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For a thriving New England

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Re: Beneficial Electrification: Barriers and Opportunities in Maine
Comments on December 24, 2019 draft

Dear Ms. Cushman:

Conservation Law Foundation (CLF) is grateful for the opportunity to comment on the draft *Beneficial Electrification: Barriers and Opportunities in Maine* (the Draft), Staff Report of the Efficiency Maine Trust (the Trust). CLF acknowledges and appreciates the extensive investigative process that went into development of the Draft, as well as the opportunities that were provided for public input.

Founded in 1966, CLF is a member-supported environmental advocacy organization that works to solve the problems threatening our natural resources and communities in Maine and throughout New England. In the face of global climate change, CLF and our members have a significant interest in reducing emissions from the transportation and building sectors while improving air quality and mitigating adverse public health impacts.[1]

CLF's advocacy is guided by the global consensus of scientists warning that to avert the most devastating impacts of climate change, greenhouse gas emissions must be reduced to net zero by 2050.[2] To meet this challenge, last session the Legislature established aggressive greenhouse gas

[1] Some of CLF's previous relevant advocacy work in the state includes: participating as an intervenor in Maine Public Utilities Commission (Commission) proceedings to approve the Trust's second, third, and fourth triennial energy efficiency plans; commenting orally and in writing on Maine's proposed Environmental Mitigation Plan associated with the partial consent decrees resolving certain violations of federal emissions standards by Volkswagen companies; participating as an intervenor in various non-wires alternatives dockets; providing testimony on L.D. 1464 (129th Legis. 2019), *An Act To Support Electrification of Certain Technologies for the Benefit of Maine Consumers and Utility Systems and the Environment*, the bill that spawned this Draft as well as the Commission's ongoing review of proposals for pilot programs to support beneficial electrification of the transportation sector, in which CLF is also participating.

[2] *See* IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable

emission reduction targets that will put the state on this track by 2030.[3] The Legislature also enacted a suite of legislation designed to ramp up investment in renewable energy and bolster energy efficiency funding.[4] The Governor has issued several executive orders with these same objectives in mind, including *An Order to Strengthen Maine's Economy and Achieve Carbon Neutrality By 2045.*[5]

Strategic electrification is a critical component of decarbonizing Maine, as the Trust explains.[6] "Beneficial electrification" is initially that which "results in reduction in the use of a fossil fuel."[7] Because electricity can heat homes and power cars more efficiently than fossil fuels, emissions attributable to power generation for electric appliances are generally lower than those from comparable conventional ones.[8] That superior efficiency as well as load flexibility attributes mean that widespread electrification can additionally improve environmental outcomes by enabling the electricity grid to better accommodate new, variable generation resources, while smoothing peaks and reducing reliance on dirty peaker plants.[9] At the same time, Maine's Renewable Portfolio Standard and other renewable energy policies ensure that the electricity supporting this transition away from fossil fuel dependency will be increasingly clean and low-emitting.[10]

Importantly, though, beneficial electrification offers a wide array of significant benefits even beyond the carbon savings. The statutory definition ensures as much: to be "beneficial," electrification must also "provide a benefit to a utility, a ratepayer or the environment, without causing harm to utilities, ratepayers or the environment."[11] The additional attributes of electrification, which should be quantified and accounted for in any cost-benefit analysis prioritizing and developing policies for the state, are at least threefold. First, electrification cleans up the air in our communities, our schools, and along our roads, providing tangible health benefits (and health cost savings) for Maine families and businesses. Electric vehicles (EVs), one of the three "key electrification technologies" identified by the Trust, have no tailpipes and emit no air pollution. The health benefits attributable to electrification are of critical import, as the burdens of air pollution disproportionately fall on disadvantaged communities and have outsized consequences for our most vulnerable populations. CLF urges the Trust to highlight in the final report the intrinsic and tangible public health benefits associated with beneficial electrification.

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development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland. Available at https://tinyurl.com/y2jncrr3.

[3] P.L. 2019, ch. 476 § 7.

