

**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
TO THE PROPOSED DECISION ESTABLISHING A SELF-GENERATION
INCENTIVE PROGRAM EQUITY RESILIENCY BUDGET, MODIFYING EXISTING
EQUITY BUDGET INCENTIVES, APPROVING CARRY-OVER OF ACCUMULATED
UNSPENT FUNDS, AND APPROVING \$10 MILLION TO SUPPORT THE SAN
JOAQUIN VALLEY DISADVANTAGED COMMUNITY PILOT PROJECTS**

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In accordance with the Rules of Practice and Procedure of the California Public Utilities Commission (“Commission”), the California Energy Storage Alliance (“CESA”) hereby submits these comments to the *Proposed Decision Establishing a Self-Generation Incentive Program Equity Resiliency Budget, Modifying Existing Equity Budget Incentives, Approving Carry-Over of Accumulated Unspent Funds, and Approving \$10 Million to Support the San Joaquin Valley Disadvantaged Community Pilot Projects* (“PD”), issued by Assigned Commissioner Clifford Rechtschaffen on August 9, 2019.

I. INTRODUCTION.

CESA applauds the Commission for the many important and timely changes proposed in the PD for the Self-Generation Incentive Program (“SGIP”) that will increase energy storage access for Equity customers and provide dedicated funds for resiliency applications, which is a pressing and urgent issue given the ongoing risks of planned outages from Public Safety Power Shutoff (“PSPS”) events. CESA appreciates the Commission’s responsiveness to stakeholder feedback to address the barriers identified in responses to the April 15, 2019 Ruling for Equity

customers as well as to facilitate energy storage as a clean and reliable backup power option for customers likely to face increased frequency of PSPS events. Some of the key changes that CESA particularly supports include:

- **Broadened Equity Budget eligibility:** CESA supports the changes to eligibility to include California Indian Lands, which was ‘overlooked’ based on current eligibility rules, and to include public agencies that provide services to disadvantaged communities (“DACs”).
- **Synergies of the SGIP Equity Budget with low-income solar programs:** The cross-eligibility between the two programs will support streamlined access, make program requirements more consistent (*e.g.*, system sizing requirements), and create opportunities to consolidate marketing, education, and outreach (“ME&O”) efforts.
- **Elimination of the Equity Budget developer cap:** The PD rightly recognizes that any developer that is able to increase access to energy storage resources for Equity customers should be allowed to develop projects beyond the developer cap, putting the Equity goals above market transformation and competition goals at this time.
- **Leveraging attestations and application information submissions to verify resiliency capabilities:** The PD appropriately recognizes that the Rule 21 interconnection tariffs and other established standards sufficiently ensure safety, reliability, and resiliency service.
- **Establishment of a new Equity Residential Heat Pump Water Heater (“HPWH”) Budget category:** Although the allocated funds are small (\$4 million), this carve-out will support increased Equity customer access to an energy storage technology that can provide grid-interactive load shifting services and provide greenhouse gas (“GHG”) reduction benefits from load shifting as well as potentially from fuel switching. CESA looks forward to participating in a future workshop to consider how barriers to HPWH participation in SGIP can be addressed.

In addition to the above changes, CESA believes that some components of the PD should be modified to varying degrees. CESA generally supports increasing the Equity incentive rate, - the new Equity Resiliency Budget category along with a higher Equity Resiliency incentive rate, and the modifications to the incentive rate step-down structure based on energy duration but wants to ensure the changes achieve the appropriate and desired outcomes. CESA recognizes the Commission’s good intention in proposing these rate-related changes but believes that the i) Equity

and Equity Resiliency incentive rates should be set higher to initially cover 100% of eligible project costs, ii) longer durations should be incentivized at higher rates given some of the misunderstandings of long-duration storage technologies, and iii) cycling and GHG requirement implications should be reconsidered for the resiliency use case. Further, while the near-term focus of this PD is on Equity Budget changes, CESA recommends that the Commission also consider changes to General Budget projects that support resiliency applications as well as longer-duration technologies. At a high level the key changes CESA recommends in our comments include:

