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Testimony in Support of Advanced Clean Cars II (Chapter 127-A)

To the Board of Environmental Protection
by Jack Shapiro, Climate and Clean Energy Program Director
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The Advanced Clean Cars II Standard is Essential to Meet Maine's Climate Goals

Maine's transportation sector accounts for nearly half of the state's carbon emissions from fossil fuels, by far the top contributor to climate change of any sector.[1] Maine's transportation sector accounts for nearly half of the state's carbon emissions from fossil fuels, by far the top contributor to climate change of any sector.[2] Sixty percent of those transportation sector emissions come from light-duty vehicles.[3] Maine's 2020 bipartisan Climate Action Plan, *Maine Won't Wait*, identifies reducing transportation emissions as "Strategy A," highlighting the need to "pursue aggressive transition strategies and innovative solutions within this important sector" to hit our rapidly approaching 2030 emissions reduction targets as well as our 2050 emissions reduction goals.[4]

In 2019, bipartisan majorities of the Maine Legislature passed new climate laws to reduce greenhouse gas emissions by 45% in 2030, and 80% in 2050.[5] Since then, Maine has also established a net-zero emissions target by 2045.[6]

Maine Won't Wait called for the development of a Clean Transportation Roadmap to guide our state toward achievement of our legally binding emissions reduction goals. The Roadmap, published in 2021, states that "although multiple strategies could reduce emissions to near-zero levels, deployment of electric vehicles (EVs) appears to be the most important, technologically ready strategy for almost all modes, due to comparatively low fuel cost, high drive-train efficiency, and sustained falling costs of batteries."[7] The Roadmap goes on to show that adoption of ACCII is the top policy strategy to electrify our transportation sector, stating that the "most

[1] https://www.maine.gov/dep/commissioners-office/kpi/details.html?id=606898, 9th Biennial Report on Progress toward Greenhouse Gas Reduction Goals
[2] https://www.maine.gov/dep/commissioners-office/kpi/details.html?id=606898, 9th Biennial Report on Progress toward Greenhouse Gas Reduction Goals
[3] https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/Maine%20Clean%20Transportation%20Roadmap.pdf
[4] https://www.maine.gov/climateplan/
[5] http://www.mainelegislature.org/legis/statutes/38/title38sec576-A.html
[6] http://www.mainelegislature.org/legis/statutes/38/title38sec576-A.html
[7] https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/Maine%20Clean%20Transportation%20Roadmap.pdf

important regulatory driver in the electrification of Maine's light-duty vehicles in the next two decades will be through Advanced Clean Cars II (ACC II) standards."[8]

While this standard remains an essential policy tool to achieve our vehicle electrification goals, its implementation is already a year overdue according to the projections in the Clean Transportation Roadmap. If we do not adopt the standard this year, we lose yet another model year of applicability and fall another year behind on our transportation emissions reduction goals. Maine has made great progress on the climate and clean energy goals outlined in *Maine Won't Wait*, but as can be seen in the 2022 *Maine Won't Wait* Progress Report, vehicle electrification trails behind the other stated clean energy goals for the state.[9] At the time of the progress report's release on December 1, 2022, there were 8,594 battery electric and plug-in hybrid vehicles registered to Maine users, far from the goals of 45,000 by 2025 and 219,000 by 2030 called for in *Maine Won't Wait.*[10] Though we are currently lagging behind vehicle electrification goals, EV adoption has been increasing exponentially nationwide and in Maine, driven by significant consumer demand, and an increasingly mature market, and doing so despite supply chain interruptions caused by the COVID-19 pandemic. The Clean Transportation Roadmap shows that the number of electric vehicles in Maine increased by 90% and the number of public charging stations in Maine increased by 62% between 2019 and 2021.[11] If the right EVs are available at the right price, Mainers are showing that they will buy them. Adopting ACCII's requirements for manufacturers will ensure that more affordable EVs are available for Maine drivers every year and the program is the most impactful available policy mechanism we have as a state to achieve our vehicle electrification and emissions reduction goals by 2030.

