BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Policies, Procedures and Rules for the California Solar Initiative, the Self-Generation Incentive Program and Other Distributed Generation Issues.	Rulemaking 12-11-005 (Filed November 8, 2012)

COMMENTS OF THE CALIFORNIA ENERGY STORAGE ALLIANCE IN RESPONSE TO ASSIGNED COMMISSIONER'S RULING SEEKING COMMENT ON SENATE BILL 861 COMPLIANCE AND REVIEW OF SELF-GENERATION INCENTIVE PROGRAM

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The California Energy Storage Alliance ("CESA")[1] hereby submits these comments pursuant to the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), and the *Assigned Commissioner's Ruling Requesting Comment on Senate Bill 861 Compliance and Review of Self-Generation Incentive Program*, issued by Assigned Commissioner, President Michael Picker on April 29, 2015 ("ACR").

I. INTRODUCTION.

Public Utilities Code Section 379.6 was amended on June 20, 2014 by Senate Bill 861 to include revisions to Self-Generation Incentive Program ("SGIP") eligibility requirements,

[1] 1 Energy Systems Inc., Abengoa, Advanced Microgrid Solutions, AES Energy Storage, Aquion Energy, ARES North America, Brookfield, Chargepoint, Clean Energy Systems, CODA Energy, Consolidated Edison Development, Inc., Cumulus Energy Storage, Customized Energy Solutions, Demand Energy, Duke Energy, Dynapower Company, LLC, Eagle Crest Energy Company, East Penn Manufacturing Company, Ecoult, ELSYS Inc., Energy Storage Systems, Inc., Enersys, EnerVault Corporation, Enphase ENERGY, EV Grid, Flextronics, GE Energy Storage, Green Charge Networks, Greensmith Energy, Gridtential Energy, Inc., Hitachi Chemical Co., Ice Energy, IMERGY Power Systems, Innovation Core SEI, Inc. (A Sumitomo Electric Company), Invenergy LLC, K&L Gates, LG Chem Power, Inc., LightSail Energy, Lockheed Martin Advanced Energy Storage LLC, LS Power Development, LLC, Manatt, Phelps & Phillips, LLP, Mitsubishi Corporation (Americas), Mobile Solar, NEC Energy Solutions, Inc., NextEra Energy Resources, NRG Solar LLC, OutBack Power Technologies, Panasonic, Parker Hannifin Corporation, Powertree Services Inc., Primus Power Corporation, Princeton Power Systems, Recurrent Energy, Renewable Energy Systems Americas Inc., Rosendin Electric, S&C Electric Company, Saft America Inc., Sharp Electronics Corporation, Skylar Capital Management, SolarCity, Sony Corporation of America, Sovereign Energy, Stem, SunEdison, SunPower, Toshiba International Corporation, Trimark Associates, Inc., Tri-Technic, Wellhead Electric.

program evaluation criteria, project-level requirements, and various program processes. The overarching intent of SB 861 was to use the ratepayer-funded SGIP to curb greenhouse gas ("GHG") emissions and other air pollutants and support technologies that increase the efficiency, reliability, and utilization of existing grid assets. CESA provides these comments in response to questions posed by the ACR to help inform the Commission's evaluation of how to modify SGIP rules and processes.

II. CESA'S RESPONSES TO QUESTIONS POSED FOR COMMENT.

1) **Do you agree or disagree with the proposed program goals, and why? Should SGIP include any other goals? How should the reduction of customer peak demand weigh reductions of coincident peak demand at the system and local levels? Should the Commission give some goals greater or lesser weight?**

CESA RESPONSE: CESA largely supports the goals outlined by the Commission in the ACR for the SGIP. The purposes set forth in SB 861 are consistent with state policy aimed at lowering the greenhouse gas ("GHG") emissions associated with electricity production in California.[2] CESA urges the Commission to emphasize and expand on goals that further support the state's renewable targets of 33% by 2020, 50% by 2030, and 80% by 2050. Specifically, additional SGIP goals should include: (1) enabling renewable integration, (2) increased system reliability, and (3) efficient use of existing grid resources. These goals would be an addition to - not a replacement for - the current goals outlined in the ACR.

While each program goal is important, the Commission should greater weight to certain key goals than others that are also important. Specifically, the Commission should prioritize

[2] Governor Brown has clearly articulated these broad policy objectives. ". . . I propose three ambitious goals to be accomplished within the next 15 years: Increase from one-third to 50 percent our electricity derived from renewable sources; Reduce today's petroleum use in cars and trucks by up to 50 percent; Double the efficiency of existing buildings and make heating fuels cleaner." Edmund G. Brown Jr. Inaugural Address Remarks as Prepared January 5, 2015. "1. A new interim statewide greenhouse gas emission reduction target to reduce greenhouse gas emissions to 40 percent below 1990 levels by 2030 is established in order to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050." Executive Order B-30-15, April 29, 2015.

goals of GHG reduction and market transformation for technologies that supply a variety of grid services. GHG reduction goals should be highly weighted because they were a primary thrust of SB 861 and this objective aligns with numerous state policies, including Governor Brown's recent Executive Order requiring GHG reduction of 40% below 1990 levels by 2030. Market transformation goals should also be highly weighted as corresponding cost-reductions can yield long-term benefits to the grid and its users. To achieve market transformation, sufficient levels of SGIP incentives should persist over time, with occasional evaluations for commercial viability. By prioritizing these two categories of goals, Californians can achieve higher-value uses of SGIP contributions while pursuing broad environmental goals.