- **The Equity incentive rate should be initially set at \$0.85/Wh to cover 100% of project costs.**
- **The Equity Resiliency incentive should be set at \$1.02/Wh and \$1.20/Wh for eligible residential and non-residential customers respectively.**
- **The Commission should address resiliency for non-equity customers soon or when allocating SB 700 funds.**
- **CESA recommends a 50% of base incentive for long duration storage beyond 4 hours.**
- **Storage systems that provide back-up capability may not always be appropriate or intended for life support and other critical medical functions, therefore, the Commission and PAs should provide cautionary language around this potential use-case.**
- **Cycling and GHG emission reduction requirements may need to be revisited for the “Resiliency Operation” use-case.**
- **System sizing handbook rules should be modified to support resiliency projects.**

- **Attestations should be used to verify islanding for resiliency, rather than an AHJ review.**

II. THE EQUITY INCENTIVE RATE SHOULD BE INITIALLY SET AT \$0.85 PER WATT HOUR TO COVER 100% OF PROJECT COSTS

CESA supports the Commission's many changes proposed to bolster energy storage access and deployment for Equity customers but recommends that the Commission go further in increasing the incentive rate for the Equity Budget category. The proposed increase from \$0.50/Wh to \$0.65/Wh is an improvement that the Commission calculates to cover 83% of average eligible project costs, but CESA is concerned that sufficient Equity storage project development will not materialize if Equity customers are expected to cover the residual costs of the energy storage system that may exceed their means. The concern that qualifying customers will be unable to cover even a relatively low share of un-rebated costs was expressed by almost every stakeholder commenting on this issue in response to the ruling issued on April 15, 2019.¹ Equity customers may be unable to cover the remainder of costs because other household needs may take priority. Lack of creditworthiness and an inability to finance these costs also may hinder investment. Developers also face higher sales and installation costs for low-income customers because this population segment resides in older buildings that need electric panel upgrades or other wall structure renovations. Such additional costs, can add \$2,744 to the cost of a single-family home installation (equating to around an added 25% to the \$10,496 average project costs for non-Equity

¹ CESA also respectfully notes that the PD mistakenly attributes comments related to the appropriate incentive levels to Tesla that were actually put forward by SCE. Specifically, the \$.65-\$.85 incentive range was a proposal put forward by SCE, not Tesla. See PD pg. 32 and SCE comments pg. 1 and pg. 9.

small residential storage projects)² or \$4,256 for low-rise multi-family dwellings installations, according to an E3 study of 200A panel upgrades.³

As mentioned above, broad party support for the Equity incentive rate to be set at 100% of eligible project costs appeared to exist. Due to the financing challenges of Equity customers, CESA recommends that the Commission set the incentive rate at \$0.85/Wh, near the average \$/Wh cost of residential storage projects (\$0.87/Wh) from a database representing entirely non-Equity storage projects. Given the additional costs and challenges associated with Equity projects, \$0.85/Wh seems like a reasonable starting point to kickstart the Equity market. However, as can be shown below,⁴ the range of \$/Wh storage costs for residential customer is large; to protect against projects over-claiming incentive funds, the Commission can leverage the SGIP Handbook rules to prohibit projects from claiming more than 100% of their eligible project costs.⁵

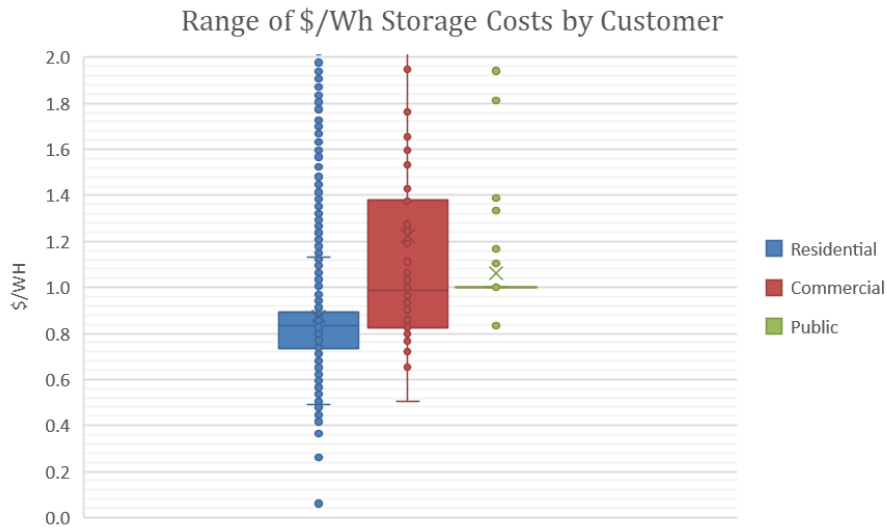
² Calculations was based on SGIP Weekly Statewide Report as of August 12, 2019 for small residential storage projects since 2017 with payment completed.

