

December 8, 2014

California Energy Commission
Docket Office, MS-4
Re: Docket No. 14-IEP-1
1516 Ninth Street
Sacramento, CA 95814-5512
docket@energy.state.ca.us



Re: *Southern California Edison Company's Comments on the California Energy Commission Docket No. 14-IEP-1: Draft 2014 IEPR*

Dear Commissioner Scott:

Southern California Edison (SCE) appreciates the opportunity to provide comments on the California Energy Commission's (Energy Commission's) Draft 2014 Integrated Energy Policy Report (IEPR) Update (Draft Report). The Draft Report covers many important policy issues impacting California's energy future, particularly the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP) and the transportation sector's potential to advance the state's energy, transportation, and climate goals. SCE agrees with the Draft Report's observation that meeting these goals will require a complete transformation of the current transportation system to zero-and near-zero emission technologies and fuels. In light of this pressing need, SCE recently submitted a proposal to the California Public Utilities Commission (CPUC) to expand the utility role in charging station development and EV market education and outreach. SCE strongly supports the Energy Commission's, other state agencies', and stakeholders' efforts to achieve these important goals and is eager to play a substantial role in making the State's progressive, long-term goals a reality.

As Governor Brown recently remarked, "[w]e face an existential challenge with the changes in our climate. The time to act is now. The place to look is California. We're not finished, but we sure are setting the pace." SCE's and the other electric utilities' involvement is essential to achieving widespread change, adoption, and proliferation of alternative transportation, and specifically transportation electrification. SCE and other electric utilities are well-situated to play an important role in advancing transportation policy goals through the large-scale development, implementation, and ownership of plug-in electric vehicle (PEV) infrastructure and through associated PEV market education and outreach efforts. The Energy Commission should therefore express support for expanded utility roles in supporting the State's goals.

The undertaking is so massive and the need is so great, however, that no stakeholder can accomplish these ambitious goals alone. The urgency created by climate change and other environmental concerns requires all hands on deck. To further the State's goals and ensure that California continues to lead the nation on this issue as it has on so many important progressive issues before it, SCE recommends that the Energy Commission not only support the role of electric utilities to the fullest, but also, in 2015 -2017, update the State Alternative Fuels Plan with upcoming efforts, such as charging station programs by utilities, hydrogen station development, the AB 1257 natural gas vehicle study, National Academy of Sciences reports, Low Carbon Fuel Standard modeling, and recent reports and plans such as the Governor's Interagency Zero Emission Vehicle Plan.

SCE's comments on the Draft Report also request that the Energy Commission's final IEPR Update Report recommend that: (1) the Legislature reexamine all of the existing funding sources targeting clean and/or alternative fuel transportation to see if their competing goals are still relevant; 2) the Energy Commission and other agencies immediately convene to examine how they can leverage each other's funding; 3) the Energy Commission add several recommendations from the 2007 State Alternative Fuels Plan to the Final IEPR; 4) Vehicle Grid Integration Programs focus on GHG reduction and performs a cost benefit analysis; 5) the Energy Commission dedicate \$10 million per year to fund market education, promotion and outreach, as well as make additional funding recommendations.

In developing its portfolio, SCE also recommends that the Energy Commission take a balanced approach in encouraging both long-term advanced technology solutions, as well as near-term solutions to accelerate the transition to alternative fuel, low-carbon transportation. SCE believes that acceleration of the market's growth in the near term is essential, particularly in terms of improving the business case for many longer-term advanced technology solutions.

Finally, SCE reiterates its support of the Energy Commission's efforts to finalize and implement the Desert Renewable Energy Conservation Plan (DRECP). SCE looks forward to filing detailed comments on the DRECP Draft Report in February.

SCE's specific strike-out and underline edits to the Draft Report are provided in Appendix A to this letter.

A. Accelerating Transportation Electrification is Essential to Realizing California's Important and Ambitious Climate Change and Other Environmental Goals

California has best-in-the-nation electric vehicle laws. These laws support the goals the Governor created in Executive Order B-16-2012, which calls for an 80% reduction in GHG emissions from the transportation sector by 2050 and sets several near- and mid-term milestones, including the following:

- By 2015, all California cities will have adequate infrastructure and be "zero-emissions vehicle (ZEV) ready."
- By 2020, California will have infrastructure in place to support 1 million ZEVs.

- By 2025, there will be over 1.5 million ZEVs on California roads.

The Executive Order also created the Governor's Interagency ZEV Action Plan for agencies such as the CPUC, California Air Resources Board (CARB), and the California Energy Commission (CEC). Executive Order's 2025 goal is consistent with CARB's ZEV regulation, which requires large- and intermediate-volume automobile manufacturers to offer specific numbers of light duty ZEVs for sale in California.

