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Pacific Gas and Electric Comments on August 22 Title 24 Workshop

Additional submitted attachment is included below.

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DOCKET 17-BSTD-01**California Energy Commission
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1516 Ninth Street
Sacramento, CA 95814-5512

Re: Docket 17-BSTD-01: Pacific Gas and Electric Comments on the August 22, 2017 Workshop on Residential Solar Photovoltaic, Storage, the Energy Design Rating and Grid Integration Impacts for the 2019 Building Energy Efficiency Standards

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide comments on the August 22, 2017 Workshop on 2019 Building Energy Efficiency Standards (Title 24, Part 6) hosted by the California Energy Commission (CEC).

PG&E supports the efforts of the CEC to develop the 2019 Building Energy Efficiency Standards (Standards) and broadly supports the materials presented by Staff at the workshop, with exceptions noted in comments below. PG&E also encourages further, detailed evaluation of the recommendations and their potential impacts to all California energy customers. PG&E appreciates the California Public Utilities Commission (CPUC) participation in the workshop, and the subsequent inclusion of its integration cost report. PG&E supports continued CEC coordination with the CPUC to better address cross-jurisdictional issues critical to the discussion of whether rooftop solar should be mandated in the 2019 Standards.

Key points in response to the day's discussion include:

- The loading order should determine the priority of resources used to satisfy the Standards;
- The costs and benefits of rooftop solar need to be fully considered;
- The potential impacts of storage to all customers requires further evaluation;
- Photovoltaic Compliance Credit and Energy Storage Sizing needs to avoid oversizing;
- Grid Integration Costs should continue to be evaluated; and,
- Impacts on customer rates should be considered in evaluating community solar options.

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

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I. The Loading Order Should Determine Resource Priority

PG&E supports the CEC's continued commitment to the loading order through the proposed requirement that 2019 Title 24, Part 6 projects meet energy efficiency thresholds prior to obtaining beneficial credits for including photovoltaic (PV) system generation. This is in keeping with the importance of placing cost-effective energy efficiency strategies first. Setting separate energy efficiency and generation targets is consistent with the California's loading order, ensuring cost-effective energy efficiency measures are installed prior to implementing other resources. Requiring projects to meet a specified level of efficiency will ensure that the Standards do not encourage larger and less cost-effective self-generation projects that may unnecessarily impose costly impacts on the grid. Due to the intermittency of solar generation and its potential for back feeding to the grid, PV systems create grid harmonization challenges that energy efficiency does not.

II. Rooftop Solar Benefits and Costs Should be Considered Fully

PG&E appreciates CEC Staff's acknowledgement at the Workshop that there are unresolved issues associated with rooftop solar being installed at every new home. PG&E understands and supports a commitment to including rooftop solar in the 2019 Standards to the extent possible. However, PG&E urges the CEC to consider, in addition to the five exceptions already under consideration, a sixth exception to the requirement to install on-site generation – where a new homeowner can participate in a green tariff or community solar program to substitute for the attributes of onsite PV (described more fully in the section on Community Solar below).

It is important to note that the benefit-cost study relating to rooftop solar has not been released by the CEC yet. Without the opportunity to review the full analysis and assumptions from the benefit-cost study, it is difficult to address the proposal's strengths or weaknesses and policies should not be implemented absent a full review of this study. Key issues that would significantly influence the benefit-cost analysis include:

- Changes to the current NEM mechanism's export compensation for surplus generation will require evaluation of a broader range of future costs and benefits.
- The persistent references during the workshop to net surplus compensation indicates that the PV systems being modeled might be oversized relative to the customer's annual energy usage. This, in turn, could indicate that the installation would not qualify for NEM, which requires sizing to annual electrical load. Sizing PV to displace natural gas time dependent value (TDV) is problematic.
- Various alternative rate designs, including demand charges, higher fixed charges, and grid access charges, could impact the value of rooftop solar for customers and should be evaluated.
- It is not clear how GHG emissions were treated in the benefit-cost analysis. The CEC is committed to GHG emissions reduction and an optimal evaluation of rooftop solar would

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include an analysis of the impacts of rooftop solar on GHG emission reduction. PG&E notes that the marginal generation being offset by rooftop solar might very well be other solar, therefore not resulting in any further GHG emissions reductions. Conversely, the GHG intensity of resources firming up solar resources (or providing generation when the sun is not shining) should also be considered.

