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COMPANY

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

UNITED STATES OF AMERICA,

Plaintiff,

v.

PACIFIC GAS AND ELECTRIC COMPANY,

Defendant.

Case No. 14-CR-00175-WHA
**RESPONSE TO REQUEST FOR
INFORMATION REGARDING
PROBATION CONDITIONS**

Judge: Hon. William Alsup

1 Defendant Pacific Gas and Electric Company (“PG&E”) respectfully submits this
2 response to the Court’s December 20, 2019 order requesting that PG&E file a statement of
3 compliance regarding two of the conditions of probation imposed by this Court on April 3, 2019.
4 (Order Adopting New Conditions of Probation, dated April 3, 2019 (Dkt. 1040).)

5 **INTRODUCTION**

6 PG&E’s highest responsibility is the safety of its customers and the communities
7 it serves. In 2019, PG&E implemented a comprehensive Wildfire Safety Plan that further
8 expanded and enhanced the additional safety precautions PG&E began implementing in response
9 to the 2017 and 2018 wildfires to address the growing threat of extreme weather and wildfires
10 across its service area. Those expanded efforts have been aggressive and wide-ranging and
11 include further enhancing vegetation management around power lines, enhancing and
12 accelerating safety inspections of electric infrastructure in high fire-threat areas, and hardening
13 its electric system. PG&E also expanded its Public Safety Power Shutoff (“PSPS”) program,
14 which de-energizes power lines when warranted by forecasted weather and fire danger
15 conditions. As a result of that expansion, all electric lines that pass through elevated and extreme
16 fire-threat areas (including high-voltage transmission lines) are considered for proactive de-
17 energization according to a risk-based methodology.

18 In 2019, PG&E implemented eight power shutoffs, including both transmission
19 and distribution lines, in a fire season that began in June and extended through late November.
20 During the patrols and safety inspections after these safety shutoffs, PG&E identified hundreds
21 of instances of wind-related damage and hazards. As previously reported to this Court, PG&E
22 has determined that a significant number of instances of vegetation or infrastructure damage
23 likely would have caused arcing if the lines had been energized.

24 PG&E recognizes that it has more work to do to continue to improve its
25 vegetation management and other wildfire mitigation programs, including further steps to lessen
26 the hardship of PSPS events to the extent possible. At the same time, PG&E has made
27 significant progress in enhancing its readiness and responsiveness to the increased threat of
28

1 potential wildfires across its service territory. The number of utility-caused wildfires in high
2 fire-threat areas of PG&E's service territory declined materially in 2019 and there was no repeat
3 of the deadly catastrophic wildfires that devastated Northern California in 2017 and 2018. Most
4 significantly, there was not a single utility-caused wildfire in its service territory that led to a loss
5 of life. Moving into 2020 and beyond, PG&E is working to sustain and build on this progress for
6 the benefit of all Californians while minimizing disruption to customers to the extent possible.

7 **I. PG&E Statement Regarding Condition 1**

8 Condition 1 states: "PG&E must fully comply with all applicable laws
9 concerning vegetation management and clearance requirements, including Sections 4292 and
10 4293 of the California Public Resources Code, CPUC General Order 95, and FERC FAC-003-4."

11 As stated in prior submissions, due to the size of its service territory, the dynamic
12 environment that PG&E power lines run through and other legal and practical limitations, PG&E
13 is unable to certify that it is in perfect compliance with all applicable regulations at any specific
14 point in time, including the time of this submission. PG&E's system includes approximately
15 100,000 miles of overhead transmission and distribution lines across a service territory of
16 approximately 70,000 square miles that contains tens of millions of trees that could come into
17 contact with its lines. Moreover, the natural environment through which PG&E's lines traverse,
18 spanning forests, mountains, coasts and deserts, is dynamic, and conditions can and do change on
19 a daily basis. A tree that was compliant at the time of a prior inspection might become a non-
20 compliant hazard tree one day later when it is damaged by a natural event or human intervention,
21 including lightning strikes, car accidents, ground disturbances and extreme weather, or three
22 months later after a bark beetle infestation has taken hold. PG&E has developed an extensive
23 program of inspection and maintenance to identify those trees that need to be removed or pruned
24 under federal and state laws and regulations, as well as PG&E's own standards (which in certain
25 respects exceed federal and state requirements), but it is unable to monitor every tree that could
26 contact its lines at every moment. Perfect compliance would require nothing less than round-the-

1 clock surveillance of all trees within striking distance of PG&E's equipment to identify and abate
2 any hazard as soon as it arises.

3 While the scope and dynamic nature of PG&E's service territory means that
4 PG&E is unable to certify perfect compliance with all applicable laws concerning vegetation
5 management and clearance requirements at all times, PG&E recognizes the importance of proper
6 vegetation management in reducing wildfire risk and is taking a comprehensive, multi-pronged
7 approach that aims to achieve as close to the standard of perfect compliance as feasible. In
8 addition to its comprehensive routine vegetation management program, PG&E has expanded
9 existing specialized vegetation management programs and implemented an Enhanced Vegetation
10 Management ("EVM") program to address increasing fire risk. PG&E also has in place quality
11 control and assurance programs to assess the effectiveness of these efforts over time and correct
12 any deficiencies that are identified. (*See* PG&E's Response to Order to Show Cause Why
13 PG&E's Conditions of Probation Should Not Be Modified, dated January 23, 2019 (Dkt. 976) at
14 34-36; PG&E's Response to Request for Information, dated February 22, 2019 (Dkt. 1016) at 9-
15 12; Pacific Gas and Electric Company Amended Wildfire Safety Plan, dated February 6, 2019 at
16 70-80.) PG&E provides below a report on its programs for 2019 to maintain vegetation-to-line
17 clearances, and radial clearances around poles, pursuant to California Public Resource Code
18 Sections 4292 and 4293, CPUC General Order 95 Rule 35, and NERC Reliability Standard FAC-
19 003-4.

