

**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 ON THE
ASSIGNED COMMISSIONER'S RULING ISSUING ENERGY DIVISION'S SELF-
GENERATION INCENTIVE PROGRAM GREENHOUSE GAS SIGNAL STAFF
PROPOSAL FOR COMMENTS AND REVISING COMMENT SCHEDULE**

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September 26, 2018

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In accordance with Rules of Practice and Procedure of the California Public Utilities Commission (“Commission”), the California Energy Storage Alliance (“CESA”)¹ hereby submits these comments on the *Assigned Commissioner’s Ruling Issuing Energy Division’s Self-Generation Incentive Program Greenhouse Gas Signal Staff Proposal for Comments and Revising Comment Schedule* (“Ruling”), issued by Assigned Commissioner Clifford Rechtschaffen on September 6, 2018.

¹ 8minutenergy Renewables, Able Grid Energy Solutions, Advanced Microgrid Solutions, AltaGas Services, Amber Kinetics, American Honda Motor Company, Inc., Axiom Exergy, Brenmiller Energy, Bright Energy Storage Technologies, Brookfield Renewables, Carbon Solutions Group, Centrica Business Solutions, Consolidated Edison Development, Inc., Customized Energy Solutions, Dimension Renewable Energy, Doosan GridTech, Eagle Crest Energy Company, East Penn Manufacturing Company, Ecoult, EDF Renewable Energy, ElectrIQ Power, eMotorWerks, Inc., Enel, Enerport, ENGIE, E.ON Climate & Renewables North America, esVolta, Fluence Energy, GAF, General Electric Company, Greensmith Energy, Ingersoll Rand, Innovation Core SEI, Inc. (A Sumitomo Electric Company), Iteros, Johnson Controls, Lendlease Energy Development, LG Chem Power, Inc., Lockheed Martin Advanced Energy Storage LLC, LS Power Development, LLC, Magnum CAES, Mercedes-Benz Energy, NantEnergy, National Grid, NEC Energy Solutions, Inc., NextEra Energy Resources, NEXTracker, NGK Insulators, Ltd., NRG Energy, Inc., Parker Hannifin Corporation, Pintail Power, Primus Power, Range Energy Storage Systems, Recurrent Energy, Renewable Energy Systems (RES), Sempra Renewables, Sharp Electronics Corporation, SNC Lavalin, Southwest Generation, Sovereign Energy, Stem, STOREME, Inc., Sunrun, Swell Energy, True North Venture Partners, Viridity Energy, VRB Energy, Wellhead Electric, and Younicos. 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>).

I. INTRODUCTION.

Behind-the-meter (“BTM”) energy storage resources will play important roles in decarbonizing and supporting the electric grid while providing customer benefits. Despite the many successful deployments of BTM energy storage, there is still much to learn by customers, energy services providers, and grid regulators in terms of unlocking the benefits and continuing to develop the skills, understanding, and capabilities to provide advanced grid services and achieve greenhouse gas (“GHG”) emissions reductions. Much progress has been made over the past several years, and this progress will be important in revising select program rules.

The Self-Generation Incentive Program (“SGIP”) remains an important program to ensure the deployment and adoption of BTM technologies, given the ongoing grid transformations and electric customer empowerment occurring in California. As the grid changes, the ‘toolkit’ must also change. Advanced uses of energy storage are an essential tool for any grid that pursues high levels of renewables, seeks to achieve a low- or no-GHG emissions grid, and ensures high reliability and affordability.

CESA strongly supports SGIP and supports the intention of SGIP to reduce GHG emissions. CESA believes the program’s GHG goals can be met with some modest changes that provide further certainty regarding project performance and accountability for reducing GHG emissions while still limiting any excess burdens or costs on program participants and the SGIP Program Administrators (“PAs”). CESA’s comments thus seek to modify the *Self-Generation Incentive Program Greenhouse Gas Staff Proposal* (“Staff Proposal”) attached to the Ruling in ways where industry can continue to participate in SGIP and support SGIP goals, while providing more certainty and upfront clarity regarding the obligations and expectations on participants, including on the GHG emissions reduction goal as well as appropriate accountability for projects that increase emissions.

The Staff Proposal is a helpful proposal for ways to comprehensively update program rules to drive higher achievement of the GHG emissions reduction goal. CESA salutes the effort to draft this proposal and appreciates the extensive work behind the many substantive changes being considered. However, CESA is concerned that, in a number of instances, the Staff Proposal goes too far by proposing verification and enforcement frameworks that are excessive relative to the issue the Staff Proposal seeks to address. Based on member feedback, CESA believes that the proposed reforms, if adopted, may effectively foreclose the ability of customers and developers to participate in SGIP. This in turn could slow BTM energy storage resources from achieving the program's goals.

CESA's comments respond to the Staff Proposal and elaborate on the following key points:

- CESA strongly supports the GHG goals of the program
- SGIP rule changes should strive to achieve the program's goals while also being reasonably workable for industry and BTM energy storage developers so that SGIP funds are effectively deployed.
- The Staff Proposal's consequences for underperformance on the GHG emissions reduction goals are excessive while the GHG emissions reduction goals are set higher than is reasonable.
- Multiple modifications to the Staff Proposal are needed.
- The capacity benefits of BTM energy storage systems (*i.e.*, the 'build margin') should be valued at some point in the program's review.
- The 'praise list' is an unnecessary step and may be misleading and thus should not be pursued.
- A Revised Staff Proposal with an opportunity for further stakeholder comment and feedback should be added to the procedural schedule.

II. ABOUT CESA.

Founded in 2009, CESA is a non-profit membership-based advocacy group committed to advancing the role of energy storage in the electric power sector through policy, education, outreach, and research. CESA's mission is to make energy storage a mainstream energy resource which accelerates the adoption of renewable energy and promotes a more efficient, reliable, cleaner, affordable, and secure electric power system. As a technology-neutral group that supports all business models for deployment of energy storage resources, CESA membership includes technology manufacturers, project developers, systems integrators, consulting firms, and other clean-tech industry leaders. More than 75 companies comprise CESA's membership.

