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04/25/19
02:21 PM

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Implement
Electric Utility Wildfire Mitigation Plans
Pursuant to Senate Bill 901 (2018)

R.18-10-007
(Issued October 25, 2018)

**SECOND AMENDMENT TO
PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E)
WILDFIRE MITIGATION PLAN**

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April 25, 2019

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Pacific Gas and Electric Company (PG&E) hereby provides notice that pursuant to Rule 1.12 of the Rules of Practice and Procedure of the California Public Utilities Commission (Commission or CPUC), PG&E is modifying its Wildfire Safety Plan (Plan), filed February 6, 2019, corrected February 12, and amended February 14, 2019.

The amendments to the Plan reflect clarifications, improvements, and limited revisions to targets to address specific external conditions that PG&E has encountered in its implementation of the Plan. While PG&E has made significant progress towards achieving the targets set forth in the Plan, it nonetheless needs to revise certain targets due to external factors such as the extended federal government shutdown, weather, access challenges, and permitting/ environmental restrictions that will likely prevent PG&E from meeting some targets on the projected timeline. PG&E is also enhancing several procedures based on early learnings, which will result in some modifications to Plan targets. In addition, PG&E is clarifying a few targets to avoid the potential for misinterpretation, notifying the Commission and parties of expected cost increases for two programs, and correcting minor errors in Attachment E to its Plan. PG&E is submitting its Second Amendment at this time so that the Commission has the most up-to-date information to review and consider before issuing its final decision on the Plan. Should other factors or conditions change, PG&E will update the Commission in a timely and appropriate manner.

I. STATUS UPDATE

PG&E developed its Plan to implement aggressive and innovative measures to reduce the risk of wildfires in its service territory. The Plan provides considerable detail about what PG&E proposes to do in 2019 in advance of the wildfire season, during the wildfire season, and in subsequent years to reduce the risk of wildfires. The Plan reflects a mobilization and organization of extensive workforces in multiple areas of PG&E's electric business, including operations; system hardening; overhead distribution, transmission, and substation inspections and corrective actions; vegetation management; situational awareness; and proactive de-energization. The objective of PG&E's Plan is straightforward – to act with urgency to prevent electrical lines and equipment from causing wildfires that have the potential to become catastrophic wildfires. To accomplish this objective, PG&E proposed in Tables 1 and 9 of the Plan specific targets that were tangible, quantifiable, and auditable; reflecting substantial increases of work over prior years on an ambitious timeline.

PG&E started working on many of these programs in 2018 and has made considerable progress since that time. As of mid-April, PG&E has automated over 80% of the targeted line reclosers and is approximately 40% and 70% complete on its mid-year (*i.e.*, June 30th) targets for weather stations and cameras, respectively.¹ PG&E's Wildfire Safety Inspection Program (WSIP) teams have completed visual and climbing inspections by qualified electrical workers of more than 95% of the total transmission structures included in the scope of the Plan (over 45,000 transmission structures); inspections of approximately 70% of the substations (152 substations); and inspections of 45% of the distribution poles (over 300,000 poles). The teams have also identified and resolved over 900 high priority corrective actions² identified during the inspections. The system hardening team has completed or has in progress approximately 95% of the 2019 design and estimating work and has completed or is in the process of completing

¹ With regard to its 2019 end of year targets for weather stations and cameras, PG&E has installed over 15% of the weather stations and 20% of the cameras.

² PG&E defines high priority corrective actions as A and B tags.

approximately 25% of the 2019 system hardening work. The Enhanced Vegetation Management (EVM) team has completed inspections and necessary tree work (subject to quality review) on over 25% of 2019 targeted miles to date, with another approximately 25% of the 2019 miles inspected and ready to be worked. The Public Safety Power Shutoff (PSPS) team is working to finalize the 2019 PSPS training while collaborating with external parties to prepare for the 2019 wildfire season. PG&E has evaluated the outstanding 2019 work in light of this progress and lessons learned to date to make modifications, so the Plan that is ultimately approved reflects the most current information available, as well as what is feasible and achievable.

Other than the targets revised in this amendment, PG&E currently expects and is planning to achieve the remaining targets. However, while PG&E has prepared contingency plans and mitigations to address potential challenges, the Plan proposes the completion of work at an unprecedented scale and speed. In developing the Plan, PG&E recognized that there were significant execution risks, arising from sources both external and internal to PG&E, to accomplishing the expanded and accelerated scope of planned work. These challenges, outlined in Table 9 of the Plan, include inclement weather, the availability of equipment, materials, and qualified personnel, and legal/regulatory issues (*e.g.*, objections from property owners or governmental agencies, and environmental permitting requirements), which could impact the timing and scope of the programs proposed in the Plan.³

As PG&E implements these ambitious goals, these challenges persist. For example, both the WSIP inspections and EVM program apply heightened criteria compared to historical routine work. As a result, PG&E is identifying greater numbers of necessary actions, which require additional resources. PG&E has hired and will continue to hire the qualified resources necessary to complete this work safely and with a high standard of quality, and PG&E will continue to assess and fine-tune the needs of these new programs as PG&E learns through executing the Plan. Likewise, PG&E's land and environmental management, external affairs, and customer

³ PG&E Plan at p. 2, see also Table 9 at pp. 39-46 (identifying the major risks for each target).

care teams are working closely with PG&E's work execution teams to reduce potential delays caused by property owners, governmental agencies, and environmental permitting requirements. Nonetheless these challenges still present a risk of delay.

