

Expanding Maine's Renewable Portfolio Standard

Creating Economic and Environmental Benefits for Maine | May 2019

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Overview

Maine has a history of leadership in environmental stewardship and energy economic development. Expanding Maine's Renewable Portfolio Standard (RPS) is an opportunity to ensure Maine continues to lead in job development, energy security, and emissions reductions.

RPS policies require electricity suppliers to obtain a certain amount of power from renewable sources each year. RPS policies are a cornerstone for clean, renewable energy markets and are a proven tool for supporting cost-effective renewable energy development.

Maine's Class I RPS policy currently requires LSEs to provide customers with 10 percent of their electricity from qualified renewable energy facilities built after August 2005. This is accompanied by a Class II policy requiring an additional 30 percent of load to be served with renewable sources built prior to August 2005.

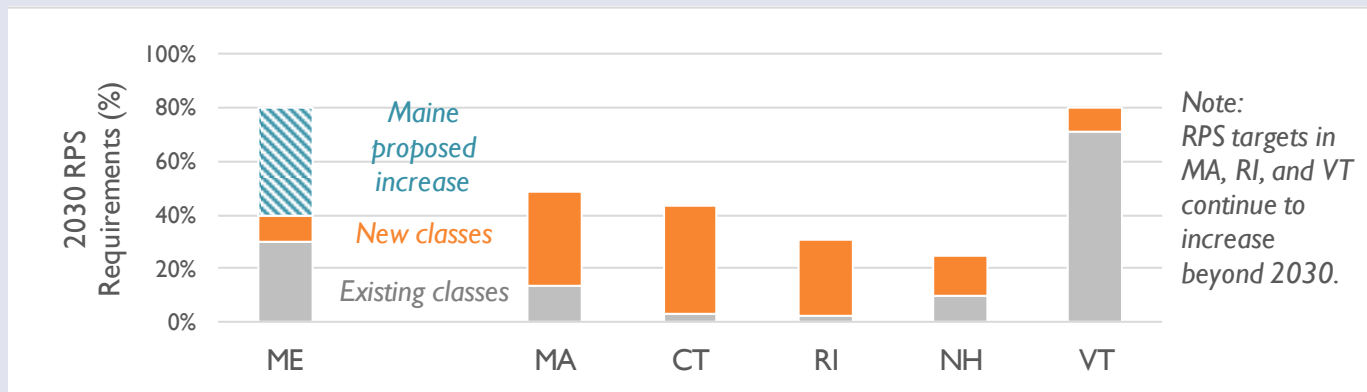
All six New England states have active RPSs. Connecticut, Massachusetts, and Rhode Island have expanded or accelerated their RPS programs in recent years—both increasing RPS targets and adopting companion long-term contract procurement programs.

These procurements are generally open to all eligible technologies, although technology-specific policies and procurements also exist—most notably for solar and offshore wind. Maine benefits not only from its own renewable energy policies but also by hosting renewable energy facilities used to satisfy other states' obligations.

This analysis examines the expected benefits and costs of a Maine Class I RPS that increases to 50 percent by 2030, alongside the procurement of 2,300 gigawatt-hours (GWh) of clean energy (based on assumptions from draft legislation LD 1494 *An Act To Reform Maine's Renewable Portfolio Standard*). Our cost-benefit analysis shows that such a reform can create jobs and reduce the negative impacts of climate and air pollution with minimal impact to Maine ratepayers.

By 2030, an extended RPS would create an additional 1,200 megawatts (MW) of renewable capacity in New England (700 MW in Maine), 170 Maine jobs per year, lower electric-sector CO₂ emissions attributable to Maine by 55 percent, save \$500,000 per year in health benefits related to reduced pollution, and decrease regional reliance on imported fossil fuels by 5 percent—with estimated electricity bill impact of just 1.1 percent.

Figure 1. Maine's current and proposed RPS requirement, compared to other state requirements



Our Findings



Increasing the RPS grows New England renewables by 1,250 MW

New England’s electric sector is changing: even without a change to Maine’s RPS, policies mandated by other states will increase the nameplate capacity of renewables by 6,900 MW by 2030 (as shown in our Reference case). Maine will experience economic benefits whenever the new facilities required to satisfy these policies are developed in Maine. Expanding the Maine RPS to 50 percent by 2030 would create an additional 1,200 MW of renewable energy in New England. Of this additional capacity, an estimated 700 MW (60 percent) would be in Maine: 500 MW of solar and 200 MW of wind.



