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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Microgrids Pursuant to Senate Bill 1339	Rulemaking 19-09-009 (Filed September 12, 2019)

OPENING COMMENTS OF PACIFIC GAS AND ELECTRIC COMPANY (U 39 E) ON ORDER INSTITUTING RULEMAKING

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Pursuant to the schedule set forth in the *Order Instituting Rulemaking Regarding Microgrids Pursuant to Senate Bill 1339*, issued by the California Public Utilities Commission ("CPUC" or the "Commission") on September 12, 2019 ("Order"), Pacific Gas and Electric Company ("PG&E") respectfully submits these opening comments. PG&E appreciates the opportunity to provide comments and is supportive of the Commission's efforts to ensure the safe and reliable delivery of clean and affordable energy to all customers.

I. INTRODUCTION AND SUMMARY.

PG&E supports the preliminary scope, schedule, and categorization of this Rulemaking and believes it will be effective in allowing the Commission, in conjunction with the California Energy Commission ("CEC") and the California Independent System Operator ("CAISO"), to address the legislative requirements of Senate Bill ("SB") 1339.[1/] In particular, PG&E supports the consideration of microgrids as an important component to address the broader need for electric system resiliency.

PG&E recommends that the Commission identify categories of microgrids, as discussed below in Section 2, and use this categorization to identify, prioritize, and evaluate topics within this Rulemaking.

PG&E recommends prioritizing the following two issues, identified in the preliminary scope, for the initial phase of this proceeding:

- *Issue 2. Develop methods to reduce barriers for microgrid deployment, without shifting costs between ratepayers, pursuant to Section 8371(b).*

1/ Stats. 2018, Ch. 566.

- *Issue 4. Develop separate rates and tariffs, that are just and reasonable, to support microgrids pursuant to Section 8371(d).*

II. THE COMMISSION SHOULD IDENTIFY RELEVANT CATEGORIES OF MICROGRIDS IN ORDER TO HELP IT ANALYZE THE ISSUES WITHIN THE SCOPE OF THE PROCEEDING.

SB 1339 defines a microgrid as:

> [A]n interconnected system of loads and energy resources including, but not limited to, distributed energy resources, energy storage, demand response tools, or other management, forecasting, and analytical tools, appropriately sized to meet customer needs, within a clearly defined electrical boundary that can act as a single, controllable entity, and can connect to, disconnect from, or run in parallel with, larger portions of the electrical grid, or can be managed and isolated to withstand larger disturbances and maintain electrical supply to connected critical infrastructure.[2/]

PG&E has long been a supporter of microgrids. Historically, these microgrids have been installed by individual customers located behind a single meter. Many campuses, military bases, hospitals, and industrial customers have used microgrid configurations successfully for decades to manage loads and resources and provide back-up power in the event of a grid outage. In PG&E's service territory, the recent growth of distributed energy resources ("DERs"), such as smaller-scale renewable energy systems, storage, and demand response, has created new opportunity and use cases for microgrids incorporating DERs to provide island[3/] capability to customers. As DER deployment within PG&E's service area vastly exceeds that of virtually any other utility in the country,[4/] PG&E expects to increasingly see DER-centered microgrids play a role in customers' energy plans. Finally, recent events highlight the need to consider the context in which microgrids might facilitate the support of critical community services during natural disasters or other significant service disruptions that might impact the electric grid as noted in the Order (including wildfires, floods, earthquakes, extreme weather, or cyber-attacks).

2/ Cal. Pub. Util. Code § 8370(d).

3/ The term "island" in these comments refers to the operation of a part of the grid when it is electrically disconnected from the remainder of the grid. The smaller, disconnected part of the grid is said to be "islanded" or operating as an "island."

4/ PG&E interconnected over 1.7 gigawatts ("GW") of DERs to PG&E's distribution grid between January 1, 2017 and July 31, 2019 (based on nameplate of exporting, inverter-based capacity).

