

**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  
AND THE NATURAL RESOURCES DEFENSE COUNCIL IN RESPONSE  
TO THE ASSIGNED COMMISSIONER'S PROPOSED 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**

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AS AMENDED BY SENATE BILL 861**

The California Energy Storage Alliance (“CESA”)<sup>1</sup> and the Natural Resources Defense Council (“NRDC”) hereby submits these comments pursuant to the Rules of Practice and Procedure of the California Public Utilities Commission (“Commission”), and the *Proposed 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)*

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<sup>1</sup> 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.

*as Amended by Senate Bill 861*, issued by Assigned Commissioner, President Michael Picker on July 10, 2015 (“PD”).

## **I. INTRODUCTION.**

Public Utilities Code Section 379.6 was amended on June 20, 2014 by Senate Bill (SB”) 861 to revise Self-Generation Incentive Program (“SGIP”) eligibility requirements, 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 and NRDC provide these comments regarding the proposed GHG emission threshold formula, use of degradation factors, and appropriateness of the formula as it relates to the goals of SB 861.

The PD establishes a formula for calculating avoided GHG emissions given an expected longevity, degradation, and operation of prospective SGIP-eligible resources. The output of this calculation, given defined inputs, should establish a GHG emissions eligibility threshold that SGIP-eligible resources must “beat” in order to ensure those resources satisfy SGIP goals and requirements established by SB 861. CESA and NRDC believe that such a methodological approach based on reasonable assumptions holds merit and is a prudent approach to a complex matter. CESA and NRDC appreciate the PD’s thoughtful work and clarity in laying out its formulations and thinking.

The formula, however, is complicated, and based on CESA’s and NRDC’s assessment, could prove ineffective in meeting the Commission’s goals. These comments show how total grid GHG emissions driven by a representative load across a given year could actually be lower *without* an SGIP-eligible resource operating at the proposed level of 360 kgCO<sub>2</sub>/MWh. CESA

and NRDC have found that this outcome is due to the fact that the formula incorrectly applies the adjustment for 33% Renewables Portfolio Standard (“RPS”) by applying it exclusively to the Build Margin component of the marginal emissions rate, instead of to both the Build Margin and the Operating Margin emissions rate contribution consistent with the intent of D.11-09-015.<sup>2</sup> CESA and NRDC recommend a change to the formula to correct for this problematic outcome, and to ensure consistency with D.11-09-015. CESA’s and NRDC’s proposed specific formula changes are included as proposed redlines to the PD so that it can be expeditiously approved, as modified, to ensure that current SGIP incentives are being deployed consistent with the goals of SB 861 as soon as possible. CESA’s and NRDC’s recommended changes to the Findings of Fact, Conclusions of Law, and Ordering Paragraphs in the PD are set forth in Appendix A to these comments

**II. THE CURRENTLY PROPOSED EMISSION FACTOR METHODOLOGY WILL NOT MEET THE CLEAN ENERGY GOALS STIPULATED BY SB 861.**

A simple example illustrates how the PD’s GHG Emissions Eligibility Threshold formula, establishing 360 kgCO<sub>2</sub>/MWh may fail to address the goals of SB 861. The following simple example illustrates this finding. Assume a customer plans to have an annual load of 100 MWh for the next 10 years. This 100 MWh/year load may be served either by the grid under 33% RPS conditions (Baseline Scenario), or by an SGIP-eligible resource with a GHG emissions rate equal to the proposed 360 kgCO<sub>2</sub>/MWh (Project Scenario).<sup>3</sup>

In the Baseline Scenario, the 100 MWhs of load is served by a combination of RPS resources and marginal grid resources. To keep this example as consistent as possible with the

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<sup>2</sup> D.11-09-015 provides: “We believe the adjusted emissions factor represents a reasonable proxy for calculating the avoided GHG emissions at this time and adopt it here. First, we believe that the GHG emissions factor should reflect the fact that DG displaces a mix of resources including renewable resources as required by the RPS statute [Emphasis Added]”, p. 15.

<sup>3</sup> For simplicity, the example assumes SGIP rules accommodate this resource.

values in the PD, assume an RPS of 33% and a line loss factor of 8.4%, and assume that the remaining generation required to serve the load comes from marginal fossil resources with the same emissions rates as in the PD. Further, assume the mix of gas-fired resources is 92% from Combined Cycle Gas Turbines and 8% Combustion Turbine "Peaker" plants, and 50% of the generation is produced at the Build Margin emissions rates, and 50% is produced at the Operating Margin emissions rates, consistent with the assumptions used in the PD.

