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Submitted Electronically

April 28, 2022

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P.O. Box 47600
Olympia, WA 98504-7600

RE: Informal Comments for Chapter 173-424 WAC, Lookup Table, Clean Fuel Program Rule

Dear Mr. Creswell:

In addition to previous comments supporting base residential charging credit allocation option #3, posted 3/10/2022 and supported by the Alliance for Automotive Innovation on 3/11, offering a comprehensive approach to incentivize market key CFP participants, and continuing support for option 3 filings submitted 4/25 by BTR Energy and Audi of America, Tesla offers the following comments on the Lookup Table.

## I. Improvements in EV Technology are Not Reflected in Lookup Tables and Deserve Updating

The battery electric vehicles (BEVs) Tesla manufactures and sells are much cleaner than comparable internal combustion engine (ICE) cars over their lifetime. As the Union of Concerned Scientists concludes, "the average EV is cleaner than the average new gasoline vehicle everywhere in the US. But if you choose the most efficient EV available, your emissions reductions from switching from gasoline to electricity will be even higher."[1] This is due largely to two factors: EVs do not emit tailpipe emissions, and they are much more efficient in terms of onboard energy usage because an electric motor is much more efficient than a gasoline

[1] https://blog.ucsusa.org/dave-reichmuth/are-electric-vehicles-really-better-for-the-climate-yes-heres-why

engine." According to the Department of Energy, Alternative Fuels Data Center, emissions from EV's (accessed April, 2023, clicking state of WA)[2] equate to roughly 8% of those of an internal combustion engine (ICE) vehicle, approximately 15% those of the average hybrid vehicle, and 24% of a Plug-in Hybrid (PHEV) due to the abundance of Washington's over 80% carbon free electricity resources (Hydro, wind, nuclear and solar generation combined). Put another way, on a per average vehicle basis, EV's are roughly 4 to over 12 times cleaner than any other average passenger vehicle type.

## A. Washington Should Consider Separate Battery Electric Vehicle (BEV) and Plug-in Hybrid Vehicle (PHEV) Energy Economy Ratios (EERs)

Importantly, the figures in the section above not only highlight the Carbon Intensity (CI) of each vehicle type, demonstrating the difference in emissions between PHEVs and BEVs as significant, but call into question the efficiency of each vehicles all electric range. As discussed further below, not only have technology advancements improved since California's EERs were established, but as the transition to Electric Vehicles (EVs) takes place, expectations are that deployment of PHEVs by comparison to BEVs will decline substantially. Data collected by Washington through reported registrations already reflects that BEV adoption significantly outpaces PHEV adoption. January 31, 2017 reports show 8,399 PHEVs registered compared to 14,796 BEVs, a ratio of 1.76 BEVs to PHEVs.[3] Yet jumping to the most recent data from March 31, 2022, PHEV adoption has increased to 24,454 while BEVs have increased to 69,778, with now 2.85 BEVs per PHEV, demonstrating that BEVs significantly outpace PHEV adoption which if left combined within an EER will diverge from actual emissions reductions due to the

[2] https://afdc.energy.gov/vehicles/electric_emissions.html
[3] https://data.wa.gov/Transportation/Electric-Vehicle-Population-Size-History/d886-d5q2, See Table Monthly Vehicle Count January 31, 2020.

current EER category blending.[4] The increasing BEV over PHEV deployment can be seen in analyst projections based upon automaker transition announcements as well.[5] In order to reflect the efficiencies of each vehicle type (PHEV and BEV) and because BEVs are expected to far outnumber PHEVs as they do currently in Washington, the EERs of these vehicles should no longer be comingled. Separating the two will result in increased programmatic accuracy of emissions reductions.

## B. The Light-Duty BEVs EER Should be Calibrated to Todays Information

Washington is considering using a 3.4 EER for Light Duty Battery Electric Vehicles. This value is likely based on the 3.4 EER in the current California LCFS regulations. The California 3.4 EER has not been updated in over a decade and does not reflect the significant improvements in BEV efficiency relative to the internal combustion vehicles over the past decade.