We look forward to the opportunity to provide further comments when the Study is released.

III. The Potential Impacts of Storage Must Be Further Evaluated

PG&E agrees that storage will play an important role in achieving California's Zero Net Energy policy objectives and supports the CEC's inclusion of it as an option in the 2019 Title 24 Standards. However, behind-the-meter (BTM) storage does not necessarily aid in reducing greenhouse gas (GHG) emissions. Storage dispatch that may be beneficial to customers to reduce their bills may not be beneficial to the overall system. A CPUC evaluation of customer storage that received rebates from the Self Generation Incentive Program (SGIP) found that under current observed operating characteristics (timing of charge vs. discharge driven by economic signals and round-trip efficiency), BTM storage actually increased GHG emissions.¹ The second measurement and evaluation report that included GHG emissions analysis is due for release this month. PG&E urges the CEC to consider the results and recommendations of the two reports as it considers how to best incorporate storage and its operational requirements into building standards.

Further, many of the stackable benefits of storage will not be realized until the California Independent System Operator (CAISO) and/or the CPUC develop programs or tariffs to compensate use of storage for multiple applications (for example, customer rate benefits as well as CAISO market participation). PG&E notes in Staff's presentation the statement "the battery enables the increased PV capacity to be used by the utility."² To date, there are no programs that would allow a utility to actively make use of BTM storage or PV. The value of distribution services that technologies like storage can offer varies widely based on location-specific characteristics. The assumption that all storage installations are of high value to the utility may be premature.

IV. Photovoltaic Compliance Credit and Energy Storage Sizing Benefits should be Limited

PG&E supports limiting the benefits of the PV compliance credit to systems that meet, but do not exceed, the estimated annual electricity usage of the building after all cost-effective energy

¹ *Final Report: 2014-2015 SGIP Impacts Evaluation*; prepared for the CPUC by Itron, November 4, 2016.

² <http://docketpublic.energy.ca.gov/PublicDocuments/17-BSTD->

01/TN220876_20170824T105443_82217_ZNE_Strategy_Presentation.pdf, Slide 28

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efficiency measures are implemented, and also allowing projects to downsize the PV system when battery storage or other Grid Harmonization Strategies (GHS) are included in the system. Allowing significant over-sizing with a 1.6 multiplier of PV systems may inadvertently encourage violation of NEM regulations. Without being able to participate in utility tariff structures bound by these specific rules, the benefit-to-cost ratio for the generation and storage system may be jeopardized. Meanwhile, the value of storage is necessarily uncertain.

Additionally, the explanation of what features battery storage will need to demonstrate to qualify as “advanced control” is still evolving, creating the potential for misunderstanding or misuse of the proposed credit. As the role of storage increases in the Standards, the CEC must provide ample documentation to support the classification of “advanced control” and include stakeholders in the continued development of this definition.

Further, PG&E recommends that the Standards or supporting documentation direct builders and contractors to disclose to customers that use of the system to discharge electricity into the grid may be subject to rules set forth by state regulatory agencies. How the storage systems will be used over the lifetime of the technology will largely be determined by the customer. Guidance that directs contractors and builders to work closely with the CPUC and utilities to ensure that access to accurate information is provided to the customer is essential. If the customer will need to enroll in a utility program, or take service under a particular rate, to realize the benefits of an advanced storage system, this information must be disclosed to the customer in advance of a commitment to install the system.

V. Grid Integration Costs Should Continue to be Evaluated

PG&E appreciates the insightful and extremely informative analysis completed in the DNV GL study. There are two points that deserve mention, however. First, the report conflates “grid integration” with “grid interconnection”. The latter is what the report analyzed, and it comprises all of the costs that are incurred at the time PV is installed. However, the report did not study costs that are incurred over time, such as flexible resources required to firm and shape the PV generation and grid upgrades required to correct for voltage issues that crop up after interconnection.

Secondly, PG&E also recognizes that when new homes are located at the end of a circuit, the high cost case is much more likely. The CEC should consider further research to determine what circuit location is most likely for new homes to further inform this work.

