BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Consider Alternative-Fueled Vehicle Programs, Tariffs, and Policies.	R.13-11-007 Filed November, 2013

COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE ON ORDER INSTITUTING RULEMAKING

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The California Energy Storage Alliance ("CESA")[1] hereby submits these comments pursuant to Rule 14 of the California Public Utilities Commission's ("Commission's") Rules of Practice and Procedure, and the Order Instituting Rulemaking, filed on November 14, 2013 ("OIR").

I. INTRODUCTION.

CESA appreciates the opportunity to provide comments to the CPUC's AFV OIR and participate in this exciting time as more electric vehicles enter the California market. CESA

[1] The California Energy Storage Alliance consists of 1 Energy Systems, A123 Energy Solutions, AES Energy Storage, Alton Energy, American Vanadium, AU Optronics, Beacon Power, Bosch Energy Storage Solutions, Bright Energy Storage, BrightSource Energy, CALMAC, Chevron Energy Solutions, Christenson Electric Inc., Clean Energy Systems Inc., CODA Energy, Deeya Energy, DN Tanks, Duke Energy, Eagle Crest Energy, EaglePicher, East Penn Manufacturing Co., Ecoult, Energy Cache, EnerSys, EnerVault, FAFCO Thermal Storage Systems, FIAMM Group, FIAMM Energy Storage Solutions, Flextronics, Foresight Renewable Systems, GE Energy Storage, Green Charge Networks, Greensmith Energy Management Systems, Growing Energy Labs, Gridtential Energy, Halotechnics, Hecate Energy LLC, Hydrogenics, Ice Energy, Innovation Core SEI, Invenergy, K&L Gates LLP, KYOCERA Solar, LightSail Energy, LG Chem Ltd., NextEra Energy Resources, NRG Energy, OCI Company Ltd., OutBack Power Technologies, Panasonic, Paramount Energy West, Parker Hannifin, PDE Total Energy Solutions, Powertree Services, Primus Power, RedFlow Technologies, RES Americas, S&C Electric Co., Saft America, Samsung SDI, Sharp Labs of America, Silent Power, SolarCity, Sovereign Energy Storage LLC, Stem, Stoel Rives LLP, Sumitomo Corporation of America, TAS Energy, Tri-Technic, UniEnergy Technologies, Xtreme Power, and Wellhead Electric Co. The views expressed in these Comments are those of CESA, and do not necessarily reflect the views of all of the individual CESA member companies. http://storagealliance.org

believes that electric vehicles as both a significant source of new manageable load, and, as a dispatchable storage resource, can make a significant contribution to a cleaner, more stable, and more affordable electric grid in California.

II. RESPONSES TO THE FOUR QUESTIONS POSED BY THE COMMISSION REGARDING VEHICLE-GRID INTEGRATION (VGI).

1. Is the VGI framework proposed in the White Paper a reasonable way to organize VGI activities and scenarios?

CESA strongly supports the VGI framework proposed in the White Paper and appreciates the Staff's well-researched report and proactive articulation of the issues at hand. It is a thoughtful and comprehensive way to structure a very complicated topic. Regarding the components of the framework, CESA has the following comments on each of the components:

1.1 Direction of Power Flow

CESA agrees that direction of power flow is a key component of the framework, and that given the emerging nature of this industry, that V1G is the necessary *starting point*. However, that should not preclude immediate attention to key V2G items such as interconnection, which may be handled in parallel and indeed are already being addressed to some degree by stationary energy storage systems. Given the current redesign of DR via the DR OIR additional revenue streams could be obtained for EV owners and other ecosystem stakeholders simply by modulating the charging of EVs. V2G can provide value through similar mechanisms, but the magnitude of this value is several times higher due to doubled power capacity and unlimited duration of provision of services such as Regulation. Thus, V1G should be immediately explored at Level 2 and higher voltage DC fast charging. This may help accelerate ecosystem sales by 1) Lowering total cost of ownership for EV owners and potentially opening channels for reducing up front vehicle acquisition costs, and 2) Providing a better experience for consumers by enabling a faster, more convenient reliable source of 'fuel' for EV owners.

