FILED
11-06-09
04:59 PM

Before the Public Utilities Commission
of the State of California

Order Instituting Rulemaking on the
Commission's Own Motion to Consider
Alternative-Fueled Vehicle Tariffs
Infrastructure and Policies to Support
California's Greenhouse Gas Emissions
Reduction Goals

Rulemaking 09-08-009
Filed August 20, 2009

Comments of General Motors To the California Public Utilities Commission Regarding Alternative-Fueled Vehicle Tariffs, Infrastructure and Policies to Support California's Greenhouse Gas Emissions Reduction Goals

Proceeding R0908009

November 6, 2009

Robert Babik
Director – Environment, Energy and Safety Policy
General Motors Public Policy Center
GM Global Headquarters
Mail Code 482-C27-C22
300 GM Renaissance Center
P.O. Box 300
Detroit, Michigan 48265

Phone: **313-665-3092**

E-mail: **Robert.Babik@GM.com**

SM-3092

Comments of General Motors
To the California Public Utilities Commission
Regarding Alternative-Fueled Vehicle Tariffs, Infrastructure and Policies
To Support California's Greenhouse Gas Emissions Reduction Goals

November 6, 2009

INTRODUCTION

General Motors appreciates the opportunity to offer comments on building the infrastructure for electric vehicles. These comments provide some initial thoughts on the issues before the CPUC, and we look forward to working with all the stakeholders as this program is developed to reach a successful outcome for all. Success can only be achieved through positive support for the program from both vehicle manufacturers and electricity providers.

Building the electric vehicle infrastructure is a critically important task for the transition to a low carbon future. Over the next few years, GM plans to introduce new models capable of electric propulsion on an unprecedented scale. California will be a proving ground for market acceptance of these vehicles, and for usage of lower carbon fuels. The Public Utility Commission has the opportunity in this process to provide a sound framework to sustain this momentum to a successful transition.

Early market introduction of Plug-in Electric Vehicles (PEVs) will require all stakeholders to cooperate and provide necessary incentives and support to ensure that initial PEV vehicle and infrastructure offerings grow to sustainable market demand. Early availability and new technology offerings are not a guarantee for market acceptance. There will certainly be early adopters who are excited about this new technology and are unfazed by high vehicle and charging installation costs, or by installation inconveniences. There may therefore be an initial sales surge. However, to cause a successful transition from gasoline vehicles to PEVs, these vehicles have to be accepted by mainstream consumers, who will more critically assess the vehicle offerings in the market and need as much encouragement as can be offered. In our opinion, the

risk of under-funding or under-preparing for the introduction of PEVs into the market could seriously impact the success of the transition – and should not be under-estimated.

RESPONSE TO QUESTIONS

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?

GM Response

The Commission should allow flexibility in metering arrangements within the constraints of the industry standards for PEV/Utility communications (i.e. SAE standards and the Smart Energy Profile 2.0 applications standard for messaging specifications and communication protocols). This intelligent metering with two-way communications and data transfer capability is currently being defined at SAE by an industry coalition of automakers, utilities and other stakeholders and is an essential element of the Smart Grid implementation.

Metering architectures should provide for interoperability between multiple communications protocols, including cellular and internet-based networks, which would apply particularly in areas where the AMI network cannot reach or does not cover.

The metering arrangements should introduce neither an inconvenience nor a cost to residential customers and the installation should be integrated with the EVSE installation to ensure an acceptable customer experience. The metering should also provide a meaningful benefit to consumers by enabling lower overall household electricity rates.

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?

GM Response

The communication standards efforts described in response #1 are expected to be completed mid to late 2010. Once the standards are finalized by consensus of the utilities, vehicle manufacturers, and industry stakeholders, then all subsequent advanced meters will need to be compliant.

Since some meters have already begun deploying in some regions, there is a risk that these existing meters and those planned for installation prior to the completion of the standards may not be compatible with the new communication standards. The Commission should work with the various utilities to understand what is required, if anything, to upgrade the existing advanced meters to be compliant with the formally released communication standards.

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?

