BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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COMMENTS OF THE DIVISION OF RATEPAYER ADVOCATES

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COMMENTS OF THE DIVISION OF RATEPAYER ADVOCATES

The Division of Ratepayers Advocates (DRA) hereby responds to the questions posed by the Commission in the Order Instituting Rulemaking (OIR) 09-08-009 on August 24, 2009, to consider alternative-fueled vehicle (AFV) tariffs, infrastructure, and policies to support California's greenhouse gas emissions reduction goals.

DRA applauds the Commission for taking the initiative to address AFV issues on a proactive basis. It appears that a large penetration of AFVs will potentially result in great societal benefits resulting from the reduction of greenhouse gas emissions and less dependence on foreign oil. However, DRA cautions against expending ratepayer funds until more information is known on expected penetration levels of electric vehicles. Based on studies conducted by the Electric Power Research Institute (EPRI) and the California Air Resources Board (ARB), DRA estimates that in the next decade, AFV penetration on a California system-wide basis would not be large enough to have any major impact on loads. The on-peak megawatt (MW) maximum expected load impact in the California Independent System Operator (CAISO) service territory is about a 0.02% increase for 2010, 0.11% for 2015, and 0.35 % for 2020. These percentages are well within forecast error levels. The maximum expected load impact during off-peak periods is somewhat higher (.06% to 1.06%), but would have even less of an impact on the utility system-wide basis. See Appendix A for DRA's estimated numbers.

DRA relies on this study and other forecasts for near-term adoption of AFV technology as a basis for DRA's response to the Commission's questions. The answers to the forty-two questions are based on the assumption that there will be insignificant load impacts as a result of AFV adoption, at least for the next 10 to 12 years. DRA recommends that the Commission address the issues that will allow the electric vehicle market to develop, such as tariff and rate issues, in this proceeding; and address the longer-term issues, that will only be relevant after the market more fully develops, in a later proceeding. Issues that should be addressed in this proceeding appear to relate mostly to rates and tariffs. Other issues, such as whether to commit large amounts of ratepayer money to infrastructure development, can be addressed in a later proceeding. However, the developments in the market should be monitored closely for a swift response as needed. The Commission can revisit some of the issues identified in the OIR when more information is known about the penetration levels of AFVs, and as the market demand grows for various types of technologies.

DRA hopes the responses listed below will help the Commission's immediate goal to review current electric vehicle tariff schedules, and facilitate electric vehicle charging infrastructure to support a successful commercialization of AFVs in California. DRA supports facilitating the development of electric vehicle markets and the integration of AFVs into California's electric and transportation infrastructure. To that end, DRA recommends the Commission adopt policies designed to minimize any barriers to the growth of electric vehicle markets. Perhaps foremost among such policies should be the development of optional time-of-use (TOU) rates to encourage off-peak vehicle charging. Such rates may or may not require separate metering for electric vehicles. DRA recommends that TOU rates for electric vehicle owners should be strongly encouraged but not required.

Further, installation of separate metering or electric vehicle supply equipment (EVSE) should be optional for electric vehicle owners and at their expense. "Strong," highly time-differentiated TOU rates for electric vehicle charging only should be available for those customers who do install separate meters or metering-capable EVSE.

Below is a summary of DRA's recommendations:

1. Since the short-term estimated system impact will be negligible, ratepayer-funded expenditures should not be considered at this time. Any future consideration of ratepayer funded programs must clearly show a ratepayer benefit exceeding its cost. For example, ratepayers would benefit from lower rates when more energy is sold during off-peak periods to the AFVs.
2. AFV owners should be required to pay for residential charging upgrades.
3. Development of different types of AFVs, infrastructure, and charging types should be left to the market at this time.

In response to the OIR questions, DRA discusses the areas that need to be addressed in the short-term, and identifies the ones that can be addressed later. Limiting the scope of this proceeding to the short-term issues identified in these comments will facilitate development of the AFV policies without interfering in the direction it takes.

OIR QUESTIONS	**DRA RESPONSE**
Residential Charging Infrastructure and Policy	
1. What types of residential metering arrangements are appropriate for PHEVs and BEVs and why? Should the Commission require a particular metering arrangement, or should it allow more flexibility in metering arrangements by investor-owned utilities or others? If so, why?	Separate metering or metering-capable electric vehicle supply equipment (EVSE) should be optional for residential electric vehicle owners and primarily at the customer's expense. A residential electric vehicle metering arrangement should also utilize, to the greatest extent possible, the IOUs' AMI communication systems and Home Area Network (HAN) capabilities. Since the utilities' AMI systems are designed to support the integration of distributed resources via an open-architecture HAN gateway, an investigation of how AMI can support PHEV/BEV metering should be part of the proceeding's scope. There is an opportunity for the IOUs to minimize