While bi directional flow from the mobile (i.e. connecting at multiple locations over time) vehicle to the grid does add complexity beyond that of a controllable load, it is important to note that bi directional flow is already being undertaken with behind the meter stationary storage to support load management objectives as well as services to be sold in CAISO's frequency regulation markets. Stationary storage can be an excellent way to augment EV charging by integrating stationary storage with the EV charger. Stationary energy storage can be utilized to enhance EV charging revenue in the near term, until OEMs and other stakeholders work out the appropriate technical, policy and business model options for vehicle to grid charging (especially impacts to vehicle warranties). Specifically, stationary 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

1.2 Coordination of Actor Objectives in the PEV Value Chain

CESA would like to suggest that the car manufacturers and battery manufacturers, otherwise known as original equipment manufacturers or "OEMs," be considered as key actors. OEMs are foundational actors for many reasons. First, they have a direct interest in increased sale of EVs and thus an interest in any new ownership/financing/business models that could affect increased sales. Second, they may, in the future, play a role in assisting with aggregating resources and or interacting with wholesale markets or other ways to monetize value from EVs. Further, the two use case options of 'fragmented' and 'unified' may in fact be a spectrum, where

in the future, some portions of the eco system are vertically integrated/controlled, whereas others are not. Generally, the outcome of this will be driven by industry standards (i.e. SAE J1772 Charging Plug and controls) and competitive dynamics. Generally, CESA believes that it is not the role of the CPUC to specify this eventual outcome but rather to facilitate a clear regulatory framework, identify and value costs vs benefits, and minimize regulatory uncertainty/risk for all stakeholders in order to accelerate ecosystem development.

1.3 Geographic Resource Aggregation

CESA agrees that resources can either be individual or aggregated. As noted in our comments above on "Direction of Power Flow," CESA would also like to encourage Staff to consider the ability of stationary storage to augment aggregated EV charging locations as well. Again, this can be an intermediary step – by aggregating distributed stationary storage and facilitating a transparent, low-cost means for interconnecting and participating in CAISO markets, the State can use this platform as a near-term proxy for how aggregated vehicle batteries can perform the same function. Further, stationary 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.

1.4 CESA Supports Open Markets and Competition

Because EV charging and related infrastructure and business models are just beginning, CESA strongly recommends that regulators and grid operators allow each resource – EVs, charging stations, stationary storage co located with charging stations, and facilities - to be a potential grid resource. This will certainly allow market participants and competitive forces to determine how to best handle VGI functionality. Again, as mentioned above, many of the issues are already being addressed for the more generalized case of behind the meter stationary energy storage.

1.5 CESA Supports Utility Participation to Capture Distribution Benefits

Similarly, CESA supports the hybrid approach where by utilities and non-regulated firms can both serve as aggregators. In this way, utilities will have an interest/incentive to participate as well as non-regulated firms. This will stimulate competition, creativity and diversity in ownership/business models and lower overall costs for ratepayers. This is also important because utilities have a unique and privileged insight into local distribution requirements. For example, CESA can envision a future scenario where utilities execute long term contracts for third party or customer-owned storage services behind the meter to assist with local distribution support/deferral and peak load management for a portion of time each day. This would have the benefit of 1. Maximizing/optimizing the use of storage capacity, whether it is stationary storage or storage on board a vehicle 2. Targeting utilization of those resources to a specific geographic location for maximum grid benefit 3. Creating a win-win arrangement whereby all stakeholders support cost-effective use of available resources to make the grid more reliable and affordable overall. CESA thus strongly opposes both competitive market aggregation without utility participation as well as any scenario where utilities are the sole aggregator.

1.6 Energy storage can help mitigate conflicts in primacy to facilities, the distribution system or the wholesale market

CESA believes that open markets and competition will facilitate optimization of benefits among competing interests, thereby addressing concerns about primacy without CPUC intervention. CESA welcomes the opportunity to work with the CPUC, CAISO and our members to demonstrate this with pilot projects. CESA agrees that meeting grid services needs for each of these system locations can conflict at times, particularly if limited by the capacity and reliability needs of a vehicle battery. Again, this is another area where adding extra 'inventory' in the form of stationary energy storage can help mitigate conflicting needs at any point in time. Behind the meter stationary energy storage is already being deployed and appropriate

optimization algorithms are being developed to manage competing needs for financial and operational optimization. EV charging is a subset use case of the more generalized behind the meter energy storage + market services use case.

1.7 Procurement and Contracting should be added as an additional regulatory question to the framework

CESA applauds the exhaustive list of regulatory issues that Staff has identified for consideration in this OIR. CESA would like to respectfully add that EV charging and stationary storage coupled with EV charging (and or local renewable energy/demand response/energy efficiency) can be valuable preferred resources 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 stationary behind the meter energy storage and associated use case/duty cycle will be the best way to demonstrate to OEMs 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. The specific requirements associated with the V2G use case can be determined in parallel.

