



**Via Electronic Mail**

July 9, 2009

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**RE: Comments of the Center for Energy Efficiency and Renewable Technologies (CEERT) on the California Public Utilities Commission Staff's White Paper dated May 22, 2009, *Light-Duty Vehicle Electrification in California: Potential Barriers and Opportunities.***

Dear Matthew,

CEERT appreciates the opportunity to offer general comment on the CPUC Staff's white paper (hereinafter WP) which provides an excellent overview of the issues relating to potential barriers and opportunities for electrifying transportation (ET) in California. Done right, ET can play a critical role in meeting the state's air quality and climate goals. This WP succeeds in providing a solid foundation from which to launch stakeholder discussions addressing the many policy and regulatory linkages between electrifying transportation while achieving the state's air quality, global warming and renewable energy goals.

In considering the issues raised in the WP and the ongoing Smart Grid proceeding (R.08-12-009) the CPUC is well positioned to initiate an integrated system-wide exploration of the role that the California utility system can play in supporting the deployment of highly efficient vehicles utilizing electricity as a fuel that will be progressively decarbonized by meeting the state's RPS & AB32 goals. Such an exploration could go towards developing an executable vision for electrified transportation (ET) in the state for the years 2020 and beyond. Such a vision should also consider the role for electrifying mass transit, heavy transport and offroad applications.

**The Need for a Vision and State Action Plan on PEVs**

In keeping with this, and in recognizing the breadth and complexity of the issues, CEERT supports the Staff's recommendation that there be a dedicated, "...proceeding to evaluate

policies and programs to incent PEV commercialization.”<sup>1</sup> Moreover, either before undertaking or in conjunction with such a proceeding (and recognizing that there are linkages with the Smart Grid proceeding - R.08-12-009) CEERT feels that it would be advisable to implement a joint interagency forum process involving the public and industry stakeholders to review the cross-cutting issues and through which to develop an integrated Vision and Action Plan for the deployment of ET, that is consistent throughout the state. This clearly relates to the fact that the CPUC has jurisdiction over the IOUs while the CEC has jurisdiction over the POUs, and while the ARB has ultimate jurisdiction over vehicle emissions regulations, carbon policy and the LCFS. Any such Vision – and its accompanying Action Plan and/or CPUC proceeding – should be based on a uniform set of principles analogous to those that served to frame the initial discussion around the Smart Grid proceeding.

This is also in keeping with (but may expand upon) the general intent of legislation currently making its way through the California legislature.<sup>2</sup> Regardless of whether this or similar legislation is eventually signed into law or not, the CPUC should convene a joint forum process with the CEC, ARB and any other relevant agencies, industry and stakeholders to develop a Vision and Action Plan for ET in the state.

### **Ensuring that Ratepayers Benefit**

As acknowledged in the WP, PEVs could potentially provide many important ratepayer benefits when appropriate tariffs or other command and control mechanisms are used to increase off-peak demand.<sup>3</sup> Staff has also cautioned that – in their absence – deploying large numbers of PEVs could yield negative system impacts.<sup>4</sup> The task facing the CPUC (and other state agencies and stakeholders) is the implementation of policy that ensures that the former, and not the latter, is the realized outcome. This includes ensuring that the state’s RPS goals can be met. By successfully incentivizing off-peak load-shifting that also encourages greater fuel-switching away from petroleum, the CPUC can help deliver a future for the state of California that not only decarbonizes its electrical grid but also significantly decarbonizes its transportation and helps the state to achieve its air quality, AB32 (AB1493 & LCFS) and ZEV goals.

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<sup>1</sup> CPUC White Paper at page 10.

<sup>2</sup> SB 626 (Kehoe).  
[http://www.leginfo.ca.gov/cgi-bin/postquery?bill\\_number=sb\\_626&sess=CUR&house=B&author=kehoe](http://www.leginfo.ca.gov/cgi-bin/postquery?bill_number=sb_626&sess=CUR&house=B&author=kehoe)

<sup>3</sup> WP at page 9. Flattening the electricity system load shape and improving utility transmission and distribution asset utilization while increasing utilities’ load factors; providing “supply-following” demand to support intermittent renewable resources such as off-peak wind; providing grid support and distributed storage for load capacity using “Vehicle to Grid” (V2G) technology thereby enabling utilities to defer or otherwise avoid emissions associated with additions of central peaking generation during peak demand periods by utilizing capacity stored in PEVs.