20 A. Vegetation Management Programs Designed to Meet Regulatory Standards

21 **Routine Vegetation Management:** PG&E's routine vegetation management
22 program is designed to cover all of PG&E's approximately 81,000 miles of overhead distribution
23 lines and approximately 18,000 miles of overhead transmission lines. For its distribution lines,
24 PG&E pre-inspectors patrol to identify trees that are not in compliance with legal requirements
25 or PG&E standards at the time of inspection or that might not remain in compliance for
26 approximately one year thereafter. PG&E contractors then perform work to correct issues
27 identified during those patrols, including removing hazardous vegetation such as dead or dying
28

1 trees that pose a potential safety risk, creating the required radial clearances of 4 feet and, where
2 necessary to prevent encroachment, creating clearances of 12 feet or more at the time of pruning
3 for lines in High Fire-Threat District (“HFTD”) areas for year-round compliance and risk
4 reduction.

5 For its transmission lines, PG&E uses Light Detection and Ranging (“LiDAR”) technology to detect encroachments on rights of way or spans where trees have the potential to
6 contact transmission lines in the event of failure. For any such trees that are identified, PG&E
7 policy requires a subsequent ground inspection to assess the health of the identified trees and to
8 determine if pruning or removal was necessary.
9

10 Through these routine system-wide inspections, PG&E inspected all of its overhead transmission lines and approximately 99% of its overhead distribution lines.¹
11 Following those inspections, PG&E completed work on more than one million trees in 2019. As
12 of the time of this filing, PG&E records indicate that there are approximately 22,000 trees that
13 PG&E has identified as being either hazard trees or within the four-foot radial clearance area for
14 which work has been prescribed but not yet confirmed as complete. This figure includes work
15 that has been delayed because of environmental issues, permitting requirements and customer
16 refusals, as well as work identified by inspections in late 2019 that has not yet been addressed in
17 the ordinary course of business.² Because there is a lag between the time tree work is completed
18
19

20 ¹ Routine patrols of approximately 850 miles of distribution lines originally scheduled for
21 late 2019 were shifted to be completed in early 2020 in order to focus resources on the
22 completion of higher priority CEMA and EVM work. Approximately 105 of those line miles
23 were subject to EVM patrols in 2019. PG&E has begun routine patrols of approximately 165
24 miles of those miles and expects to complete its patrols of all 850 miles by February 29, 2020.

25 ² Section 4295.5(a) of the Public Resource Code authorizes PG&E to enter private property
26 to identify and address hazard trees. However, Section 4295.5(b) provides that this authorization
27 does not exempt PG&E from liability for damages (including treble damages) for the removal of
28 hazard trees or other vegetation that is located on private property outside of PG&E’s easement.
PG&E provides notice to private property owners of work it intends to conduct to abate any risk
identified on their property, regardless of whether it has an easement. Where a property owner
refuses that work, PG&E tries to persuade the property owner to grant permission to proceed. If

1 and the time PG&E contractors submit paperwork confirming completion, PG&E expects that
 2 once that paperwork is submitted, its records will reflect that many of those trees were worked
 3 within PG&E's standard work completion timeframes.

4 In addition, PG&E has implemented Quality Control ("QC") reviews and Quality
 5 Assurance ("QA") audits as two layers of quality checks to assess work performed by pre-
 6 inspectors and tree workers, identify any corrective actions and further compliance. (*See Pacific*
 7 *Gas and Electric Company's Report in Response to Attachment B of the Commission's Order*
 8 *Instituting Investigating and Order to Show Cause, No. I-19-06-015, filed June 27, 2019,*
 9 *at 10-12.')*³ Non-compliances identified during QC reviews and QA audits were referred to the
 10 Vegetation Management Operations team for corrective action.

11 **Vegetation Control ("VC") Program:** To comply with Public Resource Code
 12 ("PRC") Section 4292's requirement to maintain clearances around utility poles in State
 13 Responsibility Areas with equipment that may generate electrical arcs, sparks or hot material
 14 during normal operation ("non-exempt equipment"), PG&E inspects and removes all flammable
 15 material within a 10-foot radius at the base of such poles.

16 As with its vegetation management program, PG&E's QC contractor conducts
 17 QC reviews on an ongoing basis as work is completed to further monitor compliance with PRC
 18 Section 4292. PG&E also performs annual QA audits of VC work on a random sample of line
 19 miles taken from all overhead distribution lines in PG&E's system. Those audits are conducted
 20 by QA contractors overseen by PG&E employees. Non-compliances identified during QC

21 _____
 22 the property owner continues to refuse, PG&E will still proceed if the work is within PG&E's
 23 easement. For work outside of PG&E's easement, PG&E is working on a process under which
 24 PG&E makes a case-specific, risk-based determination as to whether to conduct the work over
 the private property owner's objection or take other action.