³ *Residential Building Electrification in California: Consumer economics, greenhouse gases, and grid impacts* published by E3 in April 2019 at p. 26.

https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf

⁴ Calculations in the table was based on SGIP Weekly Statewide Report as of August 12, 2019 for storage projects since 2017, by customer type, with payment completed or performance-based incentives (“PBI”) in progress.

⁵ SGIP Handbook Sections 3.2 and 3.2.2.



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Furthermore, the PD does not differentiate between residential and non-residential Equity projects where project costs can differ to a degree, even as the current budget categories include a Residential Equity and Non-Residential Equity budget categories. Data from non-Equity projects show that the average commercial storage project costs \$1.22/Wh, which encompasses a wide range of project sizes and use cases from small commercial projects with less than 30 kW capacity to much larger commercial projects with 500 kW. Instead, it may be more appropriate to use \$1.00/Wh as the appropriate incentive rate for the Non-Residential Equity Budget based on the \$1.06/Wh average project cost for non-Equity public sector customers, which has a tighter range of reported cost data and aligns more closely with the types of customers that are currently eligible for the Non-Residential Equity Budget (*e.g.*, nonprofits, educational institutions, state agencies).

Finally, the PD expressed concern that higher Equity incentive rates could lead to developers increasing the price of their storage systems. To address this, the PD takes a couple of approaches. First, the PD modifies the handbook to include the following language: Section 5.2.2,

⁶ Figure 1: This chart highlights how the average \$/Wh for residential, commercial, and public customers correspond to \$0.87/Wh, \$1.22/Wh, and \$1.06/Wh respectively.

states that “vendors/developers shall not sell a storage system that receives incentives for a total price (before incentives) that is greater than the price they sell a comparable system that does not receive incentives.”. Second, the PD recommends that the program administrators (“PAs”) propose the establishment of a “soft cap” on storage prices similar to the California Solar Initiative.

Regarding the first proposal, although CESA understands and is sympathetic to the underlying intention, we are concerned that participation in the SGIP, and managing the myriad complexities of this program can, impose real costs on participating vendors. Such costs should be allowed to be reflected in the price of systems that seek to benefit from this program. It may be that some small flexibility in this rule can be authorized, e.g. that an SGIP system cannot exceed some percentage (greater than 100%) of a non-SGIP system. This approach is likely fair because SGIP is a complex incentive program where many developers are learning to operate and install storage systems. Such complexities include, upfront eligibility requirements, ongoing performance and reporting requirements, and a relatively sophisticated incentive design/structure.

Regarding the establishment of a soft-cap, though a specific proposal has not yet been developed, CESA has general concerns with this. As a practical matter, it’s unclear how this would work, particularly in the case of contractual arrangements, common in the non-residential space, where vendors are not selling the equipment outright, but are instead selling a service. Fundamentally CESA believes that market competition should be the primary means to put pressure on pricing and ensure it appropriately reflects underlying costs rather than attempting to impose what may amount to price controls. The Commission could also leverage data collected as part of the program to improve transparency and aid customers by providing guidance on how to ensure they are getting a fair market price, by, for example, encouraging them to get bids from

multipole vendors. This could be included as part of the proposed marketing and outreach plan that is also directed by the PD.

III. THE EQUITY RESILIENCY INCENTIVE SHOULD BE INITIALLY SET AT \$1.02/WH AND A \$1.20/WH FOR RESIDENTIAL AND NON-RESIDENTIAL CUSTOMERS RESPECTIVELY.

