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COMMENTS OF THE PUBLIC ADVOCATES OFFICE ON THE ASSIGNED COMMISSIONER'S RULING SEEKING COMMENT ON IMPLEMENTATION OF SENATE BILL 700 AND OTHER PROGRAM MODIFICATIONS

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TABLE OF CONTENTS

I INTRODUCTION

The Public Advocates Office at the California Public Utilities Commission (Cal Advocates) submits these comments pursuant to the *Assigned Commissioner's Ruling Seeking Comment on Implementation of Senate Bill 700 and other Program Modifications* (Ruling), issued on April 15, 2019. The Ruling requests party comments on questions in nine topic areas that will be used to guide implementation of Senate Bill (SB) 700 (Wiener, 2018) and make other revisions to the Self-Generation Incentive Program (SGIP).

In the discussion below, the Public Advocates Office responds to questions posed in the Ruling[1] and makes the following recommendations:

- The Commission should not authorize additional ratepayer collections, given the large remaining pool of incentives and the inconsistent greenhouse gas (GHG) performance of projects to date.
- The Commission should not modify the budget allocation between energy storage and generation projects for funds collected in 2020-2024.
- The Commission should not reallocate incentives to the residential budget from the non-residential budget.
- The Commission should require the program administrators (PAs) to request any fund-shifts from incentive to administrative budgets via a Tier 2 advice letter.
- If the Commission adopts a "resiliency adder" to existing incentives for projects that provide additional resiliency in wildfire-related risk scenarios, it should carefully consider the criteria for receiving the adder, as not all customers or communities encounter the same degree of risk.
- The Commission should continue to require households in San Joaquin Valley (SJV) pilot communities that participate in the SGIP program and draw from the SGIP equity budget to follow the SGIP's program rules for the equity budget.
- A storage-specific rate that reduces non-coincident demand changes may aid in reducing GHG emissions, but there is little evidence that an energy storage-specific rate would address other needs of the grid.

II DISCUSSION

1. Overall collection levels for years 2020-2024[2]

[1] In section II, the Public Advocates Office responds to selected questions from the Ruling using the numbering from the ruling.

[2] Ruling. Section 1, p. 3.

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

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

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?

The Commission should not authorize additional ratepayer collections for SGIP at this time due to the large remaining pool of incentives and the inconsistent GHG performance of projects to date. As of April 2019, the SGIP program had $414,788,311 in available funds.[3] Reserved incentives for 2016-2018 averaged about $65 million.[4] At this rate of spending, the more than $414 million pool of available funds would not likely be exhausted by 2024 if previously collected incentives are carried over from 2019 to 2020. Therefore, there is no present need to authorize additional collections for SGIP.[5] Instead, the Commission should focus on developing and evaluating new GHG rules in order to ascertain the most effective use of ratepayer funds in accomplishing state and Commission objectives.

SB 700 also limits eligibility for SGIP incentives to distributed energy resources that will achieve GHG emission reductions.[6] The vast majority of energy storage projects[7] funded through SGIP (which represents 87% of the funds allocated in SGIP from 2016 to 2018[8]) have

[3] Ruling. Section 1, p. 4.

[4] Weekly Statewide Report for the Self-Generation Incentive Program, https://www.selfgenca.com/home/resources/, accessed May 9, 2019. Sum of Current Incentive for all Equipment Type and all Fully Qualified State other than "cancelled."

[5] As discussed in the next section of these comments (response to Section 2.2, Question 3 of the Ruling at pages 4 and 5), the Public Advocates Office does not recommend reallocating SGIP funds to the residential SGIP budget until program evaluations demonstrate that residential SGIP projects will achieve reductions in GHG emissions, as required by. Public Utilities Code Section 379.6 (b) (1). Once it is determined that residential storage projects will reduce GHG emissions, the Commission could reallocate funds from the remaining SGIP budget to the residential budget or allow PAs to request additional funds via a Tier 3 advice letter.

[6] Public Utilities Code Section 379.6(b)(1).