2) **For those criteria which the Commission has been measuring, should any changes be made in how this is done? For those criteria which the Commission has not been tracking (namely, onsite reliability) how should the Commission measure success? Are there other measures of success, not listed in the statute, that should be examined in future impact evaluations?**

CESA RESPONSE: CESA especially supports continued use of "market transformation" and "GHG reduction" metrics for technology eligibility. Market transformation should be measured either through the forthcoming Commission market transformation study, referred to in the ACR[3], or via the market transformation metrics under development in the *Energy Storage Procurement Framework and Design Program* proceeding, R.15-03-011 ("Storage Framework"). The Storage Framework requires the Energy Division to conduct a comprehensive evaluation of the existing general policies affecting energy storage, which includes demonstration of "progress toward market transformation."[4] GHG reduction metrics, as set forth in the expected GHG Emission Factor Proposed Decision, can aid in evaluating which

[3] ACR, p. 6.
[4] *Order Instituting Rulemaking to consider policy and implementation refinements to the Energy Storage Procurement Framework and Design Program (D.13-10-040, D.14-10-045) and related Action Plan of the California Energy Storage Roadmap*. Issued April 2, 2015, p. 10.

technologies classes fit best with SB 861's intent. As AES facilitates renewable integration, increased utilization of existing resources, and other indirect drivers of GHG reduction, CESA urges the Commission to ensure Itron develops a robust methodology for AES in their annual impact evaluations. A simple off-peak/on-peak calculation, similar to the one used in the Commission's 2010 Staff Proposal GHG Analysis Workbook[5], excludes values such as curtailment reduction and other system-wide efficiencies. CESA recommends that Itron incorporate production cost modeling in their GHG methodology for AES as well as other SGIP eligible resources.

CESA also recommends the development and inclusion of grid reliability and resource optimization as eligibility metrics. Such metrics support the SGIPs goals and will help ensure the SGIP incentivizes technologies that reduce overall grid volatility, make existing resources more efficient, and assist in realizing the GHG emission reduction targets set forth in AB 32.[6] Grid resource optimization could be measured by modeling a future grid scenario (*e.g.*, 50% renewables by 2030) and calculating how each SGIP technology class performs in reducing curtailment, unit starts, and average heat rate per kWh for the gas-fired generation fleet. This can be done, for example, with a production-cost model that measures these metrics with and without each technology class. Importantly, this metric should be used as a program eligibility criterion to guide the inclusion of technology classes in the SGIP. It should not be used to evaluate project-specific eligibility.

3) **For other eligibility criteria (i.e., demand reduction, commercial availability, safety, and reduction of criteria air pollutants), how should the criterion be defined and how should a technology's compliance with each criterion be verified?**

[5] SGIP Appendix A GHG Analysis Workbook. http://www.cpuc.ca.gov/NR/rdonlyres/47EB0BEB-AF81-4873-8951-DB20367048E5/0/SGIP_AppendixA_GHGAnalysisWorkbook.xls.
[6] California Global Warming Solutions Act of 2006.

CESA RESPONSE: CESA advocates for the following verification methods for eligibility criteria other than GHG emission reduction:

- Demand Reduction: The methodology for verifying demand reduction used in Itron's 2013 SGIP Impact Evaluation is reasonable.[7]
- Commercial Availability: The existing definition of "commercial availability," as defined in the 2015 SGIP Handbook is sufficient.[8]
- Safe Grid Integration: Existing interconnection rules governing how energy storage and other resources interact with the electric distribution system specifically provided in Rule 21, as well as applicable permitting requirements, adequately address safety concerns.
- Reduction of Criteria Air Pollutants: Itron's 2014 SGIP Impact Evaluation study reports on the output of criteria air pollutants (NO_x, SO_2, PM_{10}) for each technology class. As with the GHG emissions factor, technologies should be deemed ineligible if they emit a higher criteria air pollutant mix locally than what is being produced to meet system load (as well as a forward looking estimate of pollutants based on a generation mix under a 33% or higher RPS scenario).

4) Should the Commission now restrict SGIP to those technologies that require an incentive in order for them to be profitable for the system owner? Why or why not? If so, how should the profitability threshold be measured?

CESA RESPONSE: No. Profitability should not be a metric for determining eligibility for technology classes. First of all, in the case of advanced energy storage, there are a range of technologies within that technology class … all at different stages of commercial progress. It will be very difficult administratively to distinguish the profitability of specific technologies

[7] *2013 SGIP Impact Evaluation (2013).* Itron, p. 6-1.
[8] *2015 Self-Generation Incentive Program Handbook*, p. 45.

within a technology class. Further, it will also be difficult to distinguish between a technology class that is unprofitable due to its early stage of market transformation and those that are inherently unprofitable regardless of their commercial progress to date. SGIP funds should be directed to newly commercialized technologies that show signs of becoming self-sustaining and need interim financial support as they gain market acceptance and scale. This can be accomplished by gradually reducing the incentive levels over time until they are no longer needed, as was successfully demonstrated by California's Solar Initiative program. Technologies showing no signs of market transformation should be eliminated from the program in order to preserve funds for those that hold substantial promise. SGIP funds should not provide unending subsidies for technologies that are not consistent with other policy goals in a competitive energy landscape.

5) **Should the requirement of present or near future cost effectiveness now be adopted? Why or why not? If so, how should it be measured? Should the Commission require that SGIP technologies have the potential to become self-sustaining DER industries? Why or why not? If so, how should this potential be measured?**

CESA RESPONSE: The Commission should require that SGIP technologies have the potential of ultimately becoming self-sustaining. As with the profitability criteria referred to in Question Number 4, above, the Commission should reference the forthcoming market transformation study or the methodology developed in the Storage Framework and use market transformation as a proxy for market transformation and promise. The rate of new energy storage reservations is indicative of its cost-effectiveness and its potential to provide benefits to individual host customers and the system as a whole.