Increasing the RPS adds jobs for Maine and New England

Increasing the Maine RPS to 50 percent by 2030 would create a net increase of 1,900 jobs between 2020 and 2030, or about 170 Maine jobs per year. This estimate accounts for changes in jobs related to decreasing the use of natural gas and coal to provide electricity, and for the impact of increased customer bills on re-spending throughout the economy. New wind capacity built in Maine in response to the proposed RPS expansion is expected to result in over \$70M in Maine-vendor services. Other benefits (beyond those estimated in this analysis) may accrue if more renewable projects are located in Maine as a result of the in-state benefits weighting criteria in the renewable energy procurement.



Increasing the RPS reduces Maine’s dependence on fossil fuels

Even without a change to Maine’s RPS, the electric sector’s reliance on fossil fuels (primarily natural gas) is expected to decrease by 42 percent from 2018 to 2030

Figure 2. New and incremental renewable capacity additions in the New England electricity system



as a result of energy efficiency programs, regional carbon pollution reduction programs, and other states’ renewable energy policies. Increasing Maine’s RPS to reach 50 percent by 2030 will cause electricity generation from fossil fuels to fall by 45 percent by 2030. Even a small percentage change is significant—reduced exposure to natural gas price volatility can produce millions of dollars of savings, particularly in cold winter months when customers throughout New England rely on natural gas for heating.



More renewables help Maine meet its greenhouse gas reduction requirements

Increasing the amount of renewable energy in Maine and the rest of New England reduces pollution linked to climate change. Under the current RPS policy, in-state electric-sector emissions are expected to decrease from 1.4 million metric tons (MMT) in 2018 to 1.0 MMT in 2030—a 13 percent reduction. Increasing the RPS to 50% reduces 2030 in-state emissions by an additional 10%

compared to the current policy. Were Maine to be credited for region-wide CO₂ emission reductions, 2030 emissions would fall by 55 percent, relative to the Reference case.

An increase in renewable energy requirements will allow the state to provide the cleanest electricity to other decarbonization strategies, such as the deployment of space and water heat pumps and electric vehicles. Expanding the RPS is a key step to ensure that Maine's emissions continue to decline as other sectors of the economy electrify.

Health

More renewables reduce the air pollution impacts of fossil fuels

By switching away from fossil fuels to renewables, Maine policymakers can help reduce the emission of pollutants like nitrogen oxides (NO_x), sulfur dioxide (SO₂), and particulate matter (PM), all of which reduce air quality and damage human health. Reducing health damages has real economic benefit in terms of reducing hospital visits, decreasing lost work days, and avoiding premature deaths. Increasing Maine's RPS to 50 percent by 2030 avoids 1.4 million pounds of NO_x, 1.2 million pounds of SO₂, and \$500,000 per year between 2020 and 2030 in public health costs associated with pollution.

Bills

Increasing the amount of renewables results in minor changes to bills

A cleaner, healthier, more efficient and reliable energy future comes at a relatively small cost, with considerable long-term benefits. Starting in 2020, increasing Maine's RPS and adding clean energy procurements will increase monthly electric bills for Maine residential ratepayers by an average of 1.1 percent compared to recent average bills, or about \$1.16 per month through 2030. Small commercial customers will see a similar bill impact of 1.1

Our Scenarios

We evaluated two main scenarios:

Reference case: Maine makes no changes to its RPS or other renewable policies, and all other New England states meet their respective renewable requirements. In this case, the Maine Class I RPS is assumed to remain at 10% per year through 2030.

50% by 2030 case: Maine increases the Class I RPS to achieve 50% by 2030. This case also expands the eligibility of Class I to include roughly 130 MW of existing hydro. This case assumes 2,300 GWh of large-scale procurement of renewables (1,725 GWh of which have a commercial operation date after December 31, 2018, while the remaining 575 GWh can have existed before January 1, 2019). By 2030, this scenario reduces in-state emissions by 10% and saves \$500,000 per year in health-related impacts compared to the Reference case.