[4] *See, e.g.*, P.L. 2019, ch. 478; P.L. 2019, ch. 477; P.L. 2019, ch. 365.

[5] Me. Exec. Order No. 2019-010 (Sept. 23, 2019); *see also* Me. Exec. Order No. 2019-013 (Nov. 26, 2019).

[6] Draft at 4-5.

[7] P.L. 2019, ch. 365, § 1.

[8] *See, e.g.*, Union of Concerned Scientists, *Electric Vehicle Benefits for Maine* (Apr. 8, 2019).

[9] *See, e.g.*, Draft at 22-24.

[10] *See, e.g.*, 35-A M.R.S. §§ 3210, 3486.

[11] P.L. 2019, ch. 365, § 1.

Moreover, as noted above, these electrified applications have flexible loads, meaning that they do not need to draw on the electricity grid at the same time that they are utilized.[12] Thus, demand can be shifted—to better match supply (for instance, to times when renewable resources are being curtailed), or to take advantage of less congested and less costly hours (off-peak). This lends itself to flexibility of the grid and improved efficiencies, with positive outcomes not only for the environment.[13] Strategic electrification facilitates load management and presents significant, untapped potential for grid optimization.

These system benefits, as well as the improved margins attributable to higher utility revenues, can be shared with all ratepayers, putting downward pressure on rates.[14] Owners of the key electrification technologies stand to reap additional cost benefits given the greater efficiencies of those in comparison to conventional, fossil fuel-powered versions. Overall energy use is therefore decreased, as are costs of operation.

The qualities of electrified end uses lend themselves to myriad benefits. Yet, importantly, as the emphasis on *beneficial* electrification suggests, careless electrification could undermine Maine's efforts. To harness these benefits, particularly in the long-run, electrification must be properly planned for and managed.[15]

1. General Comments

The Draft will serve as a valuable "primer for Maine legislators on beneficial electrification."[16] It is a useful resource and sets forth a broad array of measures that could facilitate and advance the transformation of our transportation and heating systems, along with explaining how barriers "manifest in Maine specifically."[17] The Draft contains a comprehensive recitation of "social, technological, legal, regulatory and economic barriers to electrification" and describes myriad solutions.[18] The description of key electrification technologies is also highly informative. This document no doubt reflects the thorough investigation underlying its development.

Nevertheless, while CLF agrees that serving as a "primer" is useful, we regret that the Draft does not recommend specific "opportunities for beneficial electrification," as the law directs.[19] CLF recognizes that the Trust intends to "summarize recommendations for further study" and

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[12] *See* Draft at 22-24; *see also* Farnsworth, D., Shipley, J., Lazar, J., and Seidman, N. (2018, June). *Beneficial electrification: Ensuring electrification in the public interest*. Montpelier, VT: Regulatory Assistance Project, at 29-33.
[13] *See, e.g.*, C. Nelder, J. Newcomb, & G. Fitzgerald, Rocky Mountain Institute, *Electric Vehicles as Distributed Energy Resources* (2016).
[14] *See, e.g.*, J. Frost, M. White & A. Allison, Synapse Energy Economics, Inc., *Electric Vehicles are Driving Electric Rates Down* (June 2019 Update).
[15] Though outside the scope of this matter, it is important that discussions about electrification take place within a broader context—for electrification is but one key strategy to decarbonizing. For instance, to reduce emissions from transportation, states must implement policies that facilitate not just low-emitting driving, but also *less* driving by providing access to clean transportation options to all Maine residents.
[16] Draft at 7.
[17] *Id.*
[18] P.L. 2019, ch. 365, § 4.
[19] *Id.*

"summarize recommendations received from stakeholders."[20] Thus, it does not appear that the Trust intends to make concrete recommendations for legislative action; or if it does, these have not been subject to public review and comment. The solutions introduced in the Draft, while comprehensive, are presented as an array of options rather than tangible suggestions. They are not prioritized or subject to quantitative analysis. This approach seems to miss the mark of the legislation prompting this investigation, which contemplates actionable proposals, directing that the Trust submit its report along with "*any recommended legislation*."[21]