Climate Impacts

Mainers are already feeling the impacts of climate change. This June was one of the wettest on record in Maine,[12] and July is the hottest month ever recorded in global history.[13] Inconsistent and extreme weather patterns have led to increased flooding, high heat days, and shorter winters. Average annual precipitation in Maine has increased by 15% (5.8 inches) since 1895, with most of the increase taking the form of rain rather than snow. Not only is it raining more, the intensity of rain events is also increasing. Maine now sees three times as many rain events with more than

[8] https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/Maine%20Clean%20Transportation%20Roadmap.pdf
[9] https://www.maine.gov/climateplan/sites/maine.gov.climateplan/files/inline-files/MWW_Climate%20Plan%20Update%20December%202022_digital.pdf
[10] https://www.maine.gov/climateplan/sites/maine.gov.climateplan/files/inline-files/MaineWontWait_December2020_printable_12.1.20.pdf
[11] https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/Maine%20Clean%20Transportation%20Roadmap.pdf
[12] https://www.mainepublic.org/environment-and-outdoors/2023-06-26/this-june-is-one-of-the-wettest-on-record-in-maine
[13] https://www.theguardian.com/science/2023/jul/27/scientists-july-world-hottest-month-record-climate-temperatures

four inches of rain, and twice as many rain events with more than two inches of rain as last century.[14]

Average annual temperatures in Maine have increased by 3.2°F over the past 124 years, with the most notable increases occurring since 1960. The Northeast is warming more rapidly than the rest of the world and is expected to have reached 5.4°F (3°C) of warming when the average global warming reaches 3.6°F (2°C).[15] The Gulf of Maine is warming faster than 99% of ocean area worldwide,[16] and our winters have shortened by at least 2 weeks in the past century.[17] Maine now experiences 5 more days of thaw, 9 more days of bare ground, 10 more days of mud, and 4-12 more days of insect survival than it did 100 years ago.[18]

Last summer, sunsets were blood-red due to smoke from fires in the western United States. This summer, Maine's air quality reached dangerous levels due to unprecedented fires in Canada.[19] Maine people and communities are already experiencing the impacts of climate change. We are fortunate to have strong state policies put in place in the past two years, but we must take the necessary steps, like the adoption of the ACCII program, to implement them with diligence.

Maine has a History of Adopting Strong Emissions Standards

The Federal Clean Air Act (CAA) establishes the framework for controlling mobile source emissions in the United States. While the law generally preempts states from adopting their own emissions standards, the CAA grants California a special exemption to do so as long as the state standards are at least as protective as the federal standards.[20] Section 177 of the CAA authorizes other states to adopt the California standards if they are identical to California's standards, and so long as states provide vehicle manufacturers at least two model years' lead time before enforcement.[21]

Thirty years ago, Maine's Legislature specifically authorized the Department of Environmental Protection ("the Department") to adopt California's vehicle emissions standards consistent with the CAA.[22] This authority is bolstered by even longer-standing general grants of jurisdiction over emission standards and air quality. The Department has exercised these authorities on numerous

[14] https://climatechange.umaine.edu/wp-content/uploads/sites/439/2020/02/Maines-Climate-Future-2020-Update-3.pdf
[15] https://climatechange.umaine.edu/wp-content/uploads/sites/439/2020/02/Maines-Climate-Future-2020-Update-3.pdf
[16] https://gmri.org/stories/gulf-maine-explained-warming-gulf-maine
[17] https://www.mainepublic.org/environment-and-outdoors/2022-02-16/maine-winters-are-shortening-thats-raising-existential-questions-for-the-states-snowmobilers
[18] https://climatechange.umaine.edu/wp-content/uploads/sites/439/2020/02/Maines-Climate-Future-2020-Update-3.pdf
[19] https://www.pressherald.com/2023/07/18/as-smoke-shrouds-maine-sky-professors-says-theres-likely-more-to-come
[20] 42 U.S.C. § 7543.
[21] Id. § 7507.
[22] An Act Regarding Automobile Air Emission Standards, P.L. 1993, ch. 358, § 1 (codified as amended at 38 M.R.S. § 585-D).

occasions. Maine first adopted California's vehicle emission standards in 1993, impacting model years beginning in 2001.[23]

Since then, the Department has periodically amended its rules to remain consistent with California's emission standards in compliance with the CAA. In 2012, for instance, the Department amended Chapter 127, New Motor Vehicle Emission Standards, to adopt motor vehicle emission standards for criteria pollutants for model years 2015-2025 and greenhouse gases for model years 2017-2025.[24] The 2012 amendment also revised the state's Zero Emission Vehicle requirements, improved vehicle labeling requirements, and amended greenhouse gas standards for passenger vehicles.

A Tailored Approach for Maine

The stronger emissions standards Maine can adopt via its Section 177 eligibility cannot be substantively amended from their original form to avoid a patchwork of emissions standards across the country. However, the petitioners have uniquely tailored this ACCII standard for Maine. Maine can adopt the annual standards laid out in the ACCII program in 2032 rather than 2035 with a midterm review in 2028 to review progress and extend the rule to 2035 if appropriate. This tiered approach to adoption is pragmatic and ensures Maine follows a reasonable, common-sense approach to vehicle electrification standards that match our state's circumstances.