	incremental electric vehicle metering costs and improve the usefulness of the approved AMI systems. For example, if a customer-owned EVSE or electric vehicle meter (either inside the car or on the customers' premises) could relay time-based kilowatt-hour measurements to the utility-owned household AMI meter, to be transmitted to the IOU's AMI network, the necessary hardware costs for the electric vehicle customer class would be minimal as a result.
2. How will electric vehicle meters or sub-meters and EVSE's interact with the advanced meters currently being installed across the service territories of investor-owned utilities? What policies does the Commission need to consider concerning any such interaction?	In order for an electric vehicle meter, submeter, or EVSE to interact with the IOU advanced metering infrastructures, it needs to be compatible and configured to communicate with the advanced meter's HAN gateway. Before the Commission considers any general policies pertaining to such any such interaction, the Commission should first review HAN laboratory test results currently being conducted by the utilities as part of their AMI deployment projects.
3. What kinds of equipment and electrical improvements will typically be needed to support residential charging for PHEVs and BEVs, e.g., EVSE's, metering, electrical system upgrades? Who should pay for residential equipment and improvements required to support PHEVs and BEVs, and why?	The type of equipment and electrical improvement needed to support residential electric vehicle charging will depend on the electric vehicle fleet penetration rate within an IOU's service territory, as well as the preferred charge rate among electric vehicle customers. Given the uncertainty of electric vehicle market penetration, and the low forecast fleet penetration rate found in even the most optimistic studies, it would be unreasonable for the Commission to consider ratepayer funded infrastructural improvements at this time. (See also response to Question 5.) The Commission should not authorize any ratepayer-funded subsidy or incentive for electric vehicle customers at this time, especially when there are existing state and federal incentives for early adopters of alternative-fuel vehicles. At an appropriate time when the electric vehicle market is more fully developed, any future consideration of ratepayer-funded programs must clearly show a ratepayer benefit exceeding its cost.

4. What policies should the Commission adopt to encourage competition and innovation in the market for residential infrastructure development for PHEV and BEVs?	The electric vehicle technological advancement is in its infancy. In the short term, the Commission should closely track technological developments related to PHEVs and BEVs, as far as the types of vehicles and residential infrastructure are concerned. Policies can be developed more effectively when the electric vehicle penetration levels are known with more certainty. DRA recommends that AFV development is best left to the market, which will result in adopting the best technology based on competition and innovation. However, the Commission should avoid developing policies that place barriers in the development of market for residential infrastructure and AFVs.
5. Should the Commission consider allowing utilities to invest in and rate-base residential electric vehicle charging in order to encourage and support early adoption of PHEVs and BEVs? If so, what components of the infrastructure should the utility be authorized to invest in, e.g., wiring upgrades, EVSE? Should utility investment continue once the market matures? What impact might this have on the competitive marketplace relating to electric vehicle charging infrastructure by non-utility entities?	Due to the estimated low penetration levels, the short-term impact of AFV loads is expected to be negligible. There is no need for ratepayers to subsidize residential charging stations at this time. When higher penetration levels are achieved, DRA could support ratepayer subsidy, as an incentive, if it is demonstrated that ratepayer benefits exceed the costs of an incentive. For example, the PHEV/BEV purchaser would receive a credit, equivalent to the net ratepayer benefit towards the cost of enabling the purchaser to charge his/her vehicle at home. In addition, in some rare cases limited upgrades may be needed to be conducted by the utility company, such as transformer upgrades, where clusters of electric vehicles may be present. These types of upgrades can be handled on a case by case basis or in the utilities' respective GRCs, and should not require broad policy development at this time.
6. If a utility proposes to own customer-premises EVSE's, how will the Commission ensure that near-term EVSE and metering capital investments are interoperable with future generations of PHEV and BEV technology?	If a utility proposes to own customer-premise EVSE equipment, the Commission can require that the net book value of the EVSE equipment cannot be recovered through rates when the equipment is rendered obsolete by the emergence of a new generation of electric vehicle technology. This will ensure a strong financial incentive for utilities to plan a utility-owned EVSE deployment project with interoperability and upgradability issues woven into the project planning

	process.
7. What approaches are there to provide PHEV and BEV charging for owners who do not have regular access to a garage for residential recharging (including single family dwellings and multiple dwelling units (MDUs) like apartments, condominiums, and duplexes)? What regulatory issues does the Commission need to address relative to infrastructure for such residents?	DRA does not have a response to this question at this time.
8. How can the Commission, in coordination with utilities, relevant state agencies, federal authorities, local governments, and other entities, streamline EVSE permitting, installation, and approval processes from the time of PHEV and BEV purchase to EVSE activation? What jurisdictional barriers should be assessed to achieve a streamlined permitting, installation, and activation process for residential EVSE?	A streamlined permitting, installation, and activation process for residential EVSE is really dependent on the close relationship between the electric vehicle dealers and the utility to educate and inform the consumer of the requirements for EVSE activation in the home. The utility-dealer relationship would be best equipped to provide the best information on permitting, technology choices, and available incentives at the local, county state, and federal levels. The Commission can direct the utilities to synthesize the process of electric vehicle purchase to EVSE installation on their websites, as well as available incentives for consumers.
Commercial and Public Charging Infrastructure and Policy	
9. How should electricity used for PHEVs and BEVs be metered at commercial and public charging facilities?	The metering at commercial and public charging stations can be done similar to the current utility practices for existing commercial businesses. Ratepayers should not be required to subsidize infrastructures or rates being charged at these facilities. DRA recommendations with respect to rates are contained in the responses to Questions 25 and 29.

