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TURN Comments on AB 2127 Report

Additional submitted attachment is included below.

**COMMENTS OF THE UTILITY REFORM NETWORK ON THE CALIFORNIA
ENERGY COMMISSION'S AB 2127 REPORT**



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I. Introduction

The Utility Reform Network (TURN) is a consumer advocacy organization that for decades has fought for the right of all Californians equitable access to clean, safe, reliable, and affordable energy. TURN's primary advocacy work has historically been as an intervenor at California Public Utilities Commission (CPUC) as well as at the state legislature. Given the overlapping topic areas, we also find it necessary to represent consumer interests at other state agencies like the California Energy Commission (CEC). While we very much appreciate the important contributions provided in the AB 2127 infrastructure needs assessments, and indeed find it to be a well-written and thorough modeling effort, we are extremely concerned that one possible outcome of this analysis will be unnecessary increases in utility bills which are not only highly regressive and inequitable, but also actively work *against* California's electrification goals by increasing the cost of "fueling" the EVs of the future – this surely runs counter to the CEC's goals.

The headline results of the CEC's analysis – that California "needs" around 1 million non-residential charging ports to support 5 million electric vehicles, or 1.5 million to support 8 million electric vehicles – is the result of underlying modeling assumptions that are far too conservative, and may ultimately serve to mislead the public in California and the United States, if not the world, of challenges to EV adoption that are overstated by this report. We discuss these results below, including a comparison to actual "needs" shown in the real world to engender EV adoption, as well as other modelling results that demonstrate the CEC's referenced "average" estimate is much more akin to a "high" estimate. But on its face, the Commission should question why 100,000-200,000 gasoline station nozzles are sufficient to support around 29 million light-duty gas-driven cars and trucks in California,¹ in addition to vehicles from out of state, but California "needs" 1.5 million non-residential chargers to support just 8 million EVs, even as EV range is already competitive with gasoline vehicles **and many consumers have, or can procure, the equivalent of a gasoline station in their home when it comes to EV charging.**² We also note that the cited "average" for chargers to

¹ California has just over 10,000 gas and diesel retail stations, which if these have 10-20 nozzles at each station, means there are around 100,000-200,000 nozzles, the most comparable measure to charging ports for gasoline stations. See CEC, <https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-retail-fuel-outlet-annual-reporting>,

² To extend the analogy further, there are currently around 160,000 gasoline stations in the United States – if these have an average of 10 nozzles, the CEC's 1.5 million port estimate is close to the number of gas nozzles in the entire United States to support more than 250 million gasoline powered vehicles.² EIA,

support 5 million EVs is just 4% lower than one the CEC's high alternative scenarios called the "gas station model" whereby just 40% of EVs have access to residential charging – this clearly highlights that the CEC has predominately used conservative assumptions to drive large numbers of "needed" chargers.

Most concerning for California residents in the short-term is the potential effect on utility electric rates this report may have when the investor owned utilities (IOUs) reference or rely on the CEC report as figures sanctioned by the CEC to justify "necessary" regressive utility rate increases in the name of climate change mitigation. Indeed, at least one IOU has already referenced the CEC's preliminary results in a regulatory filing to the CPUC.³ Though perhaps beyond the purview of this immediate AB 2127 analysis, the CEC would thus contribute to "climate action" costs that are both unnecessary to achieve California's climate goals, and inequitable, falling on those consumers who can least afford the burden. California must do better to live up to its well-intentioned efforts to curb climate change without burdening low-income individuals and communities disproportionately – if released as-is, the CEC report may work against this objective. As the CEC states in its report "the best fit charging solution maximizes the electric miles enabled at the lowest overall cost while reflecting local needs and constraints"⁴- yet this objective is not reflected in the CEC's assumptions and modelling results, discussed further below.

TURN recommends the following to ensure the CEC's AB 2127 report does not lead to unexpected and unintended consequences:

- Based on the aforementioned affordability, equity, and financial concerns with adding to the cost of e-fueling and the regressive nature of utility bill charges, the CEC should find that ratepayer funding must ideally not be utilized at all, or at a minimum that ratepayers be the last resort, for funding charging stations and related infrastructure particularly on the

<https://www.eia.gov/todayinenergy/detail.php?id=6050#:~:text=In%20aggregate%2C%20there%20are%20currently,in%20the%20lower%2048%20states>. Statista, <https://www.statista.com/statistics/183505/number-of-vehicles-in-the-united-states-since-1990/#:~:text=The%20number%20of%20light%20trucks,12%20million%20units%20in%202019>.

