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**BEFORE THE PUBLIC UTILITIES COMMISSION**
**OF THE STATE OF CALIFORNIA**

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| 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<br>(Filed November 8, 2012) |

# PACIFIC GAS AND ELECTRIC COMPANY (U 39 E) OPENING COMMENTS ON IMPLEMENTATION OF SENATE BILL 700 AND OTHER MODIFICATIONS TO THE SELF-GENERATION INCENTIVE PROGRAM


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# PACIFIC GAS AND ELECTRIC COMPANY (U 39 E) OPENING COMMENTS ON IMPLEMENTATION OF SENATE BILL 700 AND OTHER MODIFICATIONS TO THE SELF-GENERATION INCENTIVE PROGRAM

## I. INTRODUCTION

Pacific Gas & Electric Company (PG&E) appreciates the opportunity to submit these Opening comments in accordance with Assigned Commissioner Rechtshaffen's "*Assigned Commissioner's Ruling Seeking Comment On Implementation of Senate Bill 700 and Other Program Modifications*," which was issued on April 15, 2019 (Ruling). PG&E respectfully recommends that the Commission take the following steps:

- Increase the incentives for batteries and other qualifying generation for critical customers that could be most affected by Public Power Safety Power Shutoff (PSPS) events, recognizing that permanent, Greenhouse Gas (GHG)-reducing batteries may be able to provide some backup benefit to customers in these areas during Public Safety Power Shutoff (PSPS) events. The details of who should qualify and the available budget should be addressed in a public workshop.
- Refund unspent and uncommitted incentive funds (approximately $200 million) from the current SGIP budget in future years in consultation with Energy Division.
- Decrease the incentive rates for energy storage in years 2021 to 2025.
- Open the Equity Budget in PG&E's service area and increase the incentives substantially, with a $5-10 million cap for a Pilot. The Equity program is not yet open in PG&E service area; in the areas of other program administrators, it is open, but has had no takers.
- Reallocate budget from the commercial budget to the residential budget but keep the Equity Budget allocation where it is now.
- Increase the incentives for generation such as fuel cells fueled by biofuels, as these projects have achieved the greatest GHG reductions and grid benefits but are no longer cost-effective due to the 100% renewable fuel requirement.

## II. PG&E'S RESPONSE TO QUESTIONS IN THE RULING

### A. Introduction

PG&E appreciates the opportunity to address the critical budget and program design issues for the future of the Self-Generation Incentive Program (SGIP), now extended by Senate Bill (SB) 700 through 2024. The Ruling correctly asks important questions about four relatively new topics for this program, which include: resiliency, overlaps with the San Joaquin Valley proceeding, grid support, and thermal/mechanical storage participation in the program.

Two key themes underpin PG&E's positions in these comments. First, PG&E believes that there is potential that the SGIP may be able to help address California's most pressing issue, wildfire resiliency, while also meeting existing program goals. Here, we use the term "resiliency" to mean the ability to provide backup power to customers during PSPS Events.[1] There are limits to what the SGIP can address in this area, given the current regulatory and statutory limits on the SGIP. In addition, qualifying SGIP projects often lack the capability to provide enough backup capability for the duration of a PSPS event. Nonetheless, we recommend that the Commission adopt incentive adders for the most impacted customers. Current program rules limit SGIP incentives to projects that are permanently installed, that must not operate in "backup-only" mode and must reduce GHG emissions. We understand that backup-only and mobile generators are available in the marketplace today at a fraction of the cost of permanently installed batteries designed to operate all year, that such generators may be better equipped to sustain power throughout the duration of a PSPS event and that these backup-only and mobile projects are not eligible for SGIP program incentives. We do not seek to change the "no backup-only," permanent installation, or GHG reduction eligibility rules here. Nonetheless, PG&E hopes the Commission will consider making changes to the SGIP to promote resiliency which would take only minor rule modifications to the program, as explained in more detail below.

Secondly, we recognize that there has been a substantial slowdown in the number of commercial projects applying for SGIP incentives. However, many developments will take place that will provide new market opportunities for batteries, as well as valuable new information. The SGIP program evaluator-Itron-is in the process of completing the hybrid Cost

[1] Other parties use the term resiliency to include other concepts. For example, the Ruling mentions that some use the term to refer to helping utility systems recover from "adverse events such as accidents, natural disasters, and those related to cyber and physical security." Ruling p. 18, fn. 25.

Effectiveness / Market Transformation (CE/MT) Report for the program. This Report is scheduled to be provided to the CPUC at the end of June 2019. We are hopeful that this report on the status of the energy storage market in California will provide significant new information to assist the CPUC to make decisions on the questions in the Ruling about program collection levels, funding allocations, and incentive rates. While the CPUC will hear a variety of opinions on questions raised in the Ruling from interested stakeholders, the CE/MT report should help inform decision-making because its purpose is to provide unbiased analysis to the CPUC

In addition, in PG&E's 2017 General Rate Case (GRC), Phase 2, the CPUC adopted significant changes in rate design for battery projects, as well as time-of-use (TOU) hours for commercial customers. These changes should substantially improve opportunities for commercial storage projects to achieve greater savings and at the same time achieve greater GHG reductions. These new rates are not yet available but will be available later, as addressed in more detail below. In addition, we are optimistic that the Commission will finalize GHG reduction requirements for SGIP projects later this year, which will remove one area of uncertainty for customers and vendors.

Overall, PG&E believes this Ruling accurately recognizes the core issues facing SGIP today and asks the right questions to help design a better SGIP for tomorrow.

### B. Response To Questions In The Ruling

#### 1. Overall Collection Levels for Years 2020-2024

Q 1 What criteria should the Commission use to determine ratepayer collection levels for years 2020-2024?

A 1 Some parties will advocate for spending on the SGIP every penny of the $1.2 billion potentially available statewide from existing decisions and the program extension authorized by SB 700.[2] However, the CPUC is trying to meet **affordability** goals,[3] in addition to SGIP goals, and should not require the spending of over a billion dollars unless it is a prudent use of customer funding. Several factors should help guide the Commission in addressing this question. First,

[2] The Ruling noted that $414 million is available for SGIP incentives now, including 2019 collections, and that SB 700 authorizes the collection of another $166 million per year statewide for each year from 2020-2024, for a total of $1.24 billion. Ruling pp. 3, 4.

