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Maine Energy Planning Roadmap— Energizing Maine's Future

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by Lisa Smith and Jeff Marks

INTRODUCTION

Identifying effective and efficient ways to heat and electrify Maine homes, buildings, and factories, and to fuel cars, trucks, and boats are consistently at the top of Maine governors' priority lists, whether they are Democrats, Republicans, or Independents. Advancing energy policies for the benefit of communities, businesses, and residents is increasingly necessary to drive economic development, enhance environmental quality, and achieve energy security.

The Maine Governor's Energy Office (GEO), with the guidance of a diverse and accomplished steering committee and funding provided by the US Department of Energy (DOE), is developing a *Maine Energy Planning Roadmap (Maine Energy Roadmap)* scheduled for release in January 2018. The *Roadmap* will provide a framework for evaluating existing and proposed energy policies, so Maine's goals to lower energy costs, reduce greenhouse gas (GHG) emissions, make efficient use of a diverse energy portfolio, and bolster state energy planning can be achieved. The Environmental and Energy Technology Council of Maine (E2Tech), a nonpartisan representative of a growing sector of the Maine energy economy and a key partner in the project, is tapping into its network of stakeholders to discuss, evaluate, and help solve the state's critical energy problems.

Compared to most states, even other New England states, Maine is an outlier in its demographics, energy generation, and energy consumption. These differences produce unique energy challenges for Maine. Although Maine is larger geographically than the other five New England states combined, it has a relatively small population of about 1.3 million people, most of whom live in rural areas (US Census Bureau 2017). The state's rural nature means its citizens travel more miles than those in many other states, and nearly 100 percent of Mainers are dependent on oil for transportation (US EIA 2016a). It also has the oldest population in the country, and some of the oldest housing stock (US Census Bureau 2017; US EIA 2016a). Furthermore, approximately 65 percent of Maine households still use oil as their primary heating fuel, more than any other state (US EIA 2016a). Maine also has the most energy-intensive economy in New England. As a result, Maine's high electricity costs (eleventh highest in the nation) place Maine's businesses at a competitive disadvantage (US EIA 2016a). All these issues clearly highlight the need to develop a Maine-specific energy plan. Not only must Maine pursue lower energy prices for its citizens and its industries, but the state must also seize its available energy opportunities to build a stronger economy that will employ more Mainers.

Fortunately, Maine has many assets available to address its energy challenges including in-state renewable resources and regional access to natural gas from the south and hydropower resources from the north. Furthermore, Maine's abundant natural wind, water, and biomass resources are economic drivers and position the state as a leader in renewable energy. Nearly 70 percent of the electricity generated in Maine is from renewable resources (US EIA 2016a). And although, Maine constitutes only 10 percent of New England's electricity demand, it supplies 50 percent of the renewable electricity generation for the region (US EIA 2016a).

The ultimate goal of the *Maine Energy Roadmap* is to establish an implementable, stakeholder-driven plan with a framework to enable development of sustainable energy policies and programs. Without a comprehensive *Roadmap* to guide policymakers, Maine will continue to be vulnerable to the effects of high and volatile energy prices and will be unable to establish a cost-effective, sustainable path for the production, delivery, and use of energy by all sectors in the state.

ENERGY POLICY—THE PAST

The phrase *energy policy* covers a wide scope of policy actions. These actions include, but are not limited to, market regulatory changes, environmental regulations, tax laws, incentive programs, and state mandates. Maine's energy policy is comprised of an often-contradictory mix of statutes, regulations, and programs that influence residential, industrial, and commercial

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heating and electricity use; renewable electricity generation; natural gas delivery and consumption; electricity reliability and resiliency; electricity transmission and distribution; transportation; GHG emissions; and state government energy use. Historically, the development of energy policy in Maine has not been the result of thoughtful, comprehensive analyses of costs and benefits; instead, state energy policies reflect a disjointed, decentralized culture and political process, one in which the objectives of special interests often dominate and policy initiatives are advanced without a consistent standard of evaluation.

No single entity manages the study, creation, and execution of Maine's energy policy. A combination of the state legislature, state and federal regulatory agencies, and quasigovernmental organizations oversees public funds, market regulations, programs, and laws relating to energy generation, distribution, consumption, and price. The primary entities include the Maine GEO; the legislature's Joint Standing Committee on Energy, Utilities and Technology; the Public Utilities Commission (PUC); Office of the Public Advocate; Department of Environmental Protection; and Efficiency Maine Trust. Other ancillary committees, nonprofits, and state offices operate in this sphere, but the entities listed here are the primary policy actors. As a result, Maine's energy policy has become the interplay between this complex bureaucratic structure and outside forces such as rapidly changing energy markets, emerging technologies, market externalities, behavioral changes, regional mandates, and federal policy initiatives.

HEATING AND TRANSPORTATION —EXAMPLES OF FLAWED (OR ABSENT) ENERGY POLICIES

Oil is the primary heating fuel used by Maine households. Despite record low prices for heating fuel over the last couple of years, the probability of significant price volatility remains due to factors such as global market changes and political upheaval in oil-producing countries. Low-income households are most vulnerable to oil-pricing shocks. While the state has financial incentives for installing energy-efficiency measures and upgrading old heating systems, these incentives reach only a small segment of Maine citizens. Approximately 5 percent of Mainers use natural gas to heat their homes (US EIA 2016a), but natural gas poses its own capacity and price challenges due to high winter demand and lack of infrastructure, particularly in rural areas of the state where natural gas infrastructure has not yet been built.

