DOCKETED

Docket Number:	17-BSTD-01
Project Title:	2019 Building Energy Efficiency Standards PreRulemaking
TN #:	221574
Document Title:	Pacific Gas and Electric Comments on Draft 2019 Standards
Description:	N/A
Filer:	System
Organization:	Pacific Gas and Electric
Submitter Role:	Public
Submission Date:	10/20/2017 3:10:53 PM
Docketed Date:	10/20/2017

Comment Received From: Pacific Gas and Electric
Submitted On: 10/20/2017
Docket Number: 17-BSTD-01

PG&E Comments on Draft 2019 Standards

Additional submitted attachment is included below.

Wm. Spencer Olinek
Sr. Representative
CEC Regulatory Relations

77 Beale Street, B23C
San Francisco, CA 94105

(415) 973-5540
Spencer.Olinek@pge.com

October 20, 2017

POSTED ELECTRONICALLY TO DOCKET 17-BSTD-01

California Energy Commission
Dockets Office, MS-4
Docket No. 17-BSTD-01
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Docket 17-BSTD-01: Pacific Gas and Electric Comments on the October 4 and 5, 2017 Staff Workshop on the Draft 2019 Building Energy Efficiency Standards

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide comments to the California Energy Commission (CEC) on the Draft 2019 Building Energy Efficiency Standards (Title 24, Part 6).

PG&E supports the efforts of the CEC to develop the 2019 Building Energy Efficiency Standards (Standards) and broadly supports the Draft Standards, with specific exceptions noted in comments below. PG&E also encourages further, detailed evaluation of the proposed changes to Title 24 and their potential impacts to all California energy customers.

Key points in response to the Draft Standards include:

- Rooftop solar requirements should be clarified:
  - The requirements should be limited to single-family structures;
  - Exceptions should be clarified and expanded;
- The addition of Community Solar as a means of satisfying the rooftop solar requirement is an attractive means of lowering costs to all ratepayers; and
- Storage guidelines should be clarified.

PG&E looks forward to continued engagement with staff on this important work.

I. Chapter 8-150.1(c)14 Photovoltaic Requirements Should be Clarified and Augmented

PG&E recognizes and appreciates the care that CEC Staff took to preserve the State's Energy Action Plan Loading Order, which places energy efficiency first, followed by demand response, and then renewable sources of generation. Moving solar photovoltaic (PV) generation from an option that offsets efficiency measures to one that follows energy efficiency measures ensures that the more cost-effective solutions are implemented first. In addition, PG&E supports the prudent approach that the Commission has taken to limit the photovoltaic requirement to those buildings that can usefully and effectively install solar. However, PG&E also believes that there should be additional qualifications regarding solar PV, as described below.

A. Future Rate Design Changes May Impact Rooftop Solar Cost Effectiveness

The Rooftop Solar PV System Report[1] found that rooftop solar is cost-effective for homeowners, even when relatively significant assumptions are made as to future export compensation. However, there are considerations that the study did not include which could change even the high benefit-cost ratios in the report.[2] Specifically, rooftop solar remains subsidized and is generally not the best choice to meet future energy needs because it requires a subsidy from customers who have not installed rooftop solar to customers who install it. These subsidies to those installing solar may be significantly reduced going forward. The CPUC has examined residential rate structures recently and will continue to do so. In 2018, the CPUC will re-examine the net metering tariffs for the IOUs. While the cost-effectiveness report drastically reduced the compensation for exported generation under a net metering tariff as part of the sensitivity analysis, it is risky to assume that fundamental rate structures will not change and it is appropriate for the CEC to proceed cautiously in implementing the use of rooftop solar to meet zero net energy (ZNE) goals.

B. Rooftop Solar Requirements Should be Restricted to Single-Family Structures

PG&E generally supports the inclusion of rooftop solar in Title 24, as structured by the CEC, but believe that there are clarifications that could improve this section of the Draft Standards, as well as an additional exception that PG&E previously proposed and repeats below.[3]

PG&E notes the limitation on the requirement for rooftop solar to "low-rise" residential dwellings. However, there is a lack of clarity on the types of multifamily dwellings that could fit the "low-rise" definition. Additionally, new apartment buildings are required to have individually metered dwelling units, impacting the ability to use rooftop solar to offset the load

[1] http://docketpublic.energy.ca.gov/PublicDocuments/17-BSTD-01/TN221366_20171002T104342_Rooftop_Solar_PV_Stystem_Report.pdf
[2] PG&E will provide separate written comments on the Rooftop Solar PV System Report.
[3] http://docketpublic.energy.ca.gov/PublicDocuments/17-BSTD-01/TN221067_20170906T152635_Pacific_Gas__Electric_Comments_Pacific_Gas_and_Electric_Comment.pdf

of the entire structure. PG&E recommends that the CEC consider restricting the photovoltaic requirements to single family dwellings. Simply substituting "single family" for "low-rise" in applicable Draft Standards sections would accomplish this.

