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**PG&E Comments on 2019 IEPR Adaptation Workshop**

*Additional submitted attachment is included below.*

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Dockets Office, MS-4  
Docket No. 19-IEPR-10  
1516 Ninth Street  
Sacramento, CA 95814-5512Re: Docket 19-IEPR-10: Pacific Gas and Electric Company Comments on 2019 Integrated Energy Policy Report Workshop regarding Climate Adaptation in the Energy Sector**I. Introduction**

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide these comments regarding the August 8, 2019, Integrated Energy Policy Report (2019 IEPR or IEPR) workshop on climate adaptation in the energy sector. Many of the customers and communities PG&E serves in California are already experiencing the consequences of climate change, including more frequent extreme weather, rising sea levels, increased drought, and longer, more severe wildfire seasons. These comments are submitted with acute awareness of how climate change has increased the risk of catastrophic and chronic events. PG&E is taking action to manage these risks, with a particular focus on wildfire. As an essential service provider to the world's fifth largest economy, PG&E's mission is to provide safe, reliable, affordable, and clean energy, both now and into the future. PG&E appreciates the willingness of the California Energy Commission (CEC) to consider these comments, which are organized as follows:

- Climate-driven risks in PG&E's service area
- PG&E's assessment and implementation of resilience measures to mitigate near-term and long-term climate-driven risks
- Supporting community efforts to bolster climate resilience
- Furthering public and academic research to advance energy utility climate adaptation

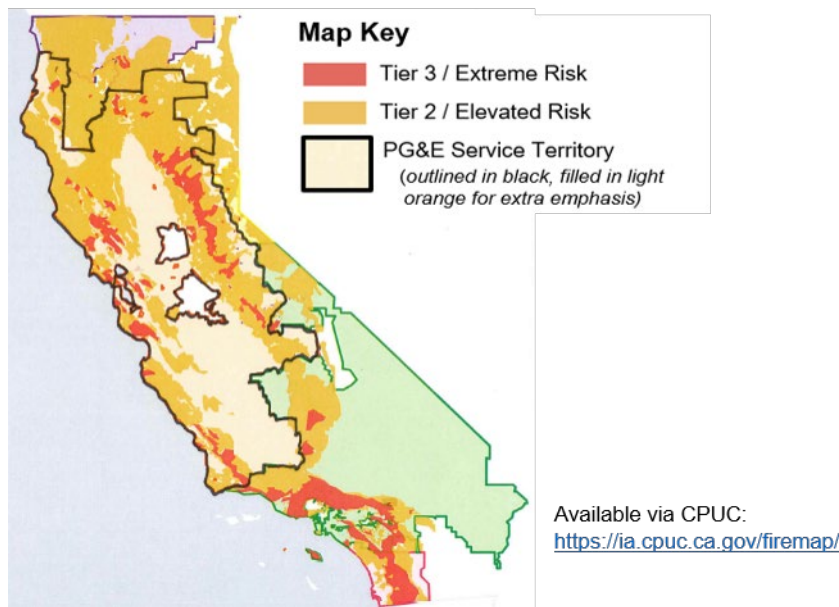
**II. Climate-Driven Risks in PG&E's Service Area**

PG&E operates across 70,000 square miles in Northern and Central California. Given the large, geographically diverse service area in which PG&E operates, the company's infrastructure is exposed to multiple severe weather hazards, as well as other impacts from climate change.

The most significant weather hazard currently facing PG&E is the continued and growing threat of wildfires. As a precautionary measure, we are enhancing and expanding our Community Wildfire Safety Program (CWSP) to further reduce wildfire risks and help keep our customers and the communities we serve safe.

One key foundational component informing our work is that wildfire risks are differentiated across California. Our plans are intended to reflect that differentiation given the unique design and geography of PG&E’s service area, as well as the fact that more than half (52 percent) of PG&E’s service area is identified as extreme (Tier 3) or elevated (Tier 2) fire-threat areas according to the CPUC’s High Fire Threat District Map, as shown below.

