

Maine Climate Council
Energy Working Group (EWG)

June 2024

The Energy Working Group (EWG) of the Maine Climate Council is co-chaired by Dan Burgess, Director of the Maine Governor’s Energy Office, and Ken Colburn of Symbiotic Strategies. The EWG has 33 official members who contributed their time, diverse expertise and lived experiences to develop a set of updated and new recommendations to the Maine Climate Council.

Over the course of eight meetings between October 2023 and May of 2024, the working group evaluated the state’s progress on the energy-specific goals contained in *Maine Won’t Wait*, then developed new and updated recommendations to address gaps and emerging issues. The group’s primary goal was to ensure all Maine people have access to affordable and reliable energy as the state transforms its energy infrastructure to achieve its clean energy targets and emissions reduction requirements in law. The EWG also convened, together with the Transportation and Buildings Working Groups, two workshops about electricity demand management.

In its early meetings, the members of the EWG identified a set of priority areas for updating the recommendations in Maine’s climate action plan. Those priority areas included recommendations and actions to help Maine thoughtfully and successfully build necessary clean energy infrastructure; to increase the efficiency and reduce the cost of that infrastructure by enabling demand management and related innovation strategies; to build a clean energy workforce; and to address energy burdens for Mainers who are most vulnerable to volatile and high energy costs.

The EWG invited several guests to give presentations on related policy topics, ongoing energy work happening in the state, and the latest energy planning and modeling. These presentations helped inform the direction and detail of the group’s recommendations.

The resulting recommendations and actions drafted by the EWG are designed to support the four primary goals laid out in *Maine Won’t Wait*, which are to: reduce Maine’s greenhouse gas emissions; avoid the impacts and costs of inaction; foster economic opportunity and prosperity; and to advance equity through Maine’s climate response. A detailed table of the recommendations, actions, and additional important information is included in Appendix 1 and represents the consensus view of the EWG.

Summary of Recommendations and Actions

(Detailed table of recommendations, actions, and additional important information is included in Appendix 1.)

RECOMMENDATION	ACTIONS
<p>1. Decrease energy burdens for Mainers by reducing barriers to participating in the state’s energy transformation</p>	<p>A) Better understand energy burden across all energy costs:</p> <ul style="list-style-type: none"> • Conduct a comprehensive assessment of residential energy burden in Maine by 2025 that considers all types of energy expenditures in its analysis, including those associated with electrification of buildings and transportation. • Reassess energy budgets of highest burdened populations every three years to build understanding of energy disparities and inform targeted policy interventions that maximize benefits for low- and moderate-income households. • Set a target for reducing energy burden of low- and moderate-income households based on an updated, comprehensive analysis of energy-related costs. <p>B) Reduce capital and financial barriers:</p> <ul style="list-style-type: none"> • Develop and support the availability of expanded financing options and ownership models to reduce barriers to accessing the benefits of clean energy and energy efficiency investments for low- and moderate-income households including renters, disadvantaged communities, and small businesses. • Seek additional state or federal funding sources to support clean energy and energy efficiency programs that will help lower energy burdens for low- and moderate-income households. <p>C) Assist Mainers in navigating government programs:</p> <ul style="list-style-type: none"> • Launch an energy navigator program to provide education and technical assistance related to available energy cost assistance programs and state and federal funding opportunities (grants, rebates, and other incentives). <p>D) Increase funding to core assistance programs:</p> <ul style="list-style-type: none"> • Ensure adequate and sustainable funding for energy cost assistance programs and streamline program enrollment to support delivery of funds to a greater portion of eligible households.

<p>2. Advance policies that support timely and cost-effective planning and buildout of necessary clean energy infrastructure to meet state goals and statutory requirements including 100% clean electricity by 2040.</p>	<p>A) Establish a regular cadence of clean energy procurements to occur at least every two years to ensure timely deployment of projects.</p> <ul style="list-style-type: none"> • Coordinate and inform procurements with grid planning activities. • Annually evaluate outcomes, technologies, and electricity market opportunities, and implement changes as needed to ensure success. • GEO and the PUC should continue to engage in and seek opportunities for regional policy coordination and cost-sharing of large-scale resource procurements and transmission infrastructure. <p>B) Maximize delivery of federal funds to priority infrastructure projects that contribute to meeting state goals.</p> <p>C) Develop stakeholder-informed resources that provide fact-based information, model ordinance or zoning language, and community benefit information to assist Maine communities in supporting the development of clean energy in a manner that meets local needs.</p> <p>D) Review and evaluate state policies for the permitting, siting and procurement of clean energy projects and transmission resources, with the intent of finding opportunities to enhance efficiency, predictability, and transparency, while providing for meaningful public engagement and protection of natural resources.</p> <p>E) Conduct proactive grid planning at both the transmission and distribution level to ensure that Maine’s electric grid will meet Maine’s needs in the coming years, including addressing the challenges posed by climate change while creating a more reliable, resilient, equitable, flexible, clean, and affordable grid.</p> <p>F) Continue to improve and modernize the process for connecting clean energy projects to the grid to support certainty, timeliness, affordability, and improved utilization of resources on the grid.</p> <p>G) Implement the Maine Offshore Wind Roadmap, including near-term infrastructure investments—such as a dedicated Maine port—transmission and interconnection planning, the Gulf of Maine Research Array, and advancement of Maine-based innovations to meet the state’s energy goals and to position the state as a competitor and beneficiary in the emerging national and international offshore wind industry.</p>
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<p>3. Develop and implement demand management and innovative load flexibility strategies and technologies to support energy reliability and resiliency, reduce electricity peaks and overall system costs, accelerate beneficial electrification, and reduce emissions.</p>	<p>A) Adopt software and technologies that enable signals based on electricity grid conditions to manage demand and supply.</p> <p>B) Facilitate customer participation in demand management programs through the adoption of supportive policies, programs, markets, and regulatory mechanisms.</p> <p>C) Ensure equitable access to and the distribution of benefits from demand management programs and pilots is equitable.</p> <ul style="list-style-type: none"> • EMT, and other relevant entities, should track and annually report low- and moderate-income program participation in applicable demand management programs. <p>D) Develop an education and communications campaign around the opportunities and benefits of demand management initiatives with consumers, communities, policymakers, and regulators.</p>
<p>4. Attract, prepare, and position people and businesses to participate in Maine’s clean energy economy with a goal to support 30,000 clean energy jobs by 2030.</p>	<p>A) Continue to support state workforce initiatives with ongoing stakeholder coordination between industry, educational, and labor and training organizations to support current and future workforce needs.</p> <p>B) Continue to support programs and partnerships for clean-tech innovation support to encourage the creation of clean-energy and climate solutions.</p> <p>C) Expand access to apprenticeships and other earn-and-learn models.</p> <p>D) Create and maintain a clearinghouse for clean energy workforce development efforts, resources, and funds in the state.</p> <p>E) Ensure that tools, resources, trainings, and apprenticeship programs are designed to support disadvantaged students and job seekers.</p> <p>F) Identify workers and industries disproportionately impacted by climate change and identify pathways into clean energy and climate friendly careers.</p>

Analysis and Supporting Information by Recommendation

Recommendation 1: Decrease energy burdens for Mainers by reducing barriers to participating in the state’s energy transformation.	
<p>A) Better understand energy burden across all energy costs:</p> <ul style="list-style-type: none"> • Conduct a comprehensive assessment of residential energy burden in Maine by 2025 that considers all types of energy expenditures in its analysis, including those associated with electrification of buildings and transportation. • Reassess energy budgets of highest burdened populations every three years to build understanding of energy disparities and inform targeted policy interventions that maximize benefits for low- and moderate-income households. • Set a target for reducing energy burden of low- and moderate-income households based on an updated, comprehensive analysis of energy-related costs. 	<p>B) Reduce capital and financial barriers:</p> <ul style="list-style-type: none"> • Develop and support the availability of expanded financing options and ownership models to reduce barriers to accessing the benefits of clean energy and energy efficiency investments for low- and moderate-income households including renters, disadvantaged communities, and small businesses. • Seek additional state or federal funding sources to support clean energy and energy efficiency programs that will help lower energy burdens for low- and moderate-income households.
<p>C) Assist Mainers in navigating government programs:</p> <ul style="list-style-type: none"> • Launch an energy navigator program to provide education and technical assistance related to available energy cost assistance programs and state and federal funding opportunities (grants, rebates, and other incentives). 	<p>D) Increase funding to core assistance programs:</p> <ul style="list-style-type: none"> • Ensure adequate and sustainable funding for energy cost assistance programs and streamline program enrollment to support delivery of funds to a greater portion of eligible households.

Impacts: Recognizing the critical threat of climate change, Maine has committed itself to an ambitious set of policies to reduce Maine’s greenhouse gas emissions, transition to clean energy, and grow the state’s clean energy economy. The state has established statutory greenhouse gas reduction requirements of 45% below 1990 levels by 2030 and 80% by 2050, as well as a requirement for carbon neutrality by 2045. Maine has also established a Renewable Portfolio Standard (RPS) requiring 80% of electricity used in the state be generated by renewable sources by 2030. In 2023, recognizing the progress made to date and the key role of clean energy in controlling costs for consumers and reducing fossil fuel dependence, Governor Mills announced a new accelerated goal of 100% clean energy by 2040.