GM Response

Consumers will use Level 1 (120V) and Level 2 (240V) home charging. The 120V/15A cord set will have an in-line Electric Vehicle Supply Equipment (EVSE) unit and will likely be provided with the PEV by most auto manufacturers. The 240V/20A residential charge station is a wall-mounted EVSE unit connected to a dedicated 240V circuit. Costs associated with charging installation will vary, but could include many of the following costs: initial home inspection to estimate the installation effort, the cord set and/or charge station, move an outlet, add an outlet, add a dedicated circuit, upgrade the panel, and fees

for permits and inspections. There may also be a requirement for the installation of optional or additional metering or submetering equipment by the utility, which will add additional costs to the residential installation.

Successful consumer acceptance of PEVs is not guaranteed. A time-consuming or costly home charging installation process could be key detractors in the consumer's decision to purchase a PEV. Providing cost offsets to the utility customers for the installation of home charging and any required or desired metering are important consumer enablers especially in the near to midterm. Plug-in vehicles benefit utilities, consumers, and society in general through reduced GHG emissions, reduced oil dependency, improved national security and energy sustainability, and improved grid utilization and load leveling through smart vehicles on a smart grid.

Costs to the consumer should be offset through customer direct incentives or rebates, either through state funded consumer incentive programs or through utility rate-based programs.

4. What policies should the Commission adopt to encourage competition and innovation in the market for residential infrastructure development for PHEV and BEVs?

GM Response

Adopting and enforcing the standards for the PEV charging interface connector and the communications protocols for the EVSE and metering equipment will be key to encouraging competition and innovation in the market. Statewide consistency in building codes and permitting and inspection processes will help to encourage competition in the residential infrastructure installation segment as well. Importantly, since a key objective is to keep charging installation costs for a consumer as low as possible, generating a profit from residential installation services in the near term is likely to be challenging – a statewide plan to offset

these costs would surely lead to more competitors and more innovation in this process.

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?

GM Response

Yes, in order to encourage and promote early PEV adoption the Commission should authorize utilities to invest in and rate-base as much of the cost of home installations as possible. From response #3, costs are associated with an initial home inspection to estimate the installation effort, the hardware costs for the cord set, the charge station, meters or submeters, the costs to move an outlet, add an outlet, add a dedicated circuit, or upgrade the panel, and the fees for permits and inspections.

These equipment and distribution wiring upgrades will augment the development of the Smart Grid interface and interaction with the residence. This investment should be considered an extension of the Smart Grid implementation into the residence because it provides the ability to institute sophisticated demand side management programs that enable better control and efficiency in the use of electricity for PEV charging.

The investment should continue past the early adopter market and into the mainstream market to ensure that PEV adoption grows even as more demanding and cost-conscience mainstream consumers begin considering a PEV purchase. We would expect the costs for residential charging installation services and equipment to reduce over time as PEV volumes increase and installation

processes become more streamlined and optimized.

We expect utilities will be engaging non-utility entities in the manufacturer and development of products, equipment, and services for residential installations, which will ensure a competitive marketplace that will remain open to new players.

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?

GM Response

EVSE and metering equipment will be compatible with future generations of PEV technology as long as this equipment adheres to the standards defined in SAE J2847, SAE J1772, and with Smart Energy Profile 2.0 standards, as adopted by NIST.

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?

GM Response

We believe the priority in establishing charging infrastructure solutions is as follows:

- Home charging (single-family homes)
- Workplace charging (includes large public parking garages used by employees)
- Multi-family home charging (condominiums, apartments)
- Commercial charging

- Other public charging (though a few key sites for public awareness and outreach are important)

We believe consumers are likely to seek charging solutions in this order and the charging solutions become increasingly complex to cost-effectively implement as you move down this list. Thus, we encourage the Commission to prioritize solutions according to this list.

Relative to multi-family home charging - there are some urban and metropolitan areas where large segments of the population reside predominantly in multifamily dwellings such as condominiums and apartments. In these areas, infrastructure policies and incentives will be important to enable this customer segment to participate in the market growth of PEVs.

Provisions should be put into place that will incentivize landlords, property management associations, and property owners of residential multiple and single family dwelling complexes without garage access or with open access premise parking to install PEV charging infrastructure. Zoning, parking, and building regulations (and legislation) could be established to ensure that a specific percentage of parking spaces be designated for resident accessible PEV charging. Building codes that facilitate the installation of residential charging infrastructure for single or multiple family dwelling units without garage access should be enacted for new construction and renovation projects.