Along the same lines, CLF is concerned with a general failure of the Draft to adequately convey the urgency with which the State must act to advance beneficial electrification. The time for iterations upon iterations of studies and reports is behind us. The tremendous disruptions of climate change are already here, and we have only a limited amount of time to get on track to contain the most severe consequences. Maine law directs that the state must reduce greenhouse gas emissions 45% by 2030, now only a decade away.[22] Without expedited process, it is entirely possible that this report will not lead to proposed legislation until the next session, and assuming a need for regulatory implementation, it may well be 2022 before meaningful action. This extended timeline is exacerbated if the Trust recommends only further investigation.

As such, CLF urges the Trust to make actionable recommendations to the Legislature in its culminating report, in line with the suggestions set forth below. To the extent the Trust has identified specific studies necessary for implementation of beneficial electrification strategies, the Trust should describe those in detail both to the Legislature and to the climate council and relevant working groups. The Trust should recommend that any such investigation and analysis occur in an expedited manner, culminating in specific, implementable recommendations on time to inform legislative development in the very next session.

2. Specific Comments

Ultimately, to achieve Maine's decarbonization targets and stave off the worst impacts of climate change, it will likely prove necessary to act on many, if not all of the solutions delineated by the Trust. There is no longer time for half-measures or incremental progress; Maine must act aggressively and quickly to reduce emissions 45% below 1990 levels over the next ten years. CLF expects electrification strategies to be a key element of the comprehensive climate action plan that will emerge from the Maine Climate Council at the end of this year.[23] In the meantime, however, the Legislature should begin to consider policies for encouraging, facilitating, and planning for a transition away from fossil fuel dependency in the heating and transportation sectors.

a. Grid/utility beneficial electrification bill

As described *supra* and by the Trust in the Draft, electrification presents an array of potential benefits, not only for reducing climate-harming emissions but also for the electricity grid and

[20] Draft at 53.
[21] P.L. 2019, ch. 365, § 4 (italics added).
[22] 38 M.R.S. § 576-A(1).
[23] *See* 38 M.R.S. § 577(1).

ratepayers. But it must be properly planned for and managed to maximize these assets. CLF recommends that the Legislature undertake a comprehensive beneficial electrification bill that would modify the Commission's traditional definition of "public interest" to better advance these causes and direct the Commission to undertake several new regulatory matters.

The public interest test

The key electrification technologies pose quantifiable efficiency and cost benefits that are valuable under a historic cost/benefit-focused public interest test. However, the Commission's application of the conventional test for utility actions may stymy investment in beneficial electrification by failing to account for the full suite of benefits. Maine's new statutory decarbonization targets demand that the Commission take a new perspective on utility action and investment—one that properly values and accounts for additional benefits including emissions reductions and avoided climate change costs, cleaner air and health savings, and reduced fossil fuel consumption. It is incumbent upon the Commission to begin to consider climate change and state climate change law in all of its decision-making. The Legislature should redefine "public interest" for purposes of utility regulation to ensure that investments are properly quantified and analyzed within this new framework.

Load management

CLF agrees with the Trust that the load flexibility associated with the key electrification technologies is an important attribute.[24] The fact that these technologies need not draw electricity at the time they are utilized enables load management, which is critical for mitigating the increased demand that widespread electrification will spur. What's more, if properly managed, this feature enables these technologies to serve as distributed energy resources that can increase operational flexibility of the grid.[25] Shifting load to less congested hours and smoothing demand curves can lower costs of service for all customers.[26] EV batteries, essentially mobile electricity storage units, present vast, untapped potential for enhancing grid efficiencies. And in a future scenario consistent with the state's renewable energy targets, these resources can help accommodate increased variable energy generation and reduce curtailment.