It's clear that Maine’s energy system, like that of much of the world, is undergoing a transformation. Maine has become a leader among states in decarbonizing its energy system to reduce greenhouse gas emissions and help mitigate the effects of climate change on our communities, people, and environment. Nevertheless, New England’s continued over-reliance on natural gas for electricity generation and oil to heat our homes puts the state at risk of price swings caused by global events and

uncertain global markets. Maine people have felt the effects of increased electricity and heating bills as fossil fuel prices rise - with recent global events adding more uncertainty. Low- and moderate-income Maine people often feel the effects of high energy prices most acutely.

Energy burden is generally understood to be the percentage of household income spent on energy costs. A 2019 Home Energy Burden Study of low-income Maine households, prepared for the Maine Office of the Public Advocate (OPA), found that Maine's low-income residents face higher energy burdens than other residents. The average home energy burden for low-income households in 2018 was 19% while the average home energy burden for all Maine households was 6%.

Maine's targets aim to help protect the state from energy price volatility by investing in resources closer to home, reducing energy burden, and benefiting low-income households in the long-term. The EWG recognizes that this transition must be managed thoughtfully to ensure affordable, reliable, and equitable outcomes. Achieving equity through Maine's climate response will require intentional action, thoughtful policy, and program support to address multiple barriers and intersecting vulnerabilities that can delay uptake in these programs.

Action A under Recommendation 1 focuses on building a better understanding of residential energy burden in Maine—inclusive of all types of energy expenditures—and to set a target for reducing energy burden for low- and moderate-income households following a comprehensive analysis.

Traditional energy burden analyses have assessed electricity and heating fuel costs, but often leave out transportation, water, and other energy-related costs. As Maine pursues significant building and transportation electrification goals, the EWG recommends that future energy burden analyses be inclusive of a broader range of energy expenditures, including primary and secondary heating sources, fuels, electricity, water heating, and transportation costs. This work will provide insights into the relative energy burdens of those households who electrify appliances, vehicles, and heating, as compared to those who remain reliant on fossil fuels for these uses.

A target for reducing energy burden for low- and moderate-income households should be established based on an updated, comprehensive analysis of energy related costs.

The OPA has hired a consultant to update its 2019 Maine Low-Income Home Energy Burden Study in 2024. The EWG recommends that this study include analysis of all energy uses, not just electricity.

The EWG also recommends regularly reassessing energy costs, particularly of Maine's highest burdened populations as well as maintaining an understanding of the landscape of energy costs for all energy users, to help identify disparities and inform targeted program delivery that helps low- and moderate-income people reduce their reliance on the energy sources that are most expensive and most exposed to risk. The EWG proposes reassessing energy burdens every three years.

Clean energy investments—such as energy efficiency, electrification (heat pumps, heat pump hot water heaters, etc.), weatherization, renewable energy and energy storage—can deliver long-term, high-impact solutions to reducing energy burdens, lowering emissions, increasing resilience, and better managing electricity demand. The upfront capital costs of these investments, however, can be cost-prohibitive.

Barriers to accessing the benefits of clean energy and energy efficiency investments beyond cost may be low credit scores, being a renter, lack of information or expertise, or lack of trust, among other barriers.

Actions B and C under Recommendation 1 seek to reduce different types of barriers to accessing the benefits of energy efficiency and clean energy faced by low- and moderate-income households, renters, disadvantaged communities, and small businesses, among others.

To minimize barriers and to maximize program benefits from energy efficiency and clean energy, the state and other program implementers should develop and support the availability of expanded financing options and ownership models. Programs should implement best practices for program design, delivery, and evaluation to reach their target populations. Additional state or federal funding sources should also be sought to support these programs specifically for low- and moderate-income households.

Some examples of alternative or more equitable financing and ownership models include:

- A green bank or fund could leverage significant, low-cost private-sector capital to finance clean-energy projects, climate initiatives, and infrastructure over the long term. In addition, the Efficiency Maine Green Bank will receive \$15 million to support energy loans through a grant from the U.S. EPA's National Clean Investment Fund, an initiative created by the Inflation Reduction Act.
- The Federal Justice40 Initiative designates that at least 40% of the funding and benefits from the Inflation Reduction Act must be delivered to disadvantaged communities.
- Efficiency Maine offers heat pump rebates scaled by income and allows streamlined income verification if a household participates in MaineCare, HEAP, SNAP, or TANF. Efficiency Maine also offers no-fee, low-interest-rate home energy loans to help income-eligible homeowners pay the upfront cost of energy upgrades.
- On April 22, 2024, the U.S. Environmental Protection Agency (EPA) selected Maine's proposal for a \$62 million grant award to provide financial and technical assistance enabling low-income and disadvantaged households across the state to access solar and energy storage. The proposal puts forth a range of programs and financing options designed to ensure a pathway to solar participation is available to renters and homeowners, rural and urban households, and households that may not be well-suited for on-site solar. This program will be administered by the Governor's Energy Office and plans to serve thousands of low-income participants through the *Solar for All* program.
- In 2017, the Center for an Ecology-Based Economy in Norway, Maine started the first public solar cooperative in Maine with the aim of reducing energy costs for households in western Maine and keeping more energy dollars in the community. The scale of their community-owned projects allows for expedited grid interconnection and can contribute to increased regional energy resilience.

Establishing a navigator program focused on delivery of education and technical assistance to facilitate access to available energy assistance programs and state and federal funding opportunities such as grants, rebates, or other incentives, could assist individuals and communities in understanding their options for funding and stacking available opportunities that meet their energy needs. The EWG emphasized that the design and delivery of a navigator program will be most successful if implementers work with community-based organizations and tribal governments to ensure assistance and education opportunities reach priority populations.

Action D under Recommendation 1 recognizes that while the primary goal of this recommendation is to decrease energy burdens, there are today and will remain a significant number of Maine people who have difficulty paying their electricity bills. To be eligible to participate in Maine’s Low Income Assistance Program (LIAP) household income must be at or below 150% of the Federal Poverty Limit. According to the Office of the Public Advocate, 122,000 households in Maine meet that threshold, but a large portion of eligible households don’t enroll or receive a benefit for a variety of reasons.

Funding for core energy bill assistance programs should be increased, a sustainable funding source should be identified, and—where possible—automatic enrollment of eligible households in energy bill assistance programs should be implemented to reduce administrative and other barriers to entry. Streamlining the process for bill assistance recipients to transfer payments between fuel sources, such as from a fuel to electricity, could also reduce barriers and negative incentives to access assistance.

Priority populations: Populations who may have a high energy burden, be particularly vulnerable to volatile energy costs, or face barriers to accessing energy efficiency and clean energy programs and their benefits include: low- and moderate income households; people with limited English proficiency; renters in landlord-controlled properties; residents of affordable housing units; residents of mobile or manufactured homes; rural residents; small towns with limited municipal capacity; small businesses; disadvantaged communities; and the elderly, among others.

The EWG discussed the need for policies that support renters in the energy transition, including renter protections when rent increases are proposed to pay for upgrades.

The EWG was intentional about not only addressing low-income households in its actions under Recommendation 1, recognizing that low-income thresholds have not always kept up and moderate-income households often also struggle with electricity bills. The group discussed ways to increase income eligibility for energy bill assistance programs, potentially by area median income thresholds, but did not come up with a specific proposal on the topic.

Based on the Mitchell Center’s presentation to the EWG on May 23, the EWG also understands that engagements with tribal governments related to program design or delivery will be best received when approached via government-to-government interactions.

Additionally, the EWG recognized that populations who may have a high energy burden are likely to face multiple vulnerabilities. The Equity Subcommittee’s final report cites several studies that explore these multiple vulnerabilities, such as the correlation between elevated energy burden with negative health outcomes, and that rural communities have a high concentration of low-income households that experience high energy burdens and cannot afford any upfront capital costs for needed energy efficiency improvements.

Crossover: The EWG did not collaborate with other working groups on this recommendation, but this recommendation may overlap with or be relevant to the other working groups.

Timeframe: Tracking and reducing energy burdens will take ongoing action. In the near-term, the EWG recommends completing a comprehensive energy burden study by 2025 to be updated every 3 years. All

other actions under Recommendation 1 should be underway or completed within the four-year climate plan framework (2025-2028) with progress reports in the interim.

Implementation Next Steps:

- Legislation, rules/regulation, internal program guidance changes
- Establishment of a new program or a fund,
- Conduct additional research
- Provide education or training
- Coordinate with other parties/agencies/states
- Other (please describe)

Metrics: How will you know the recommendation is effective? *Are outcomes measurable using current monitoring/data collection? Are there benchmarks or short-term indicators of success?*

Action A: A comprehensive assessment of residential energy burden should be completed by 2025. A target for reducing energy burden (%) should be set specifically for low- and moderate-income households. Energy burden should be reassessed every 3 years.

Action B: Data regarding participation in state energy efficiency and clean energy programs by income level should be collected and tracked overtime. Consider setting low- and moderate-income participation targets.

Action C: Before a navigator program is launched, a target for number of users and specific goals for the program should be set for year 1 and beyond. It will be important to work with community-based organizations to successfully design and deliver this program to effectively reach priority populations.