6) **Should the criteria of grid reliability, efficient use of grid resources, and on-site customer reliability be explicitly required of SGIP technologies? Why or why not? If so, how would these criteria be measured?**

CESA RESPONSE: Yes, these criteria should guide considerations for technology eligibility in the SGIP. As stated in CESA's response to Question Number 2, above, the SGIP's success metrics should include how well technologies support grid reliability, efficient use of grid resources, on-site reliability, and helping the state reach its GHG emissions reduction targets. The means by which flexible resources, like energy storage, provide these system-level benefits are still in development at the California Independent System Operator ("CAISO") and Commission. CESA therefore recommends that system benefits not be a project-level eligibility criterion, but an overarching program goal and standard by which the Commission determines the eligibility of various technology classes.

7) **Should DC micro-grids as a category be eligible for SGIP incentives? Is this a specific technology or is it a package of technologies, and does it matter? Might this technology more appropriately be categorized as energy efficiency? Is this a technology or package of technologies that has been available long enough to be considered commercially available (required per§379.6(e)(2))?**

CESA RESPONSE: CESA views a "DC micro-grid" as an operating environment that utilizes a suite of resources or technologies working together to provide multiple functions and services as opposed to the microgrid itself being treated as a specific technology class. Consequently, DC micro-grids should not be an eligible SGIP technology class. Instead, CESA supports revising existing rules to allow for eligible technologies to operate in a DC environment. For example, current rules require that energy storage systems must be connected to the local distribution system and configured to operate in parallel with the grid, which precludes the energy storage system from operating within a DC microgrid operated by a customer.[9] However, an energy storage system operating in a DC environment that still operates in a manner that reduces on-site peak load should be eligible for SGIP incentives. CESA therefore recommends updating existing rules such that the rules are agnostic of AC or DC

[9] *Ibid*., p. 46.

operation. This would help support a DC micro-grid without creating another category of "DC micro-grid" as a separate technology class for incentive purposes. Moreover, inclusions of DC micro-grids as a new category could open up SGIP funding for unintended technologies. For example, ineligible PV solar operating in a DC microgrid could theoretically be eligible for SGIP incentives under a DC micro-grid structure.

8) **Should any of the currently eligible technologies be eliminated from SGIP eligibility? If so, which ones? Why or why not, and based on what criteria? Are there any additional technologies that should be added to the program, and if so, what are they and why should they be included?**

CESA RESPONSE: SGIP-eligible technologies should be able to provide a cleaner GHG profile than the grid operating under a minimum of a 33% RPS target regime. If this GHG threshold cannot be met, a technology class should be removed from the SGIP. SGIP-eligible facilities will operate far beyond 2020, and the California ratepayer should not directly subsidize technology classes that contribute to local air pollution and are inimical to achievement of renewable targets. Further, the SGIP should not directly subsidize fossil fuel use and non-renewable assets that will be in operation for decades to come.

The Commission has yet to release its revised methodology for calculating GHG emissions factors, so it is unclear at this time how the GHG-enabled reductions from energy storage systems will be considered. The current emissions factor methodology includes only the off-peak/on-peak shifting of energy; however, there are many ways in which energy storage systems directly and indirectly enable GHG reductions. Energy storage systems can provide load leveling, demand response, time shifting of energy, ancillary services, and enhanced electric vehicle charging. There are also market products in development at the CAISO and the Commission designed to compensate energy storage systems for their flexibility (*e.g.*, the CAISO's flexible ramping product, proxy demand response, and locational benefits,). The

results of CESA's production cost modeling effort - discussed in its opening comments on the GHG emissions factor ACR - highlight how energy storage systems enable existing generation to operate more efficiency, decrease curtailment, reduce unit starts, and displace inefficient peaking generation.[10]

Any technology with natural gas as its primary fuel source should no longer be eligible for SGIP incentives. Fuel cells and other non-renewable technology classes should be considered for removal from the SGIP eligibility based on these grounds. These technologies have been in the program since its inception. Fuel cells specifically have received or applied for approximately $532 million of ratepayer dollars and still receive the highest incentive level.[11] This funding history raises questions of what constitutes market transformation and how much money is needed before a technology class should be self-sustaining. Instead of continuing to subsidize non-renewable projects, SGIP funds should be made available to truly emerging technologies such as advanced energy storage, resources fueled exclusively with in-state biogas, and non-PV renewable generation that best meet the program goals and advance the state toward its climate and clean energy targets.

9) Should the current categories of "Renewable and Waste Heat Recovery," "Non-Renewable Conventional CHP," and "Emerging Technologies" be maintained? Why or why not? Should any technology be moved from its current category to another? Why or why not?

CESA RESPONSE: Unless a new class of technologies is admitted into the SGIP, energy storage should be the sole technology in the "Emerging Technology" category. Energy storage is unique as compared to all other technologies in its flexibility (both at the system and

[10] *See, Comments of the California Energy Storage Alliance in Response to Assigned Commissioner's Ruling seeking Comment on Updating the Greenhouse Gas Emission Factor for Self-Generation Incentive Program Eligibility*, filed April 17, 2015. pp. 16-19.
[11] *See, SGIP Weekly Statewide Report*, May 2, 2015. Accessed at: https://www.selfgenca.com/documents/reports/statewide_projects. Electric and CHP Fuel Cells and have received approximately $430.8 million and $102 million respectively.

host customer level), range of grid benefits, and distinctive ability to absorb and inject energy as a non-net-generating technology.

CESA also recommends that both electric and CHP fuel cells be removed from the "Emerging Technologies" Category (if they are deemed eligible under the new GHG emissions factor rules). CHP and electric fuel cells have been receiving SGIP payments since 2001 and 2007, respectively, and according to the last SGIP Statewide Report, 73% of all paid or reserved fuel cell projects are fueled by natural gas. Despite this long history in the program the technology class still receives the highest incentive in the SGIP.[12] These facts raise significant policy questions concerning the definition of "emerging" in this context, highlighting the need for market-transformation metrics, and indicate such technology classes may need to be removed from SGIP eligibility entirely.

