date should be 2030 at the latest, not 2035. Beyond legislation, we see the following as key:

- a. Building owner investment in energy efficiency where benefits accrue to the tenant (known as a split-incentive) must be addressed. Upfront owner costs invested in a building can be offset with lower demand for tenant heating and cooling resulting from better building envelopes. Building owners can save from appropriate sizing of equipment for lower loads. Energy cost savings can be negotiated at the time of leasing in the case of both commercial and residential buildings.
- b. We strongly support the widespread, standardized adoption of building energy efficiency ratings. The IECC 2015 building energy code about to be implemented statewide is the first time Maine builders will be required to do a blower door test. It is then an incremental step to have a Home Energy Rating System (HERS) score calculated. Documenting efficiency with a label such as HERS is like the MPG label for automobiles. Better scores bring higher resale values thereby monetizing investments made in buildings that are not always visible.¹ The HERS rating should be done at the time of construction for new buildings by the seller/builder, with incentives. HERS ratings should also be done after renovations to assess progress made. We do not support requiring HERS ratings at time of sale for existing buildings because it does not coincide with a plan to improve the existing building envelope, and therefore has no constructive purpose at the point of sale. The proper sequence for existing buildings should be energy audit,

¹ <https://www.hersindex.com/hers-index/> Already 2.88 million American homes have been rated and scored. Compared to the base of other energy standards, EnergyStar has certified over 1 million homes, LEED 67,200 buildings, and Passive House 1200 buildings. The HERS score is easy to understand because it is a single number.

identification of energy saving actions, implement actions, and do a HERS rating to monetize the actions for resale.

- c. The HERS scores are entered in the new Home Energy Labeling Information Exchange (HELIX) database that auto-fills participating MLS fields with scores when a house is listed even if the owners are detached or forget they have one.² HELIX is being integrated into the FLEX MLS system used by the statewide MaineListings service, and it is also adding databases for solar installed, EnergyStar certifications and more. It is a DOE project managed by the Northeast Energy Efficiency Partnerships (NEEP).
- d. We strongly support the BIH Working Group's emphasis on training and education. They are the key to understanding and accepting new codes and innovative construction techniques, materials, and technologies. Codes cannot effectively be enforced without training and education, nor can builders and developers understand how to comply.
- e. We support the licensing and/or certification of builders throughout the state. Plumbers and electricians throughout the state routinely obtain and maintain their licensure regardless of location.
- f. We support the increased availability of Energy Efficient Mortgages in Maine. Financing mechanisms known as energy efficient mortgages (EEMs) are available although not in Maine. The mortgage loan for new construction has energy efficient upgrades and can allow borrowers to qualify for larger mortgages based on projected lower utility costs. EEM programs are supported by the same entities that back the overwhelming majority of residential mortgages in the United States: FHA, the VA, and Fannie Mae/Freddie Mac (the conventional secondary mortgage market). Energy efficient mortgage lenders include banks, mortgage companies, savings and loans, credit unions – the places one can obtain regular mortgages. We support the increased availability of Energy Efficient Mortgages in Maine. Increasing utilization of these valuable financing products will require education and training of lenders, Realtors, appraisers and home buyers.³
- g. We strongly agree with the pressing need to decrease our energy consumption and GHG emissions by addressing embodied carbon in the selection of materials. There needs to be extensive education about the embodied carbon content of construction materials.
- h. Encourage the use of locally and regionally sourced and certified sustainable forest resources and Maine-made wood products and increased usage of Maine-made wood products such as insulation and Cross Laminated Timbers (CLTs) need to be promoted, and also incentivized where more than one company benefits.
- i. Green Building Certifications - we support voluntary, third-party certification of green construction utilizing proven programs including, but not limited to, LEED, Energy Star, Passive House, and National Green Building Standard. Such third-party documentation is relied upon

² <https://neep.org/home-energy-labeling-information-exchange-helix>

³ <https://www.mortgageloan.com/environment#:~:text=As%20the%20name%20implies%2C%20a,friendly%20type%20of%20home%20loan.&text=Also%20known%20as%20Energy%20Efficient,money%20at%20the%20same%20time>

by real estate appraisers to verify the added value attributed to cost savings from energy efficiency improvements and advanced building techniques. Absent this information, appraisers and real estate licensees must rely upon the comparative market analysis approach, which is currently an insufficient method due to the low number of green and high performance buildings for which sales information is available. We recognize that many in the building trades believe that third-party certifications are unnecessary and add additional time and expense to a project. There is some merit to this criticism and this along with new home owners reluctance to spend limited funds on intangibles has resulted in an underutilization of this valuable verification tool. Though studies have borne out that most green building certifications only add a small premium to the cost of construction, additional up-to-date, and locally relevant information on the cost-benefit of third-party green certifications should be undertaken to support expanded adoption.

In conclusion, advancing and enforcing building energy codes to greater energy efficiency while maintaining cost effectiveness as we implement the necessary goal of Net Zero carbon emissions is a significant argument for policy makers that results in immediate and enduring cost savings for investors and consumers. The parallel benefit of improving occupant health makes our support even stronger.

2. Transition to Clean(er) Heating and Cooling Systems

- a) Eliminating all combustion from buildings is critical as we make envelopes tighter. This goal should state “Transition to Clean Heating” (as opposed to “Cleaner” Heating).
- b) We must avoid further build-out of fossil fuel infrastructure in the state and implement beneficial electrification supported by renewable energy and storage.
- c) We support incentives for energy star wood stoves as replacements for existing wood stoves.
- d) We support the transition to beneficial electrification with air source heat pumps and heat pump hot water heaters and geothermal systems.
- e) We strongly support enforcement of the updated renewable portfolio standard (RPS). The previous standard requiring 30% of the state’s electricity has not been followed. The new RPS enacted by the legislature updates the standard to 100% by 2050.⁴ Milestones must be set and adhered to.
- f) We support the 100,000 heat pump goal. One very good possible source of financing is expanding the RGGI carbon tax.
- g) We strongly support the establishment of a Green Bank. With a record of very few defaults, states (and countries) have launched Green Banks that have been highly successful.

⁴ <https://www.utilitydive.com/news/maine-steps-up-clean-energy-turnaround-tees-up-80-rps-pro-solar-bills/556783/>

In summary, we support the principle of Strategy 2, however we would like to see our grid energy sources utilize renewable energy instead of the fossil fuels our major utilities are utilizing now.

Additionally, we want to stress the importance of the order of implementation to be weatherization, then electrification, then solarization. There is no point in spending money to cover the bloated energy costs of a leaky, poorly insulated building with over-sized heat pumps and solar.

3. Improve the Efficiency and Resiliency of Existing Building Envelopes

We strongly support improving the efficiency and resilience of existing buildings through enhanced and expanded weatherization, electrification, solarization and other renewable energy sources. There are approximately 550,000 existing residential dwellings and 275,000 commercial buildings in Maine. Nationally, nearly a quarter of the nation's population lives in multifamily rental housing, and emission reduction strategies will need to address this segment of the market.⁵ We must commit to improving the building stock we have to make it more efficient and resilient. Better performance across the spectrum of existing housing through weatherization, electrification and solarization is our greatest opportunity for owners and occupants alike to claim substantial benefits.

Benefits Include:

- a) Lower heating, cooling, electrical loads, and hot water heating costs
- b) Better occupant comfort, health, and productivity
- c) Better indoor air quality with proper mechanical ventilation
- d) Lower air pollution and lower related health expenses
- e) Less emissions of greenhouse gasses and less global warming impact, achieving Maine's goals
- f) Greater resiliency to extreme weather events and less risk of property and insurance losses
- g) Higher resale value when better performance is documented with energy audits and consumer labeling such as HERS, EnergyStar, EnergyStar NetZero Ready, Passivhaus, or LEED certification.

Funding mechanisms include:

- a) Energy Efficient Mortgage products from FHA, VA, Fannie and Freddie;
- b) federal and potentially state tax credits,
- c) PACE loans,
- d) Efficiency Maine rebates and
- e) low-interest, non-collateralized loans.

Hopefully new funding mechanisms will emerge from a Green New Deal next year. We should be ready with shovel-ready projects. We should also implement the Green Bank.

⁵ <https://www.nmhc.org/research-insight/quick-facts-figures/quick-facts-resident-demographics/>

Disclosures and Labeling

It is especially important to emphasize that the investments in better buildings pay for themselves. This must be demonstrated by consumer labeling in the form of third party certifications. The HERS rating is by far the most successful and popular and its use is growing every year. A HERS rating is the first step in qualifying for an Energy Efficient Mortgage. The HERS rating should be applied for at the time the EEM is applied for and/or after renovations are complete if using another funding mechanism.

Completing the Weatherization of Maine Existing Buildings

Not long ago, Efficiency Maine had a goal to weatherize every Maine building by 2030 where owners were willing and able to contribute, and in collaboration with MSHA's program to do this at no cost for low income households. We strongly support reviving this effort with funding sources such as a Green Bank. In this pandemic environment when public funding has been funneled into economic support and revenues have been cut, we cannot rely on public and philanthropic sources. We don't have to. Energy efficiency and renewable energy pay for themselves when we structure the financial instruments to use small amounts of public funds to leverage and guarantee larger amounts of private capital.

Education

We strongly support a comprehensive, long-term commitment to educate property owners regarding the need and value of making their homes and businesses more energy efficient. We stand ready to assist with this effort by helping to educate Realtors and related industry associates by providing outreach, education, and informational resources.

Land Use

Our land use policies and building zoning rules need to be examined to create urban centers where people have dense residential and commercial land usage; open spaces to walk and recreate nearby, close access to schools, medical assistance, food, pharmacies, social and other services; employment is accessible within walking distance or with public transportation; limited vehicle access in the zones but with parking accessible and public transport nearby.

Thank you for reading our comments and considering them in your important work. We recognize and thank all of you who have participated and contributed so meaningfully in this momentous, ongoing process. We are excited to support and collaborate with you, and we look forward to working together as this critical and existential project moves forward and unfolds.

Postscript: Why We are Engaging with You in the MCC BIH Working Group

In the absence of national leadership, states have taken up the work of shifting from fossil fuels to renewable energy, reducing our energy demand through efficiency, and preparing for the inevitability that things will get worse before they get better by making our communities more resilient and sustainable. We are fortunate to live in a state where our Governor and legislature have pledged to lead us in this work. The Maine Climate Council engages and unites us in a public/private partnership to do this work together.

Vince Malta, President of the National Association of Realtors®, in recognition of the need for urgent action and the responsibility of Realtors to be proactive in helping their clients respond last year formed a Presidential Advisory Group (PAG) to develop a long term sustainability plan and policies to integrate sustainability into leadership well into the future of the Association. The PAG has responded swiftly. Malta stated at the most recent NAR Sustainability Summit that the consequences for property values, human lives, and the environment from extreme weather events and other climate change impacts are so vast we cannot turn away or fail to succeed. This will only be accomplished through complete decarbonization.

Also at the NAR Sustainability Summit this year, speaker Joel McGovern of GreenBiz asked a simple question: “What would it take to make sustainability a good business strategy?” So we have in turn been asking ourselves: What would it take to make buildings sustainable, to make them energy efficient so as not to contribute to greenhouse gas emissions, and to encourage renewable energy?

What would it take to make Realtors® leaders in this effort, in partnership with lenders, appraisers, builders, architects, municipal and state planners, and legislators? We must find innovative solutions that will turn around the progression of climate change, to be cost effective over the life cycle of the property to implement; to create good paying jobs, to address social inequity, and to avert the most dire scientific projections for the climate crisis in turning around global warming? To manifest the very real possibility for public/private financing partnerships to provide the significant capital required to decarbonize our economies, aka the triple bottom line: people, planet and profits. We want to be an engaged partner in accomplishing our shared goals at this critical time.

Respectfully submitted 9.9.2020

Agents for the Built Environment Steering Committee

Marc Chadbourne, Gardner Real Estate Group [REDACTED]

Russell DeConti, Keller Williams [REDACTED]

David Gulick, Keller Williams [REDACTED]

Leanne Barschdorf Nichols, Keller Williams [REDACTED]

Julia Bassett Schwerin, Coldwell Banker Realty [REDACTED]

Maine Climate Council
Governor's Office of Policy Innovation and the Future
181 State House Station
Augusta, Maine 04333

September 24, 2020

Dear Members of the Maine Climate Council:

Thank you again for the time, attention, and energy you have devoted to the Maine Climate Council and the development of the State's Climate Action Plan. We continue to be impressed with the Council's productive discussions during meetings and commend the Governor's Office and state agencies for the tremendous amount of work they've done while simultaneously addressing the health and economic crisis of the COVID-19 pandemic. Maine's commitment to bipartisan climate action remains strong and indeed a strong Climate Action Plan can be a cornerstone to not only addressing the climate crisis but also to hasten Maine's economic recovery and ensure its long-term prosperity.

As each of you continues to fulfill your role on the Council, our organizations have reflected on the recommendations of the Council's six working groups, heard from thousands of our members, and had conversations with residents across the state. Our July 8 letter identified proposed strategies with the best potential to meet Maine's urgent and ambitious goals. Now, as the Council embarks on its own prioritization process, we have further elevated those strategies that will deliver the broadest combination of social, economic, and environmental benefits.

The following strategies will strengthen Maine's economy by supporting the greatest number of jobs; reducing the most greenhouse gas emissions; ensuring a higher level of public health and community protection; and, if structured appropriately, do the most to ensure that Maine's climate actions are effective, just, and equitably distributed. We urge the Council to:

- Reduce Maine's largest and fastest-growing source of carbon pollution, and address long-standing transportation investment deficits by **committing Maine to sign on to a regional Transportation Climate Initiative (TCI) that works for all Maine people**. A well-designed TCI would generate more than 150 million dollars per year for increased investments in cleaner, smarter transportation solutions that:
 - Better address the transportation needs of all residents by dedicating a high, minimum percentage of program benefits to under-resourced and overburdened communities, such as rural communities;
 - Expand the capacity, geography, and frequency of bus, rail, and other public transportation services across the state, with the aim of doubling public transportation ridership in Maine by 2030;
 - Increase zero emissions (primarily electric) vehicle infrastructure and purchase incentives, with the goal of boosting zero-emissions car and truck sales in Maine to 70% by 2030 and 90% by 2035; and

- Expand sidewalks and bikeways, and repair existing roads and bridges to enhance public safety, encourage increased walking and biking, support healthy activity, and reduce traffic congestion.
- Spur jobs and lowering electricity bills by **maximizing the energy efficiency of homes and businesses**:
 - Financing ultra-efficient and highly cost-effective new affordable housing through Maine Housing;
 - Launching an initiative to manufacture zero-energy homes in Maine to replace aging, inefficient mobile homes;
 - Dramatically scaling up the successful low-income weatherization programs to Tighten up leaky homes—which are also often unsafe and unhealthy;
 - Increasing access to financing for home efficiency improvements and expanding support for heat pump installations; and
 - Requiring progressively tighter standards for space-and water-heating systems, embodied carbon, and building codes for residential and commercial buildings, including a net-zero emissions objective for 2035.
- **Accelerate the transition to a future powered by local, clean energy** by reinforcing and protecting Maine’s electrical grid and other critical infrastructure, and expanding sources of renewable energy:
 - Creating a Maine Clean Energy and Climate Resilience Bank that builds off existing clean energy financing programs and is seeded with revenue bonds, private capital, federal grants, and other new funding sources to increase investments in energy efficiency, renewable energy, energy storage, electrification of transportation and buildings and climate-resilient infrastructure. Programs should be available and accessible to all Mainers, including low-income households, disadvantaged communities, and rural areas.
 - Establishing a clear pathway, with biennial solar and wind energy generation (onshore and offshore) and storage benchmarks and procurements, for meeting Maine’s 80% by 2030 and 100% by 2050 clean energy Renewable Portfolio Standard (RPS) targets.
 - Exploring structural solutions including public ownership of distributed energy generation and delivery systems and multi-state or national carbon pricing and sequestration initiatives; and
 - Requiring state agencies, including the Maine PUC, by statute to implement regulatory changes that would make the costs and benefits of reducing carbon emissions (both financial and societal) and alignment with the State’s climate action plan central to agency decision-making.
- Support thousands of natural resource jobs; protect thousands of acres of Maine forest, agriculture, and ecologically significant land; sequester tons of carbon pollution; increase Maine’s resilience in adapting to climate change; and address conservation investment shortfalls, by:

- **Creating a dedicated, sustained public funding source that generates at least \$15 million annually to conserve working forest, agricultural, and ecologically significant lands.**

We also encourage the Climate Council to consider recommending that the State develop a cross-agency mechanism to routinely track, evaluate, and report on the State's efforts to address climate change. Enhanced accountability and transparency are essential to meeting Maine's emissions reduction targets.

Our organizations are committed to achieving a just and prosperous clean energy future for all Mainers, regardless of age, race, ethnicity, ability, income, or community of residence, and to remaining engaged and helpful as the Climate Council continues its vital work.

Thank you.

Signed,

350 Maine
A Climate to Thrive
Acadia Center
Appalachian Mountain Club
Coastal Enterprises, Inc.
Center for an Ecology-Based Economy
East Coast Greenway Alliance
Environment Maine
Maine Association of Conservation Commissions
Maine Audubon
Maine Conservation Alliance
Maine Council of Churches
Maine Organic Farmers and Gardeners Association
Maine Trails Coalition
Maine Unitarian Universalist State Advocacy Network
Midcoast Conservancy
Natural Resources Council of Maine
Physicians for Social Responsibility
RESTORE: The North Woods
ReVision Energy
Southern Maine Conservation Commission
The Wilderness Society
Union of Concerned Scientists



**Acadia
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September 24, 2020

Maine Climate Council
Governor's Office of Policy Innovation and the Future
Via Electronic Mail

Dear Director Pingree & Members of the Maine Climate Council:

Acadia Center respectfully submits the attached comments in response to the Governor's Office of Policy Innovation and the Future (GOPIF) *DRAFT Proposed Strategy Framework for the Maine Climate Action Plan, Parts I & II*, per the September 4, 2020 and September 15, 2020 *Draft Frameworks for Climate Action Plan* @ <https://climatecouncil.maine.gov/reports>.

Thank you for your important ongoing work to develop the *Maine Climate Action Plan*. As a Member of the Buildings, Infrastructure, and Housing Working Group, and as a contributor to and commenter on the reports of the other working groups, Acadia Center is impressed with and appreciative of the Climate Council's commitment to climate action during the COVID-19 pandemic. Your work would be challenging in normal times; however, it is particularly important now and critical that the final Plan spurs robust, sustainable, and equitable initiatives to the economic, energy, and environmental benefit of all Mainers.

Through research and advocacy, Acadia Center envisions a clean energy, low carbon economy focused on clean technology – not fossil fuels – to heat buildings, power transportation, and generate power. Acadia Center is pursuing reforms that encourage states to [Make the Next Decade Count™](#) by aggressively phasing out fossil fuels and expanding clean energy to achieve necessary reductions in climate pollution by 2030. These actions will grow the region's economy, create jobs, enhance public health, improve the quality of housing, and increase access to transportation. Acadia Center appreciates that Governor Janet Mills and the Maine Legislature set an interim target and put us on a trajectory to reduce greenhouse gas emissions by 45% by 2030.

Acadia Center fully supports the joint priority recommendations submitted by 23 organizations, including Acadia Center, to the Climate Council on September 24, 2020 (see attached). Acadia Center worked with its partners to ensure that these four priority strategies represent the policy initiatives that will best “strengthen Maine’s economy by supporting the greatest number of jobs; reducing the most greenhouse gas emissions; ensuring a higher level of public health and community protection; and, if structured appropriately, do the most to ensure that Maine’s climate actions are effective, just, and equitably distributed.” These four priority strategies are:

1. Reducing Maine’s largest and fastest-growing source of carbon pollution and addressing long-standing transportation investment deficits by committing Maine to sign on to a regional Transportation & Climate Initiative (TCI) that works for all Maine people.
2. Spurring jobs and lowering electricity bills by maximizing the energy efficiency of homes and businesses.

3. Accelerating the transition to a future powered by local, clean energy by reinforcing and protecting Maine's electrical grid and other critical infrastructure and expanding sources of renewable energy.
4. Supporting hundreds of natural resource jobs; protecting thousands of acres of Maine forest, agriculture, and ecologically significant land; sequestering tons of carbon pollution; increasing Maine's resilience in adapting to climate change; and addressing conservation investment shortfalls.

Acadia Center's comments focus on the first three priority strategies, mitigating greenhouse gas emissions from the transportation, buildings, and power sectors, but also expand upon and add recommendations based on its research, analysis, and policy advocacy in Maine and throughout the Northeast.

Acadia Center looks forward to working with the Maine Climate Council, GOPIF, the Governor's Energy Office, Department of Transportation, Department of Environmental Protection, Maine Public Utilities Commission, Efficiency Maine Trust, and the Maine Legislature to advance the strategies needed to implement the final set of priority strategies in the Maine Climate Action Plan.

Please contact me at any time with questions so that Acadia Center can provide you with assistance, information, or analysis. Thank you again for your work on behalf of Maine's people, businesses, and natural resources.

Respectfully Submitted,

Jeff Marks
Maine Director
(207) 956-1970
jmarks@acadiacenter.org

CC: Hannah Pingree, Director, Governor's Office of Policy Innovation and the Future
Melanie Loyzim, Acting Commissioner, Maine Department of Environmental Protection
Tom Abello, Senior Policy Advisor, Office of Governor Janet T. Mills
Brian Ambrette, Governor's Office of Policy Innovation and the Future
Sarah Curran, Governor's Office of Policy Innovation and the Future
Taylor LaBrecque, Governor's Office of Policy Innovation and the Future
Anthony Ronzio, Governor's Office of Policy Innovation and the Future
Cassandra Rose, Governor's Office of Policy Innovation and the Future

DRAFT Proposed Strategy Framework for the Maine Climate Action Plan, Parts I & II

Response by Acadia Center

To Maine Climate Council and Governor's Office of Policy Innovation and the Future, September 24, 2020

Acadia Center appreciates this opportunity to provide written comments in response to the Governor's Office of Policy Innovation and the Future (GOPIF) "*DRAFT Proposed Strategy Framework for the Maine Climate Action Plan, Parts I & II (Framework)*", per September 4, 2020 and September 15, 2020 *Draft Frameworks for Climate Action Plan* @ <https://climatecouncil.maine.gov/reports>.

Maine's Climate Goals

The final Maine Climate Action Plan will be a roadmap to achieving Maine's goals of reaching 45% greenhouse gas (GHG) emissions reductions by 2030, and at least 80% reductions by 2050 while achieving carbon neutrality by 2045. In support of the Maine Climate Council's work, in May 2020, Acadia Center and its partners convened a (virtual) meeting of more than 400 people, including dozens of environmental, labor, and public health organizations, to learn about how the Climate Action Plan will be created. The webinar, titled "The Maine Climate Council: Everything You Need to Know" was hosted by over 30 entities dedicated to reducing carbon pollution and equitably transitioning Maine's economy to clean, renewable energy. Acadia Center joined its partners to call for action that strengthens the economy, creates well-paying jobs, improves public health, and ensures equitable distribution of investments, benefits, and opportunities. The full webinar can be found at this [link](#).¹

In July 2020, Acadia Center joined with 23 of our partner organizations to make and build upon thirteen strategy recommendations issued by the Climate Council Working Groups.² These recommendations are essential to reducing GHG emissions while also creating and retaining high-quality jobs that provide a living wage and secure benefits for Maine families; providing public health and ecological benefits; and addressing existing structural inequities, including racial and ethnic disparities through access by all to long-term economic growth and prosperity.

Acadia Center has been working individually and with its coalition partners to help inform policy strategies developed across the working groups of the Maine Climate Council. These working groups were created to tackle the topics of coastal and marine issues; community resilience planning, public health, and emergency management; electricity and utility innovation; natural and working lands; and transportation. Acadia Center served on the Buildings, Infrastructure, and Housing Working Group. The working group members include businesses, legislators, nonprofits and foundations, scientific and academic experts, state and local governments, and youth representatives, each of which provided a different and unique perspective on the issues. In their decision-making processes, working group members considered costs and benefits; impacts on low-income, senior, and rural residences; funding and financing mechanisms; and economic and workforce results.

¹ [The Maine Climate Council: Everything You Need to Know](#), Climate Maine, May 28, 2020.

² [Priority Climate Action Strategy Recommendations](#), Climate Maine, July 2020.

Acadia Center believes the Climate Framework captures the spirit and momentum of the working groups by focusing on four key goals for the final Climate Action Plan:

1. Goal 1: Create jobs and economic opportunity
2. Goal 2: Reduce Maine's greenhouse gas emissions
3. Goal 3: Prepare Maine residents, businesses and communities for climate change impacts
4. Goal 4: Ensure that Maine's climate strategies are equitable

Acadia Center supports these goals and urges the Climate Council to adopt a Climate Action Plan with concrete legislative and regulatory actions to mitigate and adapt to climate change within the context of these goals. Clear implementation timelines and targets are also essential.

The *DRAFT Proposed Strategy Framework for the Maine Climate Action Plan, Part I* focuses on mitigating Maine's GHG emissions from the buildings, power, and transportation sectors. Heating, cooling and lighting of buildings is responsible for 30 percent of Maine's GHG emissions, with residential homes emitting 19 percent of Maine's emissions and commercial buildings 11 percent. The transportation sector emits a whopping 54 percent of the State's GHG emissions. When combined with some of the oldest housing stock in the country (25% built before World War II), the highest percentage of oil used for heating, the greatest energy usage by industry in the country, and the excessive dependence on oil for transportation, the urgency to develop a plan for climate change is clear.

Not only must Maine have lower energy prices for its citizens to survive its challenging climate and for its industry to be competitive, the State must also seize the opportunity to build a stronger energy sector that will employ Mainers. Buttressing this point, on September 15, 101 companies doing business in Maine and organizations supporting Maine companies submitted a letter to the Climate Council urging "support for a Climate Action Plan that strengthens Maine's economy, creates and maintains jobs, reduces greenhouse gas emissions, and builds healthy communities for everyone." (letter attached) In addition to nonprofit and public entities, Acadia Center is partnering with the private sector to help carry the message that a strong Climate Action Plan is good for Maine's citizens and businesses.

Acadia Center comments focus on mitigating emissions from three sectors: transportation, buildings, and electricity.

Bring the Future of Transportation to Maine

The Maine Department of Environmental Protection (Maine DEP) *Eighth Biennial Report on Progress Toward Greenhouse Gas Reduction Goals*, showed that Maine met its goal to reduce GHG emissions by 10% below 1990 levels by January 1, 2020.³ While this was good news for the environment generally, the report confirmed that we must do more, including a focus more seriously on the transportation sector, which contributes 54 percent of Maine's carbon dioxide (CO₂) emissions. Maine is nearly 100 percent addicted to out-of-state petroleum to fuel its automobiles, boats, busses, and trucks. It is time to shift from dirty, volatile fuels and vehicles to cleaner electric vehicles, better public transit, and transportation solutions that help rural citizens get to where they need to go at lower cost.

³ [*Eighth Biennial Report on Progress Toward Greenhouse Gas Reduction Goals*](#), Maine Department of Environmental Protection, January 13, 2020.

Transportation & Climate Initiative – Investment, Equity, and Reduced Emissions

This will require smart investment in clean infrastructure and technologies, including tapping into a proposed regional Transportation and Climate Initiative (TCI) for investment dollars. A similar program in the power sector – Regional Greenhouse Gas Initiative (RGGI) – has successfully channeled millions of dollars for Maine residents and businesses to improve their homes and buildings.

The rural nature of the State lends itself to more vehicle miles traveled, with nearly 100% dependence on oil for transportation. Maine uses more transportation energy per capita and more gasoline per capita than the United States average, while spending less than the United States average on transportation services.⁴ Being rural with high miles traveled, it also has low adoption of alternative fuel vehicles and small concentrations of public transportation.

Acadia Center and its partners support the following recommendation as a policy strategy priority:

*Reduce Maine's largest and fastest-growing source of carbon pollution and address long-standing transportation investment deficits by **committing Maine to sign on to a regional Transportation & Climate Initiative (TCI) that works for all Maine people**. A well-designed TCI would generate more than 150 million dollars per year for increased investments in cleaner, smarter transportation solutions that:*

- *Better address the transportation needs of all residents by dedicating a high, minimum percentage of program benefits to under-resourced and overburdened communities, such as rural communities;*
- *Expand the capacity, geography, and frequency of bus, rail, and other public transportation services across the state, with the aim of doubling public transportation ridership in Maine by 2030;*
- *Increase zero emissions (primarily electric) vehicle infrastructure and purchase incentives, with the goal of boosting zero-emissions car and truck sales in Maine to 70% by 2030 and 90% by 2035; and*
- *Expand sidewalks and bikeways, and repair existing roads and bridges to enhance public safety, encourage increased walking and biking, support healthy activity, and reduce traffic congestion.*

As mentioned above, transportation is responsible for more than half of Maine's CO₂ emissions through the combustion of imported gasoline and diesel. According to the U.S. Energy Information Administration (EIA), Maine falls in the top ten states for money spent per capita on energy, with the highest proportion of energy spending going to transportation. Gasoline and diesel fuel prices can be extremely volatile due to global, national, and regional constraints, which brings additional economic uncertainty to Mainers. These issues, along with aging transportation infrastructure, creates a challenge for clean and cost-effective transportation throughout the State.

A survey of voters indicates that 73% of rural Maine residents support the creation of a clean transportation fund, and a majority of rural Maine residents are willing to pay more to improve their mobility and quality of life.⁵ A well-

⁴ [Maine – State Profile and Energy Estimates](#), U.S. Department of Energy, Energy Information Administration, July 16, 2020.

⁵ [Small Town & Rural Voters' Views of Investments Related to the Transportation and Climate Initiative a Clean Transportation Fund in the Northeast & Mid-Atlantic](#), FM3 Research, New Bridge Strategy, The Nature Conservancy, September 27, 2019.

designed transportation policy will deliver benefits for all and center our most vulnerable citizens. In a rural state with an aging population, equity considerations need to be front-and-center when developing transportation policy in Maine.

Maine should be moving toward a transportation system with cleaner vehicles and fuels, transit options that are better suited to meet the needs of its rural communities, and resilient transportation infrastructure that can stand up to mud season and more frequent storms. By working on a regional, cooperative basis, Maine can achieve its transportation goals in a faster, more efficient way to enhance economic productivity, reduce reliance on fossil fuels, and address the State's largest source of GHG emissions while reducing the transportation pollution we breathe.

TCI could help Maine decrease transportation pollution, lessen price risk, and invest in new transportation options, including incentives for electric cars and trucks, electric vehicle charging infrastructure, better public transit, and more accessible communities for walking and biking. Analysis released with the TCI proposal shows that regional action to reduce transportation pollution will deliver economic, health, and environmental benefits. Under the most ambitious pathway analyzed, the region would see at least a 25 percent reduction in CO₂ emissions from vehicles, \$10 billion in health savings from reduced tailpipe pollution—in 2032 alone—and nearly \$2 billion in proceeds for Maine to invest in clean, equitable transportation solutions from 2022-2032, according to Acadia Center's analysis. The regional approach is intended to help build a strong clean energy economy by minimizing reliance on fossil fuels while promoting sustainable economic growth. The modeling shows it would do just that, adding jobs and revenue to the Maine economy.⁶

Gas tax revenues have declined and a pollution pricing program will provide an important mechanism for necessary new transportation system investments. The Northeast has demonstrated that such a regional partnership works under RGGI, a cap-and-invest program that not only reduced CO₂ emissions from power plants by almost 50 percent, but has generated over \$100 million dollars for Maine homes and businesses in cost-effective energy efficiency and renewable energy improvements.

