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California Energy Commission
Docket Office, MS-4
Re: Docket No. 14-IEP-1B
1516 Ninth Street
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Re: Southern California Edison Company's Comments on the California Energy Commission Docket No. 14-IEP-1B: Lead Commission Workshop on Transportation

Dear Commissioner Scott:

On March 27, 2014, the California Energy Commission (Energy Commission) held a Lead Commissioner Workshop on Transportation (the Workshop) as part of the 2014 Integrated Energy Policy Report Update (2014 IEPR Update) process. Southern California Edison (Edison) participated in the Workshop, and appreciates the opportunity to provide these written comments.

During the Workshop, the Energy Commission and stakeholders highlighted the importance of reducing pollution from the transportation sector, and the critical role that the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP) will play in supporting these efforts. Assembly Bill (AB) 8 (Perea, Chapter 401, Statutes of 2013) extends clean transportation investment programs such as ARFVTP, and provides guidance as to how clean transportation will fit within the state's broader goals for climate, clean air, and energy security.

Edison supports the state's efforts to achieve its energy, alternative fuel, and climate goals, and recognizes the importance of transforming the transportation sector in a manner that further reduces greenhouse gas (GHG) emissions, improves public health, and promotes energy security. Recognizing the substantial investments that will be made in advanced technology fuels, fueling infrastructure and vehicle technologies over the next decade and beyond, Edison recommends that the Energy Commission work with stakeholders to establish guiding principles, metrics, and standards to inform investment in the transportation portfolio. Such guidance will ensure that investments in near-zero and zero-emission transportation are directed to technologies, programs, and strategies that will most cost-effectively address the state's goals, and will guide future decision-making in the transportation sector.

Consistent with the recommended guiding principles that Edison sets forth in these comments, Edison also recommends directing funding—including designated marketing funding—in a manner that will further support the transformation of transportation industry to meet the state's GHG and pollution reduction goals. Edison also believes that there are solutions for the equity issues raised during the Workshop. First, by encouraging the most cost-effective solutions,[1] the Energy Commission can incentivize greater GHG emission reductions per dollar invested in transportation while also helping improve air quality and public health throughout the state. Second, targeted outreach and promotion of alternative fuel vehicle technologies and programs to lower income communities will increase awareness of and encourage members of lower income communities to take advantage of affordable options and incentives that are available to them.

To best position the state to achieve its AB 8 and broader environmental goals, the Energy Commission is faced with the complex task of assessing a variety of options and selecting the most effective mix of programs for alternative and renewable fuels and vehicle technologies. The Energy Commission's assessment of the costs, benefits and metrics of various technologies will ultimately shape the most cost-effective portfolio of transportation investment to meet the state's goals. In performing that undertaking, the Energy Commission has a unique opportunity to claim a leadership role in the state and even nationally in transforming the transportation industry and establishing the best practices for selecting grant recipients for programs to commercialize alternative fuels. Edison looks forward to being part of that process by participating in, and contributing to, the Energy Commission's workshop on Transportation Benefits and Metrics in June.

A. Guiding Principles for Alternative and Renewable Fuel and Vehicle Technology Program

Edison understands that the Energy Commission plans to pursue a "portfolio approach" for ARFVTP investments and similar AB 8 created programs, meaning that the Energy Commission will spread funding over a wide variety of technologies and programs in the transportation sector. It is critical that the portfolio is shaped with the objective of achieving the State's transportation and climate goals. To that end, the 90% of the portfolio should fund very low carbon, alternative fuel vehicles, and infrastructure to meet AB 8's requirements[2] and other state goals. The existing ARFVTP utilizes a similar approach and allows eleven AB 8 preference criteria to be factors.[3] To develop the portfolio, Edison suggests that the Energy Commission:

- Develop benchmarks for best practices and perform a gap analysis for the different aspects of alternative fuel commercialization by examining other commercialization

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1 SCE believes the definition of cost-effectiveness is very important as there are many competing, possible definitions. SCE intends to provide comments on this issue after the workshop on metrics.

2 Health and Safety Code § 44272(a) (". . . to develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the state's climate change policies.")

3 Health and Safety Code § 44272(c).

plans and programs, such as those in place at air quality management districts, in other states, federal government agencies and nations.[4]

- Work with stakeholders to develop a set of guiding principles for different aspects of alternative fuel technologies and their commercialization, including grant programs, market education, cost issues, and trade-offs. Examples of guiding principles that Edison has recently recommended to the CPUC and California Independent System Operator (CAISO, or ISO) are included in Appendix A;

- Utilize the benchmarks, gap analysis, and guiding principles to invest in transportation technologies and programs in a manner that is commensurate with technology/program's ability to cost-effectively reduce GHG emissions, petroleum use and other criteria pollutants;

- Commit to investing in associated education, outreach, and marketing for very-low-carbon, alternative fuel transportation technologies and programs.