CESA is not opposed to keeping an incentive for in-state biogas as a separate and stand-alone incentive in the "Renewable" category. The "add-on" aspect of biogas, however, is not appropriate and should no longer exist. Such an add-on would be analogous to wind technology receiving an incentive for the turbine and then receiving a second incentive as a "wind adder" as the source for the generation. CESA does not believe the program goals and eligibility criteria intend for "double-dipping" of incentive payments. To reach California's goals, it seems reasonable that "in-state biogas" (*i.e.,* originating in California) remain as a requirement for biogas eligibility in the SGIP. Furthermore, biogas should be included when calculating the minimum host customer investment limit of 40% as required by the SGIP. The biogas adder is currently not included in this calculation, which is inappropriate as customers should be required to pay for at least 40% of the project cost as required of all other SGIP eligible technologies.

[12] *Ibid.* Excludes all projects where the Fully Qualified State is: Cancelled, Payment Recalled, or Waitlist.

Finally, CESA believes the non-renewable category should not have a separate funding carve out, but should have a capped amount it is able to receive. The SGIP budget allocation and availability should be revised such that the total incentive budget is available to renewable and emerging technologies, while access to program incentives is capped for non-renewable technologies to the current 25% or less. The current SGIP rules specify that funds be reserved for non-renewable projects; however, Program Administrators have the discretion to transfer funds to the renewable/emerging category. The quantity and timing of such transfers is unknown, which creates market uncertainty and a back log of renewable and emerging projects that should be allowed to move forward. Restructuring the non renewable category as a 'cap' rather than a separate budget carve out will help alleviate this problem.

10 – 12) Retain the existing SGIP program design? Or more to capacity-based approach (to better support program participation and market transformation)?

Capacity-based: identify the technologies, amount of money that would belong in each bucket, as well as the number, size (MW and dollar), and rebate levels for the steps in that bucket.

Status Quo: Should the program rebates be reduced (or increased) overall or only for certain technologies? Why or why not? And if they are reduced (or increased), then by how much and why? Should the annual rate of reduction be increased for one or more technology categories, and if so, to what rate and why?

CESA RESPONSE: CESA supports the existing, annual incentive declination for energy storage technologies and establishing a capacity-based declination for any non-renewable technologies remaining eligible in the program. Energy storage is broad asset class that includes a variety of mechanical, electrical, chemical, and thermal-based technologies. Some technologies perform better in fast-responding, short-duration applications, while others perform best for longer duration uses. Within each energy storage technology class are subclasses of technologies that have different strengths, weaknesses, and cost structures that vary by

application. Given the broad range of technologies and their respective levels of market maturity, it would be difficult to determine how to equitably allocate capacity between energy storage subclasses and allow for fair market transformation.

In contrast, non-storage technologies are more homogenous per technology class, and certainly more commercially mature. A capacity-based step-down would therefore allow incentives to align with market maturity and progress for non-renewable technologies. Historic cumulative capacity and cumulative incentives awarded to date should be factored in as a good benchmark of commercial progress, incentive need, and ability to become self-sustaining. As stated in our response to Question Number 9, above, CESA strongly urges the Commission to move all fossil-based generation technologies that meet GHG eligibility requirements (including fuel cells that do not use biogas if they are deemed eligible for the SGIP) to the "Non-Renewable" category.

13) **Should the SGIP continue to fund projects of any size? Should the declining payment structure for each project be continued or altered? Why or why not? And if so, what should the size limits be? What should the new structure be?**

CESA RESPONSE: CESA does not see a reason to move away from the current rules regarding system size.

14) **Should the load-based size restrictions currently in place be continued or altered? How and why?**

CESA RESPONSE: At a minimum, energy storage should be sized to the peak customer load, regardless of any other existing generation technology. It should not be additive and should not be restricted to the capacity of the existing on-site generation. The "coupled" distinction, currently in the SGIP Handbook, should be eliminated. The concept is a legacy from many years ago, before SB 412 and AB 1150 added energy storage into the SGIP. Prior to enactment of these bills, energy storage was only eligible in the program if it was integrated with

another eligible technology. At that time, eligible technologies were limited to wind and fuel cells. Since that restriction no longer applies, it's no longer necessary to have the "coupled" carve-out. In other words, there should be no distinction between "Stand Alone" and "Coupled with existing SGIP generation."

In cases where a system exceeds peak load, CESA supports the ability of an SGIP applicant to allow their maximum project size to be determined through the interconnection process, which may exceed the on-site peak load. An interconnection study will reveal whether a feeder and/or distribution network can handle a certain sized energy storage project and any necessary upgrades. There are a number of contexts where sizing the energy storage system greater than peak load makes sense. For example, a stationary energy storage system sized greater than the load of electric vehicle charging stations can deliver faster and more reliable charging as well as charging when the grid is down. If such a configuration is located at a large campus, the energy storage system can also help with other demand-side energy management tasks. More generally, as market options for flexible resources continue to expand, it may be advantageous to size an energy storage system to provide on-site load management and demand charge reduction as well as a variety of grid services. Another example where this maybe the case exists in dense load centers (*e.g.*, highly urbanized areas), a non-generating/non-emitting grid asset could help reduce on-site load, and also mitigate grid congestion and maintain stability, especially during critical peak days. Finally, flexibility in sizing the energy storage will also be highly supportive of AB 327 and the Commissions ongoing work to reform the distribution planning system and make it more plug and play."

15) **Should the biogas adder be continued as it is currently applied? Why? If it is changed, how should it be changed and why?**

CESA RESPONSE: The Commission should continue to allow biogas in the program on the conditions that it is: (a) produced in California and 2) either moved to a stand-alone incentive category or "Renewable" category as opposed to being an "add-on." It should be reserved for technologies that use biogas as their only fuel source. If the biogas is trucked in or delivered from out of state, its GHG emission profile is not net-zero. The Commission should support the instate biogas market and retain the GHG emission reduction benefits within California. In addition, as stated above, biogas should be included when calculating the minimum host customer investment limit of 40% as required by the SGIP. The biogas adder is currently not included in this calculation, which is inappropriate as customers should be required to pay for at least 40% of the project cost as required of all other SGIP-eligible technologies.