Assuming these emissions rates, the emissions from serving this load can be determined mathematically, similar to the formulas used in the PD. See the chart set forth below as Figure 1.

Where:

$$ER_{OLF} = \text{Operating Margin Emissions Rate of Load Following Plants} \\ = 382 \frac{\text{kgCO}_2}{\text{MWh}}$$

$$ER_{OP} = \text{Operating Margin Emissions Rate of Peaker Plants} \\ = 544 \frac{\text{kgCO}_2}{\text{MWh}},$$

$$ER_{BLF} = \text{Build Margin Emissions Rate of Load Following Plants} \\ = 368 \frac{\text{kgCO}_2}{\text{MWh}},$$

$$ER_{BP} = \text{Build Margin Emissions Rate of Peaker Plants} \\ = 524 \frac{\text{kgCO}_2}{\text{MWh}},$$

$$WFP = \text{Weighting Factor for Peaker Plants} = 8\%,$$

$$LLF = \text{LineLoss Factor} = 8.4\%$$

$$RPS\% = \text{Renewable Portfolio Mix} = 33\%$$

$$ER_{\text{Margin.Gas}} = \text{Marginal Gas Plant Emissions Rate} \\ = [0.5 (ER_{OLF} * (1 - WFP) + ER_{OP} * WFP)] \\ + [0.5 (ER_{BLF} * (1 - WFP) + ER_{BP} * WFP)] = 387.7 \frac{\text{kgCO}_2}{\text{MWH}}$$

$$ER_{\text{Renewables}} = 0 \frac{\text{kgCO}_2}{\text{MWH}}$$

Baseline Scenario Emissions Calculation to Serve 100 MWh From the Grid

To serve 100 MWhs of retail load, 33 MWhs must be renewable according to the state's RPS. The remaining generation will come from marginal grid resources. Because of losses of 8.4%, 108.4 MWhs must be generated at the transmission level to serve 100 MWhs of retail load. Because 33 MWhs will be renewable, the remaining 75.4 MWhs will be marginal grid resources:

$$\text{Total Generation Required} = 100 \text{ MWh} * (1 + LLF) = 108.4$$

$$\text{RPS Generation} = 33 \text{ MWhs}$$

$$\text{Marginal Grid Generation} = 100 \text{ MWh} * (1 + LLF) - 33 \text{ MWhs} = 75.4 \text{ MWh}$$

$$\text{Total Emissions}$$

$$= (33 \text{ MWh} * ER_{\text{Renewables}}) + [100\text{MWh} * (1 + LLF) - 33] * ER_{\text{Marg.Gas}}$$

$$= 0 + 75.4 \text{ MWhs} * 387.7 \frac{\text{kgCO}_2}{\text{MWh}} = 29,233 \text{ kg}$$

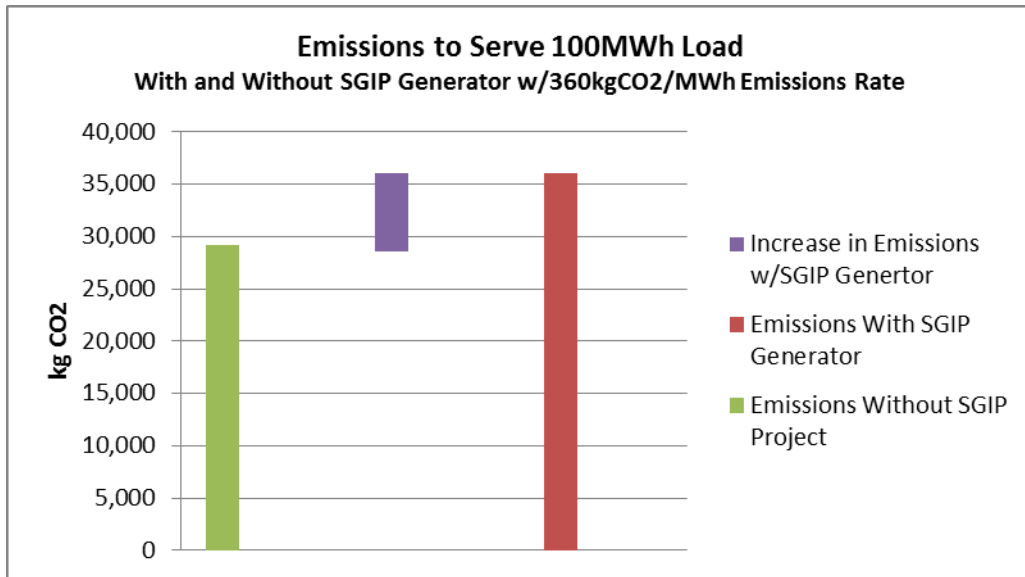
Next, let's look at the Project Scenario for comparison. Given the intent of SB 861, we should expect total emissions to be lower if introducing an SGIP-eligible resource with GHG emissions rates at the PD's rate, the intent of which is to support California's GHG emissions reduction goals and to lower GHG emissions. As proposed in the PD, the SGIP-eligible resource will be deemed to emit 360kgCO2/MWh.