[7] For example, 93% of the non-residential projects and all of the sampled residential projects that Itron evaluated in 2017 increased GHG emissions. Itron, *2017 SGIP Advanced Energy Storage Impact Evaluation*, 2018 (Itron Report 2017), pp. 4-51, 4-57

[8] Weekly Statewide Report for the Self-Generation Incentive Program, https://www.selfgenca.com/home/resources/, accessed May 9, 2019. Sum of Current Incentive for all Fully Qualified State other than "cancelled." Energy storage projects include Electrochemical Storage, Mechanical Storage, and Thermal Storage, but Electrochemical Storage accounted for nearly all of the total.

contributed to rising greenhouse gas (GHG) emissions.[9] This is in direct contradiction to the intent of the SGIP statute.[10]

The Commission is developing new rules to ensure that SGIP-supported energy storage projects reduce GHG emissions,[11] but these rules would not go into effect until 2020 or beyond, and the efficacy of these new rules will not be evaluated until least 2022.[12] Until the Commission implements new GHG rules for the SGIP program, and evaluates the effects of these new rules, there will be uncertainty about the GHG performance of new SGIP projects. Once new GHG rules are in place, evaluation reports will indicate whether these new rules are effective. The Commission could authorize PAs to request authorization for additional collections via a Tier 3 advice letter if it finds the new rules to be effective.[13]

Even if the forthcoming SGIP program changes result in projects reducing GHG emissions, the Commission should be cautious when authorizing additional collections that could raise rates. Given the Commission's ongoing concerns about rising utility bills,[14] the

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[9] Itron Report 2017; see also Itron, *2016 SGIP Advanced Energy Storage Impact Evaluation*, Foreword, 2017 (Itron Report 2016).

[10] See SB 412 (Kehoe, October 11, 2009), which amended Section 379.6 (b) of the Public Utilities Code to read:

> "Eligibility for incentives under the [SGIP] program shall be limited to distributed energy resources that the commission, in consultation with the State Air Resources Board, determines will achieve reductions of greenhouse gas emissions pursuant to the California Global Warming Solutions Act of 2006 (Division 25.5 (commencing with Section 38500) of the Health and Safety Code)."

[11] See *Assigned Commissioner's Ruling Issuing Energy Division's Revised Self-Generation Incentive Program Greenhouse Gas Staff Proposal for Comments*, December 31, 2018 (December 2018 ACR).

[12] The December 2018 ACR's attached staff proposal notes on p. 13 that "Staff recommends making the go live date eight months after a Commission decision setting GHG rules for SGIP-funded energy storage systems to allow sufficient time for [implementation]." At that time, the anticipated timeline was a proposed decision in Q1 2019 and a "go live date" around January 1, 2020. The first evaluation report of a full program year under the new rules would have been available in 2022, according to previous release timelines. A proposed decision has not yet been issued, suggesting that an Itron report of a full implementation year may not be available until 2023 or beyond.

[13] A Tier 3 advice letter is appropriate since funding needs after implementation of new GHG rules are quite uncertain. Evaluating the reasonableness of funding requests under such conditions are unlikely to be ministerial and therefore disposition of such requests without a Commission-approved resolution would exceed the bounds of the Energy Division's properly delegated authority.

[14] See, for example, R. 18-07-006, which addresses utility bill affordability. See also SDG&E *Petition for Modification of D.13-12-003 of San Diego Gas & Electric Company*, filed March 29, 2019 in R.11-03-012, p. 4. (Seeking to authorization to distribute the California Climate Credit to mitigate the impact of "significantly higher bills" experienced by residential customers in summer months.)

Commission should only authorize additional collections for programs that meet a demonstrated need.[15]

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

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

Question 3: Should the Commission modify the budget allocation between residential and non-residential storage projects for funds collected in 2020-2024?[16]

The Commission should not modify the budget allocation between residential and non-residential storage projects for funds collected in 2020-2024. As the Ruling explains:

> [T]he generation budget is almost untouched, the non-residential storage budget is undersubscribed, and the equity budget has not confirmed any reservations to date. The residential storage budget, however, is expected to run out of funds in 2019 if current subscription rates continue.[17]

This scenario prompts the question of whether it would be prudent to simply transfer funds from the underutilized non-residential energy storage budget, to the residential energy storage budget, where it could be promptly used by PAs such as the Center for Sustainable Energy (CSE).[18] The Commission should not allow such a transfer because it would only provide additional incentives to projects that currently do not align with the program's statutory goals to reduce GHGs.