**CPUC Fire-Threat Map and PG&E Service Area**



Additionally, as part of our commitment to addressing climate change, PG&E has identified the primary climate change hazards to our business, including flooding from storm events, sea level rise, land subsidence, heat waves, changes in precipitation patterns and wildfire danger.

The table below outlines key climate change hazards and potential impacts.

Hazards	Potential impact
Increased frequency and severity of storm events	Increased risk of infrastructure damage, customer outages and operational costs due to weather factors such as flooding, high winds and heavy snow.
	Potential to significantly impact operations, create the need for emergency response from PG&E crews and require investments in infrastructure to make the system more resilient.
Sea level rise	Higher inundation and flooding potential at coastal and low elevation facilities due to sea level rise when combined with high tides, storm runoff and storm surges.
	Levee erosion or failure, putting assets at risk.
	Risk of damage to substations and other gas and electric infrastructure.
Change in temperature extremes	Increased electricity demand and loads from more extreme and prolonged hot weather events.
	Risk that certain electrical assets may fail, become less efficient or less reliable, and may need to be modified or replaced as a result of higher

	temperatures, including warmer daytime maximums and night time minimums, for prolonged periods.
	Increased stress and management of electricity on the transmission system due to higher electrical loads.
	Increased customer outages during extreme heat wave events.
Change in mean (average) temperatures	Higher annual electricity demand if average temperatures increase at the rate global climate models currently predict.
	Lower annual customer natural gas demand.
Change in precipitation patterns and drought	Reduced hydroelectric output, which can increase costs for customers.
	Increased wildfire frequency and intensity due to extreme drought.
	Increased water temperatures in rivers and streams that sustain critical habitats, including for endangered species. Reduction in cold water pools in PG&E’s hydroelectric storage reservoirs, limiting the company’s ability to comply with regulatory requirements and other mandated license conditions.
	Increased risk to infrastructure from land subsidence that occurs as a result of increased groundwater extraction during extreme drought conditions.
Increased wildfire frequency and intensity	Threat from wildfires to customers as well as PG&E assets such as electric transmission and distribution lines, gas infrastructure and hydroelectric assets—also creating the need for emergency response from PG&E crews.
	Increased customer outages.
	Increased risk of erosion and landslides in affected areas, putting assets at risk.

*Source: Pacific Gas and Electric Company’s Climate Change Vulnerability Assessment and Resilience Strategies report, November 2016.*

### **III. PG&E’s Assessment and Implementation of Resilience Measures to Mitigate Near-Term and Long-Term Climate-Driven Risks**

Nothing is more important to PG&E than the safety of our customers, employees and the public. In keeping with that focus, PG&E’s long-term objective for managing risk is to conduct data-driven decision making to support safe, reliable and efficient electric and gas service that is integrated into our planning process and becomes the foundation for our regulatory rate cases.

#### *Addressing the Immediate Threat of Wildfires*

Wildfires present the most immediate risk to PG&E’s electric operations in our service area. PG&E takes seriously the critical role we play in preventing wildfires caused by electrical equipment and we understand the urgency of addressing this risk. As such, in 2019, PG&E has expanded and accelerated our CWSP to enhance, accelerate and implement new programs to help prevent wildfires in 2019 and beyond.

The CWSP includes accelerating inspections of our electric infrastructure; upgrading our electric system in the highest fire-risk areas over the next 10 years; enhancing our vegetation management work, meeting and exceeding current state vegetation and fire safety standards for electric distribution lines in high fire-threat areas; increasing focus on vegetation that poses a higher potential for wildfire risk; adding weather stations to provide improved awareness of fire danger conditions; installing new high-definition cameras to enhance real-time monitoring across

high fire-risk areas; and opening a Wildfire Safety Operations Center to monitor conditions 24/7 during wildfire season and coordinating prevention and response efforts.

To address increasing wildfire risk, in addition to aggressively implementing new approaches to manage it, PG&E believes shutting off power will likely be necessary and may need to be performed more frequently due to the extreme weather events and dry vegetation conditions. To that end, PG&E is expanding its Public Safety Power Shutoff (PSPS) program to prevent wildfires from occurring and is implementing new ways to reduce its impacts to first responders and vulnerable customers, including those with medical needs.