10. Who should pay for commercial and public meters, EVSE, and related upgrades?	See Question 9 above. Ratepayers should not subsidize any costs of public meters, EVSE, and related upgrades, at this time, unless higher electric vehicle penetration levels are achieved, and it is proven that ratepayer benefits will clearly exceed their costs. Commercial and public entities should pay for these types of equipment. Examples of public and commercial public charging stations currently operating are City of San Francisco, some airports and some Costco stores.
11. How should the Commission ensure that commercial and public charging facilities are cost-effective, openly-accessible, and interoperable with a Smart Grid system?	Cost-effectiveness of charging stations should be determined by commercial and public entities themselves. The Commission must assure that relevant codes and standards are adhered to, to make charging stations interoperable, upgradable and compatible with Smart Grid system.
12. Are additional building codes needed for residential, commercial and public charging facilities to supply sufficient electrical services to PHEVs and BEVs? What role, if any, can the Commission play in this regard?	The needed building codes are the responsibility of other state and local government entities. The Commission can provide input and support to the process of developing and updating these codes by each government entity. The Commission should also actively monitor the developments in the market, to facilitate the seamless transition from the estimated low penetration levels expected initially, to a potentially high penetration in the longer term. This information can be shared with other state and local entities in charge of building codes to expedite changes in the relevant codes.
13. What policies should the Commission adopt to facilitate competition and innovation in the commercial and public infrastructure market?	DRA's response here is similar to Question 4 for residential customers. Due to the low estimated penetration levels, the short-term impact of electric vehicle loads is expected to be negligible. DRA does not believe that there is need for ratepayer subsidy for commercial and public charging stations at this time. Any needed upgrades should be borne by the commercial and public entities using these facilities. The Commission can revisit this issue if the PHEV/BEV

	demand increases much faster than the current projected levels in the longer term. Ratepayer subsidy should be considered only when benefits exceed the costs. In the short term, the Commission should develop policies that do not interfere in the development of the market for commercial and public infrastructure.
14. What issues need to be addressed related to the relationship between regulated electricity utilities and third-party electric vehicle service providers that are proposing and/or implementing charging services at residential, commercial and public locations?	Tariffs should be developed to regulate the prices of energy delivered to third party electric service providers. These rates should not be subsidized by any class of ratepayers. DRA's rate recommendations are set forth in responses to Questions 25 and 29. Third-party providers should be able to charge prices based on their business model. DRA does not envision a need to regulate the rates third-parties charge their customers.
Legal Issues Related to the Ownership and Operation of Charging Infrastructure	
15. Under what circumstances are third-party electric vehicle service providers public utilities and/or electrical corporations pursuant to Pub. Util. Code § 216 and Pub. Util. Code § 218? What implications do Pub. Util. Code § 216 and Pub. Util. Code § 218 have on the competitiveness of the third-party electric vehicle service provider market? If the Commission has jurisdiction over third-party electric vehicle service providers, what is the appropriate level of regulatory oversight?	Other than regulating the electric prices through the utility tariffs, third-party electric vehicle service providers that provide battery swapping or on-site charging services should not be subject to additional regulatory oversight by the Commission. Such oversight may impede competition by creating a barrier to entry into the market. As noted in the May 22, 2009 Staff White Paper, Public Utility Code § 218 may discourage certain business models. At the same time, the regulated utilities should not gain an advantage over the unregulated companies by receiving ratepayer funding to support these activities. At most, Commission should consider whether oversight is necessary regarding the citing of third-party charging stations in areas the utility (or the Commission, or the CAISO) identifies as a load pocket that would stress the distribution system during peak hours.
16. What statutory changes, if any,	DRA does not have a response to this question at this

should the Commission propose to the legislature to encourage innovation and competition in the charging infrastructure market	time.
Codes and Standards	
17. Please identify current and pending Society of Automotive Engineers vehicle design and interface technical requirements, the Underwriters Laboratory listed components and systems, and the National Electric Code, California Electric Code, and California Building Code Regulations that govern the installation, operation, and maintenance of charging infrastructure at the residential, commercial, and public charging EVSE. How does the timeframe for each code and standard adoption impact current and future vehicle and EVSE products? What role, if any, can the Commission play in improving or encouraging this process?	These groups have been developing standards in coordination with the direction of market needs. The Commission should refrain from dictating a process that would impair the development of standardization.
18. How important is consumer choice as to Charging Levels ((Level 1, 2 or DC)? If important, how may the Commission best balance driver and grid benefits for all residential, commercial, and public charging infrastructure?	Customers should have a choice of either Level 1 and Level 2, or DC charging. Ratepayers should not subsidize these choices. Market forces should determine how these customer choices are implemented.
19. What role can the Commission play to ensure EVSE compatibility with a unified EVSE conductive charge coupler standard (J1772) for	DRA does not have a response to this question at this time.

