

Testimony of William D. Johnson
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Before the
Committee on Energy and Commerce
Subcommittee on Energy and
Subcommittee on Environment and Climate Change
United States House of Representatives
on the “Out of Control: The Impact of Wildfires on our Power Sector and the
Environment.”

January 28, 2020

Good morning Chairman Rush, Chairman Tonko, and Chairman Pallone, and Ranking Member Upton, Ranking Member Shimkus, and Ranking Member Walden, and members of both subcommittees. My name is Bill Johnson, and I am Chief Executive Officer and President of PG&E Corporation.

I am pleased to appear before the House Energy and Commerce joint subcommittee hearing on the impact of wildfires on energy infrastructure and the environment entitled: “Out of Control: The Impact of Wildfires on our Power Sector and the Environment.” PG&E appreciates the time and consideration the committee and Congress are giving to wildfire mitigation, grid reliability, resilience, and other clean energy solutions.

PG&E Corporation is a holding company headquartered in San Francisco, California. It is the parent company of Pacific Gas and Electric Company (PG&E), an energy utility with approximately 23,000 employees, which operates and maintains more than 100,000 miles of electric transmission and distribution lines, and 49,200 miles of gas transmission and distribution lines, delivering energy service to 16 million Californians across a 70,000-square-mile service area in Northern and Central California.

PG&E is focused on the critical role it plays in preventing wildfires caused by electrical equipment. We understand the urgency of this situation and the consequences for our communities. The safety of the communities in Northern and Central California that we have the privilege to serve drives the expansive effort to reduce wildfire risk PG&E is undertaking. PG&E also recognizes that it takes collective effort to prevent wildfires, and we welcome the input and feedback of our communities, customers, representative leaders, first responders, and others to collaboratively solve the unprecedented wildfire risk facing our state.

For more than a century, all of PG&E’s equipment, technology, processes, procedures, and expertise have been developed with the goal of keeping the energy flowing with as few interruptions as possible over a large and geographically complex service territory.

More recently, PG&E is proud to have partnered with the state of California and our customers to mitigate the climate challenge by delivering electricity that is nearly 80 percent free of greenhouse gas emissions, while at the same time improving the reliability of our system.

Yet within that same time period, California experienced several climate-driven events that contributed to dramatic changes in the environmental conditions in which our assets operate. These circumstances contributed to the largest, most destructive, and deadliest wildfires in the state's history.

These wildfires have been tragic and devastating. PG&E acknowledges the role our equipment had in some of those fires, and we are deeply sorry. We are committed to helping those communities recover and rebuild, and we are taking action to address the increased wildfire threat in which our infrastructure now operates. Now more than ever, PG&E's commitment to safety must also include meeting the challenge of climate change, both mitigating and adapting to its impacts, and increasing the resilience of our infrastructure to all hazards.

Wildfire Risk is Increasing

Like any home, building or other infrastructure, electric transmission and distribution lines and related infrastructure are vulnerable to extreme weather conditions, including winds over 70 miles per hour. This creates conditions in which utility equipment can come in contact with surrounding vegetation, utility assets or other objects, potentially resulting in wildfires.

Over recent years, California has experienced a prolonged, record drought, unprecedented tree mortality, heat waves, and changing Diablo offshore winds that have resulted in a significant and an unforeseen increase in the wildfire threat and the number of wildfires.

Between 2010 and 2018, according to the U.S. Forest Service, over 147 million trees in California alone have died from drought and invasive beetles. PG&E estimates there are more than 100 million trees adjacent to its overhead power lines with the potential to either grow into or fall into the lines.

Moreover, as air temperatures rise, forests and land are drying out, increasing fire risks and creating weather conditions that readily facilitate the rapid expansion of fires. In fact, just seven years ago, only 15 percent of PG&E's service area was designated as having an elevated wildfire risk. Today, more than 50 percent of PG&E's service area is designated as a high fire-threat area by the California Public Utilities Commission (CPUC) and CAL FIRE. This means that now, over 30,000 miles of PG&E's electric assets are exposed to a higher wildfire risk – more than a tripling of the threat in less than a decade.