<sup>4</sup> WP at page 9. Increase total energy demand; substantially increase daily load capacity requirements; alter peak load shapes; increase transmission and distribution system demands, and result in net negative emissions of carbon dioxide (CO<sub>2</sub>), while increasing the electricity sector’s emission profile.

Approaches to quantifying ratepayer benefits traditionally seek to monetize benefits through the use of emissions reduction credits. However, as considerable research in California has also shown in the area of air quality improvement, economic benefits can be realized through avoided costs for healthcare and lost productivity.<sup>5</sup> CEERT looks forward to further explorations with the CPUC and other stakeholders on the implications of PU Code § 740.8 which we feel merits further evaluation especially when it comes to, “...activities that benefit ratepayers and that promote...” “...reduction of health and environmental impacts from air pollution, and GHG emissions related to electricity and natural gas production and use, and increased use of alternative fuels.”<sup>6</sup>

**Rate design options, including the potential for a statewide electricity rate for PEVs**

CEERT agrees that before the implementation of AMI and a Smart Grid, increasing block pricing was an appropriate mechanism for avoiding a revisit of the challenges faced during the electricity crisis of 2000-1. However, in moving forward and in ensuring that PEVs play an appropriate role in meeting the state’s goals, CEERT believes that TOUs for PEVs should be consistent with the design of an effective SmartGrid, while also providing tariff rates appropriate to strongly encourage off-peak and strongly discourage on-peak charging.

CEERT supports exploring the feasibility of establishing tariff rates that are more or less consistent across different service territories. However, we anticipate that this will likely prove challenging because of the unique nature of each utility’s generation mix, etc.

CEERT also supports exploring approaches to maintaining transportation tax revenues with the increased use of ET and other alternative fuels.<sup>7</sup>

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<sup>5</sup> Eg.

- CSU Fullerton Institute for Economic and Environmental Studies, November 13, 2008. The Benefits of Meeting Federal Clean Air Standards in the South Coast and San Joaquin Valley Air Basins. [http://business.fullerton.edu/Centers/iees/reports/Benefits\\_of\\_Meeting\\_Clean\\_Air\\_Standards\\_11-13-08.pdf](http://business.fullerton.edu/Centers/iees/reports/Benefits_of_Meeting_Clean_Air_Standards_11-13-08.pdf)
- South Coast Air Quality Management District, 2003 & 2007. Final Socioeconomic Reports for the 2003 & 2007 AQMPs. <http://www.aqmd.gov/aqmp/docs/2003AQMPSocio.pdf>  
[http://www.aqmd.gov/aqmp/07aqmp/socioecon/Chapter\\_7\\_Assessment\\_CEQA\\_Alternatives.pdf](http://www.aqmd.gov/aqmp/07aqmp/socioecon/Chapter_7_Assessment_CEQA_Alternatives.pdf)
- California Air Resources Board, March 22, 2006. Emission Reduction Plan for Ports and Goods Movement., Appendix A - Quantification of the Health Impacts and Economic Valuation of Air Pollution from Ports and Goods Movement in California., 111pp. [http://www.arb.ca.gov/planning/gmerp/march21plan/appendix\\_a.doc](http://www.arb.ca.gov/planning/gmerp/march21plan/appendix_a.doc)

<sup>6</sup> WP at page 52.

<sup>7</sup> Eg. See: LeMoine et al. 2008. An innovation and policy agenda for commercially competitive plug-in hybrid electric vehicles. Environ. Res. Lett. 3 (January-March 2008) 014003 <http://www.iop.org/EJ/abstract/1748-9326/3/1/014003/>

### **Vehicle incentives to encourage Californians to buy and operate PEVs**

Given the various approaches to PEVs – from various types of relatively low-cost NEVs and City-EVs to the more costly PHEVs and performance BEVs (pBEVs) – this is not a one size fits-all issue area. CEERT does believe that in order to ensure the accelerated deployment of PEVs there is a need to provide stable long-term and sustainable incentives than already exist. However, while CEERT supports exploring the use of incentives – including incentives funded by ratepayers – we note that incentives for the installation of charging infrastructure could prove to be as effective if not more effective in encouraging the adoption of low-cost NEVs and City-EVs. Certainly vehicle incentives are likely appropriate for the accelerated adoption of pBEVs and PHEVs with significant AER<sup>8</sup> capability. Whether incentives are targeted at vehicle or infrastructure deployment they should be supported by an effective public education/marketing program in order to familiarize the public with the vehicle types suitable to their lifestyles.