While the unmistakable trends in the auto industry, supportive federal policy, and the experience of EV drivers in every county of Maine point to a conclusion that the state is ready for the EV transition, this approach allows for further consideration and deliberation in ensuring we are meeting both our climate targets and the needs of Maine drivers at the same time.

98% of Maine EV Drivers Would Recommend their EV to a Friend

In adopting a program like ACCII, which will move Maine decisively toward more zero-emission vehicles on the road, it is important to understand how real Maine people are experiencing the EV transition. In 2022, NRCM sent a survey to every single registered EV owner in the state to ask about their experiences driving electric vehicles and plug in hybrid electric vehicles. More than 1,200 EV drivers from every county in the state responded to the survey.

The results indicated that Mainers who currently drive EVs are nearly unanimous in their user satisfaction. NRCM's 2022 survey of Maine EV drivers, the only such statewide survey sent to every single EV driver registered at the time, found that 98% of EV drivers would recommend their EV to a friend; 99% report that their EV is reliable; and 97% say their EV is affordable and easy to maintain.[25] The full results of NRCM's 2022 EV survey is attached as Appendix A.

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[23] 06-096 C.M.R. ch. 127 (Feb. 17, 1993) (amended 1994).

[24] 06-096 C.M.R. ch. 127 (Dec. 12, 2012) (amended 2013).

[25] https://www.nrcm.org/climate/survey-of-maine-ev-owners-shows-reliability-cost-savings-among-top-benefits/

In NRCM's 2018 EV survey, less than 1,500 zero-emission vehicles were registered in Maine. In April of 2022, that number had increased more than 5 times to more than 6,800. Between April and December 2022, nearly 2,000 more EVs were registered in Maine.[26] Even as more drivers in Maine experience driving EVs, their self-described experiences remain excellent. The task now at hand is to make EVs more accessible to a broader array of Maine drivers, and the ACCII standard is the best available policy mechanism to ensure a healthy supply of EVs in Maine in the coming years.

ACCII will Increase Vehicle Choice and Availability for Maine Drivers

The ACCII program requires manufacturers to sell an increasing percentage of zero-emission vehicles (ZEV) in states that adopt the program. Because the ACCII program places the obligation on vehicle manufacturers, not consumers, manufacturers must establish electric vehicle pricing strategies, advertising campaigns, and offer financing and incentives that ensure they meet the requirements outlined in the rule. However, if Maine does not adopt this standard, manufacturers will deliver available ZEVs to states that already have adopted ACCII, including Massachusetts, Vermont, and New York, leaving Maine drivers behind. Many EVs already have significant waiting lists in Maine, and prospective EV buyers are waiting in long queues for the next available vehicle.[27] This reflects national data that that 4 in 10 Americans are at least somewhat likely to go electric on their next vehicle purchase.[28] Historically, the EV market share in Section 177 states has been roughly twice as high as states that follow federal emissions standards, showing how effective vehicle sales requirements can be.[29]

The ACC II standard will increase accessibility to personal ZEVs, helping the benefits of clean cars reach all Mainers, including low-income communities, rural communities, or communities of color. Growing supply and demand will not only drive down costs of ZEVs as markets continue to improve, it will also contribute to more diversified model availability (including more affordable models) and will boost the used ZEV market as well.[30]

Automotive Market Trends Align with ACCII Adoption

EVs continue to sell at a record pace each year. In 2022, 10.3 million light-duty EVs were sold worldwide, 1 in 7 of all new light-duty vehicles sold last year.[31] In the United States, more than

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[26] https://www.maine.gov/climateplan/sites/maine.gov.climateplan/files/inline-files/MWW_Climate%20Plan%20Update%20December%202022_digital.pdf

[27] https://www.pressherald.com/2023/03/19/ready-to-rev-an-electric-vehicle-maine-buyers-are-running-into-roadblocks/ This Portland Press Herald piece outlines the roadblocks faced by prospective EV buyers in Maine due to limited supply and long wait times.

[28] https://www.marketplace.org/2023/04/11/next-car-may-be-electric-about-4-in-10-people-say-in-poll/

[29] https://cdn.americanprogress.org/content/uploads/2018/06/06140002/EVreport-5.pdf

[30] https://theicct.org/wp-content/uploads/2021/12/ZEVA-used-EVs-white-paperv2.pdf (In the United States, five-year-old plug-in electric vehicles could save 11% to 17% in annual ownership costs relative to a comparable conventional car, and the savings increase to 17% to 22% for seven-year-old vehicles.)

[31] https://www.edf.org/sites/default/files/2023-05/Electric%20Vehicle%20Market%20Update%20April%202023.pdf

800,000 light-duty EVs were purchased in 2022, a 65 percent increase from 2021. The first quarter of 2023 saw EV sales reach more than 258,000 units, almost a 45 percent year over year increase.[32] This pace is increasing exponentially and is expected to grow as vehicle manufacturers invest billions of dollars in EV production.

