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*Comment Received From: Valerie Winn*  
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**Pacific Gas and Electric\_Renewable Integration**

*Additional submitted attachment is included below.*

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DOCKET 18-IEPR-06**

California Energy Commission  
Dockets Office, MS-4  
Docket No. 18-IEPR-06  
1516 Ninth Street  
Sacramento, CA 95814-5512

Re: Docket 18-IEPR-06: Pacific Gas and Electric Company Comments on the 2018 Integrated Energy Policy Report Commissioner Workshop on Renewable Integration

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide comments on the 2018 Integrated Energy Policy Report (IEPR) Commissioner Workshop on Renewable Integration. PG&E appreciates the California Energy Commission's (CEC) focused efforts on understanding and addressing current and long-term renewable integration issues. The workshop discussion was instructive on the current and future challenges of integrating renewable resources and informative on potential integration solutions. Finally, the workshop raised the over-arching issue of the need to improve implementation of integration solutions. PG&E provides the following comments and recommendations on this topic.

**A. Overview of Current Operational Issues**

Clyde Loutan's "Renewable Integration Update" clearly shows that the renewable integration challenges are here and ahead of schedule. The variability within the evening ramp period and the California Independent System Operator's (CAISO)'s reliance on the transmission ties during periods of high renewable penetration revealed significant system stress and potential reliability risk. This highlights the need for more investigative studies to be performed during these periods given the anticipated increase in renewables.

PG&E encourages more investigation into the benefits of expanding markets and centralizing the capability and value of the Western Interconnect to transport variable renewable resources, transport ancillary services and ramping capabilities across major transmission interfaces.

**B. Potential long-run need for renewables and their integration**

*On E3 Pathways:* gives useful high-level insights into the challenges to meet California policy goals.

PG&E encourages more investigation into the feasibility of meeting year-round energy needs when depending on renewable energy out in 2050. New planning criteria and metrics must be developed to ensure reliable system operations. Specifically, PG&E encourages further study to determine how a highly renewable system relying on large volumes of intermittent generation can maintain reliability under different weather conditions. Loss of load probability across multiple weather years should be studied to ensure that the modeled system has sufficient resources available for reliability in a cloudy winter week with low solar output or a period of low wind output. Long duration storage may help to address resource sufficiency challenges in a high renewables future. An additional investigation of the benefits/costs of policy reforms that would enable for effective reduction of greenhouse gas emissions from a WECC and/or global perspective should be performed.

### **C. Regional Overview**

*Gas-electric coordination:* PG&E supports the CAISO on studying the use of the PDCI and coordination with BPA to assist in managing Aliso Canyon storage and Southern California pipeline constraints. Regional planning and coordination across the Western Interconnect can provide increased operational efficiency and reliability.

### **D. Integrating Solar, Flexible Loads and Resource Updates and Electric System Flexibility**

The workshop presentation showed there are a tremendous number of potential integration solutions that have been developed or are rapidly evolving.

*Distributed Resource Framework:* In response to the presentation and remarks made by the California Efficiency and Demand Management Council, demand response (DR) stakeholders are currently in the process of developing the “New DR” framework which will be called more frequently over potentially shorter intervals and smaller geographic footprints, with the focus primarily on addressing issues related to integration of renewable generation (both utility scale and distributed).

*Bulk Electric System (BES) and Distribution system interface:* This potential solution was not discussed in any depth at the workshop. PG&E encourages more study/planning efforts to address the frontier of the interface between the bulk electric system and the distribution system for renewable integration. For example, there is a growing need to have reliability requirements/contributions for inverter-based resources on both the bulk system and distribution system, which will become increasingly important as we progress to a low-carbon future.

### **E. Recommendations**

*Holistic Planning Approach:* PG&E encourages a holistic approach to addressing integration issues and consideration of many options and trade offs, (e.g., the use of storage vs. centralized dispatch/interchange vs. curtailment to address oversupply during net minimum load conditions). The CAISO highlighted the increasing use of the inertias during high evening ramps.

There is a need for strong coordination between the California Public Utilities Commission's (CPUC) Long-Term Procurement Plan/Integrated Resource Plan, the CAISO Transmission Planning Process, and investor-owned utilities' distribution system planning. Finally, PG&E encourages alignment of the CEC's IEPR forecasts that inform these planning processes. PG&E supports that inverter based resources provide grid support on both the BES and distribution systems.

*Implementation Opportunities:* Chair Weisenmiller asked for ideas on how implementation of demand management and other integration solutions could be faster and more effective. PG&E agrees that:

- The first order of business in supporting greater renewables integration through demand management is to build the inventory of flexible load resources which include all of the following initiatives:
  - Increased deployments of battery energy storage devices
  - Building shell improvements for existing and new buildings to reduce energy waste and increase available thermal energy storage
  - Transportation electrification
  - Aligning building codes and appliance standards with the goal of greater renewables integration
  
- The next step is activating those resources through either retail pricing that is aligned with the overarching goal of renewables integration or through market-based mechanisms like demand response which include all of the following initiatives:
  - Residential time-of-use (TOU) rate transition
  - Development of new models of demand response focused on renewables integration
  - Development of smart inverters standards and communication protocols
  - Development of more sophisticated DER management systems

Additional areas of inquiry could include evaluating the need for storage with longer duration profiles, sending different pricing signals for new photovoltaic (PV) additions to the system, including net energy metering, and expanding electric vehicle (EV) aggregation and charging frameworks to leverage EVs as a grid resource.

PG&E appreciates this opportunity to comment and looks forward to continued participation in this IEPR process.

Sincerely,

/s/

Valerie J. Winn