16) Should the PBI structure be maintained or modified? Why? If modified, then how should it be modified and why?

CESA RESPONSE: The PBI structure for energy storage systems should be modified. The PBI serves an important role in ensuring that ratepayer funds support beneficial projects; however, CESA recognizes that the PBI was originally developed for generating technologies. Energy storage is not a generating technology, but a fundamentally different asset class offering a different suite of values to the host customer, grid, and ratepayer. It is often used to reduce demand charges, level load, offset load during demand response events, enable more reliable and faster electric vehicle charging, and shape the output of on-site PV solar generation. It provides capacity value even when the energy storage system is not charging or discharging. Because the operating characteristics of energy storage are different than generators, so too are its applications.

Behind-the-meter energy storage charging/discharging characteristics are highly dependent on a host customer's load profile. Therefore, the capacity factor and discharge profile

of the energy storage system will invariably differ. It does not follow that a smaller capacity factor translates to less value provided to the host customer or ratepayer. A PBI requirement on small systems would likely lead to charging and discharging without grid benefit in order to increase incentive capture. This would simply lead to increased GHG emissions. Also, additional metering devices for smaller systems would be both onerous and expensive relative to total project costs. If AES systems are contractually obligated to supply services that align with the SGIP program goals and warrantied for a minimum of five years (the length of the PBI), a PBI is not necessary to prove that benefits are being realized by the customer or the grid. Utilities, for example, impose penalties if an energy storage system under contract is unavailable (or does not discharge) during peak periods. Provisions in bilateral contracts between developers and end-customers also include performance requirements. For these reasons the Commission should raise the PBI threshold for energy storage systems from 30kW to 100kW.

The 5,200 hours currently used to calculate capacity factor in the SGIP Handbook reflects the assumption that energy storage "typically discharge during peak weekday periods and are unable to discharge during their charging period."[13] CESA agrees with the assumption that energy storage systems will most often discharge coincident with the "on-peak" periods during weekdays. Currently, "on-peak" hours in the summer (May-October), include 6-hour windows – either from noon to 6pm or 2pm-8pm. Therefore, for purposes of calculating the capacity factor for energy storage systems, a 6-hour summer "on-peak" period for each weekday should be used rather than 5,200 hours as currently specified in the SGIP Handbook. It then follows that 6 hours per week day over a 52-week period results in 1,560 "on-peak" hours. This should replace 5,200 hours as the basis for energy storages' 10% capacity factor.

[13] *2015 SGIP Handbook*, p. 37.

17) **Should SGIP payments reflect locational benefits (or costs) they provide (or impose)? If so, how (from a timing and methodological perspective) should this be accomplished? Because some customers are in locations where their contributions might be especially valuable to the grid, does the introduction of a locational component raise concerns about equity?**

CESA RESPONSE: SGIP technologies should receive an adder based on locational benefit, which will likely be determined via the Distribution Resources Planning proceeding. Part of SGIP's goal is to improve grid reliability through improved transmission and distribution utilization. Some areas of the distribution grid would benefit from SGIP projects more than others depending on current and forecast congestion and load variability issues. While providing additional incentives for locational benefits may favor customers in specific geographic locations, the grid benefits are shared by all.

The Commission should base the payment methodology on the Locational Value Analysis currently being developed in the Distributed Resource Planning proceeding as the basis for the locational SGIP incentive adder.[14] Upon completion (expected summer, 2015), the Commission should issue an ACR for the SGIP to address specifics on how to value the adder.

18) **Should the SGIP program administrators track and should the SGIP payments reflect the operational benefits that SGIP projects provide to the grid on a day-to-day or hour-to-hour basis, or in response to peak grid usage or over generation events? If so, then specifically how should this be accomplished?**

CESA RESPONSE: While CESA strongly supports the idea of compensating SGIP systems for supplying grid benefits, the complexity of tracking and measuring of operational benefits on an hourly or daily basis for these host customer-sited resources would likely make program administration more difficult. Existing programs, like demand response ("DR"), reward flexible resources for the values they offer the grid and more market mechanisms are currently in

[14] Guidance for Section 769 – Distribution Resource Planning. As part of the *Assign Commissioner's Ruling on Guidance for Public Utilities Code Section 769 – Distribution Resource Planning*, filed February 6, 2015. Accessed at: http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M146/K374/146374514.PDF.

development at the CAISO and Commission. These programs and new market opportunities are avenues through which flexible resources can receive fair market value for the operational benefits they provide. Such tracking and measuring are more feasible and more impactful when applied to grid-scale/grid-connected resources.

19) **19.1 Should dual enrollment in DR and SGIP continue to be allowed? If yes, how should the Commission address dual enrollment in DR and SGIP but adhere to its current policy to not allow multiple incentive payments for taking a single action (e.g., through metering?)**

CESA RESPONSE: SGIP projects should be allowed to continue participating in DR programs. Projects should not be arbitrarily penalized for providing additional benefits to the grid and supporting the stated goals of SB 861. It is important to note that DR is not an incentive program – it is a program than compensates customer behavior or technologies that behave in a specific way for the grid services they provide. If a developer is forced to choose between DR and SGIP, they will likely chose SGIP as it provides upfront incentives to allow a project to be built. Preventing these projects from participating in DR seems to needlessly limit DR participation and goals that the Commission actively supported in R.13-09-011. If the SGIP provides incentives for technologies that are very well-suited for DR, it seems only reasonable to allow them to participate.

