



Natural Resources Council of Maine

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Dear Ms. Cushman,

Thank for the opportunity to comment on Efficiency Maine's draft report entitled *Beneficial Electrification: Barriers and Opportunities in Maine*. As you know, NRCM is the state's largest environmental advocacy organization and is pleased to offer these comments on behalf of our more than 25,000 members and supporters.

Having played a role in the development of the legislation that led to this report, we are pleased to observe that the draft report is an excellent primer on beneficial electrification. We applaud the Trust for developing a clear, wide-ranging and detailed report. Below you will find some overall comments about areas where we think the report can be improved, as well as suggested recommendations for the report.

Overall Comments

The description of electrification technologies in Section 3 are clear and useful. Both would be improved by any additional information or insight on where building and transportation electrification technologies may be headed in coming years (or decades). This is especially true for electric vehicles, which are on a steep technology innovation and market development curve.

Section 3.2 Transportation Sector would be enhanced by inclusion of data or indicators of market trends and forecasts, where available. In particular, Section 3.2.1 On-Road Vehicles could include the number of commercially available vehicle models and trends in model availability/announcements, pricing, or range.¹ This is true for the discussion of light-, medium-, and heavy-duty vehicles.

¹ See for example:

- Bloomberg Electric Vehicle Outlook: <https://about.bnef.com/electric-vehicle-outlook/>
- Bloomberg Lithium Ion Battery Prices: <https://about.bnef.com/blog/behind-scenes-take-lithium-ion-battery-prices/>
- <https://www.consumerreports.org/hybrids-evs/hot-new-electric-cars-are-coming-soon/>

According to at least one report, there will be 104 models of electric vehicle available in the U.S. in 2020, up from 79 at the end of 2019.² With regard to vehicle batteries, Bloomberg New Energy Finance's Battery Price Survey, published in December 2019, predicts that as cumulative demand passes 2 TWh in 2024, prices will fall below \$100/kWh. This price is seen as the point around which EVs will start to reach price parity with internal combustion engine vehicles.

While there are fewer medium- and heavy-duty vehicles available, this market is growing, and more electric options are becoming available.³ A greater discussion of these trends would provide a greater understanding of how this technology will impact beneficial electrification policies and goals in the future.

Similarly, Section 3.2.2-3.2.4 could be enhanced by specifics on the types of electric equipment currently being deployed in Maine and other states. For example, it is not clear from the report that many states are already deploying electric forklifts, ground support equipment at airports, and cargo-handling equipment at ports, terminals, and railyards.

With regard to barriers, a fundamental and cross-cutting barrier is the need to shift from paying higher operating costs to paying higher capital costs (and lower total costs.). This challenge is familiar to the Trust and has a wide variety of implications. Those capital costs can include both electrification equipment as well as socialized electricity system costs.

Beneficial electrification also represents a shift from unregulated fuels to a regulated environment. Utilities are regulated in large part to allow consumers to efficiently finance major capital investments. Utility regulation also typically applies a least-cost framework—one that recognizes the value of energy efficiency and funds Efficiency Maine. That framework could serve the state and consumers well if it covered a broader set of energy use, but that requires careful adjustments in policy and regulation. As such, we do not see the barrier to electrification as a funding challenge as much as a challenge of helping consumers make or finance economic choices that benefit themselves and the public interest (including other consumers on the electric grid.).

In the sections on Barriers (both Cross-cutting and Measure-specific sections), it is important to recognize that upfront costs include equipment purchase and installation as well as significant soft costs, which can also increase the incremental upfront cost of electrification technologies. Customer acquisition and permitting costs, for example, can be higher for new technologies.

• <https://www.businessinsider.com/electric-cars-that-will-be-available-by-2025-2018-1>

² <https://www.axios.com/newsletters/axios-generate-db7f8011-ff70-45d6-b86e-192e282d544d.html>

³ See "Ready for Work." Union of Concerned Scientists, December 2019.

<https://www.ucsusa.org/sites/default/files/2019-12/ReadyforWorkFullReport.pdf> or

"Electrifying Trucks: From Delivery Vans to Buses to 18-Wheelers." ACEEE, January 2020.

<https://aceee.org/sites/default/files/Electric%20Trucks.pdf>

Suggested Recommendations

The following suggested recommendations do not by any means represent an exhaustive or exclusive set of recommendations for achieving beneficial electrification.