Utilities should initiate an outreach program directed at the landlords, property management associations, and property owners of MDUs to engage them in understanding the need for PEV charging, the benefit to the residents and the determination of requirements. Utilities should engage in understanding the barriers and challenges of the property administration entities for supporting the development of PEV charging on their premises.

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?

GM Response

Consumer acceptance of PEVs urgently requires a streamlined residential charging installation process that has minimal, if any, cost impact on the customer. Such a streamlined process will require improved coordination among the various California regulatory agencies, utilities and local governments to develop a simple, convenient and expeditious process for building permits, inspections and the installation of PEV charging equipment and utility metering equipment. A best-practice permitting and inspection process that is standardized and adopted by all local jurisdictions within the state should be implemented. This may require the formalization of a special state level building codes authority to establish a state-wide regulation or standard for accelerated permitting and inspection processes. Creative solutions such as self-permitting, over-the-counter permits, phone-in permits, etc should be considered. There is precedent for such practices from earlier EV programs. The Commission should further address a standardized inspection, meter installation and activation process among all the utilities that would further streamline the installation process.

There are a multitude of steps and parties that affect the timing and cost of residential PEV charging and circuit installation, which, without some level of regulatory standardization, could present an unreasonable obstacle to PEV adoption.

Commercial and Public Charging Infrastructure and Policy

9. How should electricity used for PHEVs and BEVs be metered at commercial and public charging facilities?

GM Response

The same standards, policies, and regulations for monitoring, controlling, and incentivizing residential infrastructure should be applied to commercial and public infrastructure. We believe a variety of approaches will be introduced in the marketplace – and those business propositions that are consumer-focused (safe, convenient and affordable) will prevail.

10. Who should pay for commercial and public meters, EVSE, and related upgrades?

GM Response

Whereas we believe the majority of PEV consumers will likely charge their vehicles at home, there is a need, if only for public awareness and outreach and the convenience of those who cannot charge at home, to provide some amount of workplace, commercial, and public charging. Note, that Battery Electric Vehicle (BEV) manufacturers will likely be more interested in a larger build out of public charging infrastructure to alleviate consumers' range anxiety concerns.

In the near term, it will likely remain challenging to derive profit from vehicle charging business scenarios. Therefore, we support the rate-basing of not only residential charging, but also of workplace, commercial, and public charging stations. Areas of cost would be similar to those noted in response to #3, but additionally could include costs for more expensive heavy-duty public EVSEs, laying conduit, trenching concrete, and upgrading transformers. All workplace, commercial or public charging should be Level 2-capable. Considerations for Level 3 charging should be made once its impacts on the battery and on the electric grid are better understood.

11. How should the Commission ensure that commercial and public charging facilities are cost-effective, openly-accessible, and interoperable with a Smart Grid system?

GM Response

In all cases, EVSE equipment should be standards-compliant and compatible for use with all standards-compliant PEVs in order to ensure Smart Grid interoperability. We don't believe that public funds or rate-payer funding should be used to incentivize commercial or public infrastructure unless it is standards-compliant and ensures open access. We believe consumers in the market will drive cost-effectiveness and accessibility into commercial and public charging facilities.

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?

GM Response

Yes, uniform statewide building codes (particularly for homes, multi-family residential and places of work) should be modified today to anticipate a large market-share of PEVs in the future and put in place the enablers for vehicle charging. The Commission can aid in the development and adoption of uniform statewide building codes that require provisions for Level 2/240V charging in all new home and multi-family residential construction, workplace and public parking garage construction, as well as in all major renovation projects. This goes a long way to reducing the installation costs for vehicle charging, even if the actual EVSE charging hardware is not installed at the time.

13. What policies should the Commission adopt to facilitate competition and innovation in the commercial and public infrastructure market?

GM Response

We believe the key to competition and innovation in the infrastructure market is simply to ensure that all PEV charging infrastructure installed is SAE standard-compliant to ensure compatibility with OEM vehicles. The Commission, through the adoption and regulation of the standards for PEV charging safety, reliability, and interoperability, will have established the foundation for suppliers and 3rd party providers of equipment and services to be able to be innovative and competitive.

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?