Transportation accounts for half of the state's energy use, emissions, and costs, and Maine is nearly 100 percent dependent on petroleum to fuel all its modes of transportation. There are fewer alternative-fuel vehicles per capita here than other New England states and little infrastructure for alternative-fuel vehicles (electric, natural gas, or biofuels). As with heating oil, gasoline and diesel fuel prices can be extremely volatile due to global, national, and regional constraints. Yet, there are no policies to reduce our reliance on petroleum in the transportation sector.

ENERGY POLICY—THE FUTURE

Maine Governor Paul LePage's energy goals are to reduce Maine's energy costs, not harm the environment, and decrease the state's reliance on oil. Maine already produces nearly half of New England's renewable generation and nearly 70 percent of its own electricity generation with renewable resources (US EIA 2016b). Furthermore, Maine's electricity industry accounts for less than 10 percent of the carbon dioxide (CO_2) emissions in Maine (US EIA 2016b), while the transportation sector contributes about 53 percent of CO_2 emissions. Most utilities and business groups share the governor's disinclination to subsidize additional renewable electricity generation or to spend resources on a patchwork of policies that do not result in a positive change. On the other hand, clean energy companies and environmental groups support energy policies that drive additional in-state renewable electricity generation, which they believe will lead to reduced energy costs, improved environmental quality, and green jobs. These divergent goals often lead to inertia when it comes to moving Maine's energy policy forward.

We believe there is a need for a holistic and unified approach to setting energy policy. A strong, implementable energy roadmap can provide guidance and potentially common ground to policymakers as they assess strategies for meeting energy goals. It also may facilitate economic development in the energy sector. Currently, there is no consensus on the appropriate objectives, and therefore, no robust integrated path forward. Despite different perspectives on electricity policy, and given that most of the state's GHG emissions and oil use are in the heating and transportation sectors, perhaps we should shift our policymaking approach to address the biggest challenges.

The steering committee, established at the outset of this planning process, has already identified several general

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themes and objectives that will inform and guide development of the *Roadmap*. Addressing all of these is beyond the scope of the project, but the *Roadmap* may consider the following:

- Strategies to ensure long-term energy affordability and price stability for Maine residents and businesses.
- Initiatives to move Maine from a high-carbon to a low-carbon future.
- Consideration of Maine's unique demographics when setting transportation and heating policy.
- Recognition that current regulations and pricing mechanisms for electricity are based on old paradigms. New technologies and methodologies (clean energy, distributed generation and off-grid solutions, increased grid security and reliability, penetration of smart grid, and energy storage) will require new ways of thinking, pricing, and regulating.
- A focus on reducing Maine's dependence on petroleum-based fuels for heating and transportation through new technologies and use of alternative fuels.
- Review of regional (New England and our Canadian neighbors) activities on renewable energy, electricity procurement, and transmission.
- Discussion of new standards for policy development and implementation. For example, can we evaluate policies based on whether they increase gross domestic product per unit of energy input, lower GHG emissions per unit of energy consumed, and lower the cost per unit of energy consumed?
- Approaches to encourage business and economic development in Maine's energy sector including companies designing, manufacturing, and installing alternative energy systems and technologies.
- Ways to stimulate research, development, deployment, and commercialization of new and emerging energy systems and technologies.
- Discussion of energy-sector workforce development and training to attract and retain skilled workers.

The state's industrial and transportation energy consumption along with its heating needs during the winter give Maine the highest per capita energy usage in New England. How do we reduce consumption while increasing productivity and make the most of each unit of energy? When dealing with energy efficiency, do we look long term and construct new, more efficient housing to replace older, inefficient units or focus on the short term and retrofit existing inefficient housing? Do we enact more stringent building and appliance-efficiency standards? When dealing with electricity, what combination of energy efficiency, demand management, and access to distributed energy and storage do we need? When dealing with transportation, do we try to change vehicle and public transportation use? Because of the complex interaction between sectors, there are no easy answers to these questions. But, the steering committee and stakeholders will consider these questions, and others, in the coming months.

CONCLUSION

Maine's largest end use for energy, and greatest consumption of oil, is in the transportation sector. Yet, we have no coordinated policy on reducing oil use or advancing alternative fuels, vehicles, and infrastructure. Heating Maine's homes and businesses is a perennial challenge, yet we fret every winter to ensure that our most vulnerable stay warm. Maine has the highest per capita energy usage in New England, but we don't have a focused strategy for reducing oil dependence while increasing productivity. Are these the right priorities? The *Maine Energy Roadmap* will identify the state's most urgent energy challenges and obtainable opportunities; outline the state's energy priorities; and include policy evaluation measures to find the right solutions for Maine. A pathway to a more affordable, reliable, and sustainable energy future is ahead of us. We will need resilient political will and a compelling roadmap to lead the way.

If *Maine Policy Review* readers are interested in contributing to the *Maine Energy Roadmap*, please contact the authors.

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