CESA strongly supports the establishment of a new Equity Resiliency Budget and the many accompanying changes recommended in the PD. The PD appropriately allocates accumulated unused funds from the Generation Budget to this new proposed budget category given the potential for energy storage to provide resiliency through outages as well as the lack of participation in the Generation Budget following eligibility and rule changes. Furthermore, the eligibility criteria appears to appropriately focus on high fire-threat districts (“HFTDs”) and allow for flexibility to ensure that Equity customers are both directly supported with onsite storage installations as well as with the public services that they use for storage installations at those service providers in line with definitions adopted in R.18-12-005.

However, with the base incentive rate for Equity customers at \$0.85/Wh for the Residential Equity Budget and \$1.00/Wh for the Non-Residential Equity Budget, CESA recommends that the Equity Resiliency Budget incentive rates be adjusted upwards accordingly to \$1.02/Wh for eligible residential customers and \$1.20/Wh for eligible non-residential customers, roughly corresponding to a 20% adder to support additional islanding costs (*e.g.*, service panel re-wiring, specialized switchgear). The cost to make solar-plus-storage islandable can add incremental expenses ranging from 10% to 50%, though one study found that maximum cost to island should not exceed 3% to 21%, when factoring in added bill savings that exceed added islanding costs.⁷ If economically

⁷ “Valuing the Resilience Provided by Solar and Battery Energy Storage Systems,” published in January 2018 by NREL and Clean Energy Group. <https://www.nrel.gov/docs/fy18osti/70679.pdf>

feasible to island, energy storage serving critical loads and paired with solar can ride-through multi-hour outage, or sometimes multi-day, depending on application, customer load, etc. Accordingly, a 20% adder to the base Equity incentive rate would allow customers to support the investments needed to provide resiliency through PSPS or other outage-related events.

IV. THE COMMISSION SHOULD ADDRESS RESILIENCY FOR NON-EQUITY CUSTOMERS SOON OR WHEN ALLOCATING FUTURE SB 700 FUNDS.

The PD notes that the Commission may consider an additional \$100 million funding allocation for resiliency purposes at a later time. The language in the PD suggests that the Commission may infuse additional funds into the Equity Resiliency Budget. Because the PD does not raise the potentiality of addressing resiliency for non-equity budget customers, it could suggest that the Commission may not support resiliency investments to general market (i.e. non-equity budget) customers and thus may not adjust the rules to address the challenges that the current rules pose for resiliency projects for those customers that do not qualify for equity budget funds, but are at risk of PSPS-drive outages. As the Commission contemplates funding collection and allocation decisions pursuant to the Senate Bill (“SB”) 700 authorization, CESA strongly encourages the Commission to address resiliency application for non-Equity customers as well. Broadly, there is significant reliability and emission-related benefits to using energy storage as opposed to fossil-fuel backup power sources, which the Commission should seek to encourage through this program for all customers. From CESA’s perspective, it seems highly likely that customers subject to increased risk of prolonged de-energization will buy and deploy back-up generators. Although anecdotal only, CESA recently observed a Costco™ advertisement for back-up generators. The risk of individual purchases of fossil-fuel emitting back-up generators (“BUGs”) can be especially true for non-equity budget customers to the degree that they may likely have more financial resources to buy a back-up generator. It is not the case, however that non-equity budget customers

will, absent focused support, choose to deploy a clean back-up solution given relative costs. It seems not only reasonable but likely to anticipate that many of these customers could turn to conventional (BUG). The Commission has acknowledged that conventional BUG work at cross-purposes with state policy goals. For demand response eligibility, the Commission banned conventional BUGs recognizing that the use of these systems is contrary to state efforts to reduce GHG emissions. More recently, in the Commission's de-energization proceeding, the Commission recognized that increased reliance on BUG has adverse implications for GHG emissions and local air quality.⁸ To cost effectively support such resiliency applications from non-Equity projects, the Commission could explore our proposed 20% resiliency adder concept, presented in the previous section, to be layered on top of the applicable base incentive rate at the time of application (e.g., Step 2, 3, 4, etc.) for those demonstrated to be able to provide islanding capabilities, along with other program changes as discussed below.