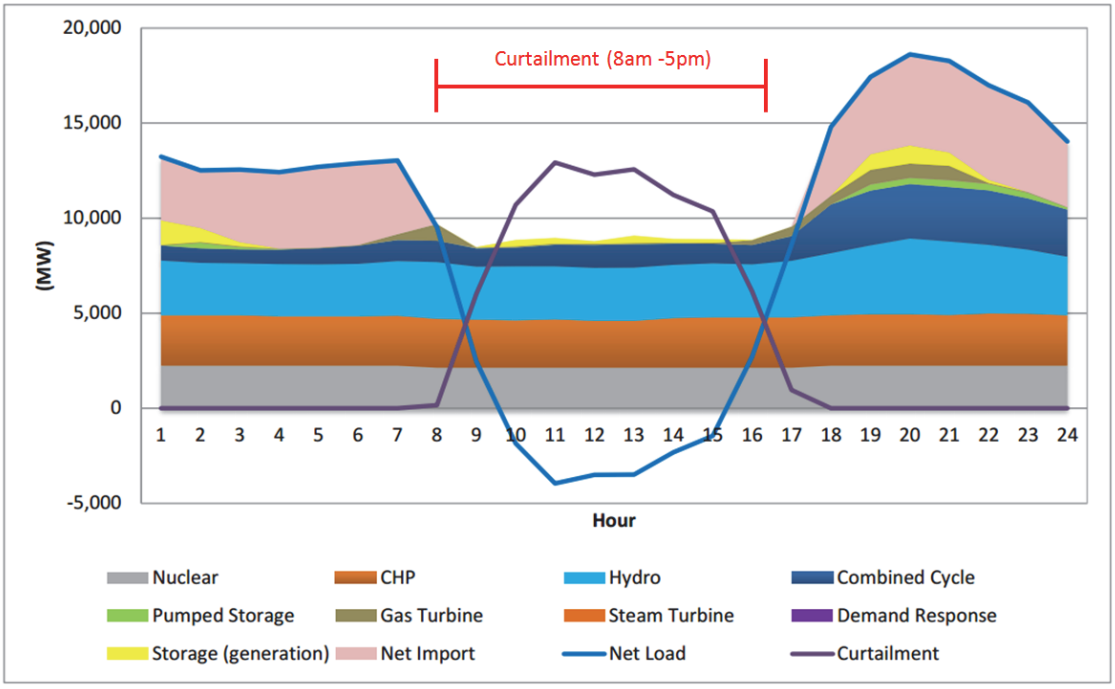
20) **How should the Commission design AES incentives to encourage investments and other behaviors that maximize benefits to the grid? Should the incentive structure stay the same or be revised? If they should change, what specific revisions do you recommend and why?**

CESA RESPONSE: For the reasons stated above in response to Question Number 9, unless there are new technologies brought into the SGIP, AES should be the sole technology class in the "Emerging Technologies" category. Incentive levels for other eligible technologies also need to be updated and completely revised to better align with how each technology class

meets the program goals. The existing incentive levels appear to be entirely independent to how each technology class meets the stated goals of the SGIP.

CESA recommends maintaining the current incentive levels for energy storage technologies. In light of the CAISO's recent modeling effort on over-generation in a 40% RPS by 2024, CESA encourages the Commission to consider an "adder" for longer duration storage. As shown in Figure 1 below, CAISO's modeling shows over-generation exceeding 10,000MW for 6 consecutive hours on a spring day in 2024. While the CAISO concluded that a number of options must be explored in order to solve the over generation problem, flexible resources like behind-the-meter long duration storage can play a vital role in helping the grid operators address this issue. CESA recommends that the Commission seek additional comments or hold a workshop to consider additional incentive level for 4-hour and 6-hour energy storage resources.

Figure 1. Ramping process of March 24, 2024 (40% RPS Scenario)



Source: The CAISO Study of 2014 LTPP No Renewable Curtailment Sensitivity Cases. 2014 LTPP Study Advisory Team Conference Call May 14, 2015.

21) How should the SGIP ensure that residential AES applicants operate their systems regularly, instead of being reserved for backup only? If residential AES systems are used only during critical peak events, do these systems provide enough of a ratepayer benefit to justify their inclusion in the SGIP?

CESA RESPONSE: Resolution E-4717, issued by the Commission on May 21, 2015, incorporates many of the operational requirements set forth in the Program Administrator's January 20, 2015 Joint Advice Letter for residential energy storage systems demonstrating use beyond "emergency or backup" purposes. In its protest to the Advice Letter, CESA was "generally supportive of the requested provisions."[15] This still holds true and CESA applauds both the Program Administrators and Commission for identifying this issue and proactively working toward its resolution. CESA was disappointed, however, to see the Commission retroactively apply rule changes to applicants who were in compliance with all SGIP Handbook requirements and who submitted their reservation request forms prior to the filing date of the Advice Letter. In principle, CESA does not oppose reasonable, ongoing changes to the rules, so long as they do not affect those who, at the time, observed existing requirements. Additionally, CESA is hopeful that the Program Administrators and the Commission will be receptive to expanding eligibility requirements for residential energy storage systems eligible to participate in existing and forthcoming DR programs, either on an individual or aggregated basis.

22) Is the 40 percent individual manufacturer cap working acceptably well to allow robust participation by an individual manufacturer without squeezing out other participants? Why or why not? Should the cap be maintained or modified? If modified, how should the cap be modified?

CESA RESPONSE: CESA recognizes that the current 40% manufacturer cap, while well-intended, does not always incentivize optimal outcomes for SGIP applicants. On one hand, it allows for a small number of manufactures to receive a great majority of available funds (as has happened), and on the other hand, it creates uncertainty for developers who are unsure

[15] *CESA Protest of Advice Letter 3552-G et al.,* February 9, 2015, p. 2.

whether they will be able to procure the most cost-effective technology for their projects. Lowering the cap would support the program goals of market transformation and innovation; however, it would also limit the industry's range of technology options. Furthermore, reaching the 40% cap without sufficient warning to stakeholders can disrupt development cycles and SGIP project economics.