³ SDG&E Opening Comments on the Assigner Commissioner's Ruling Implementing AB 841, <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M364/K582/364582206.PDF>.

⁴ CEC AB 2127 Report, p. 61.

customer side of the meter.⁵ Public (e.g. state, federal) and private funds must be exhausted before regressive funding that actively works against the economics of state electrification goals, including EVs, is utilized.

- The CEC must be more transparent about the various assumptions that drive its modelling results, including the impact on charging “needs” by varying multiple primary assumptions that affect this estimate and showing the potential impact of these variations.⁶
- The CEC should revise its analysis to include a more reasonable “low” scenario and by extension “average” results that includes optimization to leverage higher degrees of residential charging and higher utilization of charging stations, as well as other reasonable assumptions, that have a significant effect on this modeling and are driving “needed” non-residential ports to unnecessarily high levels.

TURN discusses the issues of transparency and overly conservative modeling assumptions in the sections below.

II. The CEC Should Provide More Transparency into Major Assumptions and Modeling Sensitivities

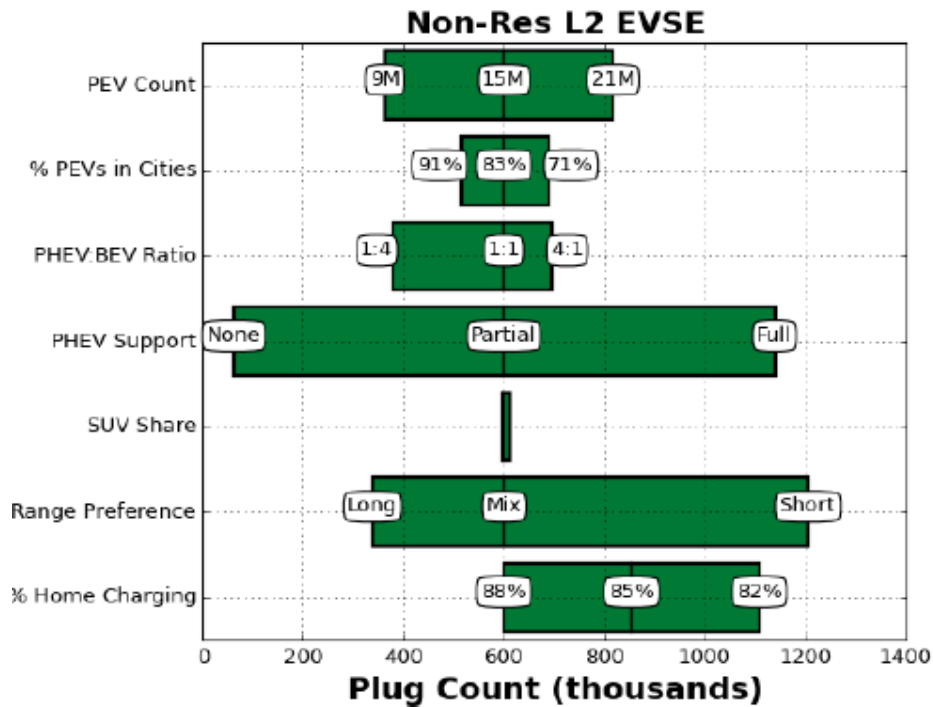
TURN appreciates the detailed modeling conducted by the CEC and its partners to help determine the number of chargers “needed” to meet our EV goals. We understand that there are numerous assumptions that drive these estimates, yet it is not clear which assumptions and policy preferences the CEC has adopted that primarily drive the figures, nor how varying these assumptions would affect the result. While the report does an excellent job laying out some of the assumptions utilized, as well as additional scenario analyses provided in the report’s appendix, it is not clear to the reader how varying each assumption affects the magnitude of charging need calculated.

In addition to adding further sensitivities to aid the public in understanding a wider range of possibilities, discussed below, TURN recommends the report include a discussion and figure akin to the National Renewable Energy Laboratory’s 2017 initial report on EV charging assessment needs; based on similar modeling efforts, the report included the following figure which illustrates the range of outcomes for the primary assumptions that drive charging ports needed:

⁵ We note that under recently passed legislation, AB 841(Ting), ratepayers will subsidize more utility-side distribution infrastructure costs than in the past, however this policy is not necessarily a permanent change and will be subject to Commission review and possible revision at a future date.