CWSP activities include:

- Improving our real-time intelligence and monitoring by:
  - Adding approximately 1,300 weather stations by 2022 to provide improved awareness of fire danger conditions. As of June 30, 2019, we have installed 285 weather stations.
  - Installing approximately 600 cameras by 2022 to enhance real-time monitoring across high fire-risk areas. As of June 30, 2019, we have installed 46 high-definition cameras.
  - Opening a Wildfire Safety Operations Center to monitor conditions 24/7 during wildfire season and coordinating prevention and response efforts.
- Upgrading our electric system in the highest fire-risk areas over the next 10 years by installing approximately 7,100 miles of stronger poles and covered power lines. As of June 30, 2019, we have upgraded and strengthened 51 miles of our system in the highest fire-risk areas.
- Meeting and exceeding current state vegetation and fire safety standards for electric distribution lines in high fire-threat areas, and increasing focus on vegetation that poses a higher potential for wildfire risk. As of June 30, 2019, we have inspected 1,942 miles and cleared 523 miles.
- Conducting accelerated safety inspections of approximately 50,000 transmission structures, 685,000 distribution poles and 200 substations across high fire-threat areas in advance of wildfire season. As of June 30, 2019, we have completed:
  - Visual or aerial inspections of approximately 97 percent of the nearly 50,000 transmission structures in, or adjacent to, high-fire threat areas as defined by the CPUC's High Fire-Threat Map.
  - Inspections of approximately 99 percent of nearly 700,000 distribution poles in, or adjacent to, high fire-threat areas.
  - Inspections of all 222 substations in high fire-threat areas.
- Addressing and repairing conditions that pose an immediate safety risk, while completing other high-priority repairs on an accelerated basis. As of May 31, 2019, we have identified:
  - Approximately 53,000 corrective actions on transmission structures with nearly 100 conditions identified as highest priority. One hundred percent of these highest-priority conditions have been repaired or made safe.
  - Approximately 207,000 corrective actions on distribution poles with nearly 1,000 conditions identified as highest priority. Ninety-seven percent of these highest-priority conditions have been repaired or made safe and the remaining high-priority conditions are currently in the process of being repaired.
  - Approximately 3,000 corrective actions within substations with approximately 100 conditions identified as highest priority. One hundred percent of these highest-priority conditions have been repaired or made safe.
- Expanding our PSPS program to include piloting new resilience zones to provide electricity to community resources and help reduce the potential impact of a PSPS event.

- This work involves installing equipment that will enable temporary generation to connect to the larger grid, installing devices that can isolate certain circuits, and other system hardening efforts such as stronger poles and covered power lines to improve resiliency.

*Addressing the Full Range of Long-Term Possibilities throughout the Business*

In addition to meeting the immediate threat of severe wildfire risk driven by climate change, PG&E is working to incorporate long-term climate resilience into the company's core processes.

In 2017, PG&E established a Climate Resilience Officer Committee to direct and take accountability for the company's climate resilience programs. This multidisciplinary governing body is overseeing a multi-year action plan to close gaps in our approach to addressing the impacts of PG&E's priority climate risks. The Committee is co-chaired by PG&E Corporation's Vice President, Federal Affairs and Chief Sustainability Officer and Vice President, Internal Audit and Chief Risk Officer and includes senior representatives from gas operations, electric operations, power generation, enterprise risk management, the Community Wildfire Safety Program, information technology, supply chain management, and corporate real estate.

A critical aspect of PG&E's climate resilience activity is the incorporation of long-term climate projections into infrastructure planning. PG&E's Climate Resilience team is working with the lines of business to translate the high-quality, downscaled climate data provided by Cal-Adapt into formats that engineers can use to better plan for expected future conditions. By planning today for the projected changes in heat, precipitation, sea level rise and other conditions that will occur in California in the coming decades, PG&E can avoid increased maintenance or replacement costs and be better prepared to continue providing safe, reliable, affordable, and clean energy into the future. While PG&E is still exploring and learning from the application of climate data to utility planning processes, the goal is to eventually develop infrastructure standards that address expected future climate conditions.