Action D: Increase funding available for assistance to eligible households. Track number of eligible households that enroll or receive a benefit as well as the average benefit size with the goal of increasing the portion of eligible households who are served.

Recommendation 2: Advance policies that support timely and cost-effective planning and buildout of necessary clean energy infrastructure to meet state goals and statutory requirements including 100% clean electricity by 2040.

<p>A) Establish a regular cadence of clean energy procurements to occur at least every two years to ensure timely deployment of projects.</p> <ul style="list-style-type: none"> • Coordinate and inform procurements with grid planning activities. • Annually evaluate outcomes, technologies, and electricity market opportunities, and implement changes as needed to ensure success. • GEO and the PUC should continue to engage in and seek opportunities for regional policy coordination and cost-sharing of large-scale resource procurements and transmission infrastructure. 	<p>B) Maximize delivery of federal funds to priority infrastructure projects that contribute to meeting state goals.</p>
<p>C) Develop stakeholder-informed resources that provide fact-based information, model ordinance or zoning language, and community benefit information to assist Maine communities in supporting the development of clean energy in a manner that meets local needs.</p>	<p>D) Review and evaluate state policies for the permitting, siting and procurement of clean energy projects and transmission resources, with the intent of finding opportunities to enhance efficiency, predictability, and transparency, while providing for meaningful public engagement and protection of natural resources.</p>
<p>E) Conduct proactive grid planning at both the transmission and distribution level to ensure that Maine’s electric grid will meet Maine’s needs in the coming years, including addressing the challenges posed by climate change while creating a more reliable, resilient, equitable, flexible, clean, and affordable grid.</p>	<p>F) Continue to improve and modernize the process for connecting clean energy projects to the grid to support certainty, timeliness, affordability, and improved utilization of resources on the grid.</p>
<p>G) Implement the Maine Offshore Wind Roadmap, including near-term infrastructure investments—such as a dedicated Maine port—transmission and interconnection planning, the Gulf of Maine Research Array, and advancement of Maine-based innovations to meet the state’s energy goals and to position the state as a competitor and beneficiary in the emerging national and international offshore wind industry.</p>	

Impacts: In 2019, Maine increased Maine’s Renewable Portfolio Standard (RPS)—the minimum portion of electricity sold in Maine supplied by renewable sources—to 80% by 2030 with a goal of 100% by 2050. In 2023, Governor Mills announced an intention to accelerate that pace with a new goal of 100% clean electricity by 2040.

Maine Won’t Wait directed the state to “set achievable targets for cost-effective deployment of technologies such as offshore wind, distributed generation, and energy storage, and outline the policies necessary to achieve these results.” Since then, the state has set targets for procuring offshore wind guided by the Maine Offshore Wind Roadmap, and deployment goals for distributed generation and energy storage. Procurements have also been directed for transmission infrastructure to connect generation resources in northern Maine to the grid and separately, for combined heat and power.

The actions under Recommendation 2 focus on moving beyond statutory goals and towards effective policy implementation and efficient, affordable deployment of resources—both large scale and distributed—on pace to match the state’s growing electricity demand.

The importance of this action was recently emphasized by the results of Tenth Biennial Report on Progress Toward Greenhouse Gas Reductions Goals published by the Maine Department of Environmental Protection in early June. The report finds that Maine is on track to meet its greenhouse gas reduction goals and has, as of 2021, reduced gross greenhouse gas emissions to 30% below 1990 levels. However, it also finds that 94 percent of gross greenhouse gas emissions in Maine result from energy consumption, and carbon emissions from the combustion of fossil fuels account for 65 percent of gross emissions in 2021. While annual emissions from energy have gone down 41 percent since the high in 2002 and 30 percent since 1990, there remains significant work ahead to decarbonize Maine’s energy sector.

Action A under Recommendation 2 makes clear that to ensure available resources to meet increased demands from electrification of buildings and transportation, it will be necessary to establish a regular cadence of clean energy procurements through existing or expanded authority. Procurements should occur at least every two years and their results evaluated annually to ensure outcomes aligned with state policy.

The Maine Public Utilities Commission (Commission) has multiple existing authorities to ensure compliance with Maine’s RPS, to ensure reliability, and to advance beneficial electrification through its decisions and orders. The Commission should develop standardized regulatory tools to evaluate costs and benefits to aid in identification and selection of cost-effective projects. The Governor’s Energy Office, through the Beneficial Electrification Policy Act also has the authority to petition the Commission to procure energy from renewable resources to achieve the emission reduction and renewable energy goals of the State to meet reasonably expected growth in electric demand. The GEO should continue to regularly evaluate and report on the status and impacts of Maine’s RPS and clean energy targets on

“The time has come to be bolder: I am announcing tonight that I am directing my Energy Office to draft legislation requiring that **100 percent of our electricity come from clean energy by 2040**. By accelerating our pace toward 100 percent clean energy, we will reduce costs for Maine people, create new jobs and career opportunities that strengthen our economy, and protect us from the ravages of climate change.”

Governor Mills, State of the Budget Address, February 2023

energy prices as well as assessment of benefits, including greenhouse gas emission reduction and economic benefits. See the latest report detailing the costs and benefits of Maine’s RPS policy [here](#).

Where necessary, the legislature should provide implementing agencies with additional statutory authorizations and guidance, while preserving agency discretion, to accomplish regular procurements in line with Maine’s RPS policy, the Beneficial Electrification Policy Act, and that integrate statutory deployment targets for offshore wind, energy storage, and distributed energy resources. Customer-owned, behind-the-meter, and community-based renewable energy and storage projects can also contribute to Maine’s climate goals and renewable energy targets while promoting customer empowerment, brownfield development, and additional grid services close to load. Continuing to support a diverse portfolio of existing and new resources can help manage costs and mitigate risks.

Procurements should be closely coordinated and informed by grid planning activities as described in **Action E**. Effective grid planning will be a powerful tool to ensure all Maine people and businesses are afforded reliable and resilient cost-effective electric service as technological advances, economic changes, and policy objectives drive significant transformation across the energy landscape. The state, utilities, ISO-NE, the Commission, stakeholders, and advocates all have important roles in ensuring the coordination and implementation of such plans. As part of this work, GEO and the Commission should continue to engage in and seek opportunities for regional policy coordination and cost-sharing of large-scale resource procurements and transmission infrastructure.

As Maine electrifies, the distribution system will play a greater role in supplying energy across the economy, in reducing emissions, and in doing so cost-effectively. The distribution system will likely need significant upgrades to serve peak demand across geographies. Proactive and granular planning that utilizes time-series, location-specific data and power flow simulations to illustrate the effects of time-varying loads and time-varying generation will be important to inform interconnection assessment, characterize grid needs, assist in managing electricity demand, and suggest grid solutions such as efficient upgrades to existing infrastructure and targeted investments and deployment of new generation.

The Commission hosted a stakeholder process to identify priorities to be addressed in utility grid plans that will support improved system reliability and resiliency and enable the cost-effective achievement of the state’s greenhouse gas reduction obligations and climate policies.

The EWG detailed several actions and considerations that electric system planners and operators must weigh in grid planning processes, recognizing that the grid faces a set of complex challenges and planning for a grid that is reliable, resilient, equitable, flexible, clean, and affordable—attributes that are each important but sometimes conflicting—requires careful consideration of tradeoffs. See full details in the attached appendix.

Action B highlights the importance of maximizing the delivery of available federal funds to priority infrastructure projects that contribute to the advancement of state goals. Historic federal funding opportunities are currently available to support critical investment in Maine’s roads and bridges, ports, public transportation systems, broadband, improve climate resilience, and build a clean energy future.

In 2022, Governor Mills established the Governor’s Infrastructure Implementation Committee. State agencies should continue to coordinate to maximize the delivery of federal funds to priority infrastructure

projects that align with Maine’s climate and clean energy goals to leverage state dollars and accelerate progress toward these goals. To improve Maine’s success in drawing down federal funds and to ensure infrastructure projects create good-paying jobs, the state should ensure applications for federally-funded infrastructure projects demonstrate a meaningful commitment to meeting federal labor standards required by these laws, such as prevailing wage and fringe benefits as determined by Davis-Bacon and registered apprenticeship utilization.

Action C recognizes that Maine communities are coping with a variety of difficult and complex challenges today, including climate change and related impacts, which have highlighted the need to support local and regional community resilience efforts. Severe storms in recent months have strained the resilience of communities and the electric grid, additionally underscoring the importance of energy resilience and reliability in an increasingly electrified energy system. Lack of capacity, expertise, and funding are consistently cited by municipalities as reasons why they are not able to plan for and address their climate risks through investments in clean energy, weatherization, and energy efficiency. The development of stakeholder-informed resources that provide fact-based information, model ordinance or zoning language, and community benefit best practices could improve equitable access to the environmental, economic, and resilience benefits of clean energy by helping local governments make informed decisions regarding energy planning and siting that align with the state’s climate action plan.

Actions D and F recognize that existing state policies and processes for the permitting, siting, procurement, and interconnection of clean energy projects and transmission resources can be cumbersome, inefficient, and often lack adequate or accessible opportunity for meaningful public engagement. Meeting Maine’s clean energy goals will require significant additional buildout of energy generation, transmission, and distribution assets. Uncertainties in siting and permitting processes can delay development and operation of clean energy projects and create uncertainty that increases costs. Timely, predictable review of projects and dispute resolution processes can accelerate deployment and reduce development costs.