25 ³ In addition to formal processes such as QC and QA, PG&E fosters a "Speak Up" safety
 26 culture, which encourages employees and contractors to identify any irregularities, deficiencies
 27 or potential misconduct they see in any of PG&E's programs, including all vegetation
 management programs. PG&E investigates all issues identified including, where appropriate,
 conducting internal investigations in close coordination with the Federal Monitor.

1 reviews and QA audits were referred to the Vegetation Control Pole Clearing team for corrective
2 action.

3 B. Enhanced Vegetation Management Initiatives

4 To further enhance the safety of its system, PG&E has also adopted a series of
5 programs to implement additional vegetation management measures in areas of higher risk.
6 Those programs and the relevant 2019 metrics are described below.

7 **Catastrophic Event Memorandum Account (“CEMA”) Program:** Since
8 2014, PG&E has performed additional ground and aerial patrols of lines in high fire-threat areas
9 as one element of its Drought and Tree Mortality Response Program, commonly referred to as
10 the CEMA program, implemented in response to severe drought conditions in California. The
11 CEMA program currently covers all distribution lines in HFTD areas. In 2019, PG&E
12 completed CEMA patrols on tens of thousands of distribution line miles, representing
13 approximately 81 percent of the originally planned CEMA inspections on a mileage basis in
14 2019. For the line miles within the scope of the CEMA program that did not receive a separate
15 CEMA patrol in 2019, PG&E may perform an additional mid-cycle inspection in 2020
16 depending on, among other things, the time between the last routine inspection in 2019 and the
17 next scheduled routine inspection.

18 **Reliability Program:** For more than a decade, PG&E has been performing
19 targeted ground patrols of distribution lines in areas with a higher incidence of vegetation-related
20 outages and wires down based on historical outage data. While these patrols focus on reliability,
21 they provide an additional check of lines where vegetation damage has been known to occur and
22 therefore serve as another opportunity to identify and address potential hazards that could lead to
23 an ignition. As part of this program in 2019, PG&E patrolled approximately 206 line miles and
24 identified approximately 2,100 trees for pruning or removal that was not required by regulations,
25 of which approximately 1,440 have been completed to date.

26 **Enhanced Vegetation Management (“EVM”) Program:** In 2019, PG&E also
27 conducted additional inspections and tree work as part of its EVM program to further reduce
28

1 wildfire risk across the approximately 25,200 distribution line miles in PG&E's service territory
2 that traverse Tier 2 and Tier 3 HFTD areas. Pursuant to the EVM program, PG&E creates 12
3 feet of radial clearance around conductors where necessary to prevent encroachment within the
4 required minimum of 4 feet of radial clearance; conducts overhang clearing (pruning to maintain
5 conductor-to-sky clearance above a zone extending 4 feet on either side of conductors, even
6 though applicable regulations permit overhangs); and completes high-risk tree work (identifying
7 trees tall enough to potentially strike power lines and addressing any that fail a risk-informed tree
8 analysis, even though applicable regulations require removal of only "[d]ead trees, old decadent
9 or rotten trees, [and] trees weakened by decay or disease" or dead, rotten, or diseased portions of
10 otherwise healthy trees that lean toward and may fall into lines).

11 The scale, scope and complexity of the EVM work have necessitated a multi-year
12 approach, with the pace to increase over time. In 2019, PG&E exceeded its commitment in its
13 Wildfire Safety Plan to clear overhanging vegetation and perform targeted tree species work on
14 approximately 2,450 distribution circuit miles in Tier 2 and Tier 3 HFTD areas, completing
15 EVM work on a total of approximately 2,500 line miles and working approximately 65,000 trees
16 along those line miles.

17 C. Notices from Regulators and the Monitor Relating to Vegetation Management

18 In 2019, PG&E received approximately 40 notices from regulatory agencies
19 relating to trees near its power lines, including 32 notices from CAL FIRE identifying a total of
20 75 potential violations. PG&E assessed each of those potential violations and took any
21 corrective action required to address the issues identified. The Monitor also has identified for
22 PG&E a number of potential vegetation management issues requiring attention over the course
23 of 2019. PG&E assessed each of the issues identified and took corrective action where
24 appropriate.

1 **II. PG&E Statement Regarding Condition 2**

2 Condition 2 states: “PG&E must fully comply with the specific targets and
3 metrics set forth in its wildfire mitigation plan, including with respect to enhanced vegetation
4 management. Compliance with these targets and metrics, however, will not excuse any failure to
5 fully comply with the vegetation laws as required in paragraph 1. For purposes of this condition,
6 the operative wildfire mitigation plan will be the plan ultimately approved by the CPUC.”

7 PG&E understands that meeting the commitments set forth in its Wildfire Safety
8 Plan is critical to the safe operation of its electric system. To that end, PG&E made it a top
9 priority in 2019 to meet the specific targets and metrics set forth in the plan, many of which
10 relate to the expansion and execution of the PSPS program, repairing high-priority conditions
11 identified during Wildfire Safety Inspection Program (“WSIP”) inspections of electric assets in
12 Tier 2 and Tier 3 HFTD areas, and other wildfire mitigation measures such as the EVM program,
13 system hardening and improved situational awareness.