Specifically, the Commission should not reallocate incentives to the residential budget from the non-residential budget until it has determined that residential projects will reduce GHG emissions, as required by Public Utilities Code Section 379.6(b)(1). To date, residential projects are primarily used for backup power, remain idle "for a considerable portion of the year," and "[engage] in charge/discharge cycling to meet the SGIP's requirement to fully discharge 52 times per year."[19] This use is in direct contradiction to SGIP Handbook rules, under which

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[15] See e.g. Public Utilities Code 451, requiring that all charges demanded or received by any public utility be "just and reasonable."

[16] Ruling, p. 10.

[17] Ruling, p. 7.

[18] CSE exhausted all five steps of its residential storage budget by April 2018 and filed an advice letter to request authorization to transfer funds from Step Five of its non-residential storage budget to Step Five of its residential budget. See Ruling p. 10.

[19] Itron Report 2017, pp. 1-27. See also Itron Report 2016, p. 1-31.

backup systems intended solely for emergency purposes are not eligible for participation in SGIP.[20] Furthermore, this use will likely result in higher GHG emissions.[21]

Although SGIP should not allow residential systems to receive incentives solely for providing backup power to the system owner (while increasing GHGs), the program already provides incentives for projects that simply discharge 52 times per year.[22] These incentives are high — currently averaging more than $4,400 per individual residential system[23] — even though ratepayers receive little if any tangible benefit and may actually be harmed due to the increase in GHG emissions associated with these systems. The Commission is currently considering revisions to these rules in this proceeding and expects to implement those changes in 2020.[24] The Commission should only provide incentives to projects that can demonstrate GHG reductions under the Commission's forthcoming rules to ensure that SGIP projects do not increase GHG emissions.[25]

5. Administrative Budget

Question#2: Should the Commission authorize the PAs to shift funding from incentive to administrative budgets via advice letter? If yes, please specify the criteria the Commission should use to evaluate the request.[26]

The Ruling explains that seven percent of the SGIP budget for each PA is set aside for program administration, and provides a table showing the current SGIP administrative budget. The table shows the allocation across PAs, the estimated annual administrative expenditures averaged over the past three years, and the estimated amount of unused funds accumulated in administrative budgets to date.[27] As the Ruling notes, Pacific Gas and Electric Company

[20] According to the Self-Generation Incentive Program Handbook (SGIP Handbook), December 18, 2017, p. 39.

[21] Itron Report 2017, pp. 4-57: "All sampled residential projects contributed to an increase in GHG emissions." For the Itron Report 2016, there was no assessment of GHG impacts from residential energy storage projects due to data quality issues. See Itron Report 2016, p. 3-52.

[22] SGIP Handbook, p. 46.

[23] Weekly Statewide Report for the Self-Generation Incentive Program, https://www.selfgenca.com/home/resources/, accessed May 23, 2019. Sum of Current Incentive for all energy storage Equipment Types, all Fully Qualified State other than "cancelled," Program Years 2017 and 2018, Small Residential Storage. Sum of Current Incentive divided by count of Current Incentive.

[24] December 2018 ACR, p. 13.

[25] Public Utilities Code Section 379.6(b)(1).

[26] Ruling, p. 17.

[27] Ruling, pp. 15-16.

(PG&E) and Southern California Edison (SCE) rarely spend their full allocated budget and carry over administrative funds from year to year.[28] The remaining two PAs, CSE and Southern California Gas Company (SoCalGas), may exceed their administrative budget allocations "since some administrative expenditures are fixed regardless of the amount of incentives processed."[29] The reasons that the remaining PAs anticipate budget shortfalls are not self-evident, and are not fully explained by the fixed costs of program administration, since two of the four PAs that have fixed costs manage to stay within their budgets. Without additional information, the Commission cannot effectively evaluate whether the transfer of funds would be in the interest of ratepayers.

If the Commission authorizes fund shifting from the incentive budget to the administrative budget, it should require PAs requesting this shift to submit a Tier 2 advice letter to allow the Commission to review the reasonableness of the request. As part of the advice letter process, the Commission should require any PAs that request to shift funds from the incentive budget to the administrative budget account for: 1) funds spent on administrative costs to date, and 2) anticipated funding needs for the relevant time frame of the transfer request. This information will allow the Commission to evaluate whether administrative funds are being spent prudently.