all residential, commercial, and public charging EVSE within regulated utility service territories? What role can the Commission play to ensure that EVSE be forward-compatible with emerging Society of Automotive Engineers loads, messages, and programs communication standards (J2293, J2836, and J2847)?	
Electrical System Impacts	
20. What are the potential electrical distribution system impacts associated with geographically concentrated PHEV and BEV charging in the near-term? How will utilities anticipate these impacts and make capital investments needed to ensure service network reliability? How should the utility capital investments be paid for and recovered?	Due to the estimated low penetration levels of electric vehicles in the short term, DRA does not expect any noticeable impact on the general distribution system. The exception, as noted by Question 20, may be a small possibility of cluster or clusters of PHEV/BEVs which may require limited upgrading, such as transformer upgrades. This limited upgrading can be addressed on a case by case basis or in the utilities' respective GRCs, for possible rate-basing of these upgrades. DRA is not aware of any way that the utilities can predict the number of vehicles in a cluster. One consideration is to require the purchasers of these vehicles to notify the utilities of the purchase through a registration program, plus any relevant information, so that the utility could prepare for these changes.
21. What commercial and public infrastructure options are most likely to be deployed, e.g., Level 1 charging facilities, Level 2 charging facilities, "service station" model DC charging facilities, and/or battery swap stations? Should the Commission adopt policies to favor certain charging options taking into consideration cost-effectiveness, grid benefits, ability to meet PHEV and BEV driver charging demand, and	It is difficult to predict what type of charging option will most likely be adopted. DRA believes that at this time the type of charging should be left to the market with all options being made available. Each type has pros and cons associated with it. Two important factors must be considered: (1) Charging during on-peak appears undesirable, and should be discouraged by appropriate time-of-use (TOU) rate design, but not banned; and (2) customer convenience is necessary. Commercial and public infrastructure could be modeled after the existing gas stations where customers are in and out in a few minutes. In the shorter term, this could possibly be

ability to reduce BEV driver "range anxiety"?	accomplished by battery swapping stations where robots would switch batteries in a few minutes. This type of charging, in addition to the highly desirable longer range limit, could minimize the impact on the power system, since the charging of replacement batteries could be done during off-peak periods. DC charging would have the similar advantage, as far as the impact on power system is concerned, but the charging time would be much longer.
22. What potential load shape impacts associated with PHEV and BEV charging should utilities anticipate in the near-term? How can time variant pricing, demand response programs, and advanced meters mitigate load spikes associated with uncontrolled, simultaneous charging found to occur at specific times of day, for example, when drivers arrive home from work? How should the Commission address potential load spikes if a large number of customers begin charging simultaneously when lower electricity rates apply under TOU rate schedules?	The system peak load in California ISO service territory approaches 50,000 MWs during summer. The small number of megawatts expected to be used by PHEVs and BEVs in the near-term should not cause any noticeable impact on the system load shape in that time span. Time-variant pricing will be key in ensuring that customers charge their vehicles during off-peak times. Demand response programs specifically oriented towards addressing PHEVs and BEVs loads are not necessary. Existing price-responsive demand response programs and dynamic pricing programs enabled by advance metering will be sufficient to mitigate any load spikes associated with PHEV and BEV during on-peak hours. Load spikes during off-peak hours are not a current concern. In fact, off-peak load additions due to PHEVs and BEVs could potentially complement the expected increases in renewable generation (e.g., wind) during off-peak hours. If off-peak load spikes become a concern in the future, EVSE could be used as a "load management" tool. However, EVSE should not be made mandatory nor be ratepayer subsidized.
23. In the long term, what are the benefits and drawbacks on electric generation and transmission associated with projected PHEV and BEV market growth in California?	The long-term benefits and drawbacks are difficult to predict, but if the growth of electric vehicles prove to be substantial, the impact would likely be beneficial to both electric generation and transmission, as they would tend to flatten the demand curve. This is assuming the correct signals / rates are adopted to encourage off-peak charging and discourage on-peak charging. DRA emphasizes that it is very important to design rates carefully. Without the correct signals the growth of