$$\text{Project Scenario Emissions Serving 100 MWh from SGIP Resource:}$$

$$= 100 \text{ MWh} \times ER_{\text{PD GHG Threshold}}$$

$$= 100\text{MWh} \times 360\text{kgCO}_2/\text{MWh} = 36,000\text{kgCO}_2$$

This comparison shows that 23% more GHGs are emitted under the PD (36,000 kgCO2) using the PD Emissions Factor than in the Baseline Scenario case (29,233 kgCO2), as summarized in the chart below.



This outcome illustrated in the example above is contrary to the intent of the law under SB 861. Also concerning, this simplified example demonstrates that the contributions from RPS resources in the Baseline Scenario are underrepresented in the methodology proposed in the PD. If RPS resources were properly included in this calculation, the GHG Emissions Eligibility Threshold would be lower, such that an SGIP project with an emissions rate at the threshold would not produce higher emissions than the baseline scenario which assumes no SGIP project. Further, it is important to note that this simplified example did not factor in a 1% degradation factor to the SGIP-eligible technology, which CESA and NRDC strongly recommends should be consistently applied to all SGIP-eligible technologies as explained below.

**III. A 33% RPS FACTOR CORRECTLY APPLIED TO THE FORMULA RESULTS IN AN SGIP GHG ELIGIBILITY THRESHOLD OF 295.3 KGCO2/MWH.**

CESA and NRDC investigated the PD's formula to understand where it may fail to compute a GHG Emissions Eligibility Threshold that ensures SGIP-eligible projects offer net



emissions reductions, instead of yielding the problematically high 360 kgCO<sub>2</sub>/MWh. CESA and NRDC found that the way in which the RPS adjustment is applied warrants revisions.

As written, the PD found that it is only appropriate to apply the RPS adjustment to the build margin component of the marginal emissions rate, and not the operating margin. In this way, the PD conflates installed RPS capacity with the volume of RPS generation, and in so doing, misconstrues the intent of the RPS adjustment. As the example above illustrates, for eligible generators to provide net emissions reductions, their emissions rate would need to be lower than the 67% marginal fossil resources and 33% RPS resources they are displacing (adjusted for line losses). The build margin and operating margin concepts should apply only to the estimation of the marginal fossil emissions rate. The 33% RPS adjustment factor must be applied to the whole marginal emissions rate to account for the fact that the behind-the-meter generation is displacing a volume of RPS generation by reducing the retail load on which the RPS obligation is set. To correct the PD, the 33% RPS adjustment should apply to both the Operating and Build Margin effects, as follows.

$$\text{GHG Emission Eligibility Threshold} = [1 - \text{RPS}\% * (1 - \text{LLF})] * [(0.5(\text{EROLF} * (1 - \text{WFP}) + \text{EROP} * \text{WFP}) + 0.5 * (1 - \text{RPS}\% * (1 - \text{LLF})) * (\text{ERBLF} * (1 - \text{WFP}) + \text{ERBP} * \text{WFP}))] / (1 - \text{LLF})$$

Applying the 33% RPS correctly as illustrated above results in an SGIP GHG eligibility threshold of 295.3 kgCO<sub>2</sub>/MWh. If the intent of the SGIP's GHG emissions eligibility threshold requirement is to result in a net reduction in emissions, then SGIP-eligible resources need to have a lower GHG emissions rate than this threshold rate. Through this corrected formula, any new (non-energy storage) SGIP-eligible generation resource would reduce the GHG emissions of serving load, in line with SB 861 and an assumed 33% RPS.