CESA hopes to work with the Commission on a new framework that allows newer technologies to better utilize the SGIP to support market transformation and provides developers certainty and optionality in choosing the most cost-effective and advanced product for a given project.

23) **In light of SB 861, should the Commission revisit the SGIP programs rules for providing an adder to installations "manufactured in California?" Should the adder continue to be given for a product that contains any component, however small in value, manufactured in California? Require >50%? Consider another interpretation?**

CESA RESPONSE: CESA supports keeping the 20% adder for installations "manufactured in California" and does not see a need to change the current rule.

24) **How should the Commission comply with the mandate to determine capacity factor? What should the capacity factors for each eligible technology be? Should the Commission use the most recent available impact evaluation to determine what an average or reasonable capacity factor for each technology is? If not, what other information should be used to determine the capacity factors? Should those same capacity factors be used in administering the PBI payments?**

CESA RESPONSE: The capacity factor requirement pursuant to SB 861 applied only to Distributed *Generation (emphasis added).* Section 379.6(g) of the Public Utilities Code refers to the need to determine a capacity factor for "distributed *generation* system energy resource."[16]

> (g) In administering the self-generation incentive program, the commission shall determine a capacity factor for each distributed *generation* system energy resource technology in the program.

[16] California Public Utilities Code § 379.6(g). Accessed at: http://codes.lp.findlaw.com/cacode/PUC/1/d1/1/2.3/6/s379.6.

There are a number of reasons for this, as capacity factor is a poor metric for energy storage systems. There is currently no uniformly accepted definition of "capacity factor" for energy storage and as stated above, storage can provide value to the system even when it is not discharging. Having an energy storage PBI based on capacity factor may encourage systems to charge and discharge without grid benefit in order to increase incentive capture, which, given round-trip efficiency losses, would result in increased GHG emissions.

Therefore, any new capacity factor concepts developed and applied to generation technologies should not apply to energy storage systems. As highlighted in CESA's response to Question Number 16, above, the capacity factor for storage based on 5,200 hours (as required in the SGIP Handbook), is flawed. Instead, the hours should be based on peak times during which the energy storage system will be providing value to the customer and the grid. Specifically, this includes the 6-hour "on-peak" period during weekdays. A 6-hour "on-peak" period for each week day over 52 weeks equates to 1,560 "on-peak" hours in a year. This should replace 5,200 hours as the basis for AES' 10% capacity factor.

25) Are there other important topics that have not been covered in the previously listed questions? If so, what? Are there other ways in which the SGIP can be improved to help it meet its goals?

CESA RESPONSE: CESA offers ten additional issues for the Commission to consider. Addressing these issues can improve the SGIP and make the process more efficient, equitable, and transparent for developers and help send the right signal to investors. For the sake of brevity, each issue and CESA's recommendation is listed in order below:

1. Continue to focus on ways to increase program efficiency and cost-savings.

Recommendation: CESA encourages the Commission to continue focusing on ways to streamline the SGIP and identifying cost-savings opportunities when and where appropriate. For example, the SGIP currently has $57.5 million allocated for program administration and M&E.

While the Program Administrators ("PAs")have repeatedly reallocated these funds to the Level 2 and Level 3 categories, since 2001, the annual administrative allocation has dwarfed annual administrative expenditures (the addition of $42.5 million in 2006 withstanding). Without endangering the PAs ability to process a growing number of applications, it may be prudent to revisit the 7% annual allowance for program administration and ensure it is aligned with actual project-specific costs.

CESA also suggests consideration of using a single statewide PA instead of multiple PAs as another means to achieve process efficiency improvements and potentially better coordination and greater accountability. The Commission should investigate ways to simplify and streamline reporting and auditing functions and to avoid duplicative expenses and efforts, (*e.g*. program response to regulatory and compliance questions, marketing education, and outreach). In addition, there are general and administrative expenses such as corporate overhead (*e.g*. legal, general and administration) that result from the existence of four separate administrators. A single PA model may also provide for a more objective single touch-point for users and greater accountability when evaluating progress against key program goals over time.

Should a single PA model be established, CESA recommends that third parties be eligible to serve in this role and that the Program Administrator be selected as a result of a competitive RFP administered by the Energy Division. A key decision factor in selecting such third parties should include proven ability to advance program goals and market transformation and work with a diverse and large set of stakeholders to evolve program rules over time.

2. Create O&M cost cap of 10% in the SGIP program, comparable to how O&M cost is treated in the Federal Investment Tax Credit (FITC).

Issue: The SGIP currently allows for excessive incorporation of upfront O&M costs.

Recommendation: Aligning SGIP with the FITC rules will increase transparency and simplicity.

3. 10-year contract vs. 10-year manufacturer warranty.

Issue: The SGIP is intended to incentivize systems that are physically permanent and operate over the duration of their useful life. The SGIP Handbook also requires "contractual permanence," which demonstrates a long-term agreement (10 years) between the developer and customer. Some AES business models include developer ownership or co-ownership, which helps de-risk project investment for these emerging technologies. This arrangement is especially helpful for larger profile customers who are risk-averse but want to invest in systems that can improve their on-site energy management. Without a 10-year commitment, however, these systems are ineligible for SGIP funds.

Recommendation: Developers taking an ownership stake in projects are financially incentivized to keep the systems in operation. Under such arrangements, a 10-year manufacturer warranty and the requirement of physical permanence could fulfill the intention of installing equipment that functions throughout its useful life and enabling the program goals. CESA recommends allowing for a 10-year manufacturer warranty, in combination with developer third party ownership or co-ownership, to meet the 10-year contract requirement.