GM Response

There are over 3,000 utilities in the United States and they are engaged in PEV market preparation to varying degrees. Some utilities plan to provide extensive resources and support to consumers through the entire home charging installation process (and will conveniently bill the consumer for hardware and installation - if not fully funded - through the consumer's monthly utility bill); some utilities will also get engaged in the installation of commercial, workplace and public charging. But some utilities may not be as engaged. Some variation may exist amongst the California utilities.

Whereas we would prefer that every Utility be responsible for the entire consumer charging experience (and all associated costs covered by rate-base increase or other funding mechanism), in reality, automakers will have to rely to some extent on third-party electric vehicle service providers to provide charging installation in many regions. The details of how a utility works seamlessly together with third-party service providers to best satisfy the needs of PEV consumers are crucial. The Commission could be very helpful in working with utilities to enable

processes that empower utilities to support third-party service providers, as well as consumers, dealers, automakers, permitting officials, inspectors, etc. and find mechanisms to help fund the charging installation efforts in order to minimize handshakes, optimize installation processes and remove the financial burden to the maximum extent possible.

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?

No GM Response.

16. What statutory changes, if any, should the Commission propose to the legislature to encourage innovation and competition in the charging infrastructure market?

GM Response

To encourage innovation and competition in the charging infrastructure market (and in other industries arising from the PEV market) it is most important to ensure that the introduction of PEVs is successful and that there is confidence in its robust growth over time. Thus, we believe the most critical policy need is to ensure that compelling incentives are in place for consumer vehicle purchase, consumer charging installation, and workplace charging installation. An example of another compelling incentive is HOV lane access for PEVs – the Commission is encouraged to support the passage of SB535 for HOV lane access for PEVs.

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?

GM Response

EPRI provided a very comprehensive response to this question with a complete list of the standards and information on their relevancy, purpose and status. Our primary concern is that the connector standard be complete and implemented no later than Dec 2009 and the communication standards complete no later than Dec 2010.

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?

GM Response

We expect PEV customers will choose between Level 1 and Level 2 charging at home, depending on their willingness to pay for the likely extra costs incurred with 240V installation. We anticipate that all PEV customers will expect Level 2 outside the home, in commercial and public settings. Therefore, Level 2 should be required in all applications outside the home. In the near term, only few PEVs will be capable of Level 3 DC charging, and there is not yet sufficient understanding of the impacts of fast-charging on battery degradation and the reliability of the distribution grid. Until we have an improved understanding of

both of these issues, Level 3 charging cannot be made commercially available to the customer.

19. What role can the Commission play to ensure EVSE compatibility with a unified EVSE conductive charge coupler standard (J1772) for 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)?

GM Response

The Commission should continue its support of the utilities' role in codes and standards development. SAE standards are being developed that define the charging connector and communication standards – all automakers are expected to design PEVs compliant with all the relevant SAE standards. All work being done by these groups and supported by utilities across the country are focused on common standards and the need to guarantee interoperability.

The focus on standards is important, and the Commission should require that any new infrastructure that will be funded by State funds or any utility based incentives must be SAE J1772, J2847, etc… compliant.

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?

GM Response

We expect Plug-in Hybrid Electric Vehicle (PHEVs) and Extended Range Electric Vehicles (EREVs) to make up the majority of PEVs in the market. PHEVs and EREVs have charging loads not unlike large appliance loads in the home today (e.g. the Volt on-board charger will accept a maximum 3.3kWh charge rate), whereas pure BEVs can introduce significantly larger loads due to larger batteries and much higher charging rates. Utilities have adapted to significant load growth over time for air conditioners, plasma screen TVs, freezers, backyard pools and spas, etc. Utilities will be in a much better position to proactively react if needed to local distribution impacts caused by PEVs through their direct support and involvement in the residential infrastructure installation process – and should be very strongly encouraged and supported with the necessary enablers to do so.

Existing PEV grid impact studies and analyses indicate that concentrations of multiple PEVs will cause the need for local feeder transformer capacity replacement or supplements. Utilities, as matter of practice, annually update and validate the analyses/models to predict geographic load profiles and to determine distribution system predictive maintenance plans. Utility investment in the upgrade of distribution systems for residential and not-for-profit workplace, commercial or public charging should be recoverable in the rates from all ratepayers.

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 ability to reduce BEV driver "range anxiety"?