PG&E proposes that microgrids be organized initially into three distinct categories: (1) single-customer projects; (2) multiple-customer projects addressing a specific community's objectives; and (3) multiple-customer projects addressing broader wildfire risk reduction and system cost reduction opportunities. Each category has unique elements and issues to be identified and resolved. Some of these issues should be addressed in this proceeding, as discussed below; others are outside the scope of this Rulemaking but appropriate for other proceedings.[5/] While most of the experience and associated projects in PG&E's service area fall into the first category, PG&E is also actively engaged in pursuing opportunities in the second and third categories. PG&E also recognizes that this is a quickly evolving area. These categories may change and new categories may be added as new types of resiliency and reliability solutions are innovated over time. PG&E welcomes that evolution and looks forward to incorporating those additional solutions as they develop.

A. Single-Customer Microgrids

Single customer, grid-connected, behind-the-meter microgrids are prevalent in PG&E's service territory. These are predominantly installed by individual customers who desire to utilize their on-site generation resources to keep some or all of their loads energized while the wider grid is experiencing an outage. These microgrids typically consist of onsite distributed generation (*e.g.*, photovoltaic ("PV"), diesel, fuel cell), battery energy storage, and a local controller and are able to isolate from the grid in order to ensure that energy does not flow onto the grid during an outage causing risk of injury. By design, these systems vary both in their ability to serve all of the customer's energy demand or only critical equipment and in the

5/ Some configurations that may generally be called "microgrids" are outside of the definition of a microgrid adopted by SB 1339 and so should not be within the scope of this implementation proceeding. For example, a community-based distribution system owned by a third party performing transactive energy services (sometimes known as a virtual power plant) that is not capable of "disconnect[ing] from . . . larger portions of the electrical grid" is outside the scope of SB 1339 implementation. Cal. Pub. Util. Code § 8370(d).

duration that the load can be served. The primary function of the electric utility in these microgrids is to ensure that they can be interconnected to the electric grid safely via Rule 21.

Examples of systems in this type of microgrid include:

- Battery-backed residential solar PV installations that can island and serve critical loads for a period of time;
- Hospitals, fire stations, and other critical facilities with backup generation; and
- Corporate or university campus microgrids.

PG&E is supportive of such customer-side microgrids and has interconnected them for decades. Recently, PG&E has supported emerging demonstrations of single-customer facility microgrids with significant use of renewable resources. For example, PG&E participated in the Humboldt State University Sponsored Programs Foundation/Schatz Energy Research Center's (HSUSPF/SERC's) proposal, "Demonstrating a Secure, Reliable, Low-carbon Community Microgrid at the Blue Lake Rancheria."[6/] This project provides reliable power to critical facilities during times of public emergency and demonstrates the viability of a microgrid with a high penetration of renewable energy integrated with energy storage and existing diesel back-up generation.

Given the long history of single-customer microgrids, PG&E's perspective is that this Rulemaking need not prioritize this type of microgrid, which is covered by existing policies, procedures, and rules.

B. Multiple-Customer Microgrids Addressing Community-Level Objectives

PG&E recognizes that there is growing customer and community interest in deploying microgrids that enable multiple customers to serve some or all of their energy demand during a grid outage by utilizing behind-the-meter and/or community-scale DERs. Community-based

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6/ The Blue Lake Rancheria (BLR) microgrid was awarded funding under the Electric Program Investment Charge (EPIC) Program grant solicitation PON-14-301.

resiliency embodies a number of principles that are fundamental to PG&E's mission, including efficient resource utilization, public safety, and the ability to respond in states of emergency.

For example, PG&E is working with several community stakeholders in the Humboldt area to develop a first-of-its-kind multi-customer microgrid powered by 100 percent renewable energy.[7/] Composed of a third-party-owned 2.3 MW PV array covering 9 acres and an 8 megawatt-hour ("MWh") battery storage system, the microgrid will support 18 electric customers, including the Humboldt County Airport and the U.S. Coast Guard Air Station connected to a PG&E 12 kilovolt ("kV") circuit. This PG&E-owned circuit will be capable of disconnecting from the larger electric grid and operating independently during an outage on the broader grid.[8/] Humboldt project will also serve as a test bed to develop policies, tariff structures, and operating procedures necessary to integrate multiple-customer microgrids into California's electric grid. In particular, the project will provide an opportunity to examine how to best allocate the incremental costs and benefits associated with the hardware and software needed to enable occasional stand-alone operation for a line segment serving multiple customers. This will be achieved through a new tariff that PG&E is intending to introduce in conjunction with and as part of this proceeding.

