Responses from Agency of Natural Resources to questions posed by members of the Senate Transportation Committee and Senate Natural & Energy Resources Committee on Thursday, February 6, 2025

How much are Vermonters saving because of the rules? Why was there a difference in estimated cost savings between ANR and the Vermont Natural Resources Council (VNRC) during testimony?

- Drive Electric Vermont estimates that EV owners typically save $6,000 to $10,000 over the life of the vehicle, based on a Consumer Reports study.
    - The average Vermonter could save more than $670 a year on fuel, based on the average prices of gas and electricity over the past year[1].
    - Lifetime maintenance costs for EVs is about half as much as those of gas-powered cars.
- The Vermont Natural Resources Council (VNRC) in its testimony cited to a 2024 report by the Energy Action Network (EAN) that estimated EV owners save $9,500+ over 8 years, including about $7,500 in estimated lifetime fuel savings + $2,000 in estimated lifetime savings on maintenance. EAN estimates that a typical driver would save $943/year by switching to an EV and a "high gasoline user" could save $4,034/year.

- The data shared by ANR during testimony represented information from Drive Electric Vermont available at the time of the 2022 rulemaking process. EAN has since calculated fuel and maintenance costs using more recent and Vermont-specific data for average annual vehicle miles travelled (VMT) from the Federal Highway Administration and average gasoline and electricity prices specific to Vermont from the U.S. Energy Information Administration (EIA).

- In 2022, ANR prepared a detailed economic analysis of the rules using models such as the Motor Vehicle Emission Simulator (MOVES)[2], the CO-Benefits Risk Assessment Health Impacts Screening and Mapping Tool (COBRA)[3], and other tools to aid in understanding how implementation of these rules will benefit Vermonters, and what economic impacts may result.

    - Estimated avoided social costs based on the greenhouse gas (GHG) emissions reductions benefits from ACC II from 2026 through 2040 were $1,105,242,991. The social cost of carbon is an estimate of the monetized value of long-term impacts (economic, health and environmental) from climate change as a result of a single metric ton increase in carbon dioxide (CO2) emissions in a given year.

    - Estimated total cost savings from avoided premature deaths, avoided hospitalizations for cardiovascular and respiratory illnesses, and avoided emergency

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[1] Drive Electric Vermont, https://www.driveelectricvt.com/shopping/cost-of-ownership (visited February 14, 2025).
[2] U.S. EPA, *MOtor Vehicle Emission Simulator*, https://www.epa.gov/moves
[3] U.S. EPA, *CO-Benefits Risk Assessment Health Impacts Screening and Mapping Tool*, https://www.epa.gov/cobra

room visits due to a reduction in criteria pollutant emissions resulting from the proposed ACCII regulation for the year 2040 in Vermont was $373,000-$840,000.

Can you use a Tesla charging station if you drive a different model EV? Do you need an account?

- Tesla vehicles use a different charging standard than other manufacturers; Tesla uses the North American Charging Standard (NACS) and the majority of others use the Combined Charging System (CCS). Every major manufacturer has committed to adopting the NACS standard, developed by Tesla and now standardized by SAE International, for use in their vehicles beginning with some MY 2025 models. Some manufacturers are also offering customers free adapters to use for Level 2 and fast charging, and there are some adapters available for purchase. Some Tesla superchargers (fast chargers) have been converted to be accessible to CCS charging, which represents the capability of the majority of non-Tesla EVs on the road today.

- To use the Tesla charging network customers need to download the Tesla app and create an account. However, this is no different than how a customer would access any other charging network (ChargePoint, Flo, EvGo, etc.).

For credits, what is the difference between "traveling" and "pooling" under the rule? Can manufacturers use credits from vehicles delivered in other states?

- There is a difference between traveling and pooling. Without getting into the weeds, the travel provision allows greater flexibility for manufacturers to use credits they've earned in California towards compliance in another state. Travel is no longer allowed and was phased out in model year 2017 for battery electric vehicles.

- Pooling allows manufacturers to transfer excess credits earned in one state to satisfy deficits generated in another state. Pooling from other states that have adopted ACC II is allowed under ACCII, and CARB is currently finalizing a proposal to include pooling in Advanced Clean Trucks (ACT), expected to be announced in March.

- In the past, Vermont has actually been on the winning side of pooling, meaning that manufacturers have delivered more vehicles to Vermont than required and used the excess credits generated to comply in other ZEV states.

- CARB and the Section 177 states are discussing some additional flexibilities related to ACT, but those are not quite ready for prime time.

Can additional information be provided about specific manufacturers' credit banks nationally? What ACCI credits can carryover for use in ACCII? Are there limits on these credits?

- Unfortunately, not all ACC states share their credit bank data publicly, so we may not be able to provide a lot of additional information here. Vermont's manufacturer credit banks are

available on ANR's website. ACCII does allow a certain amount of converted ACCI credit to carryover towards ACCII compliance. Manufacturers' cumulative ACC I credit banks at the end of MY 2025 will be converted for use in ACC II (Converted ZEV values = total ZEVs/2.1 conversion factor and Converted PHEV values = total PHEVs/2.1 conversion factor). Manufacturers may meet up to 15% of their annual compliance requirement in MYs 2026 through 2030 using converted ZEVs and PHEVs values. Pooling of converted ZEV and PHEV values is not allowed.

- Looking at ZEV deliveries of manufacturers in Vermont: in MY 2023 some manufacturers are doing better than others – this reflects the availability of compelling models and EV investments made by specific manufacturers.
- Any comparison of existing credit banks to the MY 2026 ZEV sales requirement for ACCII is incomplete because right now Vermont only has credit data through the end of MY 2023. Manufacturers will continue to accrue credits for MYs 2024 and 2025 in addition to earning early compliance vehicle values. However, just as an example, if we take the current MY2023 credit banks and convert them for use in ACCII, all manufacturers, except one, have enough converted credits to maximize their use in MYs 2026 through 2030 as allowed under ACCII.

What are the impacts from manufacturing vehicle batteries?

- ANR provided a detailed response to this question in the Responsiveness Summary handout pgs. 18-19. In summary, electrification of the on-road vehicle fleet will likely result in increased demand for lithium and other semi-precious metals, which may result in potential adverse environmental effects. Battery recycling and reuse is important to reducing battery manufacturing impacts.
- ANR conducted a life-cycle analysis to compare the overall environmental impacts of an EV to an internal combustion engine (ICE) vehicle, which showed that the life-cycle emissions of an EV are lower than an ICE vehicle. A detailed discussion of this analysis can be found in the Technical Support document handout page 28.
- New studies estimate that the need for virgin materials will greatly diminish as battery recycling capacity increases. The LEV/ZEV rules include durability requirements for batteries that lead to reduced battery degradation and therefore less battery replacements. The LEV/ZEV rules also include battery labeling requirements to ensure that used batteries can be sustainably and properly managed at their end of life and critical battery materials are efficiently recovered.
- The Northeast States for Coordinated Air Use Management (NESCAUM) is releasing a paper in the coming weeks about how states can help to facilitate the growing circular EV battery economy via policies like extended producer responsibility.