Launching this program will be a major accomplishment at a substantial scale: the TCI region, were it a single country, would represent the world's third-largest economy. Maine can leverage its position in that group to advance what would be the most significant climate policy in recent years. And, given the projected economic, health, and environmental results, TCI will cut tailpipe pollution while delivering much needed investment in clean, equitable, modern transportation options. By working together, the TCI region can achieve globally significant carbon reductions while delivering millions of dollars each year for grants and investments to help Maine's rural areas and fund investments to make better transportation options more accessible, affordable, and reliable.

Investments funded by TCI must be dedicated to reducing pollution AND delivering a more equitable transportation system, and complementary policies will be essential to the rapid and just transition to a clean transportation future.

On May 18, Acadia Center and 27 of its partner organizations banded together to ask the Transportation Working Group to support Maine's continued participation in the TCI development process as a priority recommendation to

⁶ Transportation & Climate Initiative, <https://www.transportationandclimate.org/>.

the full Maine Climate Council to ensure that TCI provides needed transportation investments for rural states like Maine (see attached letter). TCI is the only proposal on the table that guarantees reductions of emissions from the transportation sector AND provides a sufficient, stable, and sustainable revenue stream to pay for investments in clean, affordable transportation that benefits all of Maine's residents by improving air quality, access, mobility, and safety. Joining other states across the region through programs like TCI will help Maine reduce climate pollution in an efficient and equitable manner and must be a priority in any serious Climate Action Plan.

One of the primary challenges that you face is to identify creative and innovative financing mechanisms to achieve climate goals in an equitable manner. You have an extraordinary and unique opportunity to develop strategies that achieve significant, long-term economic, energy, environmental, and equitable benefits for Maine companies and residents and invest in safe, clean, and affordable transportation systems. TCI is currently one of the most effective strategies to reduce Maine's largest source of GHG emissions in the most efficient and equitable way, and it will support Maine's complementary efforts to improve our transportation options. TCI won't begin until January 2022 at the earliest, and the timing could be an important part of our effort to revitalize and expand Maine's economy with a focus on creating good quality Maine jobs and building safe, reliable, and affordable ways to get around in Maine.

Modernize Maine's Buildings: Energy Efficient, Smart and Cost-Effective Homes and Businesses

Energy efficiency – the cleanest and least-cost energy resource – is a key tool for helping achieve the State's ambitious climate goals. Saving energy spurs economic development, improves public health, promotes innovation, and saves businesses and residents money. Energy efficiency is a powerful tool for helping reduce energy bills in rural and low-income households, where energy burdens are highest, and it is an important job creator, offering opportunities for the local workforce. Clean energy is a rapidly expanding sector of Maine's economy, and energy efficiency makes up the bulk of these jobs. More than 8,600 Mainers worked in energy efficiency prior to the COVID-19 pandemic, constructing energy-efficient buildings, installing equipment and insulation, and providing the financing tools residents and businesses need to invest in efficiency projects. Investments in efficiency support small business; about half of all businesses providing energy efficiency services employ 1-5 people.⁷ About a third of these jobs are in rural areas, providing important economic opportunities to those living outside of Maine's cities. More work remains to be done to maximize the benefits of energy efficiency in Maine.

To combat climate change, the State needs to ensure the design and construction of new buildings promotes greater energy efficiency and use of cleaner energy supplies and low-carbon materials, with progressively tighter building codes over time and improved training, education, compliance and enforcement. The energy associated with the extraction, manufacturing, and transportation of building materials, known as *embodied carbon*, must be included and can account for as much as half a building's lifetime carbon footprint, making the selection and life cycle analysis of building materials vitally important. For example, wood has inherently low embodied carbon and naturally stores carbon and can be regrown to sequester more – and for a State that is 90 percent forested, can be a building boom for the State's economy.

⁷ [Energy Efficiency Jobs in America](#), E2, E4TheFuture, September 2018.

Maine also needs to accelerate the transition to cleaner heating and cooling systems and away from the nearly 80 percent of the fossil fuels currently used to provide space and water heating. For example, high-performance, mini-split ductless heat pumps achieve much higher efficiencies than combustible fossil fuels when converting energy to useful heat, and they run on electricity, which in Maine, is relatively clean, renewable energy. In existing buildings, the State must promote increased efficiency and resiliency of the building envelopes that house Maine's residents, businesses and institutions, especially weatherization to reduce air leakage and improve insulation levels.

Acadia Center and its partners support the following recommendation as a policy strategy priority:

*Spur jobs and lowering electricity bills by **maximizing the energy efficiency of homes and businesses:***

- *Financing ultra-efficient and highly cost-effective new affordable housing through Maine Housing;*
- *Launching an initiative to manufacture zero-energy homes in Maine to replace aging, inefficient mobile homes;*
- *Dramatically scaling up the successful low-income weatherization programs to tighten up leaky homes—which are also often unsafe and unhealthy;*
- *Increasing access to financing for home efficiency improvements and expanding support for heat pump installations; and*
- *Requiring progressively tighter standards for space-and water-heating systems, embodied carbon, and building codes for residential and commercial buildings, including a net-zero emissions objective for 2035.*

Modernize Maine's Building Energy Codes

Advanced building energy codes that are regularly updated to reflect new technologies and design strategies are the most cost-effective way to achieve energy savings and ensure that new buildings are built well and equipped with the most advanced energy- and cost-saving equipment. Strong codes also contribute to the equitable distribution of the economic benefits of energy efficiency, including to sectors that may face barriers to participating in other types of efficiency programs, like low-income households. Advanced building energy codes accelerate market adoption of leading building practices. Buildings in Maine are used and occupied for decades, if not hundreds of years. Advanced codes ensure that future generations will be able to share the benefits of more-resilient and -efficient construction practices.

Maine has a single, statewide building and energy code, the Maine Uniform Building Energy Code (MUBEC). Although the building code was updated by legislation in 2019, the energy requirements of the code remain equivalent to 2009 international codes. Maine should move closer to the modern international codes adopted by neighboring states. Even after the 2019 updates, municipalities with fewer than 4,000 residents are not required to enforce the State codes, leaving rural and small-town residents without the assurance that their buildings will be built to the same standards as their urban counterparts. Getting buildings ready for a clean energy future means ensuring that all new construction in Maine meets up-to-date building energy codes and that all areas are treated equally in achieving that goal. One straightforward path is to require all communities to comply with and enforce the code. Because small

communities have not previously been required to enforce the MUBEC, the State should provide financial and technical assistance, possibly including a pool of code enforcement professionals, to support small towns.⁸

Maine should allow communities to voluntarily adopt and enforce a “stretch code” that sets energy savings requirements above and beyond the statewide mandatory base code. Stretch codes can be designed to deliver maximum energy savings, encouraging net-zero or net-zero-ready construction practices that enable the adoption of distributed renewable generation and electric vehicle infrastructure. Many Maine communities and residents from Portland to Bar Harbor have expressed interest in adopting building codes stronger than the state’s code. Communities that wish to lead by example should be able to do so. In any case, Maine should start the process by requiring progressively tighter standards for space- and water-heating systems, embodied carbon, and building codes for residential and commercial buildings, including a net-zero emissions objective for 2035.

Advancing Energy Efficiency and Weatherization

By all accounts, the strides that the State has made on greenhouse gas reduction under Governor Mills have been ambitious. But more rapidly transitioning the state’s homes and businesses away from combustible heating fuels can only compound the consumer financial, environmental, and public health benefits of clean heating. It is critical that the State of Maine build on its early success and continue to create policy frameworks that will make it easier for more Mainers to obtain these benefits.

For example, Efficiency Maine Trust has a long and successful track record of delivering the efficiency programs that Maine’s residents and businesses need to keep energy costs down, but it must be funded to fully capture all cost-effective energy savings. Policymakers should ensure that Efficiency Maine is able to capture all cost-effective energy savings in the state by securing sufficient funding to meet those targets, designing programs that capture comprehensive savings, and increasing program impacts by targeting communities with the greatest need. Acadia Center has estimated that just one year of full investment in electric efficiency would give a substantial boost to Maine’s economy.⁹

Efficiency Maine Trust has an important role to play in ensuring the benefits of energy efficiency accrue to all residents and businesses, especially those with the greatest need. The Trust should be supported in expanding access to traditionally underserved markets, including low-income residents, middle-income homeowners and renters, and small businesses, and should be encouraged to spend the budgetary carve-out for low-income and small business customers. Because a large portion of Maine residents live and work in rural areas that have limited access to energy efficiency programs, the Trust should identify ways to improve program uptake in these areas. The Trust could increase incentives for projects in rural areas that have been identified by an objective set of criteria as having challenging economic conditions.

Additionally, a large portion of Maine’s potential energy savings remains untapped because the state’s largest energy consumers – large industry and businesses – can opt out of the Trust’s programs. While Efficiency Maine Trust offers some services to these customers using funds collected from RGGI, the total amount available through RGGI has

⁸ [Advancing Energy Efficiency in Maine](#), Acadia Center, January 9, 2020.

⁹ [Advancing Energy Efficiency in Maine](#), Acadia Center, January 9, 2020.

shrunk in recent years because of legislation that diverted funding from the Trust. As a result, many of Maine's largest energy consumers, including the reviving papermaking industry, do not participate in programs that would both increase their competitiveness and reduce their emissions. Maine should seek to reverse the opt-out provision, or as a fallback measure, consider developing a framework that encourages these customers to self-direct an equivalent amount of funding toward efficiency projects that they identify.

The Buildings, Infrastructure, and Housing Working Group provided a suite of recommendations to improve the efficiency and resiliency of existing building envelopes:

- Expand access to weatherization programs for low- and moderate-income households.
- Weatherize existing market-based dwellings.
- Require commercial building energy benchmarking and labeling/disclosure.
- Establish incentives for participating in smart device load management programs.
- Amend state rules and policies for affordable housing to further incentivize energy efficiency, clean heating and cooling, distributed energy resources, and emissions reductions.¹⁰

As a Member of the BIH Working Group, Acadia Center endorses these recommendations.

Clean Heating Pathways – Heat Pumps

Maine already leads the nation in cold climate heat pump deployment. Maine's goal of installing 100,000 more heat pumps in the next five years is unmatched. Efficiency Maine Trust saw the value in cold climate heat pumps early on, and to date has helped thousands of Mainers increase the comfort of their homes and businesses by offering beneficial electrification incentives alongside home weatherization and other energy efficiency measures. In fact, the Alliance to Save Energy recognized the Trust for its ten years of implementing beneficial electrification, weatherization, and other successful programs in Maine.¹¹

Energy supplied by a heat pump is efficient, complementary to other technologies and systems, and reduce GHG emissions:

1. **Heat pumps provide more thermal energy than they consume in electricity.** Because heat pumps move heat rather than generating it as a furnace would, their efficiency generally exceeds 275%. The average efficiency of fuel-fired heating equipment in Maine, by contrast, is about 83%.¹²
2. **Efficient electric heating equipment can run on solar energy.** An 8-kilowatt solar array is more than enough to provide all the electricity necessary to run a whole-house heat pump system for a year.

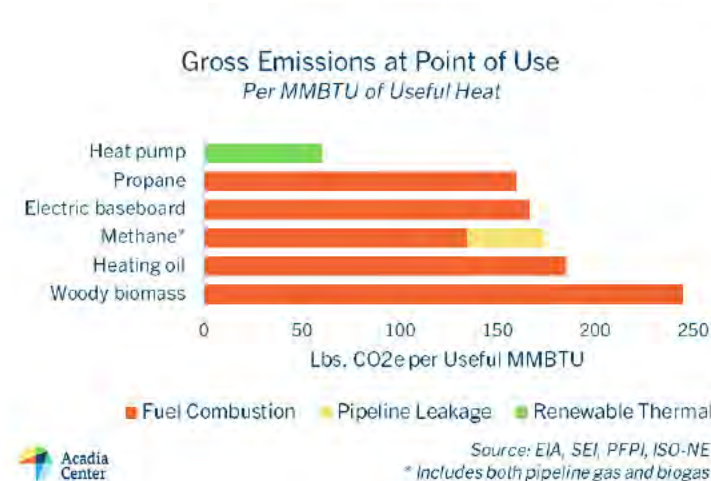
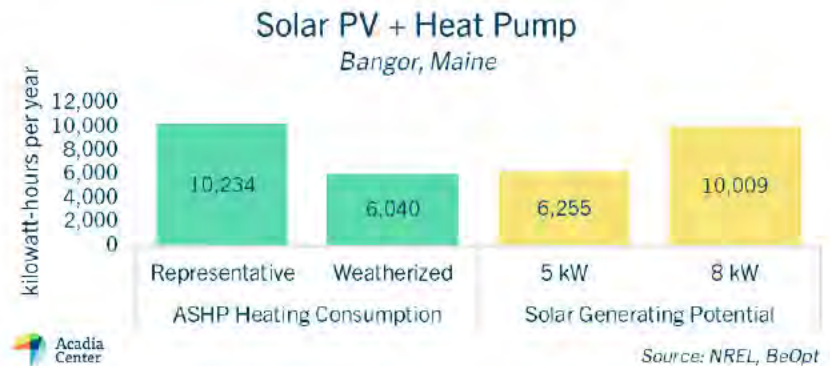
¹⁰ [*Strategy Recommendations to Mitigate Emissions and Support Resilience in Maine Buildings*](#), Buildings, Infrastructure, and Housing Working Group, June 5, 2020.

¹¹ [*Alliance Recognizes Efficiency Maine Trust as 2020 Star of Energy Efficiency*](#), Alliance to Save Energy, September 22, 2020.

¹² [*Maine Single-Family Residential Baseline Study*](#), Page II. NMR Group, Inc., September 14, 2015.

3. **Heat pumps emit no greenhouse gases at the point of use.** Unlike biomethane, woody biomass, and liquid biofuels, the use of a heat pump does not necessarily result in carbon emissions.

In addition to heat pumps, energy efficiency, and weatherization, solar is a key technology. Even in states as far north as Maine, solar electric generation potential is significant. According to NREL's PV-Watts¹³ tool, an 8-kilowatt solar array in Bangor, Maine generates 10,009 kWh per year. An air-source heat pump (ASHP) operating in an average Maine home uses about 10,250 kWh per year.¹⁴ This same home would spend more than \$2,400 each year on heating oil—a cost that can be substantially reduced by combining heat pumps and solar.



Maine's electric grid continues to rely on fossil fuels for a significant proportion of its generation capacity. However, the high efficiency of heat pump technology means that even with today's fuel mix on the electric grid, heat pumps emit far less carbon per unit of useful thermal energy than other heating systems.

In contrast, biofuels like woody biomass and biomethane emit substantial amounts of greenhouse gas during combustion.

For additional information regarding heat pump types, benefits, and policies, Acadia Center developed *Clean Heating Pathways* at the municipal, state, and regional level that overcome challenges to their adoption, including:

- Educating consumers and vendors
- Coupling heat pumps with home weatherization

¹³ [PVWatts® Calculator](#), National Renewable Energy Laboratory (NREL).

¹⁴ NREL [BeOpt](#) modeling using results of the 2015 Maine Residential Baseline Study (ibid.)

- Installing only clean electric heating in new homes
- Decreasing operating costs through smart electricity pricing
- Stop fossil gas companies from expanding
- Align energy efficiency program incentives with state policy objectives
- Establish state clean heating requirements

This suite of policy solutions provides a coherent strategy for stakeholders and policymakers to reduce building emissions while lowering consumer heating costs and improving health outcomes.¹⁵

Drive Innovation to Reduce Carbon Emissions in Maine's Energy and Industrial Sectors

The case for a strong Climate Action Plan rests not just with significant changes to the buildings and transportation sector, but also with new opportunities that will evolve in the clean electricity sector and markets, and the linkages among these sectors. For example, a reliable future electricity generation, transmission, and distribution (T&D) system will depend on advances in utility innovation, such as assimilating energy storage systems as solutions to the intermittency of wind and solar; incorporating emerging technologies like on-site batteries and power control systems; and encouraging and adapting to the rise of a robust electric vehicle and infrastructure market. In turn, regulatory reform will also shape how Maine developers, utilities, and customers build and operate energy systems with microgrids, smart grids, storage, and other non-wire alternatives (NWAs) and innovations. At the same time, electric utilities like Central Maine Power (CMP) and Versant Power must examine and change their business models to productively improve reliability of the grid and implementing pilot programs with new innovations.

Acadia Center and its partners support the following recommendation as a policy strategy priority:

Accelerate the transition to a future powered by local, clean energy by reinforcing and protecting Maine's electrical grid and other critical infrastructure, and expanding sources of renewable energy:

- *Creating a Maine Clean Energy and Climate Resilience Bank that builds off existing clean energy financing programs and is seeded with revenue bonds, private capital, federal grants, and other new funding sources to increase investments in energy efficiency, renewable energy, energy storage, electrification of transportation and buildings and climate-resilient infrastructure. Programs should be available and accessible to all Mainers, including low-income households, disadvantaged communities, and rural areas.*
- *Establishing a clear pathway, with biennial solar and wind energy generation (onshore and offshore) and storage benchmarks and procurements, for meeting Maine's 80% by 2030 and 100% by 2050 clean energy Renewable Portfolio Standard (RPS) targets.*
- *Exploring structural solutions including public ownership of distributed energy generation and delivery systems and multi-state or national carbon pricing and sequestration initiatives; and*

¹⁵ [Clean Heating Pathways](#), Acadia Center, March 10, 2020.

- *Requiring state agencies, including the Maine Public Utilities Commission, by statute to implement regulatory changes that would make the costs and benefits of reducing carbon emissions (both financial and societal) and alignment with the State's climate action plan central to agency decision-making.*

Acadia Center's *EnergyVision 2030* takes a comprehensive look at where efforts to expand clean energy resources can lead, how consumer adoption and market penetration rates can grow, and what increases in clean energy efforts are needed to attain state and regional emissions goals. *EnergyVision 2030* data show that with further strategic action, expanding adoption of modern, market ready technologies can reduce climate pollution emissions 45% by 2030: a target needed to put the region on the path to meet scientifically directed emission reductions of 80% by 2050 – the target also set by Maine's climate law. *EnergyVision 2030* suggests pathways to advance adoption of clean energy technologies in four core areas – grid modernization, electric generation, buildings, and transportation.¹⁶

Acadia Center comments thus far have focused on the *Climate Framework's* potential policy strategies on buildings and transportation and the priorities Acadia Center believes should be in a final Climate Action Plan. This section focuses on electricity, utility, and regulatory reform. Clean electricity, utility innovation, and regulatory reform strategies are needed in the final Climate Action Plan to ensure the following results:

- Decarbonization - increasing low-carbon and renewable electricity supply generation to get to a net-zero energy economy;
- Increased energy efficiency, demand management, and energy storage to meet higher electricity demands;
- Grid modernization - modernizing T&D capacity and infrastructure to allow use of distributed energy resources, flexible automated demand, microgrids and storage, and effective use of NWAs in planning;
- Beneficial electrification for heating, cooling, and transportation;
- Equity for low-income, rural and other vulnerable populations; and
- Support for a clean energy economy in a post-Coronavirus pandemic world.

Decarbonization and Clean Electricity Policy

Maine is blessed with ample and valuable natural resources. Maine's abundant natural wind, water, and woods resources are economic drivers and position the State as a leader in renewable energy, and residential, community, and grid-scale solar is beginning to emerge. Maine's utility-scale electricity generation is currently comprised of two thirds renewable energy (hydro, biomass, and wind) and one third nonrenewable, placing Maine in second place for renewable energy generation in New England.

While Maine has many strong electricity-related initiatives, including a state requirement to consider non-wires alternatives (or NWAs) as a substitute for transmission projects, long-term contracting, and a robust renewable portfolio standard (RPS), the State needs a modernized utility infrastructure to ensure the reliable and efficient delivery of electricity. For the State to move forward and embrace a consumer-friendly, low-polluting clean energy future, its biggest utilities, CMP and Versant Power, must dramatically change the way they do business and do much more to support consumer and community access to solar, wind, weatherization, and clean technologies like electric

¹⁶ [EnergyVision 2030](#), Acadia Center, May 9, 2017.

vehicles and heat pumps, CMP and Versant Power must align their investments and rates with consumer interests so that those consumers have access to clean, cost-effective options that reduce climate pollution from energy generation. The next two years will be critical in reforming Maine's utility sector. While investor-owned utility CMP has invested significantly in poles and wires over the last decade to delivery electricity, its critics claim that the company has underinvested in grid infrastructure that could improve reliability, reduce rates, and better accommodate renewable energy resources.

2019 was a successful year for clean electricity (and related) policies. Governor Mills elevated "climate change" as a top issue in her Administration. Efficiency Maine Trust launched electric vehicle rebate and infrastructure programs using VW settlement funds. Governor Mills signed legislation to restore net metering and incentivize distributed generation to encourage renewable energy for homeowners and small businesses. The Governor and Maine Legislature ended the blanket ban on wind power development; increased the RPS to 80 percent by 2030, up from 40 percent; set a goal of 100% renewable power by 2050; and set goals to install 100,000 new heat pumps by 2025 with a focus on low-income residents.

The Maine Climate Council must adopt the Energy Working Group's recommendation to "ensure adequate affordable clean energy supply to meet Maine's 100% RPS goal and any increased load through the development of centralized generating resources, distributed energy resources, and other measures." Acadia Center agrees with this recommendation and its strategies to:

- Fully apply power purchase agreements (PPAs) for all new large-scale renewable generation development.
- Implement the Commission to Study the Economic, Environmental, and Energy Benefits of Energy Storage to advance energy storage in Maine.
- Accelerate the goals of Maine's Ocean Energy Act to develop offshore wind in the Gulf of Maine, including encouraging more pilots and demonstration projects, commercializing projects, establishing Maine's role in regional development of offshore wind, ensuring economic benefits for Maine from development of projects; and coordinating necessary transmission planning.
- Identifying and growing distributed generation in a way that prioritizes considerations of cost, equity, and cohesive integration into the grid.
- Improve the permitting, financing, and construction of renewable generation and infrastructure needed for Maine to reach its zero-carbon-by-2050 goal.

On the regional side of electricity policy, New England's electricity grid operator, ISO- New England (ISO-NE) actions directly impact the ability of Maine to meet its climate and clean energy goals. ISO-NE rules govern the regional electricity market and often are at odds with efforts to meet state climate goals, clean energy procurement efforts and move away from a system that has disproportionately burdened low-income communities. ISO-NE rules often advantage fossil (natural) gas over viable clean energy resources, delay the retirement of the fossil fleet, and deprive the State's citizens of more rapid movement to a clean energy future.

Serious flaws in the electricity market rules lead to shortsighted, expensive decisions that damage all consumers: annual costs for the entirety of the wholesale markets was nearly \$10 billion in 2019 and has ranged between \$7.7 billion and \$15 billion over the last 12 years. New England over the past twenty years has become increasingly reliant on natural gas for meeting the region's power generation needs (gas provides ~45 percent of installed capacity on the grid) and gas has expanded in Maine for heating applications. The State cannot continue to rely on gas for its energy needs and still meet its climate goals. Over the next decade in New England, gas will play a much smaller role in electricity generation. As a result, existing gas-fired plants will be underused, and new plants, as well as new supply infrastructure like pipelines, will be unnecessary.¹⁷

The New England region must shift rapidly to a just, equitable, and climate-focused future. The Climate Action Plan must recognize, and begin the process of alleviating the inequities in the system by strengthening Maine's role in:

- Advancing awareness of equity and consumer disparities and reforms to rectify these detrimental impacts
- Curbing the region's and State's dangerous and costly dependence on fossil gas (or natural gas);
- Removing barriers to greater clean energy deployment on the path to rapid decarbonization of the grid;
- Avoiding continued costly investments in unnecessary and polluting infrastructure;
- Achieving full recognition of the benefits that state action can bring to the grid.

The Climate Action Plan cannot approach its electricity policies in a vacuum and must outline the opportunities for and barriers to regional collaboration in the achievement of Climate Council objectives and recommendations. As the Energy Working Group found, "Maine's unique renewable energy resources, strategic location and low-cost of development should influence state and regional policy decisions. Policy makers should structure policy to ensure highest benefits to Maine, to complement regional markets, and to ensure additional generation is developed in parallel to grid infrastructure. Where prudent, Maine should work with regional partners to advance Maine's strategic and policy objectives; particularly in promoting coordinated procurements for generation and/or transmission development."

Utility Innovation

Acadia Center supports the Energy Working Group recommendation to consider creating a public or non-profit entity to conduct comprehensive energy grid planning – completely separate from utility T&D ownership – that uses competitive markets to harness innovation and cost savings AND considers both utility and consumer needs related to climate change goals, equity, reliability, resiliency, and other critical factors.

In the 129th Legislature, *L.D. 1646, "An Act To Restore Local Ownership and Control of Maine's Power Delivery Systems*, was introduced to create a new consumer-owned utility (COU), which acquires all transmission and distribution assets of CMP and Versant, compensating them "fairly." According to proponents, the COU will deliver lower rates and more reliable service; be more amenable to integrating renewable energy sources and non-wire-alternatives; be more responsive to environmental concerns when planning large projects like power corridors; and

¹⁷ [*The Declining Role of Natural Gas Power in New England: A Comparison of Costs and Benefits*](#), Acadia Center, June 2020.

be more competitive and more transparent than the current system. Opponents argue that the transition to a COU will be too large and unsuccessful a leap, politically, legally, and financially. The Energy, Utilities and Technology Committee approved an amendment that strikes and replaces the original bill and establishes the Consumer Ownership Evaluation Task force to assess the risks and rewards of a COU and the net public benefits of a COU compared to the current investor-owned utilities.

Concurrently, the Energy Working Group recommended that a Power Sector Transformation Stakeholder Process be initiated to examine and provide recommendations regarding transformation and planning of Maine's electric sector, including beneficial electrification in heating and transportation, which may require significant expansion and investment in the electric grid, and achieve Maine's greenhouse gas reduction requirements. Areas for analysis also include:

- **Utility Structure:** What functions should the future electric utility perform and how should the utilities be compensated for those services? Should Maine establish an independent, public or non-profit entity to conduct comprehensive energy grid planning – independent from utility T&D ownership – undertaken in a way that uses competitive markets to harness innovation and cost savings and considers both utility and consumer needs?
- **Load Management:** What is the extent to which load flexibility can increase the efficient and optimal use of clean energy generation, reduce carbon emissions, reduce system costs (including T&D costs), and minimize peak load? What means are available to achieve useful and effective load management goals? Should the retail competition model be revised to remove the “price flattening” impacts of the current Standard Offer?
- **Data/Information Access:** What enhancements in the production and dissemination of information are needed to facilitate access to energy usage data to assist in the deployment of market-based load management mechanisms? What enhancements in the production and dissemination of information are needed to facilitate the development of clean energy generation in Maine to accomplish climate-related goals?
- **Non-wires alternatives (NWA) & Distributed Energy Resources:** How should non-wires alternatives (NWA) and DERs, including storage, be incorporated into integrated resource planning and other investment decisions to meet the objectives and recommendations of the MCC and other state policy?
- **Efficient and Equitable Cost Allocation:** What is the efficient and equitable allocation of costs associated with achievement of the objectives and recommendations of the MCC and the integrated resource plan? What are the implications for electric rate design of moving towards the MCC and integrated resource plan objectives with respect to economic efficiency, equity, and proper market incentives? What rate design tools would be useful to influence consumer behavior to achieve MCC objectives and recommendations and improve the efficient and equitable cost recovery, while minimizing negative impacts on marginalized communities?

This is a critical moment for Maine policymakers to evaluate and plan for the “utility-of-the-future.” Acadia Center recommends that these utility reform efforts consolidate and focus on developing the framework necessary for achieving least-cost capital investment and system planning; identify and procure non-wires alternatives; improve reliability; incorporate renewable energy; reduce greenhouse gas emissions; increase energy efficiency; and ensure that the system benefits underserved and disadvantaged communities, including people of color, indigenous communities, and rural and low-income areas.

Beneficial Electrification

Beneficial electrification of end-use services in the buildings and transportation sector, coupled with decarbonization of electricity generation and weatherization, is a key pathway to achieving a low-carbon future in Maine. Enhanced infrastructure is needed to increase the electrical load from heating and transportation electrification and durable and predictable funding sources are needed to pay for it. “Beneficial electrification” powers end uses with electricity instead of fossil fuels in a way that increases energy efficiency, reduces carbon pollution, and lowers costs to consumers. In other words, we must change our way of producing and using electricity in a manner that embraces new and commercially available technologies, meets customers’ and market needs and demands, and confronts economic, technical, infrastructure, and policy/regulatory challenges.

Shifting energy end uses to the electrical grid will drive up demand for electricity and add to the heat load and meeting additional electricity demand will require additional renewable supply. Long-term investments in T&D and NWAs will be required to support a larger electrical load and integrate new, variable renewable power while maintaining reliability. Acadia Center recommends grid solutions that shift electric end users to reduce peak demand; charge different rates/kW consumed and significantly differentiating between on- and off-peak, including offering different rates structures in Maine’s standard offer (SO); requiring embedded technology like programmable time presets, price signals, or real-time third-party commands; and continuing and expanding upon Efficiency Maine’s heating and EV pilot projects.

The costs of replacing or displacing fossil-fired options, especially for low-income households, and operating them on an ongoing basis can be overwhelming. Acadia Center supports increased financial incentives, like rebates, loans, and tax credits; net-zero energy incorporated into building codes; appliance standards; updated building codes and expanded enforcement; conservation charges, carbon charges, and/or sales tax on heating fuels to fund energy efficiency; and innovative funding mechanisms to encourage beneficial electrification.

There are limited access and awareness for customers with initial investment challenges to purchase and install heat pumps. Acadia Center recommends enhanced incentives for low-income households; purchase and installation of equipment at no charge to customers; increased and targeted advertising, point-of-purchase materials, one-on-one conversations with contractors; increase education and outreach through websites, events, best practices, usage tips, calculators, purchasing guides, vendor locators; increase outreach and education for engineers, vendors, and installers; technical training by manufacturers and community colleges; and training and certification of contractors on updated codes and standards.

The costs, technological limitations, and supply availability are barriers to new electric vehicles and limited availability of reliable public charging stations are barriers. Acadia Center recommends more consumer education and outreach, with the Trust as a brand-neutral source of EV-related information; additional funding for charging stations; revised residential and commercial building codes to require supporting EV infrastructure for new construction and major renovations; local ordinances to require minimum percentage of electric vehicle supply equipment (EVSE)-ready parking spaces in new or re-constructed residential and commercial parking structures; public-interest tests for utility EV investment: 1) in the public interest; 2) meet a need regarding advancement of EVs in Maine; 3) do not hinder development of competitive charging market. (MA model); and/or alternative demand charge rate designs, waivers, or other options to balance utility need to recover costs and EV charging station owners’

needs to provide economically viable service. (NY Model); consumer purchase incentives; state tax credits or exemptions for EVs.

Maine has already taken very important and successful steps toward electrification, and Acadia Center believes that the Climate Council should recommend additional policies to spur even further penetration of BE into Maine's homes, businesses, and transportation infrastructure. Acadia Center supports a robust beneficial electrification effort that will result in real progress toward Maine's aggressive greenhouse gas reduction goals. Heat pumps, while increasingly common, remain unfamiliar to many consumers. As a result, the market for heat pump installations remains relatively small, which drives up costs. Consumer incentives make heat pumps a much more attractive option for home and business owners. The Trust itself is perhaps the best example of this fact in the Northeast, having supported a high rate of heat pump installations in recent years and, to speed adoption, recently doubling its incentive amounts for high-efficiency units. Nevertheless, the Trust currently lacks the robust level of funding that will be required to instigate rapid building electrification consistent with the State's climate goals.

Acadia Center recommends that Maine pursue two changes to statute which will generate revenue for home weatherization, beneficial electrification, and other important clean energy priorities¹⁸:

- Eliminate the 4% cap on utility contributions to Maine's Electric Efficiency and Conservation Fund. All Cost-Effective Energy Efficiency is an important policy that the legislature should adopt to maximize energy and cost savings for residents and businesses and solidify Maine's leadership in the clean-energy transition.
- Expand conservation charges to unregulated heating fuels. Delivered fuel conservation charges as a financial incentive could raise upwards of \$8,208,240/year based on 2017 consumption levels, which is 9.2% of the Trust's FY2020 budget.