[3] The Commission recently commenced a new Rulemaking on the Affordability of Utility Service to help address these issues. R.18-07-006.

the SGIP legislation directs the CPUC to consider a list of specific factors in designing and evaluating the program, which include environmental and other program goals.[4] The Commission should consider the already achieved results and likely future success of projects in meeting these goals.

A second consideration is market demand: if there is limited demand for potential SGIP technologies, PG&E requests that the Commission refund or not collect funding that is not needed for incentives for such projects.

Third, the Commission should use Itron's CE/MT Report as a resource to help determine the program budget categories that require incentives, the appropriate collection levels, incentive rates and whether current budgets should be rolled over or refunded to customers.

Q 2 Based on your proposed criteria, should further collections be authorized for SGIP? If yes, at what level, and in which years?

A 2 For the reasons discussed above, it would be ideal to review the Itron CE/MT report *before* answering the collections questions. Nevertheless, as a preliminary matter, approving future collections depends on the decision of what to do with current *over*-collections. These recommendations are for PG&E service territory only with the acknowledgment that other Program Administrators' (PA) needs may differ.

1) Refund Unspent and Unreserved Collections. PG&E requests that the Commission refund customers unspent and unreserved incentives from the current SGIP budget in future years. PG&E will work with Energy Division to develop the implementation timing and approach to offset future rate increases. Further, PG&E recommends returning unused funds from a prior year to customers and collecting an authorized forecast amount through customer rates during the forecast year. PG&E interprets the legislative set budget amount of $73 million per year for PG&E's service area (statewide $166 million per year times PG&E's 44% share) to be a "not to exceed" amount over the lifetime of the program (2020-2024) and recognizes that demand for incentives will fluctuate and projects have a lead time before completion. Therefore, PG&E requests a program lifetime budget cap of $365 million (5 years times $73M) and allow PG&E the right to request yearly SGIP revenue requirements based on year-ahead demand forecasts. Such a policy allows for enough funds available to disburse incentives and

[4] Indeed, Public Utilities Code section 379.6 subparts (h) and (k) contain a list of factors the Commission should consider in designing the SGIP.

minimizing rate impact to customers. Additionally, this also allows for the CPUC to reassess program design should demand not materialize and consider suitable alternatives *before* collecting funds from customers. The following are approximate amounts that could be refunded to ratepayers in PG&E territory.

| SGIP Proposed Refund Scenario; PG&E Territory | | |
|---|---|---|
| **SGIP Budget Categories** | | **Est. EOY 2019 Balance/Refund** |
| Residential | $ | - |
| Large Commercial | $ | 101,087,519 |
| Generation | $ | 49,198,752 |
| Resi Equity Budget | $ | 2,979,392 |
| Non-Res Equity Budget | $ | 26,814,534 |
| Administration | $ | 26,500,000 |
| **Total** | **$** | **206,580,197** |

PG&E could refund over $200 million to ratepayers in future years if the CPUC approved this proposal which PG&E believes is justified due to upcoming costs and increased utility bills associated with statewide resiliency efforts.

The alternative to this proposal would be to *roll over* all unspent incentives to the future 2020-2025 program and continue to collect but at significantly reduced rates based on analysis that hopefully the CE/MT will help with. However, based on the large overage in PG&E's balancing account (see chart above) it is prudent for the program to refund funds and collect based only on forecasted demand tied to real-time market conditions, and after consulting with Energy Division.

2) Increase the Residential budget share. PG&E requests that the Commission increase the residential budget with a larger carveout, reducing the Large Commercial budget, and maintain the Equity Budget carveout as follows: 25% Residential, 25% Equity Budget, 50% Large Commercial. This would result in the following annual statewide collections,[5] (based on the cap of $166 million per year in statewide funding): Residential: $33.2 million (up from $12.95 million), Equity Budget: $33.2 (unchanged), Large Commercial: $66.4 million (down from $86.65 million). [Total: $132.8; i.e. 80% of $166 million]

[5] This is a hypothetical example. As PG&E will explain, PG&E does not support additional collections in three budget categories – Large Commercial, Generation and Admin – but does support recalibrating the percent allocations as described.

This would be the starting point from which to adjust the collection levels in future years based on market demand.

3) Reduce collections for PG&E's Large Commercial budget. Refund all unspent and unreserved funds from the Large Commercial budget and *reduce* program collections in PG&E territory by a percentage that is generally supported by CE/MT analysis in Itron's report and reviewed annually. Base collections on forecasted demand. PG&E has recommended a new collection scheme above.[6]

4) Maintain current collections for the Generation budget. After refunding over $40 million of PG&E over-collections for generation to customers (see chart), PG&E believes it is appropriate to maintain the current collection levels for generation projects and increase the incentive rate so generation can once again participate in SGIP, as discussed below.

Q 3 Should the Commission authorize the carry-over of accumulated SGIP funds at the end of 2019 for use in subsequent years? If so, should the Commission reduce the annual collection in 2020 by the amount carried over?

A 3 PG&E recommends that all unused funding should be returned to customers at the close of 2019 and 2020 (i.e. after the last applications have been submitted and funds reserved including for PBI projects). If the CPUC does not approve this recommendation, and prefers rolling over unused balancing account funds, PG&E respectfully requests that the Commission reduce the annual collections starting in 2020 by the amount carried over.

## 2. Funding Allocation Among Technology and Customer Sectors; Modifications to Address Participation in Generation, Equity, and Non-Residential Budgets

### 2.1 Participation in Generation Projects; Budget Allocation Between Generation and Storage

Q 1 What are the main drivers for low participation in the generation budget beginning in 2017?

A 1 The main driver behind low participation in the generation budget relates to significantly diminished project economics due to the expensive renewable fuel blending requirements adopted in 2016. Since D.16-06-055 was adopted, generation projects have not made economic

[6] It may be best for the CPUC to reevaluate collections less on a statewide basis and more on an IOU-by-IOU basis depending on the comments the CPUC receives through this ACR, industry forecasts, the Itron report, etc.

sense to develop through SGIP. According to SGIP's Public Report, there are only 8 active generation projects across *all* PA territories since 2017 (when D.16-06-055 went into effect).