[California's Fourth Climate Change Assessment](#), released in 2018, estimates that the wildfire risk across California could worsen, with large wildfires becoming 50 percent more frequent by the end of the century.

In short, the past is no longer a predictor of the future as we experience the increased risk, magnitude and devastating impacts of wildfires. PG&E is adapting to this new reality expeditiously and transparently.

PG&E is Addressing the Wildfire Threat Through its Wildfire Safety Plan

Building upon additional safety precautions the company began implementing in 2017, and through benchmarking best practices from our peers both here and abroad, including San Diego Gas and Electric, PG&E developed and received approval for its 2019 Wildfire Safety Plan from the CPUC.

The plan expanded and enhanced additional safety precautions given the increased and growing wildfire threat, and it is comprised of three key elements: 1) bolstered situational awareness, wildfire prevention and emergency response efforts; 2) new safety measures that include accelerated safety inspections, enhanced vegetation management, and Public Safety Power Shutoffs (PSPS), and 3) doing more over the long-term to harden the electric system to help reduce wildfire threats and increase resilience for our customers and communities.

The core elements of the Wildfire Safety Plan work together to comprehensively address the known fire ignition causes from electrical equipment, such as contact with vegetation, and prioritize mitigations based on the consequences of ignitions, such as population density and limited egress.

The highest historical driver of wildfire ignitions from utility infrastructure is vegetation coming into contact with distribution powerlines. The Wildfire Safety Plan addresses this risk through several important measures, including:

- Enhanced vegetation management work in the high fire-threat areas;
- Initiating PSPS, or de-energization events, when the weather conditions, including windspeed, could cause vegetation outside of our right-of-way to contact our lines;
- Situational awareness and weather monitoring to help us better understand the likelihood and consequence of ignitions from our electric infrastructure to prioritize investment and guide PSPS decision making; and
- System hardening investments such as using covered wire to prevent an arc when vegetation makes contact with powerlines.

To date, PG&E has undertaken a significant amount of work and made tremendous progress. For example, PG&E has installed more than 600 weather stations and 140 high-definition cameras across its service area. PG&E will continue to expand these networks to enhance weather forecasting and modeling and improve the company's ability to predict and respond to extreme wildfire danger. PG&E is on track to install a total of 1,300 weather stations and 600 cameras by 2022, a density of one weather station roughly every 20 circuit miles and video coverage of roughly 90 percent of the high-risk areas.

PG&E analyzes this data at its Wildfire Safety Operations Center (WSOC), which serves as PG&E's 24/7 hub for monitoring wildfire risks and coordinating prevention and response efforts across Northern and Central California.

We also finished an unprecedented process to inspect every element of our electric system within the high fire-threat areas in 2019, comprised of almost 750,000 transmission, distribution and substation structures and over 25 million electrical components in those areas. We climbed structures, used drones and helicopters, and performed approximately 18 months' worth of inspections in only four months.

Whenever we found equipment that needed immediate repair, we fixed or replaced it. Through this process we have validated that the health of every piece of electrical equipment within and next to the high fire-threat areas is suitable to serve our customers and the broader system.

To manage vegetation risks along our rights-of-way alone, PG&E has spent approximately \$3.8 billion since 2009. Our vegetation clearance efforts continue to meet important state and federal vegetation and fire safety standards through routine vegetation management work. State requirements for distribution lines require clearances of 4 feet in high fire-threat areas, with recommended minimum clearances of 12 feet or more at time of prune to ensure compliance year-round.

PG&E is taking this work a step further to proactively address forest health management and fire risk reduction, including analyzing tree failure patterns across different species; using advanced detection techniques to help predict tree failures; and patrolling of power lines in high danger areas. In total, in 2019 PG&E hired more than 2,000 additional contractors, most of whom are qualified IBEW represented members, and employees to conduct this important vegetation work.