Acadia Center offers the following additional suggestions for policy and programmatic improvements in the area of building electrification, including those referenced as potential opportunities in the Trust draft Report.

- A Thermal Renewable Portfolio Standard that includes heat pumps in its eligibility criteria can help transition away from fossil fuels to cleaner, renewable and local technologies.
- Active Demand Management programs can mitigate peak winter demand with aggressive energy efficiency and stronger load-shaping programs.
- Building Codes offer a significant opportunity to accelerate deployment of clean heating (and EV charging infrastructure).

Regulatory Reform

Acadia Center recommends reforming government agency enabling statutes, including the Maine Public Utilities Commission, to include climate goals in decision making.

¹⁸ [*Beneficial Electrification: Barriers and Opportunities in Maine Draft Staff Report – Efficiency Maine Trust*](#), Acadia Center response, , January 17, 2020.

Maine has made substantive strides in addressing climate mitigation through legislative and executive action. However, the agencies charged with advancing these climate goals are often hampered by their out-of-date and misaligned enabling laws. In general, state agencies' enabling statutes are silent on climate change or give only weak prioritization to climate in agency decisions compared to more conventional priorities such as minimizing immediate costs. Such regulatory frameworks limit the scope of state agency decision-making in carbon-intensive sectors such as electric and gas utilities, transportation, and buildings and land use, and they often serve as a barrier to strong climate progress.

To reorient agency actions to align with state goals, Acadia Center recommends that the Maine Climate Council prioritize the policy that the state should update enabling law of all key state agencies to place societal costs and benefits, including emissions reductions, on equal footing with other equities including life-cycle costs at the center of decision-making. Regulatory processes could then act as permanent investment screening for investments that effectively provide the greatest cost benefit to the state.¹⁹

The Buildings, Infrastructure and Housing Working Group recommended this policy strategy as part of its Grid Modernization section.²⁰ By instilling this authority and consideration in state agency decision making, it will promote projects that need infrastructure to electrify, enable optimized use of DERs, least-cost grid operations, and NWAs, electrify homes and businesses, and enable appropriately-valued health, jobs, and other non-energy benefits while eliminating wasteful spending and stranded costs for fossil-fuel related infrastructure that is inconsistent with climate goals. Equity and justice concerns will also be elevated in decision-making, as well as resilience and adaptation strategies when making investment and planning decision. While short-term rate impacts may appear high, they are dwarfed by long-term economic, health, environmental, and equity benefits.

Conclusion

As a Maine-based organization, Acadia Center is especially grateful for the action that the state has taken to address the climate crisis and appreciates the work of the Maine Climate Council and GOPIF. Much of what Maine will accomplish through the Climate Action Plan will serve as a model for other states. In advocating for a comprehensive, multifaceted suite of greenhouse gas mitigation policies, Acadia Center supports the inclusion of robust, sustainable policy strategies that mitigate emissions from the buildings, power, and transportation sectors.

Thank you for the opportunity to offer these comments. We look forward to continued engagement on this and other issues.

For more information:

Jeff Marks, Maine State Director, jmarks@acadiacenter.org, 207.236.6470 ext.304

¹⁹ [*The Public Utilities Commission and Why it Must be Reformed*](#), Acadia Center, May 11, 2020.

²⁰ [*Strategy Recommendations to Mitigate Emissions and Support Resilience in Maine Buildings*](#), Buildings, Infrastructure, and Housing Working Group, June 5, 2020.



September 24, 2020

Cassandra Rose
Climate Council Coordinator
Governor's Office of Policy Innovation and the Future
181 State House Station
Augusta, Maine 04333

Re: Transportation Working Group Recommendations

Dear Ms. Rose:

Greenlots welcomes the opportunity to provide the Maine Climate Council with comments in response to the recommendations of the Transportation Working Group.

Greenlots is a leading provider of electric vehicle (EV) charging software and services, and a wholly owned subsidiary of Shell New Energies. The Greenlots network supports a significant percentage of the direct current fast charging (DCFC) infrastructure in North America and an increasing number of Level 2 chargers. Greenlots' smart charging solutions are built around an open standards-based focus on future-proofing while helping site hosts, utilities, and grid operators manage dynamic EV charging loads.

The Transportation Working Group (TWG) provided a range of comments focused on reducing emissions in the transportation sector in Maine. Greenlots offers support for the following recommendations in particular:

1. Develop a comprehensive state EV roadmap

Greenlots believes that target-setting and roadmapping is an important initial undertaking for transportation electrification efforts. Maine has already set initial targets for EV adoption by adopting California's Zero Emission Vehicle (ZEV) mandate and, more recently, signing on to the Multi-State Medium- and Heavy-Duty ZEV Memorandum of Understanding (MOU). A roadmapping effort can build upon these commitments, identifying near-term priorities and milestones and assigning responsibility to key stakeholders (e.g. utilities, state agencies, and legislators) to ensure that Maine meets its 2050 goals as well as any nearer term goals that are developed.

Greenlots also strongly encourages the development of complementary targets and roadmapping for EV charging infrastructure specifically. In particular, we suggest that the state focus on

strategically identifying and incentivizing highly visible public charging locations along key corridors that will facilitate regional travel and tourism and ensure equitable access to charging infrastructure across Maine. Greenlots believes a comprehensive network of public fast charging stations is critically important for spurring EV adoption. However, no single government agency, private infrastructure provider, or other entity is likely to establish such a network on its own. By identifying critical locations and developing a roadmap that establishes an action plan for infrastructure deployment, the state can leverage the knowledge and skills of a wide array of stakeholders and help facilitate transportation electrification at the pace needed to meet state goals.

The Transportation Working Group recommends that an EV Roadmap be completed no later than December 2021. Greenlots supports this recommendation, and suggests that the electric vehicle industry, including charging companies and auto manufacturers, should be leveraged as key partners in this effort. We further suggest that the Roadmap include near-term actions to be completed within the next 1-5 years to help build momentum for transportation electrification in Maine and ensure that climate and ZEV adoption goals are met.

2. Provide equitable incentives and grants that encourage customers to adopt electric vehicles

The higher upfront cost of electric vehicles represents a major barrier to widespread consumer adoption. While costs of EVs have consistently fallen, the existing price differential between comparable internal combustion engine and battery electric vehicles remains an impediment to electric vehicle purchases. Efficiency Maine has leveraged Volkswagen funding to offer rebates for electric vehicles for individuals, businesses, and government entities. We support the TWG's suggestion that the Climate Council maintain these incentives going forward and seek to identify a sustainable source of funding for vehicle incentives until electric vehicles reach price parity with internal combustion engine vehicles.

We further suggest that vehicle incentives consider the full range of use cases. As light duty trucks enter the market, higher incentives may enable electric vehicle adoption by drivers who would not otherwise consider the purchase of an electric vehicle. Incentives for vehicles should apply to all classes of vehicles, including medium- and heavy-duty vehicles. The state should also consider ways to more quickly turn over older higher emission vehicles, potentially by offering a cash-for-clunkers style program that encourages adoption of electric vehicles. Finally, Greenlots encourages equitable incentive design that helps ensure electric vehicles are accessible to a wide range of Maine residents. Efficiency Maine vehicle rebates already include income-qualified adders, but the state could also consider incentivizing the purchase of used EVs which are becoming increasingly available on the market.

Incentives for smart chargers, which can meet charging needs while also serving an important grid integration and load management role, should also be a key priority. Given the scale of transportation electrification that must occur to meet Maine's climate and ZEV goals, it will be critical to ensure a robust charging network is in place in the near-term. Research by McKinsey has found that range anxiety and access to charging are two of the top three concerns inhibiting EV adoption.¹ Greenlots suggest that the state prioritize incentives for chargers particularly in sectors that will drive public adoption of EVs (e.g. high powered corridor charging) and sectors that are primed for significant electrification (e.g. fleets). Considering the breadth of Maine's rural areas, we further suggest that careful attention be paid to reducing barriers to charging deployment in rural areas. Importantly, all of the scenarios modeled by Synapse for the TWG emphasized managed charging to help balance additional load from transportation electrification. Ensuring that smart charging solutions can reach all areas of Maine will likely require emphasis both on increased connectivity and equitable charging station deployment. Utility turnkey solutions may be a practical solution for ensuring that all areas of Maine are adequately served by EV charging infrastructure.

3. Explore funding mechanisms

In today's constrained economic environment, funding the programs identified through the Climate Action Plan will require careful consideration. In Greenlots' view, as a way to catalyze the market, utilities are well suited to invest in EV charging infrastructure since these projects can accrue major benefits to ratepayers. Indeed, efforts to electrify the transportation sector could have significant grid impacts. The Brattle Group predicts that regional electrification could double monthly electric usage by 2050.² Indeed, regulators across the country have recognized that utilities have an active role to play in developing and administering the ratepayer funded programs needed to address the significant market barriers facing transportation electrification and plan for the integration of EV charging load. The Washington Utilities and Transportation Commission, for example, issued a policy statement in 2017 that likened the electric vehicle market to that of energy efficiency – a market that utilities have a key role in transforming.³ The Commission wrote that it was in the public interest to support “transformation of the EV market through utility provision of a portfolio of regulated EV

¹ See *Electrifying Insights: How Automakers Can Drive Electrified Vehicle Sales and Profitability* (2017). McKinsey & Company. <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/electrifying-insights-how-automakers-can-drive-electrified-vehicle-sales-and-profitability>

² See *Achieving 80% GHG Reduction in New England by 2050* (2019). The Brattle Group. https://brattlefiles.blob.core.windows.net/files/17233_achieving_80_percent_ghg_reduction_in_new_england_by_20150_september_2019.pdf.

³ See “Policy and Interpretive Statement Concerning Commission Regulation of Electric Vehicle Charging Services.” Washington Utilities and Transportation Commission. Docket UE-160799. <https://www.utc.wa.gov/layouts/15/CasesPublicWebsite/GetDocument.aspx?docID=147&year=2016&docketNumber=160799>.

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RE: Climate Council

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charging services that maximize the benefits of EVs to the electric system and allow a competitive market for EV charging services to continue to develop.”⁴

Greenlots suggests that the Climate Council place ratepayer funded programs at the center of its investment strategy to help build a sustainable charging market in Maine. To date, the Public Utilities Commission has approved only small-scale pilot programs that do not begin to meet the scale of the transformation that will be required to meet Maine’s climate goals. Greenlots encourages the Climate Council to consider ways to scale up the programs led by utilities and Efficiency Maine to adequately meet the commitments the state has made to reduce emissions in the transport sector. The TWG suggests that legislation could direct utilities to evaluate and invest in a range of EV-related programs. Greenlots suggests that any legislation (or PUC directive) be specific about the expected minimum scale of such programs.

Greenlots also encourages Maine to make a firm commitment to the Transportation Climate Initiative (TCI). Not only can the program contribute to reducing transport emissions by sending a signal to consumers to choose efficient transportation options, it also serves an important role in unlocking revenues that can be invested in clean and equitable transportation solutions. Maine has been actively engaged in the development of the regional TCI framework. Greenlots respectfully suggests that the state take the next critical step, publicly committing to TCI and initiating the internal processes necessary to formalize its participation.

Greenlots looks forward to continuing to work with the state of Maine as it works to advance transportation electrification.

Respectfully,

A handwritten signature in dark ink, appearing to read 'AGilleo', with a long horizontal flourish extending to the right.

Annie Gilleo

Manager, Policy and Market Development

⁴ *Ibid.*



**Comments from the Island Institute to the Maine Climate Council
regarding the importance of increasing the local capacity to support the implementation of
the emerging Maine Climate Action Plan
September 24, 2020**

With staff on multiple work groups, the Science and Technical Subcommittee, and advising on the equity considerations, the Island Institute has already provided significant input into the Climate Council process. We appreciate the opportunity to comment further on the emerging framework to help Maine meet the state's climate mitigation and adaption goals.

Today, we are writing to highlight and amplify the importance of investing in the capacity of Maine's smaller and more rural communities to implement many of the recommended actions, and to offer our support in tackling this issue. With this challenge in mind, several proposals emerged from the working groups earlier this year that address this capacity gap through technical assistance and embedded local capacity (e.g., Energy Corps). We believe that there is now an opportunity to more closely link investments in local capacity with plan implementation. Building on the working groups efforts, and with our deep insights into the needs of small communities, we strongly encourage the Governor's Office for Policy, Innovation, and the Future and the Maine Climate Council to fully more fully develop strategies that strengthen the capacity of small communities to participate in and benefit from the Climate Action Plan.

As noted on page 15-16 of Part II of the framework, adopting strategies to support implementation of the Climate Action Plan within Maine's smaller and more rural communities helps those communities withstand the impacts of climate change. This approach has the additional benefit of strengthening how *many* of the actions in both Part I and II are implemented and persist in communities of *any* size and character.

The human, financial, and technical resources needed to implement projects often combines with local leadership capacity and a limited number of hours in a day to create a set of constraining conditions in small communities. Simply put, time and resources spent on implementing projects relevant to the Climate Action Plan may take way from the ability for somebody to focus on their core duties or resources available to undertake other projects – or the time and skill to adequately address the needs of the Climate Action Plan may not be available at all. These constraints are exacerbated in small communities where a lot of work happens because of dedicated volunteers.

In addition, as noted in our 2018 white paper, [Bridging the Rural Efficiency Gap](#), residents of rural communities are likely to face unique geographic, financial, and awareness barriers when understanding options for climate mitigation opportunities such as energy efficiency, which are likely to persist with elements of the Climate Action Plan. As such, municipalities and other key institutions in small communities will have to work hard to overcome these barriers to ensure that residents will be able to benefit from the plan.



As a community development organization, the Island Institute's most successful engagement strategies recognize how an individual issue (e.g., energy) sits in a broader context of community sustainability priorities and the need to invest in local leaders to build buy-in and ownership for emerging solutions. We strongly believe that successful implementation of the Climate Action Plan will rest, in part, on how well local leaders will be able to situate the plan in the broader context of their priorities and how well they will be supported in translating this understanding into action. Through 37 years of supporting communities in implementing policies and projects, the Island Institute has seen time and again just how important locally relevant, translatable, and actionable technical assistance coupled with an extra set of hands can be to moving projects forward.

To help the Climate Council understand the potential impact an extra set of hands can make, we wanted to share a few examples from our work.

For more than two decades, our Island Fellows program has enhanced the capacity of communities to undertake significant projects. Fellows are placed within host communities and work with host institutions for one to two years to support local research, planning, education, and technology projects. Island Fellows are trained in community development by a team of Island Institute staff and are supported to develop lasting capacity within their host communities that endures beyond their assignment. Given their placement on islands and remote communities, the Fellows also facilitate important connections between communities and resources, as well as often serving to strengthen local organizations and facilitate new partnerships within their host communities.

From helping a community to build window inserts for older residents on a fixed income or supporting teachers in small schools to run competitions focused on helping students and their families reduce their energy usage, more than a dozen Island Fellows have actively supported community-led climate and energy efforts over the past decade.

Fellows have helped to create greenhouse gas inventories and sustainability plans, facilitate the collective purchase of energy efficiency products and services assist with procurement of renewable energy, support the implementation of energy education programs, and share the lessons of their community's work. Two key examples for the Climate Council are:

- Maggie Small worked with the Peaks Environmental Action Team (PEAT) as an Island Fellow on Peaks Island from 2012-2014, facilitating community outreach and coordinating with weatherization contractors to [assist more than 100 islanders to participate in Efficiency Maine's Home Energy Savings Program](#). Without Maggie's ability to support PEAT to aggregate demand on the island and negotiate a collective purchase discount, first for weatherization and then for heat pumps, the transaction costs of doing a single installation in a somewhat difficult to access community would have been



prohibitive. In addition, the pace of change to the Peaks housing stock would have been significantly longer, had the community been left to a one-house-at-a-time, markets-based approach

- Ben Algeo worked with the power companies on Matinicus and Monhegan islands from 2014-2016 on a host of community-based energy initiatives including island-wide energy use assessments and the collective purchase of more than 3,000 LEDs, a story that was documented in this [2015 Portland Press Herald article](#). Ben also served as a bridge between the Monhegan community and the National Renewable Energy Laboratory (NREL), enhancing the accuracy and relevancy of NREL's modeling, as well as making their findings more understandable and actionable for the community.

Recognizing the capacity challenges small, remote communities face and the difficulty in accessing tools and resources on their own, Maine's Congressional delegation successfully advocated for the use of over \$5 million in federal funds to support the capacity of islands and other small, isolated communities as they try to tackle energy transition projects. This funding is coming through the U.S. Department of Energy and NREL to support organizations that provide critical capacity support to island and remote communities. This support will include identification of remote and island communities, stakeholder engagement on the topics of energy, resilience, energy education, development, and implementation of long-term energy planning. Essentially, NREL has acknowledged the capacity barriers faced by small communities and is supporting bridge institutions to ensure that its technical assistance is accessible and usable, and doesn't just end up as a report on a shelf.

Beyond small or remote communities, similar concerns apply to sectors of the economy that are vulnerable to climate change, like the marine and seafood sector. Supporting the marine sector to invest in clean energy projects builds the resilience of the sector in the face of a changing ocean environment by helping the reduce and better control some of their costs, a concept that is further explained [in this September 2020 article about a lower carbon future for the state's working waterfronts](#). Recently, the Island Institute has been interviewing working waterfront and seafood supply chain businesses about barriers to and interest in implementing clean energy projects. Two emerging take-aways from this work are:

- 1) There is appetite for reducing energy usage and stabilizing energy costs as part of building economic resilience of businesses in the face of unpredictable environmental shifts, and
- 2) There is limited knowledge of how to implement such projects and the financial resources available to support them.

Reflecting on the ties between climate action and the Maine economy, the Seafood Economic Accelerator for Maine (SEA Maine) project is building an economic development roadmap for the marine sector that is similar to what the Forest Opportunity Roadmap/Maine project achieved for the forest industry. The SEA Maine project will identify industry needs and opportunities and will provide solutions to workforce needs and skills gaps. It will also focus on



investments that create a more resilient Maine marine economy, including aquaculture as an entrepreneurial diversification and building climate resiliency. SEA Maine may be well poised to help support the implementation of various recommendations from the Coastal and Marine Work Group, including the Seafood Business Council and serve as a forum for addressing sector-specific capacity concerns. The Island Institute, with its ties to the Climate Council, is also honored to serve as project manager for this work; the co-chairs of SEA Maine also serve on the Marine and Coastal Working Group.

The Island Institute would welcome the opportunity to further discuss the needs of Maine's smallest communities to fully participate in the Climate Action Plan, as well as possible strategies that could emerge to support them in doing so. Drawing on our network on this topic, we would also be happy to support or convene a conversation about these linkages and build a set of engaged stakeholders who could support the work moving forward.

Signed,

A handwritten signature in dark ink, appearing to read "Nick Battista".

Senior Policy Officer
Island Institute

Rose, Cassaundra

From: Pingree, Hannah
Sent: Thursday, September 24, 2020 1:23 PM
To: LaBrecque, Taylor S; Rose, Cassaundra; Curran, Sarah
Subject: FW: Climate Council Recommendation

From: [REDACTED]
Sent: Thursday, September 24, 2020 12:58 PM
To: Pingree, Hannah <Hannah.Pingree@maine.gov>; Gerald.Reed@maine.gov; Wood, Shelly <Shelly.Wood@maine.gov>; Sarah Cushman
Subject: Climate Council Recommendation

EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.

I have been closing following and attending the meetings of the Climate Council due to my personal interest in this critical topic as well as to be more informed on this policy issue as a Trustee with Maine Audubon. I am writing to you to suggest an initiative that addresses both auto emission reduction and income equity concerns relative to Maine's goal of reducing greenhouse gas production.

As you know, residents of Maine must convert from use of gasoline powered cars to electric vehicles (EVs) for the state to meet its greenhouse reduction goals. However, new EVs remain considerably more expensive than similar gasoline cars. Even used EVs, while considerably less expensive than new, can be more expensive than an equivalent gasoline vehicle. For example, I found the following cars listed for sale:

2017 Chevy Bolt (EV) with 18K miles) - \$19,963
2017 Chevy Cruze (Conventional) with 26K miles - \$15,995

While the two cars are the same age and with similar mileage, the EV is listed at nearly \$4,000 more. While operating costs for the EV would be less, it would take several years of ownership to break even compared to ownership of a conventional gasoline car, given the higher purchase price.

I recommend (as a private citizen) that the Climate Council consider providing an incentive for buying a used EV rather than a used gasoline vehicle to bridge some of the up-front price difference. Arguably, the need to close the price gap completely would not be necessary since the owner of an EV would experience operating cost savings over time but a reasonable incentive to help reduce the up-front purchase or loan payment expense would help consumers with limited means select and EV over a gasoline vehicle. Perhaps a pro-rated calculation based on the current state incentive for new EVs (\$2000) might be an approach. For example, for the 2017 Chevy Bolt referenced above, the incentive might be \$1,200 (based on a 10-year life and the car's four years of use).

I hope you will consider this suggestion as the Climate Council wraps up its work in the coming months. Thank you for your consideration and congratulations on the fine work by the Council.

Sincerely,
John R. Grew

September 24, 2020

Dear Climate Council members,

Maine Sea Grant supports the initiative from the Governor's office and the many partners involved in the Maine Climate Council. We consider the Council's work critical for the sustainability and resilience of Maine's coastal communities and ecosystems. Our program, a federal-state partnership housed at the University of Maine, has promoted sustainable development, management, and stewardship of Maine's marine and coastal resources since 1971. Preparing for a Changing Climate is one of our program's five focus areas and is an integrated component throughout our entire strategic approach.

Bolded on the next two pages are Climate Council proposed strategies which are of great importance to our stakeholders and have direct connections with Maine Sea Grant's ongoing work coastwide. The programs and partnerships detailed alongside those strategies are Maine Sea Grant projects that have been developed through a rich history of collaboration and support. We are in a unique position to tap into the capacity of these networks and programs to assist with implementation and outreach and to amplify the strategies recommended by the Climate Council.

In the next pages, we hope you see our commitment to working in these climate-related areas. We will continue to engage with the council and its partners on climate change strategies moving forward, and we are available to provide technical expertise and help support outreach and education efforts. For example, we can offer facilitation and engagement training to partners as a way to strengthen engagement with communities and stakeholders. Our marine extension team members, who are located in coastal communities from Eastport to Wells, are well-positioned to mobilize and work with our established networks.

As an organization that grants federal funding, we have targeted research dollars toward projects that address climate change and community and industry resilience, and we plan to continue doing so. There may also be opportunities to develop or fund research, outreach, or other projects that support our stakeholder needs and operate at the cross section of Maine Sea Grant, NOAA initiatives and the Climate Council's recommendations.

We could work with the Climate Council and Governor's Office to identify resources to expand the capacity of this work in our state. At a national level, we are in the process of concentrating a ten-year vision for Sea Grant's targeted support for coastal resilience, work which will align with the research, implementation, and funding needs of the Maine Climate Council.

Maine Sea Grant remains deeply committed to supporting our stakeholders as they prepare for a changing climate, and we look forward to supporting the Climate Council as it moves forward with its recommendations. Please reach out to me for further discussion on how we can best leverage Maine Sea Grant's efforts to the Maine Climate Council's work.

Sincerely,



Gayle Zydlewski
Director, Maine Sea Grant Program
Professor, University of Maine School of Marine Sciences



Community Resilience Planning, Public Health, and Emergency Management Working Group - *Maine Sea Grant Extension Professor, Esperanza Stancioff, is a dedicated member of this working group.* Our Extension professionals work with, facilitate, and co-coordinate the Climate Change Adaptation Providers Network ([CCAP](#)), a network of 75 practitioners, engineers, researchers, and agency representatives dedicated to helping coastal communities adapt to climate change. Our project *Collaborating Toward Climate Solutions* ([CTCS](#)) team works with municipal officials to incorporate climate change resilience into planning and implementation. Extension work with partners in southern Midcoast Maine is also exploring opportunities to build social resilience to climate change. This work especially aligns with the following strategies:

- **Provide data and technical assistance to communities about the impacts of climate change:** Since 2010, CCAP has been convening (and will continue to convene) climate change experts and municipal leaders partnering to share best practices and to reach citizens and municipal planners directly through site visits, professional development, training and consulting in order to assist communities in adaptation planning and implementation processes. CTCS currently assists municipal officials in 18 communities to identify and incorporate their community-specific climate change resilience strategies into their planning and implementation processes.
- **Provide funding for municipal infrastructure projects that help communities plan for and respond to climate change:** Our extension professionals and partners are helping coastal communities access state and federal funds (e.g. the FEMA Building Resilient Infrastructure and Communities Fund) and other resources through our CTCS project.

Coastal and Marine Working Group

Maine Sea Grant is involved with multiple efforts to strengthen resilience for marine and coastal economies and ecosystems. Our Aquaculture in Shared Waters ([AQSW](#)) training and business development program, which began in 2013, is the largest in the state and convenes multiple partners and experts. This work along with two new efforts, Maine Aquaculture Hub ([MAH](#)) and the National Seaweed Hub ([NSH](#)), expands sustainable opportunities for these industries. The Alliance for Maine's Marine Economy ([AMME](#)), a Maine Sea Grant-coordinated network, facilitates technology transfer and idea-sharing among stakeholders and advises policy-making processes. The Sea Grant American Lobster Initiative ([ALI](#)) funds research and convenes resource managers, fisheries representatives, and scientists to increase the lobster industry's resilience to ecosystem change. We also partner with NOAA to study changes to coastal ecosystems.

- **Support Maine's lobster and fishing businesses to prepare and respond to changing environments:** ALI-supported research addresses critical knowledge gaps about American lobster and its iconic fishery in a dynamic and changing environment. The ALI also helps strengthen communication and collaboration channels between the lobster industry and research community and will provide fishermen the opportunity to access and prepare for the changing Gulf of Maine.
- **Expand local marketing opportunities for Maine seafood:** Through our work with AMME, we are helping to facilitate the development of a strategic 10-year roadmap for Maine's marine living resource economy, with a focus on building and strengthening Maine's seafood economy's resilience to disruptions caused by severe weather and coastal flooding events that cause negative impacts across the seafood value chain.
- **Continue to grow Maine's diverse aquaculture sector:** The AQSW training program and the broader Maine Aquaculture Hub orients aquaculture opportunities within marine spatial planning and has created funding opportunities to support innovation for technologies, operations, and markets for seaweed, shellfish, and finfish.
- **Collect scientific data to understand the changes to Maine's coastal and marine areas:** Through our work with the Northeast Coastal Acidification Network ([NECAN](#)) and NOAA Ocean Acidification Program on the [Shell Day](#) project, Maine Sea Grant and partners provided training and resources on ocean acidification monitoring to 57 water quality groups. In partnership with NOAA's Northeast Fisheries Science Center, we conduct an annual survey of the planktonic, fish, bird, and marine mammal species that inhabit the Penobscot River estuary in order to understand how the ecosystem changes in response to habitat restoration.



- ***Provide clear information and tools about climate change impacts:*** In addition to CTCS, we facilitate the [Maine Ocean and Coastal Acidification Partnership](#), which published two reports used by the Climate Council's Science and Technical committee and the Coastal and Marine Working Group. We are also co-developers and steering committee members of NECAN, which is the leading group in the region for the synthesis and dissemination of ocean and coastal acidification information.
- ***Protect Maine's working waterfront infrastructure from climate change impacts:*** Along with CTCS mentioned above, our working waterfront and coastal access programing focuses on providing capacity, support, and information to businesses that depend on waterfront access via piers, wharves, docks, boat ramps, and commercial infrastructure.
- ***Store greenhouse gases by conserving and restoring salt marshes and other coastal environments:*** We anticipate a focused effort on coastal ecosystem services and salt marsh restoration supported by an NSF Coastlines and People Grant (CoPe).
- ***Promote nature-based solutions to protect coastal communities from climate change impacts:*** We anticipate a focused effort on promoting nature-based solutions supported by CCAP, CTCS engagement, and NSF CoPe.

Natural and Working Lands Working Group

Our new sea-run fish program ([SRFP](#)) supports research, education and cross-sectoral collaborations that protect and improve habitat for native sea-run (diadromous) fishes. Our work with coastal access and working waterfronts ([WWF](#)) started in 2003 and continues through both local collaborations and national networks. We have provided leadership within the National Working Waterfront Network ([NWWN](#)), which aims to increase the capacity of coastal communities and stakeholders to make informed decisions, balance diverse uses, ensure access, and plan for the future of working waterfronts and waterways

- ***Make investments to increase wildlife crossings and aquatic organism passage:*** SRFP collaborations are working to inform the public on the ecosystem services provided by increased connection of Maine's watersheds with coastal communities and sea-run fish. Working with NOAA's [Habitat Blueprint](#) initiative, we highlight fish passage projects that have been completed and describe ecological responses as seen through the local members of the communities where they occurred.
- ***Strengthen Maine's food systems:*** AMME brings Maine seafood businesses together to share innovative strategies (including ways to access new market opportunities) for adapting to dramatic environmental and economic changes. MAH efforts include investing (~\$200,000 this year) in aquaculture industry members to expand seafood growth, harvest, and processing to strengthen the seafood system.
- ***Prioritize the retention of Maine's valuable working and natural lands:*** The Municipal Budgets and Conservation Lands project, which Maine Sea Grant helps facilitate, is looking at the fiscal impact of conservation lands on municipal budgets. And, through the NWWN's [Estimating the Local Marine Economy](#) project, we have worked with economists at NOAA and within the state to develop a method for estimating the value of working waterfronts to local marine economies. Information generated from these projects may help start a dialogue about the importance and feasibility of retaining working and natural lands through conservation efforts.

Buildings, Infrastructure, and Housing; Energy; and Transportation working groups

Maine Sea Grant envisions a future in which Maine's coastal communities are resilient to challenges and changes. As such, our work also intersects with some of the strategies that were recommended by these three working groups.



Dear Cassy,

Ivy and I are submitting comments on behalf of the MOCA Steering Committee. MOCA has dedicated the year to serving on the Climate Council in various capacities. The MOCA Steering Committee met today and agreed to support the strategies set forth by the Coastal and Marine Working Group, the Community Resilience Working Group, and the bones of those strategies as set forth in the Proposed Strategy Framework. The strategies mirror the recommendations set forth in the MOCA Planning Report developed in advance of and to support the efforts of the MCC. Those documents are available at: <https://seagrant.umaine.edu/extension/maine-ocean-and-coastal-acidification-partnership-moca/>.

You may recall, the MOCA recommendations were developed following three targeted in-person stakeholder meetings with a total of 80 participants designed to draw together experts in three areas related to ocean climate change: Research and Monitoring, Policy and Law, and Resilience and Adaptation. Participants in these sessions brought years of experience and expertise working on ocean climate change. As we held these meetings at the request of the State to help inform the MCC process, we hope you will consider them to be part of your outreach and the report as support for the MCC strategy framework.

Thank you for considering our comments. We are planning a seminar for this winter to further MOCA's continued goals of collaborative research and information sharing.

Sincerely (on behalf of the MOCA Steering committee),

Ivy and Esperanza

Ivy L. Frignoca, Casco Baykeeper
Friends of Casco Bay
43 Slocum Drive
South Portland, ME 04106
Cell: (207) 831-3067
ifrignoca@cascobay.org

Esperanza Stancioff, Extension Professor
Climate Change Lead
University of Maine Cooperative Extension/
Maine Sea Grant
377 Manktown Rd; Waldoboro, ME 04572
Cell: (207) 706-6977
esp@maine.edu

Other MOCA steering Committee members:

Lydia Blume, Mick Devin, Parker Gassett, Richard Nelson, Don Witherill



To: The Maine Climate Council

From: The Nature Based Education Consortium Climate Education Task Force and Supporters

We encourage the Maine Climate Council to adopt these three recommendations created by the youth-led Climate Education Task Force of the Nature Based Education Consortium.