Several important studies indicate that California's GHG-reduction goals, air-quality requirements¹ and petroleum reduction goals² can only be achieved with 70 to 90 percent electrification of internal combustion engine vehicles.³ Meeting the 2023 and 2032 air-quality attainment deadlines are the most difficult and require the fastest shift.⁴ All types of near-zero and zero-emission vehicles are necessary to meet this target, including plug-in hybrid EVs (PHEVs), battery EVs (BEVs), and fuel cell vehicles (FCVs). Several automakers are currently developing light-duty FCVs, but these are only likely to be available in limited quantities, at least through 2020.⁵

On the other hand, Californians have already purchased over 100,000 EVs⁶. Over 20 models are currently available, with more choices expected over the next several years from the

¹ For example, in the South Coast Air Basin, NOx emissions must decline from 758 tons per day in 2008 to about 78 tons per day by 2032 in order to meet the federal standards. See "On the Move: Southern California Delivers the Goods; Comprehensive Regional Goods Movement Plan and Implementation Strategy; Summary Report," Southern California Association of Governments, December 2012, p. 27, available at http://www.freightworks.org/DocumentLibrary/CRGMPIS_Summary_Report_Final.pdf [as of October 27, 2014]

² The CEC and CARB, in response to AB 2076 and AB 1007, adopted the goal of increasing non-petroleum fuel to 20% of on-road demand by 2020 and 30% in 2030. See "State Alternative Fuels Plan, Commission Report," CARB and CEC, December 2007, available at <http://www.energy.ca.gov/2007publications/CEC-600-2007-011/CEC-600-2007-011-CMF.PDF> [as of October 27, 2014].

³ Several studies that examine the 2050 climate goals show that almost all of light duty vehicles must be BEVs, ZEVs and/or PHEVs, and 70% or more of the medium and heavy duty vehicles must be as well. See Figure II-1 below. See also James H. Williams, et al. "The Technology Path to Deep Greenhouse Gas Emissions Cuts by 2050: The Pivotal Role of Electricity," Science Magazine, Vol. 335, January 2012, p. 53, available at <http://www.sciencemagazinedigital.org/sciencemagazine/20120106?pg=54#pg52> [as of October 27, 2014].

⁴ See "Vision for Clean Air: A Framework for Air Quality and Climate Planning," CARB, the South Coast Air Quality Management District, and the San Joaquin Valley Unified Air Pollution Control District, Public Review Draft, June 27, 2012, pp. 16-19, available at http://www.arb.ca.gov/planning/vision/docs/vision_for_clean_air_public_review_draft.pdf [as of October 27, 2014].

⁵ This is primarily due to the initial technology cost and the need to build a hydrogen fueling infrastructure from scratch.

⁶ See S. Blanco, "California has sold 102,440 EVs since Volt, Leaf went on sale in 2010," AutoblogGreen, September 9, 2014, available at <http://green.autoblog.com/2014/09/09/california-has-sold-102440-evs-since-volt-leaf-went-on-sale/> [as of October 27, 2014].

17 automakers subject to CARB's ZEV regulation.⁷ Part of the popularity of EVs today can be attributed to the ease of fueling at home from a ubiquitous infrastructure that has significant excess capacity. EVs will almost certainly continue to lead the initial phase of the transition to ZEVs (present to 2030).

The ARB projected adoption, however, although a 20-fold increase ZEV sales between now to 2030, falls woefully short of that necessary to meet California's 2050 GHG goals.⁸ To achieve California's goals, the PEV market must expand into the mainstream and adoption must dramatically escalate in the next 10-15 years.

Without sufficient infrastructure to support charging needs, the State's goals will not be realized.⁹ SCE's Charge Ready program, which is discussed in Section B below, plans to provide approximately one-third of the estimated 2020 infrastructure requirements in SCE's service territory. The involvement of other parties where the utilities are not active (e.g., single family homes, retail stores, and DC fast charging stations) is critical to completing the development of the remaining infrastructure needed to make California's ambitious and important goals a reality.

B. The Energy Commission Should Express its Support for the Expanded Role of Electric Utilities in Advancing the Market for Transportation Electrification through the Development of PEV Charging Infrastructure

During the June 5, 2014 IEPR Workshop on the California Statewide Plug-In Vehicle Infrastructure Assessment,¹⁰ several participants, including representatives from the Governor's office, Chargepoint, the Los Angeles Department of Water and Power and EVgo, called for an expanded utility role in PEV infrastructure development. SCE agrees that expanding the role of utilities can help accelerate PEV adoption in support of the ARFVTP, and that doing so is essential for meeting the state's broader climate and transportation goals.

⁷See "Staff Report: Initial Statement of Reasons for Rulemaking," *supra*. See also Electric Drive Transportation Association, Electric Drive Sales Dashboard, *available at* <http://electricdrive.org/index.php?ht=d/sp/i/20952/pid/20952> [as of October 27, 2014]. See also S. Blanco, "California has sold 102,440 EVs since Volt, Leaf went on sale in 2010," *supra*.

