

Draft
Comment on Beneficial Electrification Study

Section 5.1.1 The Grid

Barriers

Public Safety

Depending entirely on electricity to power Maine's homes and transportation could make the Grid a single point of failure in a storm. For example, in October, 2017 a severe wind storm knocked out electricity for over 500 thousand Mainers, some for more than a week. ([1 year later: a look back at the worst wind storm in Maine's history](#)) Gasoline was available in sufficient quantity to run generators to power homes, and for transportation. A 5000 Watt generator can be had for about \$500. So although the Grid was down, some could keep their homes heated inexpensively, and some could drive. A cyber attack on Maine's grid could also highlight the vulnerability of a single point of failure.

ISO NE released an [Operational Fuel-Security Analysis](#) in January, 2018. In it, ISO NE studied 23 scenarios for the winter of 2024/2025. 19 of the scenarios resulted in load shedding due to insufficient fuel. 2024/2025 is close at hand, and if enough renewable generation and battery back-up is not installed in time, New England may be short of generating capacity as outlined in the report.

Opportunities

Battery equivalents for home and transportation should be studied and understood. Perhaps over time the single point of failure posed by today's Grid can be overcome. At present Tesla's web site offers a [Powerwall](#) costing approximately \$20 thousand which will provide continuous power for a 1400 square foot house and EV charging equipment with 1 day of continuous power.

The pilot projects which promise to manage demand peaks may help understand how to move the peaks enough to avoid load shedding and rolling brownouts, assuming implementation on a large scale by winter 2024/25.

Distributed Energy Resources (DERs) such as solar PV, energy storage, electric vehicles, microgrids, and energy efficiency may distribute the single point of failure above and may allow local generation during a generalized outage. Local emergency response will need to be developed to respond to DER outages where the DER is not the responsibility of, say CMP.

Over the short run, increasing the supply of natural gas to New England's electricity generators may be prudent and necessary if transition to renewable energy between now and 2024/2025 takes longer than expected.

Section 5.1.2 Upfront Costs

Barriers

Statewide capital requirements are likely to be large. The State has not taken on a project of this size or complexity before. As a result the estimate of the size of the investment is subject to uncertainty. A [presentation](#) to the Energy working group estimates the cost of completely electrifying Maine at \$50 to \$60 Billion over the next 30 years. A presentation to the Building, Infrastructure and Housing working group estimated the improvements needed at 10 to 20 Billion dollars. The citizens of the State of Maine will need to fund the capital requirements and accept some project risk to accomplish the goals set out in statute.

Generation of electricity at zero marginal cost may make recovery of any investment difficult. Companies may compete on price, driving prices toward their marginal costs, or zero. Attracting investors other than taxpayers may therefore be difficult.

Solutions

The presentation to the Energy working group should serve as a starting point to help refine the range of potential costs relative to any alternatives. The presentation is a very good thought-experiment.

It is possible that switching the variable costs incurred by burning fossil fuels with the nearly zero variable cost of solar and wind power will provide enough economic benefit to pay for the transition. Any analysis showing this should cover a range of possible cost scenarios, and include a study of how the massive investment is recovered.

The State may want to consider where the project management necessary for an undertaking of this size (somewhere between 10 and 60 Billion dollars) and complexity could best reside.

Section 5.1.3 Ongoing Operating Costs

Barriers

According to the Maine Office of Tourism [2018 Annual Report](#), about two thirds of overnight visitors to the state used their personal car to travel to Maine. Three-fourths of Maine's overnight visitors stayed in paid accommodations while visiting in 2018. Significantly raising the cost of motor fuel through new conservation charges or sales taxes may reduce spending by tourists on other items during their visit.

Maine competes for talent with many states outside of New England which have much lower energy costs. Increasing energy costs over the short run may cause businesses and individuals to look toward other states with lower energy and other costs.

Solutions

Implementing the various revenue programs across all states in New England may create a level cost playing field in New England.

The State may want to consider paying any funds raised through increased taxes intended to reduce carbon emissions directly back to the taxpayers annually. That way the cost of living and working in Maine won't increase.