Globally, $860 billion has been invested in EV manufacturing and infrastructure, with the United States representing nearly a quarter ($210 billion) of that total.[33] Unprecedented investments in transportation electrification through the Infrastructure Investment and Jobs Act[34] and Inflation Reduction Act[35] have spurred significant investments over the past two years. Since the signing of the Inflation Reduction Act a year ago this month, 62 new EV supply chain projects specifically have been announced in the United States alone, including assembly facilities, battery factories, and battery cell production, totaling $52.7 billion in new investments.[36] The ACCII standard presents an opportunity for Maine to participate in this global transition, and failing to pass this standard would put Maine well behind the curve.

At the 2021 UN Climate Change Conference of Parties (COP) 26 in Glasgow, the Zero Emissions Vehicle Declaration was presented. The document commits signatories to a goal of all sales of new cars and vans being zero emission globally by 2040, and by no later than 2035 in leading markets. The declaration has since been signed by more than 100 governments and leading manufacturers, including Ford, General Motors, Mercedes-Benz, and Volvo.[37] The United States has since issued a Zero Emission Government Fleet Declaration, committing to 100% zero-emission light-duty vehicle acquisitions of its government-owned and operated fleet.[38] These commitments reflect rapid movement toward vehicle electrification in direct alignment with the adoption trajectory outlined by the ACCII standard.

Mitsubishi recently joined Ford, General Motors, Mercedes-Benz, Audi, and Volvo in announcing that it expects 100% of its global car sales to come from EVs by 2035 and will be releasing four new EVs in the same timeframe.[39] As noted above, these stated electrification goals have been substantiated by significant investment from vehicle manufacturers and suppliers.

The International Energy Agency (IEA) 2023 Global EV Outlook Report[40] found that battery manufacturing trends are sufficient to meet the demand required by a Net Zero Emissions by 2050 global trajectory as called for by the Paris Agreement. The Inflation Reduction Act has

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[32] Ibid
[33] https://pv-magazine-usa.com/2023/01/17/inside-the-455-billion-u-s-investment-in-electric-vehicles
[34] https://www.fhwa.dot.gov/bipartisan-infrastructure-law/evs.cfm
[35] https://electrificationcoalition.org/work/federal-ev-policy/inflation-reduction-act/
[36] https://www.charged-the-book.com/na-ev-supply-chain-map
[37] https://acceleratingtozero.org/signatories-views/
[38] https://www.whitehouse.gov/ceq/news-updates/2022/11/16/ceq-announces-new-countries-committing-to-the-zero-emission-government-fleet-declaration/
[39] https://www.edf.org/sites/default/files/2023-05/Electric%20Vehicle%20Market%20Update%20April%202023.pdf (see pages 9-11 for a full overview of manufacturer electrification commitments)
[40] https://iea.blob.core.windows.net/assets/dacf14d2-eabc-498a-8263-9f97fd5dc327/GEVO2023.pdf

greatly incentivized the domestic battery and EV manufacturing sectors in the US, and auto manufacturers have responded by investing billions in domestic industry development.

Cost Savings for Maine Drivers

EV drivers in Maine are already saving money on fuel and maintenance costs. NRCM's 2022 survey of Maine EV drivers found that 56% of drivers save at least $50 a month on gasoline and 97% of respondents found their EV to be easy and affordable to maintain.[41] A recent article by the *Washington Post* found that EV drivers save on fuel costs every time they recharge in all 50 states. In Maine, electric truck drivers can expect to save $30 with every fuel up relative to internal combustion engine (ICE) fuel ups, electric SUV drivers can expect to save $19, and electric sedan drivers can expect to save $27.[42] Relevant in Maine, these operational cost savings accumulate more quickly for drivers that log more mileage on average. That is, rural EV drivers stand to save even more than urban EV drivers.[43]

While the average price of a new EV is higher than that of a new ICE vehicle today ($61,488, compared with $49,507 for all passenger cars and trucks at the end of 2022),[44] up-front cost parity is on the horizon. Already, lifetime cost for many EVs is lower than that of their combustion engine counterparts due to lower fueling and maintenance costs over the course of ownership, in addition to currently available tax incentives[45] and EV rebates.[46] An analysis by *Car and Driver* in 2022 found that the three-year cost of ownership for a Ford F-150 Lightning is already lower than its combustion engine counterpart,[47] and Ford just lowered the baseline price of the F-150 Lightning by an additional $10,000 for 2023 models.[48] A new report by Energy Innovation found that leasing an EV is the cheapest option for new car buyers, saving the average person up to $500 per month relative to ICE counterparts.[49] The same report found that more than half of available EV models are now cheaper to own and operate than their ICE counterparts.[50]