Other unexpected and unavoidable challenges will likely also arise as PG&E continues to execute the Plan. For example, weather stations and high definition cameras cannot be installed and properly calibrated during inclement weather. While PG&E currently has a plan to achieve the 2019 targets, inclement weather in the first quarter of the year has resulted in initial delays from which PG&E is currently working diligently to recover, and future unforeseen weather conditions could further impact the schedule.

PG&E's WSIP program similarly faces risks that certain repairs cannot be completed on the identified timeline. PG&E has completed just under half of the required distribution pole inspections, which have had a relatively low percentage of high priority corrective actions. While PG&E currently expects to complete the repairs on schedule, it is possible that there will be a significantly higher percentage of high priority corrective actions resulting from the remaining inspections. This could jeopardize the schedule. Corrective actions from transmission drone inspections face similar uncertainties as inspections for nearly half of the transmission structures are currently in progress (described below). As discussed above, PG&E continues to evaluate risks and develop contingency plans related to the resources necessary to complete all of the work safely and to high quality standards.

As noted in the Plan, programs (including system hardening and vegetation management work) may also face delays from environmental permitting requirements, the need to obtain additional land rights, or community protests. Local governmental permits can also cause delays. For example, many municipalities have adopted heritage tree ordinances that prohibit the removal of specified tree species or require a permit. Although local land use restrictions do not

apply to CPUC-regulated work by investor-owned utilities,⁴ private citizens nonetheless frequently protest the work. PG&E works closely with local governments to explain existing law regarding the Commission’s jurisdiction and attempts to address local concerns about its proposed work authorized or required by the Commission. However, disputes over the applicability of local ordinances have resulted in litigation and delays in other safety-related work.

While PG&E cannot predict whether these additional risks will arise, we are committed to keeping the Commission informed of our progress and any delays we encounter. PG&E will seek assistance from the Federal Monitor to address these challenges, where necessary. The amendments outlined in this filing address only the specific factors and learnings that have already arisen and are impacting the original targets.

II. OVERVIEW OF FACTORS PRECIPITATING SECOND AMENDMENT

PG&E is amending its Plan in three respects: To address external conditions that will likely prevent full completion of the targets by the original target dates; to modify targets to allow for improvements to the original Plan from lessons learned; and to clarify ambiguous language that may be subject to misinterpretation.

External execution risks identified in the Plan have resulted in delays. Although PG&E initiated the process to obtain the Federal Aviation Administration (FAA) certification required by CAL FIRE to use PG&E’s helicopters in July 2018, the abnormally long government

⁴ See, e.g., Cal. Const., art. XII, §§ 5, 8 (granting the Legislature “plenary power” to confer on the Commission jurisdiction to regulate public utilities and prohibiting a city, county or other public body from regulating matters within the regulatory authority of public utilities); Cal. Pub. Util. Code, § 701 (Commission may “do all things . . . necessary and convenient” to supervise and regulate public utilities); CPUC General Order 131-D, § XIV (local jurisdictions are preempted from regulating public utility projects subject to the Commission’s authority); *San Diego Gas & Electric Co. v. City of Carlsbad*, 64 Cal. App. 4th 785, 796, 801-802 (1998) (preemption over local authority occurs regardless of whether the Commission has expressly exercised this power); *Sarale v. Pacific Gas & Electric Co.*, 189 Cal. App. 4th 225, 232 (2010) (utility vegetation management programs fall within the exclusive jurisdiction of the Commission, safeguarding “the commission's ability to implement statewide safety protocols from being undermined by an unworkable patchwork of conflicting determinations regarding what constitutes necessary or proper management of power lines.”).

shutdown in late 2018 and early 2019 delayed issuance of the certification. In addition, unusually heavy snowfall and storms have prevented PG&E crews from accessing, inspecting, and repairing a small percentage of distribution and transmission poles and towers under the WSIP program. Likewise, despite PG&E's proactive outreach, land owner refusals and environmental permitting challenges threaten PG&E's ability to complete a small percentage of WSIP corrective actions. While PG&E continues to find creative solutions to these challenges, these external execution risks will likely prevent PG&E from completing some components of the Plan on the projected timeline. As a result, PG&E is amending the Plan to allow for necessary extensions of time.