Q 2 What program changes should the Commission consider, if any, to increase subscription in the generation budget, keeping in mind that SB 700 renders generation technologies using nonrenewable fuels ineligible for SGIP incentives starting in 2020 (see Public Utilities Code § 379.6(m))?

A 2 We propose three changes to the Generation Program.

Raise the Generation Incentive. PG&E believes that the only way generation projects will participate in SGIP is if they make economic sense, i.e. they do not lose money for the developer or the customer. The incentive rate should be raised high enough to permit projects to go forward even with the added cost of the 100% renewable fuel requirement. Our understanding is that although very limited biogas is available in California, it is available in other parts of the country and may be used under the existing "directed biogas" rules of the program. Those "directed biogas" rules should continue to apply.

The Ruling recognizes the importance of generation in SGIP, stating, "most of (the 2016-2017) emissions reductions came from generation technologies, especially electric fuel cells and internal combustion engines. Generation projects were also responsible for the majority of the program's demand reductions during the California Independent System Operator's (CAISO) peak hour." (p. 9) For these reasons, PG&E continues to support the eligibility of generation and recommends that the Commission maintain or increase collections and increase the incentive rate for qualifying generation projects.

Consider fund-shifting from Storage to Generation. If energy storage performance in reducing GHG emissions does not improve based on upcoming Energy Storage Impact Evaluations, it could be prudent to *increase* the generation percentage of the budget (up from 20% of collections) and institute a pay-by-performance concept where budget allocations can be shifted based on compliance with program rules.

Resiliency Adder for Generation Projects. PG&E recommends that the CPUC offer a resiliency adder to generation projects installed by the customers that would be most impacted by PSPS events. PG&E proposes a resiliency adder for certain *energy storage* projects as discussed below; the same approach for generation projects is reasonable. Generation can island from the grid during de-energization while still meeting onsite energy needs. The adder should be based on the capacity of the prime mover and in the $.20/W - $.30/W range for qualifying projects.

Q 3 Should the Commission modify the budget allocation between storage and generation projects for funds collected in 2020-2024? What allocation do you propose, and why?

A 3 PG&E's preferred allocations are addressed above, and we respectfully request that the Commission consider modifying allocations between storage and generation after a full review of both the energy storage CE/MT and generation CE/MT report due out later this year.

### 2.2 Reduced Participation in Non-Residential Storage Projects; Residential/Non-Residential Storage Budget Allocation

Q 1 What were the main drivers for the reduced participation in the non-residential storage budget in 2018?

A 1 Participation in the Large Commercial storage program has been significantly lower for the last 18 – 20 months. Today, storage can be cost effective from a customer standpoint by reducing demand charges for larger commercial customers. It also has value as a backup resource, as discussed in more detail below. It has the potential to take advantage of varying rates in different TOU periods. However, some parties have complained that a limited number of commercial customers find storage attractive today. Fortunately, changes are coming that should help this.

First, changes in TOU hours are coming to PG&E's commercial customers. Storage can be paired with solar and move solar generation from the time of generation to the highest value peak hours. However, while residential rates in PG&E's service area have already moved to later TOU peak hours, commercial rates for PG&E customers today still have a noon to 6:00 pm peak. Those peak hours provide limited incentives for commercial customers to use storage to shift that solar output. However, in PG&E's 2017 GRC, Phase 2, the CPUC approved a move to later peak hours for commercial customers, which will move most commercial customers' peak period, with the highest rates, from 4:00 to 9:00 pm.[7] Those new hours will be available on a voluntary basis this year, and on a mandatory basis next year for most commercial customers. Some developers have said that the new peak periods will make solar paired with storage more economical. It should also help send better price signals to customers with batteries to help incent them to meet GHG reduction goals.

Second, new rates will become available to storage customers that are even more attractive. In PG&E's 2017 GRC, Phase 2, the Commission approved a new A-1 STORE rate,

[7] D.18-08-013.

with much greater TOU differentials, both winter and summer, that was supported by storage and solar parties. The Commission also approved new storage rates for larger commercial customers that will be implemented as options on Schedules E-19 and E-20 together with the new later TOU periods, with daily demand charge, adopting a proposal of storage and solar parties. The new option for larger commercial customers is expected to become available later this year or the first of next year. The new A-1 STORE rate will be available in 2020.

Third, as mentioned in the Ruling, on a separate track from this briefing, the Commission is considering adoption of new operating rules to ensure the SGIP projects achieve GHG emission reductions. Vendors have indicated that uncertainty about these GHG Signal rules have reduced interest in purchasing batteries until these issues are resolved.

Finally, interest in batteries has continued, even outside of SGIP. We understand that a substantial number of residential and commercial customers have installed batteries but did not apply for SGIP incentives. There are two potential reasons given for this. One is that some batteries are intended to operate in backup only mode and therefore qualify for interconnection but do not qualify for SGIP incentives. The other is that some vendors have hit the developer cap, and therefore cannot submit additional SGIP incentive applications.

Q 2 What program changes should the Commission consider, if any, to increase subscription in the non-residential storage budget?

A 2 The discussion above indicated that although there has been a marked decrease in applications for incentives for commercial customers, the incentive levels should not be increased at this time. PG&E recommends that the CPUC consider taking time to digest the Itron CE/MT report once it is complete, and then address incentive rates and budget allocations armed with that information.

PG&E recommends against increasing the incentive rate for non-residential storage unless the CE/MT report suggests that higher incentives will be needed after the new hours, new storage rates, and new operating rules are adopted. Developers have reported that the incentive is already high and program data show that incentives offset approximately 40%-50% of project costs. The incentive rate should not be the focus -- the primary focus should be to provide investors as much certainty about their investment as possible. Ruling on the GHG Signal and this Ruling will also help developers understand future operational requirements and expectations.

Q 3 Should the Commission modify the budget allocation between residential and non-residential storage projects for funds collected in 2020-2024? If so, what allocation do you propose, and how does this allocation advance specific SGIP goals?