Beginning in 2017, PG&E disabled automatic reclosing in high fire-threat areas during wildfire season and periods of high fire-risk. Automatic reclosers are used on distribution lines to detect and interrupt momentary faults to maintain reliability but can result in a fire ignition under certain conditions. PG&E is upgrading more reclosers and circuit breakers with remote control capabilities.

PG&E is installing stronger and more resilient poles and covered power lines and performing targeted undergrounding, starting in areas with the highest fire risk, ultimately upgrading and strengthening approximately 7,100 miles over the next 12-14 years. To date, PG&E has completed 188 miles of hardening work.

Also included in the 2019 plan is an expansion of the PSPS program to include all electric lines that pass through high fire-threat areas – both transmission and distribution – and the creation of temporary microgrids or “resilience zones” that can power central community resources during PSPS events or keep some customers from being impacted by a PSPS event entirely.

Incorporating the lessons learned and new information obtained from the 2019 wildfire season and the associated PSPS events, PG&E is continuing to refine its wildfire risk reduction strategies and will be filing an updated 2020 Wildfire Mitigation Plan with the California Wildfire Safety Division in February.

Public Safety Power Shutoffs are An Important Tool for Wildfire Risk Mitigation and PG&E is Working Hard to Reduce the Impact on Customers

Proactive de-energization to reduce the threat of catastrophic wildfires when certain weather conditions (e.g., Red Flag Warnings, high winds, low humidity levels, and condition of vegetation) are present that have the potential to damage our powerlines and other equipment is a recognized best practice and required in PG&E's CPUC-approved Wildfire Safety Plan.

Before last year's wildfire season, PG&E began an aggressive outreach campaign to increase awareness and preparedness with first responders, local communities, and customers for such outages. This outreach included distributing over 18.8 million PSPS-related direct mail pieces and 17.1 million emails, as well as conducting over 1,000 in-person stakeholder meetings, 23 open houses, 17 workshops, and 6 webinars.

Throughout PSPS events, PG&E works in partnership with first responders, impacted counties and tribes in real time, while continually working to improve our communications about PSPS events with customers. That includes providing as much notice as possible of a potential PSPS event to those impacted, 48 hours when possible, as well as notifying those that will not be impacted as our event evolves.

During these events, PG&E provides support to customers including through Community Resource Centers, where restrooms, bottled water, coffee, snacks, electronic-device charging, and air-conditioning are available.

Before a PSPS event, crews visually inspect PG&E's powerlines that are in scope for a potential event to provide on-the-ground conditions that factor into our decision making. After the weather clears and it is safe, crews again inspect the impacted power lines and make any necessary repairs or corrective actions, so that an ignition does not occur upon re-energization.

As we continued the program during the 2019 wildfire season, PG&E experienced challenges and incorporated lessons learned in subsequent events. Those include improved capacity to respond to customer call volume and web traffic, better coordination with local counties, and increased support for impacted customers. For example, we expanded the services offered at our Community Resource Centers, deployed temporary generation, including up to 65 megawatts during the late October events, and began testing infrared technology to conduct inspections at night in order to reduce restoration times.

Last year, millions of PG&E's customers were impacted by nine PSPS events, which were very disruptive to people's daily lives, challenged essential systems our society depends on, and put vulnerable customers at temporary risk.

Ultimately, PG&E's PSPS program, and its broader wildfire safety efforts, achieved our goal in preventing loss of life and a reduction in ignitions from electric infrastructure, despite some of the most extreme fire season conditions that our region has seen in decades and the wind-related damages to our system that could have resulted in a fire

had the power been on. The shutoffs were the right thing to do for public safety, even as it is not the way PG&E wants to serve its customers.

Throughout these events, our most important responsibility is the safety of the customers and communities we serve. We can and will improve our execution through better pre-planning and coordination with first responders and government partners, and by better anticipating the needs of PG&E's vulnerable customers. PG&E is conducting in depth, in-person PSPS listening sessions with impacted counties and tribes to incorporate feedback and lessons learned, as we work to make these shutoffs less impactful in the future. Going forward, we will continue hosting open houses for community members to learn about wildfire preparedness and will conduct Town Hall meetings at various locations in the high fire-threat areas attended by at least one officer of the company to share safety and service-related information and gather community feedback.