The EWG recommends a review and evaluation of state policies on these topics with the intent of finding opportunities to enhance efficiency, predictability, and transparency, while providing for meaningful public engagement and protection of natural resource. Maine should consider establishing a formal commission to provide recommendations for potential reforms to remove barriers to responsible clean energy infrastructure development, similar to the Commission on Energy Infrastructure Siting and Permitting recently established in Massachusetts. Such a commission should provide recommendations on potential administrative, regulatory, and legislative changes to existing procedures and government structures that could enhance efficient and responsible clean energy development in line with state goals. Such a commission should also assess project-level risk premiums and risk management strategies associated with existing and proposed policy reforms, and seek to proactively work with municipalities, landowners, developers, fishermen, and tribal governments to minimize conflicts and ensure benefits related to development.

Specific to interconnection policies, state regulators and utilities should seek to continually improve and modernize the process for connecting clean energy projects to the grid to support certainty, timeliness, affordability, and improved utilization of resources on the grid. At the state level, interconnection policy

reforms should be considered within the Maine Public Utilities Commission Small Generator Interconnection Procedures Rules (Chapter 324). Utilities should provide, and stakeholders should apply, time-series, location-specific grid planning data and power-flow simulation approaches described above and incorporate the grid-interactive capabilities of distributed energy resources to develop an interconnection process that reduces delays and costs while avoiding adverse grid impacts and aligns with the state's climate goals and targets for renewable and distributed energy resource deployment.

Maine's Non-Wires Alternative (NWA) process is a second important regulatory program for advancing this goal at the state level. Policy makers should consider reforms to the NWA process to improve the program's effectiveness for connecting high value clean energy projects while reducing transmission and distribution capacity costs.

Utilities can additionally support a more efficient process by improving publicly available hosting capacity maps of grid conditions and capacity, ensuring hosting capacity maps are regularly updated, and annually reporting on the number of pending projects and approval timelines in active cluster studies.

Last, but not least, under Recommendation 2, the EWG recommends **Action G** to implement the Maine Offshore Wind Roadmap, including near-term infrastructure investments—such as a dedicated Maine port—transmission and interconnection planning, the Gulf of Maine Research Array, and advancement of Maine-based innovations to meet the state's energy goals and to position the state as a competitor and beneficiary in the emerging national and international offshore wind industry.

Offshore wind presents a generational economic and energy opportunity for Maine. As an abundant source of clean and renewable energy, offshore wind has the potential to help free Maine from its reliance on fossil fuels, to lower energy costs and volatility, and to curb climate-altering emissions to protect our state's environment for future generations. As an industry, offshore wind is poised to grow significantly in the coming years. This growth will support existing and emerging Maine companies, create new jobs and career opportunities for Maine citizens, attract new workers and families to Maine, and deliver infrastructure investments in communities across the state. The Maine Offshore Wind Roadmap is a stakeholder-driven comprehensive plan that offers detailed strategies for Maine to realize the economic, energy, and climate benefits from offshore wind, in conjunction with communities, tribal governments, fisheries, and wildlife of the Gulf of Maine.

In addition to the Roadmap, Public Law 2023, Chapter 481, which was signed into law in July 2023, authorized the Governor's Energy Office to lead a process to procure at least 3,000 MW of offshore wind installed by 2040. Offshore wind procurements should be coordinated with others states or entities in the region to drive competition and reduce costs while securing phased development commitments to deliver a meaningful percentage of Maine's electricity needs by 2040.

As part of Maine's commitment to responsible offshore wind, Governor Mills established the Maine Offshore Wind Research Consortium to better understand the local and regional impacts of offshore wind power projects in the Gulf of Maine and pursued a research lease in the Gulf of Maine from the federal Bureau of Ocean Energy Management (BOEM). To date, three projects representing priority research strategies have been funded, including: exploring approaches to fisheries coexistence with

floating offshore wind; inventorying baseline data on socioeconomics of Maine fishing communities to help assess potential positive and negative impacts of floating offshore wind in the Gulf of Maine; and sonar seafloor mapping in key areas of the Gulf of Maine. The state should allocate additional funding to the Research Consortium to support work on the priority research strategies as identified by the group's Advisory Board. In May of 2024, BOEM granted Maine's request for a lease to advance a floating offshore wind research array site.

Crossover: The EWG did not collaborate with other working groups on this recommendation.

Timeframe: Each of the actions included in Recommendation 2 require immediate or near-term planning or policy reviews critical to informing effective policy and program implementation to ensure the state is on track to meet its 2030 and 2040 goals.

Implementation Next Steps:

- Legislation, rules/regulation, internal program guidance changes
- Establishment of a new program or a fund,
- Conduct additional research
- Provide education or training
- Coordinate with other parties/agencies/states
- Other (please describe)

Metrics: How will you know the recommendation is effective? *Are outcomes measurable using current monitoring/data collection? Are there benchmarks or short-term indicators of success?*

Action A: The Commission annually reviews compliance with Maine's RPS policy and the GEO is directed to regularly evaluate and report on the status and impacts of Maine's RPS and clean energy targets on energy prices as well as to assess benefits, including greenhouse gas emission reduction and economic benefits. GEO and the Commission should annually evaluate procurement and policy outcomes, technology advancements, and electricity market opportunities, and implement changes as needed to ensure success.

Action B: The Governor's Infrastructure Implementation Committee coordinates state agencies to maximize delivery of federal funds to priority infrastructure projects aligned with Maine's climate and clean energy goals. Successful grant proposals are detailed and reported on www.maine.gov/bil.

Action C: Engagement with and outcomes resulting from the use of state-developed planning resources such as model ordinances or zoning language should be monitored closely to ensure usefulness. Tools should be modified based on community and stakeholder input to avoid negative outcomes. Examples of local policies or ordinances adopted by communities that support beneficial clean energy development can be shared with other communities.

Action D: Review and evaluation of state policies for the permitting, siting, and procurement of clean energy projects and transmission resources should include analysis of average time a project takes to receive applicable permits, average length of appeals processes, the value of risk premiums associated with existing and proposed policies, current levels of public engagement, among other metrics to inform

opportunities to enhance efficiency, predictability, total costs, and opportunities for meaningful engagement.

Action E: Establishing consensus around load forecasts that are actionable and transparent, and temporally and geographically granular will be particularly valuable to the success of grid planning processes.

Action F: Annual reporting on the number of pending projects and approval timelines in active cluster studies will help inform the success of efforts to improve and modernize interconnection processes.

Action G: There are many metrics, benchmarks, and indicators of progress regarding the development of a responsible offshore wind industry in Maine. This work should continue to be guided and tracked against the Maine Offshore Wind Roadmap and authorizations included in Public Law 2023, Chapter 481.

<p>Recommendation 3: Develop and implement demand management and innovative load flexibility strategies and technologies to support energy reliability and resiliency, reduce electricity peaks and overall system costs, accelerate beneficial electrification, and reduce emissions.</p>	
<p>A) Adopt software and technologies that enable signals based on electricity grid conditions to manage demand and supply.</p>	<p>B) Facilitate customer participation in demand management programs through the adoption of supportive policies, programs, markets, and regulatory mechanisms.</p>
<p>C) Ensure equitable access to and the distribution of benefits from demand management programs and pilots is equitable.</p> <ul style="list-style-type: none"> • EMT, and other relevant entities, should track and annually report low- and moderate-income program participation in applicable demand management programs. 	<p>D) Develop an education and communications campaign around the opportunities and benefits of demand management initiatives with consumers, communities, policymakers, and regulators.</p>

Impacts: To meet Maine’s greenhouse gas emissions reduction targets, large portions of the energy used in our economy will need to be converted from higher emitting sources, like fossil fuels, to electricity — a transition referred to as “beneficial electrification” — and this electricity must increasingly come from cleaner generation sources.

Beneficial electrification in heating and transportation will require expansion and investment in Maine’s electricity transmission and distribution system, or electric grid. However, by changing the way we manage energy, we can manage the need to continually add expensive infrastructure to meet peak loads and reduce the total cost to build a 100% clean electricity grid. Effective preparation for managing increased electricity usage will include increased energy-efficiency efforts, thoughtful management of energy uses, modernization of the electricity grid, enhanced grid management systems, greater use of markets and aggregation, and accompanying statutory and regulatory policies to ensure that Maine’s power sector evolves efficiently and affordably, and can event support accelerated beneficial

electrification and emission reductions from the energy sector. These elements reflect a fundamental transformation of the electricity sector that is now underway nationally.

Action A emphasizes the need to adopt software and technologies that can enable signals based on real-time grid conditions to manage demand and supply. Flexible loads can help the grid adapt to variations in resource availability, particularly as we transition to a system with a greater supply of intermittent energy sources, but capabilities such as automated network sensing, management, and communications systems will be required to maximize the benefits of flexible loads such as electric vehicles, batteries, and grid-integrated devices.

Action B is about the types of programs, policies, and regulatory and market structures that should be available to facilitate customer participation in demand management. Using the *Pathway to 2040* analysis developed for the GEO to guide the scale and scope of needed demand management and load flexibility that will be needed to efficiently and affordably meet Maine’s climate, clean energy, and reliability goals, particular areas of focus under this action include: scaling of demonstration programs and existing demand management initiatives, advanced rate designs, opportunities for aggregation and automation, and open access opportunities that promote transparent and competitive energy services.