A 3 PG&E requests that the CPUC modify allocations based on the CE/MT findings and the difference between the commercial and residential market volume. In addition, currently 25% of the SGIP budget is allocated to Equity Projects under D.17-10-004, where there is no activity at the time, and the general Residential budget is allocated only 9.75%,[8] even though there is a very active market, with residential batteries thriving in the State. PG&E does not recommend reducing the allocation to the Equity Budget created by D.17-10-004 but recommends that the general Residential budget be increased. The option PG&E proposes is to increase the Residential budget with a larger carveout, maintain the Equity Budget carveout and reduce the Large Commercial budget: 25% Residential, 25% Equity Budget, 50% Large Commercial. This would simply shift funds from the Large Commercial budget to Residential while not changing the approved carveout in D.17-10-004 for the Equity budget. This simple structure may be worthwhile to test.

### 2.3 Lack of Participation in Storage Equity Budget; Storage Equity/General Budget Allocation

Q 1 What were the main drivers for the lack of participation in the storage equity budget in 2018?

A 1 There are two main explanations for the lack of participation in the Equity Budget. First, PG&E is convinced the incentive rates in the Equity Budget are far too low for income-challenged customers to participate. Not only is the *starting* Equity Budget incentive rate too low ($0.35/Wh), but its cap at $0.50/Wh is also too low. As the Ruling points out, there is no participation at $0.50/Wh in the PA territories where this rate is available. Unless the incentives are substantially higher, it is unlikely low-income customers will invest in energy storage.

The second reason why participation in the storage equity budget is low relates to the fact that in PG&E territory the Large Commercial storage market is so slow that it has not been able to open its Equity Budget. Until it is open, there can be no adoption.

Q 2 What program changes should the Commission consider, if any, to increase subscription in the storage equity budget?

[8] This is the approved 13% carveout for Residential energy storage minus 25% for the Equity Budget per D.17-10-004.

A 2 In general, PG&E makes the following recommendations: Immediately open the PG&E Equity Budget; significantly increase the incentive so the battery is much easier to afford; and execute a pilot. Specifically, PG&E proposes that the Commission carve out $5-10 million within the Equity Budget, offer incentives at $0.85/Wh with an extra $0.15/Wh resiliency adder.

We have struggled with what incentive level to recommend for batteries for Equity customers. Obviously, the $0.50/Wh is too low. The $0.85 to $1.00/Wh may be too high. In any event, the incentive should not pay more than 100% of project costs. However, because of the possibility that the $0.85/Wh rate may be too high, we propose that it be limited as a pilot at this rate, with only $5-10 million available at this incentive level. If the program funds are quickly exhausted at this level, then the incentive rate should drop thereafter.

As to the reason for proposing to lift the developer cap for Equity Projects, one vendor has already hit that cap for the general market incentives. If that cap were to apply to Equity projects, then the vendor would not be able to participate. PG&E believes that at least for the pilot it is reasonable to open the Equity Budget with the first priority being to serve income-qualifying customers without the constraints of a developer cap. The pilot can test not only the cost of systems and the incentive rate, but the concept of removing the developer cap.

Q 3 Should the Commission direct PG&E to open Step Three of its storage equity budget prior to opening Step Three of its general storage budget?

A 3 Yes, PG&E urges the CPUC to direct PG&E to open its Equity Budget as soon as possible, with higher incentives. PG&E has discussed this idea with stakeholders and would be eager to work with them should this idea be supported by the Commission, potentially on a pace ahead of consideration of other SGIP program changes.

Q 4 Are there some customers on tribal reservations that are not eligible for the storage equity budget under the current criteria? If so, should the Commission expand eligibility for the storage equity budget to all projects located on tribal reservations?

A 4 PG&E has no initial thoughts but may respond to this question in reply comments.

Q 5 Should the Commission modify the storage equity budget carveout for funds collected in 2020-2024? If so, what new carveout do you propose, and why?

A 5 PG&E addressed this question above.

Q 6 Is a modification to the equity budget incentive structure warranted? If so, what do you recommend and why?

A 6 Yes, modifications to the Equity Budget incentive structure are proposed above.

Q 7 Are any modifications to the developer cap in relation to the equity budget warranted? If so, what do you recommend, and why?

A 7 Yes, as discussed above, PG&E recommends removing the developer cap for Equity Budget projects, and that the developer cap should remain unchanged in non-Equity Budget program areas.

### 3. Incentive Levels

Q 1 Have one or more of the above factors changed for a specific SGIP technology such that a modification to the incentive level for that technology is warranted?

A 1 Several factors have changed for Generation, Large Commercial storage and Residential storage projects. For generation, the renewable fuel rules have changed, as discussed above.

Large Commercial Storage: Operationally, energy storage projects incented by SGIP have struggled to reduce GHGs and have not provided significant grid support. That trend hasn't changed but needs to. The market *has* changed; participation from Large Commercial projects started fast in 2017 when all SGIP PAs sold through Step 1 in a few days, but over the past 20 months participation has declined substantially. Since the utility tariffs have not changed during that time, the incentive rate does not alone explain why the commercial market has dropped. Further, program data shows that approximately 40% or more of project costs are offset by the incentive. Accordingly, PG&E believes the incentive for Large Commercial projects is not the problem; when the new SB 700-approved program opens, the Large Commercial incentive should be set at the Step 3 rate of $0.35/Wh (where 3 of 4 SGIP PA territories are currently).

Residential: Residential storage has struggled to meet program goals of GHG reduction and grid support, but ironically the technology attracts a healthy demand and the market has been robust lately, with CSE selling out their Step 5, PG&E reaching Step 5, and SCE and SCG reaching deep into Step 4. The CE/MT report may help determine whether the technology still requires incentives to grow, particularly since many projects are being installed today with no incentives. PG&E supports offering a small incentive of $0.20/Wh to start the new SB700 program, declining $0.05/Wh annually.

Q 2 Is a change in incentive levels prudent for some other reason?

A 2 Yes, PG&E requests the CPUC view generation projects fueled by renewable biogas as an emerging technology and provide a higher incentive for generation projects that purchase and use renewably produced fuel.

### 4. Incentive Step-Down Structure

Q 1 Should the Commission adopt additional steps in the storage or generation budgets? If yes, how many steps should be adopted, and how should funds be distributed across steps?