We also examined two sensitivities to understand the impact of specific renewable energy builds:

Additional Distributed Solar case: Same as the 50% by 2030 case but also adds 125 MW of solar in each year from 2020 to 2022, totaling 375 MW of new solar resources, as proposed by separate legislation. By 2030, this scenario reduces in-state GHGs by 11%, saves \$580,000 per year in health-related impacts, and avoids \$31 million in total system costs per year relative to the Policy Case.

Additional Hydro case: Same as the 50% by 2030 case but expands the eligibility of existing hydro from 130 to 223 MW of existing resources, with a phase-in of eligibility from 2020 to 2035. By 2030, this scenario reduces in-state GHGs by 10%, saves \$510,000 per year in health-related impacts, and avoids \$1.7 million in total system costs per year relative to the Policy Case.

percent, or an average increase of \$1.76 per month. These bill impacts take into account changes to REC prices, capacity prices, and wholesale energy prices (including the impact of price suppression from renewables).

Increasing the Maine Class I RPS to 50 percent by 2030 can:



Create jobs

- Our cost-benefit analysis shows 170 jobs are created each year between 2020 and 2030



Reduce environmental impacts

- Reduces Maine's reliance on fossil fuels by 5 percent
- Avoids \$500,000 per year in health damages between 2020 and 2030
- Reduces electric-sector GHG emissions attributable to Maine by 55 percent



Stimulate the renewable energy industry

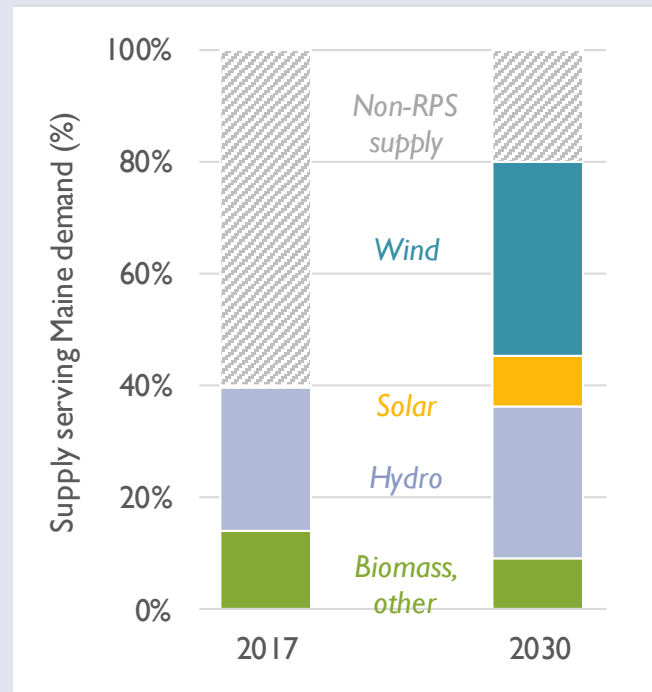
- Adds 700 MW of new renewables in Maine



Minimally impact Maine's ratepayers

- Increases residential and small commercial bills by \$1.16 to \$1.76 per month between 2020 and 2030, relative to a Reference case

Figure 3. 2017 Actual vs. 2030 estimated generation attributes used for ME Class 1 RPS compliance



This analysis was prepared for Maine Renewable Energy Association, Reed & Reed, Natural Resources Council of Maine, Brookfield, The Nature Conservancy, ReEnergy, Professional Logging Contractors of Maine, Sargent Corp., Longroad Energy, NextEra, Sierra Club of Maine, Maine Conservation Alliance, and Union of Concerned Scientists. For more information, please contact Jeremy Payne at jpayne@renewablemaine.org.

For more information on the modeling methodology and results, please see this report's accompanying technical appendix.

SYNAPSE ENERGY ECONOMICS

Synapse Energy Economics, Inc. is a research and consulting firm specializing in energy, economic, and environmental topics. Since its inception in 1996, Synapse has grown to become a leader in providing rigorous analysis of the electric power sector for public interest and governmental clients.

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Since 1998, Sustainable Energy Advantage, LLC has helped private, public and non-profit organizations develop opportunities for clean, renewable sources of energy, including wind, solar, hydroelectric, biomass and geothermal power, in competitive wholesale and retail electricity markets.

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