	electric vehicles may have an adverse effect on the power systems costing the ratepayers substantial amounts of money. In addition, vehicle to grid (V2G) capability would be able to shave a portion of super-peak demand in the longer term.
Tariff-related	
24. Should the Commission authorize a default time variant electric vehicle rate applicable to all residential electric vehicle tariff customers? What changes, if any, to the rate protection provisions of AB-1X are needed to authorize a default time variant electric vehicle rate applicable to residential customers?	The Commission does not need to authorize a default time variant electric vehicle rate for electric vehicle customers. DRA prefers an opt-in time variant rate for these customers. It is quite likely that most electric vehicle customers would opt-in to a time variant rate if it provided the proper incentives to do vehicle charging at super off-peak hours. Time-of-use (TOU) rates specially tailored to encourage residential off-peak electric vehicle charging should be limited to electric vehicle loads only; separate metering of residential electric vehicle loads should be a requirement to qualify for such rates. The utilities should work through auto dealers to educate customers on rate options. Moreover, Senate Bill 695, which is awaiting the Governor's signature, would prohibit default time variant pricing for residential customers until 2014.
25. What rates should apply to customers charging their PHEVs or BEVs at commercial, industrial, and public charging facilities that are in the same service territory as their home utility?	The following response is based on the assumption that the commercial and industrial (C&I) customers and public charging facilities will own any wiring or submetering beyond the utility's meter. For public charging facilities rates, please see DRA's response to Question 26. Separate metering for PHEV and BEV loads should initially be optional for most C&I customers. However the Commission may have reason to encourage or even mandate separate metering in the future. One possible reason for such a mandate could be possible collection of taxes for road maintenance as a surcharge on commercial electric vehicle energy rates.

	For C&I charging stations intended for business use or employee use, no special rate may be needed. With two caveats, any applicable time-differentiated C&I rate could apply, provided it is either a TOU rate or a dynamic rate such a CPP rate with a TOU underlay or a RTP rate. The first caveat is with respect to "mild" TOU rates such as the A1-TOU rate proposed by PG&E for small commercial customers in PG&E's 2009 Rate Design Window proceeding, A.09-02-022. The on-peak rate is below the fully cost-based level and would not be appropriate for customers with significant BEV or PHEV loads. Customers with multiple electric vehicles who are on such rates should be required to install separate metering or choose a more time-differentiated rate option. Second, the Commission should encourage utilities to offer highly time-differentiated TOU rates tailored for customers with significant electric vehicle loads. For example, a super off-peak period (e.g., midnight to 6:00 a.m.) could be a useful feature, especially to encourage overnight charging of electric vehicle fleets. The super-off-peak rate should include: (1) the super-off-peak marginal energy cost (MEC), plus (2) nonbypassable charges, including transmission charges, plus (3) a limited, if any, inclusion of generation or distribution capacity costs. This reflects the fact that initially, electric vehicle loads will be incremental and at-risk loads, that, if occurring off-peak, merit "economic development rate" treatment. Further, super-off-peak electric vehicle loads will cause virtually no marginal capacity cost.
26. What rates should apply to third-party operators of commercial charging facilities? Should the Commission establish new rates for commercial charging facilities taking into account the costs and benefits created by these entities?	The following response is based on the assumption that the commercial or public charging facility will own any wiring or submetering beyond the utility's meter. If the public or commercial charging facility takes bundled service from a CPUC-regulated IOU, the IOU's rate to the charging facility should be a fully time-differentiated TOU rate or TOU/CPP rate as described

	in DRA's response to Question 25. If the charging station is a direct access customer, distribution capacity costs should be fully reflected in on-peak and partial peak distribution TOU rates. To the extent the Commission has authority to regulate rates for the resale of electric energy for BEV and PHEV charging, it should act to ensure that peak-period energy consumers pay a rate that fully reflects the marginal cost of capacity. For public or commercial charging facility energy charges, assuming mainly daytime charging, real-time pricing (RTP) would be ideal. Until RTP is available, such facilities should be on fully cost-based dynamic rates. The Commission should assess the need for an additional "capacity charge" to offset any marginal capacity costs that are not reflected in RTP or energy rates. Since net environmental and economic benefits for daytime electric vehicle charging are much less than those for overnight charging, economic incentives for public or commercial charging facilities, if any, should be limited in recognition of the reduced net benefits of daytime charging.
27. How should a customer pay when charging a PHEV or BEV in another utility's service territory? Please evaluate options set forth below, or suggest alternative approaches: a. A customer pays a posted price for electricity to a specific electric charging provider at the time of the transaction, similar to how gasoline is purchased. b. The second utility bills the customer's home utility	Option A should be adequate and is, by far, the simplest of the options described. It also has the advantage of near-universal customer familiarity with the "gasoline station" model of energy delivery. This option, however, may be difficult for the Commission to require if the other utility is not in its jurisdiction. Option B is less desirable because it requires a third-party clearing house, which adds transaction costs and seems unnecessarily complex. For the quantities of energy involved in electric vehicle "fueling" transactions, the transaction cost may be considerably larger than the energy cost. Requiring the customer to have a relationship with the provider departs from the more familiar "gasoline