Efficiency Maine Trust’s Demand Management Program was approved by the EMT Board and the Maine PUC Triennial Plan V in 2022. The program is small but expanding, and now comprises four initiatives: Small Battery Management to dispatch residential back-up batteries during peak periods; Large Battery Management, a pay-for-performance arrangement for batteries 20kW and larger that reduces the load of a commercial or institutional customer behind the meter during summer peak hours; Managed Charging for EVs, in which EV drivers are compensated with they allow EMT to shift their charging to off-peak hours; and Commercial Curtailment, a traditional demand response initiative where participants are paid a fixed incentive for each kilowatt reduced during a demand response event.

Action C focuses on ensuring equitable access to and distribution of benefits from demand management programs and pilots. Successfully managing demand can reduce overall system costs—which translates to lower costs, or avoided costs—for everyone, which is particularly important for Maine’s most vulnerable customers. In considering the impact of demand management programs and actions on low- and moderate-income customers, program administrators should:

- Understand that different initiatives will target different types of customers (based on customer class, types of load, etc.). Careful attention to the distribution of benefits and burdens of all programs is warranted.
- Ensure programs targeting households strive to be designed to be as inclusive as possible.
- Identify strategies and best practices to increase beneficial participation from low- and moderate-income households, which should include coordination with community-based organizations and utilities to ensure effective education and outreach.

Action D recognizes that pursuit of robust demand management and innovative load flexibility strategies and technologies may result in new programs, initiatives, and ways of thinking about and interacting with the grid and grid-integrated devices. Effective communication of programs is critical to achieve program objectives and goals. An education and communications campaign should be developed around the

opportunities and benefits of demand management initiatives for a range of different audiences including consumers, communities, policymakers, and regulators. Several entities with different audiences will play a role in robust communications, such as utilities, state agencies, the Commission, EMT, and community-based organizations.

Some immediate priority outreach areas identified by the EWG in coordination with the Buildings and Transformation Working Groups include:

- Encouraging electric vehicle owners to participate in flexible charging by making available mechanisms such as time of use rates or managed charging programs like EMT’s Managed Charging for Electric Vehicles initiative. Electric vehicles, when aggregated, have significant potential in implementing load flexibility given their inherent flexibility.
- Increasing literacy and program participation amongst low- and moderate-income Mainers who stand to benefit from cost savings.

Crossover: The EWG worked closely, through multiple public workshops, to develop these recommendations with the Buildings and Transportation Working Groups.

Timeframe: There are several demand management initiatives or pilots currently available in Maine. Those programs should be evaluated for effectiveness and participation and expanded overtime.

Near term actions can be taken to advance the adoption of enabling software and technologies, as well as supportive policies, programs, regulatory and market structures that reduce lost opportunities of technology upgrades, such smart vehicle charging, grid-integrated devices (such as hot water heaters), and other consumer technologies today which can be utilized by existing and future demand management programs. This is an emerging and evolving space both in terms of technology and policy, so supporting actions and opportunities should be continually evaluated and updated.

Implementation Next Steps:

- Legislation, rules/regulation, internal program guidance changes
- Establishment of a new program or a fund,
- Conduct additional research
- Provide education or training
- Coordinate with other parties/agencies/states
- Other (please describe)

Metrics: How will you know the recommendation is effective? *Are outcomes measurable using current monitoring/data collection? Are there benchmarks or short-term indicators of success?*

Action A: The latest software and technology options available to enable signals based on electricity grid conditions to manage supply and demand should be monitored and evaluated for potential adoption.

Action B: The *Pathway to 2040* analysis should be utilized to guide the scale and scope of demand management and load flexibility that will be needed to efficiently and affordably meet Maine’s climate, clean energy, and reliability goals. Demonstration projects should be scaled up based on evaluation of

successes. New rate design proposals should prioritize data collection and verification to ensure beneficial implementation.

Action C: EMT, and other relevant entities, should track and annually report low- and moderate-income program participation in applicable demand management programs.

Action D: EMT, and other relevant entities, should track and annually report low- and moderate-income program participation in applicable demand management programs and set a goal for increasing program participation among these populations.

Recommendation 4: Attract, prepare, and position people and businesses to participate in Maine’s clean energy economy with a goal to support 30,000 clean energy jobs by 2030.	
A) Continue to support state workforce initiatives with ongoing stakeholder coordination between industry, educational, and labor and training organizations to support current and future workforce needs.	B) Continue to support programs and partnerships for clean-tech innovation support to encourage the creation of clean-energy and climate solutions.
C) Expand access to apprenticeships and other earn-and-learn models.	D) Create and maintain a clearinghouse for clean energy workforce development efforts, resources, and funds in the state.
E) Ensure that tools, resources, trainings, and apprenticeship programs are designed to support disadvantaged students and job seekers.	F) Identify workers and industries disproportionately impacted by climate change and identify pathways into clean energy and climate friendly careers.

Impacts: Maine’s transition to a clean energy economy offers opportunities for Maine, its industries, and workers to participate in new market opportunities and benefit from the state’s transition. A skilled clean energy workforce will be critical to ensuring projects from housing to offshore wind get built here in Maine.

In 2022, Maine’s clean energy sector employed more than 15,020 people—more than halfway to Maine’s 2030 goals—and contributed \$2.31 billion to Maine’s economy. The 2023 Maine Clean Energy Industry Report found that the sector is poised for continued growth and that “the growth of the industry presents new and increasingly valuable career opportunities to Maine residents from many backgrounds and with a wide range of skills and knowledge.”

The Clean Energy Partnership program, a recommendation of *Maine Won’t Wait*, was established to advance Maine’s clean energy, climate, economic development, and workforce goals. The Partnership is led by the Governor’s Energy Office (GEO), in close coordination with the Governor’s Office of Policy Innovation and the Future (GOPIF), the Department of Labor (DOL), and the Department of Economic and Community Development (DECD).

GEO has awarded \$2.9 million in grants from the Maine Jobs and Recovery Plan to clean energy employers, educational institutions, industry associations, and nonprofit organizations to develop new

curricula, provide technical training and experiential learning, deploy new job placement services, and other activities related to workforce development and training. This includes supporting apprenticeships, affordable and accessible trainings, and free credentialing.

To help guide the program, the Clean Energy Partnership has convened an Advisory Group to provide information and feedback as initiatives are designed and implemented. This includes defining needs, monitoring progress, advising on adjustments, and designing future programming.

Action A recommends continued support, including funding, for the Clean Energy Partnership and related workforce development programming with ongoing coordination and advising from industry, educational, and labor and training organizations to support current and future clean energy workforce needs.

Maine Won't Wait also recommended the creation of programs and partnerships for clean-tech innovation support to encourage the creation of clean-energy and climate solutions. In 2022, Maine had 2,500 clean energy businesses representing approximately 4% of total businesses throughout the state.

Through the Clean Energy Partnership, GEO has awarded \$1.3 million to partners working to develop business incubator and accelerator programs; facilitate market adoption of forward-looking technologies to expand the state's clean energy and climate leadership; encourage economic development in rural areas through business advising and mentorship for small businesses and contractors; and create hubs for entrepreneurs, founders, and startups in the growing clean energy, climate tech, and sustainability fields. **Action B** recommends continued support for clean-tech innovation efforts.

Apprenticeships are a key pathway to entry into the clean energy sector. In 2023 there were 130 registered apprenticeship sponsors in the state and 3,088 registered apprentices across all sectors. ~55% of registered apprenticeships are in the construction sector. 37% of all apprentices are electricians. These figures represent a significant increase in registered apprenticeship opportunities and uptake, but growth in apprenticeship availability will be critical to meeting the state's clean energy jobs goal. **Action C** recommends expanding access to apprenticeships and other earn-and-learn models. Access to apprenticeships can be expanded by supporting pre-apprenticeships and other pathways to apprenticeships, as well as embedding pre-apprenticeship offerings in relevant educational and workforce development programming. Outreach efforts, particularly to disadvantaged students and jobseekers should be coupled with other employment support programs, such as wrap-around services, to ensure individuals are able to effectively participate in training programs.

Developing and maintaining a clearinghouse for clean energy workforce development efforts, resources, and funds in the state, as discussed in **Action D**, is another strategy for building understanding of and access to clean energy sector career pathways available in Maine. In May of 2024, GEO in coordination with the Maine Departments of Labor and Economic and Community Development launched the [Maine Clean Energy Jobs Network](#), a new online directory that connects jobseekers with Maine-based clean energy employers and training opportunities.

Actions E and F acknowledge that historically disadvantaged students and job seekers, as well as workers and industries disproportionately impacted by climate change, stand to benefit from jobs in the

clean energy sector, but education and training opportunities, as well as specific transition pathways, should be identified to support these populations, each of which may face different types of barriers.

Populations that may face barriers to employment in the clean energy sector include workers facing disproportionate climate risks, migrant workers, those with limited English proficiency, young Mainers, New Mainers, underemployed or unemployed people, those with limited or non-transferrable experience or credentials, and BIPOC individuals. Other people who face barriers to accessing workforce training opportunities might include those that lack access to transportation or childcare, those underrepresented in the field such as women, or those who lack the ability to participate in unpaid training opportunities.