In addition, PG&E is amending the Plan to incorporate enhancements identified as a result of improved strategies. As explained in the Plan, PG&E will continuously evolve the Plan to incorporate new information, experience, and input from communities, first responders, regulators, and others on how best to prevent wildfires and improve the overall safety of its system.⁵ As previously noted by several parties, this flexibility is critical to allow continuous improvements to the Plan, especially in this early stage of the process. For example, after beginning construction of the first pilot Resilience Zone, PG&E made improvements to the design to improve risk reduction. This design change requires PG&E to obtain additional land rights, which may delay the completion of construction of the Resilience Zone. In addition, PG&E has further enhanced the EVM program with more objective criteria to enable more consistent Quality Assurance (QA) audits. As described in more detail below, in recognition of these enhancements, PG&E proposes to amend targets in the Plan to incorporate these enhancements.

Finally, this amendment clarifies targets to avoid any ambiguity about what is required to comply with the target. First, PG&E clarifies the Vegetation Management inspection program target to indicate that, while over 100 million trees will be assessed as explained in the Plan, only

⁵ PG&E Plan at pp. 6-7.

those trees needing work will be documented in PG&E's vegetation management database.

Second, PG&E clarifies that PG&E will patrol all lines that were identified as meeting PSPS de-energization criteria before re-energizing following a PSPS event and will exercise operational judgment to determine whether to patrol lines that were only interrupted as a secondary effect of the de-energization of other lines.

As explained below, the amendments to the Plan reflect clarifications, improvements, or limited modifications to targets that are consistent with the execution risks PG&E previously identified in its Plan.⁶ More specifically the amendments:

- Revise the timeline the helicopters will be available for CAL FIRE's use to accommodate the delay due to the government shutdown;
- Extend the WSIP inspection and repair schedule for impacted locations to accommodate restrictions presented by external factors such as weather, access challenges, and permitting/environmental requirements;
- Modify the completion timeline to have the pilot resilience zone operational to allow for a design change for additional risk reduction;
- Modify a vegetation management QA target to adapt to more objective vegetation management inspection procedures developed through implementation of the Plan;
- Clarify potentially ambiguous language in the description of vegetation management and PSPS targets; and
- Correct inadvertent errors in Attachment E to the Plan.⁷

⁶ See, e.g., PG&E Plan at p. 132-33.

⁷ As described in the Plan, PG&E may need to make additional adjustments in the future to address evolving conditions and incorporate learnings from these innovative and new programs.

III. DESCRIPTION OF AMENDMENTS

A. Changes Required by External Execution Risks

1. Aviation Resources

In its Plan, PG&E proposed to have four heavy-lift helicopters operational and available for use by CAL FIRE to aid in fire suppression by May 2019. The helicopters will be operational by May 1, 2019, but CAL FIRE also requires a certification from the FAA to use contract helicopters. PG&E initiated its certification request to the FAA in July 2018, well in advance of the May 1, 2019 deadline. However, the unusually long federal government shutdown delayed review of PG&E’s request for the certification. When PG&E filed the Plan in February, it believed that the government shutdown would cause only a minimal delay in receipt of the certification.⁸ Unfortunately, the FAA has indicated that the governmental shutdown will delay issuance of the certification until mid-June 2019, at the earliest. PG&E has reached out through multiple paths to seek to expedite the FAA’s review, but to date has been unable to secure a commitment to an earlier date. As a result, PG&E is adjusting this goal to reflect that the helicopters will be available for CAL FIRE use as soon as feasible after receipt of the needed FAA certification and modifying the Aviation Resources target set forth in Table 9 of the Plan as follows:

Section	Title	2019 Target	Execution Risk	Included in FPP
Operational Practices				
4.1.4	Aviation Resources	Operate four heavy-lift helicopters to aid in fire suppression and restoration efforts by May 2019 , available at CALFIRE’s discretion <u>as soon as feasible after receipt of the necessary FAA certification.</u>	Delays securing CALFIRE carding by May 2019. ⁹	No

⁸ PG&E Plan at p. 39 n. 35.

⁹ Carding is the process of reviewing aircraft, support equipment and pilots each year to ensure they all meet the Cal Fire contract requirements. The Federal Government shut down delayed PG&E’s request for a 133 Certificate that is required for the Cal Fire carding and contract.

2. WSIP Inspections

For PG&E's WSIP, the Plan target for all distribution and transmission overhead structures inspections within the high fire threat district (HFTD) areas (and adjacent areas) is May 31, 2019 and May 1, 2019, respectively. Given the urgent need to address wildfire risk, these were aggressive goals representing a substantial increase over routine annual inspections and presenting a major organizational and planning challenge to mobilize the crews, equipment, and sites, and coordinate with third parties. Nonetheless, PG&E is working to complete more than 95% of the visual ground and climbing inspections by the original deadlines.