⁶ TURN does not advocate for sensitivity analyses which are not plausible. Instead, “low” and “high” sensitivities should include only assumptions which may reasonably occur, which TURN expects encompasses a wide range of possibilities given the ten year lag between now and 2030.

Figure 1. Example of Sensitivities to Provide Greater Transparency to Key Assumptions in AB 2127 Report

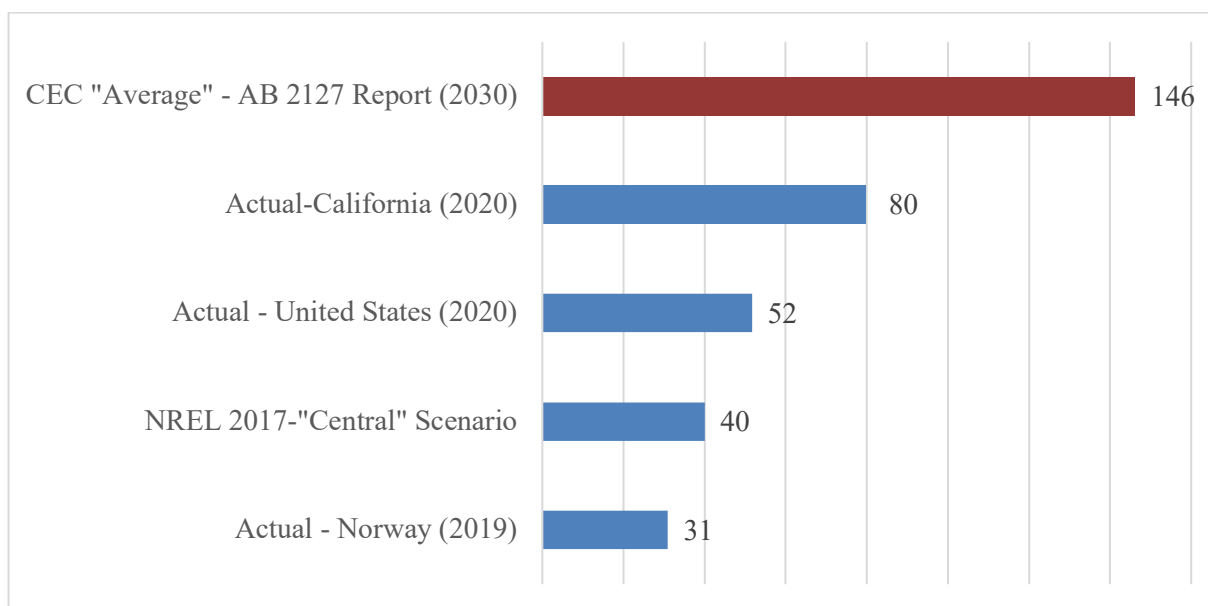


This additional transparency will aid stakeholders and decisionmakers in their understanding of the complex modeling behind the CEC’s analysis, as well as the range of results possible using reasonable assumptions.

III. The CEC’s Charging “Needs” Analysis Overstates the Role of Non-Residential Charging

The CEC’s modeling results to determine the “needed” number of ports do not seem to represent true “low” or “average” scenarios; indeed the CEC’s analysis finds “attach rates,” or ports “needed” per electric vehicle that are *significantly higher than actual attach rates* observed in California and other locales for level 2 non-residential stations, as well as previous modeling that used substantially similar methodologies as the CEC’s analysis.

Figure 2 Estimated and Observed Attach Rates vs. CEC Average Result
Ports per 1000 Electric Vehicles
L2 Non-Residential Charging⁷