⁸ US Pathways vehicle numbers from E3 methodology in "UN Pathways to Deep Decarbonization: 2014 Interim Report" (July 2014), prepared by SDSN, IDDRI, and national teams (US analysis provided solely by E3), *available at* http://unsdsn.org/wp-content/uploads/2014/07/DDPP_interim_2014_report.pdf [as of October 27, 2014]. ARB 2050 vehicle numbers from "Vision for Clean Air: A Framework for Air Quality and Climate Planning" (27 June 2012) Prepared by CARB, SCAQMD, and San Joaquin Valley Unified APCD, *available at* http://www.arb.ca.gov/planning/vision/docs/vision_for_clean_air_public_review_draft.pdf [as of October 27, 2014]. See also Max Wei, et al., "California's Carbon Challenge: Scenarios for Achieving 80% Emissions Reduction in 2050," Lawrence Berkeley National Laboratory, October 31, 2012, p. 44, *available at* http://eaei.lbl.gov/sites/all/files/california_carbon_challenge_feb20_20131_0.pdf [as of October 27, 2014].

⁹ Charging stations can have multiple charge ports to serve more than one parking space at the same time.

¹⁰ http://www.energy.ca.gov/2014_energy_policy/documents/#06052014

The CPUC, which has regulatory authority over this issue with respect to investor-owned electric utilities – initiated the Alternative Fuel Vehicle Order Instituting Rulemaking (R.) 13-11-007 (AFV OIR). Many parties, including coalitions of charging station providers, automakers, environmental groups and environmental justice groups supported an expanded role for utilities in charging station development and expanded EV market education and outreach.¹¹ In its recent Proposed Decision in Phase 1 of the AFV OIR, the CPUC agreed with those parties and supported expanding the utilities’ role in the development of PEV infrastructure by removing broad and difficult-to-meet restrictions on electric utilities.¹²

For the reasons discussed in greater detail below, SCE recommends that the Energy Commission likewise reiterate its support for an expanded role for electric utilities in advancing the market for electric transportation and the infrastructure needed to support them as part of the IEPR Update’s recommendations.

SCE recently submitted an Application to the CPUC requesting that it approve SCE’s “Charge Ready” program and market education efforts. If approved, the program will support the deployment of up to 30,000 charging stations at long dwell-time locations within SCE’s service territory. SCE proposes to compliment that effort with expanded transportation electrification market education and outreach through broad and targeted efforts to increase customer awareness of the benefits of EVs and importance of the state’s environmental goals (e.g. social media, radio ads, test drive events, business customer outreach). SCE’s Charge Ready program is important to reduce existing barriers that are stifling the growth of the PEV market. For example, as the Draft Report acknowledges, the scarcity of charging stations, particularly at multi-unit dwellings and workplaces, is a significant barrier to the adoption of electric vehicles. Rapidly expanded infrastructure on a significant scale is necessary to accelerate the market for PEVs.

The electric utilities are well-suited to expand infrastructure due to their expertise with the electric grid, which enables them to locate infrastructure where it is most needed to manage load. SCE’s and the other utilities’ reputation as thought leaders in the PEV space, as well as long-standing relationships with customers and vehicle manufacturers further qualifies utilities to take an important role, particularly in customer service, outreach, and education. Notably, the

¹¹ In R.13-11-007, Proterra, the Natural Resources Defense Council (NRDC), Valent Power, Auto Alliance, Sacramento Utility District (SMUD), CALSTART, National Electrical Manufacturers Association (NEMA), KNGrid, Pacific Gas and Electric Company (PG&E), San Diego Gas and Electric Company (SDG&E), various minority group parties filing jointly, Plug In America, and the South Coast Air Quality Management District all filed comments supporting an increased utility role in EV infrastructure deployment. Plug in America, Valent Power, SDG&E, NRDC, Auto Alliance, various minority group parties, California Energy Storage Alliance (CESA), CEVA, the Utility Reform Network (TURN), ChargePoint, and the Office of Ratepayer Advocates (ORA) also supported an increased utility role in market education and outreach to accelerate customer adoption.

¹² R.13-11-007 Phase 1 Decision Establishing Policy to Expand the Utilities Role in Development of Electric Vehicle Infrastructure

State Alternative Fuels Plan in 2007 also recommended that utilities rate base charging station infrastructure.¹³

In addition to the PEV segment, the medium-duty, heavy-duty and non-road transportation segments must also be similarly accelerated. Multiple scenarios for meeting the state's 2050 climate goals have been set forth by ICF International and Energy + Environmental Economics (E3) in their California Electric Transportation Assessment—scenarios that may require significant support from the utilities to be realized.¹⁴ Similar to the PEV market, on an interim basis, an expanded utility role that includes development of transportation electrification infrastructure may help accelerate these markets as well.

Utilities can also help accelerate adoption of electric transportation by expanding education and outreach—particularly in disadvantaged communities -- supporting RD&D programs, and working closely with the state and air districts on a range of commercialization and policy issues.