As mentioned in the Plan, in addition to work-force and other challenges that PG&E currently believes have been addressed, "implementation of the WSIP can be further delayed by weather conditions, delays caused by property owners and governmental agencies, and environmental permitting issues."¹⁰ While PG&E's land management, external affairs, and customer care teams have actively worked to overcome these challenges, there are some external execution risks that persist and may prevent PG&E from conducting enhanced inspections of all overhead facilities within the HFTD by the original completion dates.

A primary external obstacle is the wet winter that Northern California has experienced. The 2018-2019 winter has been unusually wet with heavy snow load, including at lower elevations. According to the California Department of Water Resources, snowpack was 165% of the statewide average as of April 18, 2019.¹¹ Affected areas within PG&E's HFTD areas range from 172% of normal in the north, 165% of normal for the central Sierra, and 153% of normal for the southern Sierra. Data tracked by PG&E's Meteorology Department indicates that through March 31, 2019, the 2018-2019 winter season is among the wettest since 1995, with the second highest amount of snow at low elevations, third highest amount of winter storm days, fourth highest amount of weather impacted days, and sixth highest heavy rain days.

¹⁰ PG&E Plan at p. 55.

¹¹ See <http://cdec.water.ca.gov/reportapp/javareports?name=DLYSWEQ>

As a result of these weather patterns, a population of less than 5% of distribution and transmission structures have been and continue to be inaccessible to visual ground and climbing inspections, either because the footings of the structures are covered in snow or the heavy moisture has made access infeasible. In some cases, storms have washed away access roads, making them unsafe or impassable. Fortunately, structures that are inaccessible due to these weather conditions do not pose a fire risk at this time because of the wet conditions (e.g., snow on the ground). Notwithstanding these access limitations, PG&E will strive to inspect these structures through visual ground, visual climbing, drone imagery, or helicopter imagery by May 31 (for distribution) or May 1 (for transmission), as conditions permit. This will allow for identification of conditions requiring corrective actions and will reduce the potential wildfire ignition risk until a full enhanced inspection can be performed, once access is possible. Unfortunately, it is impossible to predict when the snowpack will melt or when access roads will become passable; the WSIP team will complete these inspections as soon as practicable once the restrictions pass.

The unusually stormy weather thus far in 2019 has also hindered drone inspections, which PG&E planned to conduct on every transmission structure in the WSIP scope (subject to any FAA restrictions that cannot be resolved) to complement visual ground and visual climbing inspections.¹² This is an innovative use of drones, and PG&E is learning from its experiences with these inspections. PG&E has nearly every available qualified drone and drone operator in the western United States working on the Plan, but FAA regulations prohibit flying drones in inclement weather (e.g., winds above 25 knots). Northern California's stormy weather (snow, rain, heavy winds, etc.) has restricted PG&E's ability to perform drone inspections on the same timeline as the ground and climbing inspections. As a result, about 50% of the transmission structures drone inspections will be completed after May 1, 2019.

¹² PG&E Plan at p. 57.

In addition to weather-related restrictions, the WSIP distribution and transmission inspections may be delayed due to property owner objections and governmental permit or environmental requirements, any of which could impede the ability of PG&E’s crews to enter onto certain properties.

PG&E believes it will complete at least one form of inspection (ground, climbing, drone, or helicopter) on each distribution pole by May 31 and each transmission structure by May 1, subject to delays caused by the external risk factors impacting a limited population of facilities, discussed above. To adjust the Plan in recognition of these external challenges, PG&E modifies the May 31, 2019 and May 1, 2019 targets for the WSIP inspections of overhead distribution and transmission structures to allow for delays resulting from weather and other external factors.

The specific changes to the targets set forth in Table 9 are:¹³

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¹³ This chart includes proposed modifications to the WSIP corrective action targets explained in the next section.