The fundamentals of projected cost reductions for EVs are well understood. As with any technological advancement in the modern age, new technologies arrive to the market at a higher price point until widespread adoption drives costs down. The solar industry epitomizes this reality in the clean energy space, as the price of electricity from solar has dropped by 89% over

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[41] https://www.nrcm.org/programs/climate/cleaner-transportation/2022-maine-electric-vehicle-survey/
[42] https://www.washingtonpost.com/climate-environment/interactive/2023/electric-vehicle-charging-price-vs-gasoline/
[43] https://www.transportation.gov/rural/ev/toolkit/ev-benefits-and-challenges/individual-benefits
[44] https://www.nytimes.com/2023/02/10/business/electric-vehicles-price-cost.html
[45] https://www.irs.gov/credits-deductions/credits-for-new-clean-vehicles-purchased-in-2023-or-after An overview of EV tax credit eligibility under the Inflation Reduction Act
[46] https://www.efficiencymaine.com/electric-vehicle-rebates/ EV rebates currently available for Maine buyers through Efficiency Maine Trust
[47] https://www.caranddriver.com/shopping-advice/a32494027/ev-vs-gas-cheaper-to-own/
[48] https://www.caranddriver.com/news/a44564936/2023-ford-f-150-lightning-price-cuts/
[49] https://energyinnovation.org/publication/electric-vehicle-leasing-is-the-cheapest-option-for-new-car-buyers/
[50] https://energyinnovation.org/wp-content/uploads/2023/08/Social6_Own_FINAL082223.gif

just 10 years between 2009 and 2019.[51] The price of a new solar power plant in 2009 was three times as expensive as a new equivalently sized coal power plant, but in 2019, the exact opposite became true, with a new coal power plant costing three times as much as a new solar power plant.[52] Renewable energy technologies are found to follow a "learning curve" in which each doubling of the cumulative installed capacity their price declines by the same fraction.[53] The US Energy Information Administration (EIA) projects that battery costs will continue to decline over time, dropping 51% to 56% below 2022 prices by 2050.[54] This follows a 97% decline in the cost of batteries between 1990 and 2020, with an average price drop of 19% for every doubling of capacity.[55] The EIA also projects that non-battery costs, such as for electric motors, power electronics, and wiring, will continue to decline through 2050.

Adopting the ACCII will make EVs and their associated cost savings available to more Mainers, even those who can't or don't buy new vehicles. As new EV prices decline, so to do used EV prices, as the market saw a 17% decrease in average price from 2022-2023.[56] Combined with tax credits in the Inflation Reduction Act that now knock off up to $4,000 for qualifying used EVs, the prospect of buying or leasing an electric car is now much more feasible for a broader range of Americans. By increasing the supply of new EVs, ACCII will bolster the used EV market in Maine, providing yet more options for Maine consumers to buy EVs at lower price points.[57]

Health and Equity Impacts

Maine has a much higher than average prevalence of asthma and respiratory illnesses due to prevailing wind patterns that bring air pollution from elsewhere into our communities.[58] While the American Lung Association (ALA) State of the Air report on Maine finds that Maine's air is generally cleaner than the national average, three reporting counties, including the two most populous counties (Cumberland and York) received a "C" rating.[59] Adopting ACCII will improve air quality and address disproportionate health impacts that run along the lines of historic marginalization.

The transition to cleaner vehicles will have enormous public health benefits from reducing air pollution. By 2050, as the United States moves to 100% zero-emission new passenger vehicles sales and clean, non-combustion electricity generation, the cumulative national public health benefits due to cleaner air could reach:

- $978 billion in public health benefits,

[51]https://ourworldindata.org/cheap-renewables-growth
[52] https://ourworldindata.org/battery-price-decline
[53] https://ourworldindata.org/cheap-renewables-growth
[54] https://www.eia.gov/todayinenergy/detail.php?id=56480
[55] https://ourworldindata.org/battery-price-decline
[56] https://www.nytimes.com/2023/02/10/business/electric-vehicles-price-cost.html
[57] Under the ACCII, Mainers will still be able to buy and sell used combustion engine vehicles. The program does not regulate used car sales or purchases in any way.
[58] https://www.nrcm.org/programs/federal/federal-climate-energy/climate-change-harms-the-health-of-maine-people
[59] https://www.lung.org/research/sota/city-rankings/states/maine

- 89,300 fewer premature deaths,
- 2.2 million fewer asthma attacks, and
- 10.7 million fewer lost workdays nationwide.[60]

The ALA's "State of the Air" 2023 report found that more than 35% of all Americans, approximately 120 million people, live in areas impacted by unhealthy levels of ozone and/or particle pollution. People of color make up the majority of those living in communities with unhealthy air. The report also notes that a person of color is 64% more likely than a white person to live in a community impacted by unhealthy air and 3.7 times more likely to live with the most polluted air in the United States.[61] The report directly recommends the adoption of ACCII as a top solution to address these concerns.