Crossover: The EWG did not collaborate with other working groups on this recommendation, but this recommendation may overlap with or be relevant to the other working groups.

Timeframe: Many of the actions under Recommendation 4 are underway today but will require continued support and funding to ensure training and innovation programs adequately prepare Maine workers to join the clean energy sector and meet the state's 2030 jobs target.

Implementation Next Steps:

- Legislation, rules/regulation, internal program guidance changes
- Establishment of a new program or a fund,
- Conduct additional research
- Provide education or training
- Coordinate with other parties/agencies/states
- Other (please describe)

Metrics: How will you know the recommendation is effective? *Are outcomes measurable using current monitoring/data collection? Are there benchmarks or short-term indicators of success?*

To track and monitor success under Recommendation 4, several metrics/data sources should be collected and considered, including:

- Total number of workers in Maine's clean energy sector;
- Number of registered apprenticeship sponsors and registered apprenticeships in sectors related to clean energy;
- Number of pre-apprenticeship programs and the types of wrap-around services provided by programs;
- Registered users of the Maine Clean Energy Jobs Network including jobseekers and employers;
- Demographic data of workers and apprentices to inform success of outreach to disadvantaged students and jobseekers; and
- Salary and benefits figures to understand job quality in the clean energy sector.

Appendix 1:

Please see below full charts containing additional supporting information and detail as developed by the EWG.

Recommendation—Energy Burden & Energy Access:	
Decrease energy burdens for Mainers by reducing barriers to participating in the state’s energy transformation.	
Actions:	Additional important information:
<p>Better understand energy burden across all energy costs:</p> <ul style="list-style-type: none"> • Conduct a comprehensive assessment of residential energy burden in Maine by 2025 that considers all types of energy expenditures in its analysis, including those associated with electrification of buildings and transportation. • Reassess energy budgets of highest burdened populations every three years to build understanding of energy disparities and inform targeted policy interventions that maximize benefits for low- and moderate-income households. • Set a target for reducing energy burden of low- and moderate-income households based on an updated, comprehensive analysis of energy-related costs. 	<p>Energy burden analyses can typically include electricity and heating fuels and exclude transportation, water, and other energy-related costs. As Maine pursues significant building and transportation electrification goals, future energy burden analyses should be inclusive of a broader range of energy expenditures including primary and secondary heating sources, fuels, electricity, and transportation costs. Regularly reassessing energy costs of Maine’s highest burdened populations, as well as maintaining an understanding of the landscape of energy costs for all energy users, will help identify disparities and inform targeted program delivery that helps low- and moderate-income people reduce their reliance on the most expensive energy sources.</p> <p>A 2019 Home Energy Burden Study of low-income Maine households, prepared for the Maine Office of the Public Advocate (OPA), found that Maine’s low-income residents face higher energy burdens than other residents. The average home energy burden for low-income households in 2018 was 19% while the average home energy burden for all Maine households was 6%. The OPA intends to update this analysis in 2024.</p>
<p>Reduce capital and financial barriers: Develop and support the availability of expanded financing options and ownership models to reduce barriers to accessing the benefits of clean energy and energy efficiency investments for low- and moderate-income households including renters, disadvantaged communities, and small businesses.</p> <p>Seek additional state or federal funding sources to support clean energy and energy efficiency programs that will help lower energy burdens for low- and moderate-income households.</p>	<p>Clean energy investments—such as energy efficiency, electrification (heat pumps, heat pump hot water heaters, etc.), weatherization, renewable energy and storage—can deliver long-term, high-impact solutions to reducing energy burdens, lowering emissions, increasing resilience, and better managing electricity demand. To minimize barriers and maximize program benefits in low- and moderate-income communities, best practices for program design, delivery, and evaluation should be implemented.</p> <p>Some examples:</p> <ul style="list-style-type: none"> • A green bank or fund could leverage significant, low-cost private-sector capital to finance clean-energy projects, climate initiatives, and infrastructure over the long term. In addition, the Efficiency Maine Green Bank will receive \$15 million to support energy loans through a grant from the U.S. EPA’s National Clean Investment Fund, an initiative created by the inflation Reduction Act. • The Federal Justice40 Initiative designates that at least 40% of the funding and benefits from the Inflation Reduction Act must be delivered to disadvantaged communities. • Efficiency Maine offers heat pump rebates scaled by income and allows streamlined income verification if a household participates in <u>MaineCare</u>, HEAP, SNAP, or TANF. Efficiency Maine also offers no-fee, low-interest-rate home energy loans to help income-eligible homeowners pay the upfront cost of energy upgrades. • On April 22, 2024, the U.S. Environmental Protection Agency (EPA) selected Maine’s proposal for a \$62 million grant award to provide financial and technical assistance enabling low-income and disadvantaged households across the state to access solar and energy storage. The proposal puts forth a range of programs and financing options designed to ensure a pathway to solar participation is available to renters and homeowners, rural and urban households, and households that may not be well-suited for on-site solar. This program will be administered by the Governor’s Energy Office and plans to serve <u>X</u> [to be updated] low-income participants through the <i>Solar for All</i> program. <i>Maine’s Solar for All</i> program should consider funding models that can sustain the program beyond EPA funding availability. • In 2017, the Center for an Ecology-Based Economy in Norway, Maine started the first public solar cooperative in Maine with the aim of reducing energy costs for households in western Maine and keeping more energy dollars in the community. The scale of their community-owned projects allows for expedited grid interconnection and can contribute to increased regional energy resilience.

<p>Assist Mainers in navigating government programs: Launch an energy navigator program to provide education and technical assistance related to available energy cost assistance programs and state and federal funding opportunities (grants, rebates, and other incentives).</p>	<p>Guidance products and/or community-based energy coaching programs could assist individuals and communities in understanding their options for funding and stacking available opportunities that meet their energy needs.</p> <p>Implementers should work with community-based organizations and tribal governments to assist in the design and delivery of a navigator program to ensure assistance and education opportunities effectively reach priority populations. Engagements with tribal governments should be approached via government-to-government interactions.</p>
<p>Increase funding to core assistance programs: Ensure adequate and sustainable funding for energy cost assistance programs and streamline program enrollment to support delivery of funds to a greater portion of eligible households.</p>	<p>To be eligible to participate in Maine’s Low Income Assistance Program (LIAP) household income must be at or below 150% of the Federal Poverty Limit. According to the Office of the Public Advocate, 122,000 households in Maine meet that threshold, but a large portion of eligible households don’t enroll or receive a benefit for a variety of reasons.</p> <p>Assistance programs should be sufficiently funded to serve those who need it, and where possible, automatic enrollment of eligible households should be implemented to reduce administrative and other barriers to entry.</p>

<p>Recommendation—Infrastructure:</p>	
<p>Advance policies that support timely and cost-effective planning and buildout of necessary clean energy infrastructure to meet state goals and statutory requirements including 100% clean electricity by 2040.</p>	
<p>Actions:</p>	<p>Additional important information:</p>

<p>Establish a regular cadence of clean energy procurements to occur at least every two years to ensure timely deployment of projects.</p> <ul style="list-style-type: none"> • Coordinate and inform procurements with grid planning activities. • Annually evaluate outcomes, technologies, and electricity market opportunities, and implement changes as needed to ensure success. • GEO and the PUC should continue to engage in and seek opportunities for regional policy coordination and cost-sharing of large-scale resource procurements and transmission infrastructure. 	<p>In 2019, Governor Mills signed legislation that increased Maine’s Renewable Portfolio Standard (RPS)—the minimum portion of electricity sold in Maine supplied by renewable sources—to 80% by 2030. Maine’s RPS is inclusive of a diverse set of existing and new renewable capacity resources (see latest compliance report here). A recent report commissioned by the GEO as required by the Legislature found that Maine’s RPS has benefitted Maine’s economy, supporting significant direct investments, job creation, and more than \$21 million in annual net electricity cost savings since 2011. The report also finds that in order to continue to meet that requirement, Maine will need to bring significantly more renewable energy projects online in the coming years. New competitive procurements of clean energy resources can deliver substantial additional value to host communities, bolstering local reliability and resilience to climate impacts, jobs, and tax revenues while reducing reliance on volatile, out-of-state fossil fuels. Customer-owned, behind-the-meter, and community-based renewable energy and storage projects could contribute substantially to Maine’s climate goals and renewable energy targets while promoting customer empowerment, brownfield development, and additional grid services close to load.</p> <p>The Maine Public Utilities Commission has existing authority to ensure compliance with Maine’s RPS and to advance through its decisions and orders beneficial electrification. The PUC should develop standardized regulatory tools to evaluate costs and benefits to aid in identification and selection of cost-effective projects.</p> <p>The Governor’s Energy Office, through the Beneficial Electrification Policy Act also has the authority to petition the Commission to procure energy from renewable resources to achieve the emission reduction and renewable energy goals of the State to meet reasonably expected growth in electric demand. The GEO should continue to regularly evaluate and report on the status and impacts of Maine’s RPS and clean energy targets on energy prices as well as assessment of benefits, including greenhouse gas emission reduction and economic benefits.</p> <p>The legislature should provide implementing agencies with additional statutory authorizations and guidance, while preserving agency discretion, to accomplish regular procurements in line with Maine’s RPS policy, the Beneficial Electrification Policy Act, and that integrate statutory deployment targets for offshore wind, energy storage, and distributed energy resources. Continuing to support a diverse portfolio of existing and new resources can help manage costs and mitigate risks.</p>
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<p>Maximize delivery of federal funds to priority infrastructure projects that contribute to meeting state goals.</p>	<p>The federal Bipartisan Infrastructure Law, Inflation Reduction Act, and CHIPS and Science Act have made available historic funding opportunities that can support critical investment in Maine’s roads and bridges, ports, public transportation systems, broadband, improve climate resilience, and build a clean energy future.</p> <p>In 2022, Governor Mills established the Governor’s Infrastructure Implementation Committee. State agencies should continue to coordinate to maximize the delivery of federal funds to priority infrastructure projects that align with Maine’s climate and clean energy goals. To improve Maine’s success in drawing down federal funds and to ensure infrastructure projects create good-paying jobs, the state should ensure applications for <u>federally-funded</u> infrastructure projects demonstrate a meaningful commitment to meeting federal labor standards required by these laws, such as prevailing wage and fringe benefits as determined by Davis-Bacon and registered apprenticeship utilization.</p>
<p>Develop stakeholder-informed resources that provide fact-based information, model ordinance or zoning language, and community benefit information to assist Maine communities in supporting the development of clean energy in a manner that meets local needs.</p>	<p>Maine has an abundance of high-quality clean energy resources available for development that positions the state well to achieve its goals. At the same time, Maine is a rural, aging, and densely forested state. Reaching Maine’s policy requirements necessitates intentional action and thoughtful policy and program support to ensure that the clean energy transition is effective, affordable, and equitable, allowing communities across the state to participate and benefit from this transformation.</p> <p>Few communities in Maine have ordinances or comprehensive plans that address renewable energy resources specifically. Some communities find they can regulate these resources under existing general development rules while others with limited zoning and land use regulations in place feel they lack adequate information to inform decision making. Model ordinances and other model tools such as community benefit plans can be tailored to meet local conditions and support local accommodation of clean energy systems by ensuring municipalities receive benefits and opportunities from infrastructure sited in their community.</p>