III. CESA STRONGLY SUPPORTS THE GHG EMISSIONS REDUCATION GOALS OF THE PROGRAM.

Since the *2016 SGIP Advanced Energy Storage Impact Evaluation* ("2016 Itron Report") was prepared by Itron and released on August 31, 2017, CESA has dedicated substantial time and resources towards improving the SGIP approaches and outcomes to achieve GHG emissions reductions. In the context of the Staff Proposal, CESA was an active participant in the SGIP GHG Signal Working Group, convened at the direction of Commissioner Rechtschaffen expressly to identify reforms to the SGIP that the Commission might consider to ensure systems funded by the program yield GHG emissions reduction benefits. While energy storage can often achieve multiple goals and may prioritize some goals over others in some applications, CESA recognizes that GHG emissions reductions are a core part of the SGIP program. Even prior to the 2016 Itron Report, CESA had contemplated and proposed rates to help address the potential

cases where retail rate signals failed to align with grid conditions and thus potentially misinformed energy storage system dispatches with regards to GHG emissions reductions.²

CESA believes that BTM energy storage has an important role to play in California's evolving energy system. CESA helped establish energy storage eligibility in SGIP through a Petition for Modification³ and, to this day, has continued to be a major stakeholder in SGIP on behalf of the energy storage industry. The role of BTM energy storage is being further supported through legislation, Senate Bill ("SB") 700, which directs an extension of the SGIP program for five years. It is thus an important time to tune and update SGIP rules and requirements to target and achieve GHG emissions reductions. Regardless of SB 700 though, CESA has worked hard to craft programmatic enhancements whereby the GHG goals of the program can be reliably achieved through economically viable projects that also address and meet customer needs.

California remains a leader in the deployments of energy storage systems, and SGIP is one of the first grid-connected, energy storage deployment programs in the world. As such, SGIP stakeholders invariably must work through unanticipated and complex challenges. The outcome of this work, however, is outsized. Not only do these efforts support the important goals of SGIP – *i.e.*, GHG emissions reductions, grid support, market transformation, and customer benefits – but also provide valuable lessons learned for those in other parts of the nation and world by which to develop their energy storage and GHG emissions reduction

² *Comments of the California Energy Storage Alliance on Assigned Commissioner's Ruling on Implementation of Assembly Bill 1637*, filed on January 31, 2017, pp. 12-18.
<http://www.storagealliance.org/sites/default/files/Filings/2017-01-31%20CESA%27s%20Comments%20on%20AB%201637%20SGIP%20Budget%20Doubling%20-%20FINAL.pdf>

³ See *Amended Joint Petition of the California Center for Sustainable Energy and the California Energy Storage Alliance for Modification of D.08-11-044*, filed on August 7, 2009.

approaches. In this way, SGIP can prompt similar action and programs for GHG emissions reductions around the world.

IV. SGIP RULE CHANGES SHOULD STRIVE TO ACHIEVE THE PROGRAM'S GOALS WHILE ALSO BEING REASONABLY WORKABLE FOR INDUSTRY AND BTM ENERGY STORAGE DEVELOPERS SO THAT SGIP FUNDS ARE EFFECTIVELY DEPLOYED.

Program design can be complex insofar as it must achieve key goals while also being workable for program participants. SGIP modifications and structures must thus work for the energy storage industry even while supporting important or essential program goals. Just as program administration is needed for prudent management of SGIP, industry participants are also needed to deploy SGIP-funded energy storage systems and promulgate the program's goals. Collaboration and symbiosis are thus needed between regulators, the PAs, and industry.

CESA was pleased to see the collaborative and good-faith participation of industry, the investor-owned utilities ("IOUs"), PAs, and other stakeholders in the GHG Signal Working Group. This level of collaboration was especially noteworthy in that it required extensive investment in time and staffing from many stakeholders and also involved very candid discussion of business models, challenges, and other closely kept information.

As part of this effort, CESA developed, with input from many stakeholders, a 'Consensus Proposal' of rule changes that could be supported by a multitude of stakeholders. CESA believed some components of the package were broadly supported, while other parts of the package lacked consensus. Generally, the pathway to consensus was to identify combinations of rule changes to collectively ensure key program, industry, and other stakeholder goals were met. These included GHG emissions reductions. CESA appends its Consensus Package in Appendix A. Due to time constraints and limited desire to get ahead of the regulatory review process,

parties did not ‘sign on’ to our Consensus Proposal as part of the GHG Signal Working Group Final Report.

CESA believes the Consensus Proposal is relatively close to a ‘middle ground’ of solutions given the current range of SGIP incentive levels. It involved numerous compromises from industry as part of efforts to secure a reasonable consensus-based package of solutions. In contrast to this ‘middle ground’, the Staff Proposal lands materially farther from prevailing industry positions discussed in the GHG Signal Working Group meetings, creating concerns for CESA and its members that the Staff Proposal, if implemented, will be problematic for industry participation in SGIP. Typically, energy- or grid-related projects cannot advance unless there is an appropriate balance between benefits and burdens. By proposing terms that are materially ‘far’ from what was already deemed to be a compromise from industry’s view, the balance of benefits and burdens may be skewed to the point where program participation is not viable. The Commission should thus evaluate CESA’s recommendations in order to better balance the role of industry *while still achieving the goal of GHG reductions*.

V. THE STAFF PROPOSAL’S CONSEQUENCES FOR UNDERPERFORMANCE ON THE GHG EMISSIONS REDUCTION GOALS ARE EXCESSIVE WHILE THE GHG EMISSIONS REDUCTION GOALS ARE SET HIGHER THAN IS REASONABLE.