We know that our work will never be done when it comes to protecting human life and public safety – and we are determined to get it right. At the same time, we know with just as much certainty that repeatedly turning off the power for millions of people in one of the most advanced economies in the world – even in the interests of safety – is not a sustainable solution to the wildfire threats we face.

PG&E is Deploying Customer-Centric Solutions to Increase Overall Resilience

I want to assure you that we do not expect an annual repeat of what we went through this past fall. We are working hard now to narrow the scope and duration of future safety shutoffs and minimize their customer impact as much as possible.

This includes evaluating new technologies, such as sensors to detect emerging conditions on the electric grid and improve situational awareness, use of artificial intelligence and hyperspectral imaging of vegetation, and testing equipment that has been successfully deployed in Australia to reduce the risk of causing a spark from a falling power line before it hits the ground.

We are partnering with communities to create new microgrids or “resilience zones” with the potential of powering central community resources during a PSPS or other loss of power event and deploying sectionalization and other solutions to minimize the scope of PSPS events. PG&E, using shareholder funding, is partnering with the California Foundation for Independent Living Centers on a pilot program to alleviate disruptive impacts for, and support the safety and welfare of, vulnerable customers before, during, and after PSPS events and other disasters.

In addition to our engagement with California's state, local, and tribal agencies, PG&E is coordinating with federal agencies. In November 2019, PG&E participated in the San Francisco Federal Executive Board meeting to share information on its PSPS program and better understand the needs and impacts to federal agencies, hosted by the Region IX Office of the U.S. Department of Housing and Urban Development. As a result of that effort, PG&E continues to engage with several federal agencies to better prepare, respond, and mitigate the impacts of PSPS events.

PG&E is also continuing to work in coordination with the Edison Electric Institute and its Board of Directors to focus on industry's efforts to manage and mitigate wildfire risks, including (but not limited to), public land access, permitting and technology issues.

Last year, the Electricity Subsector Coordinating Council (ESCC), which represents investor-owned electric companies, electric cooperatives and public power utilities, expanded its focus to include wildfire issues. Initially the ESCC, along with the Departments of Energy, the Interior, and Agriculture, will focus on enhancing wildfire safety, prevention and response, including permitting and land management policies, and deploying technological advancements. The Grid Modernization Lab Consortium (GMLC), a strategic partnership between the Energy Department and the National Laboratories, is also a key partner in this effort.

Going forward, we are developing climate and vulnerable population screening data analysis to inform our wildfire safety plans and investment, and to consider prioritizing mitigation measures in communities with higher sensitivity to wildfire risks. PG&E is also providing \$2 million over five years in charitable grants, funded by shareholder dollars, to the communities it serves to increase local climate resilience, including grants to build community capacity to reduce wildfire risks.

PG&E, in partnership with the International Brotherhood of Electrical Workers (IBEW) and educational institutions in Northern California, is also establishing a Tree Crew Training Program to provide the training, skills, and knowledge necessary to be hired as entry-level tree workers by PG&E and its contractors and obtain certification as International Society of Arboriculture (ISA) Certified Tree Worker Climber Specialists.

PG&E is committed to continuous improvement and putting the safety and well-being of our customers first and foremost in everything that we do. PG&E will incorporate these lessons learned into its annual Wildfire Mitigation Plan submissions to the CPUC, and as these broader plans are implemented, the frequency, scope, and duration of PSPS events will continue to improve.

The nature of the wildfire risk, like other climate-driven and dynamic risks to PG&E's systems, and its potential consequences require PG&E to plan, operate, and maintain its system differently with a focus on resilience. More broadly, all these efforts will have a cumulative positive impact of increasing grid resilience to any hazard that we face.

Federal Policy Solutions Are Needed to Increase Wildfire Resilience

PG&E fully supports the common sense, meaningful steps taken by Congress over the years to prevent catastrophic wildfires, and you can be assured that we will remain an active voice in sharing our experiences related to reducing wildfire risk.