PG&E makes this recommendation for a number of reasons. Not all utilities in California have a tariff, such as PG&E's NEM2V tariff, that could be used to direct the output of a photovoltaic system first to the building's common area and then allocate the remaining electricity to individual units. Even with such a tariff, the landlord typically passes the cost of the photovoltaic (PV) installation to individual tenants through a financial instrument. There is no way for Title 24 to enforce such a financial arrangement or to enforce adoption of the NEM2V tariff by the landlord to the benefit of tenants. Furthermore, Title 24 cannot ensure that aggregation tariffs will continue throughout the anticipated life of the solar installation.

C. Rooftop Solar Exceptions Should be Clarified and Expanded

Regarding Exception 3 as proposed in the Draft[4], it is unclear whether the actual requirement must be at least 1.0 watt DC per square foot or whether that requirement only modifies the calculation of Equation 150.1-C which would then be compared to the solar-ready zone and the minimum installation based on that comparison. Clarifying language should be included.

Additionally, PG&E encourages the CEC to add an additional exception to the Photovoltaic Requirement that reads:

> *EXCEPTION 7: EDR calculations can include PV without actual installation of rooftop solar, provided the electric distribution company serving the new residence has a program or tariff that meets the same GHG emissions reduction benefits that rooftop solar meets as determined by the CEC Executive Director.*

This recommendation is a logical companion to Section 10-115, which enables Community or Shared Solar Systems to satisfy the onsite generation or storage requirement (see next section).

II. Community and Shared Solar Systems Are Appropriately Included in the Draft

PG&E appreciates the addition of Section 10-115 in the Draft Standards. This section is consistent with findings from the National Renewable Energy Laboratory (NREL) that only approximately one quarter of residential rooftops are suitable for hosting on-site PV systems after adjusting for structural, shading, and other constraints.[5] This leaves many customers

[4] Exception 3: "In all climate zones, for single family homes with three stories, the PV size shall be the smaller of a size that can be accommodated by the solar access requirements of the solar ready zone specified in Section 110.10 or a PV size required by the Equation 150.1-C. but no less than 1.0 Watt DC per square foot of conditioned floor area."

[5] NREL, Supply Curves for Rooftop Solar PV-Generated Electricity in the United States, https://www.nrel.gov/docs/fy09osti/44073.pdf, p. 4.

without the ability to install rooftop solar. Additionally, participation in a community or shared solar electric system can potentially offer advantages over rooftop solar including the ability to locate projects in more optimal locations to maximize solar output and economies of scale that result in a significantly lower cost per watt.

PG&E offers specific comments and edits on Section 10-115 to clarify the Draft Standards. Support for the inclusion of a Community Solar Option is based on the assumption that it would apply to a program such as the CPUC-approved Green Tariff Shared Renewables program.

- *Section Heading and throughout*: The term "Offset" should be replaced with "Fulfillment" to prevent confusion with other forms of environmental offsets.
    - Community Shared Solar Electric Generation System or Community Shared Battery Storage System ~~Offset~~ **Fulfillment** of Onsite Solar Electric Generation or Battery Storage Requirements

- *Section 10-115(a)5 "Additionality":* Taking into account the shared aspect of community shared solar or community shared battery storage systems, PG&E recommends removing the word "exclusively" to avoid confusion and instead focusing on the "non-double counting" aspect of the requirement.
    - ~~The community shared solar electric generation system and/or community shared battery storage system shall provide~~ The electrical energy generation benefits specified in Section 10-115(a)3 ~~exclusively to the dedicated building. Those energy savings benefits~~ shall in no way be attributed to other purposes, **double-counted, resold**, or transferred to other buildings or property.

- *Section 10-115(b) "Application for Commission Approval"*: PG&E proposes the following modifications to the section, as "administration" of such a system referenced here has a specific meaning and is typically undertaken by a utility, and clarification of the word "offset" as noted before:
    - Any entity may apply to the Commission for approval to ~~administer~~ **utilize** a community shared solar electric generation or community shared battery storage system to ~~offset~~ **substitute for** onsite solar electric generation system and/or battery storage system for showing compliance with Section 150.1(b)2 of Title 24, California Code of Regulations, Part 6.