A 1 Program Year Versus Incentive Step

All incentive budgets should be changed from incentive Steps to an Annual scheme whereby the incentive changes at the end of a defined *year* rather than a Step. Incentive funds would be kept in one bucket per category (Large Commercial, Residential, Generation, Equity Budget) independently for each SGIP PA, and each budget would be gradually utilized over time depending on adoption in each territory; no steps per budget, just one big budget. Only the incentive rate would change over the years. One problem with Steps is that they become exhausted at different rates in different territories which adds complexity to the program and could add uncertainty about the costs and Return on Investment for investors. The Annual scheme would act very much like Steps but provide greater certainty for investors about incentive level availability and project economics. This is a recommendation to promote investor confidence, and it allows the market to continue to develop at a separate pace in different territories without Step closures and the related disruption. This is how a new Annual incentive scheme could be structured:

| | Residential: | Commercial |
|---|---|---|
| Program Year 2021: | $0.20/Wh | $0.35/Wh |
| Program Year 2022: | $0.15/Wh | $0.30/Wh |
| Program Year 2023: | $0.10/Wh | $0.25/Wh |
| Program Year 2024: | $0.05/Wh | $0.20/Wh |
| Program Year 2025: | $0.05/Wh | $0.15/Wh |

Residential projects reserved in Program Years 2021 and 2022 would receive $0.20/Wh; Residential projects reserved in Program Years 2023 and 2024 would receive $0.15/Wh; and so on. There would be only one bucket of funds for Residential projects in each PA territory that would be exhausted over time, not steps. There would be no start-stop to the program because incentives would be available on a continuous basis until such time that the last funds approved for collection through 2024 are reserved. The PAs should consult with Energy Division, which would be authorized to approve moves in unused funds from any unused budget to a budget that has been exhausted to meet market needs and maximize customer value.

If the CPUC prefers the current incentive Step structure, PG&E recommends the following structure and rates:

| | Residential: | Commercial |
|---|---|---|
| Step 1: | $.20/Wh | $.35/Wh |
| Step 2: | $.10/Wh | $.25/Wh |
| Step 3: | $.05/Wh | $.15/Wh |

This is basically the same incentive structure currently in practice in the program, with slightly different incentive levels.

Q 2 Should the Commission continue stepping down storage incentive levels by $0.05 and generation incentive levels by $0.10? If not, what step-down values do you propose, and why?

A 2 See above.

Q 3 Should the Commission consider different stepped down incentive approaches for non-residential and residential generation or storage systems? If so, please describe and provide the rationale.

A 3 PG&E provides an alternative—described in the sections above—to the current stepped-down incentive approach.

### 5. Administrative Budget

Q 1 How should the Commission address the large existing balances in PG&E and SCE's administrative budgets? Should the Commission direct PG&E and SCE to transfer administrative funds to their incentive budgets, cover future administrative expenditures using the existing balances and lower future ratepayer collections accordingly, or a different option?

A 1 PG&E recommends the CPUC approve the existing level of administration collections per PA but consider directing PG&E to refund to customers unused Administrative funds once the current program year ends, including payment of performance-based incentives. This could reimburse ratepayers approximately $26 -$27 million in 2019 and 2020 and is included in the proposal above. Alternatively, PG&E's second preference would be to roll over existing administrative funds to cover future years of program administration and to *cease collections* for administration through 2025.

Q 2 Should the Commission authorize the PAs to shift funding from incentive to administrative budgets via AL? ….

A 2 PG&E could support shifting funding from incentive budgets to administrative budgets via an advice letter if sufficient rationale is provided to merit the fund shifting. The PA should provide evidence that its approved administrative funding level is too low, and that shifting from the budgets intended to support installations is appropriate. For example, once the program participation is reduced to Performance Based Incentive payments, administrative costs could continue at a higher percentage of total funds that was true during payouts of up-front incentives.

Q 3 What other modifications, if any, should the Commission implement to ensure CSE and SoCalGas collect sufficient funds to cover administrative costs through 2032 without unduly burdening ratepayers?

A 3 PG&E has no initial comments but may address this question in reply comments.

### 6. Resiliency

Q 1 What specific resiliency benefits, if any, can behind-the-meter (BTM) storage devices provide to customers and/or communities in the event of a wildfire, wildfire-related de-energization event, or other adverse event? ….

A 1 As a preliminary matter, PG&E notes that installing BTM storage systems will not prevent fire and does not address the causes of fire. It should be also recognized that PSPS events have the potential to be multi-day events, that reduces the efficacy of a pure BTM storage project as a mechanism for PSPS resiliency. While recognizing this, BTM storage only provides options, such as backup power, for customers in the event of a PSPS or fire. BTM energy storage and paired projects can still offer an extra tool in the toolbox for customers during a PSPS event.

Q i Describe the resiliency need the storage device can address, including the anticipated duration of the need;

A i The specific resiliency need that behind-the-meter energy storage can provide is electricity for critical load for a residence, business or community/emergency infrastructure during an outage condition. Given reduction in customer usage to critical loads, a residential battery can endure for a number of hours or days depending on whether it is paired with solar and the relative size of the battery compared to the critical loads the battery supports.

Q ii Describe the resiliency benefit the storage device can provide, including the duration of the benefit;

A ii The level of resiliency will depend on the charge of the battery at the time of de-energization, the critical load the customer serves with the battery, the length of the outage, and

whether the customer also has the means to charge the battery during the outage (e.g., with solar power). Benefits are limited for only as long as there is power in the battery. Given these limitations, the resiliency benefits of energy storage could include the potential to provide reliable backup power during an outage to support residential customers (shelter in place), businesses (financial loss, wages), and community infrastructure including emergency personnel and relief operations. Energy storage, especially those paired with a form of generation and the ability to isolate and supply only critical load, can reduce human and financial risk.

Q 1 Please provide an example of an average residential customer load and the size storage device that would be required to provide the resiliency benefit described above.