The utilities cannot accomplish the State's transportation goals alone. For instance, as noted above, SCE's Charge Ready program, plans to provide approximately one-third of the estimated 2020 PEV infrastructure requirements needed in long-dwell facilities located in SCE's service territory. The participation of other stakeholders in the market is also critical. SCE supports the efforts by the Energy Commission to continue to provide grants for EV charging infrastructure and recommends these grants be targeted to complement existing and proposed utility and air district programs. SCE also supports the Draft Report's recommendation for pilots of loans for charging infrastructure to see if this approach can work as well as grants, and recommends these pilots be in areas of the state where there are not air district or utility programs.

C. The State Alternative Fuels Plan Should be Updated in 2015 - 2017 and the Energy Commission Should Consider Delaying the IEPR Update to Include Relevant Recommendations from the Prior State Alternative Fuels Plan

The Draft Report should state that the Energy Commission plans to update State Alternative Fuels Plan (AF Plan) for 2015 through 2017. The Energy Commission should update the AF Plan in collaboration with other agencies and industry stakeholders to: (1) comprehensively analyze the state of the different alternative fuel transportation industries, (2) recommend the most likely transportation sector pathways (e.g., electricity, biogas, hydrogen, and liquid biofuels) to meet the state's 2050 climate and other state goals; and (3) determine interagency co-funding efforts. As part of this effort, the Energy Commission should also develop feasible pathways for each of transportation segments such as shipping, passenger rail, freight rail, trucking, light duty vehicles and non-road equipment.

¹³ California Alternative Fuels Plan, adopted by the Energy Commission and Air Resources Board in 2007, at 8, 20, and 22.

¹⁴ Assessment available at http://www.caetc.com/wp-content/uploads/2014/08/CalETC_TEA_Phase_1-FINAL.pdf

The updated AF Plan should build on the existing plan by including actionable recommendations for each of the agencies, the fuels sectors, and transportation market sectors. The updated AF Plan should also include details from plans since 2007 such as the Governor's Interagency ZEV Action Plan, the Bioenergy Action Plan, and other similar plans on alternative fuel vehicles from outside California, and take advantage of recent studies by trade associations and research institutions¹⁵, as well as the upcoming utility charging station programs, the AB 1257 natural gas vehicle plan, the Sustainable Freight Plan, hydrogen station programs, updates to the Low Carbon Fuel Standard modeling, and National Academy of Science's analysis. The updated AF Plan should also include chapters on all aspects of commercialization (e.g., RD&D, deployment incentives, infrastructure, education and outreach, job training, etc.), an assessment of key issues, barriers, costs and benefits; recommendations on best practices, lessons learned, technology reviews, 2050 pathways scenarios analysis, and minimizing stranded assets / unintended consequences.

While an impressive number of recommendations from the 2007 State AF Plan have been accomplished, the Energy Commission should add the following transportation electrification recommendations from the AF Plan to the Final IEPR Update:

- Install up to 2 million PHEV recharging systems over 15 years.
- Install up to 3,500 recharging stations in off-road and other electric drive market niche applications, such as ship cold ironing, truck refrigeration units, truck stop electrification, warehousing (forklifts), and other applications.
- Develop battery electric and PHEV manufacturing plants in California.
- Support utility investment in infrastructure, technology, and vehicles.
- Conduct consumer and market niche education and outreach programs to highlight electric and hydrogen FCV technology attributes, costs, and performance.
- Research and develop projects to integrate passenger PHEV's and heavy-duty vehicles with other alternative fuels.
- Promote the installation of 7,000 electric transportation market niche projects.
- Examine additional electric niche markets in future reports, including light rail, high speed rail, small non-road EVs (such as burden and personnel carriers) and electric handheld and push equipment such as electric lawnmowers and other lawn and garden equipment.

ARFVTP funds used to update 2050 pathways scenarios in the AF Plan should examine the costs and benefits of several different visions for how light duty vehicle and freight electrification might evolve, including the impact on utility ratepayers. For example, one 2050 pathway scenario could include predominately plug-in hybrid cars and heavy trucks with advanced liquid biofuels or biogas for the second fuel and very little away-from home charging except for workplaces. Another scenario could include predominately battery PEVs using residential / fleet charging and a limited, but well-placed, DC fast charging for away-from-home

¹⁵ For example the Electric Power Research Institute and the California Electric Transportation Coalition

charging. Several other scenarios could be designed to look at using large amounts of level 2 charging for away-from-home charging instead of DC fast charging, varying the mix of PHEVs and BEVs, or using wayside power for dual mode electric freight.¹⁶ Utilities can help with the upstream impacts on the generation, transmission and distribution system.

Finally, the Energy Commission should also explore cross cutting issues, such as whether biomass should be used to create liquid biofuels, biohydrogen, or bioelectricity, in its update of the AF Plan.