In 2011 California adopted the 3.4 EER for Light Duty EVs using a methodology described beginning on ISOR, page 47 and captured in ISOR Appendix A, the calculation resulting in a 3.4 EER was a simple average of just two vehicles: a Chevy Volt compared to a Chevy Cruze (93 MPGe / 28.3 MPG = 3.29 EER) and a Nissan Leaf compared to a Nissan Versa (99 MPGe / 28.4 MPG = 3.49 EER).[6] MPG figures were likely taken from the 2011 model years on fueleconomy.gov. We have performed an updated analysis using the same data source and the same methodology of the original EER calculation. Using real-world data from the US EPA and the California Energy Commission we found that the actual sales-volume-weighted EER of all BEVs on the road in California has risen to a 4.7 EER as of 2021. (See attached PDF analysis exclusive to BEVs). Tesla suggests updating the methodology for BEVs

[4] Ibid. See March 31, 2021Monthly Count of Vehicles
[5] https://www.bloomberg.com/news/articles/2018-11-26/the-plug-in-hybrid-car-hits-its-stride-just-in-time-to-die
[6] https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2011/lcfs2011/lcfsisor.pdf

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to reflect today's EERs and that similar consideration be taken to update the PHEV segment, distinguishing EERs for these LDV types. At minimum, if ECY decides to move forward with a single EER category inclusive of both PHEVs and BEVs as is reflected today, the EER deserves updating to reflect today's improved vehicle efficiencies.

EER formula:

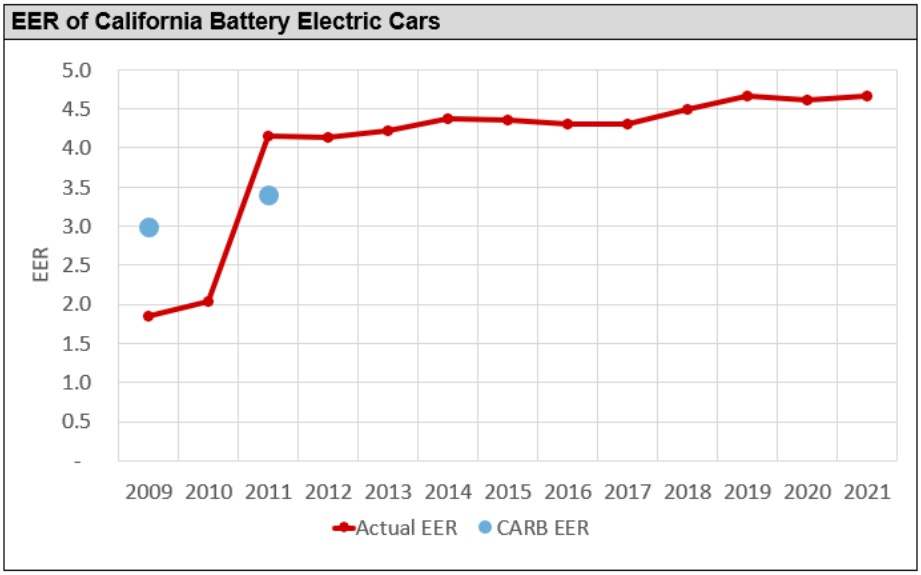
$$\frac{\text{California EV Fleet MPGe}}{\text{Real-World ICE MPG}} = \text{EER}$$

Data Sources:

- The California EV fleet MPGe is based on the cumulative sales volume weighted average MPGe of EVs sold in California. This is derived by multiplying the MPGe of each model by the sales of each model for each year. EV sales data by model comes from the California Energy Commission ZEV and Infrastructure Stats Data.[7] EV MPGe data for each model comes from the EPA's fueleconomy.gov website.[8]

- The Real-world ICE MPG comes from the EPA's Automotive Trends Report.[9]

When charted out over time the real-world EER of battery electric vehicles has improved significantly over the past decade and now stands at a 4.7 EER.




[7] https://www.energy.ca.gov/files/zev-and-infrastructure-stats-data
[8] https://www.fueleconomy.gov/
[9] https://www.epa.gov/automotive-trends/explore-automotive-trends-data

Washington should reconsider re-using a decade old EER from California, especially considering the significant improvements in electric vehicle efficiency over that time period. A more realistic EER for light duty battery electric vehicles would be a 4.7 EER.

Please contact me if ECY desires further discussion on the analysis.

Respectfully,

Thad Kurowski

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