We appreciate all the efforts made to date by Congress to reduce the wildfire risk and keep our customers and the communities we serve safe. More specifically, we applaud the previous, 115th Congress for advancing comprehensive legislation (now Public Law) that includes provisions to: 1) modernize how utilities manage vegetation along utility rights-of-way that cross federal lands; and 2) provide realistic solutions to fire borrowing so the federal government can complete its maintenance and prevention work.

With respect to the vegetation management policy, we remain hopeful that the U.S. Forest Service and Bureau of Land Management will implement policies in March 2020, as mandated by Congress, that respect congressional intent, including a commitment to electric reliability and public safety.

We also applaud Congress' decision to include Unmanned Aerial System (UAS) provisions under the Federal Aviation Administration Act. These important policies allow utilities to apply for a beyond visual line of sight (BVLOS) waiver, which can be utilized for emergency response and to speed up restoration following storms, outages or PSPS events.

PG&E also applauds the previous Congress for advancing the Disaster Recovery Reform Act of 2018 (now Public Law) that allocates 6 percent of disaster spending to pre-disaster mitigation grants, which will provide the resources necessary for our communities to better prepare for, and reduce the impacts of, future disasters. PG&E believes the Federal Emergency Management Agency's forthcoming Building Resilient Infrastructure and Communities program, which will implement these mitigation grants, could allow for successful public-private partnerships, and PG&E looks forward to working with FEMA and our communities to help support community-based mitigation projects.

PG&E also thanks Congress for advancing the National Defense Authorization Act (NDAA), which includes important wildfire-related provisions authorizing the U.S. Department of Defense to report out on the feasibility of using satellite and other aerial technology, like Unmanned Aerial Vehicles, to detect wildfires at ignition. It also requires reporting the location of such fires to first responders once the incident is detected.

While these steps on the federal legislative front have been encouraging, we believe additional action at the federal level is necessary to further reduce wildfire risk.

More specifically, Congress should focus on addressing the following areas:

Address the threat of climate change – Increasing global temperatures lead to an increase in the severity and frequency of extreme weather patterns and events that have significant implications for public safety and security. Congress should enact a market-based, economy-wide carbon reduction policy that is effective, durable, affordable, and encourages innovation in both carbon mitigation and adaptation technologies. PG&E applauds this committee's ongoing efforts to develop a comprehensive climate framework, and we look forward to continuing to work with the committee to provide input on climate mitigation and resilience solutions.

Protect Energy Affordability for Low-Income Customers – Increasingly frequent and destructive climate events require utilities to rebuild and reinforce energy infrastructure – whether it is rebuilding power lines after a storm or installing new grid technologies to mitigate damage in the future. In most cases, the costs of these efforts fall on consumers. Congress should examine assistance programs that provide eligible customers relief from increasing electricity costs that result from climate adaption and

resilience. A program modeled after the federal Low-Income Home Energy Assistance Program (LIHEAP) or creating a resilience tax grant program would ease the burden of utility bills for those low-income Americans who meet relevant criteria.

Continue to Fund Forest Management, Fire Suppression Activities – There are approximately 147 million dead or dying trees in California that increase the risk of wildfires. Congress should continue to fully fund federal agencies and support public-private partnerships charged with managing forests on federal lands. Additionally, Congress should continue to provide federal firefighting programs with enough funding to cover the costs of suppressing an increasing number of wildfires. If federal land managers do not have enough wildfire suppression funds, they can be forced to divert funding from forest health and fire prevention programs.

Ensure Administration Implements Forest and Vegetation Management – Congress must ensure that the U.S. Departments of Agriculture and the Interior implement measures passed by Congress that allow utilities to better manage vegetation near their infrastructure on federal lands. Congress should also consider advancing legislation to complement certain policies outlined in Executive Order (EO) 13855, “Promoting Active Management of America’s Forests, Rangelands, and Other Federal Lands to Improve Conditions and Reduce Wildfire Risk.”

