

**Comments of SDG&E and Southern California Gas Company
On
The CPUC Staff White Paper Titled - “Light-Duty Vehicle Electrification in
California: Potential Barriers and Opportunities”
Dated - May 22, 2009**

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San Diego Gas and Electric (SDG&E) and the Southern California Gas Company (SoCalGas) believe the increased use of alternative transportation fuels, such as electricity and natural gas, can significantly reduce greenhouse gas (GHG) emissions and our dependence on imported oil – two high priority goals for both California and the US. As a nation we import over 60%¹ of our oil and 70% of the crude supplied is used to fuel our transportation sector². Transportation is a significant contributor to GHG emissions – approximately 40% of California’s GHG inventory is attributed to the transportation sector³. Addressing GHG emissions from the transportation sector will be critical to meeting state and national climate change goals.

Success in shifting the transportation sector from petroleum to alternative fuels hinges on wide-scale customer adoption of such fuels and associated technologies. This can only be achieved if alternative fuels can match or beat the price and convenience of liquid petroleum fuels. Enabling a shift in consumer preference requires the support and coordination of infrastructure providers, readily available and cost-effective products and services, and a sustained effort to educate consumers on comparative pricing and the environmental benefits of alternative transportation fuels. Utilities can play important role in all of these areas.

The transportation marketplace has been, and will continue to be, heavily influenced by geopolitical events and advances in both vehicle and fuel technology. The inherent uncertainty of these factors make predictions about which fuel technologies will provide the best long-term solution for consumers impossible at this juncture. It is therefore important for policy makers to ensure that policy directives are even-handed in support of clean alternative fuel technologies, avoiding market distortions. All cost-effective alternative fuel technologies, including but not limited to electricity and natural gas (CNG, LNG, and bio-methane), should be enabled and encouraged through the provision of accurate price signals and by eliminating potential barriers to market entry. Doing so successfully will provide a natural evolution in cost-effective alternate fuel vehicle technologies and the resulting benefits for consumers.

¹ DOE/EIA-0383 report - March, 2009, Table 11

² DOE/EIA-0383 report - March, 2009, Table 11

³ CEC / CARB States Alternative Fuels Plan, CEC-600-2007-011-CMF, December 2007, page 13

The Sempra Energy Utilities believe that CPUC regulatory policies and utility initiatives should be designed to promote alternate transportation fuel use with the following goals in mind:

1. Ensure even-handed policies that avoid the creation of policy preferences that advance or hinder one technology relative to another in ways not tied to economic and environmental benefits;
2. Ensure utility infrastructure is made available to meet the future electricity and natural gas demands of the transportation sector, and leverage system-wide benefits to the advantage of ratepayers;
3. Create accurate price signals so electricity and natural gas reflect the full value of fuel to consumers, the utility grid, and pipeline systems;
4. Avoid the imposition of financial penalties, such as through increased GHG compliance costs, on electric and natural gas utilities and their customers when the market for alternate transportation fuel (electricity and natural gas) increases throughput on the utility delivery system; and,
5. Establish Commission-sponsored policies and programs to ensure that customers are educated about alternate fuel technologies and their potential benefits.
6. Enable an open, competitive market for products and services to help expedite and drive cost reductions and consumer acceptance.

Importantly, we believe the state's utilities can and should play an important role in advancing both electricity and natural gas as transportation fuels. We feel this can best be accomplished by:

- Utilities making appropriate investments in infrastructure for electric and natural gas vehicle refueling to provide availability and convenience for customers;
- Having utilities provide commodity tariffs for electric and natural gas vehicles that convey transparent price signals on the costs and benefits of these fuels including time of use;
- Establishing programs for utilities to provide customers with information on available products and services, comparative fuel pricing, electric and natural gas refueling system safety, and education on the environmental benefits of electricity and natural gas as transportation fuels; and,
- Allowing utilities to offer services that can stimulate the market and address unmet needs in the marketplace. Lessons learned from failed earlier attempts to support an alternative fuel market must be considered. Continued active utility involvement is necessary for sustained success.