PG&E is also planning to conduct a revised vulnerability assessment to examine the exposure and sensitivity of PG&E assets to climate-driven threats. This assessment will build upon the company's 2016 Climate Change Vulnerability Assessment conducted as part of the U.S. Department of Energy's (DOE) Partnership for Energy Sector Climate Resilience and will complement PG&E's 2017 quantitative Risk Assessment Mitigation Phase (RAMP) filing with the CPUC. The vulnerability assessment will analyze expected climate impacts, the exposure and sensitivity of PG&E infrastructure, and an estimation of how the failure of vulnerable infrastructure could impact customers. PG&E expects the results of the study will help PG&E identify and prioritize climate resilience investments that will be needed in the coming years.

Additionally, PG&E has been an active participant in the CPUC's Order Instituting Rulemaking to Consider Strategies and Guidance for Climate Change Adaptation (R. 18-04-019 or Climate Adaptation OIR). As the CEC may be aware, the Climate Adaptation OIR addresses five key questions related to energy sector climate resilience:

- How should the CPUC define climate adaptation for investor-owned utilities (IOUs)?
- What climate-related data sources, scenarios, tools and other resources should be used to inform CPUC activities and utility planning?
- What climate parameters should the CPUC use to determine climate-driven risks and resilience for electric and natural gas utilities?
- How should climate scenarios, climate-relevant parameters, and resilience metrics be used in electric and gas utility planning and operations, and in CPUC proceedings, to address climate adaptation in a consistent matter?

- How can electric and natural gas utilities identify climate impacts specifically relevant to disadvantaged communities, and address those impacts?

Though many questions remain due to the complexity of the topic, through this proceeding stakeholders, including the CPUC and California's IOUs, have advanced their thinking about how to build utility climate resilience. PG&E recommends that the CEC review the final decision in this proceeding, which is expected in late 2019.

#### **IV. Supporting Community Efforts to Bolster Climate Resilience**

Many of the customers and communities PG&E serves in California are already experiencing the consequences of climate change, including more frequent extreme weather, rising sea levels, increased drought and longer, more severe wildfire seasons. PG&E is working to design, influence and implement policies that measurably and demonstrably increase the resilience of the company's assets and operations, and support climate resilience in the communities we serve.

##### *Better Together Resilient Communities Grant Program*

As part of our efforts to promote local resilience to climate change, PG&E is investing \$2 million in shareholder funding over five years through the Better Together Resilient Communities grant program to support local climate resilience initiatives.

PG&E's Better Together Resilient Communities grant program provides eligible local governments, educational institutions and non-profits with \$100,000 for projects that increase community resilience to various climate risks, including heat waves and wildfires. The competitive process evaluates applications by the below criteria:

- **Demonstrated partnership:** the proposal reflects a collaborative effort among multiple organizations or stakeholders.
- **Replicability:** the proposal identifies how others will be able to learn from and adopt resulting strategies and solutions.
- **Assistance to environmental and social justice communities:** the proposal is community-focused and addresses climate resilience needs relevant to environmental and social justice populations, including designated disadvantaged communities.
- **Measurable impact:** the proposal includes practical, measurable and innovative ways to address community needs and climate risks.

PG&E's grant program is already seeing success in building resilience in communities threatened by wildfire risks and extreme heat. In 2017, PG&E awarded Ag Innovations a grant to partner with the Sonoma County Water Agency to create a coalition to develop solutions to protect the local water supply and forest health from erosion and wildfire risks. The project is developing collaborative solutions for managing vegetation, improving watershed health and reducing wildfire risk in the Lake Sonoma Recreation Area, a critical source of water for more than 600,000 people. Ag Innovations has plans to replicate this community-based land management effort based on demand in neighboring North Bay communities.