D. The IEPR Update Should Recommend that the Legislature Re-Examine Funding Sources and Objectives

The Energy Commission should recommend that the Legislature re-examine all of the existing grant programs for clean and/or alternative fuel transportation because the existing programs were established in different times and with different goals that may not currently align with the state's 2050 climate goals. The IEPR should also include an inventory of all of these funding sources and describe each, including their goals and efficacy metrics. Examples of these clean transportation funding sources briefly mentioned in the Draft Report include ARFVTP and EPIC the Greenhouse Gas Reduction Fund, the Carl Moyer and AB 923 Programs and air district programs. The IEPR Update should also describe other funding sources, including the AB 2766 programs, the federal Congestion Mitigation and Air Quality Program, port authority programs, and electric and natural gas utility programs. In the meantime, the Energy Commission, CARB, and other agencies should coordinate their multiple grant programs, such as the EPIC and ARFVTP. New data may be available to help transform some of these grant programs to ones that have a greater focus on decarbonization.

E. SCE Supports the Energy Commission's Recommendation to Leverage Funding Opportunities

SCE supports the Draft Report's recommendation that the Energy Commission to work in collaboration with the Legislature, and with other state, local and federal agencies to leverage the Energy Commission's funding. Specifically, SCE believes that the Energy Commission should coordinate with the Congestion Mitigation and Air Quality (CMAQ) program and AB 2766, which provide funding to areas that are experiencing challenges with attaining or maintaining the National Ambient Air Quality Standards for ozone, carbon monoxide and particulate matter, and programs that reduce air pollution from motor vehicles, respectively. Similarly, the Energy Commission should consider SCE's recently submitted Charge Ready application for PEV charging infrastructure and SDG&E's charging infrastructure application as potential opportunities for leveraging funding to achieve ARFVTP goals.

The IEPR Update clarify how the Energy Commission intends to coordinate with the Legislature, and state, local and federal agencies to leverage efforts. In addition, SCE

¹⁶ Examples include catenaries, conductive or inductive roadway power, maglev and several others

recommends that the Energy Commission conduct a workshop to determine how to coordinate different programs with different goals and metrics to leveraging funding opportunities.

F. Vehicle Grid Integration (VGI) Programs Should Focus on GHG Reduction

Accordingly, the Energy Commission should fund VGI programs, the benefits of which are often incremental, with ARFVTP or EPIC funds at a level proportionate to their ability to meaningfully contribute to top-tier state goals such as the 2050 climate goals and 2032 national ambient air quality standard goals. For example, the inherent benefit of a PEV is a 70% reduction in greenhouse gases. VGI programs can increase that benefit to an 80 or 90% reduction. The State VGI roadmap prioritize VGI projects, such as the rank of a secondary battery industry, as compared to vehicle-to-grid, managed charging, incentivized charging –by their incremental GHG reduction benefit.

G. Additional Detailed Funding Recommendations for the ARFVTP

Regarding PEV infrastructure, the ARFVTP should 1) fund the creation of a stakeholder working group / users group to focus on the identification and implementation of “no regrets” solutions for the challenges and barriers to PEV adoption and infrastructure development and help collect better data to inform decisions by the public and private sectors, and 2) fund and coordinate an interagency transportation electrification working group for demand forecasting and related planning efforts that would also work with the stakeholder community.

In order to meet timelines in the Governor’s Interagency ZEV Action Plan, the Energy Commission should temporarily fund other agency efforts as it has in the past.

In addition, taxpayer funded financing by the state should be dedicated to emerging technologies that have not yet been able to obtain financing from the private sector. Examples include projects with liability concerns, second use PEV battery projects, very large scale projects such as dual mode catenary electric trucks, or projects that leverage on-going government revenue streams.

SCE also recommends setting aside \$10 Million in funding for market education, promotion, and outreach. As noted in several IEPR Workshops this cycle, one of the most significant barriers to advancing the alternative fuel vehicle and technology market continues to be a low level of consumer awareness and interest in Plug-in Hybrid Vehicles (PHEVs), Battery Electric Vehicles (BEVs), and other alternative fuel vehicles. SCE believes that strategic investment in market education, promotion, and outreach could eliminate these barriers by increasing consumer engagement and adoption, thereby propelling the market for these vehicles.

As noted above, SCE proposed to engage marketing and outreach efforts in connection with its Charge Ready program. The Energy Commission should also undertake marketing and outreach efforts by directing designated marketing funding in a manner that will further support the transformation of the transportation industry to meet the state’s goals. Specifically, SCE recommends a state-supported marketing, education, and outreach campaign to promote commercially available near-zero and zero-emission transportation, including electric

transportation. This program should be funded, pursuant to the authority granted in AB 8 and should include some targeted education and outreach to lower income communities. In its April 10, 2014 comment letter,¹⁷ SCE provided specific examples of potential programs, including building on the efforts of the Go-Electric Drive Foundation and the Electric Drive Transportation Association (EDTA); conducting permanent Ride and Drive outreach for PEVs and hydrogen fuel cell vehicles, and promoting other educational outreach events.