Infrastructure Investment and Readiness

Maine's EV charging network is rapidly expanding alongside the state's population of EVs. In 2019, Maine had 164 public charging stations (357 ports, Level 2 or DCFC).[62] As of July 2023, that number has risen to 435 charging stations (915 ports, Level 2 or DCFC),[63] with more coming online regularly thanks to Maine's Plan for Electric Vehicle Infrastructure Deployment (PEVID).[64] That plan outlines Maine's EV charging goals and deployment strategy, identifying a total need of $42 million to attain the EV charging goals outlined in Maine's Climate Action Plan.[65] Nineteen million dollars of that total has already been attained through a successful National Electric Vehicle Investment (NEVI) grant award funded through the Bipartisan Infrastructure Law in 2022. Maine DOT, Efficiency Maine, the Governor's Office of Policy Innovation and the Future, the Governor's Energy Office, and the Maine Department of Environmental Protection are currently assembling an application, due in the fall, to receive an additional $15 million through the Charging and Fueling Infrastructure (CFI) discretionary grant program.[66] More detail is available in the presentations given by Joyce Taylor from the Maine Department of Transportation and Michael Stoddard from the Efficiency Maine Trust to the Board of Environmental Protection on July 20, 2023.[67]

The rapid progress made on expanding Maine's EV charging network lends confidence to Maine's capacity to meet charging needs in alignment with ACII adoption. The recently released update to Maine's 2022 PEVID identifies projected Level 2 and DCFC charger needs given ACCII adoption in 2022. The Efficiency Maine Trust Triennial Plan V[68] projections outlining

[60] https://www.lung.org/clean-air/electric-vehicle-report/driving-to-clean-air
[61] https://www.lung.org/getmedia/9e9947ea-d4a6-476c-9c78-cccf7d49ffe2/ala-driving-to-clean-air-report.pdf
[62] https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/MaineWontWait_OneYearProgressReport_SinglePgs.pdf
[63] https://www.efficiencymaine.com/charging-station-locator/#/analyze?fuel=ELEC&region=US-ME
[64] https://www.maine.gov/mdot/climate/docs/pevid-2022.pdf
[65] https://uploads.mainedotpima.com/e477f241-67ab-4054-b753-4cab7697dbe7.pdf
[66] https://uploads.mainedotpima.com/e477f241-67ab-4054-b753-4cab7697dbe7.pdf
[67] We have included the full set of presentations given on July 20th to the Board of Environmental Protection as Appendix B. These presentations are on slides 35-54.
[68] https://www.efficiencymaine.com/triennial-plan-v/

Maine's progress on charging infrastructure implementation show that Maine is indeed on track to meet the charging needs required under ACCII.[69] Especially given a delayed implementation of ACCII in 2023 rather than 2022, Maine's PEVID is well on track to provide the public charging resources that will be needed to support Maine's EV population under ACCII.

Our 2022 survey of EV owners in Maine found that twice as many Maine EV owners use public charging stations compared to our 2018 survey.[70] Further, many drivers identified charging as a positive element of their experience with their EV, citing that skipping gas stations in favor of public or at-home charging is a significant benefit of owning an EV. Ninety percent of drivers primarily charge at home,[71] but an increasingly robust public charging network that is growing by the day will ensure that visitors and Maine residents alike can access any corner of the state with their EV.

Growing Maine's Clean Energy Workforce

In addition to the climate and health benefits accrued through adoption of ACCII, the standard will also play a significant role in growing Maine's clean energy workforce. A new study by the Economic Policy Institute found that the transition to EVs could create up to 150,000 new jobs nationwide by 2030 if appropriate policies are implemented soon to secure US leadership on EV manufacturing and adoption.[72] Several technical schools in Maine, including Southern Maine Community College and Washington County Community College, have recently launched EV repair programs designed to train technicians how to effectively service EVs at auto repair shops, auto dealers, and other vehicle-related businesses.[73]

While ZEVs require less maintenance than their combustion engine counterparts, routine mechanical upkeep such as rotating tires, braking systems, and body work will continue to be necessary, and can be performed by existing mechanics and auto-body repair shops. Further, even with the ACCII and ACT rules in place, around 60% of vehicles on Maine roads by 2035 are projected to still be ICE vehicles,[74] showing that the need for ICE mechanics and associated jobs will continue to be needed for the foreseeable future. The ACCII standard will bring more EV technician positions into the job market without displacing existing ICE repair positions in the immediate future.