Additionally, by In D.11-09-015 the Commission determined it was reasonable to adjust CARB's GHG factor by applying the 33% RPS adjustment to both the Operating and Build Margin effects, the methodology will be consistent with the intent of D.11-09-015. The Commission's intent is summarized in D.11-09-015 as follows:

“We believe the adjusted emissions factor represents a reasonable proxy for calculating the avoided GHG emissions at this time and adopt it here. First, we believe that the GHG emissions factor should reflect the fact that DG displaces a mix of resources including renewable resources as required by the RPS statute. CARB's factor is simply the weighted emission rate of all in-state gas-fired generation from 2002 through 2004 and does not include any renewable generation.

Second, Staff adjusted CARB's factor by 20% while the State has adopted a 33% RPS mandate. It is likely that accounting for the 33% goal will require even further reduction to Staff's estimate in the future.”  
(p. 15)

Because the RPS is counted on a volumetric basis (kWh) it should be applied to the entire marginal emissions rate, not just the build margin. The 33% RPS adjustment is meant to account for the fact that behind-the-meter resources reduce the volume of the RPS obligation by reducing the MWhs of retail load. Behind the meter generation, by reducing retail load, reduces the volume of generation needed to comply with the RPS. This volumetric effect is what the RPS adjustment is meant to capture.

**IV. CORRECTLY APPLYING THE 1% DEGRADATION FACTOR TO THE EMISSIONS ELIGIBILITY THRESHOLD TO COMPLY WITH THE INTENT OF SB 861 WILL RESULT IN A TECHNOLOGY EMISSIONS EFFICIENCY THRESHOLD OF 282.3 KG CO<sub>2</sub>/MWH**

In addition to the methodological change recommend above, the Commission should also apply the 1% annual degradation factor over 10 years to ensure that SGIP-eligible resources meet the 295.3kgCO/MWh requirement over their lifetime, consistent with how the 1% degradation factor has been applied to the minimum required round trip efficiency for eligible energy storage

technologies. With this adjustment, the threshold for SGIP-eligible technologies in their first year of SGIP operations would be 282.3 kgCO<sub>2</sub>/MWh.

The emission threshold including the degradation factor should be included in the final ordering paragraph to ensure there is no confusion regarding the 1% degradation factor application. CESA and NRDC therefore requests the Commission amend page 37 of the ordering paragraph to include the 1% degradation factor. (See Appendix A).

V. **INPUTS AND ASSUMPTIONS IN THE EMISSION FACTOR FORMULA AS PROPOSED ARE CONSERVATIVE AND REASONABLE BECAUSE IT ASSUMES GAS-FIRED GENERATION TO BE MARGINAL. THE EMISSIONS FACTOR SHOULD BE AUTOMATICALLY ADJUSTED UPON STATUTORY ADOPTION OF HIGHER RPS GOALS**

Currently, the proposed formula only assumes gas-fired generation to be marginal. While such an approach may have been true historically, current grid and portfolio conditions indicate other resources may be marginal, especially during periods of overgeneration. In multiple instances in 2015 and also in planning exercises for future years that are well within the PD's GHG Emission Factor time period, the California Independent System Operator ("CAISO") has detailed challenges it faces in balancing the grid due to inflexible gas-fired resources and over generation conditions sometimes associated with periods of high renewable generation output during periods of relatively low load. In these periods, the marginal unit for integrating the next SGIP-eligible resource could be – and occasionally has been – the curtailment or adjustment of a zero-emission renewable resource, such as a wind or solar. Hydroelectric resources may also be marginal.

In its "Study of 2014 LTPP No Curtailment Sensitivity Cases" and "Reliability Services and Flexible Resource Adequacy Capacity Must Offer Obligations 2 Issue Paper", the CAISO documents how renewable units can operate as the marginal unit for integrating the "p-min

burden” associated with many fossil plants.<sup>4</sup> This p-min burden can result from characteristics of gas-fired resources which have non-zero minimum operating levels and also minimum run-times. CESA and NRDC believe this CAISO data provides a reasonable basis upon which to determine that gas-fired resources will not *always* be the marginal unit to be displaced by a small SGIP-eligible resource “turning on.” Based on these findings, CESA and NRDC conclude that the marginal emissions rates in the proposed methodology are conservative, and may need to be revised in the future. As discussed above, this perspective is also confirmed in D.11-09-015.