- 1. Create a Maine Climate Education program**, based around professional development for educators, support for school-community organization partnerships, and include a climate justice perspective.
- 2. Develop a Climate Leadership Governor's Academy.** Building on the Maine Math and Science Alliance's successful teacher leadership academy and non-hierarchical professional learning model, the Climate Leadership Governor's Academy would equip Maine educators and students to co-develop interdisciplinary climate education activities as well as develop leadership skills to empower local climate reform in schools and communities.
- 3. Create a statewide climate education task force** to assess and make recommendations on how to achieve comprehensive, multidisciplinary climate education in K-12 schools in Maine by 2030.

A climate literate public is key to continued advancement of the Climate Council's recommendations over time, and particularly imperative in meeting mid and long-range goals set forth by the council. Investing in Maine youth is an investment in Maine's future. Investing in Maine youth is an investment in Maine's future. With comprehensive climate education in Maine, we can build an essential foundation for a Maine Climate Corps - the next generation of Climate Professionals ready to create a resilient Maine economy. Support for comprehensive climate education will ensure that every Maine youth has the opportunity to be an active part of Maine's resilient future.

	First name	Last name	Email	City	State	Teacher or student	Comments
1	Helene	Adams		Gorham	Maine	Teacher	
2	Jen	Adams		Wiscasset	Maine	Teacher	
3	Diana	Allen		Ogunquit Town of	Maine	Teacher	
4	Jessica	Antonez		Portland	Maine	Teacher	
5	Kelli	Antonson		Portland	Maine	Teacher	
6	Beth	Arnold		Belfast	Maine	Teacher	
7	Amanda	Atkinson-Lewis		Portland	Maine	Teacher	I'm a school social worker!
8	Amie	Averett		Ogden	Utah	Teacher	
9	Emma	Balazs		Brunswick	Maine	Teacher	
10	Becky	Bartovics		North Haven	Maine	Teacher	I am a retired teacher who teaches all the time informally It is essential to engage faculty and students in addressing Climate Change- their work will take us into the next century well equipped if we do each of the three requests Not doing so will be a deficit to the future of this state
11	Lisa	Beneman		Wiscasset	Maine	Teacher	
12	Dede	Bennell		Freeport	Maine	Teacher	
13	K	Bolduc		Naples	Maine	Teacher	
14	Monique	Boutin		Portland	Maine	Teacher	
15	Rachel	Bouttenot		Bath	Maine	Teacher	
16	John	Branscom		Hallowell	Maine	Teacher	
17	Gabrielle	Brodek		Orono	Maine	Teacher	
18	Cassie	Cain		Saco	Maine	Teacher	
19	Amilia	Campbell		North Haven	Maine	Teacher	
20	Maisie	Campbell		Lewiston	Maine	Teacher	
21	Diana	Carson		Auburn	Maine	Teacher	
22	Nancy B	Chandler		Topsham	Maine	Teacher	Thank you for this petition I think the time frame is longer than ideal, but rural and inland school districts may take longer to feel compelled to teach renewable energies, systems thinking, and ecosystem management I would like to participate in some of the curriculum development along the Midcoast and Lewiston/Auburn areas I have been a farm educator for college students and refugee farmers with a Masters in Biology Education I also did 8 years of volunteer nature walk leading with National Audubon in Bath, and Phippsburg Elementary School I tutored reading in Bath elementary level for 4 years
23	Margaret	Chingos		Brunswick	Maine	Teacher	
24	ali	cohen		Gray	Maine	Teacher	
25	Cathy	Cone-Sabo		Saco	Maine	Teacher	
26	Katie	Corbett		Bremen	Maine	Teacher	
27	Rebecca	Cote		Biddeford	Maine	Teacher	Thank you so much for your work!
28	Laura	Craver-Rogers		Freedom	Maine	Teacher	
29	Meaghan	Daly		Biddeford	Maine	Teacher	
30	Lisa	Damian-Marvin		Camden	Maine	Teacher	

31	Ann	Darden		Edgecomb Town of	Maine	Teacher	I'm a retired teacher, but I fully support the idea of educating the world about the consequences of climate change and ways to lessen the impact of humans on the climate
32	Ethan	Davis		Kennebunkport	Maine	Teacher	
33	Micah	Depper		Bath	Maine	Teacher	
34	Jonathan	Doty		Bradley	Maine	Teacher	
35	Alanna	Doughty		Sebago	Maine	Teacher	Thank you for your work! Vtally important for our students and future!!
36	Kate	Drummond		Madison	Maine	Teacher	
37	Dotty	Dudley		Easton	Maine	Teacher	
38	Kelley	Duffy		Newcastle	Maine	Teacher	Fantastic idea!
39	Maya	Eng		Portland	Maine	Teacher	
40	Alison	England		Tenants Harbor	Maine	Teacher	
41	Madison	Etman		Brunswick	Maine	Teacher	
42	Renee	Evans		Trevett	Maine	Teacher	
43	Annie	Fagan		Portland	Maine	Teacher	
44	Deanna	Fahey		Orono	Maine	Teacher	
45	Sara	Farneth		Portland	Maine	Teacher	retired, but still following what's happening in education The topic of Climate is critical for students to study, it's their future and they need the tools to combat the disasters that are coming
46	Charles	Fear		Brunswick	Maine	Teacher	As a middle school science teacher and now a director of a nature-based summer camp, it is important to have a statewide Climate Education Program to support educators and families in helping our children understand this issue so they can make informed decisions to steward the health of our shared planet for this and future generations
47	Kelly	Fernald		Falmouth	Maine	Teacher	
48	Cathryn	Field		Brunswick	Maine	Teacher	
49	Leah	Flumerfelt		Portland	Maine	Teacher	
50	Jennifer	Frick		Portland	Maine	Teacher	I have long believed that most of our society/world-wide problems stem from our broken connection with the earth and therefore the environment I can conceive of a curriculum where all subjects are taught through the lens of earth/climate education When I was still teaching, I was instrumental in setting up a gardening in the schools program, a beginning to helping the students connect to the earth and earth education, and thus a beginning to exploring the needs and actions necessary to saving the earth through climate education
51	Patricia	Greene		Damariscotta	Maine	Teacher	
52	Alexis	Grillo		Freeport	Maine	Teacher	
53	David	Grubb		Cumberland Center	Maine	Teacher	
54	John	Haley		South Portland	Maine	Teacher	Maine is facing the barrel of climate change's gun with industries like fisheries and tourism that rely on ecosystems to thrive Our youth, who will one day become our voters/ consumers need to know what is on our doorstep and how to make choices that preserve our way of life
55	David	Hart		Winterport	Maine	Teacher	

56	Andrea	Harvey	Gray	Maine	Teacher	
57	A	Hashimoto	Bar Harbor	Maine	Teacher	
58	Christine	Hemmings	Hebron	Maine	Teacher	
59	alicia	heyburn	Brunswick	Maine	Teacher	As a statewide advocate connecting Maine youth to the outdoors for their physical and mental well-being, we know that the health of Maine's people is completely reliant on a healthy environment
60	Leah	Heyman	Freeport	Maine	Teacher	As a science teacher, this content links to everything we do
61	Jason	Hludik	Wells	Maine	Teacher	
62	Douglas	Hodum	Farmington Town of	Maine	Teacher	
63	Christopher	Hoffmann	Freeport	Maine	Teacher	
64	Sarah	Hooper	Prospect Harbor	Maine	Teacher	
65	Carey	Hotaling	Falmouth	Maine	Teacher	Climate change is essential to teach to our youth I'll looking forward to the Maine Climate Education Program and hope to participate
66	Skyler	Hurle	Cleveland	Ohio	Teacher	
67	Russell	Jabaut	Durham	Maine	Teacher	
68	Rhonda	Janelle	Falmouth	Maine	Teacher	
69	Izzy	Janzen	Wiscasset	Maine	Teacher	
70	Chris	Jeney	Portland	Maine	Teacher	I am interested in any positions for part-time work in this organization
71	Kathryn	Jensen	Jefferson	Maine	Teacher	
72	Kelsey	Johnson	Cape Elizabeth	Maine	Teacher	
73	Dana	Karukin	Biddeford	Maine	Teacher	
74	Sarah	Kearsley	Norway	Maine	Teacher	Thank you for considering this very important issue!
75	Lucas	Kellett	Farmington Town of	Maine	Teacher	As absolute essential piece of the future Maine Climate Action Plan
76	sarah	kern	Cape Neddick	Maine	Teacher	
77	Morgan	Kerr	Cape Elizabeth	Maine	Teacher	
78	sara	king	Greenwood	Maine	Teacher	
79	Chris	Knapp	Temple Town of	Maine	Teacher	
80	Thomas	Korstanje	Bar Harbor	Maine	Teacher	
81	Laura	Kutch, M.Ed	Portland	Maine	Teacher	Special Education Early Intervention
82	Laura	Lano	Brunswick	Maine	Teacher	
83	Megan	Leach	Jackman Town of	Maine	Teacher	I taught environmental science for three years Although climate standards are required there is little in the way of climate curriculum for Maine specifically It should absolutely be a priority for Maine to have a quality, expertly informed and widely sharable curriculum for teachers in the state to access It's imperative for students to learn this information to have an informed population
84	Alexis	Lisac	Portland	Maine	Teacher	Teaching students the science behind climate change is a key piece in generating public support of climate change legislation As a Maine science teacher, I fully support this action
85	Leia	Lowery	Kennebunkport	Maine	Teacher	

86	Kaitlyn	Main	Wiscasset	Maine	Teacher	
87	Doug	Malloy	Athens	Maine	Teacher	
88	Jessica	Marion	Brunswick	Maine	Teacher	
89	Megan	Marquis	Patten	Maine	Teacher	
90	Charlie	Marsh	Windham	New Hampshire	Teacher	
91	Philip	Mathiey	Saco	Maine	Teacher	
92	Janet	McMahon	Waldoboro	Maine	Teacher	I've taught a global climate change course for 10 years. My students feel this topic is urgent and should be taught in all schools. I'm also a conservation biologist and am familiar with the impacts of climate change on Maine's ecosystems.
93	Zach	Miller-Hope	Portland	Maine	Teacher	
94	Anica	Miller-Rushing	Mount Desert	Maine	Teacher	
95	Marcia	Moreno-Baez	Kennebunkport	Maine	Teacher	Very important to bring this conversation not only to the table, but to the classrooms!
96	Pamela	Morgan	Kennebunkport	Maine	Teacher	
97	Susan	Morris	South Berwick	Maine	Teacher	
98	Allison	Muir	Portland	Maine	Teacher	
99	Paula	Murphy	South Portland	Maine	Teacher	
100	eleanor	n	Newcastle	Maine	Teacher	
101	Landere	Naisbitt	Blue Hill Town of	Maine	Teacher	
102	john	nicholson	Bath	Maine	Teacher	
103	Carol	Nylen	Portland	Maine	Teacher	The time is now. No need to go into the urgency, because that has been made very clear.
104	Claire	Olson-Crocker	Windham	Maine	Teacher	
105	Stefanie	Ordway	Bridgton	Maine	Teacher	
106	Camille	Parrish	Auburn	Maine	Teacher	
107	Marina	Penalver	Peaks Island	Maine	Teacher	
108	Josie	Perkins	Wells	Maine	Teacher	
109	Ruby	Peterman	Hollis Center	Maine	Teacher	
110	Richard	Peterson	Portland	Maine	Teacher	
111	Sally	Plourde	Westbrook	Maine	Teacher	
112	Gail	Pocock	Sherman	Maine	Teacher	
113	Anne	Poirier-Flight	Kingfield Town of	Maine	Teacher	
114	Ruth	Poland	Bar Harbor	Maine	Teacher	These items are SO important to address. Ignorance about these issues is holding our society back from creating the change we need to make in order to maintain a just environmental future.
115	Jen	Porter	Camden	Maine	Teacher	
116	Stacie	Riechel	Gray	Maine	Teacher	
117	Greta	Righter	Wiscasset	Maine	Teacher	
118	Benjamin	Rosenbloom	Portland	Maine	Teacher	
119	Debora	Rountree	Millinocket	Maine	Teacher	
120	Kennedy	Rubert-Nason	Fort Kent	Maine	Teacher	
121	Maureen	Salisbury	Scarborough	Maine	Teacher	

122	Robert	Sanford
123	Patric	Santerre
124	Lisa	Savage
125	Caleb	Savage
126	Chip	Schwehm
127	Katherine	Schwehm
128	Bobby	Shaddox
129	Jennifer	Shyka
130	JAMES	SIEGEL
131	John	Smedley
132	Peter	Sniffen
133	Calvin	Soule
134	Katelyn	Spalding
135	Wendy	Steele
136	Lisa	Steiner
137	Oren	Stevens
138	Barbara	Stiles
139	Anne	Stires
140	Tom	Stone
141	Gretchen	Storer
142	Sneha	Suresh
143	Thomas	Talarico
144	Brooke	Teller
145	Jim	Thornton
146	William	Tjeltveit
147	Genevieve	Trafelet
148	Lucy	Wanzer
149	Grace	Warder
150	Gwenyth	Webber
151	Tracy	Weber
152	Julia	West
153	Maria	West
154	Helen	Westall
155	Charlotte	Williamson
156	Doug	Wilson
157	Portia	Woestman
158	Kyle	Wonser
159	Linda	Woodard

Gorham	Maine	Teacher	
Portland	Maine	Teacher	
Solon	Maine	Teacher	I'm a US Senate candidate, and just retired from 25 years teaching in Maine public schools. Thank you for this important initiative by the youth-led Climate Education Task Force of the Nature Based Education Consortium!
Bellingham	Washington	Teacher	
Boothbay	Maine	Teacher	
Boothbay	Maine	Teacher	
Portland	Maine	Teacher	
South Portland	Maine	Teacher	
Portland	Maine	Teacher	thanks
Lewiston	Maine	Teacher	
Alna Town of	Maine	Teacher	
Portland	Maine	Teacher	We need climate education NOW at all levels of education! Climate education can be integrated in every subject, and should happen in every school
Cumberland Foreside	Maine	Teacher	
Portland	Maine	Teacher	
Portland	Maine	Teacher	
Lewiston	Maine	Teacher	
Gray	Maine	Teacher	
Alna Town of	Maine	Teacher	THANK YOU!
Bangor	Maine	Teacher	
Eliot	Maine	Teacher	
Shakopee	Minnesota	Teacher	
Portland	Maine	Teacher	
Portland	Maine	Teacher	
Bethel	Maine	Teacher	
Patten	Maine	Teacher	
Greenville	Maine	Teacher	
Wiscasset	Maine	Teacher	
Wiscasset	Maine	Teacher	
Wiscasset	Maine	Teacher	
Augusta	Maine	Teacher	
Wiscasset	Maine	Teacher	
Wiscasset	Maine	Teacher	
Bar Harbor	Maine	Teacher	
York	Maine	Teacher	
Little Deer Isle	Maine	Teacher	
Brunswick	Maine	Teacher	
Wiscasset	Maine	Teacher	
Kennebunkport	Maine	Teacher	

160	Darlene	Woodman
161	Bethany	Woodworth
162	Monica	Wright
163	Danielle	Young
164	Peter	Zack
165	Lundy	
166	Christine	Adamowicz
167	Whitney	Adell
168	Alyssa	Adkins
169	Cindy	Alencewicz
170	Jeny	Alfrey
171	Muriel	Allen
172	Shamus	Alley
173	Susan	Andersen
174	Sarah	Andre
175	Gabe	Andrews
176	Cushman	Anthony
177	Rachelle	Apse
178	Allen	Armstrong
179	Walter	Baily
180	Federico	Barbetti
181	Todd	Beaulieu
182	Forrest	Bell
183	Kaitlyn	Bernard
184	Justin	Beth
185	Maeve	Blodgett
186	Sandy	Bolger
187	Xavier	Botana
188	Lynn	Boulger
189	Victoria	Boundy

Rangeley	Maine	Teacher	
South Portland	Maine	Teacher	
Bath	Maine	Teacher	Climate Education spans many content disciplines and is key to build thoughtful citizens
Newcastle	Maine	Teacher	
Parsonsfield	Maine	Teacher	
Bar Harbor	Maine	Teacher	
Brunswick	Maine	Supporter	
Casco	Maine	Supporter	
Portland	Maine	Supporter	
Ocoee	Florida	Supporter	This is a real issue right now and this should be a high priority for awareness and action Education is needed now
Kaitaia		Supporter	
Usaf Academy	Colorado	Supporter	Whole heartedly support this! We will need people who have climate education for many years into the future in order to save our state and ultimately the world!
Portland	Maine	Supporter	
Wiscasset	Maine	Supporter	School Nurse
Westbrook	Maine	Supporter	I am a parent of an 8 year old and a 13 year old I am homeschooling my 3rd grader now for the sole reason that I do not believe our district values outdoor education In the context of a pandemic and the many physical restrictions on kids' normal social interactions, moving much of school outdoors should have been a 1st response Instead, it is still seen as frivolous or too difficult by many
Scarborough	Maine	Supporter	
Yarmouth	Maine	Supporter	
Portland	Maine	Supporter	
Falmouth	Maine	Supporter	A public well informed on what's happening to our climate will be essential to develop the political will to act
Parsonsfield	Maine	Supporter	
Portland	Maine	Supporter	
Windham	Maine	Supporter	
Portland	Maine	Supporter	
Gray	Maine	Supporter	
Portland	Maine	Supporter	
Wiscasset	Maine	Supporter	
Portland	Maine	Supporter	Keep up the good work!
Mount Desert	Maine	Supporter	
Topsham	Maine	Supporter	We have left a very uncertain future for our youth, including my 17 year-old daughter As they have unwittingly become thrust into the role of managing this uncertain future, they need to have a voice in any proposed recommendations I heartily support these three climate education recommendations

190	Tom	Boutureira	Freeport	Maine	Supporter	
191	Patricia	Boyle-Wight	Newry	Maine	Supporter	
192	Kathryn F	Braemer	Philadelphia	Pennsylvania	Supporter	Thank you!!
193	Sarah	Braik	Portland	Maine	Supporter	
194	Alexandria	Brasili	Tenants Harbor	Maine	Supporter	
195	John	Brautigam	Falmouth	Maine	Supporter	
196	Nathan	Broaddus	Portland	Maine	Supporter	
197	Caitlin	Brooke	Saco	Maine	Supporter	
198	Carina	Brown	South Portland	Maine	Supporter	
199	Elizabeth	Burke	Union	Maine	Supporter	
200	Anne D	Burt	Edgecomb Town of	Maine	Supporter	Youth today hear about climate change over the airwaves or adult conversations. As the generation alive today that will be most impacted by climate change, it is important that they receive science-based information and be provided with opportunities to put that knowledge to work in their lives. Education in the schools and our in the community is an important component of achieving goals the Maine Climate Council has determined.
201	Jessica	Burton	Portland	Maine	Supporter	
202	David	Butter	Windham	Maine	Supporter	Climate education is essential to our future
203	Chris	Cabot	North Yarmouth	Maine	Supporter	
204	MaryJane	Call	Cumberland Center	Maine	Supporter	
205	Alethea	Cariddi	Gray	Maine	Supporter	
206	Dustin	Carroll	Windham	Maine	Supporter	
207	Rachel	Chase	Norway	Maine	Supporter	
208	Erin	Cinelli	Yarmouth	Maine	Supporter	
209	Alison	Clift	Westbrook	Maine	Supporter	
210	Doretta	Colburn	Waterford	Maine	Supporter	Thanks for all the hard work
211	Meagan	Cooper	Kennebunkport	Maine	Supporter	
212	Kelly	Corbin	South Portland	Maine	Supporter	
213	Kristine	Corey	Portland	Maine	Supporter	
214	Carl	Costanzi	South Paris	Maine	Supporter	
215	Hadley	Couraud	Norway	Maine	Supporter	
216	Jean	Crawford	Camden	Maine	Supporter	retired teacher
217	Andrew	Cutko	Bowdoinham	Maine	Supporter	
218	Lorie	Dana	Portland	Maine	Supporter	
219	lee	dassler	Oxford	Maine	Supporter	
220	Charley	Davis	Portland	Maine	Supporter	
221	Jessica	Decke	Lincolnville	Maine	Supporter	
222	Conner	Desmond	Scarborough	Maine	Supporter	
223	Gregory	DeVito	Portland	Maine	Supporter	
224	Daniel	Diffin	New Gloucester	Maine	Supporter	
225	Emilie	DISNEY	Franklin	Maine	Supporter	I would like my children to have this education

226	Julianna	DiTomasso		Biddeford	Maine	Supporter	I attended public school in Southern Maine and didn't learn about climate change until college - I thought it'd be different now, since I graduated in 2012. We need climate education to be part of the Climate Action Plan.
227	Ann	Dodd-Collins		Portland	Maine	Supporter	
228	Heather	Dolstra		Portland	Maine	Supporter	Educating children early about how stewardship of the environment affects every aspect of their lives means we have a powerful advocacy group when they are old enough to make decisions for themselves.
229	Kirsten	Dorsey		Scarborough	Maine	Supporter	Education provides context for action.
230	padraic	dougherty		Bath	Maine	Supporter	
231	Lila	Drewes		Damariscotta	Maine	Supporter	
232	Joseph	Drouillard		Portland	Maine	Supporter	
233	Maureen	Drouin		Hallowell	Maine	Supporter	I'm a parent who sees the lack of climate education (and in some cases, climate denialism) in my daughter's classrooms. I think the 2030 timeline is too far away and would encourage the council to begin introducing climate education into our curriculum immediately. Thank you!
234	Drew	Dumsch		Saco	Maine	Supporter	
235	Cory	Dunning		Casco	Maine	Supporter	
236	Bridget	Edmonds		Brunswick	Maine	Supporter	
237	Barbara	Egan		Belfast	Maine	Supporter	
238	Caroline	Eliot		Topsham	Maine	Supporter	
239	Sean	Ellsworth		Portland	Maine	Supporter	
240	Michael	Elvin		Falmouth	Maine	Supporter	
241	Bryan	Emerson		North Yarmouth	Maine	Supporter	
242	Catherine	Erdman		Temple Town of	Maine	Supporter	
243	Michelle	Erhard		Biddeford	Maine	Supporter	
244	Amy	Eshoo		North Yarmouth	Maine	Supporter	
245	Abigail	Farrin		Jefferson	Maine	Supporter	
246	Robin	Farrin		Eastport	Maine	Supporter	Important to be seriously implemented.
247	Lynn	Farrin		Jefferson	Maine	Supporter	
248	Bailey	Farris		Kennebunkport	Maine	Supporter	
249	Becca	Ferguson		Portland	Maine	Supporter	
250	Lily	Fernald		Falmouth	Maine	Supporter	
251	Emily	Ferrick		Kennebunk	Maine	Supporter	
252	Devin	Field		Bath	Maine	Supporter	
253	Gary	Fish		Augusta	Maine	Supporter	This is a very important initiative. As the State Plant Regulatory Official, we see ever increasing invasive organisms challenging our farms, forests and natural areas. We need a well educated generation who will take climate science seriously.
254	Abigail	Fisher		Windham	Maine	Supporter	
255	Julia	Fitzgerald		Portland	Maine	Supporter	Climate change is going to be perhaps the greatest crisis that today's youth will face in their lifetimes, and we need to equip them to meet that challenge. Climate education is crucial to building and sustaining Maine's climate resiliency.

256	Jared	Fong	Berlin	Massachusetts	Supporter	
257	Caroline	Foster	Portland	Maine	Supporter	
258	Samson	Fowler	Portland	Maine	Supporter	
259	craig	Freshley	Brunswick	Maine	Supporter	
260	Laura	Friedman	Cumberland Center	Maine	Supporter	
261	Celine	Frueh	Falmouth	Maine	Supporter	Thank you!
262	Dan	Gagnon	Biddeford	Maine	Supporter	
263	Wendy	Garland	Cape Elizabeth	Maine	Supporter	
264	Clara	Geci	Falmouth	Maine	Supporter	
265	henry	ginsberg	South Portland	Maine	Supporter	
266	Erin	Girzone	Waterford	Maine	Supporter	
267	Elizabeth	Goldman	Portland	Maine	Supporter	
268	Roy	Goldman	Portland	Maine	Supporter	
269	Gus	Goodwin	Portland	Maine	Supporter	
270	Donna	Gordon	Scarborough	Maine	Supporter	As a retired educator, I recognize and appreciate the importance of an education a quality education for all
271	Ann	Gosline	Litchfield	Maine	Supporter	Pleas support this!
272	Michael	Gould Jr	Parsonsfield	Maine	Supporter	Science literacy regarding important changes to our environment, as well as methods to combat climate change such as regenerative farming are critical to the future of all our lives
273	E Russell	Grady, Jr.	Kennebunkport	Maine	Supporter	
274	Dorothy	Grannell	Portland	Maine	Supporter	Long overdue addition to education Critical for our collective future
275	Heather	Greene	Nobleboro	Maine	Supporter	
276	Susan	Greene	Wiscasset	Maine	Supporter	
277	Alex	Grindle	South Portland	Maine	Supporter	
278	Olivia	Griset	Brunswick	Maine	Supporter	Climate education is a critical tool in building a just and sustainable Maine! Please consider these recommendations!
279	john	Hafford	Medway	Maine	Supporter	
280	Thomas	Halstead	New Gloucester	Maine	Supporter	
281	Katie	Han	Falmouth	Maine	Supporter	
282	Noelani	Hansen	Kennebunk	Maine	Supporter	
283	Meggie	Harvey	Portland	Maine	Supporter	
284	Tammy	Heiselmeyer	Windham	Maine	Supporter	
285	Jon	Hinck	Portland	Maine	Supporter	
286	Anneke	Hohl	Cumberland Foreside	Maine	Supporter	
287	Gibson	Holland	Portland	Maine	Supporter	We have about a decade to ensure that our planet remains habitable for future generations It's largely our fault and the least we can do is educate and empower the coming generations
288	Colin	Holme	Waterford	Maine	Supporter	
289	Richard	Hoppe	PORTAGE LAKE	Maine	Supporter	
290	Kathy	Hoppe	Portage	Maine	Supporter	

291	Sara	Hotchkiss	Waldoboro	Maine	Supporter	
292	Jocelyn	Hubbell	Gardiner	Maine	Supporter	
293	Lindsey	Hutchins	Limerick	Maine	Supporter	
294	Renee	Igo	Buckfield	Maine	Supporter	
295	Julie	Isbill	Brunswick	Maine	Supporter	
296	Laurel	Jackson	Scarborough	Maine	Supporter	
297	Hailey	Janelle	Falmouth	Maine	Supporter	
298	Phoebe	Jekielek	Rockland	Maine	Supporter	
299	Mary	Jewett	Bridgton	Maine	Supporter	
300	Leah	Jones	Windham	Maine	Supporter	Climate education is a crucial subject!
301	Meg	Jones	Saco	Maine	Supporter	
302	David	Jourdan	Kennebunkport	Maine	Supporter	
303	Mary	Katsiaficas	Ellsworth	Maine	Supporter	
304	Jordan	Keeler	Portland	Maine	Supporter	
305	Maria	Keeler	North Haven	Maine	Supporter	
306	Anna	Kellar	Portland	Maine	Supporter	
307	Dot	Kelly	Phippsburg	Maine	Supporter	
308	Catherine	Kelly	East Granby	Connecticut	Supporter	
309	Phoebe	Keyes	Brunswick	Maine	Supporter	
310	Tyler	Kidder	Franklin	Maine	Supporter	Creating the next generation of climate action-takers is critical to address this crisis!
311	Amanda	Killer	Bridgton	Maine	Supporter	
312	Asa	Korsen	Bath	Maine	Supporter	
313	Neha	Kumar	Bar Harbor	Maine	Supporter	
314	Bob	Kutch	Bellmead	Texas	Supporter	
315	Sam	Lakin	Livermore	Maine	Supporter	
316	Melody	Larson	New Gloucester	Maine	Supporter	I am a recent Colby college graduate who grew up in the public school system of Maine. As an environmental policy major my capstone project focused on local high school students' feelings and perceptions about climate change and action. One conclusion that came out of this research was that students felt climate change deserved a larger space in their education. This is why I support this call for climate education in Maine.
317	Kathy Angel	Lee	Old Orchard Beach	Maine	Supporter	
318	Tamara	Lee Pinard	Gray	Maine	Supporter	
319	Sarah	Leighton	Fairfield	Maine	Supporter	
320	Gretchen	Leithiser	Old Town	Maine	Supporter	
321	Lindsay	Leone	Cape Elizabeth	Maine	Supporter	
322	Genevieve	Leslie	Portland	Maine	Supporter	
323	Sue	Levene	Phippsburg	Maine	Supporter	
324	Maria	Libby	South Portland	Maine	Supporter	
325	James	Linsley	Windham	Maine	Supporter	Sounds like great meaningful and necessary work! Thanks for the opportunity!