Section	Title	2019 Target	Execution Risk	Included in FPP
Wildfire Safety Inspections Programs				
4.2.1	Wildfire Safety Inspection Program (WSIP), Distribution	<p>There are 685,000 poles located in the HFTD areas and adjacent areas with structures in close proximity and high risk of fire spread into the adjacent HFTD.</p> <p>1) Complete a WSIP enhanced inspection of all 685,000 poles in the HFTD areas by May 31, 2019, <u>or, for impacted locations, as soon thereafter as is feasible in light of weather conditions and other external factors.</u></p> <p>2) Complete high priority corrective actions created from deficiencies identified resulting from these enhanced inspections by June 30, 2019, <u>or, for impacted locations, as soon thereafter as is feasible in light of weather conditions and other external factors.</u></p>	<p>1) qualified workforce availability; and</p> <p>2) materials availability for repairs.</p> <p>Access limitations:</p> <p>1) inclement weather (snow, rain, wind, washed out roads, etc.);</p> <p>2) property owner objections; and</p> <p>3) Access rights (environmental permits, government owned land access permits).</p>	Current program scope not included
4.2.2	WSIP, Transmission	<p>There are approximately 50,000 poles and towers (structures) in the HFTD areas and adjacent areas with structures in close proximity and high risk of fire spread into the adjacent HFTD.</p> <p>1) Complete a WSIP enhanced inspection of all 50,000 structures by May 1, 2019, <u>or, for impacted locations, as soon thereafter as is feasible in light of weather conditions and other external factors.</u> (Approx. 9,377 inspections were completed in December 2018.)</p> <p>2) Complete all high priority corrective actions identified during these inspections by May 31, 2019, <u>or, for impacted locations, as soon thereafter as is feasible in light of weather conditions and other external factors.</u></p>	<p>1) qualified workforce availability; and</p> <p>2) materials availability for repairs.</p> <p>Access limitations:</p> <p>1) inclement weather (snow, rain, wind, washed out roads, etc.);</p> <p>2) property owner objections; and</p> <p>3) Access rights (environmental permits, government owned land access permits).</p> <p>Scheduling Transmission segments out of service (customer impact and clearance process) may limit timeliness of repairs.</p>	Current program scope not included

3. WSIP Corrective Actions

The Plan also includes aggressive WSIP targets to complete all high priority corrective actions on the distribution, transmission, and substation structures resulting from the WSIP inspections by June 30, 2019 for distribution and May 31, 2019 for transmission and substation. PG&E is working to achieve these goals and overcome internal challenges, including by hiring additional qualified crews and inspectors and evaluating each program to maximize efficiency.

As explained in the Plan, corrective actions resulting from inspections are prioritized based on the risk posed by the condition and the urgency of repairs.¹⁴ Subject to unanticipated and unavoidable risks discussed above, PG&E expects to complete all A tags (the highest priority) and nearly all of the B tags on the timeline outlined in the Plan. However, external factors will likely prevent PG&E from completing all B tags on schedule. These external factors include the same access issues that delay WSIP Inspections, described above. Further, in some cases, the timeline of the visual and drone inspections due to weather will result in delayed identification of the B tags, which in turn will delay the completion of the needed repairs beyond the target date. In addition, governmental permitting and environmental restrictions and the need to schedule clearances with external parties may further impede completing corrective actions on transmission and substation assets.

As a result of these external challenges, PG&E is modifying the June 30, 2019 and May 31, 2019 targets for completion of high priority corrective actions for WSIP distribution, transmission, and substation to allow for delays resulting from weather and other external factors, including inspections delayed due to external factors. The extension of the target dates is consistent with the basis for extensions allowed by CPUC General Order 95, Rule 18, for these corrective actions. The specific changes to the targets set forth in Table 9 are:¹⁵

¹⁴ PG&E Plan at p. 54.

¹⁵ This chart includes modifications for WSIP inspections discussed above.

Section	Title	2019 Target	Execution Risk	Included in FPP
Wildfire Safety Inspections Programs				
4.2.1	Wildfire Safety Inspection Program (WSIP), Distribution	<p>There are 685,000 poles located in the HFTD areas and adjacent areas with structures in close proximity and high risk of fire spread into the adjacent HFTD.</p> <p>1) Complete a WSIP enhanced inspection of all 685,000 poles in the HFTD areas by May 31, 2019, <u>or, for impacted locations, as soon thereafter as is feasible in light of weather conditions and other external factors.</u></p> <p>2) Complete high priority corrective actions created from deficiencies identified resulting from these enhanced inspections by June 30, 2019, <u>or, for impacted locations, as soon thereafter as is feasible in light of weather conditions and other external factors.</u></p>	<p>1) qualified workforce availability; and</p> <p>2) materials availability for repairs.</p> <p>Access limitations:</p> <p>1) inclement weather (snow, rain, wind, washed out roads, etc.);</p> <p>2) property owner objections; and</p> <p>3) Access rights (environmental permits, government owned land access permits).</p>	Current program scope not included
4.2.2	WSIP, Transmission	<p>There are approximately 50,000 poles and towers (structures) in the HFTD areas and adjacent areas with structures in close proximity and high risk of fire spread into the adjacent HFTD.</p> <p>1) Complete a WSIP enhanced inspection of all 50,000 structures by May 1, 2019, <u>or, for impacted locations, as soon thereafter as is feasible in light of weather conditions and other external factors.</u> (Approx. 9,377 inspections were completed in December 2018.)</p> <p>2) Complete all high priority corrective actions identified during these inspections by May 31, 2019, <u>or, for impacted locations, as soon thereafter as is feasible in light of weather conditions and other external factors.</u></p>	<p>1) qualified workforce availability; and</p> <p>2) materials availability for repairs.</p> <p>Access limitations:</p> <p>1) inclement weather (snow, rain, wind, washed out roads, etc.);</p> <p>2) property owner objections; and</p> <p>3) Access rights (environmental permits, government owned land access permits).</p> <p>Scheduling Transmission segments out of service (customer impact and clearance process) may limit timeliness of repairs.</p>	Current program scope not included

