



## ANALYSIS

## CALIFORNIA PUBLIC UTILITIES COMMISSION

### **SB 626 (Kehoe) As Amended July 1, 2009**

#### **SUMMARY**

This bill would require the California Public Utilities Commission (CPUC), in consultation with specified parties, to adopt rules by July 1, 2011, to evaluate policies to develop fueling infrastructure for plug-in hybrid and electric vehicles.

#### **CPUC POSITION AND SUPPORTING ARGUMENTS**

**SUPPORT.** This bill is consistent with the CPUC's goals to reduce greenhouse gas emissions. A historic number of automakers have announced plans to deploy a range of plug-in hybrids and electric vehicles (PEVs) in 2009 and 2010. The CPUC supports the need to develop rules and adopt policies to determine the infrastructure and pricing structures for widespread deployment of plug-in hybrid and electric vehicles.

The July 1, 2011 deadline appears appropriate for adopting the rules and addressing all other issues as prescribed this bill. The CPUC should be provided at least an 18 month period, and preferably a two-year period, from the time legislation goes into effect to complete the proceeding addressing these issues. The potential issues that must be analyzed, which are numerous, include electrical system impacts, residential and commercial metering and related on-site infrastructure for plug-in vehicle charging, the role and development of public charging infrastructure, potential grid stability issues and integration with renewable resources, the role of the state to support technology advances, potential existing code and permit requirement barriers, the role of the state to ensure plug-in vehicle interoperability across multiple electricity utility service territories, and the impact of widespread use of plug-in hybrid and electric vehicles on achieving climate change goals pursuant to the California Global Warming Solutions Act of 2006 and the Renewables Portfolio Standard.

#### **ANALYSIS**

- The successful market growth of PEVs will require the availability of standardized and optimized electricity fuel at residential, commercial, and publicly accessible charging sites.
- At the customer level, PEV owners are expected to primarily recharge the onboard vehicle battery at the residence during off-peak hours. However, increased availability of openly accessible daytime commercial and public charging infrastructure located away from the primary residential charge location can reduce

the onboard energy storage requirement for PEVs, and consequently reduce PEV cost.<sup>1</sup>

- Research indicates that if effectively managed, the widespread use of PEVs has the potential to level the off-peak electricity generation load shape and improve utility transmission and distribution asset utilization. In the long term, the promised combination of Smart Grid capabilities and “Vehicle to Grid” (V2G) technology may enable distributed energy storage from the battery storage in a plug-in vehicle to discharge power to the grid, providing grid support, load stabilization, and increased capacity during peak hours.
- Localized PEV charging may create negative impacts on the distribution system for capacity, or grid stability (e.g. from weekday on-peak charging at a workplace or end-of-day charging on-peak upon drivers’ return to home), and require additional distribution investment costs.
- The widespread use of PEVs will have impacts on energy procurement, environment, and the electric transmission and distribution system, and the numerous issues noted above must be analyzed.
- Addressing these issues would have significant impacts on a range of CPUC programs, practices, and policies, as outlined below.
- Widespread deployment of PEVs will be dependent on appropriate rate design and tariffs. The CPUC will need to address rate design issues related to promoting the use of the PEVs. There may be distribution system cost upgrades specifically associated with increased electrification that may offset the improved asset utilization associated with off-peak charging.
- Smart Grid and Advanced Metering Infrastructure (AMI) can help in the widespread deployment of the PEVs. The “Smart Grid” proceeding this summer is already seeking to address interoperability standards with regards to plug-in vehicles, but it does not currently address plug-in vehicle operation across utility service territories that would encourage partnerships between regulated and unregulated companies that are beneficial to ratepayers. It also may impact CPUC authorized IOU AMI deployment plans.
- CPUC Legal Division has preliminarily examined the potential for legal issues relating to third-party electric vehicle charging service providers, and has determined that Public Utilities Code Section 218 likely discourages the use of certain business models. While this finding potentially could reduce the scope of issues and potential utility costs and tariff options, the issue of charging services is highly fact-dependent. In addition, some charging service business models may implicate federal regulations relating to the wholesale sale of electricity.
- This bill may complement federal policies to support residential, commercial, and publicly accessible charging infrastructure necessary for a market for plug-in vehicles. For example, the 2009 American Recovery and Reinvestment Act (ARRA)