Grid Readiness

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[69] https://uploads.mainedotpima.com/e477f241-67ab-4054-b753-4cab7697dbe7.pdf Slide 12 shows projections for charging needs given different scenarios, including ACCII adoption.

[70] https://www.nrcm.org/programs/climate/cleaner-transportation/2022-maine-electric-vehicle-survey/. See also full results attached as Appendix A.

[71] https://www.nrcm.org/programs/climate/cleaner-transportation/2022-maine-electric-vehicle-survey/

[72] https://www.epi.org/press/the-shift-to-all-electric-vehicles-could-create-over-150000-jobs-by-2030-if-policymakers-make-smart-investments-to-secure-u-s-leadership-in-the-auto-sector/

[73] https://www.smccme.edu/smcc-launches-electric-vehicle-repair-certification-program/

[74] https://www.maine.gov/dep/bep/calendar.html NESCAUM, July 20th Staff Briefing on Transportation Related Matters

Transitioning to an electrified transportation sector will require significant attention to Maine electricity system as end-use energy moves from gasoline and diesel to electricity. In some cases, additional demands from EV charging could eventually strain the distribution grid in some locations. There is, however, also significant opportunity to increase grid reliability and lower ratepayer costs by taking advantage of the significant distributed energy storage capacity in EV batteries, smoothing electricity demand through managed or timed charging, and by spreading fixed grid costs over a larger volume of electricity sales.[75] For example, many EVs will be charged at home overnight, which could give EV owners access to lower rates, as well as take advantage of new renewable energy sources like offshore wind power, which generates the most energy at night.

Maine has taken major strides in the past few years in preparing for grid expansion that will inevitably be needed as we continue to electrify our economy. In 2022, Maine passed LD 1959, An Act To Ensure Transmission and Distribution Utility Accountability.[76] In addition to accountability measures for utilities, the bill requires utilities to incorporate climate change into their planned investments in the distribution grid and directs the Public Utilities Commission (PUC) to oversee an integrated grid planning process that projects grid needs given additional demand generated by beneficial electrification. Notably, LD 1959 required the PUC and Maine's utilities to not only take into account Maine's greenhouse gas reduction requirements, but explicitly includes the climate policies included in Maine's climate action plan. As our grid becomes increasingly dynamic through the addition of clean energy like wind and solar produced here in Maine and networked devices like smart EV chargers and internet-enabled thermostats, a distributed network of EV batteries will create additional storage capacity that can be used to increase grid flexibility and lower total cost to ratepayers. Vehicle-to-grid, or bidirectional charging, is an EV capability that is increasingly being shown to be a viable grid management tool.[77] While plugged in to a networked charger, EVs with vehicle-to-grid capability have the ability to send energy back to the grid during times of need and reverse the flow of charge when appropriate to ensure that the vehicle is adequately charged. The larger the battery in the vehicle, the more capacity it has to provide power to the grid when needed.

This legislative session, the Maine Legislature passed LD 519 (Resolve, to Conduct a Vehicle-to-grid Pilot Project Using Electric School Buses).[78] The bill directs Efficiency Maine to design a vehicle-to-grid pilot project using the 11 electric school buses delivered to the Wells-Ogunquit Community School District, which will provide important insights into the value of vehicle-to-grid technology for Maine as we undertake an EV transition.

Fire Safety

Lithium-ion battery fires behave differently than gasoline fires, which has led to confusion and misinformation in the public discourse. It is true that managing a battery fire requires different resources and protocol for emergency responders than combustion engine fires. The National

[75] https://www.sciencedirect.com/science/article/pii/S2352484722017462
[76] http://www.mainelegislature.org/legis/bills/getPDF.asp?paper=SP0697&item=19&snum=130
[77] https://www.virta.global/vehicle-to-grid-v2g
[78] https://legislature.maine.gov/bills/getPDF.asp?paper=HP0324&item=1&snum=131

Fire Protection Agency (NFPA) has emergency response guides for more than 35 alternative fuel vehicle manufacturers[79] and has trained more than 250,000 firefighters in the US on how to respond to EV fires through their National Transportation Safety Board (NTSB) recommended training program.[80] There are still many more firefighters that need training, and that training must accompany EV adoption here in Maine. Adopting the ACCII program will help to remove any uncertainty in the public safety community that efforts to expand this training should be taken as soon as possible.