V. CESA RECOMMENDS A 50% OF BASE INCENTIVE FOR LONG DURATION STORAGE BEYOND 4 HOURS

CESA strongly supports the PD's proposed adjustments to the incentive rate step-down structure based on energy duration, even though CESA believes the proposed incentive rate step-down structure could be more broadly applied to all SGIP storage budget categories given the benefits of load shifting applications of storage. Generally, while supportive of longer-duration storage technologies, the PD layers additional requirements or reduced incentives for technologies with durations exceed two or four hours. For instance, energy storage systems with durations exceeding two hours have an additional showing and inspection requirement to demonstrate islanding capabilities. Additionally, the PD cites uncertainty of full recharge for resiliency

⁸ D.19-05-042, p. B4, Item 11.a

applications as one of the main reasons why the incentive rate stepped down to 25% of the base rate for 4-6 hours of duration and to 0% beyond 6 hours. However, contrary to the PD's characterization, longer-duration technologies can sufficiently achieve state of charge in time for resiliency given that the likelihood that the storage device has a 0% state of charge is very low for residential customers and because a six-hour window to recharge from paired solar is enough to achieve a sufficient state of charge in preparation for resiliency needs. Furthermore, given that PSPS events come with multi-day advanced notice⁹, long-duration storage systems should be able to prepare their charge for the resiliency need. The Tesla Powerwall control application, for instance, includes an optional 'storm watch' control which can be turned on or adjusted to ensure the storage device is not depleted excessively so that greater resiliency can be achieved during an outage. As such, CESA recommends a 50% of base incentive rate structure for long duration storage technologies (i.e. longer than four hours) in the Equity and Equity Resiliency budget categories.

VI. STORAGE SYSTEMS THAT PROVIDE BACK-UP CAPABILITY MAY NOT ALWAYS BE APPROPRIATE OR INTENDED FOR LIFE SUPPORT AND OTHER CRITICAL MEDICAL FUNCTIONS, THEREFORE, THE COMMISSION SHOULD PROVIDE CAUTIONARY LANGUAGE AROUND THIS POTENTIAL USE-CASE.

The PD includes medical baseline customers and customers that have notified their utility of serious illness or condition that could become life-threatening if electricity is disconnected among those eligible to participate in the resiliency track. Although CESA supports leveraging the program to provide normal SGIP benefits as well as resiliency back-up options to this customer segment, we want to make sure that the Commission recognizes that many storage systems have differing capabilities and may fit differently with various applications, depending on how the

⁹ Proposed decision adopting de-energization (PSPS) Phase 1 Guidelines at A. 8

behind the meter storage solutions have been designed. CESA’s understanding is that some manufactures’ systems, while capable of and intended to provide robust back-up in the event of a grid outage, are not warranted or intended to function as back-up for life-support systems and medical equipment, or more generally in circumstances where loss of power would result in imminent threat to the customers life or health. We ask the Commission to proceed with due caution in this area, and ensure that customers seeking to deploy storage systems specifically to address critical medical needs are deploying equipment that has been designed with this purpose in mind. Therefore, the Commission may need to incorporate carefully crafted language for any customers seeking to utilize storage as a life support application. CESA assumes that some conventional BUGs could have similar performance guarantee concerns, and that storage is not alone its caution here.

VII. CYCLING AND GHG EMISSION REDUCTION REQUIREMENTS MAY NEED TO BE REVISITED FOR THE “REILIENCY OPERATION” USE-CASE.

CESA supports the Commission’s goals to ensure that SGIP-funded energy storage systems adhere to and support the program’s GHG emission reduction goals. While the cycling and GHG compliance requirements are important, CESA has some concerns that there are competing objectives to achieve these goals and requirements and at the same time provide resiliency, especially if PSPS events turn out to occur more frequently. According to the Commission’s tracking and reporting of de-energization events, the number of de-energization events have steadily been increasing from 60 in 2017, 78 in 2018, and 20 thus far in 2019 – a number that could increase as the state enters the wildfire season and in future years.¹⁰ The average

¹⁰ CPUC De-energization Spreadsheet.
https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/News_Room/NewsUpdates/2019/De-energization%20Event%20History.xlsx

duration of de-energization events for all customers classes appears to be around 31.95 hours.¹¹ These frequency and duration numbers also do account for the days and hours in which PSPS notifications were issued in advance for customers to be ‘ready’ for potential de-energization events, which leads to customers reserving and holding energy storage capacity in preparation.