14 PG&E identified 53 commitments made in the 2019 Wildfire Safety Plan that
15 necessitated tracking, assessing and reporting to the CPUC on the progress it has made toward
16 implementing the Plan. Those 53 commitments include but go beyond the 11 high-level targets
17 set forth in Section 6.2 of the Wildfire Safety Plan, titled Plan Performance and Evaluation. (*See*
18 *Pacific Gas and Electric Company Amended Wildfire Safety Plan*, dated February 6, 2019 and
19 filed on February 14, 2019, at 131-36.) PG&E is today submitting a report to the CPUC on its
20 progress toward meeting the 53 commitments as of December 31, 2019. That report is attached
21 as Exhibit A.

22 As detailed in the attached report, PG&E completed or exceeded 46 of the 53
23 commitments it set forth in its 2019 Wildfire Safety Plan. The following addresses the 7
24 commitments PG&E did not meet.

25 **Quality of WSIP Distribution Inspections:** In 2019, PG&E validated the
26 quality of WSIP transmission and distribution inspections and reported on findings that
27 represented a policy, procedure or standard non-conformance. For WSIP inspections of
28

1 transmission and distribution assets, PG&E made it a target to achieve a 98 percent “meets
2 expectations” performance during these reviews. As of December 31, 2019, 96.7 percent of
3 audited WSIP distribution inspections had no high- or medium-risk findings and therefore
4 complied with the “meets expectations” performance rating. To mitigate any risk created by
5 missing this target, PG&E commissioned an independent third-party evaluation of its WSIP
6 inspections and is engaged in a quality assessment effort that includes thousands of re-
7 inspections.

8 **WSIP Distribution Corrective Actions:** PG&E completed 100 percent of its
9 WSIP inspections of distribution poles in HFTD areas in August 2019 and has completed almost
10 all of the high-priority corrective actions identified by those inspections. PG&E committed in its
11 Wildfire Safety Plan to complete its WSIP distribution inspections by May 31, 2019, and to
12 complete all high-priority corrective actions by June 30, 2019. As reported to the CPUC, PG&E
13 was unable to meet those commitments in full by those dates due to a combination of factors,
14 including inclement weather; the availability of equipment, materials and qualified personnel;
15 and legal and regulatory issues (such as objections from property owners or governmental
16 agencies and environmental permitting requirements).⁴ As of December 31, 2019,
17 approximately 96 percent of the more than 5,000 high-priority corrective actions were
18 completed, including all Priority Code A notifications. As of December 31, 2019, approximately
19 190 Priority Code B notifications (or approximately four percent of high-priority corrective
20 actions) remained open. PG&E was unable to complete much of this open work due to factors
21 beyond its control. To mitigate any risk arising from the inability to meet this target, PG&E
22 established and is implementing a risk-based prioritization approach to completing the remaining
23 work in 2020.

24
25
26 ⁴ PG&E has provided the CPUC with periodic status updates on its WSP commitments,
27 including the status of its completion of inspections and high-priority corrective actions,
28 beginning May 2019.

1 **WSIP Transmission Corrective Actions:** PG&E completed visual *or* aerial
2 (helicopter or drone) inspections of 100 percent of its transmission poles and towers in HFTD
3 areas in May 2019, achieved 100 percent completion of visual *and* drone inspections of those
4 structures in December 2019, and completed substantially all of the high-priority corrective
5 actions identified by those inspections by the end of the year. PG&E committed in its Wildfire
6 Safety Plan to complete all WSIP transmission visual and drone inspections by May 1, 2019, and
7 to complete high-priority corrective actions identified by those inspections by May 31, 2019.
8 PG&E was unable to meet those commitments in full by those dates due to a combination of
9 factors, including inclement weather; the availability of equipment, materials and qualified
10 personnel; scheduling of outages required to perform work; and legal and regulatory issues (such
11 as objections from property owners or governmental agencies and environmental permitting
12 requirements). As of December 31, 2019, approximately 93 percent of the more than 5,000
13 high-priority corrective actions were completed, including all Priority Code A notifications.

14 A combination of factors led to the inability to complete the remaining
15 approximately 500 Priority Code B notifications as scheduled, including the timing of periods
16 during which PG&E was permitted to take lines out of service to perform required work and the
17 temporary diversion of resources to PSPS events. To mitigate any risk arising from the inability
18 to meet this target, PG&E established and is implementing a risk-based prioritization approach to
19 completing the remaining work in 2020. PG&E further notes that certain of the approximately
20 500 outstanding Priority Code B notifications are for conditions identified on currently out-of-
21 service lines that do not present an immediate public safety issue in their de-energized state.

22 **CEMA Inspections:** PG&E committed in its Wildfire Safety Plan to complete
23 all CEMA inspections within the CEMA program scope. As described above, PG&E completed
24 separate CEMA inspections for approximately 81 percent of originally planned CEMA
25 inspections on a mileage basis. For the line miles within the scope of the CEMA program that
26 did not receive a separate CEMA patrol in 2019, PG&E may perform an additional mid-cycle
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1 inspection in 2020 depending on, among other things, the time between the last routine
2 inspection in 2019 and the next scheduled routine inspection.

3 **Assessment of Trees with Strike Potential:** PG&E committed in its Wildfire
4 Safety Plan to assess more than 100 million trees with a potential strike path to PG&E power
5 lines during CEMA patrols in 2019. As noted above, PG&E completed separate CEMA
6 inspections for approximately 81 percent of all originally planned CEMA inspections on a
7 mileage basis in 2019.