GM Response

We believe Level 2 charging will broadly satisfy needs for commercial and public infrastructure for the near term. We expect that PEV customers will choose between Level 1 and Level 2 charging at home, depending on their willingness to pay for the likely extra costs incurred with 240V installation. We see Level 3/DC charging developing further out (once battery impacts and grid impacts are better understood). Therefore, Level 2 should be required in all applications outside the home. Battery swapping requires more study to determine whether it is a viable alternative, both from a vehicle and an infrastructure standpoint.

The Commission should adopt policies that support the appropriate technologies at the right time and do not force a technical solution that is not ready.

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?

GM Response

The utilities are focused near term on incentivizing consumers to charge during off-peak periods through time-of-use (TOU) rate discounts and on basic demand-side management programs such as the ability to turn the EVSE on or off. As the potential increases for changes in load factors and load duration curves due to PEV charging loads, utilities will have to institute sophisticated load management/control strategies, which could include dynamic time variant pricing incentives. The SAE standard for PEV/Utility communications is being developed to enable utilities to mechanize TOU, critical peak and active load management control strategies, which will incorporate time variant pricing signals and

responses. The technology, standards and the AMI architecture requires more time to develop and are taking these longer term grid impact issues into consideration.

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?

GM Response

Unchecked, a large PEV market could potentially lead to increased on-peak load as the availability and utilization of commercial and public charging facilities increases, causing the need for increased energy generation and distribution transformer capacities. However, the automotive industry is working closely with EPRI, utilities, and standards organizations to define communication protocols and standards for PEVs to ensure that even when there are significant numbers of PEVs in the market, the impact of vehicle charging is minimal on electricity generation and transmission. It is also important to note that EPRI and other key stakeholders are engaged in studies to test peak demand scenarios.

In the future, the energy storage capability of PEVs may offer benefits relative to the overall operation and stability of the grid, including the ability to help accommodate increasing amounts of renewables introduced to the grid. These are longer term issues that will become better understood as we gain experience with the vehicle batteries. For the time being, it is important to support the standards activities and assure broad acceptance of the results.

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?

GM Response

GM supports a default time variant electric vehicle rate across the state as long as it is not negatively impacted by a tiered rate structure. It is our understanding, that TOU rates do not always provide a beneficial cost trade off to the consumer when considering the cost of the TOU meter and the application of higher tiered residential rates due to the consumption increase at the residence resulting from the PEV. GM favors a simple PEV non-tiered default time variant rate that makes it easy for customers to evaluate the transportation cost of PEV ownership.

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?

GM Response

It is assumed that the rate structures for customers of commercial, industrial, and public charging facilities could be affected by resale of electricity issues, unless offered for free, and that the cost to a customer for using any of these non-residential charging facilities will be based on factors other than the utility kWhr rate.

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?

No GM response.

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 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.

GM Response

Roaming loads caused by the PEV, within the same service territory as well as across service territories, will become a more important issue over time. And solutions will also evolve over time as infrastructure providers offer different models to consumers and the better ideas prevail. Utilities plan to offer a variety of PEV energy management incentive programs that are to be facilitated by AMI communications with the PEV – primarily the ability to identify and associate a vehicle with a particular utility incentive program(s), and the ability for the vehicle to receive and respond to utility demand response signals. Options A and D above are appropriate for the near term, and for third-party owned charging facilities. But Option B will become a more significant issue in the long term when it becomes necessary for a utility to identify and manage roaming loads from other service territories in order to manage its load impact on the utility's power distribution system.

Again, the key is to ensure that all charging and communications infrastructure is compliant with the industry standards defined by SAE and NIST so that all standard-compliant PEVs are compatible and interoperable with all installed infrastructure.

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?

No GM response.

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?

GM Response

We would like to see a simple rate structure that is easily communicated to consumers. We are also concerned about the current tiered pricing structure that could cause PEV consumers to move into a higher priced tier as a result of the added vehicle charging load. During this early PEV market introduction period, we would like to see low, preferential rates for consumers – as one of many incentives available for early PEV adopters. And since the environmental benefits of EVs will benefit all Californians, the costs and benefits should be socialized across all customer classes.

30. Should the electric vehicle rates reflect the marginal cost of service, particularly for off peak electricity charging and, if so, how?