Given this context, CESA recommends that the Commission consider developing an alternative GHG compliance framework that applies to Equity Resiliency Budget projects. CESA is specifically concerned that the current methodology for evaluating the GHG impacts of SGIP funded storage systems fails to consider outages and the practical reality that absent storage customers would rely on conventional, fossil fired BUGs, and will likely overstate the emissions attributed to these projects. CESA remains unclear on, when an outage occurs, if the current methodology would calculate emission reductions attributable to the system during the outage based, again, on the predicted marginal emissions factor of the grid. CESA foresees that such a methodology may be flawed in that it is likely to understate the GHG reductions provided by a storage system used by a customer to ride through the outage. Because there is an outage, the counterfactual cannot be that absent the storage device, energy would be provided by the grid. A more realistic counterfactual would be that absent the storage device, the customer would rely with some percentage likelihood on a conventional BUG. Under this counterfactual, the storage system is avoiding the GHG emissions (and localized air pollution) that would be produced by the conventional generator. To address this, the Commission could assess GHG compliance that exempts the days and hours in which a PSPS notification was issued and PSPS events occurred.

CESA recognizes that the reporting of the frequency of “events” may be misleading in many ways since the data seems to indicate that any given event usually occurs on the same days around the same time along circuits that appear to be adjacent to one another. This suggests that there may be fewer “events” than reported but that the magnitude of any given event may be larger in terms of customers impacted.

¹¹ *Ibid.*

Alternatively, the Commission might consider exempting resiliency projects deployed in Tier 2 and Tier 3 high fire threat areas from the GHG framework.

VIII. SYTEM SIZING HANDBOOK RULES NEED TO BE MODIFIED TO SUPPORT THE DEPLOYMENT OF PROPER RESILIENCY PROJECTS

Under the rules of the program, the largest storage system that a customer can deploy is capped at their maximum demand over the prior 12 months.¹² CESA is concerned that this size limit is not reasonable for resiliency projects, where a key consideration for sizing is not only the maximum power the host customer draws, but also how much energy customers anticipate using over the course of an outage. For example, if a host customer has a peak load of 12 kW, and an average load of only 2 kW, then over the course of a 24 hour period, they would use 48 kWh of energy. This would equate to approximately 4 Tesla Powerwalls (which have sufficient energy to provide approximately 54 kWh). However, under the current rules, this deployment would not be allowed because the combined capacity of these systems, at 20 kW, exceeds the peak load of the facility. To address this, CESA recommends that, in lieu of limiting the size based on peak demand, the size of resiliency projects be limited based on the anticipated energy use of a facility over 48 hours. This is the minimum duration of PSPS outages that PG&E recommends customers prepare for.¹³ Recognizing that fire risk is most acute in the summer, and particularly the late summer, CESA recommends this be calculated using the customers' average customer load during July and August and simply multiplying this by 48 hours. Ultimately, this example can be modified to account for serving applicable loads as determined.

¹² See Section 5.3.2 of the SGIP Handbook

¹³ See https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/public-safety-power-shutoff-faq.page

IX. ATTESTATIONS SHOULD BE USED TO VERIFY ISLANDING FOR RESILIENCY, RATHER THAN AN AHJ REVIEW.

CESA supports the application form and attestation approaches to inform the PAs of expected storage performance during outages, with no additional processes really needed beyond the existing Rule 21 interconnection processes to validate resiliency. In that vein, CESA strongly suggests the Commission utilize attestations for islanding validation as well. CESA supports the Commission's intent of having assurances that energy storage systems utilized for resiliency are safely operating in islanded mode to avoid any back feeding to potential line workers. However, CESA has serious concerns with having local authorities having jurisdiction ("AHJs") verifying islanding, as they would be fulfilling a role they are not positioned to perform. Further, this would create an additional layer of requirements to an already dense program, which may seriously hamper the Commission's goal of quickly and safely deploying energy storage in equity HFTDs. CESA, thus strongly suggests using attestations, by which a single-line diagram submission outlines the project's configurations to validate islanding capabilities.

X. CONCLUSION.

CESA appreciates the opportunity to submit these comments to the PD and looks forward to working with the Commission and stakeholders in this proceeding.

Respectfully submitted,



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