and the home utility adds the electric vehicle electricity cost to the customers' energy bill. A third-party clearing house could facilitate these transactions. d. A customer has a relationship with a third party charging provider and pays that third party wherever the customer charges. e. A customer has a choice of all or some of the above options.	station" model and potentially requires the customer to have relationships with many third-party providers if they are independent of each other.
28. What types of costs and benefits are generated by electric vehicle adoption on different aspects of the electricity system, including transmission, distribution and procurement costs?	For off-peak electric vehicle charging, there will be an increase in utility energy procurement costs. Given the projected limited near-term market for electric vehicles, it is unlikely that electric vehicle loads would require additional generation, transmission, or distribution capacity in the near term. In contrast, daytime electric vehicle charging could cause increased procurement costs and accelerate the need for additional generation, transmission, and distribution capacity. Both off-peak and on-peak electric vehicle loads will cause additional generator GHG emissions. This could result in AB 32 compliance costs unless the utilities are credited with the benefits of reduced transportation sector GHG emissions. If properly credited, GHG compliance credits could be a financial benefit for the electric sector, as electric vehicle -related reductions in transportation sector GHG emissions outweighs electric vehicle -related GHG emissions from increased generation.

	For the next decade, off-peak electric vehicle charging loads can be expected to increase energy throughput on utility grids, without materially increasing grid capacity costs. The resulting more efficient use of the grid should enable utilities to lower their average rates, relative to rate levels absent electric vehicle loads. This benefit does not apply to on-peak electric vehicle charging. Finally, both on-peak and off-peak electric vehicle charging benefit the environment through reduced GHGs and other pollutants resulting from reduced use of liquid petroleum fuels. However, at least initially, the environmental benefits of off-peak charging will be far greater, due to use of more efficient and less polluting generation.
29. Should the electric vehicle rate structure be designed to align rates with the system costs and benefits of PHEVs and BEVs, and if so, how? Should the Commission assign additional costs and benefits attributable to PHEVs and BEVs to specified electric vehicle rate classes or socialize the costs and benefits attributable to PHEVs and BEVs to all customer classes? Should the PHEV and BEV rate classes bear existing rate component costs?	Most of the costs of serving electric vehicles should be assigned to those electric vehicle owners. If there are benefits that are inherently social in nature and cannot be easily allocated to electric vehicle customers, then a corresponding percentage of the costs could be socialized to all customers. Such costs should be socialized and allocated as broadly as possible to all customer classes. DRA thus recommends that socialized electric vehicle costs or identified subsidized electric vehicle program costs be allocated by equal cents per kWh. The costs associated with the original Natural Gas Vehicle program were also allocated on an equal cents basis because of the associated environmental benefits of the program. While the electric vehicle market is developing, the Commission should encourage fully-time differentiated voluntary TOU rates for BEV and PHEV charging, such as those discussed in DRA's response to Question 25. Special caveats apply to voluntary highly time-differentiated TOU rates for the residential class. This recommendation is predicated on the assumption that incremental off-peak electric vehicle loads will not significantly increase the share of distribution costs allocated to the residential class. This assumption

	should be verified before implementing the type of "low-margin" off-peak rate suggested here. In many cases, such rate designs will require separate metering of electric vehicle loads. For residential customers, separate electric vehicle metering should be required as a condition for eligibility for highly time-differentiated TOU rates; residential non- electric vehicle loads should be ineligible. This recommendation reflects the fact that initial electric vehicle loads will be incremental and at-risk loads, that, if occurring off-peak, merit "economic development rate" treatment. Further, off-peak electric vehicle loads will cause virtually no marginal capacity costs. In contrast to off-peak rates, daytime BEV and PHEV rates should fully bear all rate components, including, at a minimum, fully time-differentiated capacity rates, preferably with dynamic rate components such as CPP or RTP rates. Rates for daytime charging should not be discounted.
30. Should the electric vehicle rates reflect the marginal cost of service, particularly for off-peak electricity charging and, if so, how?	Electric vehicle rates should, at a minimum, reflect time-dependent marginal costs as well as nonbypassable public purpose program costs and other nonbypassable rate components. See DRA's response to Question 25 for further elaboration.
31. Should rate incentives be created for electric vehicles to be paired with distributed generation incentive programs, such as the California Solar Initiative (CSI) and Self-Generation Incentive Program? Should rate incentives be created for electric vehicles to be paired with demand response programs? How should these incentive programs be incorporated into electric	DRA does not support creating ratepayer-funded incentive programs such as the ones enacted for the California Solar Initiative (CSI) and the Self-Generation Incentive Program (SGIP), unless it can be shown that the quantifiable ratepayer benefits created by such programs exceed the costs. Likewise, additional incentives for CSI and SGIP should not be offered if they are dedicated to electric vehicle charging because the incentives and tax credits currently available for CSI and SGIP presumably already reflect the social and other benefits that those programs provide.