Second, while CESA and NRDC acknowledges the Commission may not readily use RPS percentages, such as a 50% RPS, not yet codified into law, the Commission should recognize the likelihood of a higher level of renewables for both the operating margin effect and for the build margin effect. The build margin effect devises a GHG Emissions factor based on future avoided capacity needs based on clean energy increases. In some cases, more renewables are being built than are needed for the 33% RPS. For instance, if utilities assumed an overly high failure rate for RPS projects, capacity beyond the 33% RPS could be developed. These resources may serve to decrease the amount of gas-fired capacity avoided by SGIP, *i.e.* the Build Margin. This illustrates another example of why the existing assumptions in the proposed methodology likely overstate the emissions factor of the grid.

Because California clearly intends to pursue higher levels of RPS, CESA and NRDC believe the Commission should immediately adjust the 33% RPS emissions factor and recalculate a new emissions threshold eligibility number if/when the higher RPS is signed into law. Indications of the legislature’s response to the Governor’s goals show a strong inclination

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<sup>4</sup> “Study of 2014 LTPP No Curtailment Sensitivity Cases,” CAISO, April 15, 2015, Slides 5-6, “Actions to Mitigate Overgeneration... Backing down online dispatchable resources...”

*Reliability Services and Flexible Resource Adequacy Capacity Must Offer Obligations 2 Issue Paper*, CAISO, June 25 2015, p. 14, see “P-Min Burden” explained.

to raise RPS levels, and the Commission should prudently adjust the SGIP Emissions Eligibility factor to be consistent with new state law. Accurate assumptions that are implemented in a timely manner for the SGIP will ensure compliance with SB 861 and will ensure that subsequent SGIP evaluation will be deemed a success. From the perspective of SB 861, a truly “conservative” approach would be for the Commission to err on the side of understating grid emissions, rather than overstating them.

**VI. VI. ENERGY STORAGE MINIMUM ROUND TRIP EFFICIENCY SHOULD BE SET AT 60% PRIOR TO APPLICATION OF THE 1% DEGRADATION FACTOR**

The PD finds no basis for changing the round-trip efficiency requirement for energy storage devices needed to qualify for SGIP eligibility. Additionally, the PD applies a 1% degradation factor which effectively increases the minimum round-trip efficiency requirements for Energy Storage technologies. CESA and NRDC support application of the 1% degradation factor to storage and to all SGIP-eligible technologies, but believe the overall increase in required energy storage efficiency poorly reflects the expected role of energy storage.

CESA and NRDC, and many other parties, recognize the California grid is becoming cleaner, and that energy storage technologies can improve grid efficiency and California’s GHG emissions profile. Energy storage technologies can also play useful roles in mitigating overgeneration concerns and, by shifting renewable generation output, effectively replace on-peak generation with zero emission renewable energy. The Commission has already recognized that energy storage technologies operating in an energy shifting application face different grid

conditions when charging than when discharging<sup>5</sup> and specifically recognized this in its ruling to authorize different line-loss factors for storage charging vs. discharging.<sup>6</sup>

In similar fashion, the Commission should apply more nuanced assumptions regarding the emissions benefits of energy storage resources charging from renewable energy generation that would have otherwise have been curtailed, and displacing less efficient marginal fossil generation. In line with CESA's and NRDC's above logic, it may be reasonable for the Commission to assume annualized emissions factors for peak and off-peak conditions reflective of the varying grid conditions. As raised in CESA's earlier comments in this proceeding, sophisticated production cost modeling using tools approved of and ordered by the Commission showed annualized GHG benefits from distributed energy storage solutions, *even with* an assumed 60% round trip efficiency.<sup>7</sup>

Given that Strategen's Energy Storage Analysis is part of the record and based on generally accepted assumptions, CESA and NRDC believe the Commission can reasonably apply a 60% minimum round trip efficiency requirement for energy storage (prior to application of a degradation factor), especially as overgeneration conditions and the RPS targets are expected to increase. After application of the degradation factor, the minimum required round trip efficiency for energy storage would be 62.7%.

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<sup>5</sup> [Cite]

<sup>6</sup> [Cite]

<sup>7</sup> 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.