8 **Quality of EVM Work:** PG&E committed in its Wildfire Safety Plan to perform
9 work verification on every mile of EVM work completed in the field in 2019, with a target of
10 achieving a 92 percent “meets expectations” performance in these reviews. The “first pass”
11 quality results of this work verification process were approximately 60 percent for the year. All
12 of the miles that did not pass the initial work verification were reworked and the reworked miles
13 were work-verified again and had to be found to “meet expectations” before being considered
14 complete. In October 2019, PG&E implemented an additional Quality Assurance review process
15 to assess the quality of the work verification process. PG&E sampled approximately 9 percent of
16 all EVM work completed in 2019 (approximately 230 miles of EVM work that had passed work
17 verification and were considered complete). These QA assessments found that approximately 98
18 percent of sampled work-verified miles that had been designated as complete had in fact been
19 properly assessed and worked according to company standard.

20 **PSPS Re-energization Strategy:** In its Wildfire Safety Plan adopted by the
21 CPUC, PG&E stated that it would “patrol all facilities de-energized during a PSPS event to
22 identify any damage that needs to be repaired before re-energizing”. That target has not been
23 met as originally framed because PG&E executed its PSPS re-energization strategy in a manner
24 different from that described in the Wildfire Safety Plan that the CPUC has adopted. As clarified
25 in PG&E’s second amendment to the Wildfire Safety Plan, submitted to the CPUC on April 25,
26 2019, PG&E’s current strategy is to patrol all lines that were identified as meeting PSPS de-
27 energization criteria before re-energizing following a PSPS event and to exercise operational
28

1 judgment to determine whether to patrol lines that were interrupted only as a secondary effect of
2 the de-energization of other lines. PG&E followed that re-energization strategy after PSPS
3 events in 2019. At this time, the April 25, 2019 amendment to PG&E's Wildfire Safety Plan has
4 not been adopted by the CPUC.

5
6 Dated: January 15, 2019

Respectfully Submitted,

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9
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EXHIBIT A



2019 Wildfire Safety Plan Initiative Performance

1. Wildfire Safety Inspections Program (WSIP) Transmission

- 1.1 Inspections: 100%
- 1.2 Corrective Actions: 93%
- 1.3 Quality: 98.1%
- 1.4 Drone Inspections: 100%
- 1.5 Helicopter Inspections: 100%

Distribution

- 1.6 Inspections: 100%
- 1.7 Corrective Actions: 96%
- 1.8 Quality: Below Target

Substation

- 1.9 Inspections: 100%
- 1.10 Corrective Actions: 100%

2. System Hardening

- 2.1 45 Miles – Q2: 106%
- 2.2 150 Miles – EOY: 114%
- 2.3 Quality: 100%
- 2.4 Non-exempt fuses: 109%
- 2.5 System Protection
- 2.6 Sectionalization

3. Vegetation Management

- 3.1 EVM 1,000 miles - Q2
- 3.2 EVM 2,450 miles – EOY: 103%
- 3.6 EVM Quality: Below Target
- 3.3 CEMA inspections: 81%
- 3.4 CEMA Corrective Actions: 100%
- 3.5 Strike Potential: 81%

4. Public Safety Power Shut-Off

- 4.1 Recloser Operations: 100%
- 4.2 Customer Services
- 4.3 PSPS Impact Mitigation
- 4.4 Re-energization Strategy
- 4.5 Customer Notifications
- 4.6 First Responders and Critical Services: Advanced notification
- 4.7 Medical Baseline Notifications
- 4.8 Customer and Community Outreach
- 4.9 Mitigate impact on Telecom / Water Utilities
- 4.10 Mapping and Communication Protocols

5. Resilience Zones

- 5.1 Pilot: Completed
- 5.2 Additional Resilience Zones

6. Operations and Technology

- 6.1 Response, Recovery and Restoration
- 6.2 Personnel Work Procedures
- 6.3 Situational Awareness
- 6.4 Rapid Earth Fault Current Limiter
- 6.5 Enhanced Wires Down Detection
- 6.6 Disable Manual Reclosers
- 6.7 Recloser Daily Operations

7. SIPT & WSOC

- 7.1 Aviation Resources
- 7.2 SIPT
- 7.3 SIPT support WSOC
- 7.12 WSOC Technology

WSOC Tools

- 7.4 Camera Deployment Q2: 103%
- 7.5 Camera Deployment EOY: 187%
- 7.7 Fire Spread Model
- 7.8 Fire Detection System

and Meteorology

- 7.6 Meteorological Operations (POMMS)
- 7.9 Storm Outage Prediction Model (SOPP)
- 7.10 Weather Stations - Q2: 125%
- 7.11 Weather Stations – 9/1: 107%

All information provided in this update reflects preliminary full-year 2019 data as of 1/10/2020, further validation & quality reviews may result in data changes

Color Legend: Completed on Time Completed Late On Track At Risk or Substantially Complete Not Completed



Wildfire Safety Inspections Program (WSIP)

1. Wildfire Safety Inspections Program (WSIP) - Transmission

1.1 Transmission Inspections
100%
Completed Late

Complete a WSIP enhanced inspection of all ~50,000 structures

2019 WSP Commitment: Complete all enhanced visual inspections by 05/01/19.

2019 Performance: All inspections completed, however final aerial inspections not completed until December.

1.2 Transmission Corrective Actions
93%
Partially Complete

Complete all high priority corrective actions (A and B tags) identified during these inspections

2019 WSP Commitment: Complete all A tag and B tag (>5,000) repairs identified from WSIP enhanced inspections by 5/31; excluding tags on deenergized or 3rd party-owned lines.