4. Exempt behind the meter energy storage from being charged Stand-By charges.

Issue: Since the energy storage system does not reduce kWh consumed from the utility or grid, but merely makes electricity use more efficient and reduces grid stress during peaks, a standby charge is not appropriate.

Recommendation: Explicitly recognize that stand-by charges are not appropriate for energy storage systems (given the reasons outlined above) and will not be applied to those energy storage systems participating in the SGIP program.

5. Elimination of the Energy Efficiency (EE) Audit Requirement.

Issue: The EE auditing requirement is a new addition to the 2014 SGIP Handbook. Any measures identified with a payback of two years or less must be implemented (and verified by a third party) prior to receipt of SGIP incentive payments. Some of the requirements for the EE audit are unduly burdensome. There are no clear standards on how the audit is done or cost-limitations to prevent the audit from becoming prohibitively expensive. For example, a developer was attempting to install a 30 kW system tied to an electric vehicle charger (and responding to that system) at a university. To fulfill the SGIP EE Audit requirement, the developer was asked to perform a campus-wide audit (9+ MW of load) for a single 30 kW installation, creating an insurmountable barrier to SGIP project deployment.

Recommendation: To the degree the EE auditing requirement adds costs to deploying systems and cannot demonstrate that it catalyzes significant uptake of incremental EE to justify that cost, this requirement should be eliminated. If kept in the program, the Program Administrators should establish consistent standards that make the audits simple and cost effective, *and* make any EE measures completely optional

6. Sample-based auditing for <10kW systems.

Issue: Some companies are installing a large number of residential storage projects (<10 kW) and current rules stipulate that site visits are required to each individual project prior to receipt of SGIP funding. This is overly burdensome and unnecessarily adds cost.

Recommendation: CESA recommends that the Commission transition to a percentage-based approach to auditing SGIP-eligible projects. For projects smaller than 10kW, utilities

should only be required to visit a subset of projects in order to determine system eligibility. Such a representative, sample-based auditing approach can reduce both administration and developer costs.

7. Federal ITC Should not be Used to Reduce the SGIP Incentives for Customers.

Recommendation: The Commission should remove the Federal Investment Tax Credit ("ITC") subtraction from the overall project value (per page 96 of the SGIP Handbook). First, the Federal ITC requires the storage device be charged at least 75% from the renewable generator. Therefore participation in Federal ITC encourages renewable integration. Second, it is imperative to prove out the success of storage participation in the ITC. SGIP's current convention of subtracting the ITC from the overall project value serves only to discourage participation in the ITC rather than to appropriately *encourage* it. Finally, requiring a calculation that reduces the overall level of incentive for dual participation in a federal program and a state program is without precedent. Many successful programs around the country, including the California Solar Initiative, allow dual participation to further enable emerging technologies to reach market transformation and become self-sustaining.

8. Greater Clarification of 'New" system is Needed.

Issue: Currently, there is a degree of uncertainty surrounding the definition of what constitutes a "new" system (which is required for SGIP eligibility).

Recommendation: A system should be eligible for SGIP incentives as long as it is manufactured as-new from a manufacturing facility, even if some of the internal components may be re-purposed. This will help realize efficient markets and re-use of usable components.

9. Encourage Vehicle to Grid Integration (VGI) and allow some VGI/V2G capable EV SE equipment capacity to count towards SGIP power level rating.

Recommendation: Encouraging a supporting role of VGI with electric vehicle energy storage *enables cost efficiencies, increases grid management resources, and spurs electric vehicle deployment & VGI* by increasing bankable revenue streams for electric vehicle owners. Strategically, allowing some SGIP incentives to encourage the additional costs of VGI will help further not only program goals, but also the Governor's key policy goals. CESA's recommendations for VGI-SGIP eligibility include the following:

i. Systems must be capable of V1G - Controllable charging rate from central system

ii. Systems must also be capable of V2G - Controllable and bidirectional discharge capability from electric vehicles, this qualifies the use case of "on board storage device" as being eligible for the SGIP.

iii. SGIP eligible electric vehicle charging systems must also be tied to a supporting SGIP-eligible stationary storage device to simplify planning and management and metering for utility

iv. Some fraction of maximum capable charge rate should be credited for the EVSE as SGIP-eligible. 10% is suggested. For example, if the electric vehicle storage capacity is 10KW, then it would receive 1KW credit toward SGIP sizing. This would account for vehicle variations and mobility. The Capacity adjustment of 10% of the max power of the EV stations (i.e. 15A station * 10% = 0.33KW, 80A station * 10% = 2KW) is modest and reflects the likely incremental costs necessary to enable an EVSE to be V2G capable provided there is a stationary storage device on premise.

An SGIP incentive on 10% of EVSE equipment capacity (*i.e.,* amps of charging rate times voltage times 10%) will help offset infrastructure costs for VGI upgrades while encouraging more cost effective readiness of VGI capable infrastructure. Examples of upgrades include: networked charging stations, extra intelligence, capability to measure and control

current and energy rapidly, higher capacity of electric vehicle charging station. A typical electric vehicle station is about 3kW, if one would like to install VGI, then one will need higher capacity (requiring equipment that is more expensive). Allowing SGIP incentives for a portion of EVSE equipment tied to the capacity will help support the governor's electric vehicle executive order and make it easier for the utilities to see it happen.[17]

10. Reduce turnaround time for Letter of Authorization ("LOA") from IOUs.

Issue: Currently, utilities are allowed 2-6 weeks to respond to LOA requests for customer load data. Waiting up to 6 weeks pushes out development lead times and seems like an unreasonably long time to return a fairly straightforward data set.

Recommendation: The Commission should require the utilities the fulfill LOA requests for customer load data within 1-2 weeks.

III. CONCLUSION.

CESA thanks the Commission for the opportunity to submit these comments on the ACR.

Respectfully submitted,

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[17] Governor Brown Executive Order B-16-2012. March 23, 2012.