SCE reiterates the importance of coordinating with stakeholders to establish guiding principles, metrics, and standards¹⁸ to inform investment in the transportation portfolio with the State's GHG emissions, public health, energy, health, and climate-related goals in mind. As such, SCE recommends that at least 90% of the portfolio should fund zero and near-zero carbon emitting alternative-fuel vehicles and infrastructure to effectively meet Assembly Bill (AB) 8 requirements and related state goals.

To develop the ARFVTP portfolio, SCE suggests the Energy Commission:

- Work with stakeholders to develop guiding principles¹⁹ for different aspects of alternative fuel technologies and their commercialization, including grant programs, market education, cost issues, and trade-offs.
- Utilize 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.

SCE has provided its recommended guiding principles in previous IEPR comment letters, and would be happy to collaborate with the Energy Commission and stakeholders to further develop guiding principles that can guide the ARFVTP portfolio.

¹⁷ *Id.*

¹⁸ *SCE Comments on Lead Commissioner Workshop on Measuring the Success of ARFVTP*, June 12, 2014, at: http://www.energy.ca.gov/2014_energy_policy/documents/2014-06-12_workshop/comments/SCE_Comments_on_CEC_Lead_Commission_Workshop_on_Measuring_the_Success_of_ARFVTP_TN-73278_2014-06-26.pdf

¹⁹ SCE comments, including recommended guiding principles in previous IEPR comment filings, including *SCE Comments on Lead Commission Workshop on Transportation*, April 10, 2014 at: http://www.energy.ca.gov/2014_energy_policy/documents/2014-04-10_workshop/comments/Southern_California_Edison_Comments_2014-04-24_TN-72967.pdf

SCE appreciates the opportunity to submit comments and looks forward to its continuing collaboration with 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

Appendix

SCE Suggests the following edits to the Recommendations in the Draft 2014 IEPR Update (indicated by Chapter and Page #):

Chapter 2, Pages 33-34:

Recommendations:

- *Create a pilot program to demonstrate appropriate financing mechanisms.* The California Pollution Control Financing Authority (CPCFA) and the Energy Commission should develop a pilot loan product for the installation of electric chargers. The CPCFA should work with commercial lenders to offer loans to install electric chargers for public or employee use, and the Energy Commission should commit Alternative and Renewable Fuel and Vehicle and Technology Program (ARFVTP) funds to compensate for potential default on the loans. This will create a financing opportunity for entities unable to secure financing from standard commercial lenders. **The pilots should complement and/or leverage the existing and proposed charging station programs/incentives from electric utilities, explore market segments not covered by large-scale electric utility programs or be in areas where there are not utility programs for charging stations.**
- *Continue to support an expanded role for investor-owned and municipal utilities.* **The Energy Commission should continue to work with and support commercialization efforts by utilities for electric transportation and natural gas vehicles including expanded market education and outreach and rate-basing of charging stations and other infrastructure.**
- *Continue to explore opportunities to collaborate with other agencies.* The Energy Commission should continue to work with other federal, state, and local agencies **and electric utilities, port authorities and other potential funding sources** to identify needs and strategically leverage funding to accelerate deployment of advanced technology **ultra-low carbon** vehicles **and associated infrastructure**. Also, the Energy Commission should consider joining groups like the U.S. Environmental Protection Agency's West Coast Collaborative that provide opportunities to strategically leverage funds to reduce diesel emissions and advance clean air technologies and practices.
- *Continue to explore alternative funding strategies that can further leverage funds.* The Energy Commission should continue to identify, assess, and initiate alternative funding strategies that can extend the leveraging power of ARFVTP **and EPIC** funds and that are commensurate with the commercialization phase of the technology. **The Energy Commission should conduct workshops with other potential funding sources to determine how their programs can co-fund individual projects or categories of projects in ARFVTP or EPIC.**
- *Collect data and conduct market assessments to stay abreast of current and emerging challenges and opportunities to advance plug-in electric vehicle (PEV) infrastructure.* **The Energy Commission should conduct an ongoing assessment of the state of the industry, the regulatory and legislative landscape, utility grid impacts, and**

consumer needs and desires as part of its efforts to deploy infrastructure to spur PEV adoption. In support of this effort, the Energy Commission should collect information needed to fill data gaps including information on trends in electric vehicle charging station (EVCS) products and networks, demand for various charging levels at various locations, information on customer payment methods and prices, and consumer behavior. The Energy Commission should serve as a convening agency to bring the many stakeholders together in order to collect the above data.