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<sup>1</sup> U.S. Department of Energy. November 2008. “PHEV charging infrastructure review.” U.S. DOE vehicle technologies program-advanced vehicle testing activity. Idaho National Laboratory

modifies a previously authorized federal plug-in vehicle tax credit and temporarily increases the tax credit incentive for alternative fueling infrastructure.<sup>2</sup> The total value of this tax credit for California depends on the market growth of PEVs, and the number of installed charging station owners that apply for the credit. Moreover, pending federal legislation (Waxman-Markey) would amend the Public Utility Regulatory Policies Act (PURPA) to direct state PUCs to examine infrastructure issues required by this bill.

#### **PROGRAM BACKGROUND:**

- **The CPUC currently has a limited IOU Low Emission Vehicle program**, which was created to provide utility support for the realization of CARB's 1990 Zero Emission Vehicle mandate. The CPUC's Low Emission Vehicle (LEV) programs currently authorize \$51.5 million of ratepayer funding for fiscal years 2009 and 2010 for the IOUs' incremental costs of alternative fuel and vehicle procurement relative to conventional vehicles, and other LEV program costs. These programs include electricity system impact assessment, EV research and development, vehicle demonstration, safety testing, customer education and outreach, and partnerships with local clean transportation organizations, automakers, and trade organizations. A major portion of LEV funding is also directed to non-road electric vehicles and infrastructure at ports and truck stops. LEV programs further support Compressed Natural Gas (CNG) fueled vehicles, hydrogen vehicle technologies, propane vehicle technologies, and biofuels vehicle technologies.
- **The CPUC's policies on utility LEV programs were updated in D.03-10-086 and D.05-05-010, and most recently under GRC decisions.** D.03-10-086 expressed continuing support for the environmental benefits of utility LEV programs, and approved continued funding of utility LEV programs through the end of 2005. D.05-05-010 states that the CPUC will evaluate future requests for discretionary LEV on a multi-year basis in each of the utilities' next General Rate Cases (GRCs) or other cost of service (COS) proceedings. The latest CPUC decisions to address electric drive LEV programs are found for PG&E in D07-03-044, for SDG&E in D.08-07-046, and for SCE in D.09-03-025.
- The CPUC is meeting with Electric Transportation managers with the IOUs, experts at the Electric Power Research Institute, environmental stakeholders, academics, CEC and CARB, third party infrastructure providers, and other stakeholders to discuss electric system impacts due to the widespread use of PEVs.
- Analysis of grid compatibility issues are being explored in the recently released white paper from the CPUC's Policy and Planning Division entitled "**Light-Duty Vehicle Electrification in California: Potential Barriers and Opportunities.**" Discussed topics include, but are not limited to: economic and environmental benefits and impacts due to LDV electrification, including electrical system impacts due to widespread use of PEVS, current utility LEV electric transportation programs, state and federal incentives, potential state policy barriers, tariffs and tariff barriers, and potential CPUC policy incentives to support PEV market growth. While no

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<sup>2</sup> ARRA Section 1123, p. 211

official decision has been reached, the paper may inform a scoping memo for an Order Instituting a Rulemaking and subsequent proceeding.

- Additionally, current efforts at the CPUC to examine PEV issues include the Long Term Procurement Plan (LTPP) proceeding R08-02-007 and Smart Grid proceeding R 08-12-009. An "Electrification Working Group" emerged from an October 2008 LTPP working group meeting. The EWG met in early 2009 to discuss energy procurement impacts due to LDV electrification. Members reviewed CEC analysis of potential impacts. The take away point from the CPUC's Energy Division staff analyst for LTPP was: "Demand impacts of electrification are potentially significant, but not in the 2020 timeframe of the 2010 LTPPs. The 2010 LTPP should address the potential impact of electrification in broad terms, but explicit scenario analysis is not required. Future LTPP cycles (2012 and beyond) will probably need to analyze the issue in more depth."

### LEGISLATIVE STAFF CONTACT

Michael Poe, Legislative Liaison, OGA

(916) 327-7788

[mdp@cpuc.ca.gov](mailto:mdp@cpuc.ca.gov)

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