6. Resiliency

The Commission should simultaneously: 1) undertake a broader comparison of possible configurations of energy storage to address resilience needs, and 2) assess what engineering and infrastructure changes would be needed to facilitate these configurations. Please see the discussion below for additional information.

> Question #1: 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 deenergization event, or other adverse event? In your response, please do the following:
>
> i. Describe the resiliency need the on-site generation device can address, including the anticipated duration of the need;[30]

[28] Ruling, p. 16.

[29] Ruling, p. 16.

[30] Ruling, p. 18.

During wildfire season in California, on-site generation devices could provide a way to keep electricity flowing locally when fires, or the threat of fires, lead to service loss. These resiliency benefits may require engineering and infrastructure changes to be realized. For households and residences, on-site generation devices could serve as back-up generators that can provide customers with a source of electricity during unexpected power outages and Public Safety Power Shut-off (PSPS or de-energization) events. On-site generation devices could provide benefits to entire communities by ensuring that critical infrastructure is operational and essential services remain available, such as hospitals, water supply facilities, fire stations, and cell towers.

Nonetheless, there are limitations to backup power availability in PSPS events. One limitation is the duration that a system would last in a power outage. Tesla estimates that a single Powerwall would fully discharge in 1 day, 17 hours and 15 minutes during an outage.[31] If the home or facility does not recharge from solar, either because no solar system is installed or because solar power is not available at that time, the system would only provide power for the duration of the battery's discharge period.

A second limitation is that the ability to provide benefits to the network would require clear, proactive collaboration between utilities and the electrical contractors and customers installing the on-site generation in order to maintain the safety and reliability of the distribution system. This collaboration may require upgrades to the local distribution network.[32]

Also, Rule 21 Anti-Islanding requirements prohibit generators from exporting power to the grid during an outage, in part protect utility workers who are working on de-energized power lines.[33] For a rooftop solar facility to charge a battery during an outage, the battery would need a

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[31] Tesla, "How long will Powerwall last in an outage?" https://www.tesla.com/support/powerwall/how-long-will-powerwall-last-in-an-outage, accessed May 28, 2013. Tesla's calculation assumes a selection of activities that includes keeping the lights on, running the refrigerator, charging a phone and laptop, watching television, and washing clothes. The calculation does not include charging an electric vehicle, drying clothes, doing the dishes, or running an air conditioner.

[32] See, for example, *Pacific Gas and Electric Company Guide to Energy Storage Charging Issues for Rule 21 Generator Interconnection*, October 21, 2016, accessed May 28, 2019.

[33] See D. 16-06-052, *Alternate Decision Instituting Cost Certainty, Granting Joint Motions to Approve Proposed Revisions to Electric Tariff Rule 21, and Providing Smart Inverter Development a Pathway Forward for Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company*, June 23, 2016. The Smart Inverter Working Group Phase 3 Recommendations included in D. 16-06-052 discuss a "cease to energize" command to DERs and where a switch could be located. See pp. 23-24 and pp. 132-133. D.16-06-052 also describes the "cease to energize" function of Advanced Inverters on p.5.

switch to facilitate disconnection from the grid to ensure against inadvertent power exports from solar panels to the grid.

> Question 5: [S]hould 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:
>
> *ii. What are appropriate project eligibility criteria to receive the adder?*[34]

If the Commission adopts a "resiliency adder" to existing incentives for projects that provide additional resiliency in wildfire-related risk scenarios, it should carefully consider the criteria for receiving the adder, as not all customers or communities encounter the same degree of risk.

Communities in Tier 2 and Tier 3 High Fire Threat Districts[35] are more likely to experience de-energization events, so providing an adder for critical facilities in these areas may result in communities that are better prepared to respond when faced with de-nergization. Critical facilities that receive this benefit should be defined as the same assets that are considered as critical facilities in the de-energization proceeding, Rulemaking (R.) 18-12-005, as these are the facilities that hold the most value in maintaining service during a power outage.[36] Any properly identified critical infrastructure should already be equipped with on-site generation, so resiliency adders should be limited to critical infrastructure or facilities that can reasonably demonstrate why they did not already have this infrastructure.