We welcome the opportunity to engage in a dialogue with the Commission on how the Sempra Energy Utilities and the CPUC can help meet the challenges of enabling and encouraging the increased future use of alternative fuel throughout the state.

Chapter 1 - Introduction

- a) Electrification off-road transportation - The focus of the Draft White paper is on Light Duty Vehicle (LDV) electrification. We recommend the CPUC also consider off-road electrification in its policies developed for electric transportation. Off-road electrification can yield considerable benefits and should be addressed in CPUC policy actions related to utility programs such as load management, system impact evaluation, metering, tariffs, etc..
- b) PEV market adoption – Staff has accurately stated that several factors will influence the market penetration of PEVs. However, on pg. 13 staff states that “...any significant level of increased consumer adoption will depend on a sustained increase in gasoline cost and at least a 50% decrease in battery and vehicle cost.” With so many factors identified as influencing consumer adoption, this statement summarizing staff’s analysis can be interpreted as reducing the factors of influence to two – battery cost and competing fuel prices. We recommend this statement be deleted. (pg. 13)

2) Chapter 2 - Environmental Benefits and Costs of LDV Electrification

- a) We support the technical comments provided by the Electric Power Research Institute (EPRI) related to Chapter 2.

3) Economic Benefits, Costs, and Barriers to Entry

- a. In general, we support PEV rate design policies which reflect the cost of service. Regarding Increasing Block Pricing (IBP), we believe IBP discourages PEV adoption, and note that SDG&E’s EV rates do not include IBP. Based on the specific customer’s usage pattern, we believe EV rates which are not based on IBP can provide a considerable incentive. (pg. 28)
- b. Differences in PEV costs between service territories will certainly exist. We encourage the Commission to establish accurate, rather than consistent, rates between service territories. (pg 29)
- c. The White paper states that the cost of a second meter or sub-meter to separately track electric transportation load would be borne by the customer because it is located on the “customer side” of the meter. Revenue grade metering of electric transportation fuel has many advantages for both the customer, and the utility. We believe the cost of providing additional – or sub-metering services – should be evaluated based on its benefits to both the customer, and ratepayers in general. In the past, the CPUC has ruled that the cost of second meters should be borne by the individual electric transportation customer. However, it can be argued that these second, or sub meters with TOU or other load management capability, should be treated like other load management devices, which provide benefits to

all ratepayers. If this is the case, then the costs of these second or sub meters could be borne by all ratepayers. (pg. 30)

- d. Electric transportation load could potentially increase annual revenue in excess of marginal cost, but this is entirely dependent on price. We believe that PEV rates should be cost based first and foremost. If incremental revenues exceed incremental costs, then these revenues should be either returned to PEV customers or all customers. (pg. 31)
- e. We agree that off-peak ET charging can result in a flattened load shape that *“results in more efficient utilization of power plants and transmission/distribution assets, which lowers average electricity cost”*. We recommend the CPUC work with the IOUs to quantify this benefit and establish rate designs that promote accurate price signals so customers have adequate incentives to pursue this option. SDG&E’s Smart Meter program will help assure that the technology is in place to handle time variant rates designed to promote off-peak charging. (pg 32)
- f. We agree that there are potential benefits to electricity storage in advanced automotive vehicle batteries (with V2G), and in stationary applications. The CPUC should encourage utilities to do additional RD&D on these technologies and applications to realize these potential benefits. (pg 32)
- g. CPUC staff has identified the potential value ancillary service value of PEVs in the following statement on page 33 *“Capacity and dynamic services may potentially be priced in ancillary service markets on the wholesale side of the electricity market, provided the utility or a third party aggregator bids these services into the wholesale market. In anticipation of this value, stakeholders have suggested that the utility could pass the value of the service to the PEV customer / ratepayer, provided the utility has a contract with the customer to aggregate and bid the service into the ancillary service markets.”* We believe that to the extent utility cost-based tariffs reflect real-time pricing and ensure verifiable and deliverable capacity and dynamic services, the rates charged under these tariffs should reflect the value of the capacity and dynamic services the customer provides to the utility.
- h. We support this statement on page 34 *“PEV charge timing will also influence electricity system load shapes.* Customer education and outreach is one way the utilities can influence customer behavior and leverage load management programs to minimize implementation costs borne by ratepayers. To ensure the bulk of PEV charging occurs during off-peak hours, utilities and the CPUC should work with consumers early in the adoption cycle to create the appropriate behaviors that will effectively manage load growth from PEVs. Proactive utility lead education and outreach programs targeted towards consumers and automotive manufacturers can help to ensure a more seamless and effective transition to the wide-scale deployment of PEVs and lead to the customer behavior that encourages off-peak charging and minimizes system impacts. (pg. 34)