GM Response

The primary focus at this time is to ensure successful introduction of plug-in vehicles into the market. To that extent, initial Commission efforts should be focused on simplifying the customer experience, providing customer-friendly information and outreach, and providing consumer incentives that remove any real or perceived barriers to market entry of plug-in vehicles. We suspect there is the potential for significant rate variability between utilities in the application of the marginal costs. Effort should be expended to correlate a comparative average rate across utility regions within the state to the extent feasible in order to simplify the customer experience.

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 vehicle rate structures? Who should pay for such incentives?

GM Response

The primary focus at this time is to ensure successful introduction of plug-in vehicles into the market. To that extent, initial Commission efforts should be focused on providing simple, consumer-friendly incentives that are not overly complicated by being tied to other programs. Incentives should be designed to remove any real or perceived barriers to market entry of PEVs and should be directed to consumers and infrastructure installers. Incentives can take the form of buy-downs or credits for PEVs and vehicle charging installations, as well as electricity rate reductions to PEV consumers.

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?

GM Response

This is a longer term issue that requires further investigation to understand the extent of vehicle battery degradation vs. the potential for revenue opportunity for the consumer. The primary focus at this time is to ensure successful introduction of plug-in vehicles into the market.

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?

GM Response

General Motors has invested billions of dollars over the past several years to develop plug-in vehicles (e.g., plug-in hybrid-electric, and extended range and battery electric). Looking forward, expenditures on these vehicles are expected to increase as they move though the costly low-volume production phase. It is anticipated that the automobile manufacturers will need to advance through multiple generations of EV designs over the next decade before they can hope recoup the initial investments and ultimately approach equivalent profitability for these vehicles, compared to conventional vehicles. Yet getting significant numbers of these vehicles onto California roadways would be required for electricity pathways to contribute at a meaningful level towards compliance with the Low Carbon Fuel Standard. GM would like to work with the CPUC and all stakeholders to determine a fair and appropriate distribution and use of Low Carbon Fuel Standard credits to ultimately reduce the cost of the vehicle to the consumer, to offset the distribution upgrade costs that might impact ratepayers, and to expand the vehicle charging infrastructure, especially for residential and workplace charging.

An example may help to provide perspective on the automobile manufacturers' relative contribution. California Air Resources Board (CARB) estimates the gasoline baseline in 2010 to be 95.9 gCO2e/MJ, whereas the average California electricity grid provides energy with lifecycle emissions of 124.1 gCO2e/MJ. Thus, before accounting for vehicle effects, electricity is actually a higher carbon fuel, on average, than gasoline. But after adjusting for the three times higher efficiency of electric propulsion, as estimated by CARB, the average electricity used by these vehicles is treated as emitting only 41.4 gCO2e/MJ (= 124.1 / 3.0), resulting in an emission reduction versus gasoline of 54.5 gCO2e/MJ (= 95.9 – 41.1). Note that this large low carbon fuel standard reduction of 54.5 g/MJ occurs in this example without the electric utilities reducing their emissions per megajoule. As utilities reduce the lifecycle emissions of the energy they produce the potential reductions are greater.

It will be important for utilities, infrastructure developers, and the auto industry all to work together to fully achieve the potential benefits that electrification of the vehicles offers. These benefits are derived from the efficiency gains of an electrically propelled vehicle, additional grid lifecycle carbon emissions reductions, as well as ensuring charging access is developed for use by all Californians. To achieve this, the CPUC needs to develop a program that appropriately provides proportional incentives to all stakeholders.

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?

GM Response

See response to #33. Credits not accrued to the auto manufacturers may need to be used to off-set the costs of vehicle charging installation or provide consumer vehicle purchase incentives.

Programs and Incentives

35. Should utilities and/or 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?

GM Response

The cost for installation of residential charging infrastructure can be a significant deterrent to PEV adoption. An incentive program that covers the cost of charging/metering hardware, installation, permitting fees, etc… would be of great value in overcoming one of several early barriers to PEV adoption. Every effort should be made – particularly throughout the early PEV transition period - to cover these costs in full through incentive programs, tax credits, etc. Though not preferred, low-interest financing is the next best alternative for a consumer.

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?