vehicle rate structures? Who should pay for such incentives?	
32. Under what circumstances can utilities and third parties aggregate PHEV and BEV services to participate in California Independent System Operator (CAISO) ancillary service markets? What policies, if any, does the Commission need to consider in this regard?	It is premature to respond in detail to this question. While the use of PHEVs and BEVs to provide ancillary services may be an appropriate topic for research, it is unlikely that there would be enough PHEVs and/or BEVs in California before 2020 to enable aggregate electric vehicle services to participate in CAISO ancillary service markets in any significant way. Further, national standards for vehicle interface with electric grids are still in early stages of development.
Low Carbon Fuel Standard	
33. What recommendations, if any, should the Commission make to the California Air Resources Board regarding the treatment of electricity under the Low Carbon Fuel Standard?	Under any inter-sector allowance of allocations in cap-and-trade that includes both the transportation and electric sectors, the Commission should recommend to the ARB to consider shifting allowances from the transportation to the electric sector while leaving fixed the total cap on the pool of allowances. This should reflect the shift of GHG emissions from the transportation sector to the electricity sector, resulting from policies supporting electric vehicles along with the role of utilities within the Low Carbon Fuel Standard.
34. If a utility generates and sells credits under the Low Carbon Fuel Standard regulation due to customers' use of electricity as a transportation fuel, what should the utilities do with the revenue from the credits?	If the utility generates and sells credits, the revenue should be returned to the alternative fuel vehicle owners who used the electricity. This can be done either through a bill credit to the owners or through a rate reduction for the metered usage of the electricity of the owners' customer class.
Programs and Incentives	
35. Should utilities and/or	At this time the ratepayers should not be required to

government provide low-interest finance incentive programs for residential and commercial EVSE? Should these programs incorporate tax incentives available through the American Recovery and Reinvestment Act (ARRA) of 2009?	subsidize incentive programs for residential and commercial customers. Tax incentives would be a better approach to provide incentives, especially if ARRA money is made available for that purpose. In the future, when sufficient market penetration of electric vehicles has developed, ratepayer subsidy may be reasonable, only in limited cases, such as rebates for ESVEs, if it is clearly demonstrated that the ratepayer benefits exceed costs.
36. Should utilities and/or government provide incentives that encourage customers to purchase higher-efficiency electric vehicles rather than less efficient electric vehicles, and if so, how should the incentives be structured?	It is too early to determine which vehicle technology has higher efficiency. Generally, ratepayers should not be required to provide incentives to electric vehicle customers at this time. Any subsidy which results in societal benefits should be provided through government tax incentives instead of ratepayer funds. Limited ratepayer subsidy may be acceptable in the longer term when sufficient electric vehicle penetration has been achieved, such as some form of rebate for purchasing AFVs, if it is clearly demonstrated that the ratepayer benefits exceed costs.
37. How should the Commission ensure that any policies developed related to electric vehicles provide a level playing field for transportation fuels and technologies?	DRA assumes this question refers to alternative transportation fuels. The level playing field can be achieved through adopting consistent policies applied to all alternative fuel vehicles.
38. How could electric vehicle adoption impact other Commission policies and initiatives including the Renewable Portfolio Standard, the Long-Term Energy Efficiency Strategic Plan, energy efficiency goals, and zero net energy homes goals?	The impact of all Commission programs on electric vehicle adoption should be coordinated and considered before any new policy is adopted. Flexibility in any of these policies would make changes and revisions easier. For example, the Commission must ensure that the ratepayers are not penalized due to higher GHGs, possibly created by the higher loads resulting from the advent of electric vehicles. In addition, the RPS energy requirements may increase due to a higher energy demand placed on the system by AFVs.

	DRA plans to include more details in its reply to other parties' comments on impact on specific programs.
Education and Outreach	
39. What entities and programs best facilitate customer outreach and education regarding convenient and timely EVSE installation options and customer tariff education to ensure awareness of off-peak versus on-peak charging costs?	Local government entities may be in the best position to facilitate customer outreach and education regarding convenient and timely EVSE installation options. Local governments have inherent incentives to reduce tailpipe emissions, improve local air quality, increase real estate value and attract new residents and commerce. City governments, for example, also exercise "hands-on" authority over building retrofit permitting and building code compliance, which are necessary for the timely installation of EVSE equipment. As for customer awareness of electric vehicle tariff options, utilities can utilize current programs designed to promote on-peak load reduction—mainly energy efficiency, demand response, and distributed generation programs. The policy reasons to promote load shifting from on-peak to off-peak times are largely the same across end-uses—better grid asset utilization, generation efficiency, deferred transmission and distribution investments, etc. Since the Commission is already dedicating significant ratepayer funding to promote on-peak load reduction, there is little reason to create a special customer outreach program specifically for the electric vehicle customer.
Scope	
40. Should the Commission consider natural gas vehicles as part of this rulemaking, or consider natural gas vehicle issues through utility filed Application(s) and/or Advice Letter(s)? What are the near-term tariff, infrastructure, incentive	DRA recommends that the Commission not consider natural gas vehicle (NGV) issues as part of this rulemaking. The issues involved with the consideration of PHEVs and BEVs are already extensive and natural gas vehicle issues can be better addressed in existing Commission processes. Tariff issues pertaining to natural gas vehicles are