326	Amy	Liston	Portland	Maine	Supporter	
327	Beth	Lively	Portland	Maine	Supporter	Students today will be living the effects of climate change more than we will Let's help with out with some education of what's to come!
328	Sam	Livingstone	Portland	Maine	Supporter	
329	Katelyn	Long	Wiscasset	Maine	Supporter	
330	Delaney	Loring			Supporter	
331	Karen	Luse	Portland	Maine	Supporter	I can't think of anything more important than to educate our youth about how to live sustainably
332	Polly	MacMichael	Kingfield Town of	Maine	Supporter	
333	Rob	MacMichael	Kingfield Town of	Maine	Supporter	
334	Andrea	Main	Wiscasset	Maine	Supporter	
335	Zoe	Malia	Portland	Maine	Supporter	
336	Matthew	Markot	Bridgton	Maine	Supporter	
337	Guy	Marsden	Woolwich Town of	Maine	Supporter	This is the most important thing young people need to know because they will have to live in a vastly different world impacted by the climate crisis
338	Carole	Martin	Rockland	Maine	Supporter	
339	Jessica	Masse	Medway	Maine	Supporter	
340	Ellen	Mavrich	Bellmead	Texas	Supporter	
341	Chloe	Maxmin	Nobleboro	Maine	Supporter	
342	mac	McAbee	York	Maine	Supporter	
343	Mary	McCann- Baker	Norridgewock	Maine	Supporter	
344	Ryan	McCullough	Portland	Maine	Supporter	My daughter just started attending Longfellow and it would bring an incredible amount of joy to our family knowing that she is learning about how to protect her future home
345	Laura	McGrath	Camden	Maine	Supporter	
346	Julie	mcleod	Kennebunkport	Maine	Supporter	
347	Evan	McVeigh	Portland	Maine	Supporter	
348	Jennifer	Melville	Freeport	Maine	Supporter	
349	Nancy	Metzger	Lisbon Falls	Maine	Supporter	
350	Jo	Moody	Portland	Maine	Supporter	
351	Quixada	Moore-Vissing	Union	Maine	Supporter	
352	Lexie	Morrill	Steuben	Maine	Supporter	I drove 1 25 hrs to school and 1 25 hrs back home EVERY DAY FOR FOUR YEARS because the unique, environmental focused program I wanted for high school wasn't available in my district (don't worry, we bought a Prius!) And I'm one of the fortunate ones Education about the place we live and how we impact it is so important!
353	Mandy	Morrish	Portland	Oregon	Supporter	
354	Julie	Motherwell	Falmouth	Maine	Supporter	
355	Austin	Muir	Portland	Maine	Supporter	Thank you!
356	Thomas	Mullin	Richmond Town of	Maine	Supporter	Absolutely critical
357	Keith	Murphy	New Gloucester	Maine	Supporter	
358	Heather	Muzzy Caron	Westbrook	Maine	Supporter	

359	Melea	Nalli	Portland	Maine	Supporter	
360	Maggie	Nelson	Portland	Maine	Supporter	
361	naomi	neville	Portland	Maine	Supporter	
362	Laura	Newman	Portland	Maine	Supporter	This needs to happen now! Please make a commitment to our future
363	Gregg	Novick	North Yarmouth	Maine	Supporter	
364	Paige	Nygaard	Portland	Maine	Supporter	
365	Grace	Olsen	Saco	Maine	Supporter	
366	Jeffrey	Olson	Kennebunk	Maine	Supporter	
367	Leigh	Peake	South Berwick	Maine	Supporter	
368	Rylie	Perron	Wells	Maine	Supporter	
369	Trevor	Peterson	Brunswick	Maine	Supporter	A large part of our country is on Fire effects of climate change are sadly getting easier to see and feel all around the world we need the future leaders of our world to be literate about factors affecting climate change!
370	Kristen	Pfeifle	Gray	Maine	Supporter	
371	Sam	Pfeifle	Gray	Maine	Supporter	
372	Regina	Phillips	Portland	Maine	Supporter	
373	Jeffery	Pinard	Gray	Maine	Supporter	
374	Katherine	Pinkham	Edgecomb Town of	Maine	Supporter	Thank you
375	William	Plumley	Windham	Maine	Supporter	This education initiative has my whole-hearted support This is an important step toward living in balance with nature here in Maine, across the US, and around the world In Maine - Yes we can
376	Catherine	PrestonSchreck	Bar Harbor	Maine	Supporter	
377	Kristen	Puryear	Brunswick	Maine	Supporter	
378	shea	quill	Portland	Maine	Supporter	
379	Salim	Raal	Portland	Maine	Supporter	
380	Lee	Reeve	Portland	Maine	Supporter	
381	Hannah	Richards	Cumberland Center	Maine	Supporter	
382	Renee	Ripley	Jefferson	Maine	Supporter	
383	Max	Robinson	Portland	Maine	Supporter	
384	Sharon	Robinson	Saco	Maine	Supporter	
385	Jillian	Roland	Portland	Maine	Supporter	
386	Seal	Rossignol	Oxford	Maine	Supporter	We cannot create a comprehensive climate action plan for Maine without having education being a key piece- otherwise, we educating generations of children that will make the same mistakes we have
387	Willow	Rowntree	Jefferson	Maine	Supporter	Education is key to understand the reality and urgency of action to slow climate change Thank you for yor work
388	Jessica	Ruhlin	Woolwich Town of	Maine	Supporter	
389	Kala	Rush			Supporter	
390	Carly	Ryan	Portland	Maine	Supporter	
391	Cullen	Ryan	Portland	Maine	Supporter	
392	Daniel	Sanford	Gorham	Maine	Supporter	

393	Alex	Saros	Bangor	Maine	Supporter	
394	Carly	Sauro	Belfast	Maine	Supporter	
395	Joan	Saxe	Freeport	Maine	Supporter	This is so Important for our future
396	Anne	Schlitt	Bath	Maine	Supporter	
397	Amy	Scott	Greenwood	Maine	Supporter	
398	Gail	Scott	Portland	Maine	Supporter	Very important!
399	Sophia	Scott	Boothbay	Maine	Supporter	
400	Lynne	Seeley	Yarmouth	Maine	Supporter	Make Maine a leader in Climate Change action!
401	Kate	Shambaugh	Portland	Maine	Supporter	
402	Ben	Shambaugh	Portland	Maine	Supporter	
403	Tanner	Shepherd	Brunswick	Maine	Supporter	
404	Madison	Sheppard	Waterford	Maine	Supporter	
405	Lisa	Shields	North Haven	Maine	Supporter	
406	Monica	Shields	Hope	Maine	Supporter	
407	Sarah	Shmitt	Portland	Maine	Supporter	I hope environmental justice also becomes incorporated into the curriculum
408	Sue	Sikes	Edgecomb Town of	Maine	Supporter	
409	Sarah	Sindo	Millinocket	Maine	Supporter	
410	Alyson	Smith	Denmark	Maine	Supporter	I was an educator in Maine for 30 years and now work for an environmental non-profit organization
411	Lindsey	Smith	Yarmouth	Maine	Supporter	
412	Rachel	Smith	Portland	Maine	Supporter	
413	Sarah	Smith	Auburn	Maine	Supporter	
414	Laura	Sokoloski	Waterville	Maine	Supporter	
415	Korah	Soll	Bar Harbor	Maine	Supporter	
416	Sarah	Somes	Bar Harbor	Maine	Supporter	
417	Charles	Spanger	Scarborough	Maine	Supporter	Please enact these three important recommendation in our education system Youth's lives depend on it
418	Sophia	Spelman	Falmouth	Maine	Supporter	
419	Jeff	Stern	Bridgton	Maine	Supporter	
420	Ali	Stevenson	Waldoboro	Maine	Supporter	
421	Joanna	Streeter	Scarborough	Maine	Supporter	
422	Matthew	Streeter	Old Orchard Beach	Maine	Supporter	
423	Meredyth	Sullivan	Wells	Maine	Supporter	
424	Betsy	Sweet	Hallowell	Maine	Supporter	
425	Meg	Sweet	Standish	Maine	Supporter	
426	Paloma	Tejero		Madrid	Supporter	
427	Pamela	Thompson	Farmington Town of	Maine	Supporter	
428	Stephen	Tibbetts	Brunswick	Maine	Supporter	
429	Valerie	Todd	Portland	Maine	Supporter	
430	Nicholas	Toole	Portland	Maine	Supporter	
431	Eric	Topper	Portland	Maine	Supporter	

432	Mary A	Tracy	Portland	Maine	Supporter	The effects of climate change are upon us now We cannot put off developing the leaders we will need
433	Brian	Tragno	Standish	Maine	Supporter	
434	Diane	Tran	Gardiner	Maine	Supporter	
435	Luke	Truman	Portland	Maine	Supporter	
436	Lucy	Van Hook	Millinocket	Maine	Supporter	I have young children, and I very much support incorporating these Climate education and preparedness goals into the learning landscape in Maine
437	Elsa	Vernon	Portland	Maine	Supporter	
438	Cara	Viele	Wiscasset	Maine	Supporter	
439	Scott	Vlaun	Oxford	Maine	Supporter	
440	Serena	Wade	South Portland	Maine	Supporter	What better way for children to learn than to be in their own world, observing, finding true inquiry and discovering Along side their peers Please consider this as a very necessary addition to our children's education!!
441	Richard	Watson	Falmouth	Maine	Supporter	
442	Jason	Wentworth	Portland	Maine	Supporter	
443	Mark	Whiting	Ellsworth	Maine	Supporter	
444	Kaya	Williams	Portland	Maine	Supporter	
445	scott	Williams	Turner	Maine	Supporter	Excellent initiative, and much needed!
446	Paul	Williamson	Scarborough	Maine	Supporter	
447	Brett	Willis	Portland	Maine	Supporter	
448	Indigo	Woods	Bar Harbor	Maine	Supporter	
449	Alexander	Wright	Portland	Maine	Supporter	
450	David	York	Falmouth	Maine	Supporter	
451	Karen	Young	York	Maine	Supporter	Thank you!
452	Gary	Zane	Unity	Maine	Supporter	
453	Lauren	Znachko	Falmouth	Maine	Supporter	
454	Bill	Zoellick	Prospect Harbor	Maine	Supporter	
455	Ella		Bar Harbor	Maine	Supporter	
456	Inna		Sheffield Lake	Ohio	Supporter	
457	Grace	Abbott	Freeport	Maine	Student	
458	Sophia	Anderson	Bar Harbor	Maine	Student	
459	Linnea	Andersson	Wiscasset	Maine	Student	
460	Stephanie	Arevalo	Bar Harbor	Maine	Student	
461	Hallie	Arno	Lincolnville	Maine	Student	
462	Connor	Ashfield	Bangor	Maine	Student	
463	Brianna	Bastarache	Limerick	Maine	Student	
464	Grace	Begin	Usaf Academy	Colorado	Student	
465	Grace	Bernatchez	Saco	Maine	Student	
466	josh	bloom	Bar Harbor	Maine	Student	
467	Oliver	Brown	Auburn	Maine	Student	
468	jude	brzozowski	Brunswick	Maine	Student	

469	Dylan	Burmeister	Nobleboro	Maine	Student	
470	Kiara	Carman	Bar Harbor	Maine	Student	
471	Alex	Carpenter	Bar Harbor	Maine	Student	
472	Louise	Chaplin	Cranberry Isles, Town of	Maine	Student	
473	Hazel	Clark	Dresden	Maine	Student	
474	Coastal Youth	Climate Coalition	Waldoboro	Maine	Student	
475	Isabella	Cowing	Dresden	Maine	Student	
476	Antoine	Croquelois	Bar Harbor	Maine	Student	
477	Kiernan	Crough	Bar Harbor	Maine	Student	
478	Katie	Culp	Bar Harbor	Maine	Student	
479	Ly	Dillon	Bar Harbor	Maine	Student	
480	Tina	Drupa	Bar Harbor	Maine	Student	
481	Gabrielle	Dumas	Bar Harbor	Maine	Student	
482	Finn	Dworkin	Newcastle	Maine	Student	
483	erin	dworkin	Newcastle	Maine	Student	to sustain climate justice we need climate education for all! Climate change isn't a party problem it's a human problem, there should be no question as to whether it pushes a political agenda, it doesn't
484	Chrissy	Easter	Wiscasset	Maine	Student	
485	Kobi	Eng	Bar Harbor	Maine	Student	
486	Marguerita	Fairfield	Newcastle	Maine	Student	
487	Sophie	Ferrick	Kennebunk	Maine	Student	
488	Grace	Flynn	Gorham	Maine	Student	
489	Emily	Fredette	Gray	Maine	Student	
490	lilu	fukman-kumpa	Hancock	Maine	Student	
491	Julien	Gagnon	Harpwell	Maine	Student	
492	Rachel	Gardella	Hampden	Maine	Student	
493	Maria	Getto	Canonsburg	Pennsylvania	Student	
494	Lily	Goltz	Damariscotta	Maine	Student	
495	grace	greene	Wiscasset	Maine	Student	
496	Regan	Greer	Bar Harbor	Maine	Student	
497	Andrea	Gutierrez	Newcastle	Maine	Student	
498	Tiffany	Ha	Gray	Maine	Student	
499	Katrina	Hardy	Bar Harbor	Maine	Student	
500	Mira	Hartmann	Edgecomb Town of	Maine	Student	
501	Hadriane	Hatfield	Bar Harbor	Maine	Student	
502	Ayanna	Hatton	Freeport	Maine	Student	
503	Nicholas	Hoffmann	Melrose	Massachusetts	Student	
504	Kelsey	Hope	Vanceboro Town of	Maine	Student	
505	Skyler	Houghton	Newcastle	Maine	Student	
506	Amara	Ifeji	Bangor	Maine	Student	
507	Kosi	Ifeji	Bangor	Maine	Student	

508	Dalton	Johnstone
509	Noah	Jones
510	Troy	Julian
511	Anara	Katz
512	Darcy	Kerr
513	Maaike	Korstanje
514	Sirohi	Kumar
515	Autumn	Landry
516	Simone	Le Page
517	Gabby	Leavitt
518	Camden	LeBel
519	Aliza	Leit
520	Katie	Lopes
521	Zeya	Lorio
522	Anna	Lupien
523	Jonathan	Mahoney
524	Josiah	Martin
525	Eleanor	Mathews
526	K	Mathieson
527	Angela	Mavrich
528	Catherine	Mavrich
529	Anyia	Mazaris-Atkinson
530	Emily	McConnell
531	Leighara	McDaniel
532	Nils	Midtun
533	Jordyn	Miller
534	Umulkair	Mohamed
535	Katy	Morin
536	Abby Jo	Morris
537	Wells	Mundell-Wood
538	Adlai	Nelson
539	eleanor	nery
540	Ruby	Newman
541	Maysa	O'Connor
542	Ogechi	Obi
543	Hana	Palazzo
544	Cordell	Perne
545	Scott	Petersen
546	Ruby	Pfeifle
547	ava	pinard



Bath	Maine	Student	
Wiscasset	Maine	Student	
Georgetown	Delaware	Student	
Bar Harbor	Maine	Student	
Bar Harbor	Maine	Student	
Bar Harbor	Maine	Student	
Bar Harbor	Maine	Student	
Topsham	Maine	Student	
Bar Harbor	Maine	Student	
Wiscasset	Maine	Student	
Nobleboro	Maine	Student	Someday I hope to come back to Maine as an educator! These ideas and goals are very important to me and I know we would see incredible change in attitude and activism once we develop proper teaching tools for educators across the state!
Bar Harbor	Maine	Student	
Waterville	Maine	Student	
Blue Hill Town of	Maine	Student	
Waldoboro	Maine	Student	
Bar Harbor	Maine	Student	For climate!
Newcastle	Maine	Student	
Newcastle	Maine	Student	
Gorham	Maine	Student	
Bar Harbor	Maine	Student	
Bar Harbor	Maine	Student	
Gorham	Maine	Student	
Falmouth	Maine	Student	
Oakland	Maine	Student	
Bar Harbor	Maine	Student	
Holden	Maine	Student	
Portland	Maine	Student	
Gorham	Maine	Student	
Bar Harbor	Maine	Student	
Bangor	Maine	Student	
Newcastle	Maine	Student	
Newcastle	Maine	Student	
Laurel	Maryland	Student	
Durham	Maine	Student	
Bangor	Maine	Student	
Orono	Maine	Student	
Belgrade	Maine	Student	
Nobleboro	Maine	Student	
Gray	Maine	Student	
Sebago	Maine	Student	

548	Billy	Pinkham		Wiscasset	Maine	Student	
549	Benjamin	Pugh		Alna Town of	Maine	Student	
550	Mauro Jose	Ramirez Azofeifa		Bar Harbor	Maine	Student	
551	Faith	Reece		Cranberry Isles, Town of	Maine	Student	
552	Jade	Rego		Alna Town of	Maine	Student	
553	Sophia	Rexing		Bar Harbor	Maine	Student	
554	Phoebe	Richards		Gorham	Maine	Student	
555	Erica	Roche		Orono	Maine	Student	
556	Hannah	Rose		Hinsdale	Massachusetts	Student	
557	Emily	Rottino		East Haddam	Connecticut	Student	
558	Sophie	Schuele		Brunswick	Maine	Student	
559	Kate	Shaughnessy		Brunswick	Maine	Student	
560	Anna	Siegel		Yarmouth	Maine	Student	
561	Ananya	Singh		Bar Harbor	Maine	Student	
562	Magnolia	Sinisi		Freeport	Maine	Student	
563	Lenka	Slamova		Bar Harbor	Maine	Student	
564	Sadie	Southall		Freeport	Maine	Student	
565	Lily	Souza		Wiscasset	Maine	Student	
566	Alexis	Steffens		Alfred	Maine	Student	
567	Lucas	Steinberger		Nobleboro	Maine	Student	
568	Maddy	Stevens		Bar Harbor	Maine	Student	
569	Riley	Stevenson		Waldoboro	Maine	Student	
570	Quinn	Straus		Newcastle	Maine	Student	
571	Samantha	Summerfield		Selkirk	New York	Student	
572	Stephanie	Sutherland		Grandville	Michigan	Student	
573	Lily	Swanberg		Damariscotta	Maine	Student	
574	Maeve	Tholen		Alna Town of	Maine	Student	
575	Melissa	Tian		Bangor	Maine	Student	
576	Katie	Tims		Orono	Maine	Student	
577	Emma	Tolley		Waldoboro	Maine	Student	
578	Dahlia	Venny		Waterville	Maine	Student	
579	Shreya	Vinodh		Bar Harbor	Maine	Student	
580	Stella	Walke		Bar Harbor	Maine	Student	
581	Chelsea	Welch		Raymond	Maine	Student	
582	Maria	West		Standish	Maine	Student	
583	Maria	West		Wiscasset	Maine	Student	
584	Cececlia	Williamson		Scarborough	Maine	Student	
585	Adele	Wise		Bar Harbor	Maine	Student	
586	josh	wood		Sanford Town of	Maine	Student	
587	Naomi	Zarin		Portland	Maine	Student	
588	Aizhan	Zhomartkyzy		Bar Harbor	Maine	Student	

589	Emma			Bar Harbor	Maine	Student	
590	Kathryn			Conway	New Hampshire	Student	
591	Susan	Mann		Portland	Maine		

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Recommendation 1: Create a Maine Climate Education program

Working Group Co-Chairs, please complete a template for each of the 4-6 strategies your Working Group is recommending to the Maine Council. Please submit strategies to GOPIF by June 5, 2020 with a cover letter summarizing your approach and prioritized strategies. You may also submit an optional Appendix with any additional background material, including decision-process explanations, issue statements, maps and data.

1. Describe the Recommended Strategy and how it addresses Maine's climate resiliency and mitigation goals.

Maine is a national leader in community based environmental learning and has recently adapted the Next Generation Science Standards, which include climate education. In 2019 a statewide Census for Community Based Environmental Learning was implemented. The Census found the top professional learning need in environmental teaching and learning by Maine teachers was more support and training to effectively teach climate change education. Furthermore, advancing equity and justice in education is a widespread and urgent goal. The following strategy would provide the support and training needed for Maine educators to successfully implement the NGSS, improve educational impact through partnerships with local community organizations and climate scientists, educate Maine youth on both climate science and justice, and result in a more climate literate citizenry.

Modeled off Washington State's successful ClimeTime program, a systemic climate science education effort, this strategy would create a Maine Climate Education program facilitated by the Maine Department of Education, in collaboration with the Nature Based Education Consortium's Climate Education Task Force. The Maine climate education program will include funding to support partnerships between school districts in all 16 counties and community-based organizations to launch programs for teacher training, linking Next Generation Science Standards (NGSS) and common core with climate science and justice education, tailored by and for each community. In addition to teacher professional development around implementation of the Next Generation Science Standards, the project will support schools and districts to work with community partner organizations, climate scientists and climate justice experts, to develop sharable instructional materials, design related assessment tasks and evaluation strategies, and facilitate student-led climate education projects. Washington State's successful ClimeTime program, a systemic climate science education effort found great success in supporting professional learning for teachers around broad climate adaptation and mitigation strategies, as well as for climate science in a local setting.

The goal(s) of this statewide strategy are to:

1. Build the infrastructure needed for Maine PreK-12 educators to confidently teach about climate science and justice with co-developed curricula that are tied to the local environment and community and aligned to existing state standards.

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2. Increase skills for Maine youth to enter the Green Jobs workforce.
3. Increase capacity of educators in all regions to help Maine youth understand climate science and promote a thriving and sustainable environment.

Outcomes: A climate literate public is key to continued advancement of the Climate Council's recommendations over time, and particularly imperative in meeting mid and long range goals set forth by the council. If successful, we will also see an increased support of pro-CO2 reduction strategies statewide, such as the adoption of electric vehicles, home heating alternatives, increased support at the local level for implementing and financing resilience community planning measures, a general and widespread understanding of how climate change disproportionately impacts the most vulnerable community members, increased support of equity-based community solutions, and an increased number of educated workers prepared to enter the Green Jobs sector and/or motivated to pursue additional post-secondary training.

Widespread implementation of systemic Climate education in Maine schools will better prepare Mainers to respond to current and future impacts of climate change, thus creating a scenario where Maine communities are forward thinking and less vulnerable to what lies ahead.

2. What is your measurable outcome for this strategy, assuming all recommended actions to implement the strategy are achieved?

- a. Using educational assessment tools developed through the program, we will be able to measure student understanding of climate science and justice. These same tools will allow us to measure the effectiveness of the teacher's professional learning programs, measuring things such as an educator's knowledge of topics related to climate science and justice, and ability to translate that knowledge into effective curricula and programming.
- b. The Maine State Economist or the Maine Department of Labor's Center for Workforce Research & Information can track and report the numbers of Maine youth entering the local Green Workforce post-graduation.
- c. Student outcomes can be measured by teachers implementing assessment tools at the classroom level. These can include both formative and summative assessments. The teacher training program will need evaluation to understand the effectiveness of the strategy. Maine has many excellent education evaluators, such as the Maine Math and Science Alliance and researchers in the University of Maine System that have the capability of evaluating the effectiveness of this teacher education program.

3. What specific actions would be required to implement the strategy, including but not limited to legislation or regulation. Examples include: establish a program or a fund, conduct additional research, provide education or training, coordinate with other

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parties/agencies/states, etc. Considering the recommended actions listed, who, if they can be named, are the specific actors needed for implementation?

1. *Collaboration between the Maine Department of Education, The Nature Based Education Consortium Climate Education Task Force, outside education evaluator (like University of Maine or Maine Math and Science Alliance) and the Governor's Office of Innovation and the Future to develop a program modeled after the Washington State Climate Program*
2. *Funding: Potential Legislative Action to approve budget for program, perhaps public-private partnership model*
3. *Education about grant program purpose and protocol to districts and partner organizations, listening sessions and feedback incorporation in early stages of design*
4. *Open application to districts and community partner organizations*
5. *A representative/government appointed advisory body will select proposals from districts and community partners.*
6. *Teacher training and curricula development and pilot testing (with community partner support)*
7. *Teachers implementing new curricula in Maine preK-12 classrooms and sharing of curricula between districts on open access web portal.*
8. *Assessment of effectiveness*
9. *Continued teacher training with open-sourced materials created through the program*

4. What is the timeframe for this strategy?

	Short-term (2022)	Mid-term (2030)	Long-term (2050)	2070 -2100
To implement	2022			
To realize outcomes	2023 and beyond			

5. Please analyze the Recommended Strategy against the following criteria. (Each Working Group can add its own sector-specific criteria as appropriate.)

Workforce - Will the strategy create new jobs, prevent job loss, or cost the state jobs?	The strategy will create new jobs in the community partner organizations to support the teacher training and development. It will also create a coordinator position potentially at the Department of Education. The outcomes of quality climate education will be a better trained young cadre of individuals ready to enter the green jobs sector in Maine. This strategy will likely lead to higher retention of Maine-raised, college educated, professionals.
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<p>Benefits (non-workforce) - What are the expected co-benefits of this strategy (e.g., improved health, increased economic activity, wildlife habitat connectivity, reduce natural hazard risk, increased recreation, avoided damage)?</p>	<p>High Quality climate science and justice education that is rooted in community partnerships will increase student academic achievement and motivation and will increase general public climate literacy. The long term benefits of a climate literate population are increased civic engagement, increased support of activities that reduce greenhouse gas emission, pro-climate health behavior change such as buying EV, insulating houses, heat pump adoption etc., increased stewardship ethic, and a deeper commitment to building a more just and equitable society.</p>
<p>Costs – What are the estimated fiscal costs and other costs to carry out this program. To the state? To municipalities? What resources do you anticipate needing to inform Mainers about the strategy and the opportunity/costs of the strategy? Where would financing likely come from?</p>	<p>The Washington State Clime Time program in 2018 cost \$4 million dollars in year 1. \$3 million was given to districts and \$1 million to community partners to support the teacher professional learning and curriculum development. Washington State has 2,370 schools and Maine has 620 schools so this program could be significantly cheaper in Maine. If we implemented a similar program design and scaled back for our number of schools and teachers this statewide program could be implemented for 1.5 million. It would be possible to pursue an even more scaled back version as a pilot where Maine focused on districts of highest need rather than the entire state.</p>
<p>Equity - Is this strategy expected to benefit or burden low-income, rural, and vulnerable residents and/or communities? What outreach has been/will be undertaken to understand the impact of the strategy on front-line communities?</p>	<p>Students, the ultimate stakeholder, and representatives from front line communities were integral in the development and design of this strategy as members of the Maine Climate Education Task Force of the Nature Based Education Consortium. This strategy will improve the quality of public education in Maine, helping to ensure equitable access to quality climate science and justice education for all Maine students.</p>
<p>Proven strategy & feasibility – Has this strategy been implemented successfully elsewhere? Is it feasible with today’s technology? What barriers to implementation exist (e.g., financial, structural, workforce capacity,</p>	<p>This strategy has been successfully implemented in Washington State. After the first year of implementation 2018-19, 99% of educators who were part of the project agreed or strongly agreed that participation prepared them with the necessary skills to try something new or different in their professional practice. 95% of participants agreed that they have broadened or deepened their understanding of research-based instructional practices and 88% of participants shared that they have broadened or deepened their knowledge of topics related to climate science. The</p>

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public/market acceptability)?	house and senate approved an additional 3 million per year for the following two years so the project is still ongoing. The Maine Environmental Education Association who serves on the Maine Climate Education Task Force has a very good working relationship with the Washington Environmental Education Association (E3) and they would be more than willing to meet with folks in Maine to assist us in further development and advancing a similar program in Maine. Using technology such as Zoom for teacher training, it would be possible to do the curricula development work and the necessary teacher training supported by this strategy, reducing the costs associated with travel, and circumnavigating COVID-19 concerns. The biggest barrier to implementation is the financial component. We have strong networks and relationships in the climate education sector between schools and community partners in Maine to build a successful program. The NGSS have already been adapted in Maine and contain climate science requirements, so this program would be the support system needed for Maine educators to feel confident and equipped to better teach the required standards. The climate justice elements help support a continued need in the state for more education on Wabanaki studies, as well as additional curricula that are culturally competent and advance equity and justice.
Legal authority - Does the strategy require new statutory (legal/legislative) authority?	To design and implement a grant program to advance climate education in Maine there would not need to be new statutory authority. However, the state funding for this program may require legislative approval. The program could also be set up as a public-private partnership, where philanthropy could help support the cost.
Other?	
Other?	

6. Rationale/Background Information

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If you are interested in learning more about Clime Time the program in Washington State this recommendation is modeled after please visit: <https://www.climetime.org>

**Please footnote substantive disagreements among the Working Group members

Recommendation 2: Develop a Climate Leadership Governor's Academy

"We all have what it takes to combat climate change, to protect the irreplaceable earth we share and care for. What is more precious than water, air, soil, the health and happiness of our children and our children's children and yours? For all of them, today, by Executive Order, I am pledging that Maine will be carbon neutral by 2045."

-Governor Mills

Tackling climate change requires action at all levels of society, from individuals and educators to policymakers and businesses. By fostering awareness, capacity building and innovation climate change learning helps communities and individuals to reduce greenhouse gas emissions and effectively adapt to the changing climate. Learning and skills are essential if countries are to achieve their stated policy goals on climate change."

-The One UN Climate Change Learning Partnership

A Governor's Academy for Climate Education would help Governor Mills reach the goal for Maine to be carbon neutral by 2045 by educating and making connections between Maine citizens, climate scientists, students, business leaders and policy makers.

The Climate Education Task Force, representing the Nature Based Education Consortium, is pleased to present the **Governor's Academy for Climate Education**. As a consortium, we believe:

- Climate resilience and mitigation education needs to begin in public schools throughout Maine.
- Curriculum is most effective when it is developed organically as a team, involves real life experiences, provides opportunities to learn first hand from experts, centers on overarching open-ended questions, and makes connections to community.
- Young people need to feel hopeful about making a difference in fighting climate change. Education is key to that agency.

This proposal is designed with a multi-generational and cross disciplinary approach from middle, high school and college school students, young professionals to retired professionals, with each bringing their passions, experiences, and expertise to the table with the purpose of learning from one another and working together building off of existing resources to design and implement authentic climate education curriculum projects and learning experiences for students throughout Maine. In the 2019 Statewide Census of Community Based Environmental Learning, the most requested professional learning support by responding educators, from both in and out of school, was on Climate education - this recommendation is a response to that request. This Governor's Academy idea builds off of an already existing model for professional learning developed by the Maine Mathematics and Science Alliance's (MMSA's) Governor's Academy for STEM Education Leadership, which played a key role in supporting many of the key education leaders in our

school's today – including many involved in this task force. The Academy ran for many years under Baldacci but was ended in 2013.

The ultimate goals of the Governor's Academy for Climate Education are two fold. One is to develop relevant and easily digested Maine-centered, cross disciplinary curriculum to be used throughout the public school systems of Maine. The second is to empower students to become well informed climate and environmental justice advocates and leaders, positively impacting their communities.

Throughout the school year an academy cohort group will include students and educators from middle, high school and college level from communities throughout the entire state. Academy partners will include environmentalists, scientists, non-profit organizations, renewable energy professionals, politicians, and government agencies. The academy cohort group and partners will gather multiple times throughout the school year to share the most current news and information on climate change and the most cutting-edge pedagogical methods for developing engaging learning experiences rooted in learning standards as they work together to develop relevant and rigorous climate education curriculum projects and learning experiences. The Academy will culminate with a Climate Education Summit each year where groups will present their final projects and how these projects can be used in classrooms throughout our State.

In addition to these rigorous and standards-based educational experiences to be shared with all, academy fellows themselves will become leaders and ambassadors for climate education and contributors to climate education partners in Maine. They will leave with knowledge to be viable climate change board, school board, and commission members, able to bridge the education and government agencies. The potential for this academy to break divides and generate collaboration between diverse communities throughout the entire state of Maine is significant, as is the potential for the specific climate issues facing inland vs. coastal communities to be taught in conjunction through the curriculum developed by the academy.

1. Describe the Recommended Strategy and how it addresses Maine's climate resiliency and mitigation goals.

a. For adaptation strategies, what climate impacts does it address? How will this strategy reduce the vulnerability of Mainers to the impacts of climate change?

b. List any site-specific geographies where the strategy would be applied.

The Center for Climate and Energy Solutions defines climate resiliency as the ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate. Improving climate resilience involves assessing how climate change will create new, or alter current, climate-related risks, and taking steps to better cope with these risks.

The United Nations Environment Programme defines Climate Change Mitigation as efforts to reduce or prevent emission of greenhouse gases. Mitigation can mean using new technologies and renewable energies, making older equipment more energy efficient, or changing management practices or consumer behavior.

We believe:

- Climate resilience and mitigation education needs to begin in public schools throughout Maine.
- Curriculum is most effective when it is developed organically as a team, involves real life experiences, provides opportunities to learn first hand from experts, centers on overarching open-ended questions, and makes connections to community.
- Young people need to feel hopeful about making a difference in fighting climate change. Education is key to that agency.

The Maine Climate Council states that many communities need state support and partnership for important resilience planning. [A 2018 study found \\$1 invested in prevention or preparation for natural disasters, such as a storm, flood or fire, saves about \\$6 in rebuilding.](#) Not investing in the long-term future of Maine communities and people risks much greater costs and complicated recoveries in the future.

We would add that investing in the climate education of Maine youth is an investment in the future of Maine. We need our young people to be prepared to lead our state through the necessary changes we need to make as our world warms in order to protect the natural beauty of Maine and to meet the needs of Earth's inhabitants, grappling with a warming planet. Furthermore, youth versed in climate issues become bold leaders, equipped to address climate injustices, and thus social injustices, making for a more balanced and equal society.

2. What is your measurable outcome for this strategy, assuming all recommended actions to implement the strategy are achieved?
 - a. For mitigation strategies:
 - i. What is the estimated CO₂e savings (metric tons) by 2025, 2030, 2050?
 - ii. What is the cost effectiveness of those reductions (cost per ton of CO₂e reduced) and the total cost?
 - b. Are outcomes measurable with current monitoring systems?

Outcomes for a Governor's Academy for Climate Education would be measured by various levels of community engagement and understanding of climate change in Maine.

Governor's Academy fellows (grads) will make an impact in schools and communities throughout the state through education, sharing their curriculum, environmental awareness and literacy, leadership skills and confidence, and climate change projects. These projects will allow fellows to develop an understanding of energy systems, the relationship between actions and measurable greenhouse gas emissions, and teach others to do the same.

3. What specific actions would be required to implement the strategy, including but not limited to legislation or regulation. Examples include: establish a program or a fund, conduct additional research, provide education or training, coordinate with other parties/agencies/states, etc. Considering the recommended actions listed, who, if they can be named, are the specific actors needed for implementation?