PG&E recommends that microgrids in this category be the primary focus of this proceeding.

7/ This project is supported by CEC EPIC grant EPC-17-055 and PG&E EPIC project 3.11.

8/ The Humboldt County Airport serves 50,000 takeoffs and landings a year and 140,000 customers, including commercial, private, and emergency medical flights. The Coast Guard Air Station Humboldt Bay provides search and rescue for 250 miles of rugged rural coastline, from the Mendocino-Sonoma County line to the California-Oregon border. Since roads into and out of Humboldt County are often closed by fires and slides, energy stability at the Humboldt County Airport is especially crucial. As extreme weather events and fires continue to cause regional outages, the ability to maintain independent power generation is a key to local resiliency.

C. Multiple-Customer Microgrids Addressing Broader Wildfire Risk Reduction and System Cost Reduction Opportunities

Utilities in the United States and other countries are increasingly evaluating and deploying microgrids as a viable part of their distribution grid infrastructure to meet reliability, resiliency, and risk reduction objectives. PG&E anticipates increasing incorporation of microgrid configurations into California's distribution architecture in light of changing California climate conditions, Public Safety Power Shutoffs ("PSPS"), and wildfire risk reduction imperatives. PG&E has identified two emerging options in this category: resilience zones and remote grids, both of which may be designed to mitigate the risks of power shut offs and wildfire ignition. While these configurations may generally be called "microgrids," they may fall outside of the definition of a microgrid adopted by SB 1339 and, therefore, should not be within the scope of this implementation proceeding. The following descriptions of these project types are meant to provide the broader context for this Rulemaking by identifying potential utility investments outside of this proceeding to address similar resiliency and cost reduction objectives.

1. Temporary Microgrids - Resilience Zones

Resilience Zones are temporary and flexible microgrid solutions. They involve installing pre-engineered interconnection hubs (i.e., pad-mounted transformers) in designated areas where, after performing certain electrical infrastructure hardening activities, PG&E can safely provide electricity to central community resources by rapidly isolating them from the wider grid using sectionalizing devices (such as line reclosers, switches, and fuses) and re-energizing those resources using temporary mobile generation that can be brought in expeditiously during a public safety outage. Due to the transient nature of wind events, the use of temporary generation greatly increases the effectiveness of providing enhanced resiliency across multiple locations for planned events such as PSPS.

Additional information regarding Resilience Zones can be found in PG&E's Wildfire Mitigation Plan filed in R.18-10-007 and PG&E's 2020 General Rate Case.[9/]

2. Permanently-Islanded Grid Configurations

Permanently-islanded grid configurations, also called remote grids, are defined as stand-alone isolated grids that are permanently islanded from the main electrical grid. While relatively rare in California in the past, remote grids may become an option to eliminate fire ignition risk by removing overhead lines in lieu of distributed generation and storage resources for long-line, low-load distribution configurations. These may also become more prevalent as the costs of solar, storage, and controls continue to sink; and the performance of controllers (e.g., smart inverters) continue to improve to provide safe and reliable service. PG&E views remote grids as a promising option to consider in the broader context of wildfire risk reduction and is actively examining the technology as a system hardening and alternative technology in its Wildfire Mitigation Plan.

III. THE COMMISSION SHOULD CONSIDER ADOPTING GUIDING PRINCIPLES FOR THIS RULEMAKING.

As part of scoping this proceeding, PG&E recommends that the Commission establish principles to guide the work of stakeholders and the Commission on these important and complex issues. In this section, PG&E offers two such principles for consideration.

A. Public and Employee Safety is Paramount

The first and most important goal of any policies, tariffs, or rules that might be adopted in this or other related proceedings is to ensure that microgrids do not diminish overall electric system safety. This includes focusing on both public and employee safety.

