

Maine Climate Council

Energy Working Group Meeting

Co-Chairs:

Dan Burgess, Governor's Energy Office
Ken Colburn, Symbiotic Strategies, LLC



GOVERNOR'S OFFICE OF
Policy Innovation
and the Future



MAINE DEPARTMENT OF
Environmental Protection



March 1, 2024

Meeting Agenda

1. Welcome, Meeting Objectives
2. Discussion: Advancing policy to plan and build necessary clean energy infrastructure
3. Updates from small groups – *energy burden, demand management*
4. Next Steps

Structuring a set of priority EWG conversations

1) Supporting demand management and related issues, including:

- Shaping load (i.e., managed vehicle charging, time of use rates)
- Facilitating flexible supply
- Enabling market access for all energy resources
- Grid enhancing technologies
- Applying analytics to grid management, etc.

2) Advancing policy to plan and build necessary clean energy infrastructure

- Clean energy resource procurement
- Permitting and siting
- Addressing interconnection processes
- Supporting implementation of Maine's Offshore Wind Roadmap
- Ensuring infrastructure is resilient to climate change
- Opportunities for community ownership and access to planning/decision making processes

3) Addressing energy burdens and energy access for vulnerable Mainers as Maine advances beneficial electrification

- Reducing energy burden
- Opportunities to build energy literacy
- Reducing barriers to state programs and incentives
- Role of fuels (and clean fuels) as Maine electrifies

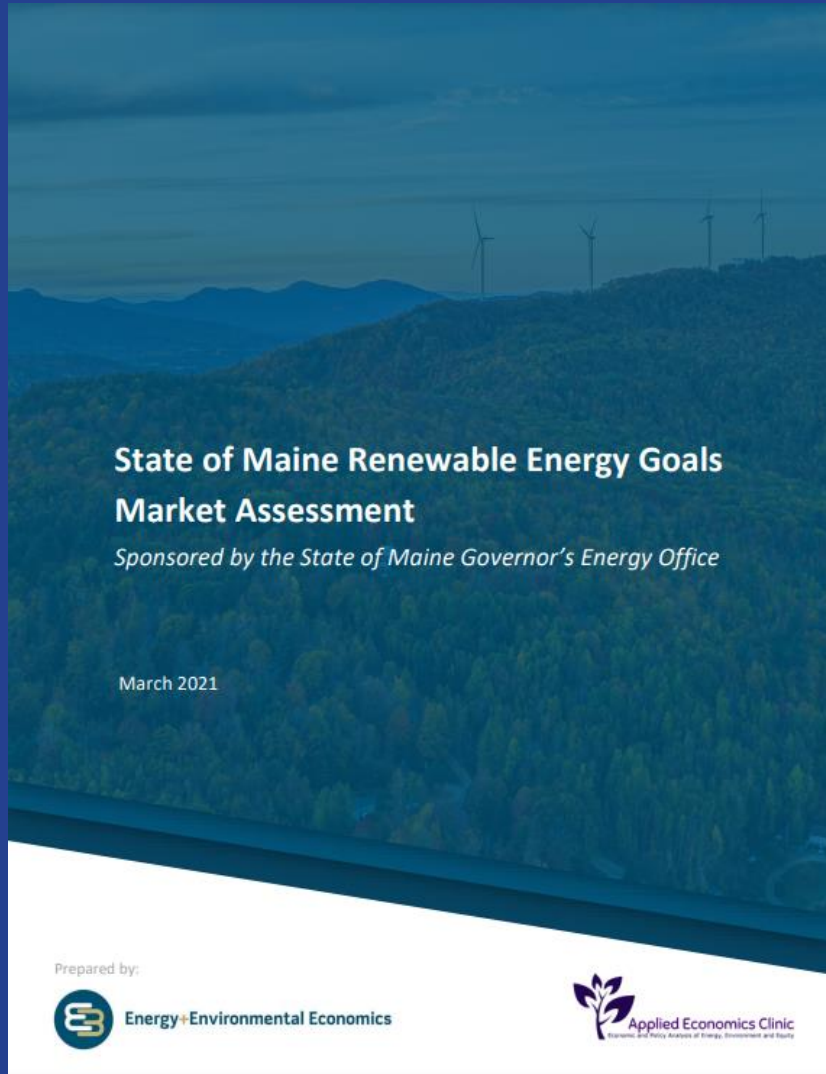
4) Building a clean energy workforce

How do we ensure the resources needed to meet growing demand are planned and built in a successful, timely, and cost-effective manner?