One area that has not been explicitly broken out in the discussion in the WP is how structured tariffs could be used to reward the consumer for providing power back to the grid and further motivate the desired behavior in the consumer (depending on the business model used) once vehicle battery technology is robust enough to serve not only in powering the vehicle but to also in grid stabilization/demand response/peak shaving.

### **Options for development of metering and charging infrastructure for PEVs**

It is CEERT's understanding that the work of the Infrastructure Working Council has largely resolved the current standards issues for Level 1 and Level 2 charging, leaving only Level 3 to be defined. Metering, load management and infrastructure issues increase in complexity when moving from Level 1 to Level 3. The conceptual models that may work for effective infrastructure deployment in a world where PEVs are predominantly charged using either Level1 or Level2 systems may not resemble a world in which Level3 is the prevalent charging technology. In the Level 1 2 world deploying infrastructure at the residence and the workplace is likely sufficient to meet most consumers' needs. The challenge lies in how much public infrastructure needs to be deployed and at what spatial granularity to address consumer anxiety over their PEV's round-trip range.<sup>9</sup> In a Level 3 world the potential exists for infrastructure deployment to either still resemble the Level 1 2 world, or for the market/consumer's to abandon that model to return to a more conventional model resembling today's retail fueling stations.

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<sup>8</sup> Or AER-equivalent

<sup>9</sup> Eg See: <http://www.iea.org/Textbase/work/2008/transport/TEPCO.pdf>

This is a complex area and while there has been a lot of research examining infrastructure use and consumer behavior for PEVs<sup>10</sup> we suspect that this is an area that could still benefit from further study especially at the pilot scale.

**Options to streamline permitting requirements and contractor installation of residential PEV charging equipment,**

**AND**

**Consideration of options to incorporate PEV charging with renewable energy supply, including, but not limited to, PV arrays over charging**

There is already considerable experience in California informed by the recently implemented California Solar Initiative and long-standing energy efficiency and related programs that can inform how to address streamlining permitting requirements for the installation (whether contracted or done by the utilities) of charging equipment. Given that the state is likely to continue increasing the deployment of various forms of renewable DG (not necessarily just for PV arrays) CEERT would be interested in exploring innovative approaches to financing and bundling PEV charging and DG equipment with other stakeholders.

One useful outcome from an exploration of updating and streamlining permitting and installation requirements since the work of the 1990s would be the development of Guidelines Handbooks appropriate to each region/service territory that could be used to assist municipalities, planning departments and developers in navigating this area.

**Encouraging partnerships between regulated and unregulated companies**

CEERT believes that there is an important role for third (unregulated) parties in providing innovation that can ensure the future success of PEVs. This is consistent with the view we expressed in our comments regarding the role of third (unregulated) parties in providing innovation that can ensure the future success of the Smart Grid (CPUC Proceeding R.08-12-009). It is also a view held and expressed by several experts featured as presenters during the workshops held as part of the Smart Grid proceeding. CEERT would be interested in exploring the implications of certain non-compete provision in the PU code, and how third parties could work to ensure the success of ET in California through innovative service arrangements.

While Direct Access is currently suspended in California, we understand that the PUC could still decide to revisit this issue which could then open the market to greater competition. Reinstating Direct Access comes with its own set of regulatory challenges.

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<sup>10</sup> Eg. See listed publications for Ken Kurani and Thomas Turrentine at:

- <http://www.its.ucdavis.edu/people/faculty/kurani/index.php>
- <http://www.its.ucdavis.edu/people/faculty/turrentine/index.php>

CEERT looks forward to working with the Commission and other stakeholders on these issues and during any future proceedings on electrifying transportation.

Sincerely,

A handwritten signature in black ink that reads "John Shears". The signature is written in a cursive style with a large, looping initial "J".

John Shears  
Research Coordinator &  
Program Lead for Clean Transportation & Alternative Fuels