CESA supports some program modifications to ensure more GHG emissions reductions from SGIP systems. CESA laid out proposed changes in its Consensus Proposal. As part of this, CESA sees that the program can leverage both behavioral or operating incentives (*i.e.*, ‘carrots’) as well as consequential measures (*i.e.*, ‘sticks’) that discourage underperformance on the GHG emissions goal or other goals. The Staff Proposal, however, includes excessively punitive measures and barriers to project development in the form of new performance-based incentives. Both of these ‘sticks’ and ‘carrots’ should be scaled back.

The primary punitive measures entail suspensions or reductions in incentive payments. These approaches are disruptive to project development and also disproportionate. Collectively, these punitive measures may seriously disrupt program participation while adding excessive levels of risk to project developers and operators.

To put this in scale, the Commission should note that the actual market value of GHG emissions in California is reflected by the current cap-and-trade price. Since 2016, this price has ranged between \$12 and \$16 per metric ton (“MT”) of carbon dioxide. Future prices do not appear to deviate from these historical prices by much.⁴ These price ranges represent the true market cost of emissions today in California. Alternatively, Commission issued a Staff Proposal in the Integrated Distributed Energy Resources (“IDER”) proceeding (R.14-10-003) to use values for the social cost of carbon recommended by the Interagency Working Group (“IWG”) set at \$105/MT-CO₂ (2007 dollars) for 2015 and \$123/MT-CO₂ for 2020.⁵ By contrast, the effective cost per ton that the proposed incentive reductions under the Staff Proposal equate to are disproportionately large. Depending on the incentive level, the 100% reduction in incentives can equate to nearly \$700/ MT-CO₂. Even worse, resources that do achieve emissions reductions at levels below the 25 kg-CO₂/kWh level and so receive the ‘low’ incentive reduction of 25% still face a relatively extreme rate in terms of \$/MT-CO₂ for not further reducing emissions to the threshold level. These calculations and assumptions are shown in Appendix B. These penalties are excessive.

⁴ See 5-day moving average price and volume of California Carbon Allowance Futures over time from ICE End of Day Reports at <http://calcarbodash.org/>

⁵ Administrative Law Judge's Ruling Seeking Responses to Questions and Comment on Staff Amended Proposal on Societal Cost Test, filed on March 14, 2018, Attachment 1, pp. 9-10. <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M212/K023/212023660.PDF>

Furthermore, the proposed ‘stick’ is not just based on reducing net grid emissions, but, for the applicable systems or fleets, also on reducing them by 25 kg-CO₂/kWh of deployed energy storage. This GHG emissions reduction hurdle means that even a resource achieving GHG savings, albeit at a rate less than 25 kg-CO₂/kWh could end up bearing a very steep price. While the Staff Proposal laid out reasons for the 25 kg-CO₂/kWh threshold, there is nothing in that rationale that ties that threshold to the environmental harm caused or the market price of emissions, rendering it essentially arbitrary. CESA evaluated a potential energy storage system’s emissions under two scenarios that generally reflect an ideal performer and a very poor performer using assumptions of marginal units from Decision (“D.”) 15-11-027.⁶ The ‘ideal performer’ is able to materially reduce GHGs emissions but may need to time dispatches with system-wide renewable curtailments or leverage other factors to routinely exceed the 25 kg-CO₂/kWh. CESA thus finds this threshold unreasonable. Instead, the Commission should use a basis of any GHG emissions reductions as meeting the GHG emissions reduction goal

Additionally, the Staff Proposal contemplates suspensions of lengths between 90 and 360 days for applicable systems that fall short of the 25 kg-CO₂/kWh threshold or cycling goals. The length of the suspension can be compounded if both cycling and GHG reduction goals are not met in the same period. While suspensions may be appropriate in cases of egregious failures, CESA believes these suspension lengths are excessive. For instance, a suspension length of 360 days could potentially cause some companies to fail or for developments to fall out. These consequences seem especially severe in that it could apply to applicable systems even if

⁶ *Decision Revising the Greenhouse Gas Emission Factor to Determine Eligibility to Participate in the Self-Generation Incentive Program Pursuant to Public Utilities Code Section 379.6(b)(2) as Amended by Senate Bill 861*, issued on November 23, 2015.

<http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M156/K044/156044151.PDF>

emissions reductions are still being achieved at a level below 25 kg-CO₂/kWh. CESA presumes the Staff Proposal sets the suspension timelines with an idea that overly short suspensions could be meaningless as companies could just wait out the suspension and proceed unaffected. CESA agrees that short suspensions may be less impactful, but still notes that long suspensions could be catastrophic. The threat of suspensions creates substantial risks in the program and will undermine the willingness of entities to pursue SGIP at all. In addition to the huge opportunity costs suspensions impose (which again appears excessive relative to any reasonable estimate of the costs of GHG emissions), developers will be loath to promote SGIP if there is a possibility, even relatively remote, that they could be suspended from the program, given the backlash they would reasonably expect from customers who, after entering into a contract with the developers are told by the developer that they can no longer submit their application. It is further worth noting that access to incentives is already challenging, given programmatic elements like the developer cap and the fact that once that cap has been reached, the developer cannot reserve incentives until the next step opens, which is not easily predictable. Imposing extensive suspension risk will only compound the existing uncertainties associated with SGIP funds. Suspensions are thus a poor way to promote compliance. Altogether, the potential for lower repayment of incentives and severity of the suspensions penalty make SGIP projects higher in risk and more difficult to finance for developers.

1. An alternative structure such as the use of payments for system net emissions should be considered.

For all of the above reasons, CESA strongly supports an alternative structure for driving GHG emissions reductions and achieving the other program goals. This alternative can be more reasonably determined such that the proverbial punishment fits the crime. CESA recommends the use of a financial payment to address failures to meet GHG emissions reductions. Payments

can and should reflect actual costs of the failure and help return funds from those who took SGIP monies and failed to consistently meet program goals. Excluding legacy and any potential future systems that are ‘deemed’ compliant, CESA believes that payments for system net emissions should be for the amount of (fleetwide) emissions times an appropriate societal cost of carbon, if not the actual market price of carbon. As a result, societally, the costs are being fully addressed, while ratepayers are getting monies returned.