The Trust's report should urge the Legislature to direct the Commission to commence a docket with the purpose of ensuring that the load management capabilities of beneficial electrification technologies are maximized. In such a docket—perhaps a follow-up to docket no. 2019-00217, *Request for Proposals for Pilot Programs to Support Beneficial Electrification of the Transportation Sector*, though with a broader focus—the Commission would direct transmission and distribution utilities and invite other entities including the Trust to submit proposals for managing load within their jurisdictions (or state-wide, for the Trust). The Commission would evaluate the extent to which proposed load management techniques and strategies would serve the public interest (as redefined) and would approve for implementation those approaches that

[24] *See* Draft at 22-23.
[25] *See, e.g.*, C. Nelder, J. Newcomb, & G. Fitzgerald, Rocky Mountain Institute, *Electric Vehicles as Distributed Energy Resources* (2016).
[26] *See, e.g.*, Farnsworth, D., Shipley, J., Lazar, J., and Seidman, N. (2018, June). *Beneficial electrification: Ensuring electrification in the public interest*. Montpelier, VT: Regulatory Assistance Project, at 31.

ensure that benefits of electrification are maximized. To allow a complete and transparent exploration of the various possible approaches, this docket should provide broad opportunities for public input, including discovery on the proposals and briefing.

One well-established and widely recommended approach for managing load is rate design. As the Trust explains, "the value of flexible electrified loads must be communicated through the electricity prices consumers pay or avoid."[27] Whereas traditional rates do not convey price signals to charge or heat water in a way that reflects contemporaneous grid conditions, well-designed, time-varying rates will lead to electricity use that is aligned with grid needs (and therefore can result in reduced costs for all ratepayers).[28] In addition to encouraging off-peak electricity use, rate design is a tool for encouraging electrification, because it presents consumers with fuel-saving opportunities.[29] Of course, it is critical to get the mechanics right to send appropriate signals and avoid customer unpopularity.[30] Commission rate design review should take place in a transparent, public process, and should consider measures to gradually transition consumers—such as voluntary or opt-out time varying rates or EV rates that are not applicable to the entire house. Discrete rate design for key electrification technologies would be an apt subject for the Commission docket contemplated here.

The Draft also details other approaches to load management, sometimes collectively known as "smart charging," including a number of Trust pilots currently underway.[31] Utilities or the Trust might reasonably propose controlled charging, which the Trust describes as utilizing "embedded technology that responds to programmable time presets, price signals, or real-time third-party commands."[32] This approach, and other variations on demand response programming, present significant load management opportunities. Furthermore, EV vehicle-grid integration, or two-way charging, where batteries store electricity and can discharge power back into the grid, is promising and should be contemplated, at least in pilot form.[33] To the extent that these mechanisms are explored and pursued in a load management docket, the owners of the relevant electric technologies should be fairly compensated for providing these benefits to the grid.

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[27] Draft at 23.

[28] *See, e.g.*, Farnsworth, D., Shipley, J., Lazar, J., and Seidman, N. (2018, June). *Beneficial electrification: Ensuring electrification in the public interest*. Montpelier, VT: Regulatory Assistance Project, at 41-44, 50 ("For consumers to benefit from the value produced by their flexible electrification load, the system or societal value of their actions must be communicated through the electricity prices they pay or avoid."); *see also* Joint IOU Electric Vehicle Load Research Report, 7th Report (Apr. 2, 2019) at 29-31 ("The load profiles demonstrate that for all [EV] rates and sectors, high off-peak usage corresponds to the PEV rate price signals, i.e., customers are largely responding to the price signal and charging during off-peak hours (11:00 p.m. to 7:00 a.m. with a bulk of the load occurring from 11:00 p.m. to 4:00 a.m.).

[29] *See, e.g.*, Zethmayr, J.; Kolata, D. Charge for Less: An Analysis of Hourly Electricity Pricing for Electric Vehicles. *World Electr. Veh. J.* (2019) (Paper using actual locational marginal prices to compare what rational EV drivers would pay to charge their vehicle on Illinois utility Commonwealth Edison's hourly pricing program with costs associated with the utility's flat-rate energy price, concluding that hourly pricing would have saved EV owners significantly over a flat-rate tariff in the years studied.).

[30] *See* Draft at 24.