A 1 Customer electric power needs for critical end uses vary widely. Customers with the lowest electric power needs would primarily need to maintain power for refrigeration, lighting, minimal air conditioning, communication electronics and be able to meet certain end use needs with natural gas (cooking and heating for example). On the other end, a customer who lives in an all-electric home, requires space conditioning, or is dependent on life support equipment such as an oxygen generator, could require much more energy.[9] Here is an example of residential energy storage systems and the loads they could service under PSPS:

Two Tesla Powerwall 2 AC (5kW/26.4kWh) energy storage systems, or four LG Chem Resu10H batteries (5kW/33.6kWh) could provide for each -- and some combination of -- the following: 8 hours of energy to 1200 W of plug loads; or 4 hours of energy to 1800 W of lighting; or 8 hours of energy to 500 W for a typical refrigerator; or 4 hours of energy to 4000 W for a typical air conditioner.

This energy would allow for basic electrical appliance and lighting usage over the course of the night and require recharging for the batteries during the day from solar. The benefit here is that during a PSPS event, customers can shelter in place in their homes for many hours or up to several days, assuming the battery received sufficient charge and loads were kept to a minimum. Lastly, it is important to note that cost is a factor; residential storage will not be as cost-effective as fossil-fueled options, and per dollar, fossil-fueled options have the potential to generate more electricity for a greater length of time, albeit with different environmental consequences.

[9] For residential, assuming the low-load scenario, demand may be only 10-12 kWh of electricity a day. For higher load customers, 40-50kWh/day.

Q iii Address who would benefit from the resiliency service.

A iii Any residential or commercial customers would benefit from improved resiliency offered by solar paired with storage systems, assuming the system was sized properly, and their usage could be isolated to only meet critical loads. Depending on design considerations, communities and shared infrastructure could potentially benefit with increased 'up-time' of their facilities and emergency relief services could benefit with potentially improved reliability of communication, fewer emergency calls and reduced costs. The list of beneficiaries from improved resiliency could extend to California Department of Forestry (CDF), United States Forest Service (USFS), Bureau of Land Management (BLM), counties, and cities who could be affected by power shut off or a fire.

Q iv Address whether the storage device would need to be part of a microgrid or have the ability to charge directly from on-site renewable generation to provide the resiliency benefit, or, more generally, how resiliency benefits differ depending on these factors.

A iv A microgrid has been defined in different ways by different parties. Stand-alone energy storage can provide a resiliency benefit as long as the battery has power; it would need to have the ability to charge from an onsite generator and have an automatic transfer switch that would allow it to island. Whether or not it is part of a microgrid, a solar paired battery has the potential to provide resiliency benefits for as long as there is solar and the critical loads are appropriately sized. For those facilities that require 24-hour uptime and require significant load to remain operationally effective, such as emergency operations centers, police & fire stations, hospitals, waste-water pumps, etc., it will most likely be necessary to have a fossil-fueled generator even if a solar plus storage system was adopted. Obviously fossil-fueled options are not eligible for SGIP incentives.[10] Where economies of scale allow, a community microgrid may make sense where critical operation facilities could be served with a variety of (potentially redundant) technologies in close proximity such as solar, storage and fossil-fueled generation controlled by a microgrid controller, but it would also need to be designed in such a manner where it would not generate electricity into high fire threat areas, and such areas could be effectively isolated via distribution line equipment (e.g. switches, line reclosers, fuses, etc.)

[10] Public Utilities Code section 379.6(m).

Q 2 What specific resiliency benefits if any can on-site generation devices provide to customers and/or communities in the event of a wildfire, wildfire-related de-energization event, or other adverse event? In your response, please do the following:

A 2 Resiliency benefits offered by on-site generation are basically the same as those offered by energy storage: continued power that can support diverse customers and community infrastructure through a de-energization event. On-site generation can include solar, stationary generation such as fuel cells, or mobile resources such as diesel generation commonly used in emergencies. Mobile generation has the benefit of being significantly less expensive than energy storage, and potentially more effective due to the higher load it can accommodate over a greater period of time, but also has the disadvantage on running on fossil fuel.

Q i Describe the resiliency need the on-site generation device can address, including the anticipated duration of the need.

A i The specific resiliency need that on-site generation can provide is electricity, just as it is for BTM energy storage. On-site generation can address power needs of critical operations facilities such as fire stations, police stations, emergency operation centers as well as disaster shelters and cooling centers, many of which will need to be available for 24 hours or longer: PSPS events could last for several days at a time, and generation, but not always storage, can provide those longer term needs. Solar-paired-batteries may be better suited for the loads of facilities that do not need 24-hour operation or do not require significant load over that time period to remain operationally effective; battery size and cost for larger 24-hour facilities can be cost-prohibitive.

Q ii Describe the resiliency benefit the on-site generation device can provide, including the duration of the benefit;

A ii See answer above.

Q iii Address who would benefit from the resiliency service;

A iii Any residential or commercial customer, the communities involved, the utility, and the emergency relief (fire, police) services and personnel. The list of beneficiaries could extend to CDF, USFS, BLM, counties, and cities who could be affected by power shut-off.

Q iv Address whether the on-site generation device would need to be part of a microgrid or be connected to a storage device to provide the resiliency benefit, or, more generally, how resiliency benefits differ depending on these factors.

A iv The amount of load as well as the timeframe that the load is required would dictate whether on-site generation would need to be part of a microgrid to provide resiliency benefits. Since generation resources do not rely on the grid and can service onsite load without it by islanding, generation could continue to provide resiliency services indefinitely as long as the fuel source remains available. Intermittent generation (such as PV) would need to be connected to storage to provide any effective resiliency but would also need to be sized large enough to provide critical load or operationally effective load; fossil-fueled generation (fuel cells, diesel generators) could potentially provide higher amount of power per dollar spend for as long as there is fuel available.

Q v Address whether or not the use of storage to provide resiliency services during de-energization events introduces public safety risks, such as creating an alternative source of ignition for a wildfire. Include recommendations for mitigating any identified risks.

A v PG&E does not believe that energy storage systems create a significant source of ignition risk or other safety risk that did not exist already. There are important safety requirements in SGIP: equipment must be certified under UL Safety Standards that require testing according to UL1973, UL1642 and UL9540 standards (for lithium ion batteries). UL 1989 applies to lead-acid batteries. Certification under the above standards provides a high level of confidence that operation of batteries minimizes risk including risk of alternative source of ignition. Of course, these resources must not backfeed into lines which are being de-energized during PSPS events. This being said, a customer's electrical design may create public safety risk if they were to remain energized during a PSPS event where source power has been de-energized. As an example, if a customer's electrical design behind the meter were to have private overhead lines, that remained energized during a PSPS event, such energized assets are exposed to environmental dangers that could create wildfire ignition risk.

