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California Energy Commission DOCKETED 12-EPIC-01
TN # 67460 OCT 02 2012

Date California Energy Commission
Dockets Office, MS-4
Re: Docket No. 12-EPIC-01
1516 Ninth Street
Sacramento, CA 95814-5512
Dockets@energy.ca.gov

October 1, 2012

REPLY COMMENTS
Of
COULOMB TECHNOLOGIES
ChargePoint Network

FIRST TRIENNIAL INVESTMENT PLAN
ELECTRIC PROGRAM INVESTMENT CHARGE (EPIC) PROGRAM
California Energy Commission
California Public Utilities Commission

Coulomb Technologies appreciates this opportunity to provide reply comments to the California Energy Commission and the California Public Utility Commission for the First Triennial Investment Plan for the Electric Program Investment Charge (EPIC) Program. This program provides an opportunity to support the development and deployment of next generation clean energy technologies—specifically in the area of electric vehicle charging and grid integration.

The newly constituted EPIC program will be a critical resource to bring together the investment expertise of the CEC with the policy leadership of the CPUC to address the GAPS in R&D funding priorities and realize the enormous benefits that Electric Vehicles to the electrical grid.

Coulomb Technologies filed comments last August to advocate for investments that reflect the critical funding gaps that must be addressed to support the innovation and manufacturing capabilities needed to develop, demonstrate and facilitate the grid efficiencies and potential for these benefits to be realized by EV Drivers.

Coulomb maintains the largest network of independently owned charging stations in the world and has developed the most sophisticated software platform to develop grid management services to support the integration of electric vehicles on the grid.

As a California based manufacturer and developer of EV Charging Services we endorse the general direction of the draft proposed three year EPIC investment plan.



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Overall we would like to make the following observations and recommendations:

SCOPE

- The proposed plan has identified key strategic objectives to advance plug in electric vehicle infrastructure and use EVs to improve the operation and performance of California's power grid.
 - **S2: Cost-beneficial customer side of the meter energy choices:** provides for opportunities for the development of cost effective meters (embedded meters in EVSE) as well as development of DR technologies and strategies to allow customers to participate in the EV ancillary services market
 - S9: Advance Plug in Electric Vehicle Infrastructure and use EVS to improve and Operate Performance and California's Power Grid:** objective should stipulate demonstration and deployment "around the AMI meter" to accelerate consumer benefits

FUNDING PRIORITIES

- These objectives must be recognized as a priority in the budget and funding timeline. The EV Market in California has been identified as the most critical market in the US. A recent Pike Research report has indicated that nearly 1 in 4 vehicles sold in the years 2012-2020 in the US will be in California. The benefits to ratepayers are a critical component for the market development and successful scale of the market to achieve mandated goals in the State. The market development timeline is in the next 3 years.
- The development of the EPIC priorities must also reflect the Governor's EV Action Plan, including the priorities to support interoperability and public access of all charging stations (separate template below).
- The development of the EPIC priorities must also mirror and promote policy and rule changes at the California PUC and other independent agencies to enable these benefits and outcomes. These policies include: Development of the Sub meter Protocol required by Phase II OIR, LCFS benefits captured by EV Drivers, CAISO policies to enable DR and Frequency Regulation markets for EVs.
- Funding priorities should not duplicate the AB 118 investment plan priorities. The emphasis currently in AB 118 is charging infrastructure deployment and regional planning. We see this investment plan as facilitating the R&D priorities for EV Grid



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integration that will compliment AB 118 efforts but should not duplicate efforts in the areas of regional planning or deployment.

PROJECT MATCH FUNDING

- The opportunity to leverage federal funding in this area is critical to success in California. The Department of Energy is embarking on a similar strategic path to identify priorities, national goals and funding targets necessary to advance technologies to modernize the grid and capitalize on the rapid adoption of Plug in Electric vehicles. The Department of Energy is undertaking a similar exercise to identify funding gaps to develop a roadmap for integrating renewable technologies into the electricity grid. The two principal departments at DOE, the Office of Electricity and the EERE have formed a cross agency team to identify gaps and prioritize DOE funding for the future.
- We recommend that CEC staff coordinate these efforts (see “Action Plan Addressing the Electricity Distribution System” and contact Dr. Anjan Bose, Grid Team Lead at DOE). If possible, match funding should be set aside for federal awards up to 50% of the projects.

ADVISORY STRUCTURE/COORDINATION WITH IOU PLAN:

- While the plan should be coordinated to a certain extent with the utility EPIC funding, it is important that funding levels be maintained to reflect the importance of third party access and appropriate investments in new technologies and innovations that have been developed and will benefit from demonstration and deployment funding in this area. These opportunities may be outside the utility plans and timelines. We cannot wait for these key market development activities.
- An advisory structure should be contemplated for this level of funding with the objective of ongoing input into technology advancement as well as coordination with other agencies and priorities. The EVSE Industry has not been represented in the AB 118 advisory council and some representation for market and technology input should be considered.