[31] *Id.* at 24-25; Regulatory Assistance Project, *Getting From Here to There: Regulatory Considerations for Transportation Electrification* (May 2017) at 19-24.

[32] Draft at 24.

[33] Regulatory Assistance Project, *Getting From Here to There: Regulatory Considerations for Transportation Electrification* (May 2017) at 24.

Long-term planning

The Legislature should ensure calculation of "a precise estimate of the number of heat pumps, HPWHs and EVs required to achieve Maine's emissions reduction targets," to create a framework for and drive forward policy development.[34] CLF anticipates that projections along these lines may well be a part of the state's climate action plan. Modeling strategic electrification projections and increased electricity demand is critical to ensuring that the state adequately plans for load growth.

The Legislature should require transmission and distribution utilities to regularly submit long-term plans to the Commission for review. These plans should account for demand projections attributable to electrification of the transportation and heating sectors consistent with the state's decarbonization targets. Utilities should be required to analyze the impacts on the state's and region's power system. Initially, the Legislature should also require that utilities take stock of their existing resources to identify areas where increased electrification could most readily be incorporated into the grid.[35] This process would entail an in-depth look at projected load and system needs over the planning horizon, and would facilitate planning for how to manage and meet those demands.

Moreover, the Legislature should ensure that all Commission review of agency investments and other decision-making occurs within the context of the state's mandatory decarbonization targets and accounts for electrification deployment scenarios—both in Maine and throughout New England. Without explicit direction to that end, the Commission has found (and may continue to find) that the effect of the state's climate change law is "uncertain."[36] The Commission has therefore not grappled with, or required utilities to grapple with, the implications of widespread electrification for fossil fuel use in the state and region.[37] This has allowed utilities to continue to lock their customers into pre-approved long-term investments in gas capacity based on assumptions that status quo gas supply and demand conditions will prevail.[38] Without legislative intervention, today's Commission-sanctioned fifteen- or twenty-year investments in gas resources may well undermine the state's ability to achieve its decarbonization targets (or leave Maine people and businesses burdened with costs for hefty stranded assets).

Utility investment in EVs

CLF asks that the Trust also recommend that the Legislature direct the Commission to open a docket specific to transportation electrification to serve as a follow-up to docket no. 2019-00217, *Request for Proposals for Pilot Programs to Support Beneficial Electrification of the Transportation Sector*. This matter would build off the data and information gleaned from the

[34] Draft at 16.
[35] *See, e.g.*, Farnsworth, D., Shipley, J., Sliger, J., & Lazar, J. (2019, January). *Beneficial electrification of transportation*. Montpelier, VT: Regulatory Assistance Project at 62-64.
[36] *Northern Utilities, Inc. d/b/a Unitil*, Request for Approval of Precedent Agreements with Westbrook Xpress Phase III Project, No. 2019-101, Order (Me. P.U.C. Nov. 7, 2019) at 21; *see also Bangor Natural Gas Company*, Request for Approval of Precedent Agreements for Westbrook Xpress Phase III Project, No. 2019-105, Order (Me. P.U.C. Nov. 7, 2019) at 20.
[37] *See id.*
[38] *See id.*

pilot(s) pursued in that docket and would direct transmission and distribution utilities to make at least two submissions with respect to transportation electrification.

First, the Commission should order transmission and distribution utilities to evaluate a range of EV-related investments. These categories could include, but would not be limited to, investments that allow for two-way power flow (to facilitate vehicle to grid integration), as well as those that reduce the upfront cost of charging stations for potential site hosts. The Trust has flagged a number of concerns with this second approach, commonly known as "make-ready."[39] CLF agrees that it is critical that the Commission constrain utility make-ready investments to ensure that a competitive marketplace is not undermined or impaired. However, it is also important not to overlook the value of utility investment for jump-starting the state's transition away from fossil fuel-powered vehicles. To the extent that utility investments advance the redefined "public interest," they should be encouraged. In general, investment should be limited to the utility-side of the meter, but the Commission should adopt a test (with public input) for determining circumstances under which more extensive utility ownership is permissible, even desirable, to serve the public interest. Creative approaches—such as delineating a finite role for the utility based on percentage ownership or ownership that phases out over a particular timeframe—should be considered in a public proceeding.