4.2.3	WSIP, Substation	<p>There are approximately 200 sites located in HFTD areas. These sites include substations, switching stations, and hydro power houses.</p> <p>1) Complete-WSIP enhanced inspections for all sites located in HFTD areas by May 1, 2019.</p> <p>2) Complete all high priority corrective actions created from deficiencies identified resulting from these enhanced inspections by May 31, 2019, <u>or, for impacted locations, as soon thereafter as is feasible in light of weather conditions and other external factors.</u></p>	<p>1) qualified workforce availability; and</p> <p>2) materials availability for repairs.</p> <p>Access limitations due to inclement weather (snow, rain, wind, washed out roads, etc.)</p> <p>Scheduling equipment out of service (customer impact and clearance process) may limit timeliness of repairs.</p>	Current program scope not included
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4. SCADA Enabling

The Plan includes a target to SCADA-enable line reclosers within Tier 2 and Tier 3 HFTD areas by June 1, 2019. To SCADA-enable line reclosers, crews generally must modify or install new equipment on the structures in the field. The same weather-related conditions and government permit requirements impeding WSIP inspections are hindering PG&E crews from accessing approximately five line reclosers. To adjust the Plan in recognition of these external challenges, PG&E is modifying the target to SCADA-enable line reclosers to allow exemptions to the June 1, 2019 deadline for delays resulting from weather and other external factors only. The specific changes to the target set forth in Table 9 are:

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Section	Title	2019 Target	Execution Risk	Included in FPP
Operational Practices				
4.1.1	Recloser Operations	<p>SCADA enable all remaining line reclosers (approximately 285) in Tier 2 and Tier 3 HFTD areas by June 1, 2019, <u>or, for impacted locations, as soon thereafter as is feasible in light of weather conditions and other external factors.</u></p> <p>Disable any remaining manual reclosing devices in advance of exposure to elevated wildfire risk conditions.</p> <p>Daily operations conformance with TD-1464B-001 and monitor program for effectiveness.</p>	<p>Qualified personnel or material limitations.</p> <p>Design, estimating or construction delays.</p>	No

B. Modifications Due to Lessons Learned

1. Resilience Zones

In the Plan, PG&E proposed having its first, pilot resilience zone operational by June 1, 2019, so it would be available to provide power during the 2019 wildfire season in the event of a PSPS event. The resilience zone is designed to be quickly isolated from the broader electric grid when a PSPS is initiated and to receive power from temporary mobile generation connected to a new pre-installed interconnection hub (PIH). PG&E initially designed the resilience zone to include segments of new, hardened overhead equipment including more resilient poles (e.g., composite, steel) and covered wire, as well as underground distribution lines.

As resilience zones are an innovative concept and this is PG&E's first resilience zone, a primary objective of this pilot is to assess and implement the most operationally effective design to maximize risk reduction. After evaluating the specific circumstances of the location, extent of facilities, and planned use of the resilience zone, PG&E recently modified the resilience zone design strategy to underground the majority of the resilience zone distribution conductors, and use new, hardened overhead systems only over hardscapes or where there is minimal to no vegetation-related risk. A new scope was added to the project to convert the majority of the existing wire on wood poles to underground distribution lines.

As a result of the design change, PG&E needs to obtain additional land rights from third parties and to satisfy environmental and other requirements.¹⁶ PG&E is actively seeking to obtain the additional necessary land rights on an expedited timeline to complete the resilience zone by June 1. However, because the change in strategy could delay the operational readiness of the resilience zone, out of an abundance of caution PG&E modifies the target to operationalize the first pilot resilience zone from June 1, 2019, to “as soon as feasible after June 1, 2019.” The specific changes to the targets set forth in Table 9 are:

Section	Title	2019 Target	Execution Risk	Included in FPP
4.6	Public Safety Power Shutoff Program			
4.6.2.2	Resilience Zones	Operationalize one resilience zone as soon as feasible after by June 1, 2019. Evaluate performance and effectiveness through post-event review. Incorporate learnings into future Resilience Zone establishment. Continue efforts to develop Resilience Zones in other towns in alignment with system hardening and targeted sectionalizing efforts.	Reliability of back-up generation equipment. Delays or trained personnel limitations associated with construction crew availability.	No

2. Vegetation Management – Inspection QC/QA

In Section 6.2.4 of the Plan, PG&E proposed several targets for the EVM program. To ensure that the EVM work is performed accurately, one of the EVM program targets (Target #4) measuring the results of the QA audits of the EVM work, stated that the target would be met where QA inspectors find that at least 92% of the trees audited were correctly worked. All work that failed the audit would be re-inspected and addressed. Because this is the first full year of the EVM program, PG&E is performing QA audits on 100% of EVM work.¹⁷

¹⁶ The PIH, the novel equipment that will enable PG&E to energize this grid segment during a broader PSPS event, remains on schedule for completion.