Specific actions required:

- a. Get the thumbs up from Governor Mills and the Climate Council.
- b. Establish funding
- c. Put together a Governor's Academy for Climate Education design team
- d. Design team develops the program.
- e. Line up speakers, experts, presenters, partners. Work out logistics, on site learning locations, etc...
- f. Invite students and educators to apply
- g. Select cohort group for the 2021-22 school year
- h. Run the Governor's Academy for Climate Education
- i. Maine Climate Education Summit (with curricula developed shared open sourced online for other Maine Educators to Access)
- j. Evaluate the program (throughout) to influence future design

4. What is the timeframe for this strategy?

December 2020	Get approval from Governor Mills and the Climate Council.
January 2021	Establish a Governor's Academy for Climate Education team
February-April 2021	Design the Governor's Academy for Climate Education Program
May-June 2021	Promote and invite educators and students to apply
July 2021	Announce cohort for the 2021-22 Governor's Academy for Climate Education
Early October 2021	Kick-off (session 1)
December 2021	Session 2

February 2022	Session 3
April 2022	Session 4
June 2022	Governor's Academy for Climate Education Climate Summit
October 2022- June 2023	Governor's Academy for Climate Education Cohort #2
October 2023- June 2024	Governor's Academy for Climate Education Cohort #3
October 2024- June 2025	Governor's Academy for Climate Education Cohort #4
October 2025- June 2026	Governor's Academy for Climate Education Cohort #5

Brainstorm! Here is a table of ideas for possible themes for Governor's Academy projects

idea	Brief description
Carbon sequestration through forest management.	A forest managed with the intent of sequestering as much carbon as possible will be healthier and sequester more carbon than a typical managed forest. This forest will also have a higher value/higher yield over a longer timeline. Curriculum could include facts about forests and how they go about sequestering carbon. What types of trees do so most efficiently. Also how a habitat improves with longer periods between disruptions and how the plants in a forest interact. How to identify tree and plant species. This section could include a field trip and art and writing projects.
How can offshore wind impact Maine and the World?	Connect with UMaine and design, build and test model floating offshore wind turbines.
Why design matters: How does energy efficient design impact Maine and the world?	Site visits, discussions with architects and research with climate scientists to design and build model net zero/energy efficient homes and buildings.
Can we Talk about Climate Change Through Art?	Students , artists, climate scientists and environmentalists work together to discuss and research a local environmental issue. Create a piece of

	artwork or performance art to educate the community.
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Recommendation 3: Create a Statewide Climate Education Task Force

Working Group Co-Chairs, please complete a template for each of the 4-6 strategies your Working Group is recommending to the Maine Council. Please submit strategies to GOPIF by June 5, 2020 with a cover letter summarizing your approach and prioritized strategies. You may also submit an optional Appendix with any additional background material, including decision-process explanations, issue statements, maps and data.

1. Describe the Recommended Strategy and how it addresses Maine's climate resiliency and mitigation goals.

- a. For adaptation strategies, what climate impacts does it address? How will this strategy reduce the vulnerability of Mainers to the impacts of climate change?
- b. List any site-specific geographies where the strategy would be applied.

The recommended long-term strategy is that interdisciplinary climate education be taught in all Maine public schools (prek-12). In order to achieve comprehensive interdisciplinary climate education in Maine public education, a statewide climate education task force should be developed to solicit stakeholder input and plan an equitable pathway to systemic adoption of climate education. While climate science education is already part of Maine's Next Generation Science Standards, the study of climate change and its impacts must be as diverse and multidisciplinary as climate change's effects on our environment and society if we hope to rise to the scale of the challenge over the long term. Climate education should be addressed with an interdisciplinary approach, with climate studies integrated across content areas - beyond science to subjects such as language arts, technical education, social studies, and Wabanaki Studies. As a long term, statewide recommendation to advance climate education in Maine, systemic and equitable access to quality climate education will be critical to building a climate-literate citizenry that is equipped to uphold the climate plan's vision of a carbon neutral Maine by 2045. Equitable access to quality climate education will enable all young Mainers who are interested to enter the growing green jobs workforce, boosting our economy and increasing the resilience of our communities.

2. What is your measurable outcome for this strategy, assuming all recommended actions to implement the strategy are achieved?

- a. The measurable outcome would be the creation of a climate education task force that plans and builds stakeholder input and support structures to ensure by 2030 climate education is taught in every Maine public preK-12 school. By 2030, all Maine teachers will have access to training, community partnerships, and curricula to ensure implementation of teaching climate education preK-12.

Revised MCC Working Group June Deliverable Template

- b. To measure this outcome the Maine Department of Education and/or appointed task force would need to survey all Maine schools to understand implementation and needs and monitor the data. A new system would need to be implemented to track this data over time.

What specific actions would be required to implement the strategy, including but not limited to legislation or regulation. Examples include: establish a program or a fund, conduct additional research, provide education or training, coordinate with other parties/agencies/states, etc. Considering the recommended actions listed, who, if they can be named, are the specific actors needed for implementation?

- a. *The Department of Education and GOPIF should convene a statewide climate education task force (and/or work with the existing statewide climate education task force at the Nature Based Education Consortium)*
- b. *The task force should include legislators and stakeholders representing the full range of those impacted by multidisciplinary climate education, including superintendents, principals, teachers across disciplines (science, social studies, english, etc), students, community-based organizations and school partners. There should be equitable representation from across all 16 counties, and from schools level K-12.*
- c. *The task force should meet, assess needs and make recommendations to the Department of Education and GOPIF on a periodic basis.*

What is the timeframe for this strategy?

	Short-term (2022)	Mid-term (2030)	Long-term (2050)	2070 -2100
To implement		x		
To realize outcomes			x	

Please analyze the Recommended Strategy against the following criteria. (Each Working Group can add its own sector-specific criteria as appropriate.)

Workforce - Will the strategy create new jobs, prevent job loss, or cost the state jobs?	Comprehensive public education on the complex causes and impacts of climate change will be key to preparing Maine youth to engage in a Green Economy born of many of the Climate Council's recommendations.
Benefits (non-workforce) - What are the expected co-benefits of this strategy (e.g., improved health, increased economic activity, wildlife habitat	Ensuring that Maine youth, the workers, citizens, and leaders of tomorrow, have complex and comprehensive understanding of climate change and its impacts is necessary for the continued support and implementation of Climate Council recommendations in order to meet all long term goals. In this

Revised MCC Working Group June Deliverable Template

connectivity, reduce natural hazard risk, increased recreation, avoided damage)?	way, it is the foundation for the successful long term impacts of all working group recommendations.
Costs – What are the estimated fiscal costs and other costs to carry out this program. To the state? To municipalities? What resources do you anticipate needing to inform Mainers about the strategy and the opportunity/costs of the strategy? Where would financing likely come from?	Convening a statewide task force will require some coordination and potential support for stakeholders with financial barriers. It's cost should be nominal, and can be conducted mostly online.
Equity - Is this strategy expected to benefit or burden low-income, rural, and vulnerable residents and/or communities? What outreach has been/will be undertaken to understand the impact of the strategy on front-line communities?	The public education system is a vehicle for truly equitable climate education. In order to ensure that climate education is not solely available to students in districts with the resources and inclination to teach about climate change, multidisciplinary K-12 climate education should be made available to all Maine students. This will improve representation of lower-income and marginalized students in green jobs post-graduation, and will better enable those most impacted by climate change in Maine to take a leadership role in facing and responding to those impacts.
Proven strategy & feasibility – Has this strategy been implemented successfully elsewhere? Is it feasible with today's technology? What barriers to implementation exist (e.g., financial, structural, workforce capacity, public/market acceptability)?	<p>In 2020, New Jersey is the first state to institute a K-12 climate education requirement. While not to be implemented until 2021, every school district will decide on an appropriate method for teaching students about the climate change's effect and how to respond to them.</p> <p>A requirement is only one approach among many however - a task force made up of a wide range of stakeholders will be best able to design strategies that are well-tailored to educator' needs and those of each community. Similar task forces have been used for public engagement and oversight in Maine and around the country.</p>
Legal authority - Does the strategy require new statutory (legal/legislative) authority?	The creation of a stakeholder task force requires no new legal or legislative authority.

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Other?	
Other?	

Rationale/Background Information

**Please footnote substantive disagreements among the Working Group members

Maine-made, Landfill Gas to Renewable Natural Gas Has a Role to Play in Achieving Maine's Cleaner Climate Future

These comments are submitted on behalf of NEWSME, which operates the Juniper Ridge Landfill ("JRL") in Old Town, which is owned by the State of Maine. NEWSME is a subsidiary of Casella Waste Systems, Inc., a vertically-integrated solid waste management company that owns and operates solid waste collection and disposal, transfer, recycling, and organics services.

Summary

Across the country, solid waste landfill facilities are being upgraded to assist in achieving significant reductions in greenhouse gas (GHG) emissions. Proven new technologies that utilize an advanced, three-stage treatment process are converting methane-based Landfill Gas (LFG) into Renewable Natural Gas (RNG). The GHG emission reductions from converting LFG to RNG are two-fold. First, the process reduces the GHG emissions from the LFG generated in a landfill during anaerobic decomposition of waste, even beyond the traditional methane capture and flare system. Second, once LFG is further processed to RNG, it can be used as a replacement fuel for conventional fossil fuels, including diesel fuel for heavy-duty trucks. Thus, LFG to RNG is a win-win-win for reducing GHG emissions. It reduces landfill emissions – win – provides a renewable fuel source for a number of possible uses, such as diesel replacement, home heating, and electricity generation– win – and eliminates long-distance transport of the fuel it is replacing - win.

For these reasons, we recommend that the Maine Climate Council report incorporate more clearly this opportunity to reduce GHG emissions from landfills by converting Maine's landfills from waste disposal of last resort to producers of renewable energy, if they were to install the technology noted. As drafted, the Transportation and Energy Working Groups allude to this possibility – specifically, reducing vehicle emissions from fossil fuel sources found in the Transportation Report (*TWG Final Report to Climate Council, Strategy 2, pg. 4 of 10 (June 2020)*); and the Renewable Fuel Standard (RFS) found in the Energy Working Group Report (*EWG Final Report to Climate Council, pg. 21 (June 2020)*).

In conflict with this opportunity, Maine's current solid waste hierarchy fails to incentivize or acknowledge LFG to RNG development in Maine. To unlock the full potential of LFG to RNG as a Maine-made alternative fuel source, we encourage the Climate Council to recommend that legislation be proposed to amend Maine's solid waste hierarchy – specifically, to match the federal Environmental Protection Administration's (EPA) solid waste hierarchy, which recognizes energy recovery from landfills. Maine's hierarchy only recognizes incineration of waste in the waste to energy category.

We expand on these issues and how Maine-made LFG to RNG can and should play a role in Maine's fight to reduce GHG emissions in the following three-part discussion:

- I. LFG to RNG is a Win-Win-Win to help Achieve Maine GHG Emissions Reduction Goals
- II. LFG to RNG is a Tool to Achieve Strategies Outlined by the Climate Council's Working Groups on Transportation and Energy
- III. Legislation to Amend Maine's Solid Waste Hierarchy is Necessary to Recognize Proven New Technologies in Waste Management, including LFG to RNG, and to align with the US Environmental Protection Agency Solid Waste Hierarchy (EPA Hierarchy).

I. LFG to RNG is a Win-Win-Win to help Achieve Maine GHG Emissions Reduction Goals

When an existing landfill converts its LFG into a renewable energy source, Maine achieves a win-win-win:

- ❖ Reduce GHG emissions from the landfill;
- ❖ Develop a renewable fuel source to lower emissions from the fossil fuels being replaced; and
- ❖ Develop this renewable fuel source in Maine, avoiding GHG emissions in transporting to Maine the fossil fuel being replaced with the renewable fuel.

The conversion of existing LFG to RNG reduces GHG emissions from the landfill by diverting gas that would otherwise have been untreated or, in the case of a Low-Emission Landfill, that would have been captured and burned with a flare.

As one example, we estimate that the state-owned JRL, which currently operates as a Low-Emission Landfill, could cut its current GHG emissions by up to 33% by installing technology to create RNG. This is the first win.

The second win is that LFG to RNG could then be used, for example, to replace diesel in Maine's heavy-duty truck fleet – currently a major source of GHG emissions in Maine. If JRL had produced LFG to RNG in 2018 and the RNG had been used as an alternative biofuel in vehicles, using the EPA Greenhouse Gas Equivalency Calculator, 1.9 million fewer gallons of diesel would have been combusted, and therein lies the opportunity to reduce GHG emissions with RNG. The graphic below shows the three-stage process by which LFG can be converted to RNG.

The final win is that this biofuel would be produced in Maine avoiding the GHG impact of long-distance transport to Maine of the fossil fuel being displaced by RNG, which will be produced and consumed in the Maine market.

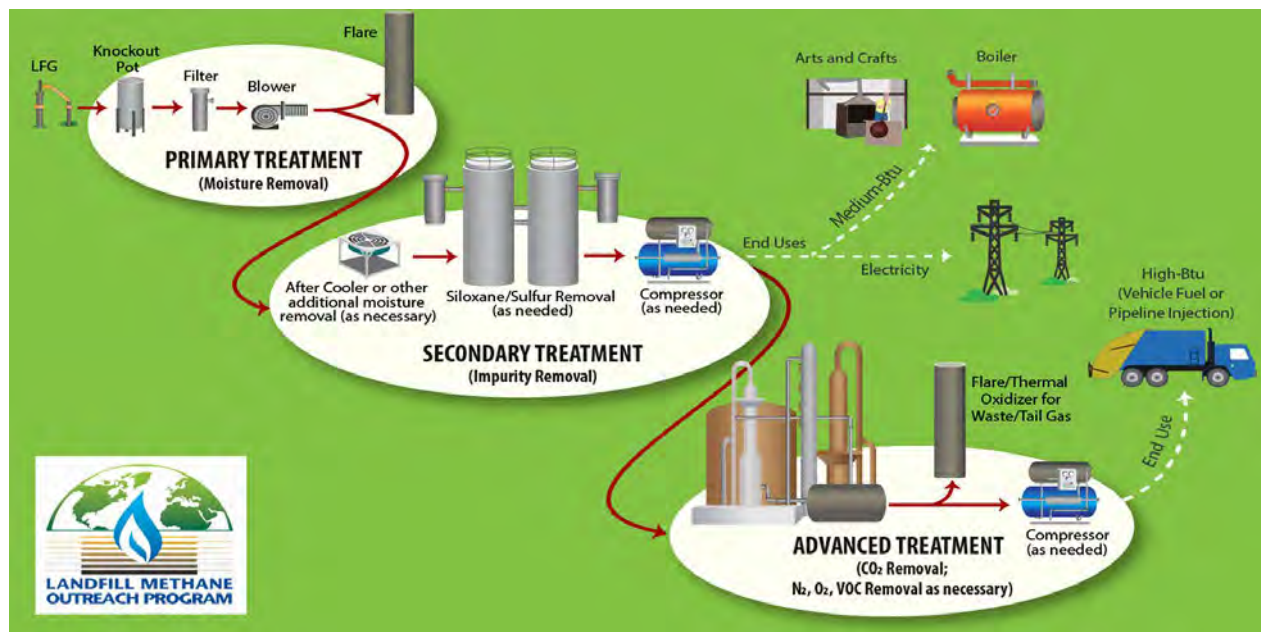


Figure 1: U.S. EPA Landfill Methane Outreach Program, Basic Information about Landfill Gas, available at <https://www.epa.gov/lmop/basic-information-about-landfill-gas>

II. LFG to RNG is a Tool to Achieve Strategies Outlined by the Climate Council's Working Groups on Transportation and Energy

The Climate Council's Working Groups on Transportation and Energy have already identified strategies that can take advantage of LFG to RNG, but they do not specifically mention RNG as part of the strategies. To be clear, LFG to RNG can play a role in achieving:

- Emissions Reductions of Maine's Internal Combustion Engines: *Strategy 2 of the Transportation Working Group*

The Transportation Working Group (TWG)'s Strategy 2 recommends the use of alternative fuels to achieve reduced carbon emissions from Maine's vehicles. Specifically, the report encourages the use of biofuels. The report further encourages the use of biofuels that can be produced in Maine. *TWG Final Report to Climate Council, Strategy 2, pg. 4 of 10 (June 2020)*.

Any LFG to RNG project in Maine would be a Maine-made biofuel, but is not named in the report. LFG to RNG has the potential to serve as an alternative fuel source for Maine's heavy-duty fleet vehicles. We believe LFG to RNG should be specifically identified as a tool to achieve Strategy 2 of the TWG report. We urge the Climate Council to incorporate LFG to RNG as part of any alternative fuels recommendations it may make in its final report.

- Implementation of a Renewable Fuel Standard (RFS): *Identified as a strategy by the Energy Working Group*

The Energy Working Group (EWG) report recommends the implementation of a renewable fuel standard (RFS). Specifically, the EWG report recommends establishing an RFS for home heating fuels. *EWG Final Report to Climate Council, pg. 21 (June 2020)*. LFG to RNG is a renewable fuel that can be used to heat homes, and should be included as part of any RFS. Further, landfill gas is defined as a renewable resource by the Maine Public Utilities Commission. See **65-407 CMR Ch. 311, Section 2(AA)(2)(g)**. So, in addition to including LFG to RNG in the Transportation report, LFG to RNG should be included in the Energy report, as well.

In summary, both the TWG and EWG reports identify strategies that can benefit from RNG generated from LFG here in Maine. We therefore urge the Climate Council to specifically identify LFG to RNG as a tool for achieving these strategies.

III. Legislation to Amend Maine's Solid Waste Hierarchy is Necessary to Recognize Proven New Technologies in Waste Management, including LFG to RNG, and to align with the US Environmental Protection Agency Solid Waste Hierarchy (EPA Hierarchy).

Maine's current solid waste hierarchy found at 38 M.R.S. § 2101 sets the State's order of preference for the management of solid waste. It was enacted in 1989, when technology was not widely available to generate RNG from LFG. Maine's hierarchy fails to recognize the innovative new methods of converting LFG to RNG. Today, a landfill that converts to an RNG facility should be recognized higher on the hierarchy than a landfill that does not because of its renewable energy production, contributing a win-win-win to reducing GHG emissions. In addition, an LFG to RNG facility produces fewer emissions per ton of solid waste than the GHG emissions produced by a waste incinerator. Maine's current hierarchy provides a rung for waste incineration to energy above the bottom rung simply stated as "Landfill," or the disposal of last resort. When a landfill produces

a renewable energy and makes the contributions described in this memorandum, it should be elevated to a waste to energy status on the hierarchy.

The graphic below is a side-by-side comparison of Maine's and the EPA's hierarchies.

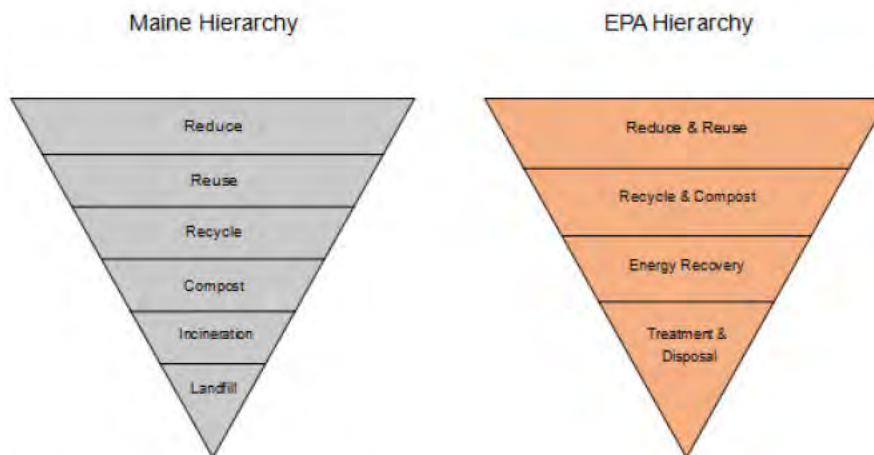


Figure 2: Maine's Solid Waste Hierarchy, available at <https://www.maine.gov/dep/sustainability/sw-hierarchy.html>; EPA Sustainable Materials Management: Non-Hazardous Materials and Waste Management Hierarchy, available at <https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and->

Amending Maine's hierarchy by replacing "Incineration" with "Energy Recovery" will put LFG to RNG facilities on par with facilities that produce energy through waste incineration. An RNG facility producing fuel for transportation produces fewer GHG emissions per unit of waste compared to incineration. Furthermore, the LFG to RNG is generated by biogenic waste, whereas incinerators produce energy largely by burning non-biogenic plastic. LFG to RNG-producing facilities are at least as beneficial as plastic-burning, higher-GHG-emitting incinerators, and we suggest that the hierarchy be amended to reflect that. Otherwise, during the permitting process, the hierarchy forces LFG to RNG facilities to demonstrate why waste cannot instead be incinerated before it may be managed by the RNG landfill, thus creating an unwarranted preference for incineration.

As part of the Climate Council's comprehensive approach to reducing GHG emissions, it is important to update the State's hierarchy so that it promotes the State's GHG emissions goals. By updating the State's hierarchy to match EPA, Maine can:

- Recognize and encourage improvements and innovation to reduce GHG emissions due to waste disposal options that allow municipalities and others to choose a superior GHG disposal option for their waste disposal needs; and
- Recognize technological advances and environmental benefits of LFG to RNG and put a LFG to RNG facility on par with incineration.

With LFG to RNG, we have an opportunity to encourage landfills to convert from low-value, last-resort methods of waste management to higher value, lower GHG emitting, and energy-producing facilities. If the hierarchy is not amended, landfills, including LFG to RNG-producing landfills, will continue to be treated as a waste management method of last-resort, which will dis-incentivize the conversion of landfills to LFG to RNG facilities and the consumers from choosing a more environmentally sound disposal option.

Conclusion

The Maine Climate Council has a unique opportunity to help craft Maine's public policies to encourage the development of proven technologies that will reduce GHG emissions and help protect our climate future. Maine-made LFG to RNG represents one such technology, and we urge the Climate Council to incorporate it directly into its recommended mitigation strategies. Additionally, to eliminate the current disincentive against the use of LFG to RNG in the permitting process, we encourage the Climate Council to recommend that the State update its hierarchy to recognize energy recovery rather than simply incineration as a tool in waste management and GHG reduction efforts.

Together, we can help create a cleaner, more efficient future for Maine.

Coastal & Marine Climate Council Working Group

Meeting Notes

September 3, 2020

Representative Lydia Blume hosted a small, in-person forum in York, Maine where critical stakeholders could learn about and provide feedback regarding strategies recommended to address sea level rise (SLR) in her district and along Maine's coast. She chose this topic because SLR impacts the natural resources, infrastructure, built environment, and economy of her district.

Representative Blume invited select members of the MCC and its working groups to present draft strategies developed by the Coastal and Marine (CMWG) and Community Resilience (CRWG) working groups. Attendees included municipal decision makers, business owners, and legislative candidates.

Below is a summary of the meeting notes. More detailed notes are available upon request. Attached to this document is a comment letter from an attendee who could not make the meeting, and who wrote on behalf of all of the State's MS4 communities.

In essence, **attendees strongly supported the foundational strategies designed to: collect, assimilate, and disseminate data; provide technical assistance to local decision-makers; and revise Maine's coastal laws and regulations to proactively address climate change.** These strategies are set forth in the CRWG's recommendations and in four strategies of the CMWG: the monitoring, information exchange, blue carbon, and nature based solutions strategies. (The latter two incorporate recommended regulatory changes.) **Attendees also indicated the importance of incentivizing action and providing funding.** There was a keen understanding that science must be the proper basis of all decision-making; these foundational changes must occur to support mitigation and adaptation actions in our coastal communities and environments.

Organizers/Presenters:

- Representative Lydia Bloom: Member MCC and CMWG
- Cassaundra Rose, Governor's Office of Policy Innovation and the Future
- Ivy Frignoca, Casco Baykeeper/Friends of Casco Bay and MOCA: Member CMWG
- Abbie Sherwin, SMPDC: Member CRWG

Other people who assisted with the meeting include Carina Greiter, SMPDC, and Lexis Anderson, 3rd year student at Maine Law School and FOCB intern.

Attendees and their concerns:

- Kristie Matheson
 - District One Candidate for House Representative
 - Climate Concerns: recycling
- Tracy Gear
 - Candidate for House District Nine
 - Business owner
 - Climate concerns: coastal flooding, preserving outdoor recreation in Maine
- Dylan Smith

- Planning director for the Town of York
- Climate Concerns:
 - Stormwater runoff, sea level rise, infrastructure vulnerabilities
 - Need to educate decision-makers and municipalities in a way that enables them to make meaningful, thoughtful decisions
 - Number one priority is to save people's lives, but then how can we coordinate approaches & adapt to dealing with that
 - Need funding and expertise to come up with solutions
 - Need for many studies → vulnerability assessment
 - Each region needs to do detailed vulnerability assessments to evaluate impacts & costs of those impacts
- Tim Haskell
 - Superintendent of the York Sewer District, Chair of the Maine Water Environment Association
 - Climate concerns:
 - Limited funds, need to know best way to spend it
 - Most concerned with sea level rise
 - Working on climate adaptation plan & master plan
 - Thinks the council doing a great job given the circumstances
 - Sharing of resources – so many people out there doing research, the ability to have that research available so that we're not duplicating research will be really important, MOCA model
 - Generally thought draft strategies were spot-on
- Philip Tucker
 - Will be the new superintendent of the York Sewer District
 - Climate concerns:
 - Importance outdoor recreation in Maine
 - MCC is as important as CWA to protect environment for the future
 - MCC doing everything they need to do at this point
- Dean Lessard
 - Engineer, civil engineer; public works director in the town of York
 - Biggest concern is sea level rise
 - His department is spending a tremendous amount of resources working on sea level rise
- Mick Devin
 - Maine House of Representatives, fourth and final term
 - Has been involved in marine issues over the last 8 years
 - In his district, sea level rise & ocean/coastal acidification are big issues

Summary of Comments from Attendees:

Support for Community Resilience Technical Assistance and Funding Recommendations and CMWG Monitoring and Information Exchange Strategies:

Attendees clearly understood the challenges that must be met with limited resources and with an interplay of state and local action. **Attendees identified funding, incentives, and**

education/technical assistance as critical underpinnings for success. They opined that solutions must be tailored by region and that different coastal regions of the state had drastically different technical expertise, capacity, and funding opportunities.

Attendees also highlighted the need for consistent and current data that is accessible to decision-makers and access to state specialists for technical assistance. They identified monitoring and mapping needs that should be done at a state level with trained staff, for example mapping blue carbon sources. Such efforts require adequate State staff and funding. The data must be consistently updated, data gaps must be filled, and information must be readily assessable to decision-makers. Neither DEP nor DMR have adequate staff or funding to consolidate existing data sources and provide the much wanted technical assistance. Attendees highlighted that they need more data. In some instances, they believe we have not even started collecting the data they need to find solutions. For example, they have just started work on surveying for the seawall to determine how it will affect the environment. They are seeing new dune vegetation and other positive changes.

Decision-makers also require clear-cut studies to really see the costs/benefits of actions so they can tailor their actions to address local needs and budgets.

Another recurrent theme was the need for incentives. There are barriers to action if there are limited resources and staff. For example, York passed a comprehensive sea level rise chapter in 2012/2013, but “what has gotten implemented is another story.”

Funding should be directed where it is most needed, especially to less affluent coastal regions.

Support for Community Resilience and CMWG recommendations to revise State Statutes and Implementing Regulations

With scarce resources no one wants to “reinvent the wheel.” Attendees had two types of comments regarding coastal laws and regulations. First, **the State should revise its laws and implementing regulations consistent with the recommendations of the working groups.** These revisions would update the laws to address current issues, be resilient for the future, and provide an adequate and uniform baseline of regulation coast-wide. Second, **Maine should adapt its regulatory structure, including streamlined permitting, to encourage pilot projects that foster resilience and help us adapt. “Regulation prevents groups from even trying a potential solution.”**

We need to focus on making the regulations strict enough to incorporate what the best available science dictates, but flexible enough to allow communities to try different approaches. Regulators need to develop a framework to ensure they are putting adequate measures in place to evaluate and assess different approaches (as well as the tradeoffs; benefits v. risk).

From a regulatory perspective, there are pilot projects that can be done within the existing regulatory frameworks, but there are other examples where regulations do not allow flexibility to try new methods and approaches. There is no way to assess the benefits and challenges of certain

approaches; regulatory review sometimes depends on the staff that you're working with and how that person interprets the regulatory requirements.

Addendum- Comments emailed to Representative Blume from MS4 communities:

Good Morning Ms. Blume,

I am sorry I missed the 9/3/2020 meeting to review and discuss the recommended strategies from the Coastal Marine Working Group and the Community Resilience Working Group of the Maine Climate Council. This email provides you with information that I would have shared at that meeting regarding the recommended strategies.

As Ivy informed you, I currently work with 20 of Maine's 30 municipalities that are regulated by the Maine General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). The municipalities I work with are located in York and Cumberland County, and include two of the communities that were the focus of your 9/3/2020 meeting (Kittery and York), however these comments apply to all of the 20 MS4 communities that I have worked with over the years, and have been specifically review and are supported by the communities who have signed on to this email.

As part of their MS4 Permit requirements, these communities are required to take action above and beyond the Maine DEP requirements for development specified in Statutes and Rules. For the first 15 years of regulation under the MS4 General Permit (2003 to 2013), the municipalities were able to act as "eyes and ears" to the Maine DEP, assisting in watching over implementation of state development regulations. These communities have also individually been pro-actively incorporating additional requirements for development and climate change into local ordinances, so clearly the need and desire to address these issues is present.

For the past 3 years, we have been reviewing drafts of the next Maine MS4 General Permit, and as part of that work, watching what other states are doing regarding MS4 permitting and overall development regulation. Our MS4 peers in Massachusetts, New Hampshire, and other states are being made to take more costly and time consuming measures to address the adverse effects of development, but have been assisted on the state level by coordinated efforts to update and improve regulations to address the compounding effects development and climate change. Maine would benefit from a statewide approach to addressing climate change in development regulations to provide consistency throughout a watershed and throughout the state.

In Maine, the MS4 communities have commented time and again on the Draft MS4 General Permit that improved regulation to address development pressures and climate change should be made at the state level, not the local level. We recently received a Grant from the Maine Coastal Program to review and summarize the Erosion and Sediment Control recommendations from the Maine Climate Council Working Groups to allow municipalities the option to incorporate these recommendations into local ordinance individually. But incorporation of these and the other Working Group recommendations into State Rules and Statutes (rather than local ordinances), so that they apply everywhere in the state, would be more beneficial to and protective of the environment and infrastructure in all areas of Maine.

MS4 communities are keenly aware that regulatory requirements need to prevent water quality degradation in undeveloped areas because it is much more cost effective to do so than it is to correct water quality issues once they have occurred. Similarly, as has been shown by the Maine Climate Council Working Groups, it is much more cost effective to prevent the adverse impacts of Climate Change rather than correct those impacts after the fact (a.k.a. the "cost of doing nothing"). The recommendations from the Working Groups regarding the needed changes to Maine DEP Chapter 500 and the associated development statutes are exactly the kinds of statewide regulatory changes the MS4s have been pushing for (including addressing larger storms, more incentives for Low Impact Development and green infrastructure, promotion of infiltration to minimize runoff, and references to more current precipitation data).

In particular, the MS4s recommend that DEP begin a state-lead stakeholder process to provide updates to both Chapter 500 and the development-related Maine Statutes incorporating the recommendations of these two MCC Working Groups. The outcome of the Maine Coastal Program Grant work by the MS4s could inform the stakeholder process. Please pass these thoughts along to the broader Council.

We appreciate your efforts on this important work. This letter is provided on behalf of the following communities and entities, who support the recommendations:

Maine Municipal Association

Berwick

Biddeford

Cape Elizabeth

Cumberland

Eliot

Falmouth

Gorham

Kittery

Portland

Saco

South Berwick

South Portland

Westbrook

Windham

Yarmouth

York

[\[cid:image001.png@01D6843D.500A6BA0\]](#)

Kristie L. Rabasca, P.E

Integrated Environmental Engineering, Inc.