2019 Performance: Completed all priority A and over 90% of priority B corrective actions in 2019 (excluding open tags on de-energized lines where no hazard exists). Some B tags (<500) will be completed in 2020, due to a combination of factors, including when PG&E was permitted to take lines out of service and the diversion of resources to PSPS events.

1.3 Transmission Quality
98.1% "Passed"
Completed

Achieve a 98 percent "meets expectations" performance during internal audits

2019 WSP Commitment: Quality performance measured by Internal Audit nonconformance report of findings that represents a violation of a policy, procedure, standard or other applicable legal or regulatory requirement.

2019 Performance: Electric Quality Control identified 2 priority 'B' and 27 priority 'E' record nonconformance out of 244 transmission records that contained 1,550 attributes, no high risk nonconformances were found. Overall compliance score of 98.1% met the target of 98%.

1.4 Drone or Helicopter Aerial Inspections
100%
Completed Late

Drone inspections will be conducted on every structure in the WSIP scope, subject to any FAA restrictions that cannot be resolved

2019 WSP Commitment: Complete all WSIP aerial enhanced inspections of in-scope structures by 05/01/19.

2019 Performance: All Transmission aerial inspections of 49,760 structures were completed, but some after the deadline. Final inspections completed in December as helicopters were utilized at Air Force bases and municipal airports, after extensive discussions, as an alternative inspection method due to restricted drone access.

1.5 Helicopter Inspections
Completed

Helicopters will be used for additional aerial inspections for collecting infrared data to determine hot spots on conductors, insulators, and connectors requiring repair

2019 WSP Commitment: High resolution infrared cameras mounted on helicopters utilized to assess for hot spots (e.g. loose/poor connections) on both summer and winter peaking lines. Scope of work is ~20% of all overhead assets (assets are reviewed on a 5-year cycle).

2019 Performance: All 2019 transmission helicopter inspection were completed. Further, as part of the winter and summer readiness scope, operational engineers review circuits' potential for overload conditions.



Wildfire Safety Inspections Program (WSIP)

1. Wildfire Safety Inspections Program (WSIP) – Distribution and Substation

1.6 Distribution Inspections

100%

Completed Late

Complete a WSIP enhanced inspection of all ~685,000 poles in the HFTD areas by 05/31/19

2019 WSP Commitment: Complete all enhanced visual inspections by 05/01/19.

2019 Performance: Inspections of all 694,250 poles completed, final inspections completed in August.

Complete high priority corrective actions (A and B tags) created from deficiencies identified resulting from these enhanced inspections by June 30, 2019

2019 WSP Commitment: Complete all A and B tag (~5,000) corrective actions as defined by the Centralized Inspection Review Team (CIRT) review (excludes B tags created to track locations where initial inspection could not access assets).

2019 Performance: Completed all ~1,000 high priority “A” tags and majority of ~4,000 “B” Tags in 2019. A small volume of “B” Tags (approximately 190) will be completed in 2020, due to a combination of factors, including inclement weather; the availability of equipment, materials, and qualified personnel; objections from property owners or governmental agencies; and environmental permitting requirements.

Achieve a 98 percent “meets expectations” performance during internal audits

2019 WSP Commitment: The quality of Distribution WSIP inspections will be validated through Work Validation Reviews of WSIP inspection work and will report on findings that represents a policy, procedure, or standard violation.

2019 Performance: There were 3 high significance findings and 45 medium significance findings identified through 1,451 reviews (1,067 field reviews and 384 records reviews) resulting in a total 96.7% quality score, below the 98% target. As a result of missing this target, PG&E commissioned an independent third-party evaluation of its WSIP inspections and is engaged in a quality assessment effort that includes thousands of re-inspections.

Complete WSIP enhanced inspections for all (~200) substations located in HFTD areas, by 05/01/19

2019 WSP Commitment: Complete all substation enhanced visual inspections by 05/01/19

2019 Performance: All Substation (222 locations) inspections were completed on time (04/29/19) with a specific focus on the failure mechanisms for transformers, conductors, connectors, insulators, switches, poles, and other equipment that could result in fire ignitions.

Complete all high priority corrective actions (A and B tags) created from deficiencies identified resulting from these enhanced inspections by 05/31/19

2019 WSP Commitment: Complete all A and B tag (~700) repairs as defined by the Centralized Inspection Review Team (CIRT) review.

2019 Performance: As of 05/31/19 had completed all high priority A tags (101) and B Tags (644) identified to date. Further reviews resulted in additional B tags that are being worked on standard completion schedules.

1.7 Distribution Corrective Actions

96%

Substantially Completed

1.8 Distribution Quality

96.7%

Below Target

1.9 Substation Inspections

100%

Completed on Time

1.10 Substation Corrective Actions

100%

Completed on Time



System Hardening

2. System Hardening

2.1 SH – Q2 Target
106%
Completed on Time

Complete 45 miles in HFTD areas by 6/30/19

2019 WSP Commitment: Implement System Hardening standard by (1) replacing overhead (OH) circuits with insulated conductors, appropriately sized poles and covered secondary, (2) converting OH circuits to underground (UG), or (3) retiring/removing OH assets where customers can be served by other means (e.g. distributed generation, microgrid).