Another example comes from the Chinatown Community Development Center, which earned a grant from PG&E to develop a neighborhood community resilience strategy for the low-income, monolingual Chinese speaking immigrant community. Many residents and businesses in the Chinatown area of San Francisco do not have air conditioning and face risks from the heat waves increasingly occurring in the Bay Area. This project will identify



gaps and recommendations to improve building performance during heat waves and engage community-based groups and local youth leaders to identify opportunities to reduce the risk of urban heat island effects.

In 2019, PG&E is requesting grant proposals to fund four projects that build community capacity to reduce wildfire risk and support healthy and resilient forests and watersheds. Priority will be given to projects located in elevated or extreme fire risk areas and to those that address the needs of environmental and social justice communities.

### *Community Climate Resilience in the CPUC Climate Adaptation OIR*

Topic 4 of the CPUC’s Climate Adaptation OIR focused on how the interaction between climate change impacts and utility infrastructure may affect customers and customer adjacent communities – particularly those with relatively fewer resources to manage such impacts. PG&E commented extensively<sup>1</sup> on the OIR’s Topic 4 Working Group Report,<sup>2</sup> which considered the following questions:

- How to define a “climate vulnerable” or “climate disadvantaged” community
- How IOUs and the CPUC should include “climate vulnerable” communities in the process of identifying and prioritizing climate adaptation investments
- How IOUs might consider identifying and/or prioritizing investments that benefit such communities in the context of climate change impacts

While these significant policy questions could not be fully resolved over two stakeholder working group sessions, some elements worth highlighting include:

- The importance of community involvement when assessing climate vulnerability and considering adaptation action.
- Clearly defining what is meant by “climate vulnerable” communities so as to appropriately and equitably target finite efforts and resources.
- Delineating state, IOU, and local roles and responsibilities with regard to adaptation actions.
- The need to coordinate with other critical service providers when making resilience investments, as climate resilience is inextricably interlinked between sectors and jurisdictions.

The Topic 4 Working Group Report and associated comments offer an insightful dialog on community climate resilience, and PG&E looks forward to working with customers and infrastructure-adjacent communities to support the energy needs associated with their climate resilience efforts.

## **V. Furthering Public and Academic Research to Advance Energy Utility Climate Adaptation**

PG&E appreciates and supports the state’s ongoing efforts to advance climate adaptation via ongoing research and publicly available tools such as the CEC-funded Cal-Adapt tool and the Adaptation Clearinghouse developed by the Governor’s Office of Planning and Research (OPR). PG&E’s participation in both the Cal-Adapt Technical Advisory Committee as well as the Integrated Climate Adaptation and Resiliency Program (ICARP) Technical Advisory Council allows direct input from the energy sector to be incorporated into these tools to help make them as actionable as possible.

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<sup>1</sup> PG&E Comments on Topic 4 Working Group Report. R.18-04-019. July 2019.

<http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=311289919>

<sup>2</sup> Working Group Session Report on Item “Climate Vulnerable and Disadvantaged Communities.” R. 18-04-019. June 2019.

<http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M303/K074/303074259.PDF>

PG&E also appreciates the ongoing work being performed by the academic community to advance predictive near- and long-term weather monitoring to better anticipate and mitigate severe climate-driven events, as exemplified by this workshop's second set of panelists.

It should be noted that when it comes to medium- and long-term utility climate adaptation, PG&E is still in the process of exploring which planning and engineering processes should incorporate climate projections, as well as the type of data needed. Similarly, given the scope and complexity of the topic, PG&E hopes that the CEC will continue to iterate on how to best incorporate the impacts of climate change into the IEPR Energy Demand Forecast.

## **VI. Conclusion**

PG&E appreciates the opportunity to comment on this critical topic, and urges Commissioners and staff to reach out Nathan Bengtsson ([Nathan.bengtsson@pge.com](mailto:Nathan.bengtsson@pge.com)) or Jessica Melton ([jessica.melton@pge.com](mailto:jessica.melton@pge.com)) with any questions.

Sincerely,

/s/

Jessica M Melton