¹⁷ In future years as the program matures and the crews become more experienced, the program may rely on a QA sampling methodology, as is common with other programs.

As PG&E inspectors began auditing EVM work, PG&E realized there was a fundamental challenge to performing objective QA audits of the EVM program. In evaluating certain high-risk trees with a potential strike path to power lines, the EVM procedures expected tree inspectors to exercise professional judgment in deciding whether to remove trees meeting certain criteria (e.g., species, height, distance, lean). During the audits, however, QA inspectors exercising their own professional judgment disagreed with the initial assessment made by tree inspectors approximately 50% of the time. To address this issue, PG&E has eliminated this subjectivity from the decision-making process for both inspectors and QA auditors: Trees meeting the objective criteria will be removed.¹⁸

PG&E proposes to modify Target #4 to require QA audits on 100% of the EVM work and to require the reworking of any trees that meet certain objective criteria (species, height, distance, lean). The specific changes to the Target #4 set forth in Section 6.2.4 of the Plan are:

Section 6.2.4: Vegetation Management Targets and Indicators

Target #4: Quality Assurance Results in HFTD Areas

- Measures the completion results of QA review of EVM and Drought Response Program work performed on electric distribution power line segments within the HFTD area;
- ~~Calculated as a percentage: the number of trees correctly worked to the EVM or Drought and Tree Mortality scope identified during audits divided by all in-scope trees reviewed through audits;~~
- The target is met by ~~achieving a 92 percent “meets expectations” performance in the QA audits. Given that 2019 will be the first full year of the EVM program, performing QA review performed~~ on 100 percent of EVM work and reworking ~~A~~any trees found

¹⁸ The subjectivity of the original procedures did not affect wildfire risk, because all work undergoes QA audits, and all trees identified as requiring additional work through the QA audit were re-inspected and worked according to the enhanced objective criteria.

~~to have been~~ through the QA reviews that were missed or incorrectly worked ~~through the QA reviews will be reworked~~ to meet the relevant program scope.

C. Clarifications to Avoid Misinterpretations

1. Enhanced Vegetation Management - Inspection coverage

In the Plan, PG&E states that all vegetation management patrols will assess all trees that are tall enough and have a feasible path to strike overhead lines. In Table 9 of the Plan, which summarized the targets, PG&E stated that this assessment meant that PG&E would “[a]ssess more than 100 million trees with potential strike path.”¹⁹ While PG&E intends to achieve this target, PG&E inspectors do not document all trees assessed on patrols. Vegetation management inspectors patrol an overhead line, inspect the appropriate trees and vegetation, and note only those trees that will require work. The inspectors do not record every tree assessed or examined. Creating a record of trees not needing work at a particular point in time is time-consuming and contrary to industry practice. Documenting the significant volume of trees not requiring work, likely approaching or exceeding 100 million trees, would also substantially delay the inspection process. To avoid any potential misinterpretation of the target stated in the Plan, PG&E is clarifying the target to indicate that trees with potential strike paths along patrol routes will be inspected, and only trees needing work will be recorded in PG&E’s database. The specific changes to the targets set forth in Table 9 are:

Section	Title	2019 Target	Execution Risk	Included in FPP
4.4	Vegetation Management			
4.4.3	Inspecting Trees with a Potential Strike Path to Power Lines	Assess more than 100 million trees with potential strike path on all routine and CEMA Patrols		Current program scope not included

¹⁹ PG&E Plan, Table 9, at p. 42.

2. PSPS – Re-energization

In the Plan, PG&E explains that it will only restore power following a PPS event after confirming that it is safe to do so. PG&E continues to uphold that standard. However, the Plan elaborates on that standard by stating it will include patrolling all facilities or “protection zones” before re-energization.²⁰ This language arose from PG&E’s PPS program as implemented in 2018 and recognizes that PG&E would only re-energize after patrolling lines in the HFTD areas subject to the PPS event to ensure re-energization did not pose a safety threat.