<p>Review and evaluate state policies for the permitting, siting and procurement of clean energy projects and transmission resources, with the intent of finding opportunities to enhance efficiency, predictability, and transparency, while providing for meaningful public engagement and protection of natural resources.</p>	<p>Meeting Maine’s clean energy goals will require significant additional buildout of energy generation, transmission, and distribution assets. Delays in siting and permitting processes can delay development and operation of clean energy projects and create uncertainty that increases costs. Timely, predictable permit review and dispute resolution processes can accelerate deployment and reduce development costs.</p> <p>In doing this policy review and evaluation:</p> <ul style="list-style-type: none"> • Maine should consider establishing a formal commission to provide recommendations for potential reforms to remove barriers to responsible clean energy infrastructure development, similar to the Commission on Energy Infrastructure Siting and Permitting established by Governor Healey of Massachusetts. • Such a commission should provide recommendations on potential administrative, regulatory, and legislative changes to existing procedures and government structures that could enhance efficient and responsible clean energy development in line with state goals. • Such a commission should assess project-level risk premiums and risk management strategies associated with existing and proposed policy reforms. • The state and such a commission should proactively work with municipalities, landowners, developers, fishermen, and tribal governments to minimize conflicts and ensure benefits related to development.
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<p>Conduct proactive grid planning at both the transmission and distribution level to ensure that Maine's electric grid will meet Maine's needs in the coming years, including addressing the challenges posed by climate change while creating a more reliable, resilient, equitable, flexible, clean, and affordable grid.</p>	<p>Effective grid planning will be a powerful tool to ensure all Maine people and businesses are afforded reliable and resilient cost-effective electric service as technological advances, economic changes, and policy objectives drive significant transformation across the energy landscape. The state, utilities, ISO-NE, the PUC, stakeholders, and advocates all have important roles in ensuring the coordination and implementation of such plans.</p> <p>As Maine electrifies, the distribution system will play a greater role in supplying energy across the economy, in reducing emissions, and in doing so cost-effectively. The distribution system will likely need significant upgrades to serve peak demand across geographies. Proactive and granular planning can inform efficient upgrades to existing infrastructure and investments and targeted deployment of new generation.</p> <p>The PUC hosted a stakeholder process to identify priorities to be addressed in utility grid plans that will support improved system reliability and resiliency and enable the cost-effective achievement of the state's greenhouse gas reduction obligations and climate policies. The first utility plans will be due within 18 months after the PUC issues its final order.</p> <p>There are several actions and considerations that electric system planners and operators must weigh in the grid planning process:</p> <ul style="list-style-type: none"> • Establishing consensus around load forecasts that are actionable and transparent, and temporally and geographically granular. • Ensuring load forecasts accommodate load growth and expected integration of distributed energy resources, and incorporate Maine's electrification goals and targets, including Efficiency Maine's programming, the state's climate action plan, analyses prepared for state agencies including the GEO, and other stakeholder priorities. • Incorporating comprehensive cost-benefit analyses that consider all costs and benefits of grid investments, including traditional T&D investments, non-wires alternatives, and distributed energy resources. • Representing distribution system conditions with time-series, location-specific data and power flow simulations, using existing data sources such as SCADA, to illustrate the mutual effects of time-varying loads and time-varying generation. Such conditions and analyses should be made available to different stakeholders to inform interconnection impact assessments, characterize grid needs, assist in managing electricity demand, and suggest grid solutions. • Adapting to evolving end-uses, additional distributed energy resources, and greater load flexibility. • Incentivizing and implementing grid enhancing technologies—including hardware or software technologies that enable enhanced or more efficient flow of electricity across the existing electric transmission and distribution system—where they can reasonably reduce or defer the need for investments in grid infrastructure. • Introducing and facilitating competitive retail power markets, access, information, and compensation necessary to enable these new resources to effectively contribute to meeting grid needs, enhancing resilience, and reducing ratepayer costs. • Establishing grid planning performance metrics tied to financial incentives and disincentives where appropriate against which grid plans are publicly evaluated. • Conducting robust engagement with both technical experts and the public. • Regularly assessing the environmental, equity, and environment justice impacts of utility grid plans. <p>Significant transmission and interconnection investments are also likely to be required to meet Maine's goals. Long-term transmission planning at the state and regional level should prioritize incorporation of realistic load growth projections and grid enhancing technologies, rather than only near-term reliability needs. Proactive planning particularly for the transmission and interconnection of 3 GW of offshore wind in the Gulf of Maine could reduce costs, uncertainty, and project risks.</p>
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<p>Continue improving and modernizing the process for connecting clean energy projects to the grid to support certainty, timeliness, affordability, and improved utilization of resources on the grid.</p>	<p>Interconnection is a challenge facing proposed clean energy projects across the country, including in Maine. At the end of 2023, there were more than 1,570 GW of generation and 1,030 GW of energy storage capacity in interconnection queues nationally, and according to Lawrence Berkley National Laboratory, projects that reach construction took an average of five years from interconnection request to commercial operation.</p> <p>At the state level, interconnection policy reforms should be considered within the Maine Public Utilities Commission Small Generator Interconnection Procedures Rules (Chapter 324). Utilities should provide, and stakeholders should apply, time-series, location-specific grid planning data and power-flow simulation approaches described above and incorporate the grid-interactive capabilities of distributed energy resources to develop an interconnection process that reduces delays and costs while avoiding adverse grid impacts and aligns with the state’s climate goals and targets for renewable and distributed energy resource deployment.</p> <p>Maine’s Non-Wires Alternative (NWA) process is a second important regulatory program for advancing this goal at the state level. Policy makers should consider reforms to the NWA process to improve the program’s effectiveness for connecting high value clean energy projects while reducing transmission and distribution capacity costs.</p> <p>Utilities can additionally support a more efficient process by improving publicly available hosting capacity maps of grid conditions and capacity, ensuring hosting capacity maps are regularly updated, and annually reporting on the number of pending projects and approval timelines in active cluster studies.</p>
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<p>Implement the Maine Offshore Wind Roadmap, including near-term infrastructure investments—such as a dedicated Maine port—transmission and interconnection planning, the Gulf of Maine Research Array, and advancement of Maine-based innovations to meet the state’s energy goals and to position the state as a competitor and beneficiary in the emerging national and international offshore wind industry.</p>	<p>Offshore wind presents a generational economic and energy opportunity for Maine. As an abundant source of clean and renewable energy, offshore wind has the potential to help free Maine from its reliance on fossil fuels, to lower energy costs and volatility, and to curb climate-altering emissions to protect our state’s environment for future generations. As an industry, offshore wind is poised to grow significantly in the coming years. This growth will support existing and emerging Maine companies, create new jobs and career opportunities for Maine citizens, attract new workers and families to Maine, and deliver infrastructure investments in communities across the state. The Maine Offshore Wind Roadmap is a stakeholder-driven comprehensive plan that offers detailed strategies for Maine to realize the economic, energy, and climate benefits from offshore wind, in conjunction with communities, tribal governments, fisheries, and wildlife of the Gulf of Maine.</p> <p>In addition to the Roadmap, Public Law 2023, Chapter 481, which was signed into law in July 2023, authorized the Governor’s Energy Office to lead a process to procure at least 3,000 MW of offshore wind installed by 2040. Offshore wind procurements should be coordinated with others states or entities in the region to drive competition and reduce costs while securing phased development commitments to deliver a meaningful percentage of Maine’s electricity needs by 2040.</p> <p>As part of Maine’s commitment to responsible offshore wind, Governor Mills established the Maine Offshore Wind Research Consortium to better understand the local and regional impacts of offshore wind power projects in the Gulf of Maine. To date, three projects representing priority research strategies have been funded, including: exploring approaches to fisheries coexistence with floating offshore wind; inventorying baseline data on socioeconomics of Maine fishing communities to help assess potential positive and negative impacts of floating offshore wind in the Gulf of Maine; and sonar seafloor mapping in key areas of the Gulf of Maine. The state should allocate additional funding to the Research Consortium to support work on the priority research strategies as identified by the group’s Advisory Board.</p>
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Recommendation—Demand Management: Develop and implement demand management and innovative load flexibility strategies and technologies to support energy reliability and resiliency, reduce electricity peaks and overall system costs, accelerate beneficial electrification, and reduce emissions.