CESA does not, at this time, have a recommended punitive measure for parties that fail to cycle sufficiently. The purpose of the cycling goal is to demonstrate that the resource is not being used for backup purposes. In this case too, however, the penalty should fit the crime. It generally seems reasonable, based on data, that systems achieving GHG emissions reductions will be used for more than backup purposes. This may mean that the goal of the cycling requirement can be met just based on the GHG emissions reduction goals. Alternatively, it could be deemed that cycling once or twice per week for a year would sufficiently show the resource is not providing only backup services. CESA thus concludes that the requirement for 52 to 104 cycles annually is sufficient for commercial systems, and these requirements reduce the problem of ‘compliance cycling’ which can be costly, wasteful, and potentially of low benefit to the grid during certain grid conditions. CESA thus recommends the Commission adopt a universal commercial cycling requirement of 52 cycles per year for residential projects and 52 to 104 cycles per year for commercial projects. If a resource cycles, say, at only 90% of the 104 cycles (*i.e.*, 94 cycles), CESA finds it reasonable to conclude the resource is not performing back-up services only. Therefore, the cycling rule should not be a hard and fast rule, where reasonable. Note that CESA agrees that SGIP systems are not intended to serve as backup only solutions.

2. An alternative approach to determine the minimum amount of upfront withholding would create a more meaningful PBI.

CESA believes the amount of the performance-based incentive (“PBI”) – *i.e.*, the ‘carrot’ – is excessive for commercial systems. PBI payments should be sufficient to drive behavior but should not unreasonably burden or create barriers to project development. This balance should direct rules whereby goals are met while costs are kept down, keeping the program as workable as possible.

CESA thus strongly recommends the upfront payment amount for commercial systems be increased from the Staff Proposal’s 40% to the 70-80% shown in CESA’s Consensus Proposal. CESA members indicated an upfront withholding amount of 20% to 30% of the total incentive is doable. The 40% marker selected in the Staff Proposal, by contrast, seems especially extreme in that it exceeds even the long-standing SGIP structure of paying 50% up front for the large to very large (greater than 30 kW) systems. CESA believes this protocol has stood in SGIP for over a decade – as well as part of the California Solar Initiative (“CSI”) before that.

CESA polled multiple members, many of whom are among the most active SGIP developers, and the incremental financing costs associated with the Staff Proposal would be materially harmful. Such harm would manifest either through more expensive development costs, which are passed on to consumers, or through no development at all. While it may be assumed that developers would merely bear the incremental borrowing and financing costs and accept lower margins, this is not necessarily the case. Each energy storage company has backers and investors who direct returns on equity. These calculations are based on risks, the availability of capital, the availability of other opportunities, etc. While merchant companies should bear and balance risks against rewards, CESA does not believe regulatory structures should unreasonably hinder the market for energy storage.

The Staff Proposal indicates that the 60% number seemed workable as they saw no clear data on financeability. This seems to reflect a view that as much money should be withheld as possible. This approach may sharpen the ‘teeth’ related to the GHG compliance goal but comes at the detriment of the SGIP deployment and market transformation goals more generally. CESA thus recommends reversing the approach. The Commission should seek to determine the minimum amount of upfront withholding to create a PBI that is meaningful. This way, the program optimally supports GHG goals *while also keeping costs down and promoting energy storage system deployments.*

In conclusion, CESA sees reasonableness in some degree of a multi-year PBI for commercial systems but believes a 20% to 30% upfront withholding is reasonable. Additionally, CESA has supported the concept of fleet-wide payments for any GHG increases, ensuring that the GHG goal is met. CESA’s approach should lower costs, ensure GHG reductions, and keep SGIP workable for developers. This seems superior to a proposal that may end up being more contentious, punitive, costly, and risky, while still requiring equivalent or more reporting.

Lastly, CESA recommends that projects greater than 30 kW keep their existing PBI structure. With the latest approved rates with time-of-use (“TOU”) peak periods in the late afternoon and evening that is better aligned with grid conditions, CESA believes the data shows that these systems are producing GHG reductions. These systems also have the ability to ‘earn’ the PBI incentives early, though the cycling requirement. Keeping this traditional PBI structure yet evaluating GHG compliance on a fleet-wide level seems prudent and best for industry while still ensuring GHG compliance is achieved through a GHG review and potential payment approach at the societal cost of carbon amount.

VI. MULTIPLE MODIFICATIONS TO THE STAFF PROPOSAL ARE NEEDED.

CESA categorizes its recommended modifications based on the categories used in the proposal: (1) new residential; (2) new commercial; and (3) legacy. This feedback is in addition to the above remarks recommending the Commission avoid suspensions or unduly harsh ‘sticks’ and also the proper but limited level of ‘carrots’.

1. New Residential Staff Proposal

Multiple modifications are warranted to the proposal for new residential projects. While CESA supports aspects of the Staff Proposal, such as the avoidance of PBI, the proposal deviates far from the GHG Signal Working Group’s consensus concepts and so should be amended.

CESA is concerned that the Staff Proposal does not authorize a ‘deemed compliance’ methodology. Notably, AESC specifically recommended a deemed-compliant option for residential systems, subject to certain upfront eligibility and prescribed operational requirements based on modeling data that indicated that a deemed compliant approach can be effective in ensuring emissions reductions. It is further worth pointing out that there was consensus across working group participants that this approach is appropriate for this customer segment. The Staff Proposal appears to discount the working groups’ consensus recommendations for various reasons, including what they see as a lack of credibility in the modeling results as well as some of the analyses presented by Itron as part of the 2017 Itron Report.

