Central Maine Power Company Reply to Efficiency Maine Trust: Request for Information On Beneficial Electrification Study

RFI

Section 4 of L.D. 1464 requires that the Trust's beneficial electrification study identify social, technological, legal, regulatory and economic barriers to beneficial electrification for the transportation and heating sectors in the State.

The Trust's Request for Information (RFI) invites interested parties to submit written information, guidance, and/or comments relevant to five required study areas.

1. Identify barriers to beneficial electrification in the transportation and heating sectors of the State;
2. Identify additional information that the Trust may require to make additional recommendations or analyses;
3. Consider potential roles of utilities in supporting beneficial electrification;
4. Identify areas or populations in the State less likely to benefit directly from beneficial electrification without additional policy development or utility intervention; and
5. Recommend opportunities for beneficial electrification

Responses

1. Identify barriers to beneficial electrification in the transportation and heating sectors of the State.

Transportation

The barriers to the growth of the electric transportation market include limited model selection, high battery costs and limited battery capacities, lack of standardized and convenient charging infrastructure, and consumer awareness.

Although the number of electric vehicle ("EV") models available in Maine is increasing, consumers continue to have significantly more options for internal combustion engine vehicles. Given the relatively smaller size of the Maine automobile market, certain electric vehicle models may also not be readily available locally.

Batteries are by far the most expensive component on an electric vehicle and cause EVs to be more expensive in comparison with equivalent internal combustion engine vehicles. Additionally, limited battery capacities, utilized to contain vehicle costs, can create consumer concerns with EV range. Range anxiety may be exacerbated by reduced battery range available under cold weather conditions.

EVs may not be a viable option today for many consumers due to the lack of robust, reliable, standardized, and accessible charging infrastructure. These challenges include convenient pricing, billing, and payment infrastructure. In the case of long distance travel it is also essential that charging is also fast.

Finally, as a relatively new technology, consumers are still unfamiliar with all of the details of EV ownership, including the vehicle models available, incentive offers, cost of EV ownership, and charging options.

Heating

The barriers to growth of the electric heating market include high capital costs for ground-source and whole-home air source heat pump systems, challenges to retrofitting existing centralized hot-water baseboard heating systems, non-centralized nature of air-source heat pumps, and the unplanned nature of heating system replacement.

Heat pump systems, particularly ground-source and whole-home air source heat pump systems, tend to have a higher initial cost compared with other heating systems. Retrofitting older existing buildings may be particularly costly as heat pump systems are designed to run at lower temperatures than hot-water baseboard or steam radiators, potentially necessitating a new centralized heat delivery system in addition to the heat pump unit and other exterior infrastructure.

The non-centralized, supplementary nature of air-source heat pump mini-split units may pose barriers to adoption for those desiring or requiring a systemic, centralized, whole-building heating system.

Finally, heating systems are often operated until failure. When such a failure occurs a homeowner is likely to want immediate replacement and may have a tendency to not want to change systems. Additionally, because systems are operated until failure, the existing fleet of heating systems has a relatively low rate of turnover.

2. Identify additional information that the trust may require to make additional recommendations or analyses.

No comment at this time.

3. Consider potential roles of utilities in supporting beneficial electrification.

Considering the barriers identified above to growth of the electric transportation market, Central Maine Power recognizes that some of these barriers are squarely in the control of automobile companies, such as having a variety of electric vehicle choices to meet driver needs.

However, certain barriers can be addressed by utility investment and activity in charging infrastructure, consumer awareness, and efficient load integration.

Utilities can develop and implement programs that help support growth of EV charging infrastructure. Utilities can make investments in the electrical infrastructure for new EV chargers as a way to help reduce the cost burden for the EV charger developer or owner. This infrastructure includes network make-ready work, transformers, pole(s) and or conduit, and service drop. Depending upon the nature of the service, a waiver of certain Maine PUC, Chapter 395 Rules may be needed to waive otherwise applicable requirements for customer cost responsibility. Some utilities in other states have been authorized to also invest in and own needed infrastructure behind the meter, up to and sometimes including the charger. Utilities may even invest in, own, and operate EV chargers in underserved areas that might not be attractive for private market investment.

Utilities have a broad reach which can be leveraged to increase consumer awareness of EVs and their benefits. Utilities could leverage existing communications channels such as websites, bill inserts, email, and social media, along with other potential channels such as public events and advertising.

Efficient integration of EV and heat pump load into the electric distribution system is also a key role for utilities. While in the near-term the size of EV and heat pump load can be adequately served by existing infrastructure, a growing number of EVs and heat pumps could potentially result an inefficient increase in peak demands if proper price signals for the cost of electricity supply and delivery are not provided. Transparent, accessible, and cost-reflective pricing enables customers to make economically efficient decisions with regard to the allocation of their capital. Rate design that reflects the utility's cost of providing service will enable sustainable beneficial electrification. To the extent price signals are not accessible enough for customers to be responsive (e.g., market pricing failure due to informational asymmetry), utilities could deploy intelligent load integration strategies.

4. Identify areas or populations in the State less likely to benefit directly from beneficial electrification without additional policy development or utility intervention.

Based on current EV adoption trends it is likely that lower income individuals may not directly benefit from growth of the electric transportation market. Any broad programs that support the electric transportation market should include considerations for lower income individuals. This could include support for electrification of transit buses or electric transit bus charging infrastructure, or additional support for vehicle rebates or charging infrastructure targeted at lower income individuals.

5. Recommend opportunities for beneficial electrification.

Please see response to Question 3.