GM Response

The PEV market is just developing and it is not yet possible to fully assess the relative value between PEV vehicles, nor the right metrics to use. Customer usage patterns and the appropriate test cycles for comparative analysis are not known. All types of PEVs should be encouraged at this stage as this new market is explored.

37. How should the Commission ensure that any policies developed related to electric vehicles provide a level playing field for transportation fuels and technologies?

GM Response

There is no single vehicle technology solution for all consumers and all applications of vehicle use that confidently allows us to reach the aggressive national/state goals for reduced petroleum dependency and reduced CO2 emissions by 2050. Therefore, it is important to maintain support and incentives for a mix of alternative fuel and propulsion system technologies. These technologies will very likely consist of the continued accelerated use of biofuels (predominantly cellulosic ethanol and limited amounts of corn ethanol) and electrification through the use of batteries and fuel cells fueled by hydrogen. As these vehicle technologies carry cost premiums compared to conventional gasoline vehicles, consumer incentives should be developed that apply to all of them.

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?

No GM Response.

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?

GM Response

We agree that public education and outreach is a critical element in the early years of the transition to plug-in-vehicles. We encourage the Commission to work with all stakeholder organizations in California to develop a comprehensive education and outreach program that addresses the needs of consumers – and to leverage national stakeholder groups who are also willing to be active in this area. Within California we see a coordination role that includes the following (at a minimum): California Public Utilities Commission (CPUC), Utilities, California Energy Commission (CEC), South Coast Air Quality Management District (SAQMD), Clean Cities groups, and California Building Officials (CALBO). Nationally, this California effort should be coordinated with (at a minimum): the Electric Power Research institute (EPRI), Electric Drive Transportation Association (EDTA), Edison Electric Institute (EEI), National Association of Regulatory Utility Commissioners (NARUC), National Rural Electric Cooperative Association (NRECA), American Public Power Association (APPA), National electrical Manufacturing Association (NEMA), National Electric Contractors Association (NECA), Fire Marshalls Association and National Fire Protection Association (NFPA).

Among the key concerns/questions that consumers will have are:

- Who can I call to answer my questions 24/7?
- What incentives are available nationally, state-wide, locally?

- Can I count on a smooth, fast, low cost home charging installation process?
- How do I take advantage of the best charging options and electricity rates?

Materials should be developed with automaker engagement.

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 programs or other issues that the Commission should address with respect to natural gas vehicles?

GM Response

Retail deployment of PEVs begins in November of 2010 (about 12 months from now) – there is a pressing need to address the issues associated with this deployment and prepare consumers, the utilities, and other stakeholders. We believe natural gas vehicle (NGVs) and medium-duty or heavy-duty EVs should be handled separately so as not to detract from this urgent task.

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?

See response to #40.

42. What other issues should the Commission consider in this rulemaking? What are your recommendations regarding those issues?

No GM Response.

CONCLUSION

GM appreciates this opportunity to provide comments and asks the Commission to continue to work closely with automakers to ensure a seamless integration of PEVs onto the electric grid.

Respectfully submitted,

/s/ Robert Babik

_____

Robert Babik
General Motors

November 6, 2009

CERTIFICATE OF SERVICE BY ELECTRONIC MAIL

I hereby certify that I have this day served a copy of "**Comments of General Motors To the California Public Utilities Commission Regarding Alternative-Fueled Vehicle Tariffs, Infrastructure and Policies To Support California's Greenhouse Gas Emissions Reduction Goals" in R.09-08009** by using the following service:

[X] E-MAIL service: sending the entire document as an attachment to all known parties of record and other interested parties on Service List R.09-08-009 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.

I certify and declare under penalty of perjury under the laws of the state of California that the foregoing is true and correct.

Executed on this 10th day of November 2009 at Detroit, Michigan.