2019 Performance: While this commitment was noted as unlikely to achieve in PG&E’s 5/31 Notice to the CPUC, potential execution risks were mitigated and 47.7 miles were completed and quality validated by 06/30/19.

2.2 SH – Q4 Target
114%
Completed on Time

Complete an additional 105 miles for a total of 150 miles in HFTD areas by 12/31/19

2019 WSP Commitment: Same criteria as 2.1 to achieve total of 150 miles by end of year.

2019 Performance: Completed 171 miles and passed quality validation by 12/31/19.

2.3 Quality Expectations
Passed
Completed

Achieve a 100 percent “meets expectations” performance during internal audits

2019 WSP Commitment: Both QC and Internal Audit reviews will take place for all System Hardening miles. Any identified quality concerns are reworked before the mileage is counted towards the reported System Hardening miles.

2019 Performance: QC and Internal Audit reviews successfully completed for all 171 miles completed by 12/31/19.

2.4 SH - Equipment
113%
Completed

Replace approximately 625 non-exempt fuses/cutouts in HFTD areas (each year for 7 years)

2019 WSP Commitment: Replace a minimum of 625 non-exempt fuses/cutouts in HFTD areas by 12/31/19.

2019 Performance: 706 non-exempt fuses were replaced in HFTD areas by EOY, surpassing 625 target.

2.5 System Protection

On Track

Automate the remaining non-SCADA TripSavers serving the Tier 2 and Tier 3 HFTD areas, in 2020

2019 WSP Commitment: Prepare to complete this work in 2020

2019 Performance: During 2019 engineering analysis determined that instead of SCADA-enabling these TripSavers they will be reprogrammed in 2020. By EOY, engineering completed creation of new electronic settings files for remaining 278 locations. By start of 2020 fire season (June 1, 2020) forecast to have uploaded all electronic settings files via Bluetooth, thereby completely removing their reclosing functionality and converting them into electronic fuses.

2.6 Sectionalization
(Distribution)
228 devices
On Track

Installation of additional line reclosers at Tier 2 and Tier 3 HFTD boundaries

2019 WSP Commitment: Install additional sectionalizing devices. No specific target was set for the number of devices in the WSP. These new SCADA-enabled devices will be a combination of Line Reclosers, FuseSavers, and Motorized Switch Operators (MSO).

2019 Performance: PG&E operationalized 228 new SCADA-Enabled sectionalizing devices (91% of the internal target of 250). An additional 65 devices were installed in the field but not SCADA Enabled or released to operations as of EOY.



Vegetation Management

3. Vegetation Management – Enhanced Vegetation Management (EVM)

3.1 EVM 1,000 Miles
– Q2
100%
Completed Late

Perform enhanced vegetation management (EVM) work on approximately 1,000 circuit miles in HFTD areas, by 6/30/19

2019 WSP Commitment: Complete 1,000 circuit miles of enhanced vegetation cleared consistent with the EVM program scope, within high-fire risk areas to reduce wildfire risk through (1) overhang clearing within 4ft from conductor to sky, (2) 12 ft radial clearing around the conductor, and (3) hazard tree mitigation.

2019 Performance: Completed late. As of June 30th ~484 miles were validated as completed. In October the 1,000 mile threshold was crossed.

3.2 EVM – 2,450
Miles by EOY
103%
Completed on Time

Perform enhanced vegetation management (EVM) work on a total of 2,450 circuit miles in HFTD areas, by 12/31/19

2019 WSP Commitment: Same criteria as 3.1 to complete EVM work on 2,450 circuit miles by 12/31/19.

2019 Performance: PG&E completed and validated 2,533 circuit miles as cleared to EVM scope.

3.6 EVM Quality
63%
Below Target

Achieve a 92 percent “meets expectations” performance in EVM QA audits

2019 WSP Commitment: QA review performed on 100 percent of EVM work. Any trees found to have been missed or incorrectly worked through the QA reviews will be reworked to meet the relevant program scope.

2019 Performance: Throughout 2019 PG&E performed work verification on every mile of EVM work completed in the field. The “first pass” quality results of this work verification process were ~60% for the year. Any miles that did not pass the initial work verification were reworked and re-work verified before they were considered complete. Based on this 60% “first pass” quality score this commitment is being considered “below target”.

To mitigate for identified quality challenges, in Q4 an additional Quality Assurance (QA) review process was implemented and assessed approximately 230 miles (~9% of work completed in 2019) of work that had passed work verification and were being counted as complete. These QA assessments identified that 98% of miles had been properly assessed and worked according to company standard.



Vegetation Management

3. Vegetation Management – continued

3.3 CEMA Inspections

81%

Substantially Completed

Complete 100 percent of VM CEMA patrols (inspections) for dead or dying trees “CEMA Trees”

2019 WSP Commitment: Complete CEMA Inspections within targeted areas.

2019 Performance: VM completed ~81% of originally planned CEMA inspections (the 2nd inspection of the year for each applicable circuit) on a mileage basis and identified ~50,000 tree units requiring work. All circuits and trees tall enough to strike lines were inspected at least once in 2019. However, CEMA inspections are targeted to occur 6 months after routine 1st patrol of a circuit. Risk-informed changes to the 2019 Routine (i.e. 1st) inspection schedule during Q1, and delays in executing the routine schedule during Q1 and Q2, resulted in associated rescheduling of some CEMA (i.e. 2nd) inspections from the second half of 2019 into early 2020. All circuits and trees in HFTD remain on a generally twice per year inspection cycle, although a small volume was only inspected once in the 2019 calendar year.

