California Energy Commission
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California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

RE: EPIC Investment Plan

Clean Transportation Technologies and Solutions

www.calstart.org

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Dear Commissioners,

CALSTART appreciates the opportunity to provide input on the first triennial Investment Plan for the Electric Program Investment Charge (EPIC). This program will benefit California's ratepayers by helping develop and deploy clean technologies that will reduce GHG emissions, improve air quality, stabilize the grid, and increase energy reliability. Our comments will focus on the role of clean vehicles in helping meet the EPIC program goals while also contributing to the success of related programs.

As electricity becomes an increasingly large and important piece of the state's transportation energy portfolio, the challenges and opportunities in this sector will grow. Smooth and successful integration of Plug-in Electric Vehicles (PEVs) into the grid will yield substantial economic and environmental benefits for California businesses and ratepayers. We therefore support the inclusion of a number of EV-related elements in the draft investment plan.

Our comments below focus largely on the scope of the investment plan, though we also discuss benefits and programmatic issues.

Comments Related to S9 Strategic Objective: Advance Plug-In Electric Vehicle Infrastructure and Use EVs to Improve the Operation and Performance of California's Power Grid

We strongly support the inclusion of strategic objective S9 in the plan. At a high level, the five initiatives outlined for this objective complement each other and hit on many of the key barriers to successful widespread integration of plug-in vehicles into the grid. We commend staff for recognizing the broad needs here and for outlining potential funding initiatives. We also agree with the grid reliability, cost, safety, and societal benefits that you describe. Indeed, we would also argue that these initiatives could yield economic development benefits, particularly in light of California's competitive strengths in this industry.

While we agree with the overall direction of the initiatives described under S9, we believe that some of the proposed initiatives are written in a way that may unnecessarily narrow their scope and reduce CEC's flexibility in creating solicitations. We therefore recommend expanding the scope in a few areas, as outlined below:

- First, we note that the focus should be broadened from "plug-in electric vehicles" to "plug-in vehicles." This is a small change in wording but allows for the use of plug-in hybrid and extended range electric vehicles as well as full battery electric vehicles. This added flexibility will allow for the initiative to have a broader impact, particularly in the near term.

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- Second, we suggest expanding the technological scope of "S9.3: Develop Novel Technologies and Strategies to Increase the Energy Efficiency of the Electric Transportation System." As currently described, this initiative would focus specifically on HVAC systems, lightweighting, wireless charging, and ecodriving. We note that there are several additional technology hurdles and investment needs, including improvements in the electric drive systems themselves and also improvements in the internal combustion engine portion of a plug-in hybrid system. Narrowing the scope of EPIC funds to a small subset of technologies unnecessarily limits program flexibility. See "additional comments" below for thoughts on how EPIC and AB 118 can complement each other.
- We recommend considering some limited funding for research, expert input, and "road-mapping" for different technology areas. The CalHEAT Roadmap effort mentioned on page 100 of the draft is one such effort that is providing valuable input on truck technology needs. A similar road-mapping effort focused on vehicle-to-grid (V2G) needs and barriers could help to identify barriers, ensure that scarce resources are used efficiently, and lay out a longer term plan and strategy for V2G. This is particularly useful for areas like V2G where there are still several unanswered technology, market, and policy questions. A study and road-mapping effort for V2G would complement the initiatives outlined in the draft plan and would allow staff to tap outside resources.

Comments Related to S13.3 Demonstrate Advanced Vehicle-to-Grid Energy Storage Technologies and Second-Use Vehicle Battery Applications

We strongly support staff's inclusion of a proposed funding initiative focused on vehicle to grid demonstrations and second-use vehicle battery applications. We actually see these as separate but related needs: (1) vehicle-to-grid demonstrations with actual V2G capable vehicles in different applications, and (2) demonstrations of second use applications for vehicle batteries. There are many cases where these things would be linked but they may also be implemented individually in some cases.

The draft plan notes that these demonstrations could help build the business case for V2G and battery second-use, and for the purchase of plug-in vehicles. While we agree that this is true, we also believe there would be some additional benefits. The demonstrations could evaluate the integration of V2G and energy storage at the distribution and transmission level, helping to identify the best markets for V2G applications. The "road-mapping" effort for V2G discussed in the comments on S9 above would complement these demonstrations and allow for some additional lessons learned.

Additional Comments on the Draft Plan

At this time, we see three areas of need that do not appear to be addressed by the staff draft. These are briefly outlined below:

- **Outreach and Education:** There is still a good deal of research and outreach work to be done in order to ensure successful integration of PEVs into our transportation system. Fleet and consumer education efforts can increase plug-in vehicle penetration, facilitate the sharing of best practices, and avoid "bad experiences." Education efforts are also needed to help encourage off-peak charging. Finally, there is an opportunity to take advantage of synergies between

PEVs and clean distributed generation. Simple outreach in this area would be quite helpful.

- **Research and Planning:** As noted in a few places above, we see some value in research, planning, and "road-mapping" activities in order to accelerate technology development and deployment. These efforts complement the technology demonstration and deployment efforts laid out in the plan, and can help ensure that scarce funds are directed toward the most promising projects. They can also identify crucial technology and policy barriers. The staff draft points out that existing roadmaps and public workshops can play this role to some extent, and we agree. However, in some cases, there is a good argument for allocating some funding for an outside group to do this work. Vehicle-to-Grid (V2G) technology is an example, and advanced truck technology (currently addressed through the CEC-funded CalHEAT effort) is another. Both of these are important technology areas with many open questions where a panel of outside experts can provide extremely valuable input on a narrow topic. This is input that cannot really be replaced by a broader advisory group or by CEC staff alone.
- **Market Facilitation Support for Electric Vehicles:** There is a definite need to directly support the PEV market. Market success for these technologies is essential if we want to capture the related economic and environmental benefits. Most importantly, this means considering buy-down funding for electric vehicles. We recognize that this falls in the "market support" category and may therefore be out of scope for the plan given the CPUC decision that creates the overall EPIC framework, but it is still worth mentioning. With regard to market facilitation efforts, we recommend maintaining the flexibility to deal with issues such as permitting and standards around electric vehicles if need be.
- **EPIC and AB 118:** Both of these programs will enhance the development and deployment of clean vehicles in California. We understand that there may be a desire to clearly separate EPIC-funded efforts from those that may be covered under AB 118. However, given that AB 118 funds are oversubscribed and that needs are subject to change, we recommend keeping both programs broad and flexible and dealing with any overlap or conflicts through coordination in the implementation phase.

We appreciate the opportunity to provide input on this important program. The successful integration of electric vehicles into the grid will yield substantial benefits for the state, and the investments outlined in the staff draft should help address some of the key barriers and potential pitfalls. Please feel free to contact me anytime should you wish to discuss our comments.

Sincerely,

James Hall
Policy Director