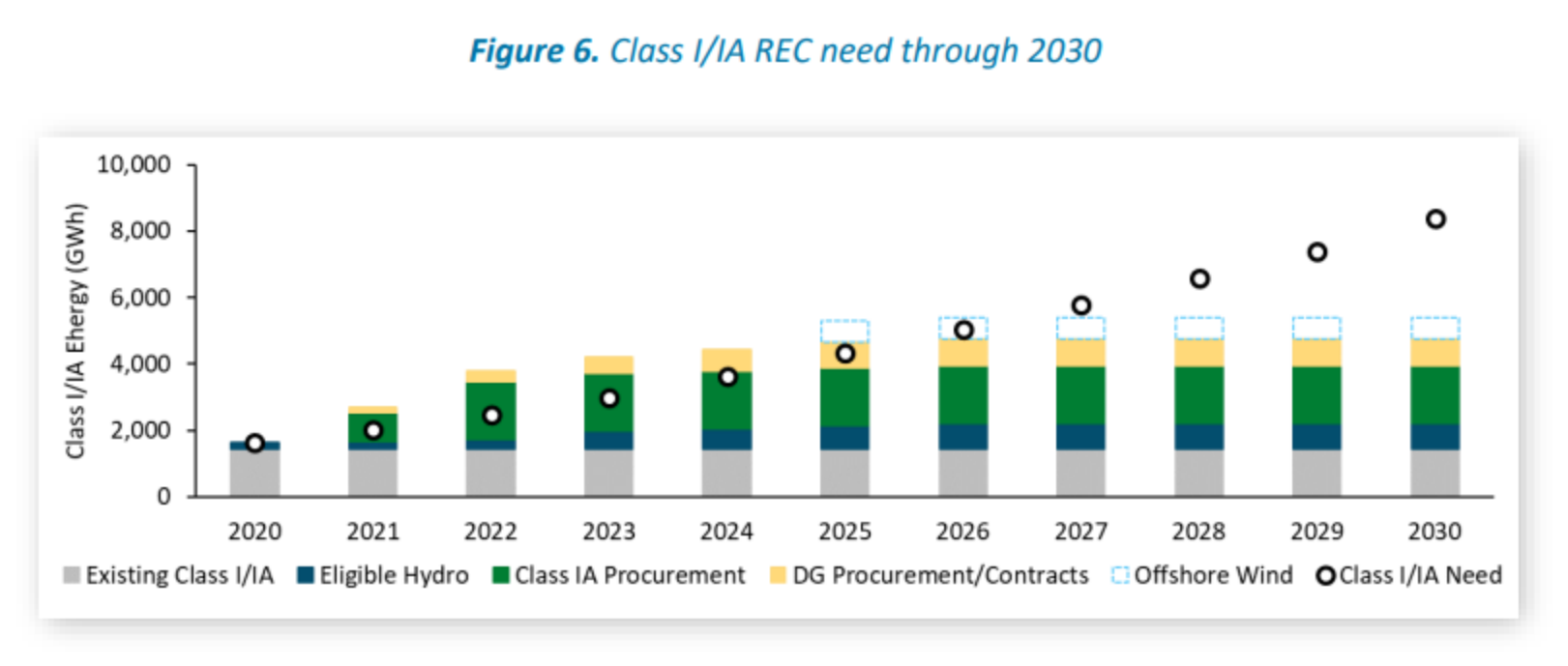
REGMA reviewed the opportunities, potential, and challenges facing Maine in reaching the state's 80% RPS goal by 2030.

