



Calculating Residential Electric Vehicle Credits

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Background

OAR 340-253-0330 gives DEQ two options for estimating credit generation from residential charging of electric vehicles.

1. The first option is a bottom-up analysis using a regional or national value to represent the average daily amount of electricity an EV uses. The amount of electricity charged is based on Eq. 1.

$$EV \text{ electricity use} = \# \text{ of vehicles} \times \text{daily residential charging rate} \times \# \text{ of days in the compliance period} \quad \text{[Eq. 1]}$$

Where,

of vehicles is based on monthly registration data from ODOT (Division of Motor Vehicles - DMV), which is the "official" dataset used by ODEQ, ODOE, and the PUC to track progress toward EV adoption goals

Daily residential charging rate is based on California's average daily residential charging rate of 8.5 kWh per electric vehicle

of days in the compliance period equals calculated number of days in the six months

Credits are calculated using Eq. 2:

$$Credits = (CI \text{ of gasoline standard} - \text{fuel CI/EER}) \times \text{energy} \times \text{energy density} \times EER \quad \text{[Eq. 2]}$$

Where,

CI Standard is the gasoline standard for a given compliance period (gCO₂e/MJ)¹

Fuel CI is either the statewide CI for electricity or a utility-specific value as requested by the utility (gCO₂e/MJ)²

EER is the energy economy ratio based on the type of vehicle (in this case, light-duty vehicles; EER = 3.4)³

Energy is the amount of *EV electricity use* calculated in Eq. 1 (kWh)

Energy Density is the energy density of electricity, 3.6 MJ/kWh⁴

2. The second option includes a DEQ-administered top-down analysis to estimate the total electricity used for all EVs statewide. Then, electric vehicle charging reported to DEQ would be subtracted directly from non-residential (public, fleet, workplace, and multi-unit dwellings) charging.

¹ CI standards for gasoline and diesel are listed in Table 1 under OAR 340-253-8010.

² Statewide mix and utility-specific CI values are available at www.oregon.gov/deq/ghgp/cfp/Pages/Electricity-Guidance-Documents.aspx.

³ Energy economy ratios are listed in Table 7 under OAR 340-253-8010.

⁴ Energy density values are listed in Table 6 under OAR 340-253-8010.

Approach for 2022

The approach for credit generation in 2022 is based on option #1 using Eqs. 1 & 2. Credits are then allocated to individual electric utilities based on the number of EVs registered in their service territories.

Timing of credit issuance

The following steps must be completed for utilities to generate these credits:

- By October 1 of the previous year, the electric utility must register with DEQ⁵.
- The electric utility must then register an account in the Oregon Fuels Reporting System, the web-based tool that DEQ uses to manage the accounts of parties registered in the program.

Staff will complete the credit calculations and place the credits into the accounts of the registered utilities every six months.

Notes on DMV registration data

ODEQ and ODOE use similar methods to process the DMV registration data, like geocoding with Bing geocoder and using the same utility shapefiles. There are differences between CFP and other agencies' data assumptions, as described below.

Data assumptions

Total EV counts include PHEVs and BEVs with active Oregon DMV registration data, including commercial vehicles. PHEV and BEV data are aggregated to make up the total EV counts. In addition, electric mopeds and motorcycles are included in the DMV registration data but excluded from the CFP total EV counts and residential credit calculations.

These assumptions may change as we enhance technical and policy strategies for accounting for various electric mobility options.

Alternate formats

DEQ can provide documents in an alternate format or a language other than English upon request. Call DEQ at 800-452-4011 or email deqinfo@deq.state.or.us.

⁵ The "list of registered parties" is available via PDF and XLS files under "General resources for the Clean Fuels Program" at <https://www.oregon.gov/deq/ghgp/cfp/Pages/Guidance-Documents.aspx>.