Maine must develop a comprehensive plan for how to strategically promote and implement beneficial electrification throughout the state.

Beneficial electrification is a complex process that will require both long- and short-term planning and cooperation between a large number of state agencies. The state must develop a comprehensive plan for how it will promote and achieve beneficial electrification throughout the state. This plan must identify all relevant actors (for example, Efficiency Maine Trust, Governor's Energy Office, Department of Transportation, Public Utility Commission, Office of the Public Advocate Non-Wires Alternative Coordinator, etc.) and what role each entity will play. The plan should also establish short and longer-term goals for beneficial electrification with benchmarks.

Maine should make our electric grid more ready for beneficial electrification, and increase transparency to maximize private investment in grid-connected electrification technologies.

Part of the comprehensive planning process should include identification of how various regions of the state's electric infrastructure will be impacted by beneficial electrification and whether there are regions of the state where electrification should be prioritized for greatest electrification at lowest cost to ratepayers. This work should be done in conjuncture with the ongoing work of the Non-Wires Alternative Coordinator housed in the Office of the Public Advocate and should include a concerted effort to fully incorporate beneficial electrification into distribution planning and non-wire alternative solutions.

Similarly, all beneficial electrification initiatives should include demand management strategies wherever possible. Demand management strategies could include various approaches ranging from market signals to hard external controls to hybrid tactics.

In the past, grid planning has been conducted by utilities without much transparency. Beneficial electrification will rely on both public and private investment, requiring a significantly more transparent and public planning process as it related to Maine's electric grid. This includes information about the capacity of different aspects of the grid to integrate electrification technologies. As such, greater transparency from Maine's utilities about distribution grids will be critical.

Expand electric vehicle charging infrastructure in a systematic way.

Rapid and robust adoption of electric vehicles is a necessary component to a beneficial electrification strategy. Because of perceptions about range anxiety, a robust and interconnected network of level 2 and level 3 charging stations is likely to significantly aid Maine in realizing

this rapid transition to electric vehicles. While EMT has done a significant amount of work to begin filling out Maine's charging infrastructure, more is required to determine where more charging infrastructure is needed, how to prioritize installation locations, how to recruit site hosts, and whether and how much financial incentive is necessary to build out the network.

In addition to creating a charging network plan, the state should identify barriers to installing charging equipment. For example, a recent report from the Rocky Mountain Institute, *Reducing EV Charging Infrastructure Costs*, found that charger installation costs in the US are three to five times more than the cost of the charger itself.⁴ These "soft costs", such as costs associated with marketing, permitting delays, and utility barriers, are significantly higher in the US than in Europe and present an opportunity to dramatically reduce installation costs if we can identify strategies to streamline the installation process in Maine.

Ensure that the Maine Public Utilities Commission recognizes and accounts for the full suite of benefits accruing from beneficial electrification.

In order to appropriately deliberate on policies aimed at encouraging beneficial electrification, the Maine Public Utilities Commission must appropriately value the various benefits conferred by beneficial electrification, above and beyond the traditional public interest analysis focused primarily on rate impacts. For example, climate impacts from switching from a more polluting to a less polluting fuel source must be valued in a meaningful way and considered with other benefits such as greater grid utilization and efficiency savings. Furthermore, especially early in this process, some beneficial electrification strategies may actually cost more, such as approaches to trigger market transformation or adoption of newer technology that may be deemed optional today but will become necessary in the future when the grid must become more dynamic. The PUC must have authority to take these factors into consideration to avoid continued investment in older but cheaper technologies and strategies that will ultimately hinder beneficial electrification. By limiting an analysis of public interest to only ratepayer costs and reliability impacts, minimally more costly projects with dramatic benefits for the climate or longer-term grid benefits are likely to be prematurely rejected. Instead, the PUC should be directed to take a more holistic approach to analyzing costs and benefits of potential projects, including an analysis of likely climate pollution benefits. This broader and more inclusive cost/benefit analysis would more closely align with Maine's climate and beneficial electrification goals and policies.

Thank you,

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Clean Energy Advocate & Staff Attorney

⁴ Chris Nelder and Emily Rogers, *Reducing EV Charging Infrastructure Costs*, Rocky Mountain Institute, 2019., <https://rmi.org/insight/reducing-ev-charging-infrastructure-costs/>.