Actions:	Additional important information:
<p>Adopt software and technologies that enable signals based on electricity grid conditions to manage demand and supply.</p>	<p>Essential software and technologies should include:</p> <ul style="list-style-type: none"> • Automated network sensing, management, and communications systems for distribution circuits, and cost-effective and timely interconnection of distributed resources based on their expected operating characteristics. Such systems and data should be made available to allow multiple different actors market access and the ability to innovate and play a role in meeting grid needs. <ul style="list-style-type: none"> ○ For example, EMT's initiatives to manage EV charging and to dispatch home batteries offer aggregators the option to sign up to use their own proprietary DERMS platform, if they have one, or to use the open DERMS platform that is provided by EMT. • Smart vehicle charging, grid-integrated devices (such as hot water heaters), and other consumer technologies to avoid creating lost opportunities. <ul style="list-style-type: none"> ○ By way of illustration, residential customers in Maine may now enroll certain brands of EV chargers and EVs to receive a financial incentive through EMT's initiative to manage charging for electric vehicles, provided that the participating chargers or EVs have compatibility with data sharing, tracking and remote management. • Robust data privacy and consumer protections.

<p>Facilitate customer participation in demand management programs through the adoption of supportive policies, programs, markets, and regulatory mechanisms.</p>	<p>Specific areas of focus should include:</p> <ul style="list-style-type: none"> • Scaling up demonstration projects • Pursuing through the Commission, advanced rate designs that create customer savings by aligning customer costs with electricity system costs (such as time-varying rates that minimize peak demands on distribution and transmission infrastructure and maximize demand under low-load and high-renewable conditions). New rate design proposals should prioritize data collection and verification to ensure beneficial implementation. • Pursuing through the Commission, implementation of rate design changes for Standard Offer and or Competitive Electricity Provider (CEP) prices that complement and support rate design changes implemented for transmission and distribution rates. • Transparent platforms, programs, policies and practices that promote competition between energy service providers and innovation on the grid edge, including open access opportunities that utilize standardized data, and pay-for-performance incentives <ul style="list-style-type: none"> ○ EMT's Demand Management Program was approved by the EMT Board and the Maine PUC Triennial Plan V in 2022. The program is small but expanding, and now comprises four initiatives: Small Battery Management to dispatch residential back-up batteries during peak periods; Large Battery Management, a pay-for-performance arrangement for batteries 20kW and larger that reduces the load of a commercial or institutional customer behind the meter during summer peak hours; Managed Charging for EVs, in which EV drivers are compensated with they allow EMT to shift their charging to off-peak hours; and Commercial Curtailment, a traditional demand response initiative where participants are paid a fixed incentive for each kilowatt reduced during a demand response event. • Opportunities for aggregation and automation • Using the Pathway to 2040 analysis to guide the scale and scope of demand management and flexible load that will be needed to meet Maine's overall climate, renewable energy, reliability, and resilience goals.
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<p>Ensure equitable access to and the distribution of benefits from demand management programs and pilots is equitable.</p> <p>EMT, and other relevant entities, should track and annually report low- and moderate-income program participation in applicable demand management programs.</p>	<p>Successfully managing demand can reduce overall system costs—which translates to lower costs, or avoided costs—for everyone, which is particularly important for Maine’s most vulnerable customers. There are several components to considering the impact of demand management activities on low and moderate-income customers:</p> <ul style="list-style-type: none"> • Different initiatives will target different types of customers (based on customer class, etc.). Careful attention to the distribution of benefits and burdens of all programs is warranted. • Programs targeting households should strive to be designed to be as inclusive as possible with diverse customers. • Strategies and best practices should be identified to increase beneficial participation from low- and moderate-income households, which should include coordination with community-based organizations and utilities to ensure effective education and outreach.
<p>Undertake education and communication around the opportunities and benefits of demand management initiatives with consumers, communities, policymakers, and regulators.</p>	<p>Effective communication of programs is critical to achieve program objectives and goals. Several entities with different audiences will play a role in robust communications, such as utilities, state agencies, the Commission, EMT, and community-based organizations. Immediate priority outreach needs include:</p> <ul style="list-style-type: none"> • Encouraging EV owners to participate in flexible charging by making available mechanisms such as time of use rates or managed charging programs like EMT’s Managed Charging for Electric Vehicles initiative. • Increasing education and program participation amongst low- and moderate-income Mainers.

<p>Recommendation— Workforce: Attract, prepare, and position people and businesses to participate in Maine’s clean energy economy with a goal to support 30,000 clean energy jobs by 2030.</p>	
<p>Actions:</p> <p>Continue to support state workforce initiatives with ongoing stakeholder coordination between industry, educational, and labor and training organizations to support current and future workforce needs.</p>	<p>Additional important information:</p> <p>In 2022, Maine’s clean energy sector employed more than 15,020 people and contributed \$2.31 billion to Maine’s economy. The 2023 Maine Clean Energy Industry Report found that the sector is poised for continued growth and that “the growth of the industry presents new and increasingly valuable career opportunities to Maine residents from many backgrounds and with a wide range of skills and knowledge.”</p> <p>The Clean Energy Partnership program was established to advance Maine’s clean energy, climate, economic development, and workforce goals. The Partnership is led by the Governor’s Energy Office (GEO), in close coordination with the Governor’s Office of Policy Innovation and the Future (GOPIF), the Department of Labor (DOL), and the Department of Economic and Community Development (DECD).</p> <p>GEO has awarded \$2.9 million in grants from the Maine Jobs and Recovery Plan to clean energy employers, educational institutions, industry associations, and nonprofit organizations to develop new curricula, provide technical training and experiential learning, deploy new job placement services, and other activities related to workforce development and training. This includes supporting apprenticeships, affordable and accessible trainings, and free credentialing. To help guide the program, the Clean Energy Partnership has convened an Advisory Group to provide information and feedback as initiatives are designed and implemented. This includes defining needs, monitoring progress, advising on adjustments, and designing future programming.</p>

Continue to support programs and partnerships for clean-tech innovation support to encourage the creation of clean-energy and climate solutions.	<p>In 2022, Maine had 2,500 clean energy businesses representing approximately 4% of total businesses throughout the state.</p> <p>Through the Clean Energy Partnership GEO has awarded \$1.3 million to partners working to develop business incubator and accelerator programs; facilitate market adoption of forward-looking technologies to expand the state's clean energy and climate leadership; encourage economic development in rural areas through business advising and mentorship for small businesses and contractors; and create hubs for entrepreneurs, founders, and startups in the growing clean energy, climate tech, and sustainability fields.</p>
Expand access to apprenticeships and other earn-and-learn models.	<p>In 2023 there were 130 registered apprenticeship sponsors in the state and 3,088 registered apprentices across all sectors. ~55% of registered apprenticeships are in the construction sector. 37% of all apprentices are electricians. <i>[Still working to identify the number of apprenticeships specifically in the clean energy sector- will update].</i></p>
Create and maintain a clearinghouse for clean energy workforce development efforts, resources, and funds in the state.	<p>A one-stop-shop that connects jobs-seekers with Maine-based clean energy employers and workforce training programs will build understanding of and access to the breadth of clean energy jobs available in Maine.</p>
Ensure that tools, resources, trainings, and apprenticeship programs are designed to support disadvantaged students and job seekers.	<p>According to the 2023 Maine Clean Energy Industry Report, non-white workers, workers of Hispanic or Latino ethnicity, and veterans each make up a higher share of Maine's clean energy talent compared to the statewide labor force. On the other hand, workers aged 55 and over represent one-fifth of the clean energy workforce compared to approximately 28% in the state economy. Women, who make up more than half of the workers across the state, comprise only one-quarter of Maine's clean energy workers. Develop and fund targeted recruitment and training strategies to support entry of diverse and disadvantaged job seekers into the clean energy sector.</p>
Identify workers and industries disproportionately impacted by climate change and identify pathways into clean energy and climate friendly careers.	<p>Develop training and/or diversification opportunities that leverage unique skills and credentials of existing workers for new industries through workforce retraining initiatives offered to industries and communities most impacted by climate change.</p>