B. Recommendations for Funding

1. Funding for Education/Outreach

Edison recommends a state-supported marketing, education and outreach campaign to promote commercially available near-zero and zero-emission transportation, including electric transportation. The campaign can focus on activities ranging from funding Ride and Drive events on a permanent basis at public gathering like conventions, fairs, and auto shows to building on the Go-Electric Drive Foundation's efforts to develop a broad national education campaign to build awareness and understanding of the multitude of benefits associated with all types of electric vehicles. For instance, the Energy Commission can create televised prime time public service announcements and advertisements promoting the significant financial saving associated with electric fuel as compared to gas, the availability of incentives and rebates that make leasing or financing electric vehicles far less expensive than maintaining or fixing an older gas vehicle, and the impact the electrification of millions of vehicles in California can have on the air we breathe, the health of our environment, and our quality of life locally, nationally, and worldwide.

To address equity concerns, the Energy Commission's public service announcements should also educate citizens about state agency programs that provide individuals with funds to scrap old polluting vehicles so that they can make down payments on new fuel efficient vehicles. Educating lower income people about the existence of such assistance programs will not only improve the quality of their lives by helping them own a new electric vehicle – the cost of which will be further offset by existing incentives and rebates – but will also make significant headway in realizing the state's goals.

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[4] Edison is happy to supply the Energy Commission with a list of such programs.

Such ambitious conduct is expressly contemplated and authorized by AB 8[5] and is consistent with California's legacy as a national and global leader for change on so many progressive and beneficial issues of significant societal concern. SCE believes that such education and outreach warrants a budget of approximately $10 million per year.

2. EPIC Funding

To the extent that EPIC funds continue to be available to the Energy Commission, Edison recommends that the Energy Commission request that the CPUC approve a shift in the Energy Commission's EPIC funds to transportation in excess of $1 million currently requested. Edison will support such a fund shifting request given the importance of this issue to the state's realization of its GHG goal.

In conclusion, SCE looks forward to using its long experience with electric transportation programs, trade associations and market evolution to support the Energy Commission's efforts in the 2014 IEPR Update. SCE appreciates the Energy Commission's consideration of these comments and looks forward to its continuing collaboration with the Energy Commission. Please do not hesitate to contact me at (916) 441-2369 with any questions or concerns you may have. I am available to discuss these matters further at your convenience.

Very truly yours,

/s/ Manuel Alvarez

Manuel Alvarez

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[5] Health and Safety Code § 44272 (e)(7), (11) (authorizing "programs and projects that accelerate the commercialization of vehicles and alternative and renewable fuels" and "block grants or incentive programs administered by public entities or not-for-profit technology entities for multiple projects, education and program promotion within California").

Appendix A

The following guiding principles were provided by Edison as comments on the CPUC's Alternative Fuel Vehicle Order Instituting Rulemaking (OIR), and reference the ISO's Vehicle Grid Integration (VGI) Roadmap. Edison recommends that the Energy Commission also utilize these guiding principles to inform investments in the ARFVTP:

Edison (SCE) comments on the Alternative Fuel Vehicle OIR[1]:

SCE proposes detailed guiding principles for the Commission's consideration. In summary, however, SCE recommends that the OIR:

- Identify near-, mid-, and long-term grid needs and focus on meeting these needs with actions that deliver the highest benefit to cost ratios;
- Initially, focus on low-cost, simple, and near-term solutions to grid needs to help accelerate adoption and increase grid connection;
- Minimize unintended consequences and avoid increasing net consumer costs;
- Adopt a technology-neutral stance for transportation electrification and business model-neutral position for charging and infrastructure technologies;
- Recognize market differences across the state when considering charging infrastructure needs (Level 1, Level 2, and DC Fast charging), their grid benefits, ratepayer savings, and customer usage needs;
- Develop a broad comparison framework which can include non-transportation solutions, similar to a cost framework used by air quality agencies.

As part of the ISO's VGI roadmap process, SCE proposed guiding principles to organize VGI activities and scenarios.[2] SCE recommends that the Commission develop guiding principles as an essential first step in the VGI process, as this will inform many later steps (e.g., refining the framework, adding uses cases, prioritizing uses cases, comparing with

[1] SCE Comments on AFV OIR (R 13-11-007) at pp. 7-11 available at: http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M083/K525/83525518.PDF

[2] 10/15/2013, 11/19/2013, and 12/10/2013 Letters from SCE to the Energy Commission.

other technologies). These guiding principles could be developed though a workshop to incorporate input from all stakeholders.

SCE proposes the following guiding principles for the Commission's consideration:

- Focus on Grid Needs (Near-, Mid-, Long-Term) and Target Areas of Largest Benefit (or, if Possible, Best Cost-Benefit Ratio)
    - Understand the relative value and timing of the potential grid benefits[3] of PEVs and broader TE to the marketplace, utilities, and ISO as a necessary first step to prioritizing.
    - Identify the largest categories of grid benefits and determine the costs to realize those grid benefits.
    - Understand if and when certain VGI benefits will decline because of competition from other grid services (e.g., demand response, compressed air, pumped hydro, stationary batteries) or because of a saturated VGI market (e.g. many cars providing many MW of services).
    - Seek to avoid harm to the grid by understanding the risk to the grid and to ratepayers of various end-state scenarios.
- Focus on Low-Cost, Simple, and Near-term Solutions to Grid Needs
    - Focus on light-duty PEVs first with low-cost and simple actions that benefit most of the PEV market and are scalable (e.g. improving rate adoption, low-cost charging solutions, and future codes and standards) and critical path activities (e.g. value analysis and collection of data to inform future policy)
    - Recognize different market dynamics across the state and different market needs of plug-in hybrid electric vehicles (PHEVs) versus battery electric vehicles (BEVs).