Additionally, the proposed PV-oversizing factor may be too generous, even when coupled with an energy storage system. While we understand the concept of providing additional generation capacity beyond what is needed to support the typical needs of the dwelling so that excess generation may be stored for peak use, PG&E feels that this recommended factor may be too high. PG&E looks forward to reviewing the detailed cost effectiveness support for the 1.6 multiplication factor in order to provide more substantive comments.

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VI. Community Solar

PG&E applauds the CEC for looking at alternative compliance options, especially for buildings where onsite renewables aren't feasible. In addition to the attributes evaluated, another important attribute that should be considered is the impact that any proposal would have on customer energy bills. For example, under virtual net energy metering (VNEM), participating customers receive bill credits that are far in excess of the costs that the utility actually avoids. A benefit to a subset of California residents' homes should not create an outsized burden for the rest of the state's energy customers.

PG&E provides an alternative view of how the Green Tariff Shared Renewables (GTSR) programs address the attributes compared in Staff's presentation³:

- **Additional** – This is a key benefit of the GTSR programs, in that incremental new solar PV is built as a direct result of customer participation. PG&E agrees that green is the correct designation.
- **Dedicated** – An “enrollment” in the GTSR program takes place at the meter level through the designation of particular “service agreement IDs” and therefore is very much dedicated to a specific home. However, PG&E does acknowledge that the service agreement ID involves an agreement with the individual party responsible for the utility bill. While this may not be an exact match with what would be desired for these building standards, PG&E believes that alternatives could be considered. Yellow is the correct designation for this attribute.
- **Durable** – CPUC Decision D.16-05-006 requires that customers be allowed to subscribe to the GTSR program for up to 20 years. Put another way, the GTSR program will be a durable option for any participating home for a period of up to 20 years. Green is the correct designation for this attribute.
- **Temporal** – The value of the solar power serving the GTSR program includes accommodation for the time-of-delivery attributes of that generation, in relation to the average load profile of participating customers. Green is the correct designation for this attribute.
- **Quantifiable** – The amount of solar kWh consumed by any single home under the GTSR program is 100% verifiable through the utility energy statement, which clearly delineates the amount of kWh consumed under the program. Green is the correct designation for this attribute.

³ http://docketpublic.energy.ca.gov/PublicDocuments/17-BSTD-01/TN220861_20170823T094322_82217_Community_Solar_Presentation.pdf

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- **Verifiable** – For the reasons mentioned above, green is the correct designation for this attribute.
- **Benefit to homes** – If this refers to a *financial* benefit to the homes; PG&E agrees that – today – the GTSR program is associated with a slight additional cost. This is due to the fact that the participant is appropriately covering the costs of the new solar. Thus, PG&E believes that yellow/red would be the correct designation. Furthermore, it is possible that participation in the program would involve a net discount or credit at some point in the future. In that scenario, green would be the correct designation due to the energy bill credits offsetting compliance costs.
- **Enforceable** – The building department can easily determine that a home is served by 100% solar power through the utility energy statement which shows participation in the GTSR programs. Green is the correct designation for this attribute.
- **Administratively Feasible** – The GTSR program is a live, working program, approved by the CPUC. While the program currently has some attributes that may not align perfectly with the desired attributes for these alternative options, PG&E believes that with CPUC approval, certain adjustments could be made. For this reason, PG&E believes that the correct designation for this attribute is yellow.

Proposed additional attribute:

- **Impact on customer rates** – the GTSR program does not impact non-participating customers. All costs associated with the program are borne by participants. In this way, the program creates no negative impact to utility customer rates. The correct designation for this attribute is green.

As discussed above, PG&E urges the CEC to add an option for Community Solar as “Exception 6” to the mandatory installation of rooftop solar for new homes, provided the electric distribution company serving the new home(s) has an available tariff or program that meets the attributes above. For example:

EXCEPTION 6: 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 attributes that rooftop solar meets.

PG&E understands that the CEC may require additional assurances that the new homeowner will participate in the program or tariff. For example, if the builder pre-pays the Green Tariff premium for 20 years for the level of participation (annual kWh) included in the EDR calculation, and this structure of program participation is approved by the CPUC, this is one way that the CEC will have assured dedication and durability.

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VII. Conclusion

PG&E appreciates this opportunity to comment on the August 22, 2017 2019 Building Energy Efficiency Standards workshop and looks forward to continued participation in this process.

Sincerely,

/s/

Wm. Spencer Olinek