III. STORAGE TECHNOLOGIES MUST MEET CERTAIN REQUIREMENTS TO BE INCLUDED IN THE CODE

PG&E appreciates the CEC looking forward to a future with increased adoption of storage technology. Specific comments are provided below in response to individual elements of Draft Standards Section JA11.2.3.

- **Section JA11.2.3.1:** In all cases of control strategies, interconnection requirements, as defined by Rule 21, such as smart inverter certification, must be included in the list of general requirements for battery storage for ZNE homes.

- **Section JA11.2.3.1:** In all cases of control strategies, customers in applicable utility regions should be on the latest time of use (TOU) tariffs that are aligned with grid requirements. It is essential that the storage system be programmed at the time of inspection to include an evening TOU peak period so that the battery has an economic incentive to discharge in that period to serve customer load which will help reduce system demand.

- **Section JA11.2.3.4**: PG&E supports the "Demand Response Control" option proposed in the Draft with complete or partial control of the battery system by the utility or third-party-aggregator via a demand response (DR) program so that the battery can be operated in a way that is beneficial to the system in addition to providing savings benefits for the individual customers.
    - In addition, PG&E recommends that CEC and other stakeholders jointly develop a technical specification for Battery Storage requirements similar to the Occupant Controlled Smart Thermostats for DR control as explained in the JA5 requirements document. [6] The different DR control requirements and specifications are outlined in the JA5 in a level of detail which should be used as a model when developing the DR control requirements for the battery storage.

- **Section JA11.2.3.3**: PG&E supports the "Advanced Control" option but recommends that it clearly requires the battery to be programmed and certified to respond to economic signals (i.e. retail rates).

- **Section JA11.2.3.2**: PG&E supports the requirement to charge only from excess on-site PV generation in the "Basic Control" option. This will help mitigate overgeneration issues from PV and maximize self-consumption of solar energy for the customer.
    - The option should clearly state that at the time of inspection the storage system must be programmed so that it cannot charge from the grid. If the storage can only charge from the renewable generator, then the combination is considered a single renewable facility under the Renewable Portfolio Standard (RPS) guidelines. In

[6] http://www.energy.ca.gov/title24/equipment_cert/ocst/Reference_Appendix_JA5.pdf

addition, additional cost savings can be realized in a solar PV plus storage integrated, DC-coupled system[7].

- The option should be defined such that storage is required to discharge during system peak hours – typically evening hours – to serve on-site load instead of "when the photovoltaic system production is less than the on-site electrical load" as currently proposed. The latter definition will mean that the storage discharge may vary based on each customer's load and not ensure discharge in the evening hours when the benefits can be maximized for the system as well as the customer.

- **Section JA11.2.3.1:** PG&E recommends that battery storage systems for residential customers should not be designed to primarily serve as back-up systems. The utilization rates of storage systems only serving as back-up tends to be very low, as shown in the latest Self Generation Incentive Program (SGIP) evaluation report.[8] Low utilization rates are also correlated with low round-trip efficiency. The utilization should be maximized to serve both the customer by enhancing PV self-consumption (shifting excess PV generation to the evening) and reducing evening peak demand on the grid by shaving local peaks and potentially providing distribution services when applicable.
  - At a minimum, the current SGIP program requirement for residential storage systems to discharge a minimum of 52 full discharges a year should be included in the system programming requirements.[9]
  - Storage systems be required to be at least partially controllable (with the split based on time of year or capacity) by third-party aggregators or the utility to enhance their utilization.

- **Section JA11.2.3.1 (a):** PG&E recommends that for the upcoming 2019 Standards update, the storage system and the inverter should be programmed and certified at the time of inspection to be non-exporting at the time of inspection to minimize grid impacts. The existing distribution system was designed for radial flow and not reverse flow. Reverse flow from batteries may cause problems with existing protection and control equipment and high voltage issues to neighboring customers. Therefore, exporting batteries will require additional evaluation to ensure no adverse impacts to other customers during interconnection which may complicate and delay the approval process. Non-exporting storage inverters may be permitted with a streamlined review process.

[7] NREL, Evaluating the Technical and Economic Performance of PV Plus Storage Power Plants, https://www.nrel.gov/docs/fy17osti/68737.pdf
[8] 2016 SGIP ADVANCED ENERGY STORAGE IMPACT EVALUATION, http://www.cpuc.ca.gov/sgip/, August 31, 2017. Pg. 1-24
[9] *Ibid.* Pg. 40

Finally, it should be noted that there are also existing California Public Utilities Commission requirements that disallow battery export for NEM-paired storage projects.

VII. Conclusion

PG&E appreciates this opportunity to comment on the Draft 2019 Building Energy Efficiency Standards and looks forward to continued participation in this process.

Sincerely,

/s/

Wm. Spencer Olinek