Second, and again, drawing from the results of docket no. 2019-00217, the Commission should evaluate current utility rates that would apply to EV fast chargers or other charging infrastructure with high power draws to determine whether they impede beneficial electrification. If demand charges are found to deter investment and undermine the public interest, the Commission should direct utilities to propose alternatives to the traditional model.[40] This participatory docket should focus on learning from the pilots currently under review, examining the effect of demand charges on investment in charging infrastructure, exploring alternatives, and ultimately approving new approaches. The innovative mechanisms being pursued by utilities around the country reflect the widespread nature of the problem but also provide a range of alternatives for serving the public interest while accommodating utility needs.[41]

b. Funding Electrification Incentives

The Trust describes a number of important purchase incentives that the state currently provides to defray the up-front costs of the key electrification technologies.[42] Financial incentives are critical for boosting adoption of innovative technologies during early deployment phases while upfront costs exceed those of comparable, fossil fuel-powered versions. In addition to the rebates already offered, the state should consider new policies that target the retrofit scenario, which the Trust defines as "a customer replac[ing] a piece of fossil-fuel burning technology before the end of its useful life."[43] For instance, the Trust explains that over "80 percent of water heater replacements in the U.S. are failure-based unplanned purchases," which shrinks the window of

[39] *See* Draft at 45-47.
[40] *See id.* at 42, 47.
[41] *See, e.g.*, The Sierra Club & Plug In America, *AchiEVe: Model Policies to Accelerate Electric Vehicle Adoption, Version 3.0* (July 2019) at 16 (providing examples of how utilities have proposed to address the demand charge disincentive).
[42] *See* Draft at 25, 35, 46.
[43] *Id.* at 25.

opportunity for influencing the customer decision.[44] The state might pursue early retirement programs in which the Trust would attempt to identify older appliances and influence the consumer's replacement decision before failure, thereby avoiding the emergency scenario and allowing for a more reasoned, cost-effective purchase.[45] A similar model for cars can be updated to make EVs more attractive to Maine consumers not in the market for a new vehicle. Through a Cash for Clunkers program, residents could receive additional incentives toward the purchase of an EV (new or used) upon agreeing to scrap an older, more polluting car.[46]

It is worth noting that as economies of scale improve, the costs of the key electrification technologies will approach cost parity with traditional fossil-fuel based technologies. EV battery costs, for instance, continue to drop steadily and passenger EVs are poised to achieve price parity with comparable traditional vehicles in the next 5-10 years—sooner if accounting for all ownership costs including fuel and maintenance savings associated with EVs.[47] If successful, then, state rebates and grants should ultimately phase themselves out. Rebates, therefore, should be reviewed periodically both to ensure that levels are adequate to influence consumer buying behavior consistent with the state's decarbonization targets, and also appropriate in light of dropping costs. Given the Trust's role in administering incentives and rebates in the energy efficiency realm as well as for EVs, CLF suggests that the Trust provide analysis and specific recommendations regarding best practices and opportunities for expanding these policies in the final report.

The Trust rightly highlights the *funding* of these mechanisms as a cross-cutting barrier to electrification.[48] Reliability is critical to the success of these incentives. It is well documented that incentives "subject to inconsistent funding streams cause markets to spike and crash."[49] This boom-or-bust behavior has been observed in EV markets.[50] In the near term, the Legislature should designate by statute a funding stream for incentive programs without eliminating or reducing investments in other important priorities.