12 Farms Edge Road

Cape Elizabeth, ME 04170

207-415-5830

Climate Council Public Outreach Meeting Notes September 10, 2020

Representative Joyce “Jay” McCreight hosted a small, outdoor forum in Brunswick, Maine. The forum focused on draft strategies developed by the Coastal and Marine (CMWG) and Community Resilience (CRWG) working groups. Attendees reviewed the strategies in advance, heard about them at the forum, then offered critical feedback to be shared with the MCC.

Earlier this spring, the CMWG acknowledged that it wanted to do more work on strategies related to aquaculture and fisheries but was constrained by the pandemic. Both of those professions are important and integral to the economy of eastern Casco Bay. For these reasons and because she is Chair of the Marine Resources Committee, Representative McCreight invited marine resource officers, aquaculturists, fisheries and shellfisheries experts, and legislators to share their thoughts with the MCC.

Their comments are summarized below. More detailed notes are available upon request.

Overall this group wanted to be part of a collaborative public-private water quality monitoring network. Their businesses depend upon healthy waters and are negatively impacted by climate change. They know and believe in the importance of science. **This group also recommended incentives to motivate businesses to innovate and be part of the solution. They strongly supported the recommended revisions to state law put forth the CMWG and CRWG. They asked for changes to the aquaculture licensing process to encourage adaptive management and uses of emerging technology.** The group also want to engage in pilot projects testing co-location of species such as kelp and mussels to buffer and filter waters. Finally, they noted a need to include **more education** in the action plan. The plan identifies information exchanges to educate decision-makers, but needs **more to educate coastal residents and seafood consumers.**

Organizers:

- Representative Joyce McCreight: Chair the Marine Resources Committee
- Cassaundra Rose GOPIF: MCC Coordinator
- Ivy Frignoca, Casco Baykeeper, Friends of Casco Bay: CMWG member

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Public Participants:

- Jessica Joyce, Freeport
 - Tidal Bay Consulting
 - Member of the Shellfish Advisory Council
 - Works to ensure there are jobs for harvesters
- Destiny Belanger
 - Works on oyster farm
 - Quahog Bay Conservancy, office manager
 - Important to conserve resources for jobs in Maine
- Anne Hayden
 - Fisheries Manager
 - Works with Jessica on the Casco Bay Shellfish Working Group

- Concerned about the fisherman and the stewards of our mud flats; important that their voice is not ignored in this
- Cameron Barner – Love Point Oysters
 - Oyster Farm in Harpswell
 - Concerned about mitigating ocean acidification and all of the related issues
- Ben Hamilton – Love Point Oysters
 - Must think about businesses as agents of positive change
 - We are here today, having this dialogue, because of business
 - Need more private entrepreneurs being active in these issues
- Keith Butterfield
 - Operate a small shellfish/aquaculture farm in Yarmouth
 - Had been in the medical devices field, but wanted to give back by growing eelgrass, etc.; turned it into a business
 - Can be a business that has a profound impact on the quality of the bay; he's seen eelgrass explode around their oyster farm
- Dan Devereaux
 - Coastal Resource Manager for Brunswick
 - Has observed a lot of changes in the environment and coastal landscape
 - Advocated for shellfish harvesters and the shellfish industry quite a bit
 - Has tried to create a business that is adapting to climate change and is collecting and monitoring data that will be helpful for the next generations
 - Trying to gather significant data
- Charlie Tetreau
 - Harbormaster and Marine Resource Officer for Freeport
 - Interested in the aquaculture industry and their thoughts about climate change
- Paul Plummer
 - Harbormaster and Marine Resource Officer for Harpswell
 - Community outreach and education is important, how can we collaborate
- Eloise Vitelli
 - Maine State Senator
 - On the Marine Resources Committee
 - Interested in finding ways to make us more resilient
- Mary Ann Nahf
 - Chair of the Conservation Commission in Harpswell
 - Member of the Marine Resources Committee; big crossover between that and the Conservation Commission
 - Done work with sea level rise, pesticides
 - Leads the Climate Resiliency Task Force for Harpswell

Discussion:

Feedback from Keith Butterfield

- The industry I'm working in is different
- There is a culture in shellfish and kelp aquaculture that is unique
- Not organized or doing anything as a group; but thinks they would if given the opportunity

- He has a concept of a smart farm that is not just vertical, but involves a number of species
- The Climate Council has a tool in the shellfish and seaweed aquaculture businesses if you can corral it
 - Example: if the Climate Council thought that a species of kelp would be helpful, then shellfish farmers would do it
- This group of people is ready
 - Ex: He is forming a cooperative of 6 other farms; wants to plan a beach cleanup
- Suggests that the Climate Council puts together some kind of a program for shellfish and kelp aquaculturists that either puts more kelp in the water, or more species in general, that have good relationships with the water & other species onto leases
- The 150 farms up and down the coast are almost all small and they're all struggling
 - Half of them or more would likely not be making a profit
 - The other half probably have a second job or their spouse is critical
 - This is a burgeoning industry that needs support
- Support shellfish aquaculturists by:
 - Finding designated places that would benefit from reefs
 - Should be doing this at the mouths of all our riverways
 - Why not pay the aquaculturists, who have the means and equipment a small amount of money, to do this?
- One of the DMR rules that could be reconsidered is the amendment process that you have to go through for new species. If you know that a species is good for the water, why do you have to go through an amendment?
- Why do farmers need approval to bring useful species into their farms?
- Professor Beal has done a lot of work with clams and found that you can bring clams up to a certain size that makes them much less vulnerable to predators
- He has been working with running size and thinks that they should be able to grow their clams to market size without touching sand
- Make it a part of the program to buy an extra 100,000 seed and seed designated flats that DMR wants you to seed, seed is cheap
- Lease process should also be revised. Example, two years ago, submitted for a lease; was accepted. Had to provide a lot of detail on the type of equipment he was using. Two years later, he learned of this new amazing technology that has a little bit of mechanization in it that saves a lot of time flipping cages. He forgot to submit paperwork saying he was going to use this new gear. This gear is not much different than other gear; the main points of why we have these rules so that riparian's can have access to their properties, no impingement on a passageway, good blend between recreation and fisheries. None of these things have been altered. Now he has to pull all of this gear off the water until they can approve it; this isn't acceptable. The rules are too inflexible and the wait time to get a lease is too long.

Feedback from Cameron Barner:

- Really likes the blue carbon piece

- Some of the language in the blue carbon piece talked about restoration; thinks that is completely necessary
 - Need to go beyond restoration to technological innovation; don't leave out businesses that are seeking out those innovations
 - Kelp businesses are capturing carbon, but that's not necessarily restoring the environment
 - Ivy: as we look at the law, we need to think about changing definitions
 - Can we revise laws to reflect this?

Feedback from Dan Devereaux:

- Active shellfish management
 - Our business is based on science
 - We follow the science
- Should make monitoring equipment available with lease so can monitor the water quality
- Offer incentives
 - Perhaps offer a carbon incentive for farmers to engage, support, or grow more product
 - This is a struggling industry; labor of love
 - Offering incentives would be important, like mid-Atlantic states are doing
Flawed model, but great idea
- local towns can't afford to implement these programs
 - Need financial support from the state for smaller communities
 - Funding is critical, especially for towns that don't have the town leaders, manpower in place
 - These growers are fostering a keystone species (shellfish) in their mudflats that are offering a filtration system
 - Privatization of some of the flats will help because it provides nursery grounds that are protected
 - People have tried it, but nobody's really went there yet
 - Those private/public partnerships need to exist more
 - If we can provide monitoring support, that would be great
- Need to be more agile; don't have the ability right now to adapt to new, better technologies and methods without a lease amendment.
- Being able to provide a resource that is sustainable is critical for trying to figure out species specific management. Essential for figuring out how to create sustainable shellfish fisheries

Feedback from Anne Hayden:

- There are already people who are growing seed privately, then making it available to the public
- Don't want to promote fish aquaculture
- There is a social carrying capacity to shellfish and that is something we're going to have to reckon with
- Making the arguments about how it's good for the water, and good for the environment, is important
- Need to be careful with kelp; not necessarily a carbon sequestration

- Getting agencies to work together, and to get state government get things done with reduced resources
- Anne and Jessica have been writing funding proposals that will support a shellfish collaboration
- Don't overlook shellfish harvesters as data collectors (Jessica notes there is an online model for monitoring that could be tested as a pilot project)
- Looking to the nonprofits is also important

Feedback from Ben Hamilton:

- Hearing mitigation and adaptation, but **incentivization is a very important bucket that's missing**
- Private enterprise can make a real difference right now
 - Businesses can take less
 - Growing protein sources on the water is so beneficial to the planet
 - There are multiple ways to incentivize businesses
 - Tax incentives are one of the best ways to do it
- Also related to community outreach; businesses can only be effective agents of change if they're making money
 - Need to reach the end consumers and have them make choices to buy food that is grown in a way that is beneficial to the planet. This must be part of the education process.
- For incentivization: need to reach consumers and support struggling businesses
- The current regulations/amendments are very static; if we don't change the laws to incentivize businesses to be profitable and give them the flexibility to change to make money & help the planet, then we're missing a big piece of this solution
- Aquaculturists are profiting from a public resource, which gets very blurry. This makes it really tricky

Feedback from Jessica Joyce:

- Strategy 2 on community resilience: we have in Maine a flood resilience checklist; there's lot of funding programs for municipalities for sea level rise
- Don't have the same tools and toolkits for municipalities to address climate change effects on shellfish
 - Recommend that a shellfish resilience checklist be developed that could be part of the Maine climate change adoption toolkit
 - Could be developed by DMR, DEP and be something that towns can actually go through and make sure that they are addressing things concerning conservation
 - Also think that the state could offer technical assistance to municipalities to look at fisheries and climate change as part of their comprehensive plan
- The species are changing; yet they're all managed under one license
 - Hard to manage all of the stocks under one plan
 - Municipalities are struggling
 - Most towns only survey for a few species

- There's not the resources or funding to do this; but if the state in collaboration w/ municipalities could establish these templates & tools for this towns, this would be really helpful
 - Richard Nelson said high tide is the new low tide; they're not finding softshell clams in the lower-intertidal. Who's even researching or talking about that?
- Issues with the municipal ordinances
- Aquaculture is mostly state-managed
- But do think that there needs to be more guidance/funding/support from the state for the municipalities to run these programs
- Most of the controversy is around the new lease itself
- Once the farm is there, that's when you need more adaptability
- The real political difficulties are around when a new lease gets approved in a new spot
- C&M strategy 5 -
 - Right now, there is a huge lack of data on the wild shellfish data
 - Some towns do regular surveys, but the state does not require municipalities to do shellfish surveys
 - The state, aside from helping municipalities that need assistance to perform those and providing some guidance, paramount that both the DMR shellfish sanitation program and the bureau of marine science coordinate with municipal shellfish programs to create shellfish stock assessment surveys
 - Right now, COVID is making is challenging to do surveys
 - Need to look at revising the survey techniques to include new technology; look at ecosystem-based survey approaches
 - If you're going to look at soft shell clams, why not look at worms, etc.
 - Important that this recommendation recognizes that more data is needed

Feedback from Destiny Belanger:

- Agree with what others have said
- Definitely need more flexibility
- Very difficult to be able to do things quickly and be flexible with our farm when the rules and regulations are not flexible
- Don't have the ability to maximize profits quickly
- Agree with making incentives and getting groups to work together
 - A lot of people are just doing their own thing, but they all have the same goal; should be working together

Feedback from Sen. Vitelli:

- Hopes the Climate Council sets the vision, direction, values, goals that folks need to achieve, which will then allow agencies like DMR to be more flexible in their management if everyone is clear with what the parameters are
- In addition to public private partnerships, there needs to be on greater emphasis on state-local-regional partnerships

- Important to establish goals at each level
- More difficult if each level isn't going in the same direction

Feedback from Rep. McCreight:

- Importance of educating the community about protein sources. Education has to be part of the process. Also very important to educate the consumer.

From: Ryan Gordon <[REDACTED]>
Date: Mon, Sep 14, 2020 at 3:01 PM
Subject: Transportation Strategy comments
To: <maineclimatecouncil@maine.gov>

Dear Maine Climate Council,

I read with interest the Strategy Recommendations of the Transportation Working Group (June 5, 2020) and the Proposed Strategy Framework for the Maine Climate Action Plan (September 4, 2020), and I have the following comments on the proposed transportation actions/strategies.

Strategy 1 (increase electric vehicle (EV) use) and Strategy 2 (reduce emissions from combustion engines) are clearly good ideas and should be pursued, but will not be enough to achieve our goals. Maine's high rate of reliance on personal motor vehicles of any type (even EVs) will continue to harm our environment, inhibit our climate goals, and lower the health, wealth, equity, and happiness of Maine people. I think that Strategy 3 (Reduce Vehicle Miles Traveled (VMT)) needs to be prioritized, and needs to contain more robust and concrete initiatives and actions. The best way to reduce VMT is by building pedestrian and bicycle infrastructure.

The most effective, most cost-efficient, and most equitable way to reduce VMT (and emissions) is to encourage more walking and biking. This is best accomplished by building more pedestrian and bicycle infrastructure and by making existing roadways safer for walking and biking by slowing and discouraging motor traffic. Walking and biking are the least expensive and most beneficial forms of human transportation. Building infrastructure to support walking and bicycling is very inexpensive compared to motor infrastructure, and is very efficient in terms of the return on investment and the reduction of carbon emissions per dollar. Converting car and truck miles to bicycle miles not only reduces emissions, but it directly SAVES money spent by State and local governments on infrastructure, and it directly SAVES money spent by individual citizens and families on private vehicles. Pedestrian and bicycle infrastructure is therefore a wise and conservative investment of transportation dollars, and probably the best investment overall that we can make to fight climate change.

Private vehicles are one of the largest outlays of money spent by Maine families, and reducing these expenses will increase the personal wealth and prosperity of Mainers. Electric vehicles are about as expensive to own and operate as combustion vehicles, and it will be difficult to make the transition to EVs equitable, since the most disadvantaged people do not currently own private vehicles and/or cannot afford to transition to either cleaner combustion engines or EVs. Bicycle and pedestrian infrastructure is nearly free to use and therefore the most equitable way to reduce VMT, and one of the best ways to increase the prosperity of our State and its people.

Private vehicles (and associated lack of exercise) are also one of the largest causes of poor health for many residents of Maine. Converting car and truck miles to bicycle and walking miles will increase the physical and mental health of many people, which is a benefit that should be quantified and taken into consideration. Greater health will also save money for Maine people, businesses, and the State.

Research shows that people actually want to walk and bike to school and work, to the store, and to visit friends and family in their communities. If infrastructure for walking and biking can be made safe and available, people will use it, and become more wealthy, healthy, and happy while decreasing transportation emissions. This is achievable, even in Maine, and should be a very high priority.

The Climate Council should consider adopting several strategies for increasing cycling and walking that were ignored or downplayed by the Transportation Working Group. Funding through the MeDOT should be shifted away from motor vehicle infrastructure, and towards pedestrian and bicycling infrastructure, and this funding shift should be of a transformative magnitude. Fewer dollars spent on subsidizing private vehicles will help reduce VMT, and these dollars should be spent on a major increase in bicycle and pedestrian infrastructure. The Maine DOT should directly fund the construction of a large network of protected trails for biking and walking between towns and cities, and local governments should be incentivized to build upon these networks with sidewalks, local trails, and complete streets. Maine DOT should also be responsible for funding and performing maintenance and snow removal on these trail networks, just like they are for motor highways. This can be accomplished in urban, suburban, and rural areas. The Sunrise Trail in Downeast Maine is a great example of what can be done to connect communities even in rural counties.

There is also a lot that could be done at the state level to make existing roadways safer for biking and walking. Towns and communities should be allowed to set speed limits that are less than 25 mph in residential neighborhoods and downtowns (this is currently prohibited by State law). A system of speed cameras that automatically issue tickets by mail should be made legal statewide for use by local towns and cities (also currently prohibited by law). Construction and maintenance of roads and intersections should prioritize traffic calming and slower traffic speeds, and traffic engineering design should by law have to prioritize pedestrian and bicycle safety and access.

A special note should be made about outdoor transportation in the winter. Walking and bike commuting can be done safely and comfortably even during Maine winters. In many other cold and snowy locations in the upper Midwest, Canada, and Europe, bicycle and pedestrian trails are currently widely used, with the only necessary technology being snowplows and warm clothes. The trail and sidewalk network in Maine simply needs to be plowed with the same determination that we currently clear roadways for motor vehicles. Trail and sidewalk maintenance should draw from the same funding stream as highway maintenance.

Finally, I noticed that the Transportation Working Group could not come to agreement about many strategies for transportation funding. Funding the transition to clean transportation would be vastly easier and cheaper if we increased the amount of bicycle and pedestrian infrastructure built, and therefore decreased the amount of future motor vehicle and EV infrastructure needed. Beyond that, I fully support the northeast regional Transportation and Climate Initiative, and encourage the Climate Council to recommend fully joining that effort. I also support the idea of replacing our current fuel tax with a weight excise fee combined with a simple VMT fee, where the odometer reading is recorded at the annual inspection. Contrary to the protestations of the trucking industry, a fee based on weight-times-VMT is the most equitable way to fund transportation, as the people, goods, and services that most use the resource are the ones that pay for it. The cost of transporting high-carbon-footprint goods will then be passed down to the consumer of those goods, decreasing their usage in favor of low-carbon-footprint alternatives. The statement from the Working

Group recommendations that "there is some concern this could be an equity issue for low income individuals who may not be able to buy a vehicle of lower weight" does not make sense and should not be a concern: light vehicles are also the cheapest vehicles to buy and operate for the end consumer, so discouraging heavy vehicles will increase the wealth of individuals while also reducing emissions.

Thank you for considering my comments and recommendations.

Ryan P. Gordon, Ph.D.

[REDACTED]

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Ryan Gordon

[REDACTED]



Sept. 23, 2020

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Maine Climate Council
c/o GOPIF
181 State House Station
Augusta, ME 04330.

RE: Maine Climate Council Coastal and Marine Working Group Strategy Report

Dear Maine Climate Council,

Downeast Institute (DEI) is a non-profit marine research laboratory, science education center, and research/development shellfish hatchery located in Beals. We serve as the Marine Science Field Station for the University of Maine at Machias – the easternmost in the U.S., and have been conducting applied marine research, primarily in the intertidal, along all of Maine's coast for over 30 years.

We appreciate the opportunity to provide comments to the Maine Climate Council ("Council") regarding the recommendations of the Coastal and Marine Working Group. We thank the members of the Working Group for their time, diligence, and careful crafting of the strategies.

DEI offers the following input on the strategies mentioned below and their associated actions:

Strategy 1 – *Track coastal and ocean climate impacts to support adaptive decision making.*

Action 1. *Leverage existing private, nonprofit and state monitoring programs via sustainable state funding, shared data infrastructure and coordinated leadership*

Action 2. *Expand monitoring of coastal water quality, including acidification*

Action 3. *Characterize, map, and track marine and coastal habitats and species, including economically important and at-risk species*

Action 4. *Enhance invasive species monitoring and management*

Action 6. *Enhance and coordinate tracking and modeling of future changes to the extent of intertidal habitats and beaches including tidal marshes, mudflats... including their flora and fauna*

The mission of the Downeast Institute is to improve the quality of life for the people of downeast and coastal Maine through marine research, marine science education, and innovations in wild and cultured fisheries.

DEI agrees with the importance of this strategy, and we wish to apprise you and the Working Group about the **Soft-Shell Clam Recruitment Monitoring Network** (“Network”), our new intertidal monitoring program that addresses action items 1, 2, 3, 4, and 6.

The Monitoring Network was established in May 2020 with 18 intertidal monitoring stations (two per community) spanning the coast of Maine. It standardizes fisheries-independent data collection for a fishery that has experienced a 75% reduction in commercial landings over the past 40 years, the same period that the Gulf of Maine has been warming and invasive green crab populations have been exploding. Green crabs are voracious predators, feeding on bivalves, worms, periwinkles, small fish, and other crustaceans, in addition to being a destructive force associated with eelgrass beds and salt marsh ecosystems. Repeated, independent field trials have found that predation, especially by invasive green crabs, is the most important factor causing the decline of soft-shell clams in Maine (Beal et al., 2016, 2018, 2020). Over 99% of settling clam recruits are being eaten before they turn one-year old (Beal et al., 2018). Declines in other commercial species, such as intertidal mussel beds, are also connected to warming seawater temperatures, and the associated increase in green crab population densities.

The Network’s monitoring sites use a novel tool, a “recruitment box,” that protects settling clams and other shellfish from most predators so that recruitment of these 0-year class individuals can be examined. The boxes allow researchers to measure as close to the true number of soft-shell clams and other shellfish recruiting to intertidal areas, while concomitant surveys of the intertidal flats away from the boxes allow estimates of clam and other shellfish (e.g., oysters, quahogs, mussels) recruitment densities that survive the intense summer and fall predation (i.e. “true survival rate”). In addition, it allows for an assessment of growth rates for these species.

Our sites are evenly distributed across all three regions of the coast: six sites in the southern region, six sites in the midcoast, and six downeast. This aligns with the Working Group’s suggestion that monitoring be set up by region to identify needs and solutions specific to each, and help ensure equity (a requirement of the Council) by determining at-risk areas and populations to inform efforts to reduce the effects of unequal economic impacts of ocean warming and associated shellfish declines.

Sustaining and expanding the network beyond the nine communities currently engaged in the field-based effort would provide the State with unparalleled information about the intertidal soft-bottom ecosystem, and allow for tracking changes over time.

Action 2. *Expand monitoring of coastal water quality, including acidification*

Given that DEI’s Soft-Shell Clam Recruitment Monitoring Network measures shellfish recruitment and survival, it is the ideal platform from which to collect ocean acidification (OA) information. Investing in gathering and calculating mudflat porewater carbonate chemistry parameters related to OA from the recruitment boxes and adjacent, ambient sediments will allow us to understand the entire carbonate chemistry system and how it affects shellfish calcification. This will place researchers in the best possible position to analyze intertidal ecosystem vulnerability to OA in Maine, understand how multiple stressors (warming seawater temperatures and OA) are impacting shellfish populations, and provide actionable data on water quality risks. DEI has one of only two OA labs of its kind on the east coast with which to measure these interactive effects.

Action 3. *Characterize, map, and track marine and coastal habitats and species, including economically important and at-risk species*

The Network’s monitoring sites capture a variety of invertebrates (e.g. 18 different mollusk species) so it is a perfect vehicle to monitor and track the recruitment, survival and growth rates of species beyond soft-shell

clams, including commercially important mussels, quahogs, American oysters and European oysters.

By using the Network to build a long-term fisheries-independent data-set, we can characterize, map, and track a portion of the population dynamics of these coastal species. Data from the monitoring stations are critical to understanding local, regional, and coastwide trends in shellfish production, and provide state and local shellfish managers with information to better equip them for the challenges of sustaining and/or enhancing clam populations in a dramatically warming (and changing) marine environment.

Action 4. *Enhance invasive species monitoring and management*

The Network also greatly enhances invasive species monitoring because the smallest green crabs can enter the boxes via settlement from the plankton (at sizes less than 1.5 mm in carapace width), or can crawl in through the aperture of the mesh shortly after they settle to the flats. Therefore, the Network is also a critical tool for monitoring an important life-stage of green crab: the recruit (young of the year). Green crabs of this size have caused a great deal of damage to shellfish populations by preying on shellfish recruits (Tan & Beal, 2015; Beal et al., 2018). Young green crabs (<20mm) are unlikely to be captured in traps, or to be seen by human researchers doing observational population studies.

Action 6. *Enhance and coordinate tracking and modeling of future changes to the extent of intertidal habitats and beaches including tidal marshes, mudflats... including their flora and fauna*

Since a robust clam or other shellfish population depends on successful settlement from the water column followed by a relatively high survival rate of recruits, the Network also provides information necessary to forecast future populations of mudflat fauna (shellfish) and associated commercial harvests.

Strategy 2 – *Provide technical assistance on and outreach networks for climate adaptation and mitigation to coastal and marine stakeholders.*

Action 1. *Establish a Coastal and Marine Information Exchange for engagement, information dissemination and assessment.*

Action 2. *Establish a Maine Seafood Business Council to assist with climate adaptation and mitigation strategies.*

DEI offers our expertise and ample library of applied marine research as resources for use by the Coastal and Marine Information Exchange and Maine Seafood Business Council. Much of DEI's research has focused on testing mitigation and adaptation actions that can be used by coastal stakeholders and managers (<https://downeastinstitute.org/research/>). Specifically, we have addressed methods to enhance and sustain shellfish populations, as well as innovations in cultured fisheries to aid in climate adaptation and mitigation strategies.

Strategy 3 – *Enhance mitigation by conserving and restoring coastal habitats that naturally store carbon (blue carbon optimization).*

Actions 4 & 5: *Blue carbon mitigation potential must be achieved by conserving and restoring:*

Tidal marshes: *...conservation of current marshes and migration pathways.*

Eelgrass: *Protect current eelgrass and historically-mapped eelgrass habitat from direct and indirect impacts of shoreline development, commercial harvesting activities, and aquaculture operations through informed lease siting and by enhancing local and state regulations to restrict fishing methods and reduce impacts. Restore eelgrass by improving water quality and promoting transplanting and/or seeding.*

Efforts to conserve and restore tidal marshes (specifically, *Spartina*) and eelgrass may likely be hampered by foraging and feeding habits of green crabs. For example, green crabs damage and uproot eelgrass shoots and

below-ground roots while digging in the sediment for benthic infaunal prey (Davis et al., 1998, Malyshev & Quijón, 2011), and juveniles also cut off shoots while grazing directly on eelgrass (Malyshev & Quijón, 2011). In Nova Scotia, foraging activity by green crabs has caused declines of eelgrass from bays (Garbary et al., 2014, MTRI and Parks Canada 2014). In Maine, Neckles found that half of Casco Bay's eelgrass cover largely disappeared between 2012 and 2013 (the year of Maine's "ocean heat wave" and an observed explosion of green crabs in Casco Bay [2015]). Likewise, green crabs also feed on salt marsh *Spartina* (Ropes, 1968), and use salt marshes as habitat, burrowing into them, causing marsh degradation and loss (Afton & Grimes, 2016).

Since green crabs increase their numbers and foraging rates with increasing seawater temperatures (Welch, 1968; Freitas et al., 2007), their populations and associated negative effects are predicted to continue to increase in the Gulf of Maine. Recognizing this connection, the Maine Climate Council's "Scientific Assessment of Climate Change and its Effects in Maine" report identified "optimize restoration strategies for eelgrass beds compromised by green crabs" as one of the "Priority Information Needs" (pg. 168).

While seawater temperatures continue to trend upward, it is unlikely that attempts to protect eelgrass and tidal marshes by restricting fishing or aquaculture, transplanting or seeding will be effective long-term in protecting eelgrass from the effects of climate change. Efforts to limit/restrict fisheries and aquaculture to restore eelgrass or tidal lands may even hamper climate adaptation efforts by Maine's seafood industries (i.e. protecting clams from predators, mussel fishing and farming).

Strategy 4 - Promote climate-adaptive ecosystem planning and management using nature-based solutions.

Action 2. Promote nature-based solutions

DEI has been conducting applied marine research to investigate nature-based solutions for many years that can inform climate adaptation plans and outreach tools. For example, DEI recently published the results of three years of field experiments on the effects of applying shell hash (crushed bivalve shells) to buffer acidic mudflats on clam and quahog recruitment and survival in the *Journal of Experimental Marine Biology & Ecology* (Beal et al., 2020).

Strategy 5 - Manage for resiliency of Maine's marine fisheries and aquaculture industries in the context of climate change adaptation.

Action 1- Enhance and provide sustainable funding for marine resource monitoring programs

DEI supports this action. Our Network is currently funded by Maine Sea Grant until the end of 2021. We continue to seek external funding to expand and extend this effort, but a lack of sustainable funding will prevent the Network from realizing its potential to help implement this strategy.

Action 2- Develop stock assessments, ecosystem-based management approaches, risk policies, and harvest strategies that account for ecosystem changes

DEI has conducted much research to uncover the impact of climate change on the important soft-shell clam fishery, including evaluating traditionally used enhancement techniques, predator protection and deterrence, and measuring clam fecundity. Our research can be used to inform ecosystem-based management and harvest strategies, and standardized use of recruitment boxes (i.e. through the Clam Recruitment Monitoring Network) can be used for stock assessments.

Action 5- Support the growing aquaculture sector

DEI is working to reduce barriers in the mussel and oyster farming industries, as well as to create new

opportunities for cultivated species (i.e., Arctic surf clams).

Action 7- *Evaluate and implement ways in which Maine's fishery and aquaculture laws and regulations can provide the opportunity to address environmental change and emerging fisheries*

DEI's research findings consistently document substantial clam losses from non-human predation and the connection between rising ocean sweater temperatures and increased levels of predation from green crabs and milky ribbon worms (Beal et al., 2001, 2016, 2018, 2020; Tan & Beal, 2015; Beal, 2002, 2006). Most laws and regulations pertaining to Maine's clam fishery have been in place since long before effects of warming ocean temperatures on clam populations were understood. Integrating the latest biological science findings regarding the high rates of predation and possible mitigation measures (i.e. updating traditional enhancement techniques, protecting clams from predators) will be necessary to sustain the fishery into the future due to the projected continuation of warming seawater.

High quality field research is the crucial element in assisting Maine's fisheries with responding to environmental change. Given that the intertidal is a sentinel system for understanding these changes, and home to our iconic clam fishery, laws governing the intertidal should be examined to make them more accommodating to research endeavors, as well as the implementation of research findings (i.e. large-scale predator protection).

Thank you for the opportunity to submit feedback and consideration of these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Sara Randall". The signature is fluid and cursive, with the first name "Sara" and last name "Randall" clearly distinguishable.

Sara Randall
Associate Director

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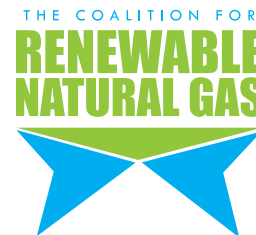
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September 24, 2020

Maine Climate Council
Governor's Office of Policy Innovation and the Future
181 State House Station
Augusta, ME 04333-0181

Feedback on Maine Climate Council Working Group Recommendations

To Whom It May Concern:

The Coalition for Renewable Natural Gas (RNG Coalition)¹ offers this letter regarding the draft strategies and framework proposed by Maine Climate Council (Council) working groups pursuant to the development of Maine's inaugural Climate Action Plan (CAP). Our comments below discuss the potential for Renewable Natural Gas (RNG) to provide greenhouse gas (GHG) reduction and other environmental and economic benefits in Maine, with particular focus on the working groups' recommendations. We strongly support adoption of a renewable fuel standard for heating fuels and a low carbon fuel standard for transportation fuels to promote use of RNG across both of these key sectors.

About the RNG Coalition and the RNG Industry

The RNG Coalition is the trade association for the RNG industry in the United States and Canada. Our diverse membership is comprised of leading companies across the RNG supply chain including RNG producers, energy marketers, waste management and recycling companies, utilities, and academic institutions, among others. Together we advocate for the sustainable development, deployment and utilization of RNG, so that present and future generations have access to domestic, renewable, clean fuel and energy in Maine and across North America.