programs or other issues that the Commission should address with respect to natural gas vehicles?	currently addressed in the gas utilities Biennial Cost Allocation Proceedings (BCAPs). For example, in PG&E's current BCAP (A.09-05-026), PG&E has presented a Natural Gas Vehicle Compression Cost Study to determine charges for fueling a vehicle with compressed natural gas at a publicly accessible PG&E NGV Station. The BCAP also develops and proposes rates for uncompressed core NGV, uncompressed noncore NGV – Distribution and uncompressed noncore NGV – Transmission. Infrastructure, incentive programs and other issues pertaining to NGVs can be accommodated and addressed in the utilities' respective general rate cases (GRCs). There is no benefit to addressing any NGV issues in the current rulemaking or opening a separate rulemaking for NGVs at this time.
41. Should the Commission consider medium-duty electric vehicles, heavy-duty electric vehicles, and off-road electric vehicles as part of this rulemaking? If so, what issues specific to these vehicles should the Commission consider?	DRA recommends the Commission not consider other electric vehicles in this proceeding. There are numerous issues identified in this OIR which could potentially be very resource intensive and possibly controversial. Adding more issues will complicate this proceeding, and potentially delay the commercialization of PHEVs and BEVs in California.
42. What other issues should the Commission consider in this rulemaking? What are your recommendations regarding those issues?	a. Ratepayer funding should not encourage public charging stations, since the majority of charging would be done during on-peak periods. Public and commercial charging stations must be charged full time-of-use rates, to avoid subsidy by the ratepayers. b. The issue of "road tax" needs to be resolved, by the applicable authorities, since currently road taxes are charged on gasoline prices. c. Inter-sector issues (electricity sector vs. transportation sector) in the treatment of GHG credits should be addressed.

Respectfully submitted,

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October 5, 2009

APPENDIX A

Estimated AFV Penetration Levels & Impact On System

		2010	2015	2020
Expected Electric Vehicles (1000s)	[1]	35	215	753
Expected Annual Electric Demand (MWh)	[2]	109375	671875	2353125
Expected Daily Electric Demand(MWh)	[3]	299.66	1840.75	6446.92
Exp Daily Off-Peak hours Electricity Use (MWh)	[4,5]	227.74	1398.97	4899.66
Exp Daily On-Peak hours Electricity Use (MWh)	[4,5]	71.92	441.78	1547.26
Off-peak increased kwh percentage (%)		0.1738	1.0679	3.7402
On-peak increased kwh percentage (%)		0.0266	0.1633	0.5718

Source:

1. The date of expected electric vehicles and annual power demand comes from the report, "Electric Transportation and Goods Movement Technologies in California: Technical Brief," Appendix, TableA-1.A & TableA-5.C

   http://www.arb.ca.gov/regact/2009/lcfs09/tiax.pdf

2. To calculate the Expected Annual Electric Demand, several assumptions have been made by the research of V2G Research Group at the University of Delaware:

   a) The average miles driven per year in the U.S.A. are 15,000 Miles / year.
   b) The average energy efficiency is 4.8 Miles / kWh.
   c) Expected Annual Electric Demand = Expected EV population × 15,000 Miles/year ÷ 4.8 Miles/kWh

3. The expected daily power demand is calculated by the expected annual power demand divided by 365 days.

4. DRA used the assumption that approximately 76% of PEV drivers will charge off peak, and 24% will charge on peak. This assumption comes from page 21 of the Staff White Paper, "Light-Duty vehicle Electrification in California: Potential Barriers and Opportunities."http://www.cpuc.ca.gov/NR/rdonlyres/AD8A4A5E-6ED9-4493-BDB6-326AB86A028E/0/CPUCPPDElectricVehicleWhitePaper2.pdf

5. In terms of Source 3, the expected Exp Daily off-Peak hours Electricity demand would be 76% of the total Exp Daily Electricity Demand, and the Exp Daily on-Peak hours Electricity Demand would be 24% of the Exp Daily Electricity Demand.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a copy **COMMENTS OF THE DIVISION OF RATEPAYER ADVOCATES** in **R.09-08-009** by using the following service:

[X] **E-Mail Service:** sending the entire document as an attachment to an e-mail message to all known parties of record to this proceeding who provided electronic mail addresses.

[ ] **U.S. Mail Service:** mailing by first-class mail with postage prepaid to all known parties of record who did not provide electronic mail addresses.

Executed on October 5, 2009 at San Francisco, California.

/s/ MARGARITA LEZCANO

MARGARITA LEZCANO

N O T I C E

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