Ultimately, though, a new revenue stream will be necessary. As the Trust has alluded to, the regional Transportation and Climate Initiative (TCI) may well create a new revenue stream that could fund incentives of this sort, at least with respect to transportation.[51] CLF urges Maine to take advantage of this opportunity. However, it is important that policymakers not rest all

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[44] Draft at 38.
[45] *See* Farnsworth, D., Lazar, J., and Shipley, J. (2019, January). *Beneficial electrification of water heating*. Montpelier, VT: Regulatory Assistance Project, at 49.
[46] *See, e.g.*, The Sierra Club & Plug In America, *AchiEVe: Model Policies to Accelerate Electric Vehicle Adoption, Version 3.0* (July 2019) at 5; *see also* Conservation Law Foundation, Sierra Club, & Acadia Center, *Charging Up: The Role of States, Utilities, and the Auto Industry in Dramatically Accelerating Electric Vehicle Adoption in Northeast and Mid-Atlantic States* (Oct. 2015) at 13.
[47] *See, e.g.*, Hannon, E., McKerracher, C., Orlandi, I. & Ramkumar, S., McKinsey and Company, *An Integrated Perspective on the Future of Mobility*, (Oct. 2016); see also N. Lutsey & M. Nicholas, The International Council on Clean Transportation, *Update on electric vehicle costs in the United States through 2030* (Apr. 2, 2019).
[48] *See* Draft at 29-31.
[49] National Association of State Energy Officials & Cadmus, *PEV Policy Evaluation Rubric: A Methodology for Evaluating the Impact of State and Local Policies on Plug-in Electric Vehicle Adoption* (Sept. 2018) at 21 (citing Barradale, 2010; Luthi and Prassler, 2011).
[50] *Id.* (citing Washington Post, 2017).
[51] *See* Draft at 30.

transportation funding hopes on TCI. TCI revenue should be used to advance a range of policies that result in equitable outcomes, reduce unhealthy air quality and attack climate change—not only promote electric vehicles. CLF will advocate for TCI-funded investments in bikeways, pedestrian walkways, improved transit options, as well as policies that support sustainable, affordable, transit-oriented development and other land use decisions that reduce vehicle miles traveled.

Another potential funding mechanism lies in revisiting restrictions on the Trust's ability to spend utility procurement resources. The Draft explains that in administering energy efficiency measures, the Trust is "limited to investing *electric* utility ratepayer funding for measures where *electricity* cost savings is a significant contributor to achieving cost-effectiveness. Similarly, the Trust is limited to investing *natural gas* utility ratepayer funding for measures where *natural gas* savings is a significant contributor to achieving cost-effectiveness."[52] The Legislature should consider expanding the law to permit electric ratepayer funds to go toward incentives for key electrification technologies that advance the public interest. CLF urges the Trust to provide its analysis of how such an approach might impact the scope and breadth of its programming in the final report.

Finally, there are certain less costly incentives that the Legislature could undertake without significant implications for funding. CLF encourages the Legislature to consider an EV tax credit that phases in as the federal tax credit phases out for EVs. Further, again in the EV context, the state should pursue non-financial incentives at little cost to the state. CLF acknowledges that many non-financial incentives pursued in denser or more congested states, such as preferential access to airport parking or HOV lane access, are less valuable in Maine. However, others could be pursued, such as preferential/lower cost parking; waivers for tolls and/or registrations; and even lower cost ferry rides.

c. Electrification Targets

As CLF argues *supra,* the Legislature should ensure that "a precise estimate of the number of heat pumps, HPWHs and EVs required to achieve Maine's emissions reduction targets" are calculated.[53] CLF anticipates that modelled projections like these will be an outcome of the climate council process. The Trust should recommend legislative codification of electrification targets in alignment with the projections for several reasons. First, such mandates provide a strong, long-term signal to parties inside and outside of the state, establishing the certainty necessary to attract investment and grow markets.[54] Among other things, this certainty will help address the supply chain and consumer awareness barriers described by the trust.[55] Further, statutory targets would quantify the scale necessary to achieve the state's mandatory decarbonization levels, thereby providing a framework to steer development of electrification

[52] Draft at 14.
[53] *Id.* at 16.
[54] *See, e.g.*, National Association of State Energy Officials & Cadmus, *PEV Policy Evaluation Rubric: A Methodology for Evaluating the Impact of State and Local Policies on Plug-in Electric Vehicle Adoption* (Sept. 2018) at 9.
[55] *See, e.g.*, Draft at 33.

policy. Finally, target numbers would be a useful metric for measuring strategies, ensuring they are adequately ambitious, and assessing whether they are successful.[56]

Public fleets

In addition to overarching, codified metrics for beneficial electrification, CLF urges the Trust to recommend that the Legislature set specific near- and long-term electrification goals and procurement policies for public entities. These should pertain to heating and cooling of government buildings as well as water heating. Maine law should also require that 100 percent of vehicles purchased and leased by public entities in the state be EVs by 2035, with interim targets.