However, the data shows that EVs are much less likely to catch fire than their combustion engine counterparts on a unit-to-unit basis. The most recent study conducted by the NTSB found an incidence of 25.1 EV fires per 100,000 EV sales, versus 1,529.9 fires per 100,000 combustion engine sales.[81]

EV Battery Recycling and Disposal

Unlike ICE vehicles that burn through hydrocarbons to generate energy, batteries retain their mineral composition throughout the course of their usable life. An EV battery pack is assumed to be at the end of its life when it has no more than 70-75% of its original capacity (and under ACCII, manufacturers are required to ensure that their vehicles retain at least 75% of original capacity for at least 10 years or 150,000 miles, whichever comes first).[82] Once the end of life is reached, batteries can be recycled to reuse the various minerals contained within to create new batteries. Several battery recycling companies have partnered with EV manufacturers lately to ensure proper recycling and reuse of battery components. For example, the company Redwood Materials received a $2 billion loan from the US Department of Energy to build a battery recycling facility in Nevada.[83] The Inflation Reduction Act provides massive incentives for domestic battery production in the US, and the domestic requirements for federal EV tax credits further incentivizes battery recycling. Under the Inflation Reduction Act, while an EV battery's metals may have come from another country when they were first mined, once a U.S. recycler separates the cells back into their component metals, those repurposed minerals are now considered to be from the US and eligible for EV purchase incentives.[84]

It is also worth noting that a typical EV battery can still offer substantial storage when it reaches the end of its usable life in an EV. At 75% capacity, an EV battery still has up to 90 kilowatt-hours of energy storage, enough to power the typical American home for 3 days.[85] A second-use market for old battery packs has not yet been established at scale, but demonstration projects for used batteries have popped up around the world. At this rate, battery prices are so low that it may

[79] https://www.nfpa.org/Training-and-Events/By-topic/Alternative-Fuel-Vehicle-Safety-Training/Emergency-Response-Guides
[80] https://www.nfpa.org/EV
[81] https://data.ntsb.gov/Docket/?NTSBNumber=HWY19SP002
[82] https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii
[83] https://www.caranddriver.com/features/a44022888/electric-car-battery-recycling/
[84] https://www.cbsnews.com/news/electric-car-batteries-inflation-reduction-act-us-manufacturing/
[85] https://www.caranddriver.com/features/a44022888/electric-car-battery-recycling/

not be economically viable to repurpose used batteries. Rather, old batteries will be recycled for their component minerals, which can be reused in future batteries.

ACCII in Other States

The ACCII standard has been adopted in seven other states (California, Washington, Oregon, New York, Vermont, Massachusetts, and Virginia) and proposed in seven other states (Maine, Rhode Island, Connecticut, Maryland, Delaware, Colorado, and New Mexico) plus the District of Columbia. Colorado's proposal is identical to Maine's in that it proposes full adoption of the ACCII regulation through 2032 with a mid-term review to determine whether to extend to 2035.[86]

If Maine does not adopt ACCII this year, manufacturers will prioritize the other states that have already done so, leaving Maine behind. We know this to be true given evidence following adoption of the zero-emission vehicle requirements under the original Advanced Clean Cars (ACC) standard. Between 2011 and 2020, two-thirds of total US zero-emission vehicle sales occurred in the 12 states that had adopted ACC.[87] Manufacturers respond to policy incentives, and Maine needs to act this year if we hope to be able to provide the zero-emission vehicles requested by Maine buyers.

Test cases elsewhere in the world lend further evidence that rapid EV adoption and deployment is feasible. For example, German EV sales went from 3.01% in 2019 to 26% in 2021, an increase of about 23% in two years in response to the "Euro 6" CO_2 emission performance standards taking effect.[88] The German case shows that markets will respond to policy incentives quickly, and manufacturers are poised to deliver the vehicles necessary to meet those goals given appropriate lead time, which the ACCII regulation ensures.

Conclusion

NRCM has been working for more than 60 years to protect, restore, and conserve Maine's environment, and today, that means one of our central priorities is addressing the threat of climate change. Adopting the proposed ACCII standard before you would be the most significant action you could take to ensure that Maine is able to achieve its statutory emissions reduction goals. Further, this program as proposed is responsible, measured, and designed specifically for Maine. It will improve health, save Maine people and businesses money, and ensure that Maine isn't left behind as the auto industry transitions to more affordable and lower-polluting vehicles. On behalf of our 25,000 members and supporters, I urge you to adopt this proposal.

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[86] https://www.maine.gov/dep/bep/calendar.html As presented to the BEP by NESCUAM at the July 20th, 2023 BEP meeting.

[87] https://blogs.edf.org/climate411/wp-content/blogs.dir/7/files/2022/04/electric_vehicle_market_report_v6_april2022.pdf page 14

[88] https://insideevs.com/news/560910/germany-plugin-car-sales-2021/