- i. The White paper states on page 35 “...*additional demand due to electrification will also raise the total renewable energy generation cost required to comply with the 20% RPS, and the proposed 33% renewable energy goal.*” Electric transportation will create incremental load on the utilities delivery systems and on system throughput. Electricity used as a “transportation fuel” creates special issues that must be addressed because they transfer costs of AB32 and RPS obligations across sectors. Unless appropriate policy provisions are put in place by ARB and the Commission, increased throughput on the electric system to serve PEVs will shift environmental compliance costs from the transportation sector to the electric sector through increases in RPS requirements and GHG mitigation obligations. Such a cost shift would run counter to the fundamental principles of providing accurate price signals to consumers and allocating environmental compliance costs to the sectors creating the environmental impacts. Allocation of LCFS credits related to use of electricity as a transportation fuel to electric utilities is consistent with these principles. As an alternative, these costs can be directly allocated to electric vehicle transportation fuel tariffs. (pg. 35)

4) Other Barriers to PEV Commercialization

- a. The principal-agent barrier discussed on page 38 can be addressed as it relates to multi-unit dwellings by effective utility programs aimed at providing cost-effective and convenient EV refueling solutions to customers, landlords, and local government. Utilities can and should work with local government individually or through for example regional Clean Cities Coalitions to develop building standards for electric vehicles and streamlined processes for property upgrades. For existing landlord/tenant situations, cost-effective charging solutions can be promoted by the utilities which integrate smart meter or other communication technology with low cost, portable revenue grade metering devices and inexpensive, public charging receptacles. Also, utilities tariffs should allow for tenants, with landlord approval, to have revenue grade metering installed that will allow for charging the tenants vehicle.
- b. EV charging and its potential impacts on the distribution system can be considerable and requires immediate measures by the utilities and the CPUC to prevent barriers to PEV integration. Market launch by major manufacturers of PEVs in the SDG&E service territory is expected to begin as soon as the fourth quarter of 2010⁴. With just over a year to ready the utility for PEV deployment,

⁴ The SDG&E service territory is one of five (5) US metropolitan regions included in the Nissan/ETEC federal stimulus proposal. This proposal seeks to deploy 1,000 PEVs in each of the five regions along with supporting charging infrastructure in residential, commercial and public areas. If successful, the award will be announced in the summer of 2009 with infrastructure and vehicle deployments beginning in mid-to-late 2010. If successful, SDG&E will be required to serve the PEV needs of these customers and address all the issue areas described herein in a timely manner.

we recommend the CPUC take early action to position the investor-owned utilities to pursue the following:

- i. Distribution System Readiness - Plug in electric vehicles (“PEVs”) are expected to make considerable gains in the transportation sector in the coming years, a trend which is now beginning. In order to accommodate increased PEV use, as this technology gains momentum in the very near term, it will be necessary to conduct infrastructure analysis to evaluate distribution system readiness. We support statements in the White paper which call attention to actions that must be taken in the near term by the utilities:

“...In addition to on-site capital infrastructure, utilities will also need to identify locations with clustered PEV adoption to make infrastructure upgrades at the distribution level.” ...”
Utility transportation electrification planners are studying potential load pockets due to PEV clusters that may stress the distribution system, particularly during summer high-load peak hours.” (pg. 43)

Importantly, the state’s utilities should conduct a regional infrastructure analysis to pre-determine system “weak spots” and potential impacts based on electric vehicle market projections. This should be followed by infrastructure planning and prudent investments consistent with the safe and reliable delivery of electric power to customers. To be effective, these plans and investments should be started in time to support market launch of several PEV models in the 2010 time frame. Further, to ensure recovery of expenses that are prudently incurred, the Commission should consider authorizing utilities to book these expenses to a memorandum account, with assurance of full recovery of all reasonably incurred costs. Going forward, utilities can account for these expenses in the GRC and avoid this type of treatment.