Investor-owned utilities have extensive experience and responsibility to ensure that their electric facilities adhere to state and local safety requirements. It is important to ensure that microgrids that serve more than one customer are the responsibility of the electric system owner,

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9/ *See* A.18-12-009, Exhibit 4, Chapter 9.

planner, and operator who can ensure that all appropriate safety considerations are integral to the design and ongoing operation of the microgrid. This also ensures that the microgrid is subject to the proper regulatory oversite by the appropriate local, state, and federal agencies.

Furthermore, any contemplated changes to Generation Interconnection Rule 21 or Wholesale Distribution Tariff (WDT) interconnection requirements for single-customer microgrids should not introduce any safety risk for customers or employees. For example, microgrids intending to operate during high fire threat conditions that trigger a PSPS must not introduce additional fire ignition risk.

B. No Cost Shifting Between Customers

SB 1339 requires that in developing methods to reduce barriers for microgrid deployment, the Commission must ensure that there is no "shifting costs between ratepayers."[10/] PG&E strongly supports prioritizing this issue among those identified in the preliminary scope of issues in this Rulemaking. The dual focus of this proceeding should be facilitating the development of microgrids, as defined by SB 1339, while simultaneously ensuring that the costs associated with those microgrids are fairly recovered from those benefitting from the microgrid and not from non-benefitting customers.

IV. RESPONSES TO PRELIMINARY SCOPING MEMO ISSUES

PG&E responds briefly in this section to each of the preliminary issues identified in the Order as being within the scope of this proceeding.

> *Issue 1: Develop microgrid service standards necessary to meet state and local permitting requirements, pursuant to Section 8371(a).*

PG&E supports including this issue in the proceeding. However, PG&E requests clarification on the service standards that the Commission is referring to and their applicability to microgrids.

10/ Cal. Pub. Util. Code §8371(b).

Issue 2. Develop methods to reduce barriers for microgrid deployment, without shifting costs between ratepayers, pursuant to Section 8371(b).

PG&E agrees this issue should be in scope of this Rulemaking and recommends it be prioritized. PG&E believes that development of a new tariff (or tariffs) would facilitate the deployment of multiple-customer microgrids designed to meet a specific community's objectives, such as the Humboldt example discussed above. Such tariff(s) would clarify the process, roles, and obligations of the utility and the microgrid proponents.

Issue 3. Develop guidelines to determine what impact studies are necessary for microgrids to connect to the electrical corporation grid, pursuant to Section 8371(c).

PG&E supports the need to provide process clarity for distribution customers to inform what impact studies are necessary for microgrids to connect to the electric grid. However, the impact studies necessary for interconnection of single-customer microgrids, and to study the related impacts to the electric grid, are already well developed. PG&E recommends that technical discussions and new use cases, if any, related to microgrid interconnection be kept in, or added as new issues to, the Rule 21 rulemaking,[11/] where the relevant technical stakeholders have already been participating.

Issue 4. Develop separate rates and tariffs, that are just and reasonable, to support microgrids pursuant to Section 8371(d).

PG&E agrees this issue should be within the scope of the proceeding and that it be a priority issue. Many existing rates and tariffs have supported the development of single-customer microgrids, and PG&E does not recommend this Rulemaking entertain modifications to those existing structures. Instead, PG&E recommends a focus on any new tariffs that would facilitate deployment of multi-customer microgrids driven by specific community objectives, subject to the cost-shifting limitations noted in Issue 2.

Issue 4.i. Ensure that the separate rates and tariffs shall not compensate a customer for the use of diesel backup or natural gas generation, except as either of those sources is

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11/ *See generally* R.17-07-007.

used pursuant to Section 41514.1 of the Health and Safety Code, or except for natural gas generation that is a distributed energy resource, pursuant to Section 8371(d).

PG&E agrees that this issue should be in scope in the development of new tariffs to support multi-customer microgrids. PG&E does not think revisiting existing rates and tariffs that have historically supported single-customer microgrids need be in scope for this Rulemaking.

Issue 4.ii. Ensure that the development of microgrids ensures system, public, and worker safety, pursuant to Section 8371(d).