[3] Examples include minimizing distribution peaks, daily generation peaks, critical summer peaks, ramping requirements, voltage / frequency issues, and intermittency issues with renewables.

- Minimize Unintended Consequences and Do Not Add to Consumer Net Costs
    - The Commission should understand trade-offs and seek to avoid unintended consequences, such as
        - Adding to consumer net costs, including costs from potential stranded assets, networking costs, costs to participate in the grid service, redundant or high back-office costs, higher costs for charging equipment, and vehicle capabilities/features.
        - Counting the same grid benefit twice (e.g. in contracts with the ISO).[4]
        - Interfering with the usefulness of the vehicle (e.g. reducing electric vehicle miles travelled).
        - Adding complexity that could confuse PEV customers, dealers, automakers and other stakeholders.
- Adopt a Technology and Business Model Neutral Position for Charging and Infrastructure Technologies
    - The Commission should not favor one vehicle type[5] over another, and should not favor one infrastructure business model[6] over another, unless there is good reason to do so (e.g., less impact on the grid). For example, recent data shows that some PHEV models are driving more electric miles and providing more societal benefits than BEVs, and many are charging at lower charging levels with less grid impact.

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4 ISO presented this concern at the December 4 workshop.

5 In the light duty segment, the major types of PEVs include PHEVs, BEVs with 70-120 mile range, and BEVs with 200 – 300 mile range. Similar categories exist for medium- and heavy-duty PEVs, as well as overhead wire dual mode and dedicated electric trucks and buses, and inductive or conductive roadway power electric trucks and buses (dual mode and/or dedicated).

6 Different business models address demand charges in different ways. For example, Tesla provides free charging to members of its "club" and demand charges are recovered as part of purchasing the car. Other business models minimize demand charges at public or workplace charging as part of a building's energy management system. Still other business models have the charging station as a separately metered account, and this model will likely see higher demand charges compared to others.

- Commission policy should continue to allow consumer choice (e.g. rate options, type of TE technology and infrastructure, type of business model)

- Seek Greenhouse Gas (GHG) and Air Pollution Reduction
  - TE and NGV adoption efforts should focus on cost-effectively seeking greenhouse gas reductions and concomitant reductions in criteria air pollutants. PEVs and other types of TE have very low emissions, typically about 70% less GHG and 99% less air pollution on a well-to-wheels basis. As the ISO staff pointed out at the VGI Workshop, it is possible to further reduce these emissions by shifting the charging load.
- Understand Charging Level Issues (Low versus High kW)
  - The Commission should evaluate the ratepayer benefits of lower charging levels[7] for PEVs, the current market conditions and trends for charging levels, and the limitations of PEVs to provide grid services based on battery size, charging rate, average miles driven, and PEV ranges.[8]
- Understand and Prioritize by Charging Market Segment (Residential, Workplace, Fleet, and Public-Access)
  - The Commission should prioritize addressing charging market segments based on size of potential market, ease of solving market barriers,[9] near-term market potential, cost, and other relevant factors.
- Develop a Broad Comparison Framework that Can Include Non-Transportation Solutions, Similar to a Cost Framework Used by Air Quality Agencies

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[7] Most PHEVs and some BEVs charge at 1.4 kW (Level 1). The grid impact of 3.3 kW (Level 2) charging is also much less than higher kW charging (Level 2 goes up to 19.2 kW).

[8] For example, a vehicle might charge at a rate of three to four miles per hour at Level 1 or up to 55 miles per hour at Level 2. Defining the benefits and disadvantages from a VGI perspective for charging at these (and other) charging levels is needed.

[9] As an example, it is much more difficult to install charging stations for tenants (business or residential).

- The Commission should develop a robust framework (similar to that used by air quality agencies) where the most cost-effective solutions are secured first, and subsequent solutions are compared incrementally to the earlier solutions.[10]
- The framework must also allow different agencies to compare VGI to solutions that do not involve vehicles (e.g. compressed air storage, stationary batteries, flywheels).

[10] In air quality regulations for mobile sources, the most cost-effective solutions were implemented first (e.g. catalytic converters). Subsequent regulations delivered fewer benefits because they were compared to the cars with catalytic converters. Still later regulations delivered fewer incremental benefits for the same reason. Each set of subsequent regulations was less cost-effective, in part, because they delivered fewer incremental benefits. The same logic should be applied to prioritizing VGI efforts by agencies.