Public fleet electrification is smart policy not only due to direct reductions in air pollution and emissions, but also because it grows the market while creating ample awareness-raising opportunities.[57] Though not necessarily in this context, research establishes a strong connection between increases in "visibility of a product and demand for that product."[58] In the personal vehicle context, this "neighborhood effect" increases customer familiarity and can help reduce perceived "technological and social uncertainties," leading to a greater likelihood of purchase.[59] CLF supports L.D. 1894, *An Act To Incentivize the Purchase of Electric Public School Buses*, referred to the Committee on Education and Cultural Affairs on Dec 20, 2019. But CLF would go further, recommending to the Legislature that school buses be part of a public fleet mandate. The health and grid benefits posed by all EVs are particularly promising in the context of school buses.[60]

Manufacturer EV Requirements

CLF is encouraged that Maine has adopted California's Zero Emission Vehicle program requiring automakers to achieve prescribed targets, and that Governor Mills formally signed the ZEV Task Force Memorandum of Understanding last year.[61] CLF is party to a lawsuit challenging the federal government's unlawful attempts to revoke state authority under the Clean Air Act. CLF urges the Trust to recommend that the state continue to monitor these ongoing proceedings and move forward with implementation as appropriate.

d. Other key solutions

This is far from an exhaustive account of legislative action that can and should be taken to facilitate and speed the electrification of Maine's heating and transportation sectors. Indeed, as noted *supra*, overcoming the barriers outlined in the Draft rapidly enough to achieve the state's decarbonization targets will entail simultaneous deployment of an extensive array of measures

[56] *See, e.g.*, Farnsworth, D., Shipley, J., Lazar, J., and Seidman, N. (2018, June). *Beneficial electrification: Ensuring electrification in the public interest*. Montpelier, VT: Regulatory Assistance Project, at 47.
[57] *See* The Sierra Club & Plug In America, *AchiEVe: Model Policies to Accelerate Electric Vehicle Adoption, Version 3.0* (July 2019) at 8.
[58] National Association of State Energy Officials & Cadmus, *PEV Policy Evaluation Rubric: A Methodology for Evaluating the Impact of State and Local Policies on Plug-in Electric Vehicle Adoption* (Sept. 2018) at 19.
[59] *Id.*
[60] Testimony of Emily K. Green for Conservation Law Foundation (Jan. 15, 2020).
[61] Draft at 18.

and approaches. CLF urges the Trust to recommend that the Legislature consider additional policy on at least the following topics:

Consumer engagement and outreach – As the Trust acknowledges in several instances in the Draft,[62] investment in raising consumer awareness of the key electrification technologies is critical for achieving necessary levels of penetration. Indeed, there is little that the other policies can achieve if customers remain unfamiliar with the technologies and the promotion programs.

Building codes – Retrofitting to accommodate beneficial electrification is more expensive than constructing new buildings already equipped. Maine should update its building codes to require that new construction be wired (or even fully equipped) to safely handle installation of the key electrification technologies.

Rural transit – Electrification policies focused exclusively on private EVs will not meet all transportation needs in Maine, particularly in rural areas. CLF encourages the Trust to recommend that the state expand GOMaine Commuter Connection, the statewide commuter program, to include EV car-sharing and offer enhanced benefits for EV shuttles and vans.

3. Conclusion

CLF appreciates the opportunity to submit these comments, and respectfully urges the Trust to make these recommendations to the Legislature.

Sincerely,

/s/ Emily K. Green

Emily K. Green
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[62] *See, e.g.*, Draft at 32-33.