PG&E agrees that safety is a critical issue that should be within the scope of this proceeding as it relates to new types of microgrids. PG&E recommends that technical discussions related to microgrid interconnection be kept in, or added as new issues to be addressed in, the Generation Interconnection Rule 21 rulemaking (R.17-07-007), where the relevant technical stakeholders have been participating.

Issue 5. Facilitate the formation of a working group to codify standards and protocols needed to meet California electrical corporation and CAISO microgrid requirements, pursuant to Section 8371(e).

PG&E supports inclusion of this issue in the scope of this proceeding so long as it is not redundant with ongoing work related to the interconnection standards and protocols for microgrids being addressed in the context of proceedings reviewing the existing Rule 21 and Wholesale Distribution Tariff ("WDT"). To the extent additional standards and protocols are identified as needed, PG&E supports the formation of a technical working group to develop them.

Issue 6. Develop a standard for direct current metering in Electric Rule 21 to streamline the interconnection process and lower interconnection costs for direct current microgrid applications, pursuant to Section 8371(f), including net energy metering paired with storage systems and microgrids.

While PG&E agrees that SB 1339 requires the Commission to develop this standard by December 1, 2020, PG&E notes that direct current ("DC") metering for microgrids has already

been included within the scope of issues in the Generation Interconnection Rule 21 rulemaking[12/] and that a process for addressing this standard was already adopted by the Commission in that proceeding.[13/] Any work on this issue in this proceeding should be closely coordinated with the ongoing work in the Rule 21 rulemaking.

> *Issue 7. Ensure that the actions taken by the Commission to fulfill the requirements of SB 1339 do not discourage or prohibit the development or ownership of a microgrid by an electrical corporation, pursuant to Section 8371.5.*

PG&E supports inclusion of this issue in the proceeding. Electrical corporations have the responsibility for prioritizing the safe, reliable, and optimal operation of the energy grid for their customers. They also ensure system planning and visibility with the primary objective of enhancing reliability and optimizing performance in a cost-effective manner. As such, electrical corporations must be eligible to develop and own microgrids as tools to help them meet these responsibilities.

> *Issue 8. Ensure any microgrid programs, rules, or rates developed to implement the requirements of SB 1339 are consistent with relevant state policy goals and are coordinated with existing CPUC responsibilities and policies.*

PG&E is supportive of this objective, and the issue should be in scope.

V. ADDITIONAL COMMENTS

Pursuant to Rule of Practice and Procedure 6.2, PG&E has no comments or objections to the categorization of this Rulemaking as rate-setting, the preliminary determination that hearings may be necessary, and the preliminary schedule described in Section 4 of the Order.

PG&E requests that Issue 2 and Issue 4 be prioritized for examination and resolution by the Commission and interested stakeholders early in the procedural schedule. Specific issues

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12/ *Scoping Memo of Assigned Commissioner and Administrative Law Judge*, issued in Rulemaking 17-07-007 on Oct. 2, 2017, p. 6 (identifying as Issue 26: "Should the Commission adopt a DC metering standard for DC applications, including net energy metering-paired storage systems and microgrids? If so, what should that standard be?").

13/ D.19-03-013, pp. 57-58 (Ordering Paragraph 4) (ordering the large investor-owned utilities to "support development of direct current metering standards by participating in the EMerge Alliance initiative or equivalent as utility resources allow.").

previously addressed or underway in other Commission proceedings that require coordination with this Rulemaking not previously identified include PG&E's 2020 GRC (Application18-12-009), as that Application relates to the Resiliency Zones described above.

VI. CONCLUSION

PG&E believes that this Rulemaking provides an important opportunity for the Commission, CEC, CAISO, the investor-owned utilities, and other stakeholders to advance a framework that ensures that microgrids can be developed and deployed in a manner that appropriately balances the interests of all Californians. Key to achieving this result will be to build upon the operating experience that has been gained so far from existing microgrid installations and to adhere to the SB 1339 requirement to ensure that microgrid development avoids cost shifting between customers. PG&E looks forward to continuing work with customers, its community partners, and the Commission to identify ways in which microgrids can work in concert with the broader electric grid.

Respectfully Submitted,

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