The Commission has identified the de-energization of customers enrolled in the Medical Baseline program as a concern in R. 18-12-005.[37] On-site storage devices could supply power to these customers during a power outage, but this may also have the perverse incentive of encouraging Medical Baseline customers to stay in areas with evacuation concerns, depending on the nature of their medical needs. Proper operation and maintenance are required for these on-site

[34] Ruling, pp. 19-20.

[35] Identified in a process initiated in D.17-01-009 and modified by D.17-06-024.

[36] One of the items of scope in R.18-12-005 considers how to define critical facilities. It is expected that a decision in this proceeding will present a clear definition of which facilities will qualify as "critical." A Proposed Decision in that proceeding, issued April 26, 2019, provides a definition on p. 75. This Proposed Decision is pending a vote at a Commission Business Meeting no earlier than May 30, 2019.

[37] See R. 18-12-005, *Assigned Commissioner's Scoping Memo and Ruling (Phase 1)*, March 8, 2019.

generation systems which, if not properly maintained or operated, can be a source of ignition.[38] Additional on-site generation should also consider the risk of leaving privately-owned electrical distribution infrastructure energized during high fire threat conditions.

7. Proposals from the San Joaquin Valley proceeding

Question #1: Should the Commission adopt changes to the SGIP program for the SJV pilot communities identified in D.18-12-015 as described in the excerpt from the October 3, 2018 ACR above? Why or why not? In your response, please address how these changes would or would not advance the SGIP's goals to provide environmental benefits (e.g., reduce GHGs), provide grid support (e.g., reduce peak demand, improve efficiency and reliability of the grid), achieve market transformation, maximize ratepayer value, and provide for an equitable distribution of costs and benefits across among customer classes.[39]

The Commission should reject the changes to the SGIP program proposed in the October 3, 2018 Assigned Commissioner's Proposal in the San Joaquin Valley proceeding (SJV ACR),[40] because these proposals are unlikely to result in material benefits to the households participating in the SJV pilot projects. In fact, the proposals from the SJV ACR are likely to be harmful to the participating households by increasing their bills and to the environment by increasing GHG emissions.[41] Instead, the Commission should maintain the current eligibility criteria to participate in the SGIP program and draw from the SGIP equity budget, under the standard program rules.

When authorizing ratepayer funding for storage projects in low-income households or disadvantaged communities, the Commission has an obligation to ensure that the proposed projects will result in real economic benefits to participants and environmental benefits. As explained below, the proposed storage projects may increase the bills of participating ratepayers.

1. The proposed storage projects in SJV pilot communities lack economic benefits.

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[38] The National Fire Protection Association (NFPA) is currently developing a standard for the installation of stationary energy storage systems, NFPA 855.

[39] Ruling, p. 22.

[40] R.15-03-010, *Assigned Commissioner's Ruling Proposing Phase II Pilot Projects in Twelve Communities in the San Joaquin Valley and Noticing All-Party Meeting*, October 3, 2018 (SJV ACR).

[41] R.15-03-010, *Opening Comments of the Public Advocates Office on Assigned Commissioner's Ruling Proposing Phase II Pilot Projects in Twelve Communities in the San Joaquin Valley and Noticing All-Party Meeting*, October 19, 2018, pp. 6-11.

From an economic perspective, behind-the-meter residential energy storage offers very little value for low-income residential customers.[42] In fact, as described below, residential energy storage may harm participating customers by increasing their bills. No party to the San Joaquin Valley proceeding, Rulemaking (R.)15-03-010, was able to articulate how providing fully subsidized energy storage would advance the overarching goal of that proceeding - to improve energy affordability for low-income customers.

a) Residential tariffs do not provide significant opportunities for rate arbitrage.

For residential customers, the potential economic benefits of behind-the-meter battery storage arise from the ability to shift their electric load to take advantage of variations in energy prices. Behind-the-meter energy storage allows residents to shift their electric load[43] to different times of day, so that load is not synchronized with consumption. Residents can draw energy from the grid to charge the battery at times when prices are low and release energy back to the grid at times when prices are high. This is rate arbitrage. Crucially, rate arbitrage requires time-of-use (TOU) price differentials, and the value of rate arbitrage depends on how large those price differentials are.

By default, residential customers are currently enrolled in a tariff with tiered rate structure, in which the price of energy rises along with the customer's monthly consumption. On tiered rates, the price of energy does not vary according to the time of day. With this rate structure, there is no economic benefit to behind-the-meter storage, because there is no TOU element to prices.