Q 3 Should the Commission seek to promote SGIP projects that provide resiliency benefits to customers and/or communities facing risks of a wildfire, wildfire-related de-energization events, or other adverse event? If so, how?

A 3 As stated above, PG&E believes that the SGIP should be modified to incorporate elements that may help address California's most pressing issue, wildfire resiliency. As the only program to provide incentives for energy storage – a technology that when paired with some form of generation (such as solar) offers another tool for customers during PSPS – SGIP may be positioned to support an aspect of wildfire resiliency efforts and should be leveraged to that end.

Historically SGIP provided incentives that produce ratepayer benefits when operating in parallel with the grid. In a PSPS situation (no grid) resiliency benefits flow to the host customer when operated in island mode. PG&E therefore recommends that current program goals should be maintained in order to reduce GHGs and provide grid support, while also allowing backup usage to promote resiliency.

Q 4 Should the Commission adopt a dedicated incentive aimed at promoting SGIP technologies with resiliency benefits? If so, how should the Commission structure such an incentive, and why? What eligibility criteria would you suggest, and why?

A 4 PG&E recommends that the CPUC create a simple financial incentive to incent project development by the most impacted customers. PG&E prefers the concept of an 'adder' to encourage resiliency-promoting projects by adding, for example, $0.15/Wh to the future approved base incentive rate, making projects more affordable. PG&E recognizes that all customers may be impacted by PSPS and therefore recommends a public discussion on developing a critical customer classification, so incentives can be most effectively directed towards the most impacted customers. PG&E hopes to avoid a scenario where the benefits of a resiliency adder become a default to all customers; it should be offered to customers who could be most impacted, with the most need. The resiliency adder should be per watt-hour, i.e. $0.15/Wh added to the base incentive. If the new incentive rate for a residential customer is $0.20/Wh, with the resiliency adder the full incentive would be $.35/Wh for customers with the most critical need

Q 5 More specifically, should the Commission adopt a "resiliency adder" to existing incentives for storage and/or generation projects that provide resiliency benefits to customers and/or communities to help address wildfire, wildfire-related de-energization event, or other risks? If yes:

A 5 Yes, please see PG&E's answer above.

Q i At what level should an adder be set (e.g., a certain percentage above existing incentive levels)? Please provide a rationale for the level you propose.

A i The resiliency adder proposed by PG&E above would be set at $0.15/Wh for projects for most impacted customers, as discussed below. The $0.15/Wh adder is 43% of the current Step 5 SGIP Residential incentive of $0.35/Wh, a significant increase.

Q ii What are appropriate project eligibility criteria to receive the adder?

A ii Eligibility should be limited to the most impacted customers. PG&E is interested in stakeholder feedback on these eligibility criteria, to be discussed in a workshop. The Commission may want to provide the adder for customers in higher fire risk areas, or instead may focus on other sensitive customer needs, communities, or critical services.

Other existing SGIP requirements would continue to apply, including permanent installation, no "backup-only" operations, GHG reductions, ten-year warranty, etc.

Q iii Should projects receiving the adder be required to demonstrate or attest that they will provide resiliency benefits? If yes, how can the Commission confirm that the storage is continually operated to provide these benefits?

A iii By installing the equipment and cycling 52 times per year for residential and 130 times per year for Large Commercial (current requirements), projects will be compliant with current program goals. An attestation or Affidavit is a reasonable additional requirement that the project is also intended – and will be used ---– as backup in the event of PSPS to promote resiliency.

Q iv What conditions should the Commission impose to ensure that resiliency services provided during de-energization events do not undermine the intended benefits of the de-energization?

A iv PG&E recommends that the system should be capable of islanding during a PSPS event. De-energizing the grid is important to ensure the effectiveness of the PSPS, so back-feeding to the grid must be prevented. There are also concerns regarding behind-the-meter customer electrical designs that could lead to customer-owned overhead lines still being energized during a PSPS event that would need to be addressed.

Q 6 In D.16-06-055, the Commission reduced incentives for energy storage projects with a discharge duration longer than two hours. While this assists in spreading SGIP storage budgets across a greater number of systems, it disincentivize storage systems with discharge durations exceeding two hours. Should the Commission modify the existing SGIP incentive structure to facilitate storage projects with a discharge duration exceeding two hours? If so, please explain your reasoning and the modifications you propose.

Q 6 PG&E believes that SGIP-incented projects should be sized to meet the host customer goals, and customers have different goals; some only need a 2-hour battery to handle brief energy spikes during a day, while others need several hours of discharge duration. In high fire threat districts, a de-energization event could involve several days of down-time so longer duration batteries could be beneficial. The program should be sensitive to that. It is likely that longer duration batteries can better support the grid than 2-hour batteries with their ability to

discharge through the peak whereas 2-hour batteries may need to re-charge during the peak; this causes the "snap back" effect by adding load to the grid at the worst time (peak) when the battery recharges. It is time that SGIP remove rules[11] that work against longer-duration batteries. PG&E would propose simply eliminating the rules on discharge duration; the incentive should remain static regardless of the battery discharge duration.

### 7. San Joaquin Valley

Q 1 Should the Commission adopt changes to the SGIP program for the San Joaquin Valley (SJV) pilot communities identified in D.18-12-015….

A 1 PG&E Supports the Pilots, but Requests that the CPUC Confirm Project Costs. PG&E supports the Commission's general proposal in D.18-12-015 to adopt rule changes in SGIP including a $10 million set-aside out of SGIP's Equity Budget for SJV pilots. However, PG&E *first* recommends that the CPUC order a cost audit of developers to validate that the program would not be paying for more than the price these storage projects are sold elsewhere. We recommend that the Commission study what the appropriate cost of the pilots should be and structure the cap as a "not to exceed"' sum rather than a sum that is authorized to be spent on each project. This is extremely important—priority should be placed on designing a system to meet customer needs, not on spending $11,979 per residential project. If a smaller system (sub-$11,979) is needed for a project, the remainder can be applied to the next project, thereby maximizing the efficiency of the budget, with a cap that it cannot exceed a reasonable amount of project costs. SJV projects would fulfill SGIP program goals because projects should be required to comply with current rules, and they promote equitable distribution of benefits from SGIP to different customer classes. In sum, the Commission should first conduct a cost audit of solar+storage developers before authorizing the cost caps to promote cost effectiveness in the program.