Ensure Access to Federal Lands for Prevention, Response – Limited accessibility to some federal lands can compromise first responders’ ability to access and respond to wildfires. Lack of roadways and restrictions on aircraft usage, for instance, can complicate efforts to respond swiftly and forcefully to fires as soon as they are identified. Congress should work with the Executive Branch, state and local emergency responders to identify and remove artificial barriers that can inhibit quick response. Additionally, the federal government should establish standardized approaches, in coordination with utilities, to address routine utility maintenance work on federal lands.

Authorize Regional Operations and Maintenance Plans – Promote coordination and cooperation by adopting regionally-based templates for operation and maintenance plans, which establish consistent work practices with clear expectations of the federal land agencies and utilities. At the same time, it is important to clarify work-streams that can be performed with notifications and those which require prior agency review and approval. To the extent possible, steps should be taken to promote joint preparation of National Environmental Policy Act documents among federal agencies for vegetation management activities to maximize efficiency and coordination, while ensuring consistency with applicable land management plans and policies, and applicable law.

Enable Federal Agencies to Share Satellite Data on Wildfire Detection – Most wildfire detection occurs when someone sees an outbreak and informs first responders. Since fire outbreaks can occur in very remote areas, a fire can burn for a long time before human identification. Modern satellite technology operated by the U.S. Department of Defense can detect an outbreak almost instantaneously – when the wildfire covers an area as small as 100 square feet. Under certain circumstances,

DoD can share geospatial data with other federal agencies. Congress should encourage the Defense Department to institute a data-sharing program with the U.S. Forest Service through which it would be immediately notified if the Defense Department satellites detect an outbreak, allowing the Forest Service to alert local authorities and coordinate a quicker response.

Promote Resilient Communities – There are many ways Congress can promote resilience in the local communities they represent, and among their constituents including (but not limited to): promoting public-private partnerships to design, develop and fund resilience projects; establish voluntary resilient zoning and building codes and standards, using the LEED certification program as a model, and providing economic incentives for customers and communities in disaster prone areas; incorporating climate resilience in future federal spending and planning decisions to maximize infrastructure lifespans; and ensure continued federal government support for programs supplying climate change research, modeling and data collection, knowledge sharing and transfer, and funding for climate resilience planning and implementation.

Federal Support for Research and Development – The federal government can play a critical role in advancing research, development and deployment of the technologies that can allow utilities to better plan for and increase their wildfire resilience. Such technologies could include: 1) technologies to harden electric infrastructure in the face of wildfire risks, such as faster, more intelligent reclosers and improved “downed line” technologies; 2) improved sensor technology for electric transmission and distribution lines; 3) analytical tools to better model the impacts of climate change on energy infrastructure; and 4) long-duration energy storage systems, advanced, low-emission mobile generation systems and other distributed generation systems that can provide power during outages.

Comprehensive study of wildfire causes, impacts, and recovery – Congress should request a comprehensive evaluation of recent events by the Government Accountability Office. The study should evaluate the direct and indirect causes and contributing factors of recent large-scale wildfires; the federal, state, and local response efforts; and other relevant factors with a focus on critical infrastructure impacts and resilience. The report should provide recommendations for improving critical infrastructure resilience, enhancing emergency response, modernizing vegetation management and forest practices, assessing rural planning and zoning policies, and improving government coordination.

PG&E believes these commonsense, much-needed federal policies can be accomplished in a responsible and bipartisan manner and will have a positive impact on reducing wildfire threats, improving safety and the environment, and increasing overall resilience.

Conclusion

PG&E faces multiple threats to its infrastructure, from climate change to cyber and physical security threats, that require a robust response with public safety at its core and resilience as our goal.

Increasing resilience to wildfires and other threats requires a comprehensive, societal approach and partnership with multiple stakeholders, including government partners. This work will never be complete, and the hazards will continue to evolve.

We know that this work starts with us in our own operations. The challenge of providing electric service in an increasingly hazardous environment is one that PG&E must – and will – master for its customers. And PG&E welcomes the attention and partnership of this committee and the 116th Congress in the effort.

Thank you for the opportunity to testify today.