CESA
CALIFORNIA ENERGY STORAGE ALLIANCE

December 10, 2013

Transmitted by Email

Kiel Pratt
California Independent System Operator

Subject: November 27, 2013 Draft of California Grid Integration Roadmap: Enabling Vehicle-Based Grid Services

Dear Mr. Pratt:

CESA appreciates CAISO's leadership in presenting to stakeholders a draft Roadmap for Enabling Vehicle Based Grid Services ("Roadmap"). In particular, CESA strongly supports CAISO's proposed three inter-dependent tracks, the foundation of which is based on specific use cases and understanding the vehicle grid integration ("VGI") value and the market potential for grid services enabled by VGI (Track 1). CESA agrees that today "VGI value is not clear", "for VGI services to be adopted by customers there has to be enough value to cover costs across the entire value chain", and "to realize VGI value, the rules and business processes must be clear." (Roadmap, page 6) Unlocking this value will lower overall total cost of ownership for potential EV owners and help accelerate EV adoption.

CESA's most significant comment on the Roadmap overall is to encourage consideration of stationary energy storage as a potential VGI resource. Stationary energy storage can be utilized to enhance electric vehicle ("EV") charging revenue in the near term, until stakeholders work out the appropriate technical, policy and business model options for vehicle to grid charging (especially impacts to vehicle warranties). Specifically, stationary energy storage has been shown (and is being deployed in California already) to:

1. Mitigate the cost of EV charging integration into the grid, especially at higher rates of charge.

2. Provide an emergency backup source of energy for local loads and/or EV charging. This can be a significant public safety enhancement for disaster recovery situations.

3. Assist with local load management to achieve energy savings in the form of demand charge reduction and/or reduced peak energy cost.

4. Provide frequency regulation or other ancillary services to CAISO or the local utility.

The role of stationary energy storage is particularly useful when considering grid integration of Level 2 and higher voltage DC fast charging, as stationary energy storage can be used as the power-boost for such charging and be 'trickle charged' during a much longer time period from the grid. Encouraging Level 2 and higher voltage fast charging will aid consumer adoption of EVs by increasing performance, convenience, and helping to mitigate 'range anxiety'.

Stationary energy storage used to augment EV charging will create valuable usage profiles and a regulatory pathway for providing grid services into CAISO markets indirectly at first, without affecting vehicle warranties. Once the duty cycle and usage patterns are better established, it will be relatively straightforward to extend such services to the EV itself.

Stationary energy storage used to augment EV charging is also a useful intermediary step for aggregating grid services – by aggregating distributed stationary energy storage and facilitating a transparent, low cost means for interconnecting and participating in CAISO markets it can be used as a near-term proxy for how aggregated EV batteries can perform the same function. Further, stationary energy storage systems will also be configured with all the necessary telemetry, monitoring and controls and can facilitate EV to grid integration and eventual V2G services as well.

With respect to transparent, low cost interconnection, CESA recommends that energy storage be recognized as a generator (like solar PV, and ideally in the same preferred classification as solar PV) for purposes of interconnection. This will eliminate unnecessary, expensive complexity and issues surrounding wholesale load. FERC Order No. 792 paves the way for this by including energy storage in the small generator interconnection process. Low cost operation of energy storage assets would benefit by CAISO further clarifying that energy storage releases of energy are to be credited at the same rate schedule as when energy is drawn from the grid to charge energy storage systems (i.e. retail in -> retail out or wholesale in -> wholesale out).

It is also very important for CAISO to encourage the California Public Utilities Commission to clarify that sizing of storage does NOT have to match the size of on-site renewable generation for purposes of securing behind the meter energy storage incentives (i.e., energy storage power may be higher than or lower than the size of the solar PV system, as many applications have different requirements and demand adjustments where load reduction is desired, which can require the power capacity of the storage to be greater than that of the local solar PV generation and enable trickle charging the storage.)

Safety and reliability are critical to establishing a healthy EV market in California and to maintain consumer confidence. CESA applauds the CAISO for including this as a foundation of its roadmap, and agrees with the CAISO, “State standards should map to existing standards already around EVs and VGI.” CESA concurs and supports CAISO’s proposal to “assess the standards underway, and work towards filling gaps where they need more support”.

Finally, CESA strongly supports the CAISO’s assertion that “Given the potentially large demand that the state could create for VGI related infrastructure, including EVs and EVSE, developing state procurement specifications would clarify the technology requirements for a potentially large segment of demand.” CESA respectfully adds that EV charging, and stationary energy storage coupled with EV charging (and or local renewable energy/demand response/energy efficiency) can be a valuable preferred resource that can be aggregated and called upon to provide local capacity, flexible capacity/resource adequacy and even distribution support/deferral/reliability benefits. As such, procurement and contracting should be added to the priority list of issues to facilitate utility contracting

for such services. A clear pathway to monetizing benefits for the first stationary behind the meter energy storage systems and associated use cases/duty cycles will be the best way to demonstrate to industry the benefits and costs associated with greater V2G participation. Monetizing such benefits will reduce the total cost of ownership and will help accelerate EV adoption.

Thank you very much for this opportunity to provide comments on the Roadmap. CESA looks forward to working closely with the CAISO on this critically important endevour.

Very truly yours

Janice Lin, Executive Director