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COULOMB FUNDING RECOMMENDATIONS (reflect August comments)

- Providing funding for funding areas that support the “next horizon” of EV issues by organizing a stakeholder Vehicle Energy Services Council
- Provide funding for third parties to develop and demonstrate energy management capabilities for EVSE independent of utility AMI networks and Smart Energy Profile 2. It’s our contention that this should not be the exclusive or even preferred way of signaling DR, Frequency Regulation, and TOU control to EVSE. Indeed we can demonstrate that these Smart Grid capabilities will move to market much, much faster without the requirement to use SEP2.
- Support for EVSE capabilities to provide ancillary grid services such as grid frequency regulation using electric vehicle charging, by developing and demonstrating a prototype electric vehicle charging system that will perform grid frequency regulation. This will help avoid blackouts and brownouts on the energy grid. It will also help facilitate the integration of renewable energies onto the grid.
- Support EV “Customer-Side Electricity Storage Projects” such as energy storage for peak load reduction, energy storage for load management or demand response and energy storage for integration of renewable generation that would utilize electric vehicles in a micro-grid demonstration and show the way to avoid demand charges in the rollout of high power vehicle charging.
- Support reduction of costs for ratepayers in EVSE deployment by funding the development of a sub meter protocol and certification of sub meters in the EVSE to make embedded meters a reality pursuant to the CPUC Phase II decision.



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California Energy Commission EPIC Initiative Template

Proposed Funding Initiative: NETWORK INTEROPERABILITY PROGRAM: Supporting

EV DRIVERS

Technology Pipeline Stage

Applied R&D and Pilot-scale Testing	Full Scale Demo	Early Deployment	Market Facilitation
X	X	X	X

Electricity System Value Chain

Grid Operations/market Design Management	Generation	Transmission/Distribution	Demand Side
			X

Issues: The EVSE industry has recognized that gaps and challenges remain to address public policy goals of these goals of driver accessibility to all charging infrastructure deployed in the State and the ability to find and reserve stations. Current challenges for drivers and the adoption of EVs include:

- Drivers must sign up with multiple charging service providers, carry different credentials for authentication and authorization, and use multiple payment systems. This problem was solved for cell phones by enabling roaming across multiple networks.
- Drivers must go to multiple sources/websites to find charging stations
- Drivers do not have a pervasive method to determine if stations are in use prior to arriving, or to reserve them

Purpose: We see an opportunity for the California Energy Commission and the CPUC to play a role in promoting this effort to ensure drivers in the California market, the largest EV market in the United States, will be able to access charging stations seamlessly and consequently grow the market in the State by funding an initiative under the EPIC program

- WE RECOMMEND that the EPIC INVESTMENT PLAN fund the formation of a roaming clearing house that multiple EV Networks can use in order to present a uniform driver experience in which any driver can charge at any EVSE. (Market Facilitation/Full Scale Demo)



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- I. Business Formation costs \$500,000
 - ii. Technology development \$3M
 - WE RECOMMEND that the EPIC INVESTMENT PLAN fund the conversion to a standard authentication mechanism that will replace charging cards used by network providers with cards that have roaming ability - \$100,000 (per manufacturer- Applied R&D)
 - WE RECOMMEND that the EPIC INVESTMENT PLAN fund the software modifications to California EV Network Providers to allow roaming and unified station mapping - \$500,000 per manufacturer (Applied R&D).

Provide a few paragraphs explaining the actions and results to be produced by this initiative.

The intention is to leverage the Industry standards work that is being undertaken in a collaborative effort by the National Electrical Manufacturers Association to enable market scale in California. Benefits include:

- Greater Choice of EV Charging stations near driving destinations
- Improved availability and range for EV Drivers
- More Economical EV Fueling from Product Standardization and “Coopetition”
- Much needed convenience to drivers
- New Service plans that include single bill electricity plans covering home, work and public charging
- Greenhouse Credit Management/LCFS credit management

Background:

Coulomb’s mission is to ensure drivers are confident and comfortable that they can charge. We see two needs for the driver: That they can find a station where they need to and they can use it.

Coulomb’s ChargePoint is featured by automakers such as Nissan to support the positive driver experience that they know is critical for consumer adoption. In addition Coulomb has over 1,000 customers who provide charging services to drivers.

Coulomb chairs a NEMA committee that was recently selected to lead the development of industry standards to address the “gaps” in infrastructure standards affecting EV rollout in the



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United States. The standards development work is underway and scheduled to be completed by end of 2013.

We recognize that collaboration is needed among EV Charging Service providers and are working with companies such as Eaton, Leviton, ECOTality and GE under the auspices of the National Electrical Manufacturers Association.

This program would leverage this collaboration and provide for a neutral mechanism for driver compensation, funding for manufactures to develop software to integrate into the new system as well as provide for a standard authentication method.

Submitted by:

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