/s/ Robert Babik

_____

Robert Babik
General Motors

Service_List_
R.09_08_009_

fdms@electradrive.net
angie_doan@plugsmart.net
kevin.webber@tema.toyota.com
mark.aubry@sev-us.com
cread@ecotality.com
spatrick@sempra.com
david.patterson@na.mitsubishi-motors.com
helsel@avinc.com
Janet.Combs@sce.com
liddell@energyattorney.com
kwalsh@fiskerautomotive.com
ek@a-klaw.com
rpopple@teslamotors.com
lms@cpuc.ca.gov
nsuetake@turn.org
SSchedler@foe.org
jay@pluginamerica.org
ssmyers@att.net
cjw5@pge.com
Ann.Bordetsky@betterplace.com
Jason.Wolf@betterplace.com
epetrill@epri.com
jody_london_consulting@earthlink.net
jharris@volkerlaw.com
svolker@volkerlaw.com
jwiedman@keyesandfox.com
gmorris@emf.net
richard.lowenthal@coulombtech.com
pskinner@svlg.net
jme@pge.com
shears@ceert.org
wwester@smud.org
aconway@dmv.ca.gov
kleacock@dmcgreen.com
krose@dmv.ca.gov
roberto.bocca@weforum.org
than.aung@ladwp.com
GO'neill@energy.state.ca.us
colleenquin@gmail.com
martin.liptrot@ge.com
jung.zoltan@epa.gov
jviera@ford.com
hillary.dayton@fluor.com
Douglas.Marx@PacifiCorp.com
Adrene.Briones@ladwp.com
Leila.Barker@ladwp.com

Marcelo.DiPaolo@ladwp.com
Oscar.Alvarez@ladwp.com
Priscila.Castillo@ladwp.com
Scott.Briasco@ladwp.com
david.eaglefan@gmail.com
leilani.johnson@ladwp.com
jellman@winnr.com
npedersen@hanmor.com
tatsuaki.yokoyama@tema.toyota.com
dsiry@codaautomotive.com
bock@avinc.com
dickinson@avin.com
klynch@cityofpasadena.net
cjuennen@ci.glendale.us
dave.barthmuss@gm.com
ffletcher@ci.burbank.ca.us
flangit@ci.azusa.ca.us
andrea.moreno@sce.com
case.admin@sce.com
Case.Admin@sce.com
mpsweeney@earthlink.net
ygross@sempra.com
julian.durand@qualcomm.com
vsmith@qualcomm.com
dniehaus@semprautilities.com
sbadgett@riversideca.gov
jlehman@anaheim.net
trae@kpcb.com
lburrows@vpvp.com
diarmuid@teslamotors.com
mdjoseph@adamsbroadwell.com
edwin.lee@sfgov.com
johanna.partin@sfgov.com
dfugere@foe.org
jheibult@nrdc.org
smui@nrdc.org
BWT4@pge.com
regrelcpuccases@pge.com
ELL5@pge.com
filings@a-klaw.com
bcragg@gmssr.com
cassandra.sweet@dowjones.com
jguzman@nossaman.com
mgo@goodinmacbride.com
mmattes@nossaman.com
bobgex@dwt.com
cem@newsdata.com
sfr2@pge.com
axtw@pge.com
l1hg@pge.com
SAZ1@pge.com

aaron.singer@bmw.com
saluja@capricornllc.com
a.vogel@sap.com
xingxin.liu@sap.com
Sean.Beatty@mirant.com
dietrichlaw2@earthlink.net
Karin.Corfee@kema.com
michael.schmitz@iclei.org
kfox@keyesandfox.com
jhal@calstart.org
philm@scdenergy.com
slsarris@greenfuseenergy.com
bdicapo@caiso.com
e-recipient@caiso.com
cchilder@arb.ca.gov
dmodisette@cmua.org
EGrizard@deweysquare.com
jluckhardt@downeybrand.com
Julee@ppallc.com
lmh@eslawfirm.com
abb@eslawfirm.com
ttutt@smud.org
atrowbridge@daycartermurphy.com
sas@a-klaw.com
jordan.white@pacificorp.com
kyle.l.davis@pacificorp.com
californiadockets@pacificorp.com
carmine.marcello@hydroone.com
ahl@cpuc.ca.gov
agc@cpuc.ca.gov
eks@cpuc.ca.gov
fxg@cpuc.ca.gov
fcc@cpuc.ca.gov
gtd@cpuc.ca.gov
jw2@cpuc.ca.gov
lau@cpuc.ca.gov
mc4@cpuc.ca.gov
mc3@cpuc.ca.gov
ska@cpuc.ca.gov
pva@cpuc.ca.gov
rmd@cpuc.ca.gov
smk@cpuc.ca.gov
ekeddie@arb.ca.gov