First, CESA disagrees with the assertion that analyses cannot be used to smartly inform proposed rule changes. While the results differed between models depending on the underlying input assumption, there was a reasonable indication directionally to support a deemed-compliant approach, provided certain upfront criteria are met. Second, CESA is concerned with reliance on the Itron report’s analysis, which, in the end, discounts the conclusions of the working group. CESA observes that at least one of the key input assumption used by Itron, the assumed round

trip efficiency of storage, was set at 78%, below the 85% eligibility requirement that Staff proposed to impose as an eligibility requirement. Changing this alone could make a material difference in Itron's conclusions. CESA welcomes discussion on this matter, including how concerns for residential systems may be separated into considerations regarding cycling versus considerations regarding GHG compliance.

The Staff Proposal also errs in disallowing standalone energy storage. A pathway for standalone energy storage should be an essential part of the SGIP and must be added. SGIP has a long record of decisions seeing merit in standalone energy storage. Rules can direct GHG performance for standalone systems, and, as shown in the Itron methodology, there is no operational GHG performance difference between standalone energy storage charging at identical times as solar-paired-storage systems. Thus, it seems reasonable to allow standalone systems to participate subject to certain requirements that will ensure they cycle in a way that reduced GHG emissions. This could be accomplished via prescriptive limitations on charging and discharging or by allowing developers seeking to deploy standalone systems to submit a compliance plan that details how cycling will be done to ensure GHG emission reductions. As the Staff Proposal notes, the GHG effects of the energy storage system are the effects of the customer's load with versus without the storage system. There may be cases where standalone energy storage is appropriate and viable yet solar is not (*e.g.*, a shady roof).

CESA agrees that residential systems should cycle at required levels and should submit performance data at reasonable intervals. However, it will also be important to make sure the data submission requirements are reasonable and do not impose unnecessary burdens on program participants. CESA supports that SGIP systems are used and useful, and agrees that measures should be in place to restrict new SGIP systems from being used for backup only. In the case of

residential systems, where CESA recommends a deemed compliance path, the 52 cycles per year requirements seems sufficient to ensure the resource is used frequently. These basics of SGIP participation for residential customers should thus be enforced. As indicated above, however, CESA seeks for any punishment to fit the crime. Excessive suspensions seem unduly harsh, and reasonable reviews of system performance can show if a system was being used in line with program expectations

While a deemed compliance approach eliminates the need, a second choice compliance driver could be to authorize compliance with a payment penalty structure for underperformance. Such an approach could be applied to either fleets or individual resources, as determined by the developer. As mentioned, CESA believes a market price or societal cost of carbon payment, determined at the fleet level, could be more appropriate. Bi-annual data submissions should support evaluations of fleets.

Additionally, CESA recommends there be pathways for energy storage systems that meet the minimum efficiencies but that may not meet the 85% single-cycle roundtrip efficiency (“RTE”) identified. CESA believes analysis on the number of cycles could show that less efficient storage technologies can still provide sufficient benefits. One option is to direct more cycling from the less efficient resources, although CESA recommends this approach should be analytically grounded.

2. New Commercial Projects

CESA understands that historical performances of early-era SGIP systems have not universally yielded GHG savings and so supports reasonable changes to SGIP to better direct performance. The Staff Proposal fundamentally changes the approach for commercial and industrial (“C&I”) systems, causing CESA to be concerned that the need for SGIP to be viable to

energy storage developers may be underestimated, which could in turn slow or stall program participation.

BTM energy storage is a competitive market. While these systems can do much to support GHG reductions and the grid, the Commission's rules may affect the economic viability of many C&I systems, particularly as SGIP incentives are already at historical levels and trending downward, even though neither the balance-of-plant costs nor the development effort have changed by much.

CESA thus recommends several key changes to the staff proposal regarding new commercial projects. As mentioned above, the upfront payment amount for small commercial systems must be increased. CESA's Consensus Proposal identified an upfront withholding of 20% to 30% for commercial systems greater than 30 kW as being about right. CESA further eyeballed the 'earn back' period as two to three years. This approach fits small-commercial PBI structures between the residential structure (*i.e.*, no upfront withholding) and the large-system 'traditional PBI' withholding of 50% earnable across five years. The rigors and size of the PBI thus are in proportion to the total incentive amount.

CESA continues to recommend that projects greater than 30 kW keep their existing PBI structure. If a concern here is that the traditional PBI approach allows resources to recover incentives earlier (*e.g.*, with more cycling), this may be an acceptable result if GHG reductions occur. To address gaps in incentives, CESA believes the fleet-wide compliance model can 'take over' once an individual systems incentives are fully received. Once in the fleet compliance model, resources can pay for emissions at an appropriate price point as discussed in the Consensus Proposal (*e.g.*, at the societal cost of carbon amount).

Additionally, the revenue-grade metering requirement should be removed for small commercial systems. It is not clear that a revenue-grade meter will substantially increase data quality over the existing systems to warrant the cost. SGIP systems have inverters with capabilities to meter outputs and performance sufficiently. The cost of an additional meter may run against affordability goals while being duplicative and potentially excessive.

Finally, the Commission should avoid unduly harsh punishments and should avoid suspensions, instead relying on a societal cost of carbon purchase for out-of-compliance fleets. Financial penalties, based on this \$/MT-CO₂ amount, should be assessed only in instances where projects have been found to increase emissions. This approach ensures program goals are met without overly disrupting industry developments, which already face many challenges.

3. Legacy Projects

CESA supports aspects of the Staff Proposal for legacy systems but believes the suspension approaches, kg-CO₂/kWh threshold bands, and 10-year compliance obligations are unnecessary or excessive. Instead, CESA strongly supports the development of multiple pathways to compliance and appreciates Staff's thoughtfulness in finding ways for legacy systems to operate productively to meet program goals. As indicated, the existing RTE compliance path should stay open as it represents the rules in effect at the time of contract signing. The failure of the RTE approach to consistently drive GHG reductions, however, warrants the development of an alternative pathway, which Staff has proposed.