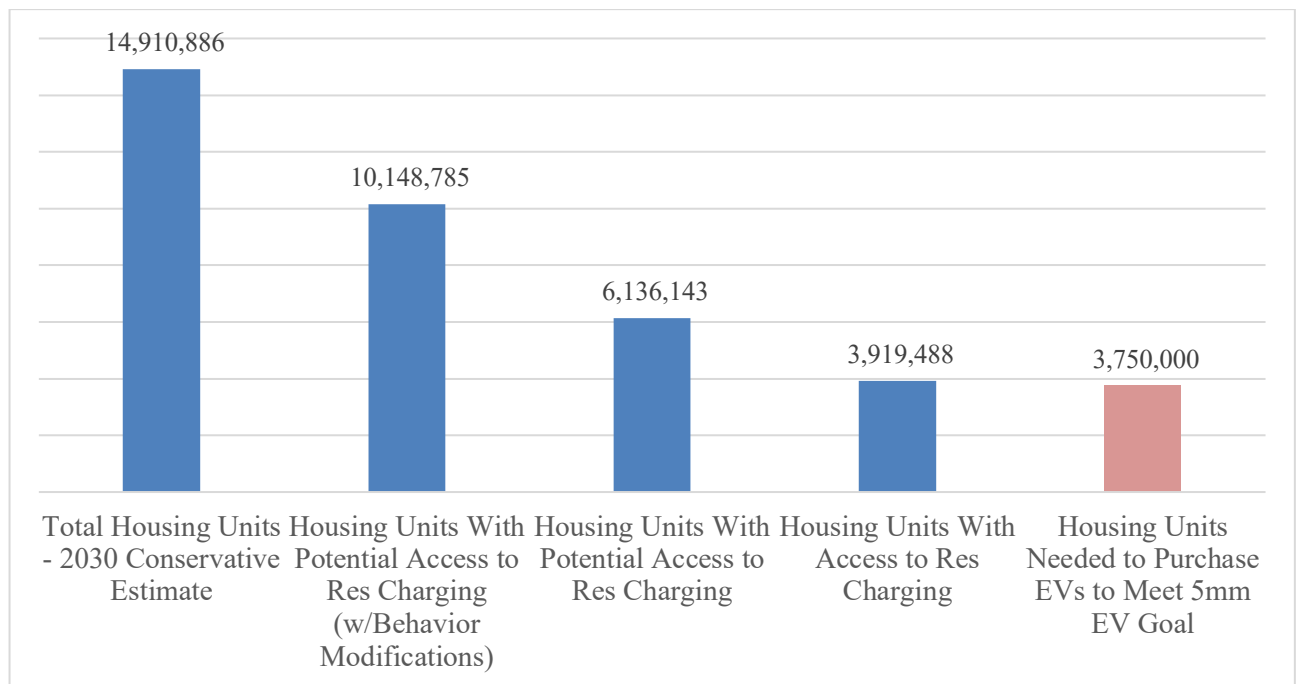
For purposes of these comments, TURN did not analyze other port needs (e.g. DCFC) though they may contain similarly conservative (high) assumptions. Though we acknowledge imperfect data is available for the comparison provided above, we have done our best to provide what should serve as a reality check on the “average” presented in the CEC’s analysis. Indeed, the Figure above shows that EV adoption to-date has occurred at substantially lower “attach rates” than assumed by the CEC as “necessary” by 2030, even if one assumes higher number of chargers than shown in the figure.

⁷ CEC attach rate in reference to average of “710,000 to 752,000 Level 2 plugs at public destinations (for example, shopping centers) and workplaces” to support 5 million EVs (AB 2127 Report, p. 30); United States attach rate from DOE public database accessed 2/1/21 - <https://afdc.energy.gov/stations/states> which showed 90,000 public and private L2 chargers, EV adoption 1,741,566 from Argonne National Lab, accessed 2/1/21, <https://www.anl.gov/es/light-duty-electric-drive-vehicles-monthly-sales-updates>; California EV adoption and ports from CEC ZEV Dashboard as of January 4, 2021 (accessed 2/16/21), total L2 public and private (shared) chargers; NREL estimate from NREL, *National Plug-in Electric Vehicle Infrastructure Analysis*, September 2017, p. viii, “Central Scenario;” Norway estimate from ICCT (International Council on Clean Transportation), *EV-EU Factbook*, 2020, p.13. Just includes public L2 ports as TURN was unable to locate an estimate of private (shared) ports including workplaces.

A. Conservative Assumptions Driving High Levels of Non-Residential Charging Need

There are likely numerous assumptions driving the CEC’s high estimates, which alone may not necessarily be unreasonable, but together, may be leading to unnecessarily high estimates of the need for non-residential charging. Based on TURN’s current understanding, one of the factors that may be driving high results is that the CEC assumes large-scale adoption of EVs for residences who do not have access to residential charging. First, it is unclear today whether consumers will adopt EVs on a large scale without access to residential charging, even with lots of public chargers – this is one reason why TURN has been a staunch advocate for smart ratepayer spending on charging stations to be deployed at or near multi-unit dwellings (MuDs). But significantly, California’s current EV goals can easily be met by households who have access to residential charging, or who with “behavioral modifications” – meaning parking near existing outlets or changing parking behavior overnight- can have access.