**VII. CONCLUSION.**

Based on the foregoing discussion, CESA and NRDC recommend that the PD's Conclusions of Law Number 17 and Ordering Paragraph Number should be modified as indicated in Appendix A.

CESA and NRDC thank the Commission for the opportunity to submit these comments on the PD.

Respectfully submitted,



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July 30, 2015

## **APPENDIX A**



## APPENDIX A

### **PROPOSED FINDINGS OF FACT, CONCLUSION OF LAW, AND ORDERING PARAGRAPHS**

CESA recommends that the following changes be made in the Findings of Fact, Conclusion of Law, and Ordering Paragraphs of the Proposed Decision. A page citation to the Proposed Decision is provided in brackets for the finding conclusion, or paragraph for which a modification is proposed. Added language is indicated by bold type; removed language is indicated by bold strike-through. An “Added Finding of Fact” or “Conclusion of Law” is so indicated.

#### **Proposed Findings of Fact**

1. [Page 30] Modify Finding of Fact Number 7 as follows: **Applicable** Storage technologies do not directly emit GHGs; they may cause emissions to occur when they charge and displace emissions when they discharge.

2. [Page 31] Modify Finding of Fact Number 12 as follows: New customer-sited generation may displace **grid emissions resulting from serving loads via RPS and other generation sources** ~~from existing dispatchable generation facilities~~ (the operating margin effect) **and from** ~~reduc~~**ing** the need for new generation that would otherwise have been built to serve the load met by the SGIP projects (the build margin effect), ~~or affect both the operating and build margins.~~

3. [Page 35] Modify Finding of Fact Number 48 as follows: ~~Parties did not thoroughly vet~~ CESA’s production cost model runs **have been introduced in Commission proceedings, use known and accepted modeling approaches and assumptions, and indicate grid reductions can occur in higher RPS scenarios using storage with 60% round-trip efficiencies.**

4. [Page 35] Add the following Finding of Fact Number 51: **To comply with SB 861, the Commission must ensure loads served by SGIP resources for a 10-year period reduce GHG Emissions when compared to emissions resulting from serving loads from the grid for a 10-year period.**

5. [Page 35] Add the following Finding of Fact Number 52: **It is reasonable to add an RPS Adjustment to the Operating Margin because retail loads otherwise served by the grid add to the RPS requirement.**

### **Conclusions of Law**

1. [Page 36] Modify Conclusion of Law Number 9 as follows: Assuming that new renewable capacity is avoided in the build margin in proportion to the ~~current 33%~~ RPS requirement is appropriate ~~conservative because~~, **and** the Legislature or the Commission may increase the renewable requirement in the future.

2. [Page 37] Modify Conclusion of Law Number 11 as follows: It is reasonable to revise the SGIP GHG emissions eligibility threshold under §379.6(b)(2) for generation technologies to **282.3** ~~360~~ kgCO<sub>2</sub>/MWh.

3. [Page 37] Modify Conclusion of Law Number 12 as follows: Under §379.6(b)(2), it is reasonable for GHG-emitting technologies to demonstrate they will emit GHG emissions at a rate no higher than **295.3** ~~360~~ kgCO<sub>2</sub>/MWh during their first ten years of operations, accounting for **1%** performance degradation, in order to receive SGIP incentives.

4. [Page 37] Modify Conclusion of Law Number 16 as follows: When calculating the minimum round trip efficiency for storage devices, SGIP should use **applicable modeling results to identify efficiency minimums that still result in system GHG reductions** ~~the operating margin and build margin emission rates for CCGTs and CTs that are applied when calculating avoided emissions for generation projects.~~

5. [Page 37] Modify Conclusion of Law Number 17 as follows: Storage devices should demonstrate an average annual round trip efficiency of **62.7** ~~66.5%~~ over ten years to qualify for SGIP under § 379.6(b)(2).

### **Ordering Paragraphs**

[Pages 37-38] Modify Ordering Paragraph Number 1 as follows: Within 30 days of the effective date of this decision, the Center for Sustainable Energy, Pacific Gas and Electric Company, Southern California Edison Company, and Southern California Gas Company shall

jointly file a Tier 1 Advice Letter revising the Self-Generation Incentive Program Handbook to modify the greenhouse gas emissions standard to **282.3** ~~360~~ kilograms carbon dioxide per megawatt hour and to modify the minimum average round-trip efficiency for energy storage projects to **62.7** ~~66.5~~%.