The Commission should strongly avoid recommending retroactive rule changes to the RTE pathway. The prospect of prolonged or automatic suspensions for legacy RTE systems seems to be a case of this. Legacy systems signed up under rules codified at the time, and the Staff Proposal now proposes to specify additive suspension criteria for these systems. CESA believes this is a dangerous precedent and also unnecessary given the relatively small number of

SGIP systems deployed and the diminutive amount of associated GHG emissions. These systems were some of the first of their kind and do not necessarily warrant excessive retroactive assessments or punishments. These systems may also soon operate under more modern rates where GHG and cycling performance are improved. While CESA agrees that egregiously poor performers may warrant some discussion of additional compliance approaches and rule changes, CESA does not support universally applied retroactive rule changes.

CESA also believes it is excessive to extend either new RTE or the alternative GHG emissions reduction pathway compliance requirements for legacy systems to 10 years. These systems were developed under a program where customer support and market transformation, GHG reductions, and grid support were all listed as program goals. Even the mere deployment of an SGIP system could, based on the letter of the law, be considered as meeting goals. While CESA expects energy storage systems to support many goals at a high level, CESA also believes legacy SGIP systems represent pioneering deployments that have supported invaluable learning about how to smartly approach BTM energy storage systems. CESA believes the Commission should recognize these benefits, understand the evolution and learning of industry participants, scale its views in regards to the overall amount of GHG emissions reductions and involved legacy incentives, and should generally exempt legacy systems, where reasonable, from new ongoing or excessive compliance requirements.

In the case of extremely poor performers for resources seeking the GHG reduction pathway, or if the Commission feels strongly that some punitive effects are useful for legacy systems, CESA recommends exploration of fleet-level payments for GHG emissions reductions, where resources cycle out of the legacy fleet after three to five years. This middle-ground approach, as detailed in the Consensus Package, helps safeguard ratepayer and GHG interests

related to legacy SGIP projects, encourages resources to move away from the flawed RTE pathway, which may be counter-productive for GHG purposes (depending on many factors), and provides a commensurate ‘stick’ for driving GHG compliance for legacy developers without, in CESA’s view, overdoing it. CESA suggested this compliance option in its Consensus Package, so many stakeholders are familiar with it.

VII. THE CAPACITY BENEFITS OF BTM ENERGY STORAGE SYSTEMS (I.E., THE ‘BUILD MARGIN’) SHOULD BE VALUED AT SOME POINT IN THE PROGRAM’S REVIEW.

D.15-11-027 found that SGIP systems invariably change the future grid needs and can reduce any construct of new fossil-fuel emitting plants. Moreover, the resources may speed the retirement of some plants. This is happening now in the Puente area where energy storage systems are contributing to efforts to avoid repowering of a natural gas plant. This shows that even if operating emissions occur near-term, the overall trajectory of the grid is towards a high-renewable lower GHG outcome. Energy storage enables this.

Current SGIP evaluation does not quantify this build-margin affect. While such an effect can reasonably be estimated as non-zero, the actual quantification of this affect may be challenging to determine. CESA recommends that any annual impact assessment also attempt to evaluate the long-term build-margin effects of SGIP storage. This analysis could bracket the numbers between a high and low case. This is important for truly capturing and understanding the effects of SGIP on grid GHG emissions reductions.

Finally, as part of this effort, the Commission should seek to emphasize the role and eligibility, where appropriate, of SGIP systems competing in utility ‘capacity’ solicitations. Recently, the IOUs have at times excluded SGIP projects from participating, in part or in full, in procurements for local capacity, as well as in distribution deferral projects. In cases where local

capacity provided by energy storage offsets the need for fossil fuel generation that provides local capacity, the utilization of SGIP funding enables storage to be competitive with other resources. As a result, storage may be used to deliver capacity. The absence of capacity revenue for fossil-fuel generation, can lead to natural gas generation retirement, removing a GHG source from ongoing utilization in the wholesale market. Therefore, to ensure that SGIP storage projects are fully utilized to encourage GHG reductions, we recommend the Commission remove, where reasonable, prohibitions on SGIP project participation in capacity procurement or distribution deferral activities. CESA recognizes that there may be situation-specific parameters to consider, but, for new SGIP systems, the eligibility of SGIP systems to compete may be fairly straightforward and appropriate.

VIII. THE ‘PRAISE LIST’ IS AN UNNECESSARY STEP AND MAY BE MISLEADING AND THUS SHOULD NOT BE PURSUED.

CESA appreciates the desire to recognize developers who excel at meeting some SGIP goals. CESA believes that such information, however, is abstract and likely of low utility for most customers, many of whom won’t review such material or know how to interpret it. Further, the list may require some administrative cost to upkeep.

Consider that some SGIP developers may target customers with energy usage profiles that are naturally more available for GHG reductions. Other customers, by contrast, may have usage profiles where lesser GHG reductions are expected. The potential for a praise list to be published may deter a developer from supporting some customers. This could be especially problematic if the customer is in a low-income area.

CESA also is concerned that the ‘praise list’ may end up being used as a ‘shame-list’, and this could occur if the list is misconstrued, oversimplified, or misused. CESA believes this risk is concerning and can easily be avoided by removing the plan for such a list.

IX. A REVISED STAFF PROPOSAL WITH AN OPPORTUNITY FOR FURTHER STAKEHOLDER COMMENT AND FEEDBACK SHOULD BE ADDED TO THE PROCEDURAL SCHEDULE.

A Ruling issued on September 6, 2018 by Commissioner Clifford Rechtschaffen does not show plans for a Revised Staff Proposal to be released, and so does not show any further comment opportunity on any such Revised Staff Proposal until a Proposed Decision is issued in Q1 2019. By contrast, an earlier Ruling issued on August 20, 2018 by Administrative Law Judge (“ALJ”) S.Pat Tsen ruled that there would be a Revised Staff Proposal issued in November 2018 with a corresponding comment opportunity.⁷ Commissioner Rechtschaffen’s Ruling thus seems to indicate a material schedule change.