Key findings from 2021 report:

- Maine had multiple pathways to meet its RPS
- Maine was on track to meet its near-term RPS requirement through 2026; substantial new resources would be needed to be online to meet increasing goals thereafter
- Transmission would be a key driver of renewable development
- Storage paired with solar would provide value to Maine's grid
- A technologically diverse portfolio helps lower risk
- Regional coordination on building transmission can help lower the costs of meeting Maine's RPS
- Energy equity considerations cut across four dimensions: resource diversity, customer-sited resources, geographic resource distribution, and cost



A snapshot from 2021: Maine was on track to meet its near-term RPS requirement through 2026; but substantial new resources were needed to come online to meet increasing goals thereafter.



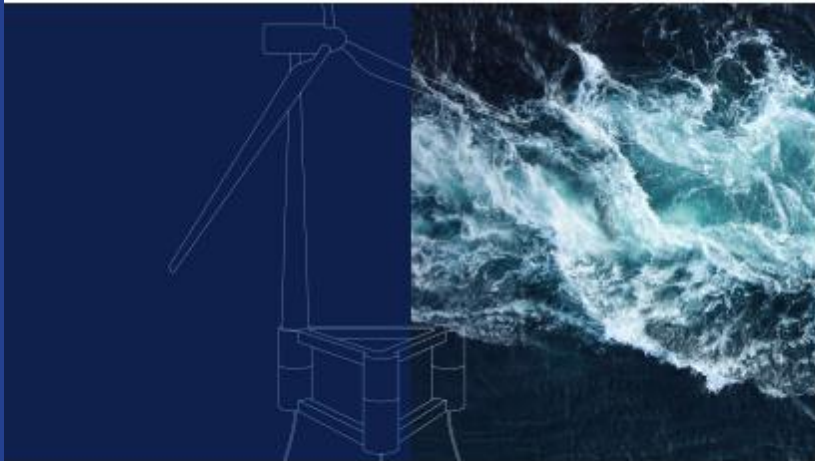
(Source: State of Maine Renewable Energy Goals Market Assessment, 2021)



Wind Energy Needs Assessment

Prepared for the Maine Governor's Energy Office and the Maine Offshore Wind Roadmap

Date: November 2022



Offshore wind will be a critical part of Maine and New England's long-term energy needs.

- DNV conducted an energy needs assessment for the state. This is one of several technical reports completed to support the development of the Maine OSW Roadmap.
- Based on various energy demand projections and onshore resource constraints, **DNV determined a need of ~3,000 MW of offshore wind by 2050** as part of a diverse portfolio of clean energy resources to meet Maine's increased electricity demand and greenhouse gas reduction goals.

Maine OSW Roadmap

A visual guide to the roadmap's development and objectives.

Maine's Offshore Wind *Roadmap* identifies five key objectives to responsibly advance offshore wind in Maine. Each objective contains a set of specific strategies recommended by the expert members of the Roadmap's Working Groups and endorsed by the Roadmap Advisory Committee.

Objectives



Pursue Offshore Wind Supply Chain, Infrastructure, and Workforce Investments to Support Economic Growth and Resiliency



Harness Abundant Renewable Energy to Reduce Long-Term Costs, Reliance on Fossil Fuels, and Fight Climate Change



Advance Maine-Based Innovation to Compete in Emerging National and Global Offshore Wind Industry



Support Maine's Vital and Thriving Seafood Industries and Coastal Communities



Protect the Environment, Wildlife, & Fisheries Ecosystem in the Gulf of Maine

Cross-Cutting Themes

At the inception and throughout the *Roadmap* development, four cross-cutting themes were deemed essential to the process of creating a *Roadmap* purpose-built for Maine and offshore:

- Stakeholder Engagement & Communications
- Equity
- Transparency & Data-Driven Decision Making
- Regional Collaboration & Coordination

Maine Energy Plan

PATHWAY TO 2040

THE BRATTLE GROUP
EVOLVED ENERGY RESEARCH

ON BEHALF OF THE
MAINE GOVERNOR'S ENERGY OFFICE

This new analysis is the most detailed to date and builds off previous studies to provide a comprehensive basis to inform Maine's best pathway to 100% clean electricity and enable greenhouse gas emissions reductions.