In fact, residential storage *increases* bills for customer on tiered rates. Batteries are not perfectly efficient,[44] and they consume a small amount of energy while on standby.[45] Without the opportunity for rate arbitrage, behind-the-meter storage will necessarily and unavoidably

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[42] R.15-03-010, *Reply Comments of the Office of Ratepayer Advocates on Utilities' Proposed Pilot Projects*, April 6, 2018, pp. 14-16 and Appendix A.

[43] Energy consumed from the grid.

[44] GRID estimates that a Tesla Powerwall is 87 to 90 percent efficient through a complete charge-and-discharge cycle. R.15-03-010, *Proposal and Response to Attachment A of Grid Alternatives and Partners as Directed by the Assigned Commissioner's December 6, 2017 Scoping Memorandum and Ruling*, March 2, 2018, Appendix 1.

[45] CAISO's *Energy Storage and Distributed Energy Resources (ESDER 2) Stakeholder Initiative Staff Paper*, pp. 18-20 (issued March 22, 2016). See also, D.17-04-039, pp. 38-42 and D.18-01-003, pp. 23-24.

increase bills. Most residential investor-owned utility customers in California will be switched by default to a TOU tariff in the near future unless a customer chooses to opt out and maintain a tiered rate structure. However, it is important to note that the change of default is unlikely to affect customers in the SJV pilot communities. The Commission has stated that it does not intend to switch low-income customers in hot climate zones (including the San Joaquin Valley) into TOU tariffs by default.[46] The default switch is a one-time event, so this policy is effectively permanent. Therefore, to realize any bill savings from residential storage, low-income customers would need to choose an optional tariff with a substantial TOU price differential and then, carefully use the battery to avoid drawing power from the grid during on-peak hours.[47]

However, under existing Commission policy, switching tariffs could prevent otherwise qualified customers from receiving the benefits of California Alternate Rates for Energy (CARE) or Medical Baseline tariffs.[48] There is a CARE tariff with a tiered rate structure[49] and a CARE tariff with a TOU rate structure.[50] However, on a CARE TOU tariff, the TOU price differential is too small to create significant financial incentives for rate arbitrage.[51] By design, the standard TOU tariffs feature small TOU price differentials. As a result, the benefits of behind-the-meter storage would be small. As the Public Advocates Office has previously shown, with these tariffs, the benefits of behind-the-meter storage do not even approach the costs.[52]

b) Participating households would not realize significant bill savings through rate arbitrage.

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[46] D.07-09-036, Ordering Paragraphs 1 – 3. See also: R.15-03-010, *Reply Comments of the Office of Ratepayer Advocates on Utilities' Proposed Pilot Projects*, April 6, 2018, Appendix A, pp. 1 – 2.

[47] Bills may increase if customers do not optimize the timing of charging and discharging. If a customer enrolled in an electric vehicle or time-of-use tariff charges the battery during peak hours, the customer will pay a premium to charge, will experience efficiency losses, and may discharge the battery when the energy is less valuable. The battery will also draw power while on standby during peak hours.

[48] CARE and Medical Baseline are distinct, Commission-authorized tariffs.

[49] See e.g. PG&E Electric Schedule El-1 Residential Care Program Service, available at https://www.pge.com/tariffs/index.page

[50] See e.g. PG&E EL-TOU Residential CARE Program Time-of-Use Service, available at tps://www.pge.com/tariffs/index.page.

[51] R.15-03-010*, Reply Comments of the Office of Ratepayer Advocates on Utilities Proposed Pilot Projects*, April 6, 2018, pp. 14-16 and Appendix A.

[52] R.15-03-010, R.15-03-010, *Reply Comments of the Office of Ratepayer Advocates on Utilities' Proposed Pilot Projects*, April 6, 2018, pp. 14-16 and Appendix A.

Households in the SJV pilot communities would not realize significant gains from rate arbitrage. The Public Advocate Office performed an analysis, using standard time-of-use tariffs, and estimated that a Tesla Powerwall would produce benefits of $57 a year for a typical single-family home in a San Joaquin Valley disadvantaged community.[53] This yields a payback period of 171.5 years with a zero discount rate. At any reasonable discount rate, the investment never pays off.[54]

c) Behind-the-meter storage is likely to cause harm to low-income households.