CESA believes this schedule change will reduce the ability to have an optimal Proposed Decision. First, the comment opportunity on a Revised Staff Proposal does not delay the timing of the eventual Proposed Decision, which is scheduled in both instances for Q1 2019. The lack of a Revised Staff Proposal may also lead to a more contentious review of the Proposed Decision as parties may see ‘fatal flaws’ and have limited opportunities for commenting on such critical concerns. CESA thus recommends the Commission revise the schedule to that presented in the ALJ’s August 20, 2018 Ruling as well as in the Staff Proposal whereby a Revised Staff Proposal is issued for comment in Q4 2018.

⁷ *Administrative Law Judge’s Ruling Amending Schedule*, issued on August 20, 2018.
<http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M223/K633/223633535.PDF>

X. CONCLUSION.

CESA appreciates consideration of these comments. SGIP is a landmark program that has led to widespread deployment of BTM storage to support the State's environmental goals and support ongoing climate adaptation and resiliency efforts. CESA believes it is possible to evolve program rules to better ensure GHG reduction goals are met while also promoting high-levels of industry participation in the SGIP program.

Respectfully submitted,



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Date: September 26, 2018

Appendix A:
CESA's Unfinalized Consensus Proposal

Compromise Recommendation for Program Modifications (Draft)

The following SGIP combination of program modifications, sets of rules, and other criteria form the basis of a 'Compromise Recommendation' that could be supported by some or all SGIP GHG Working Group stakeholders. The purpose of this Compromise Recommendation is to recommend a reasonable and effective suite of SGIP enhancements and compliance approaches to further support achievement of the three program goals, including the goal of GHG emissions reductions. It is important to evolve rules as a whole package so that redundancies are avoided and so that sufficient but not onerous safeguards on the program are developed in a timely fashion.

These recommendations are also guided by a desire to support ongoing operations of the SGIP program with an eye towards efficient program administration.

All of the ideas and specifics of this compromise solution originate from discussion in the SGIP GHG Working Group, reflected in the above SGIP GHG Working Group report.

I. Support: the following parties indicated support for this package.

- AAA
- BBB
- CCC
- XXX
- YYY
- ZZZ

II. **Compromise Recommendation Package:**

These recommendations are a package and are intentionally grouped together. The package includes 5 sections.

1. GHG signal development – SGIP’s M&V budget should provide for an available GHG emissions signal to guide project or fleet operations. This action fits with the directive from Assigned Commissioner Rechtschaffen’s Ruling to develop a GHG signal.
2. Quarterly and/or Monthly ‘GHG Performance Update’ provided through PA, with the following specifics:
 - a. Applicable to all *new* non-res projects
 - i. PBI systems may be able to provide info automatically on a monthly basis (through the database)
 - ii. Aggregation of information at fleet level may need input from data-base manager – standardized report format is desired.
 - b. Not applicable for Residential projects
 - c. For Legacy non-residential systems, the applicability of this update is TBD
3. GHG Emissions Based Compliance Payment Pathway (EBCPP) – SGIP will establish rules by which to establish a cost for GHG emissions. Potential market designs for this structure are not included in this ‘package’ but are discussed in the SGIP GHG Working Group Report. The EPBB price is used as a price reference or payment by which out-of-compliance SGIP systems or fleets (evaluated at the developer level in some instances), depending on the protocols laid out in #4 and #5 below, make payments for GHG emissions above 0 emissions in an applicable time-period, e.g. the previous annual (calendar) year. The price for emissions is denominated in a dollars per emitted Ton (\$/Ton) and will be based on the most recent and applicable ‘Societal Cost of Carbon’ price as determined in the CPUC’s Avoided Cost Calculator (ACC) model (\$68-\$70/ton).

Note that this Compromise Recommendation does not include a calculation of any ‘build-margin’ directed GHG emissions reduction. While Build-Margin effects should be deemed to be non-zero, the combination of solutions here focuses on reasonable *operational* GHG emissions effects of SGIP systems. Since additional non-zero build margin benefits are assumed, the total GHG emissions effects of SGIP will be better than those calculated solely based on operational effect, ensuring the SGIP program’s GHG goals being met with certainty. Examples of the build margin benefits include projects that are installed and so avoid the development of more emitting resources, e.g. a gas power plant which would otherwise operate for decades.

4. Legacy System enhancements
 - a. Two compliance paths are available for Legacy systems, defined as any system with an SGIP incentive reserved prior to the date of a final determination from the Commission on these matters, e.g. the date from which an Advice Letter is Accepted by the

Commission. This cutover date allows the program to remain open to applications even if the program is evolving.

- i. Legacy Traditional Pathway
 1. Resource must comply with RTE and cycling requirements per program rules at the time of the SGIP reservation
 2. Resources that comply with RTE and cycling requirements per program rules do NOT face compliance actions if GHG emissions reductions are not achieved.
 3. Resources that do NOT achieve RTE and cycling requirements may be subject to existing program oversight approaches
- ii. Legacy Compliance Pathway
 1. Data must be submitted quarterly, or monthly for PBI
 2. Out of compliance resources can achieve GHG compliance goal through developer-fleet wide measurement and participation in the EBCPP
 - a. Legacy Project GHG compliance period stops after 5 years of operations for each project.
 - b. Specific projects can still be reflected in findings of the SGIP Impact analyses for up to 10-years, per today's M&V rules.
 3. Cycling levels updated to 52 for Residential and 130 for non-Residential projects. These updated numbers are designed to avoid excessive compliance cycling while ensuring SGIP resources are clearly not used for back-up.
 4. Legacy PBI systems continue to receive PBI payments linked to cycling rules which will be updated to reflect the latest cycling minimums, NOT to GHG emissions reduction goals.
 5. For additional compliance needs, SGIP PAs continue to have ongoing oversight capabilities.