EVOLVED
ENERGY
RESEARCH



GOVERNOR'S
Energy Office

Key Questions Being Addressed:

How to meet 100% clean electricity by 2040?

- Initial findings: Renewable energy is able to cost-effectively decarbonize the bulk of the electricity system
- What supply resources may be best for the final percentage points to 100%?
 - Additional renewables with storage?
 - What is the role of clean thermal generation?
 - What other resources may be needed, based on operational considerations and economics?
 - ▶ E.g., Gas w Carbon Capture, Large Hydro, Nuclear?

Can Flexible Load help mitigate reliability concerns and/or reduce costs?

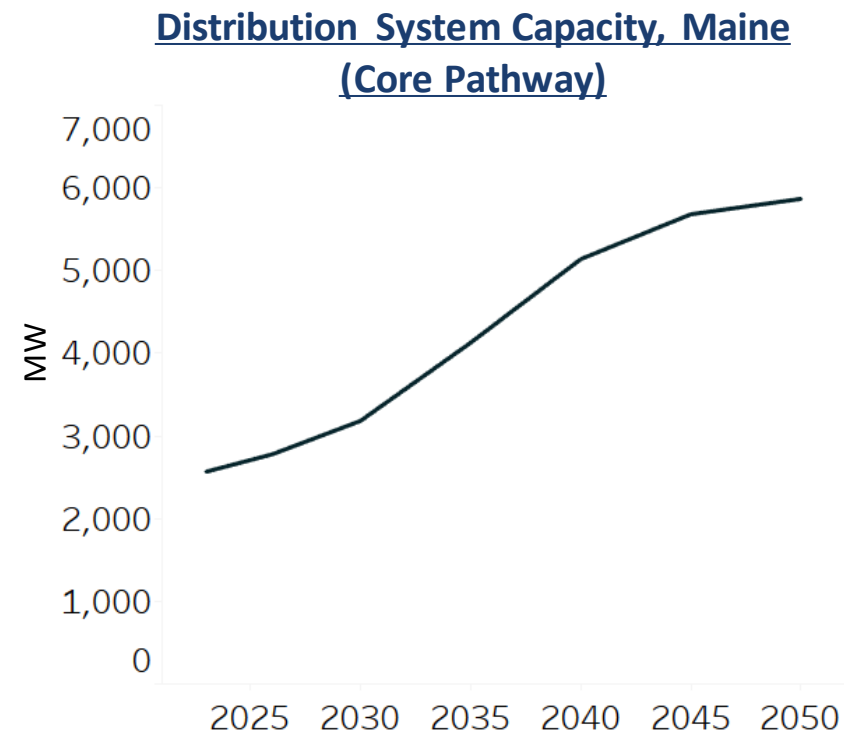
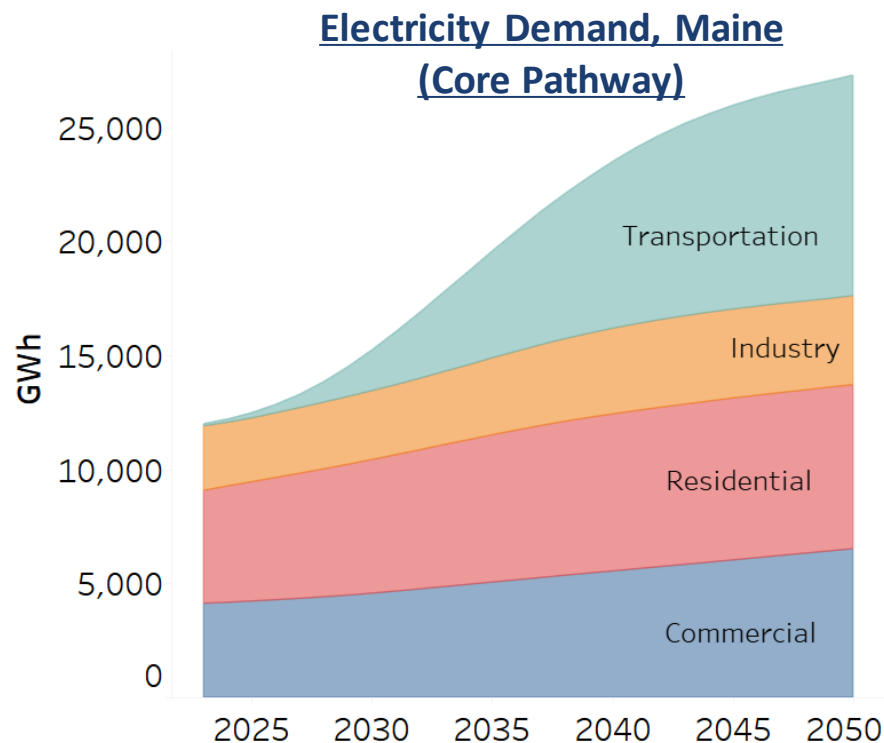
What are the impacts of emerging technologies, including:

- Hybrid Heating (renewable fuel-fired heating systems used as backup in extreme cold conditions)
- Distributed energy resources

Draft Results

Electricity demand increases via electrification (mostly heating and transport)

- Nearly doubling electric demand by 2050, while reducing overall energy use (electricity is more efficient)
- Peak may increase by 2-3x, with implications for T&D expansion, as well as generation and storage capacity
 - Peak impact depends on Load Flexibility – and much of the new electrification load can be flexible



Precise impacts on electricity demand, peak, and fuel use differ by Pathway, but all show significantly increased reliance on electricity

*On this topic
Maine Won't Wait
said:*



STRATEGY C **Reduce Carbon Emissions in Maine's Energy and Industrial Sectors through Clean-Energy Innovation**

Sectors with high greenhouse gas emissions, such as transportation and heating, must shift their energy sources from fossil fuels to electricity and low-carbon fuels to achieve Maine's climate goals. This makes it even more essential to produce and consume electricity that is increasingly clean and from lower-emission resources. This transition must be managed effectively to ensure affordability and reliability.

1

Ensure Adequate Affordable Clean-Energy Supply

- **Achieve by 2030 an electricity grid where 80% of Maine's usage comes from renewable generation.**
- **Set achievable targets for cost-effective deployment of technologies such as offshore wind, distributed generation, and energy storage, and outline the policies, including opportunities for pilot initiatives, necessary to achieve these results.**

4

Encourage Highly Efficient Combined Heat and Power Facilities

- **Analyze policies, including the potential for long-term contracts, needed to advance new highly efficient combined heat and power production facilities that achieve significant net greenhouse gas reductions.**

*What steps have been taken or set in motion related to
Actions 1 & 4 of MWW Strategy C since 2020?*

51% of Maine's electric supply from renewable energy in 2023.

1

Ensure Adequate Affordable Clean-Energy Supply

- Achieve by 2030 an electricity grid where 80% of Maine's usage comes from renewable generation.
- Set achievable targets for cost-effective deployment of technologies such as offshore wind, distributed generation, and energy storage, and outline the policies, including opportunities for pilot initiatives, necessary to achieve these results.



RPS procurements run by the PUC in 2020 & 2021 delivered low price contracts for projects which delivered \$68 million in savings for ratepayers in 2023 through reductions in stranded costs.

LD 1591 directs the PUC to procure energy and RECs from Class 1A resources equal to 5% of retail electricity sales in 2021 on contaminated lands plus the amount of energy or RECs that haven't been fulfilled pursuant to 3210-G.

LD 1591 also directs the GEO to report on the status and impacts of Maine's RPS by March 31, 2024 and every three years thereafter. 2024 report will include consideration of the impacts of Maine's RPS on energy prices as well as an assessment of benefits, including greenhouse gas emissions reduction and economic benefits.

Maine PUC annually reports on RPS compliance.

1

Ensure Adequate Affordable Clean-Energy Supply

- Achieve by 2030 an electricity grid where 80% of Maine's usage comes from renewable generation.
- Set achievable targets for cost-effective deployment of technologies such as offshore wind, distributed generation, and energy storage, and outline the policies, including opportunities for pilot initiatives, necessary to achieve these results.



LD 1895 authorizes procuring 3,000 MW of offshore wind by 2040.