Since then, PG&E has expanded the scope of the PPS program to include high voltage transmission lines. If these high voltage transmission lines are de-energized during a PPS event, the interconnected nature of the grid could result in a cascading effect that causes other transmission lines and distribution lines – potentially far from the original fire-risk areas – to be de-energized. Thus, distribution lines far from HFTD areas that triggered the PPS event, but which rely on the de-energized lines for power, such as lines in cities like San Francisco or San Jose, could be de-energized. San Francisco is not in a HFTD areas and is highly unlikely to experience the kind of climate and weather conditions that would trigger a PPS event. Nor does San Francisco present wildfire risk. But San Francisco could possibly be de-energized if multiple East Bay transmission lines were to be de-energized due to extreme conditions.

The Plan did not intend to require patrol of lines far from the at-risk areas after a PPS event. Rather than include those lines in a blanket mandate to patrol before re-energization, PG&E will exercise operational judgment to determine if lines de-energized due to the interconnected nature of the grid, and not due to their wildfire risk potential, need to be patrolled before re-energization.

PG&E thus clarifies the re-energization requirement to state that PG&E will patrol all lines in areas identified as meeting the PPS de-energization criteria, but will exercise operational judgment consistent with standard utility industry practices to determine whether

²⁰ PG&E Plan, Table 9, at p. 44; and p. 109.

lines in areas that were only interrupted because of the de-energization of other lines should be patrolled. The specific changes to the targets set forth in Table 9 are:

Section	Title	2019 Target	Execution Risk	Included in FPP
4.6	Public Safety Power Shutoff Program			
4.6.4	Re-energization Strategy	Re-energize only when confirmed safe to do so and only after <u>lines within areas triggering the PSPS decision all protection zones</u> are patrolled and clear of defects or damage. <u>PG&E will exercise operational judgment to determine whether distribution lines in areas that did not experience the PSPS triggering conditions but were only interrupted because of the de-energization of other lines should be patrolled.</u> Prioritize as directed to maximize public safety and minimize outage impacts and duration.	Large scale events. Extensive facility damage during PSPS event. Trained and qualified workforce limitations. Access to difficult terrain. Aerial patrol limitations. Concurrent natural disasters in de-energized areas impacting workforce availability.	No

D. Corrections to Attachment E

Forecast costs to complete the Plan also continue to evolve. When PG&E submitted the Plan, PG&E provided initial costs estimates for each program in Attachment E. In Section 7, PG&E highlighted a number of key drivers of uncertainty for those cost estimates, cautioning that actual costs may vary substantially depending on actual conditions and requirements.²¹ As PG&E has implemented the Plan, these uncertainties around the cost estimates persist. In particular, PG&E has become aware of likely increases in the cost estimates for two of the Plan programs: WSIP and PSPS – Sectionalizing. While PG&E is not prepared with updated cost estimates to amend cost estimates in Attachment E at this time, PG&E wants to notify the Commission and parties of these expected cost increases. Based on the current status of the WSIP program, and in light of the corrective actions that need to be taken, unit costs (e.g., contractors, drones), and the resource mix (internal vs. contractors), PG&E is currently estimating forecast WSIP costs to substantially increase. PG&E also predicts the PSPS

²¹ PG&E Plan at p. 141.

sectionalizing program cost estimate to increase due to a planned expanded scope of work for 2019 and increased unit costs.

This Second Amendment also corrects several minor errors in Attachment E, which PG&E had previously identified on March 19, 2019, in its response to Question 1 of the Safety and Enforcement Division's third set of data requests, as follows:

1. PG&E inadvertently omitted two categories of system hardening costs from Attachment E, which costs were included in PG&E's 2020 General Rate Case (GRC).
 - a. Approximately \$5,200,000 of fuse replacement capital costs: Including these costs in Attachment E increases the forecast system hardening (pole, pole loading and replacement (distribution), and conductor) program costs from approximately \$236,900,000 to approximately \$242,100,000. The number for the cell at Row labeled 4.3.1 and Column labeled "Estimated Annual Cost: 2019 Capital (1,000s)" has changed from \$236,900³ to \$242,100³.
 - b. Approximately \$2,100,000 of automatic protection (line recloser) capital costs: Including these costs in Attachment E results in an additional line item to Row Section 4.3.4 System Protection to include these costs for Automation Protection (Line Reclosers).
2. Two cells in Row 4.3.2 and Row 4.3.3 for the Column labeled "Estimated Annual Cost: 2019 Capital (1,000s)" on Attachment A were incorrectly marked with "2" footnote references instead of "3" footnote references.
3. Two cells at Row 4.3.2 and Row 4.3.3 for the Column labeled "Costs Currently Reflected in Revenue Requirement? (Provided Decision Reference) If for Only Part of Budget, Identify the \$ for that Part and Explain Part Not Previously Authorized (§ 8386(j))" on Attachment A were incorrectly marked with "3" footnote references instead of "4" footnote references.