5. New Project Compliance

- a. Minimum cycling requirements must be met (52 Residential, 130 for Non-Residential)
- b. Single-Cycle RTE is used only as a technology eligibility – ongoing enforcement of RTE is no longer part of the program
- c. GHG compliance approaches:
 - i. Residential Deemed Pathway – per the AESC findings
 - ii. Residential Non-Deemed Pathway – see Non-Res Non-PBI.
 - iii. Non-Residential <30.1 kW will be subject to a new PBI-lite concept. Under this concept, the resource receives 70% of its incentive up-front and 'earns' the remaining incentive amount (30%) ratably across the first three year period of operations based on a net-0 or lower project-specific operational GHG emissions calculation on an annual calendar basis. Payments of the additional incentives are reduced by the EBCPP as specified above on a per MT basis. In this initial three-year period, the maximum consequence for any net project-specific GHG emissions is set at the remaining annual incentive amount. After the initial three year period, the resource is obliged to achieve 0 GHG emissions

- or comply with the EBCPP as evaluated at the developer-fleet-wide level on an annualized basis. GHG compliance is required through a maximum of 5 years of project operations, after which projects 'roll off' GHG compliance calculations.
- iv. Non-Residential PBI – As with historical PBI structures, new PBI projects receive 50% of the reserved SGIP incentive up front, and 'earn' additional incentives through cycling in accordance with new cycling levels (130). After 1-year, monthly PBI payments are withheld in amounts up to the cost of GHG emissions based on the EBCPP structure in amounts attributable to the resource for the previous calendar year. In this initial PBI period, the maximum consequence for any net project-specific GHG emissions is set at the remaining PBI incentive amount estimated to be recovered in a year. When all PBI payments are recovered (or foregone due to GHG emissions), the resource is obliged to achieve 0 GHG emissions or pay for GHG emissions goals through the EBCPP as evaluated at the developer-fleet-wide level on an annualized basis. GHG compliance is required through a maximum of 5 years of project operations, after which projects 'roll off' GHG compliance calculations.
 - v. For additional compliance needs, Program Administrators retain their ongoing oversight authority.

III. Implementation Approach

This Commission may wish to incorporate this 'compromise package' into a ruling relating to potential enhancements to the SGIP program.

Appendix B:
CESA's Unfinalized Consensus Proposal

Column1	Column2	Column3	Column4	Column5	Column6
Evaluating SGIP Incentive Reductions on a \$/MT equivalent basis.					
<i>CESA believes the below calculations show that the incentive reductions proposed in the staff proposal, as well as the 25kgCO2/kWh threshold are both excessive</i>					
<u>Assumptions</u>					
		Value	Units	Formula	Source or Notes
A.	Incentive Step	0.35	\$/Wh	n/a	from selfgenca.or
B.	Capacity	30	kW	n/a	example system
C.	Duration	2	hour	n/a	example system
D.	Efficiency Losses	0.7	SCRTE	n/a	more conservativ
E.	Number of Cycles	130	cycles	n/a	Staff Proposal
F.	Amount of Incentive Paid Up-Front (Commercial)	40%		n/a	Staff Proposal
G.	On-Peak (Peaker) Emissions/MWh	544	kgCO2/MHw	n/a	2015 GHG Emissi
H.	Off-Peak (CCGT) Emissions/MWh	382	kgCO2/MWh		2015 GHG Emissi
I.	Line losses on peak	10.30%		n/a	2015 GHG Emissi
J.	Line losses off peak	5.30%		n/a	2015 GHG Emissi
<u>Calculations</u>					
<u>Determining the total and 'at risk' Incentive amounts</u>					
K.	Total Authorized Incentive	21000	\$	A*B*C*1000	
L.	Amount Paid up Front	8400	\$	K*F	
<u>Determining the At Risk Incentive each year for 5 years</u>					
M.	Remaining Incentive earnable across 5 years	12600	\$	K-L	
N.	Amount earnable per year	2520	\$	M/5	
<u>Determine 'bad case' GHG Emission Reductions in one year</u>				Assume charging ON peak and dischargin	
<u>Emissions during Charging</u>					
O.	Total kW hour Charged	11142.9	kW	B*C*E/D	

P.	Convert to MWh		11.1	MWh	O/1000
Q.	Adjust for Line losses		12.4	MWh	P/(1-I)
R.	Calc Grid Emissions		6757.8	kgCO2	Q*G
S.	Calculate to Metric Tons		6.8	MTCO2	S/1000
<u>Avoided emissions from discharging</u>					
T.	Total kWh discharging		7800	kWh	B*C*E
U.	Convert to MWh		7.8	MWh	T/1000
V.	Adjust for Line Losses		8.236536431	MWh	U/(1-J)
W.	Calc Grid Emissions		3146.356917	kgCO2	V*H
X.	Calculate to Metric Tons		3.146356917	MTCO2	W/1000
<u>Calculate Net Emissions and convert to kgCO2/kWh</u>					
Y.	Charging Emissions - Discharging Emissions		3.611407059	MTCO2	S-X. Note: Postive numbers = positive er
Z.	Convert to kgCO2		3611.407059	kgCO2	Y/1000
aa.	Convert to kgCO2e per kWh		60.19011764	kgCO2/kWh	Z/(B*C)
<u>Evaluate</u>					
<u>Amount of At-Risk Incentive Remaining under Various Discount Percentages</u>					
bb.		25%	1890	\$	L*(1-25%)
cc.		50%	1260	\$	L*(1-50%)
dd.		100%	0	\$	L*(1-100%)
<u>Delta in incentive in that year</u>					
ee.		25%	630	\$	N-bb
ff.		50%	1260	\$	N-cc
gg.		100%	2520	\$	N-dd
<u>Now Convert to \$/MT of CO2e.</u>					
hh.		25%		\$/MT	ee/Y

		\$	174.45		
ii.	50%	\$	348.89	\$/MT	ff/Y
jj.	100%	\$	697.79	\$/MT	gg/Y