The RNG industry is nascent relative to other renewables industries but has shown extraordinary growth recently driven by policies designed to promote environmental and economic goals—including but not limited to clean air, improved waste management, increased job development, energy independence, and resource diversity. Most of the RNG projects developed since 2011 have been incentivized by transportation decarbonization programs, including the United States Environmental Protection Agency's (U.S. EPA) Renewable Fuel Standard Program and California, Oregon, and British Columbia's Low Carbon Fuel Standards (LCFS). RNG is also increasingly used to decarbonize natural gas end-use applications in stationary sectors, marked by the emergence of new programs such as Oregon's recently adopted RNG procurement requirement (similar to a renewable fuel standard for heating).² Today RNG projects are largely underwritten by the monetization of tradeable credits, such as Renewable

¹ For more information see: <http://www.rngcoalition.com/>

² See Oregon Public Utilities Commission's adoption of RNG procurement rules under [Oregon Senate Bill 98](https://apps.puc.state.or.us/orders/2020ords/20-227.pdf) here: <https://apps.puc.state.or.us/orders/2020ords/20-227.pdf>

Identification Numbers (RINs) that RNG-sourced transportation fuel generates under the renewable fuel standard.³

Given the success of these programs in promoting decarbonization through RNG in a variety of sectors, we are excited to see the Council's inclusion of RNG as a key part of meeting Maine's GHG reduction goals, including through the potential implementation of demand-side policies such as a renewable fuel standard for heating fuels and a low carbon fuel standard for transportation fuels.

RNG Potential in Maine

RNG Coalition strongly supports the use of renewable gas as an important decarbonization strategy for Maine, and appreciates the dialogue surrounding biofuels—specifically methane-to-energy⁴—in the Council's recommendations thus far.⁵ We believe that this work, along with reports produced for the Council by Eastern Research Group and Synapse Energy Economies⁶, shows that RNG will play a significant role in the decarbonization of Maine's economy. RNG has the unique potential to provide near-term GHG reductions in all of Maine's top five emitting sectors⁷, while simultaneously reducing GHG emissions from organic waste sources. Accordingly, incentivizing RNG as a substitute for geologic natural gas is a natural near-term strategy. Furthermore, even in the long-run, electricity-based technologies may not be attractive for all applications—especially where very high temperatures are required—necessitating the continued use of renewable gaseous fuels if deep decarbonization is to be achieved.⁸ Indeed, studies outlining gas sector decarbonization in other jurisdictions show significant end-use demand for natural gas remaining through 2050, even in high-electrification scenarios.⁹

³ RNG has grown substantially thanks to the RFS program, making up over 95 percent of the lowest-GHG-emission cellulosic biofuel production category and generation of D3 RINs (given for fuels that create at least a 60% reduction in lifecycle greenhouse gases). <https://www.epa.gov/renewable-fuel-standard-program/renewable-fuel-annual-standards>

⁴ RNG Coalition is supportive of all sustainable methane-to-energy projects, particularly those that utilize waste emissions in the production of RNG, RNG-derived renewable hydrogen, and RNG-based electricity generation.

⁵ Our comments broadly reference all relevant material provided on the [Maine Climate Council Reports](#) page, with a specific focus on the Council's working group recommendations. These recommendations are summarized in [Draft Proposed Strategy Framework - Part 1](#) and [Draft Proposed Strategy Framework - Part 2](#).

⁶ See *Assessing the Impacts Climate Change May Have on the State's Economy, Revenues, and Investment Decisions* here: https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/ERG_MCC_AssessingImpactsClimateChangeMaine_Summary.pdf

⁷ GHG emissions assessments conducted by the Council have identified transportation, residential, commercial, industrial, and electric power generation as the State's top five emitting sectors.

⁸ Bataille et al., *A Review of Technology and Policy Deep Decarbonization Pathway Options for Making Energy-Intensive Industry Production Consistent with the Paris Agreement* <https://www.sciencedirect.com/science/article/abs/pii/S0959652618307686>

⁹ For example, see pg. 35 of the California Energy Commission report entitled *The Challenge of Retail Gas in California's Low Carbon Future*, which finds that natural gas in California's residential, commercial, and industrial sectors is still ~1,000 tBtu in 2050 in the high-building-electrification case: <https://www2.energy.ca.gov/2019publications/CEC-500-2019-055/CEC-500-2019-055-F.pdf>

Processing waste biogas into RNG or renewable hydrogen is a crucial component of a circular economy, creating a versatile resource which can be used to decarbonize any natural gas or hydrogen end-use application. RNG deserves particular near-term attention because the primary method of generating RNG today¹⁰—biomethane from anaerobic digestion (AD)—is a well-proven cost-effective technology available at commercial scale. Although still a relatively nascent industry, renewable hydrogen at scale could ultimately contribute greatly to decarbonization of thermal applications. Feedstocks used to produce RNG today can be shifted toward renewable hydrogen in the long run—a carbon-negative process when paired with carbon capture and sequestration.¹¹ Furthermore, increased availability of electrolytic hydrogen could provide significant resource potential for zero-carbon renewable gas in thermal applications.

ICF estimates that Maine’s potential to produce RNG from anaerobic digestion sources (landfills, animal manure, wastewater treatment, and food waste) is on the order of 6.904-13.192 tBtu/year.¹² This supply potential could satisfy more than 28% of Maine’s total current natural gas demand¹³, and pipeline-connected RNG projects could be shifted between demand categories over time as needed. ICF also estimates the potential for RNG produced by gasification of forest waste at 1.674-3.348 tBtu/year, presenting an opportunity for additional forest-sector jobs, revenue, and improvements in management practices. This ICF work reinforces the fact that Maine can deploy a significant amount of RNG. Supporting the growth of proven technologies like RNG as part of the state’s climate change mitigation strategy will help to position Maine as a leader in decarbonization.

The Role of Renewable Gas in Maine’s Decarbonization Strategy

There is significant potential for the use of RNG as a complement to other strategies such as electrification and renewable liquid fuels in the decarbonization of Maine’s thermal and transportation fuel demand. Indeed, the Council’s recommendations acknowledge that the proposed strategies as modeled in the “Proposed Transportation and Heating Strategy Emissions” scenario¹⁴—a version which is solely based on electrification and energy efficiency—would not achieve Maine’s GHG reduction targets in 2030 or 2050. With this in mind, utilization of RNG and other bioenergy technologies in a variety of applications will prove essential in the realization of Maine’s GHG reduction goals.¹⁵

¹⁰ The vast majority of RNG available commercially today is created by capturing and processing raw biogas generated at sites with aggregated organic matter—such as landfills, wastewater treatment plants, and agricultural operations—and then upgrading this gas to meet pipeline quality standards. In the absence of the RNG project this biogas is often flared, or worse, is uncollected and escapes fugitively into the atmosphere as a short-lived climate pollutant (methane) that, according to the Intergovernmental Panel on Climate Change, is 84 times as potent a greenhouse gas (GHG) as carbon dioxide.¹⁰

¹¹ LLNL, *Getting to Neutral: Options for Negative Carbon Emissions in California*, Baker et al., January, 2020, Lawrence Livermore National Laboratory (LLNL) https://www-gs.llnl.gov/content/assets/docs/energy/Getting_to_Neutral.pdf

¹² American Gas Foundation, *Renewable Sources of Natural Gas: Supply and Emissions Reduction Assessment*, 2019 <https://gasfoundation.org/wp-content/uploads/2019/12/AGF-2019-RNG-Study-Full-Report-FINAL-12-18-19.pdf>

¹³ EIA estimates Maine’s 2018 total natural gas consumption [here](#).

¹⁴ See [Draft Proposed Strategy Framework - Part 1](#), Figure 3, pg. 11: “Proposed Transportation and Heating Strategy Emissions”.

¹⁵ The complementarity of biofuels and electrification is reflected in a recent analysis conducted by M.J. Bradley & Associates, with particular focus on the Northeastern and Mid-Atlantic United States: M.J. Bradley & Associates,

Accordingly, RNG Coalition recommends the inclusion of RNG and renewable hydrogen in subsequent iterations of this combined scenario.

According to the Council's recommendations, heavy-duty trucking is responsible for 27% of GHG emissions in Maine's transportation sector. RNG-fueled natural gas vehicles are currently one of the cleanest technologies commercially available for the heavy-duty transportation sector¹⁶ and, in the long term, waste-derived renewable hydrogen is poised to become an increasingly available option for use in fuel cell electric vehicles. The utilization of these fuels in Maine also supports the Council's proposed goal of using locally-produced renewable biofuels in the transportation sector.

RNG Coalition applauds the Council's inclusion of a renewable fuel standard¹⁷ as a recommended strategy for decarbonization of Maine's building and industrial sectors. The implementation of demand-side policies, such as a renewable fuel standard, are critical to driving RNG demand. RNG and waste-derived renewable hydrogen are versatile resources with the ability to utilize existing infrastructure, providing significant opportunity for near-term GHG reductions in these sectors, and making them good candidates for near-term demonstration and pilot projects in pursuit of a long-range plan for industrial fuel switching. The Council's modeling specific to the transportation and building sectors currently lacks a scenario showing the combined effects of biofuels and aggressive electrification, which should be assessed in future iterations.

In the electricity generation sector, Maine should continue to incentivize RNG and waste-derived renewable hydrogen under the State's renewable portfolio standard (RPS). Renewable gases serve as important sources of dispatchable clean power, complementary to intermittent renewable power resources. Qualification and utilization of RNG and renewable hydrogen under the RPS will help achieve the Council's proposed strategies of ensuring an adequate and affordable clean energy supply, accelerating industrial decarbonization, and encouraging highly efficient combined heat and power (CHP) facilities. The Council also recommends a goal of carbon neutrality for hospitals, which are well-served by small-scale distributed generation sources such as CHP or fuel cells powered by RNG or renewable hydrogen.

Environmental and Economic Benefits of RNG Development and Utilization

In addition to the potential for reduction of GHG emissions through waste emission capture and fossil fuel displacement, the implementation of RNG projects provide other important environmental and economic benefits. Given the Council's concerns regarding potential job loss and the resiliency of Maine's most vulnerable communities and systems, it is important to consider the substantial economic benefits realized with increased development, deployment and utilization of RNG—including millions of

The Role of Renewable Biofuels in a Low Carbon Economy, February, 2020
https://www.mjbradley.com/sites/default/files/MJBA_Role-of-Renewable-Biofuels-in-a-Low-Carbon-Economy.pdf

¹⁶ UCR CE-CERT, Ultra-Low NOx Natural Gas Vehicle Evaluation Fact Sheet, 2018
<https://www.ngvamerica.org/wp-content/uploads/2018/04/NOx-Fact-Sheet.pdf>

¹⁷ Renewable Fuel Standards for heating are also sometimes talked about as "thermal renewable portfolio standards" or as "renewable gas standards" if focused on the gas system.

dollars in capital investment per project and the creation of thousands of clean energy sector jobs.¹⁸ Accordingly, we recommend that the Council incorporate the economic and resiliency benefits of RNG into their forthcoming Clean Energy Economy Transition Plan.¹⁹

RNG production from wastewater treatment plants can provide revenue used by municipalities to finance improvements which increase the resiliency of wastewater treatment plants and other water infrastructure vulnerable to sea level rise and significant storm events. RNG production from such resources also serves to increase the resiliency of Maine's energy systems by providing renewable distributed generation of fuel or electricity—additionally applicable to the Council's concerns regarding the resiliency of transportation and public health infrastructure. With the potential to produce RNG from all types of aggregated organic matter, these dual resiliency benefits can also be realized for food, solid waste, and agricultural systems.

RNG development also supports the protection and improved monitoring of natural and working lands while serving as a component of Maine's natural resource economy. In the agricultural sector, RNG provides a source of revenue to farmers which can be used to finance infrastructural improvements; helps to facilitate improvements in air and water quality through better waste management practices; and can provide monitoring data for use in tracking GHG emissions. In all cases, RNG production and utilization helps to create a circular economy, increasing the sustainability of organic waste processing systems.

Low Carbon Fuel Standards and Renewable Fuel Standards Using Lifecycle Accounting are the Most Successful Examples of State-level Policies Driving GHG Reduction from RNG

If Maine wants to maximize the use of RNG to help with decarbonization, the top two policies that should be adopted include a renewable fuel standard for heating and a low carbon fuel standard for transportation. Below we briefly discuss a few key program design features that could be helpful under either policy.

Greenhouse gas accounting using lifecycle accounting (LCA)—sometimes called carbon intensity (CI) when expressed on an emissions per unit energy basis—is a key tool to ensure the development of sustainable biofuels. Full LCA has already been successfully included in multiple demand-side policies for transportation. For example, the California Low Carbon Fuel Standard and Oregon Clean Fuels Standard are largely²⁰ responsible for the current incentive structure governing project development and subsequent RNG utilization in North America. Oregon's recently finalized renewable gas standard for gas

¹⁸ ICF, *Economic Impacts of Deploying Low NOx Trucks fueled by Renewable Natural Gas*, 2017 https://static1.squarespace.com/static/53a09c47e4b050b5ad5bf4f5/t/59077544ebbd1ad192d13ff6/1493660998766/ICF_RNG+Jobs+Study_FINAL+with+infographic.pdf

¹⁹ Economic and resiliency benefits of RNG are in line with the draft Executive Summary of Maine's forthcoming Clean Energy Economy Transition Plan—[Strengthening Maine's Clean Energy Economy](#).

²⁰ As layered atop the Federal Renewable Fuels Standard.

utilities—the first of its kind—will also utilize LCA accounting. Under these programs, projects with the lowest CI scores receive the greatest incentive.²¹

Project-specific CI scores under the aforementioned policies are calculated via LCA accounting, which factors in GHG emissions and reductions from every step of fuel production and utilization.²² Each project-specific LCA is modelled using a version²³ of the Greenhouse Gases, Regulated Emissions, and Energy Use in Transportation Model (GREET)²⁴ created by Argonne National Lab, which is widely accepted among regulatory agencies and the scientific community. Given the comprehensive and established nature of these tools, RNG Coalition strongly supports using LCA accounting and the GREET model in assessment of biofuels under similar programs. To the extent that Maine chooses to develop incentives for RNG procurement, we recommend they build upon this framework.²⁵

Registries supporting tradeable credit systems and LCA for thermal energy are emerging, such as the Midwest Renewable Energy Tracking System (M-RETS). The use of such registries and harmonization with other jurisdictions undertaking similar policies could also be helpful to promote RNG projects.²⁶ Such systems increase market confidence about the environmental benefits claimed by low-carbon and carbon-negative fuels. Oregon’s new RNG procurement regulation will require the use of M-RETS in RNG procurement and compliance.

Conclusion

The RNG Coalition appreciates the opportunity to participate and provide comment on Maine’s CAP development process. Production and utilization of RNG has the potential to contribute significantly toward the realization of Maine’s climate goals, including creating jobs and economic opportunity; reducing Maine’s GHG emissions; increasing the resiliency of a variety of systems which will prepare Maine residents, businesses, and communities for the impacts of climate change; and ensuring that Maine’s climate strategies are equitable.

The Climate Action Plan represents an exceptional opportunity to create a framework for RNG use and development, positioning Maine as a leader in low-carbon fuel use. Accordingly, our members look forward to investing in and constructing new methane-capturing and RNG production facilities that create clean energy sector jobs in Maine. We thank the Council for their leadership in development of a

²¹ Voluntary programs for RNG—and the tools built to support such markets—are considering adopting the same general CI approach. See: <https://www.green-e.org/renewable-fuels> and <https://www.mrets.org/m-rets-renewable-thermal-tracking-system/>

²² CI inputs include but are not limited to feedstock production, fuel production (upgrading and processing), fuel transport, and fuel combustion.

²³ The CA GREET (used by California LCFS) and OR GREET (used by Oregon CFS) are versions of Argonne National Lab’s GREET model which have been modified to include parameters specific to each jurisdiction.

²⁴ More information about Argonne National Lab’s GREET model can be found [here](#).

²⁵ While existing state-level low carbon fuel standard policies target the vehicle sector, this LCA framework can easily be adapted to other end uses (e.g., stationary thermal applications in a renewable gas standard).

²⁶ <https://www.mrets.org/m-rets-renewable-thermal-tracking-system/>

smart CAP as such dialogue benefits the environment and the economy, energy consumers, and policymakers interested in decarbonization across North America.

Sincerely,

Sam Wade

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John Ferland
PRESIDENT

CELL
OFFICE

September 24, 2020

Maine Climate Council
Governor's Office of Policy Innovation and the Future
VIA Email

Dear Members of the Maine Climate Council,

First, thank you. You are providing a great service to the people of Maine by volunteering your time to work with Maine state government leadership to create a plan for Maine's future that addresses mitigation and opportunities resulting from climate change. This is a tall order, and ORPC supports the efforts of all working groups in grappling with this complex task.

Second, ORPC would like to add its perspective to your process and share information with you that we hope will be helpful as you craft strategies and policies and work with the Governor and Legislature on implementation. ORPC is particularly interested in the efforts of the Energy Working Group and Buildings, Infrastructure and Housing Working Group, as these are the entities focused on renewable energy policy, distributed energy generation, microgrids, and grid resiliency for the future.

This letter is organized as follows:

- Introduction: ORPC and Maine—A Long-Term and Beneficial Economic Relationship
- Examples of Hydrokinetic Uses Beneficial to Maine
- National, and State Policies Trends Driving the Market for Tidal and River Hydrokinetic Power System Adoption
- Policy Recommendations to Maine Climate Council
- Summary and Conclusion

Introduction: ORPC and Maine—A Long-Term and Beneficial Economic Relationship

ORPC has actively served the Maine economy for more than decade. ORPC has spent approximately \$40 million statewide, including \$6 million directly in Washington County. ORPC has done business with more than 280 partners, contractors, and services providers in 14 of Maine's 16 counties. We employ 18 people working in Portland, Eastport, and Brunswick. Partnering with University of Maine School of Marine Science, ORPC developed an environmental monitoring program that documented no adverse impacts on marine resources, and the UMaine/ORPC scientific

approach was identified as an international model in the global report, “Annex IV 2016 State of the Science Report.” ORPC also uses expertise at UMaine’s School of Engineering’s Advanced Structures and Composites Center, where we have completed tank testing of a new product, the Autonomous Turbine Generator Unit (ATGU), in preparation for ocean testing in Cobscook Bay. Our UMaine partnership has spurred numerous research funding and scientific publishing opportunities for faculty and brought dozens of students into the tidal energy discipline for academic pursuits and job opportunities.

Entering the 2020s, we are accelerating our footprint in Maine. We are designing a smart microgrid initiative in collaboration with the City of Eastport that would make the city’s energy 100 percent renewable and a model of sustainability for other communities. We are pursuing improved design of our river hydrokinetic power system with the potential for testing in Millinocket in collaboration with Our Katahdin. And we recently expanded our engineering and electronics laboratory capability in TechPlace at Brunswick Landing. Over the next decade we anticipate further expansion in Maine related to multiple applications of our technology for distributed energy uses associated with bridges and breakwaters, electric ferries and other watercraft, and potential new uses such as underwater data centers.

Thanks to public policy support from the Maine Ocean Energy Act of 2010 and funding from Maine Technology Institute, Maine Technology Asset Fund, Finance Authority of Maine, CEI, and regional economic development agencies like the Sunrise County Economic Council, ORPC has raised significant private equity capital, representing new private sector investment in Maine. We have created positive local partnerships with the host communities of Eastport and Lubec and have established collaborative regulatory relationships with state and federal agencies. From this foundation in Maine ORPC has grown into a globally competitive company with subsidiaries in Canada and Ireland, and business partnerships in Chile.

Examples of Hydrokinetic Uses Beneficial to Maine

Community-Scale Power Systems

ORPC is partnering with the Alaskan village of Igiugig on installation of a community-scale, isolated, smart microgrid power system utilizing the nearby Kvichak River (Figure 1). The project includes two ORPC RivGen® devices, upgrading of the local grid with smart controls and electronics, and inclusion of an energy storage system. When completed, the RivGen® Power System will provide baseload energy for the village's needs and help reduce diesel costs by 90 percent. Igiugig exemplifies the opportunities for the global remote community market in which 700 million people are dependent upon diesel-fueled generators for their electricity, and as a result, pay up to ten times conventional prices.¹

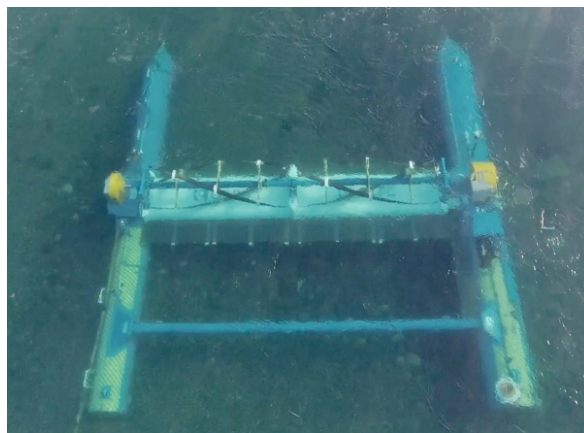


Figure 1. ORPC's RivGen Power System generating energy from free-flowing currents of the Kvichak River for the village of Igiugig, Alaska. [Watch video.](#)

ORPC has another project underway in False Pass, Alaska, (utilizing a tidal resource) and is initiating projects in Canada and Chile.

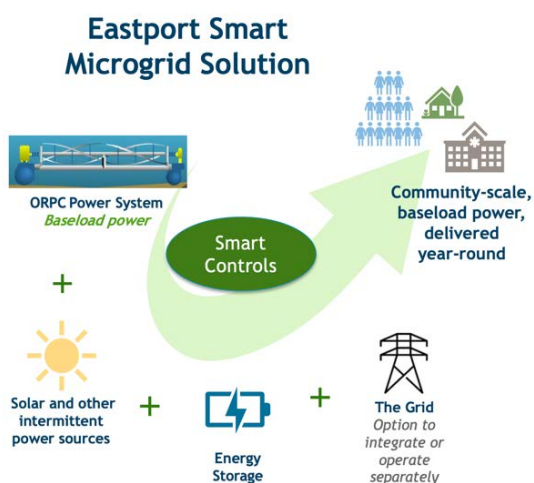


Figure 2. Eastport Smart Microgrid Project proposed by ORPC

ORPC is adapting its Igiugig smart microgrid solution to its on-going tidal energy activities in Maine. In partnership with the City of Eastport, the company is pursuing the Eastport Smart Microgrid Project with the goal of providing a model to other Maine towns and cities to adapt smart grid applications (Figure 2). The Eastport project will knit together Maine's diverse climate change, renewable energy, distributed generation, and non-wires alternative policies into one bundled application that will help define a new electricity market for the coming decade for rural and coastal communities.

¹ Natural Resources Canada Status of Remote/Off-Grid Communities in Canada, August, 2011, Ottawa, https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/canmetenergy/files/pubs/2013-118_en.pdf

Underwater Charging for Commercial Systems

ORPC is working with public agencies, private companies, and several university research institutions (including University of Maine) to develop the ATGU, a self-installing hydrokinetic power system with power generation and propulsion functions that can operate in high current environments with heavy lift capabilities (Figure 3). Market validation efforts have identified multiple use cases for the ATGU in various industries with a near-term focus on innovative power solutions for subsea sensor networks. This project is an example of disruptive ocean energy technologies supported by the U.S. Department of Energy (DOE) Advanced Research Projects Agency - Energy (ARPA-E) program, an advanced product development program modeled after the Department of Defense's successful Defense Advanced Research Projects Agency (DARPA).

There are a variety of potential users of the ATGU: oil and gas companies, security agencies, scientific organizations monitoring ocean environments, and others.

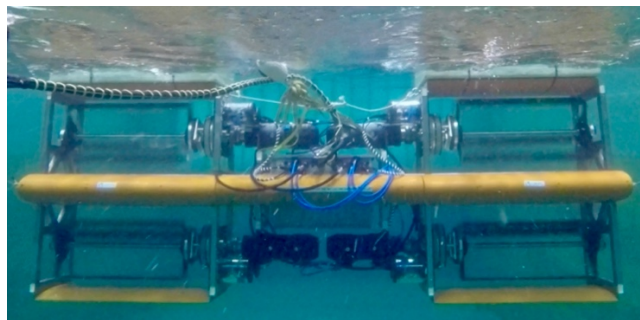


Figure 3. 2020 testing of ORPC's autonomous turbine generator unit (ATGU) prototype at University of Maine. [Watch video](#).

Modular Distributed Generation Power System

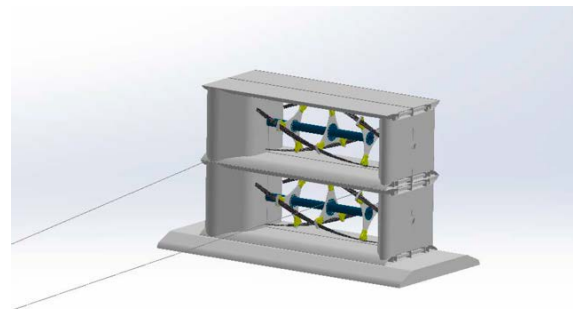


Figure 4. ORPC's modular RivGen Power System

ORPC is also developing a smaller version of ORPC's RivGen device—a modular, distributed generation system where each turbine generator unit will be installed as a standalone unit with the option for attaching adjacent modules to form a horizontal or vertical array. Objectives include optimization of the technology for lower flow sites and cost reductions. Examples of applications for this system include linking with existing hydroelectric dam facilities and other water works such as industrial canals, and integrating into bridges, piers, and breakwaters.

ORPC's has customer demand from owners of industrial and commercial properties, utilities, tribal entities, economic development agencies, independent power producers and others with significant waterpower assets. Potential uses include behind-the-meter-applications, such as power for critical infrastructure, electric vehicle (EV) charging stations, and emergency power supply.

In Maine, initial market applicability includes sites adjacent to existing or former industrial facilities and tidal flows adjacent to developed property. ORPC is funding this effort with DOE support and company resources.

Other Examples of Distributed Energy Resource Applications

Similar projects are occurring elsewhere that will influence the evolution of hydrokinetic applications in Maine and other locations.

University of New Hampshire (UNH) is leading research and development on "The Living Bridge," a data sensing and collecting project on Memorial Bridge linking Maine and New Hampshire across the Piscataqua River.² UNH researchers have placed sensors that capture structural performance of the bridge, traffic patterns, environmental conditions, and behavior of innovative bridge design elements. By sharing this data, UNH enables and promotes community engagement.

The information collected informs researchers, bridge designers and bridge owner, but also, where appropriate, K-12 teachers, students, and the public. Aesthetic lighting and social media are used to communicate relevant information from the bridge, and weather, tidal, and traffic data are broadcast to the local community. The bridge sensor network, information communication system, and aesthetic lighting are powered by locally available tidal energy.³

In yet another example, Microsoft is developing underwater data centers that will be powered by tidal energy and other renewables. This concept is being tested at the European Marine Energy Centre Ltd in Scotland's Orkney Islands, and the company has had a positive experience with the effort.⁴ Other potential uses include powering electric ferries and other watercraft and assisting with processing and ice making facilities servicing the fishing industry.

² It's Alive! UNH Researchers Create Innovative "Living" Bridge, University of New Hampshire (Jun. 4, 2019), <https://www.unh.edu/unhtoday/news/release/2019/06/04/its-alive-unh-researchers-create-innovative-living-bridge> (last viewed Feb. 24, 2020).

³The Project Overview, The Living Bridge Portsmouth Memorial Bridge, <https://livingbridge.unh.edu/> (last viewed (Feb. 24, 2020).

⁴ <http://www.emec.org.uk/about-us/research-development-innovation-clients/naval-group/>; <https://www.theverge.com/2020/9/14/21436746/microsoft-project-natick-data-center-server-underwater-cooling-reliability>.



National and State Policies Driving the Market for Tidal and River Hydrokinetic Power System Adoption

Federal Policy

Increased use of distributed energy generation from ocean, tidal, and river hydrokinetic resources is a strategic priority of DOE. Their Office of Energy Efficiency and Renewable Energy recently published report, "Powering the Blue Economy: Exploring Opportunities for Marine Renewable Energy in Maritime Markets," that identifies power requirements of emerging coastal and maritime markets. This strategy is being used to assist with federal funding priorities for advancing marine renewable energy technologies that address domestic power supply needs and promote economic growth.⁵

Among the market examples cited by DOE, which are applicable to Maine, are ocean observation and navigation systems, charging of unmanned underwater vehicles, marine aquaculture, community-scale isolated power systems, and coastal resiliency and disaster recovery applications.

In terms of federal funding support for these initiatives, the Office of Energy Efficiency & Renewable Energy's Water Power Technologies Office (WPTO) provides tens of millions of dollars of funding annually on a competitive basis to industry, university research centers and national laboratories supporting hydrokinetic technology development at various technology readiness levels. Between 2010 and 2020, budget levels rose from approximately \$30 million to about \$100 million annually.⁶ These initiatives have had unyielding support from Maine's U.S. Senate and Congressional offices, often through direct sponsorship of DOE funding bills. In Maine, private companies and the public university system have received numerous competitive WPTO funding awards, as well as related support from DOE's Office of Science Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs, and ARPA-E.

Maine Policy

Parallel to the federal government's emphasis on hydrokinetic technology development, the State of Maine has supported development of this industry for over a decade. With policy support provided through the Ocean Energy Act of 2010 and funding from the Maine Technology Institute, the Finance Authority of Maine, and private sector entities, Maine has risen to the forefront of the domestic industry with

⁵ LiVecchi, A., A. Copping, D. Jenne, A. Gorton, R. Preus, G. Gill, R. Robichaud, R. Green, S. Geerlofs, S. Gore, D. Hume, W. McShane, C. Schmaus, & H. Spence. 2019. Powering the Blue Economy; Exploring Opportunities for Marine Renewable Energy in Maritime Markets. U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. Washington, D.C.

⁶ <https://www.energy.gov/eere/water/water-power-technologies-office-budget>



private sector expansion into foreign markets. In the next decade, further drivers of growth will include Maine's increased renewable portfolio standards, net billing, and procurement policies favoring distributed generation, non-wires alternative analysis to traditional utility infrastructure, and use of energy storage systems with generation technologies.

Policy Recommendations to the Maine Climate Council

- Overall policy direction
 - ✓ Ensure that innovation policy and funding programs remain strong and flexible, and focused on the long term. Many companies, for instance those funded by MTI, run the very high risk of missing important milestones—sales, product development, new business partnerships, and private equity investment opportunity—because of disruptions from the Covid-19 emergency. Each of these impacts challenges the success of MTI funded firms and illustrate the need for continued innovation support and flexibility.
- Regulatory improvement
 - ✓ Amend the definition in Maine's renewable energy statutes to change references of "tidal" energy to "hydrokinetic energy from tidal, ocean or river currents." This recognizes that successful tidal energy product development and environmental monitoring in Maine has enabled creation of new marine hydrokinetic technology, significant economic impact in Maine, the opening of international markets that export Maine's expertise, and an evolution of hydrokinetic power systems for use in river sites and existing infrastructure—bridges, water works, canals, commercial marine terminals, etc.
 - ✓ Continue regulatory development that enables development of distributed energy resource infrastructure, particularly the benefits of microgrid development, that enhances hydrokinetic power system use in Maine.
- Funding opportunity
 - ✓ In promoting increased R&D investment in Maine, please align funding opportunities for Maine's areas of competitive advantage, such as the tidal and river hydrokinetic sector, with the existing federal strategies that also provide R&D investment to those sectors.

Summary and Conclusion

Over the next decade, multiple applications for hydrokinetic technology will occur in Maine for on-grid and off-grid applications at tidal and river sites. An immediate opportunity exists through the creation of smart microgrids through which hydrokinetic power systems are combined with energy storage systems, creating a baseload power scenario and enabling use of less predictable renewables. Over the



last decade, one of the major drivers of hydrokinetic technology development in Maine has been the Ocean Energy Act of 2010. Today there are new and compelling circumstances to expand use of the technology and increase applications in Maine. DOE continues to prioritize funding for hydrokinetic markets in its annual budgets, and Maine continues to expand renewable energy policy and laws under the administration of Governor Janet Mills and the State Legislature. Examples of how hydrokinetic power systems are providing energy solutions are occurring in Maine and nationally, with significant industry leadership provided by Maine's private sector and university system. The Maine Climate Council strategies should support increased use of river and tidal hydrokinetic power solutions as positive benefits to Maine that solve energy needs and create local jobs and tax revenue.

Sincerely,

A handwritten signature in blue ink, appearing to read "John Ferland", written in a cursive style.

John Ferland
President