The Maine Offshore Wind Roadmap is the blueprint for Maine's responsible offshore wind activities to meet climate, clean energy & economic goals while protecting the environment and all ocean users.

LD 936 established a goal of 750 MW of distributed generation.

More than 650 MW of distributed solar have been installed in the state.

Maine has a statutory energy storage goal of at least 300 MW by the end of 2025 and at least 400 MW by the end of 2030.

LD 1850 directed GEO to design a procurement for 200 MW of utility scale energy storage. 65 MW are operating in Maine today.

LD 1710 established the Northern Maine Renewable Energy Development Program to remove obstacles and promote development of substantial renewable energy resources in Aroostook County.

PUC ran a procurement for transmission infrastructure and renewable generation. The procurement was not successful but the PUC has signaled the will run a new procurement under the program.

4

Encourage Highly Efficient Combined Heat and Power Facilities

- Analyze policies, including the potential for long-term contracts, needed to advance new highly efficient combined heat and power production facilities that achieve significant net greenhouse gas reductions.



LD 1202 established the Wood-fired Combined Heat and Power Program which directs the PUC to procure generating capacity from combined heat and power projects.

PUC ran a procurement in late 2022-early 2023 under this program. No projects met the qualifications, but a new procurement will be run in 2024.

Opportunities

Historic federal funding, tax credits

Additional opportunities for disadvantaged communities

Regional coordination & collaboration

Job growth

Technology cost declines

Challenges

Siting & permitting challenges, community engagement

Interconnection timelines and costs

Supply chain and cost challenges, inflation

Procurement cost structures, risk allocation

Project maturity

Focusing our conversation today

Draft Strategy: Advance policy to plan and build the necessary clean energy infrastructure

Topic Area

Procurement

A potential actions to include in this draft strategy...

- Take actions that ensure the state resource procurements are successful, timely, and cost effective, including capital "P" Procurement (state procurements done by the PUC), and small "p" procurement (distributed generation resources such as rooftop solar, storage, etc.)
- Pursue opportunities for additional regional coordination
- Provide state support for communities engaging in siting and permitting conversations
 - Develop resources/information around best practices for these conversations, community benefit agreements, etc.
 - Provide state support for municipal capacity
- Encourage the state to evaluate and adopt best practices regarding interconnection that could address time, cost, maturity challenge
- Support implementation of the OSW Roadmap and its components

Siting, permitting, and community engagement

Interconnection

Supporting implementation of the OSW Roadmap

Demand Management Recommendations – Progress Report

<p>Draft Strategy:</p> <p>Support reliability and reduce overall system costs by enabling demand management and related innovative load flexibility strategies</p>	<p>Draft Actions:</p> <ul style="list-style-type: none">• Support the regulatory and technical mechanisms to enable effective demand management<ul style="list-style-type: none">• Regulatory: Rate structures/TOU rates, aggregation• Technology: smart meters, other controlling technologies, DERMs platforms• Develop proper mechanisms and incentives by which consumers can and do choose to provide load flexibility• Bridge existing pilot programs (EMT VPP) from pilot scale to statewide programming• Ensure equitable access to programs/pilots• Education and Communication of opportunities and benefits<ul style="list-style-type: none">• Consumer focus• Policy maker focus
---	---



Energy Burden & Energy Access Recommendations – Progress Report

Draft Strategy:

Monitor and manage energy burdens for low- and moderate-income households as Maine advances beneficial electrification

Draft Actions:

- Conduct a comprehensive assessment of energy burden in Maine that recognizes the state’s changing energy landscape – capture electricity, fuels, and transportation costs
- Increase access to clean energy and energy efficiency projects or benefits which reduce energy burden for low- and moderate-income households, renters, communities, and small businesses through expanded financing options or ownership models
- Develop a clean energy navigator and outreach program
- Increase enrollment in energy bill assistance programs among income-eligible households and ensure all eligible households received adequate assistance
 - Address long-term funding challenges with dedicated and sustainable funding source
 - Consider how to address eligibility challenges particularly for those who are just outside current income eligibility guidelines