Chapter 3, Pages 55-56:

Recommendations:

- ***Continue to strategically invest, as needed, in charging infrastructure at residential, workplace, multiunit dwelling, and public sites to spur PEV adoption.*** The National Renewable Energy Laboratory's *Statewide PEV Infrastructure Assessment*, UC Davis presentation on DC fast charging, and other state, regional, and local planning documents will help inform charging infrastructure expansion. The Energy Commission should:
 - Provide funding support for EVCS in cases where the business case is weak but the need is vital for existing and potential PEV drivers. Be mindful of low-cost, innovative, and suitable EVCS technology for each location.
 - Provide highly leveraged and easily accessed support for workplace charging to increase the effective range of battery-electric vehicles and maximize electric miles for plug-in hybrid electric vehicles. Consider various financial mechanisms as well as education and outreach strategies.
 - Reduce barriers to residential charging by working with GO-Biz to seek ways to standardize permitting templates and provide guidance on permit fees while recognizing local goals and resource constraints.
 - Reduce barriers to EVCS deployment in multiunit dwellings (MUDs) by supporting efforts to inform key MUD decision makers and encourage innovative business models to address MUD challenges. Consider providing funds for panel upgrades where the cost is prohibitive but the benefits are clear.
 - Continue to partner with the Governor's Office to help complete the West Coast Green Highway connecting California to Oregon and support deployment of DC fast chargers in convenient locations along highway corridors in California. This will provide PEV drivers with a reliable backbone of refueling options.

- Provide support to address congested EVCS in metropolitan areas. Explore and demonstrate new refueling and pricing strategies to efficiently deploy EVCS so that PEV drivers can reliably recharge when needed.
- ***Continue to support and fund regional PEV readiness plans.*** The Energy Commission should monitor the completion of ongoing regional PEV readiness plans and coordinate EVCS siting plans with statewide efforts. Furthermore, the Energy Commission should continue providing funds to help all regions of California prepare for electric vehicles.
- **Expand support for alternative fuel vehicle market education and outreach activities. The Energy Commission should expand efforts to address the market education barrier with AFVTP efforts that collaborate with other agencies and stakeholders.**

Chapter 4, Pages 78-79

Recommendations:

- ***Correlate ARFVTP statutory funding preferences with solicitation-level scoring criteria.*** Energy Commission staff should develop a template that links the 11 statutory funding preferences to the scoring and evaluation criteria used in each solicitation (with the understanding that not all 11 preferences are used or equivalently weighted in every solicitation). **Energy Commission staff should develop guiding principles for the various categories of the ARFVT program and seek recommendations through workshops.**
- **Begin work in 2015 to update the State Alternative Fuels Plan no later than the end of 2017. In order to better understand the alternative fuel pathways to meet the State's 2050 climate change goals, 2030 petroleum reduction goals, and the 2023/2032 deadlines for the National Ambient Air Quality standards, the Energy Commission should update the 2007 State Alternative Fuels Plan to better understand costs, benefits, trade-offs among alternative fuels and make recommendations similar to the 2007 AF Plan (e.g. by fuel sector and by government agencies). The AF Plan should address all commercialization issues including infrastructure development and all transportation market segments.**
 - **While many action items from the 2007 State Alternative Fuels Plan have been accomplished, other recommendations are still relevant. Examples of relevant recommendations for transportation electrification include:**
 - **Install up to 2 million PHEV recharging systems over 15 years.**
 - **Install up to 3,500 recharging stations in off-road and other electric drive market niche applications, such as ship cold ironing, truck refrigeration units, truck stop electrification, warehousing (forklifts), and other applications.**

- **Develop battery electric and PHEV manufacturing plants in California.**
- **Support utility investment in infrastructure, technology, and vehicles.**
- **Conduct consumer and market niche education and outreach programs to highlight electric and hydrogen FCV technology attributes, costs, and performance.**
- **Research and develop projects to integrate passenger PHEV's and heavy-duty vehicles with other alternative fuels.**
- **Promote the installation of 7,000 electric transportation market niche projects.**
- **Examine additional electric niche markets in future reports, including light rail, high speed rail, small non-road EVs (such as burden and personnel carriers) and electric handheld and push equipment such as electric lawnmowers and other lawn and garden equipment.**

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Recommendations:

Transportation Nexus with the Electricity Sector

- ***Conduct workshops to explore connections between the transportation and electricity sectors, including smart charging options and opportunities for integration across vehicle technologies.*** The Energy Commission, in coordination with the California Public Utilities Commission, California ISO, and California Air Resources Board, should host one or more open workshops to:
 - **Explore ways that stakeholders can work together to accelerate the market in the near-term in order to help meet state goals and improve the business case for VGI;**
 - Discuss opportunities for smart charging, time-of-use rates, and targeted efficiency and demand response programs to help balance electric vehicle charging and hydrogen production and fueling with incorporation into the grid;
 - Explore how smart charging can potentially add value to PEV ownership and be incorporated into the Statewide PEV Infrastructure Plan to optimize benefits to PEV drivers and the electricity distribution system;
 - Consider opportunities for hydrogen production, storage and use to help balance the electricity system and integrate renewable electricity resources;
 - Collect information on potential pilot or demonstration projects that are cross-cutting ways of connecting renewable energy, transportation electrification, (using batteries and fuel cells), and natural gas systems that can accelerate the state's greenhouse gas and criteria pollutant reduction goals; and
 - Explore potential incentives or rate structures to encourage the beneficial and economic electrification of other transportation modes, including heavy-duty

vehicles, rail, electric port equipment, and the use of shore power by ocean-going vessels.