- ii. Charging infrastructure – We recommend the Commission consider the value of the utilities in coordinating, and potentially deploying public and private electric vehicle charging infrastructure. For example, coordination with the regional electric utility can help to minimize local grid problems and avoid situations that could potentially result in more harm than good to both the electric grid and ratepayers – i.e. unscheduled outages, etc.. We encourage the CPUC to also consider the value of the utilities unique position in the marketplace and ability to invest in select vehicle charging infrastructure installations in advance of the market to spur PEV deployment.
- iii. EV Charging Billing and Convenience - Among utility planning and investment initiatives that the Commission should consider are investments in smart-grid technologies that would allow customers the convenience of using their own utility accounts (for billing and energy

storage sales back to the utility) for both home and public charging/electric storage services.

- iv. Revenue Grade Metering - Metering of energy consumption for electric transportation use will become critical in addressing load management and emission credit issues. This technology is advancing rapidly and can be deployed by utilities in smart regional networks to prevent this barrier from occurring. To be successful, utilities will need to plan for and make the necessary investments in revenue grade metering for residential, commercial and public access charging that ensures easy and convenient billing for customers, addresses dispute resolution, and enables the accurate tracking of electricity used in transportation for emission credit and rate calculations. These meters must have the ability to provide time of use price signals to consumers, and, as stated in the white paper, be capable of addressing the needs of a significant number of consumers who do not have access to customer owned garages.

*“Commercial and curbside public charging stations will enable greater electricity fuel availability for PEV drivers. There are five times as many cars as garages in the U.S., indicating a clear demand for on-street charging stations.”
(pg. xx)*

Revenue grade metering and advanced technology will have to be developed and installed to allow these customers to charge their vehicles at locations that may be remote from their dwelling, such as a parking space, car port, or on the street. Revenue grade metering must also be made available at other locations away from the vehicle owner’s home. This “away from home” charging infrastructure, of which a revenue grade meter is a key component, is required for successful widespread deployment of plug-in electric vehicles.

5) Existing and Pending Policies/Programs Supporting PEV Commercialization

- a. Staff has done a good job of outlining the ongoing activities under ARRA and at the FERC and CPUC to support necessary planning for future PEV requirements and providing support for initial market development and deployment activities. As noted, recent CPUC rulings have clarified the definition of ratepayer benefits of utility gas and electric vehicle programs in ways that are supportive of utility-funded programs to develop LEV markets and infrastructure. This policy guidance will be a key enabler in stimulating innovative utility proposals to support development of these markets. We fully support such proactive policy and market support efforts.
- b. We strongly encourage the CPUC to continue supporting the utilities LEV (or NGV) programs. These programs have and continue to provide value to both our customers and the marketplace. SoCalGas and SDG&E have a long track record

of success in promoting and educating our customers about the benefits of NGVs. We look to continue this success, and build upon it as we identify new opportunities where our utilities can add value to our NGV customers. Specific to the White Paper, we provide the following comments related to utility NGV programs:

- i. We believe that NGV policy issues are simpler than those associated with EV's and do not require the formality of an OIR to address. To the extent that NGV policy is addressed within the Smart Grid or any potential Electric Vehicle OIR's, we strongly encourage the Commission to ensure that utility proposals related to ongoing or extended NGV programs can proceed on a timeline in parallel with broader LEV policy development.
- ii. We see considerable value in renewable natural gas directed to the transportation market. Staff accurately identifies landfill gas as the lowest carbon intensity fuel currently recognized by the CARB: "*Landfill gas cleaned up to pipeline quality natural gas, compressed in California, amounts to 12.51 gCO₂e/MJ. Landfill gas cleaned up for pipeline quality offers the cleanest carbon intensity per MJ, both for CNG, and electricity fuels, because the fuel source is municipal and agricultural solid waste.*" We believe other renewable natural gas opportunities such digester gas from wastewater treatment plants and dairies for example will ultimately offer similar low carbon benefits once evaluated by CARB. We encourage the CPUC to investigate these opportunities in conjunction with the utilities and to develop policies which enable to full potential of these fuels to be realized. (pg. 57)
- iii. We agree with CNG analysts that report: "*CNG may be a viable option for medium and heavy duty vehicle applications, which would complement LDV electrification as an overall fuel technology strategy to reduce transportation sector emissions and avoid petroleum consumption.*" We believe the HD and MD transportation markets hold tremendous promise for natural gas and continue to promote its use in our outreach and NGV RD&D programs. (pg. 58)
- iv. We disagree with staff on page 58 where they state: "*CNG refueling infrastructure is presently at a disadvantage to electricity in terms of commercial and public access.*" In fact, the current deployment and usage of NGV vehicle infrastructure far exceeds that of PEV charging. Also, like electricity, natural gas infrastructure is widespread throughout the utility service territory and can be delivered to customers with the appropriate infrastructure upgrades, including convenient in-home NGV fueling devices with charging cycles that are generally shorter than electric alternatives.

6) Conclusion - Additional State Agency Options for Reducing PEV Barriers

The white paper recommends that the CPUC open a rulemaking to consider a variety of measures that could be taken by the CPUC to reduce barriers to electrification.

TRB: I recommend a separate proceeding. We support staff's this recommendation that the CPUC address PEV issues in a separate OIR, and not include them in Smart Grid. We address the issues identified in this section individually below:

- a. *Rate design options, including the potential for a statewide electricity rate for PEVs;*
 - i. We recommend the CPUC separate PEV load from Increasing Block Pricing for PEV rates. As mentioned previously, we believe EV TOU rates which are not tied to rates that increase as usage increases will enhance PEV market penetration.
 - ii. The CPUC should encourage utilities to continue working to address electric vehicle charging across utility service territories and inter-regional billing systems to accommodate this. This will increase the convenience and flexibility of PEV ownership.
 - iii. We believe that all forms of electric transportation (including NEVs, three wheel and two wheel electric vehicles, and off-road applications such as truck stop electrification and old ironing, etc.) should be eligible for specialized rate structures.
 - iv. We believe it would be beneficial for utilities to develop TOU charging tariffs that serve the full range of customer segments – residential, commercial, public, etc.. We encourage a dialogue with the CPUC to evaluate what tariffs should be considered, and how they might be structured to achieve the PEV goals of the Commission.
 - v. We agree that the CPUC should consider the marginal cost of electricity delivery for off-peak usage, the potential value of LCFS credit sales, the value of increased load factor, and evaluate measures that direct this value back to customers in the form of reduced rates, rebates or other financial incentives in the context of accurate price signals promoted through real-time pricing for EV customers.
- b. *Vehicle incentives to encourage Californians to buy and operate PEVs, including ratepayer funded incentive programs;*
 - i. We agree that the initial cost of PHEVs and EVs is expected to be a major barrier to commercialization of these vehicles, particularly in the early years of their introduction when production volumes are low. The white paper suggests that a limited California IOU vehicle rebate program may be feasible if off-peak charging improves load factors (thus reducing the average fixed cost of service for all ratepayers), and if there are significant utility revenues above margin that can be reallocated to vehicle rebates. We encourage the CPUC to evaluate these issues the context of the rulemaking.
- c. *Options for development of metering and charging infrastructure for PEVs;*
 - i. We agree with the staff suggestion to pilot PEV infrastructure incentives for customers which may include low-interest on-bill financing, or a rate-based subsidy for customer-site energy-related capital improvements, such as wiring, wall-box, and additional sub-metering costs. We also support the notion that the CPUC investigate means by which the utilities can support the advanced deployment of AMI meters to aide PEV market penetration. This can extend to programs which ratebase, or assist in the financing of secondary metering devices for PEVs which communicate with utility systems.