Q i: If yes:

1. Should the Commission adopt an SJV set-aside within the SGIP equity budget at the levels suggested in D.18-12015 and the SJV ACR ($10 million), or some other amount? Should the SJV ACR's proposed division of this set-aside budget between SJV residential and non-residential projects be approved as proposed, or modified in some way?

[11] Rules on energy storage duration and energy capacity are found in the SGIP Handbook at: 5.2.1, 5.2.2.

A 1 PG&E supports the set-aside at the levels suggested in D.18-12-015 and the SJV ACR ($10 million); clarity should be provided from the CPUC about whether this set-aside will come from current Equity Budget funds or future collections—the timing of this is unclear.

Q 2 Should SGIP fully subsidize SJV pilot residential systems with a cost cap of $11,979, as suggested in D.18-12-015 and the SJV ACR, or at some other level? Provide your rationale.

A 2 In general, PG&E believes that unless storage projects are close to "free" for Equity Budget-qualifying customers, customers will not embrace them. However, unlimited incentives are an opportunity for needless overspending. So, PG&E generally agrees that for the pilot specifically, the program should fully-subsidize the systems up to a reasonable cost cap, which should be determined by a CPUC-ordered audit, as described above. The audit should capture the battery costs only, since solar is not an eligible technology.

Q 3 Should SGIP fully-subsidize the SJV pilot non-residential systems with a cost cap of $26,379, as suggested in D.18-12-015 and the San Joaquin ACR, or at some other level? Provide your rationale.

A 3 PG&E provides the same answer for the non-residential systems. Fully-incenting them in the pilot makes sense, however, before a cost cap is approved the CPUC should verify costs.

Q 4 The SJV ACR did not include California City in its list of pilot communities that should participate in a SGIP SJV set-aside….

A 4 This city is outside of PG&E's service territory and it defers to others to comment.

### 8. Grid Support

Q 1 What are the grid benefits, if any, of on-site solar paired with a storage system that is operated to maximize solar self-consumption?

A 1 The Ruling defines "grid support" as "1) reducing or shifting peak demand; 2) improve efficiency and reliability of the distribution and transmission system; 3) lower grid infrastructure costs; 4) provide ancillary services; and, 5) ensure customer reliability."[12] As discussed above, moving customer load or solar generation produced on site to lower load hours can reduce peak demand. That has the potential to reduce loading on the transmission and distribution systems; the extent to which this is has occurred to date is addressed in the prior SGIP impact reports. In

[12] Ruling p. 23, citing D.16-06-055.

addition, as discussed at length above, storage has the potential to help customer reliability. BTM batteries are not now participating in the CAISO ancillary service markets.

Q 2 What are the grid benefits, if any, if non-residential SGIP customers are on a "storage" rate that reduces non-coincident demand changes, such as PG&E's Option S rates and PGE-A-1-STORE; and SCE's Option E and TOU-G-1, Option ES rates?

A 2 The A-1 STORE rate does not have a traditional non-coincident but instead includes a demand charge only applicable in the peak and partial peak hours; the PG&E Option S rates will offer reduced demand charges as compared with regular E-19 and E-20 rates. In addition, these rates will use to more accurate TOU peak hours and widen the differential in rates charged in peak periods, as opposed to off peak and partial peak periods. These rate designs give customers greater incentives to reduce loading in peak demand periods, as well as to buy batteries.

Q 3 Do you agree that the Commission should require new residential SGIP customers, who do not receive a GHG signal, to enroll in an existing Demand Response (DR) program offered by their utility or in the DRAM as a way to achieve grid benefits and/or GHG reductions from such systems? Why or why not?

A 3 DR enrollment should remain voluntary; however, PG&E does recommend exploration of a DR "pathway" for new SGIP customers. By "DR pathway, we mean the opportunity to replace mandatory cycling requirements or other operational requirements with a commitment to follow DR dispatch instructions. Depending on the DR program requirements, this could ensure that the battery is not solely being used for backup purposes, ensure that battery cycling is better aligned with grid needs, and provide an additional revenue stream for battery owners or operators. These and other DR topics should be considered in a workshop, so the nuances of DR design and enrollment can be thoroughly discussed.

Q 4 Explain how new non-residential SGIP customers can provide flexible Resource Adequacy (RA) that is recognized by CAISO. Should this be required for new non-residential SGIP customers?

A 4 For BTM storage devices the best way to provide flexible RA that is recognized by the CAISO is through CAISO market participation, using a demand response product (Proxy Demand Resource). New non-residential SGIP customers should not be *required* to participate in flexible RA but should be given the *option* to provide flexible RA if they choose to do so via a DR "pathway" offered by utilities or third parties.

Q 5 How can we ensure that municipal utility electric customers who receive SGIP incentives for battery installation provide grid support?

A 5 We do not have rules in place today to ensure that all SGIP customers provide grid support, whether served by IOUs or municipal utilities. At the very least, all SGIP participants must conform to program rules and perform up to operational expectations. Municipal electric customers should be treated like any other customer: residential customers would be required to perform 52 discharges/year, for example, and commercial customers would be required to submit performance data to receive the full incentive. In addition, both IOU and municipal utility customers should follow the SGIP operational rules to be adopted later this year.

Q 6 Do you agree that the Commission should consider other ways of promoting SGIP customer participation in DR programs, CAISO energy, and ancillary service markets and/or the regional EIM to promote operating or contingency reserve capacity? Please provide your rationale, and if "yes," provide your recommendations for how this could occur. What are the obstacles to your recommended pathway and how can these be addressed?

A 6 Yes, PG&E recommends that the Commission actively promote DR participation and develop a DR "pathway" as discussed above.

**9. and 10. Thermal Energy Storage and Coordination With Order Instituting Rulemaking Regarding Building Decarbonization, and Other**

A 1 and 2. We offer no thoughts on these questions at this time.

## III. CONCLUSION

PG&E respectfully requests that the Commission make the limited changes to the SGIP proposed above.

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