- ***Assist in the implementation of the California Independent System Operator's Vehicle-Grid Integration Roadmap.*** The Energy Commission, in coordination with the California Public Utilities Commission and California ISO, should implement activities highlighted in the California Independent System Operator's (California ISO) Vehicle-Grid Integration (VGI) Roadmap, including:
 - Schedule annual workshops beginning in 2014 to review progress on research and demonstration projects related to VGI, solicit stakeholder feedback on the direction of research, and integrate the role of publicly owned utilities in VGI development,
 - Discuss VGI activities in workshops for the Statewide Plug-In Electric Vehicle Infrastructure Plan, and integrate findings related to VGI into the Plan,
 - Reach out to California publicly owned utilities to ensure that they are aware of the VGI activities.
 - Continue demonstration projects on Vehicle-to-Grid integration, such as the Los Angeles Air Force Base Vehicle-to-Grid Demonstration project, the high-power Vehicle-to-Grid energy module being developed by TransPower, and the Plug-In Electric Vehicle Load Simulator with SDG&E, and assess the implications of their results.
 - **Understand the benefits and costs of different VGI options (e.g. TOU rates, demand charges, dynamic smart charging rates, demand response , vehicle-to-grid, smart charging to provide ancillary services, other smart charging technologies such as power capping, sharing and/or sequencing).**
- ***Conduct timely implementation of research, development, and demonstration projects on VGI funded through the Electric Program Investment Charge (EPIC).*** The Energy Commission's proposed Electric Program Investment Charge (EPIC) Investment Plan for 2015-2017 identifies research, development, and demonstration projects on VGI activities that address:
 - Standards for consistent communication pathways (that is, interoperability) for electric vehicles to communicate with charging stations and vice versa.
 - Control and communications technologies that incorporate smart charging systems.
 - Pathways and strategies to lower the costs of VGI to the consumer.
 - Research to understand the opportunities to increase the benefits of VGI to the grid.

If the California Public Utilities Commission approves the 2015-2017 EPIC Investment Plan as proposed, then the Energy Commission should implement these projects in a timely fashion.

- ***Assist in developing updates to the VGI Roadmap as needed.*** The California ISO, in consultation with the California Public Utilities Commission and the Energy Commission, should review the results of implementation of the VGI Roadmap and identify necessary updates to the VGI Roadmap, particularly as it develops the roadmap on energy storage. As part of this update, the Energy Commission should work with the California Public Utilities Commission and the California ISO to address additional VGI issues that require cross-agency coordination, such as delays in interconnection, costs of deployment, and development of technical standards.
- ***Identify challenges and solutions for potential impacts to the utility distribution system from electric vehicle deployment, as part of its distributed energy resource plans.*** Assembly Bill 327 (Perea, Chapter 611, Statutes of 2013) requires investor-owned utilities to submit a Distributed Energy Resources plan to the California Public Utilities Commission that identifies optimal deployment locations for all distributed energy resources, including electric vehicles. These plans should consider all the policies for distributed resources, including the Governor's ZEV Action Plan and VGI development as a tool to mitigate some of these impacts.
- ***Identify and support opportunities to encourage VGI development as state agencies implement the Governor's ZEV Action Plan.*** State agencies should reach out to transit officials, fleet owners, and fleet managers, such as the military, to identify opportunities for pilot programs and efforts to deploy charging stations with VGI capabilities that can help with both demand response and storage, to engage new entities in helping to achieve the goals in the Governor's ZEV Action Plan while adding grid benefits, including in publicly owned utility service territory.
- ***Provide funding to agencies, if needed, to meet targets in the Governor's ZEV Action Plan. In order to meet deadlines in the ZEV Action Plan, the Energy Commission should provide, as appropriate, temporary consultant and funding resources for the other state agencies.***

Other suggested edits to other parts of the report:

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The CPUC also opened rulemakings on energy storage and alternative fuel vehicles. The proceeding on energy storage is assessing whether controlled charging should be included in the definition of energy storage to meet the state's storage procurement targets. The CPUC's Alternative Fuel Vehicle Rulemaking will **examine whether to allow an expanded role for electric utilities with charging station infrastructure and in market education and outreach for EVs and also** evaluate the potential and value of VGI, including the use of vehicle batteries for demand response and energy storage. Furthermore, the rulemaking will focus on developing new alternative fuel vehicle tariffs in each of the three largest investor-owned utility service territories.

Insert description of SCE proposed Charge Ready program on page 126 after the section on San Diego Gas and Electric's charging station program.