2. Do you agree with Energy Division's prioritization of the VGI scenarios?

CESA generally agrees with the prioritization of the VGI scenarios, with the caveat that any prioritization schema should not have the unintended outcome of discouraging competition or innovation. Given that bi directional flow is already being addressed today for behind the meter stationary energy storage, CESA recommends that this proceeding consider the challenges and progress made to date for this more generalized use case and how it would apply to support EV charging, and in particular, high current AC level 2 and Level 3 DC fast charging, as these issues may pave the way to more rapid consideration of bi directional power flow from the

vehicle itself. In particular, CESA encourages the CPUC to encourage creative new contracting mechanisms for utilities to partner with their customers or third parties to purchase multi-year contracts for behind the meter energy storage services. Initially, this can be for stationary energy storage devices (including those paired with EV charging) and later, these contracts can be amended with OEM support to also include vehicle energy storage devices.

3. Does the White Paper capture all the utility regulatory barriers to VGI?

CESA believes that an additional barrier not currently captured in the White Paper is the lack of long term contracting mechanisms for EV and EV Charging Station owners to provide behind-the-meter services to wholesale markets or to the local utility to provide other services such as capacity/flexible capacity as discussed above.

4. How should we address any potential safety and reliability concerns associated with VGI?

Safety and reliability are critical to establishing a healthy EV market in California and maintaining consumer confidence. CESA applauds the CPUC for including this as a foundation of this OIR. It is important to note that existing safety standards do exist – for example, interconnection (IEEE 1547) standards are already applicable to both EV charging and stationary energy storage. Going forward, CESA recommends that existing safety standards and requirements be clarified for EV charging as well as behind the meter stationary energy storage and be dealt with through existing standards bodies. The CPUC can facilitate clear communications to all stakeholders about resulting standards. By identifying existing safety requirements not only for interconnection but also for first responders, the CPUC can determine whether or not clarifications need to be made on a regional basis or new standards/requirements need to be issued.

III. COMMENTS ON RATE DESIGN POLICY.

CESA believes that one option for addressing medium and heavy-duty PEV demand charges is to integrate stationary energy storage into charging stations, potentially paired with renewables as well. Stationary energy storage can help mitigate impacts of high voltage DC charging and also provide grid services when not charging a vehicle. This is being commercially deployed now.

IV. COMMENTS ON FINANCING.

CESA recommends that the Commission "direct the utilities to provide financing to customers to encourage PEV adoption," and suggests on-bill financing as an option to achieve this specifically to help manage the up front cost of new local charging infrastructure for rartepayers. With this option, EV utility customers would be able to secure financing through their utility and make payments on their monthly utility bill, similar to how energy efficiency is being financed today.

As stated above, in addition to financing, CESA also recommends that the Commission explore alternative contracting mechanisms whereby utilities can procure services provided by behind the meter stationary energy storage and, eventually, vehicles owned by third parties or utility customers. These services can be used to provide local capacity, flexible capacity, resource adequacy and/or even distribution support/ deferral services under long term, multi-year contracts.

V. GENERAL COMMENTS.

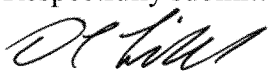
CESA recommends that the Commission recognize storage as a generator (ideally in same preferred classification as Solar PV) for purposes of interconnection. Storage delivers the same class of benefits as PV and helps improve PV performance. We also reiterate that the

Commission has already, through the energy storage proceeding, clarified that V2G is a form of energy storage. This will eliminate unnecessary complexity and issues surrounding wholesale load. FERC 792, which specifically adds energy storage as eligible for small generator interconnect agreements and procedures (SGIP), points to this same recognition from the wholesale side. Furthermore, CESA recommends that the Commission clarify that storage discharge of energy is to be credited at the same schedule as when energy is drawn from grid to charge (i.e., retail charge rate in -> retail discharge rate out or wholesale charge rate in -> wholesale discharge rate out). Lastly, CESA recommends that the Commission clarify that sizing of storage does NOT have to match the size of the on-site renewables for purposes of securing behind the meter energy storage incentives (i.e. storage power may be higher than or lower than the size of the PV as many applications have different requirements and demand adjustments where load reduction is desired).

VI. CONCLUSION.

CESA appreciates this opportunity to comment on the OIR, and looks forward to working with the Commission and stakeholders in this proceeding.

Respectfully submitted,



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