Figure 3. Estimated Housing Units in 2030 with Access to Residential Charging⁸



⁸ TURN examined existing housing stock per census data and assumed flat housing growth from 2019 to 2030, also assuming the same mix of MuD unit types as today. TURN then multiplied the housing stock by the CEC’s estimate of vehicles with residential access by housing type, which will likely increase as

The CEC should consider in its scenarios whether it is better and more efficient public policy to spend billions of dollars on an excessive number of public chargers or provide greater education to homeowners and renters of existing residential charging opportunities, in addition to opportunities to install smart charging. Based on adoption trends to-date that find consumers value the ease and convenience of residential charging,⁹ not to mention the fact that the pandemic will likely accelerate the work-from-home trend and may therefore decrease reliance on workplace charging, greater reliance on residential charging is more likely to be a successful strategy to drive the market rather than hoping a large number of public chargers will result in meeting EV adoption goals. Further, income-based subsidies to ensure residential access to overnight charging would likely be more cost-effective than a massive buildout of potentially low-utilized public charging stations. These statements should not at all minimize the importance of well-placed and highly-utilized public and private (shared) charging infrastructure – as in most problems we confront in energy policy, there will be no “one size fits all” solution.

In addition to reliance on public charging over residential charging, the other assumption that is likely driving the CEC’s high estimates is that its model uses existing (“observed”) utilization of charging stations and extends this into the future, rather than estimates.¹⁰ In TURN’s work examining utilization of ratepayer-funded infrastructure, utilization of stations is currently extremely low, in many cases non-existent (at least for ratepayer-funded projects). Low utilization at currently deployed stations actually points to the need to ensure chargers are well placed to maximize utilization, not to extend this poor performance into the future as a

infrastructure is deployed, particularly at MuDs (this is thus conservative). We do not include mobile homes in this analysis. See US Census data: <https://data.census.gov/cedsci/table?q=housing%20type%20california&tid=ACSDP1Y2019.DP04&hidePreview=false>, and CEC survey on access and potential access to residential charging. Since most households in California own 2 or more vehicles, TURN assumes 25% of households purchase 2 EVs, and 75% purchase one EV in the “households needed” figure. Regardless, the number of residences with “potential access” to EV charging exceeds the number of EVs needed to be purchased to meet state goals under either the 5 million or 8 million EV scenario.

⁹ For example, a review of existing studies and literature found that “the most important location for PEV charging is at home, followed by work, and then public locations.” Hardman, Tal, *A Review of Consumer Preferences of and Interactions with Electric Vehicle Charging Infrastructure*, July 2018, https://www.researchgate.net/publication/324476046_A_review_of_consumer_preferences_of_and_interactions_with_electric_vehicle_charging_infrastructure.

¹⁰ CEC AB 2127 Report, Table 5, p. 29.

justification to build more low-utilized chargers. As the CEC correctly states “Generally, the best fit charging solution maximizes the electric miles enabled at the lowest overall cost while reflecting local needs and constraints.”¹¹ This statement does not appear to be properly reflected in the CEC’s modeling assumptions. Instead of using some average or subset of utilization, the CEC should modify this assumption to assume stations are *highly* utilized – and then conduct procurement that operationalizes this assumption.¹² This is consistent with the goal of the CEC’s deployment and will also likely provide a more accurate estimate than current, relatively low, utilization rates.

In sum, based on TURN’s preliminary analysis, there appears to be significant opportunity for the CEC to conduct additional scenarios that utilize reasonable assumptions such that non-residential charging is not prioritized over simpler and potentially more cost-effective solutions that do not unnecessarily drive up the number of non-residential chargers “needed” to achieve EV goals. The CEC should update its modeling efforts with additional scenarios that explore how to actually leverage the most optimal portfolio of charging solutions from a public perspective. It should then work with its sister agencies, including the CPUC, to help ensure an understanding of how to deploy infrastructure that maximizes the level of GHG abatement for each dollar spent.

IV. CONCLUSION

Based on the foregoing discussion and analysis, TURN urges the CEC to incorporate frameworks and language that ensure ratepayers are not unduly burdened by its modeling efforts, increase transparency and access to modeling assumptions and sensitivities, and provide additional reasonable scenarios that seek to reduce costs to the public to meet California’s aggressive EV adoption goals.

¹¹ AB 2127 Report, p. 61.

¹² TURN has previously commented on the TERPA concept which would enable procurement mechanisms of highly utilized chargers at least cost to the public.