- d. *Options to streamline permitting requirements and contractor installation of residential PEV charging equipment;*
 - i. As stated above, utilities can and should work with local government individually or through Clean Cities Coalitions to develop EV building standards for new construction, and streamlined processes for property upgrades. In addition, utilities should work with the CPUC to evaluate programs where utilities coordinate services with regional contractors to facilitate PEV infrastructure.
- e. *Development of policies that encourage partnerships between regulated and unregulated companies that are beneficial to ratepayers;*
 - i. We support the efforts of private infrastructure developers and installers, and we believe that a partnership between these private entities and local utilities is the most effective way to ensure benefits to both ET customers and all ratepayers.
- f. *Consideration of options to incorporate PEV charging with renewable energy supply, including, but not limited to, PV arrays over charging stations or off-peak charging that takes advantage of overnight wind resources expected in the utility resource portfolio;*
 - i. We support efforts by the CPUC to integrate renewable energy sources with PEVs. Integrating solar shade trees with PEV charging provides direct benefits to the grid, and renewable energy supply for PEV customers utilizing these systems during daylight hours. However, we must assure that this does not result in costs that discourage use of PEVs.

7) Franchise Tax Board Options

- a) The issue of potentially imposing a highway tax or other taxes on electricity used as a transportation fuel has been considered by State policy makers several times. This issue was the subject of legislative hearings at the State Capitol in the mid-1990's. The conclusion of those hearings was that the existing amount of electricity used for transportation purposes is too small to generate meaningful revenue, and too small to justify the administrative requirements necessary to collect the tax. To date the penetration of Electric Vehicles has not risen to levels that should cause the state to rethink this conclusion. Imposing as tax, at this time, on this developing market we believe would act as a disincentive to consumers at a time when the State wants to encourage its use. In addition, there is uncertainty as to just how big and how fast this market will develop. Should electricity become a significant transportation fuel in the future, the issue of whether it should be subject to a highway tax or fuel tax should be revisited at that time.

8) CARB Options

- a) We support the following statements in the white paper:

“Assuming CARB allocates allowances on a sectoral basis, failure to make available additional allowances to the electricity sector due to electrification to the electricity sector risks overburdening ratepayers with the cost of transportation

sector emissions. Provided that electrification occurs at a significant scale, CARB should consider a policy to shift allowances from the transportation sector to the electricity sector, while not changing the total cap on the pool of allowances.”

As stated previously, unless appropriate policy provisions are put in place by ARB and the Commission, increased throughput on the electric system to serve PEVs will shift environmental compliance costs from the transportation sector to the electric sector through increases in RPS requirements and GHG mitigation obligations. Such a cost shift would run counter to the fundamental principles of providing accurate price signals to consumers and allocating environmental compliance costs to the sectors creating the environmental impacts. We recommend the CPUC investigate this issue and make a recommendation to the CARB.

CPUC staff expresses concern about the use of LCFS credits into other AB 32 markets. However, the CARB’s LCFS Staff Report makes clear that this issue will be specifically addressed in the ARB rulemakings which create these other AB 32 markets. Having said that, ARB staff proposed this concept of allowing LCFS credits from electricity and other low-carbon fuels to be used in other AB 32 markets because of the difficulty in getting needed GHG reductions from the transportation sector, and the difficulty in developing low-carbon transportation fuels. Further, ARB could limit the quantity of LCFS credits into other markets, and could certainly stop this practice if they thought a problem was developing. We support the CARB’s current policy direction of allowing the one-way transfer of LCFS credits into the broader AB-32 market.

CPUC staff also raises a concern that driver behavior of the operators of electric vehicles and other low-carbon fuel vehicles risks compromising actual verifiable emissions. We do not believe that this is an issue, because LCFS credits are based upon the actual measured fuel (including electricity) use. So if a driver is driving more miles, this will be captured by the additional measured electricity use.