On the whole, the economic case for behind-the-meter storage in low-income households is fatally flawed. Behind-the-meter storage is liable to cause actual harm to pilot participants. Because of inefficiency and standby losses, customers on tiered rates lose money by installing storage.

Customers on standard time-of-use rates could see limited bill savings, but only if they optimize the timing of charging and discharging. The modest financial gain may not motivate customers to cycle the battery daily. Instead, customers might prefer to use the battery as a back-up power supply. If the battery is used primarily as a back-up power supply and is cycled infrequently, the electricity consumed while the device is on standby will result in higher bills.

2. It is inappropriate to use SGIP funding to address perceived electric reliability concerns.

The SJV ACR stated that pilot projects should "include subsidized [behind-the-meter] residential storage to provide increased reliability to households."[55] It is important to bear in mind that the financial and reliability justifications for deploying behind-the-meter storage are in conflict. The potential financial benefits to participating customers come from rate arbitrage, as

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[53] R.15-03-010, *Reply Comments of the Office of Ratepayer Advocates on Utilities Proposed Pilot Projects,* April 6, 2018, pp. 14-16 and Appendix A.

[54] At a discount rate of five percent, the benefits have a present value of $1,140. At a three percent discount rate, the present value is $1,895. The cost of powerwall is approximately $9.775, including equipment and installation. See R.15-03-010, *Reply Comments of the Office of Ratepayer Advocates on Utilities Proposed Pilot Projects,* April 6, 2018, p. 15.

[55] SJV ACR, p. 31. See also SJV ACR, p. 41: "Most importantly, the existing proposals do not optimally provide the reliability benefits of storage to pilot communities, which is particularly important in communities where residents expressed particular concern about a high frequency of electric power outages."

discussed above. However, cycling the battery to arbitrage on-peak charges in this manner would impair the availability of the battery as a back-up power supply for some power outages.

Lastly, it is worth noting that there is no evidence that electric service reliability is particularly problematic in the SJV pilot communities. Indeed, the Public Advocates Office conducted discovery and found that "neither PG&E nor SCE have any records of formal or informal complaints about electrical service reliability in any of the pilot communities,"[56] and no party to R.15-03-010 provided evidence to show that the SJV pilot communities are worse off in this regard than other rural communities or disadvantaged communities in California.

8. Grid support

Question #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?[57]

Non-residential SGIP customers' use of a "storage" rate that reduces non-coincident demand changes could provide the grid benefit of reducing or shifting peak demand, and therefore reducing GHG emissions. But there is little evidence that use of a storage-specific rate would address the other grid support features detailed in the Ruling: improving efficiency and reliability of the distribution and transmission system, lower grid infrastructure costs, ancillary services, and customer reliability.[58]

Reducing non-coincident charges would generally increase the incentive for storage customers to charge at times when prices are low (and GHG emissions are lower) and consume/discharge stored power when prices are higher and GHG emissions are higher. To the extent that volumetric TOU price signals align with GHG emissions rates, lower non-coincident charges could incent GHG reducing behaviors.

Higher on- to off-peak volumetric price signals, and lower non-coincident demand charges, could solicit stronger responses. But too large a differential could introduce a subsidy, thereby raising rates for non-storage customers. This can happen when, for example, the low retail prices are below marginal cost and/or the peak prices are artificially high.

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[56] R.15-03-010, *Opening Comments of the Public Advocates Office on the Administrative Law Judges' Ruling Seeking Party Responses to Questions*, September 10, 2018, Appendix E, p. 1.

[57] Ruling, pp. 25-26.

[58] Ruling, p. 23. See also D.16-06-055.

However, a "storage" rate design may not provide the types of grid support that is hypothetically described in the Ruling, and without additional analysis the Commission should not take for granted that a storage rate design will produce the intended benefits. For example, the use of an energy storage rate — or any rate — for non-residential SGIP customers could result in higher grid infrastructure costs and decreased reliability as the number of energy storage devices added to the grid increases. With the addition of new devices, there would likely be a need to add new infrastructure to accommodate the safe adoption of these devices, and to ensure they promote overall reliability.

III CONCLUSION

The Public Advocates Office requests that the Commission adopt the recommendations contained herein.

Respectfully submitted,

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