3.4 CEMA Corrective Action

100%

Completed on Time

Removing or working all dead or dying trees (“CEMA trees”) identified by 10/01/19

2019 WSP Commitment: For all tree work identified by CEMA inspections as of 10/01/19, complete work by 12/31/2019. Excludes trees where tree work is delayed by third party delays, including environmental permitting requirements, owner refusals, and agency approval or review.

2019 Performance: Completed ~48,000 CEMA tree work units, including all tree work identified by CEMA inspections before 10/1, with the exception of approximately 1,839 trees where work completion has been delayed due to 3rd party constraints.

3.5 Assess Trees with Strike Potential

81%

Substantially Completed

Inspect all Trees with a Potential Strike Path to Power Lines

2019 WSP Commitment: Assess the more than 100 million trees with potential strike path through completion of on all CEMA inspection within targeted areas.

2019 Performance: See notes above for 3.3, completed ~81% of planned CEMA inspections, on a mileage basis. As noted: all circuits and trees in HFTD remain on a generally twice per year inspection cycle, although a small volume was only inspected once in the 2019 calendar year.



Public Safety Power Shutoff (PSPS)

4. Public Safety Power Shutoff (PSPS)

4.1 Recloser Operations
100%

Completed on Time

SCADA-enabling all remaining, active/operational line reclosers (~285) in Tier 2 and Tier 3 HFTD areas, by 06/01/19
2019 WSP Commitment: Install SCADA (Supervisory Control and Data Acquisition) functionality on all line reclosing devices in Tiers 2 and 3 which are not currently SCADA-enabled.
2019 Performance: Completed SCADA enabling on all 287 remaining manual reclosers by 5/30.

4.2 Customer Services

Completed

Continuously refine and further develop strategies that minimize the extent of disruption of grid power
2019 WSP Commitment: Define and document the following six new program workstreams in the 2019 Customer Program Playbook and implement during PSPS events: 1) Back Up Generation (OEM, Retail and Technology Partnerships), 2) Back Up Generation (Continuous Power Programs), 3) Collaborative Community Support (Community Resource Centers), 4) Support programs (Access & Functional Needs community), 5) Partnership with Critical Services providers and 6) Coordination with 3rd-Party Commodity Suppliers (CCAs).
2019 Performance: Implemented improved strategies across workstreams during September, October & November PSPS events.

4.3 PSPS Impact Mitigation

On Track

Identify and prioritize mitigation of PSPS impacts to customers where de-energizing the line will not result in a realized wildfire risk reduction
2019 WSP Commitment: All sectionalizing devices being installed as part of initiative 2.6 within System Hardening are designed to isolate Tier 2 and Tier 3 HFTD areas.
2019 Performance: Aligns with initiative 2.6 within "System Hardening". This effort is prioritized based on total number of customers who would otherwise be impacted by PSPS that can benefit from sectionalizing devices. Note that prioritization analysis for sectionalizing devices will continue to be refined each year based on improved analysis and information.

4.4 Re-energization Strategy

Not Completed

Re-energize only when confirmed safe to do so and only after protection zones are patrolled and clear of defects or damage. Prioritize as directed to maximize public safety and minimize outage impacts and duration.
2019 WSP Commitment: Confirm it is safe to re-energize circuit by conducting a patrol, which is a visual assessment of the lines to ensure segments are clear of defects and/or damage.
2019 Performance: This issue was fully described in PG&E's second amendment filed on April 25th, with the key proposed amendment being that instead of positively inspecting every circuit that is de-energized during PSPS events, "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."



Public Safety Power Shutoff (PSPS)

4. Public Safety Power Shutoff (PSPS) – continued

4.5 Customer Notifications

On Track

Attempt to send notifications to all potentially impacted customers

2019 WSP Commitment: Attempt to send notifications to all customers identified as being in scope of a PSPS event

2019 Performance: PG&E attempted to send notifications to all customers impacted by PSPS events in 2019. During the largest, October 2019, PSPS events ~ 3% of total impacted customers were not contacted. PG&E is working to improve data accuracy and resolve abnormal circuit configuration issues and reaching out to customers without contact information to request they update their information.

4.6 First Responders and Critical Services

On Track

Attempt to notify First Responders, Healthcare Facilities, Telecommunication Providers and Water Utilities in advance of residential notifications prior to a PSPS event

2019 WSP Commitment: For each PSPS event in 2019, attempt to notify critical service providers.

2019 Performance: PG&E was generally successful at sending notifications to all impacted critical service providers during 2019 PSPS events but identified several lessons learned and areas for improvement for 2020 and beyond.

4.7 Medical Baseline Notifications

Completed

Attempt to provide additional notifications to life support/medical baseline (MBL) customers prior to a PSPS event if general notifications are unsuccessful

2019 WSP Commitment: Maintain up to date contact information and provide the necessary tools and processes to support the additional notification / outreach to MBL customers expected to be impacted by a PSPS event, including rolling trucks to knock on doors of MBL customers if they do not confirm receipt of prior notice attempts via phone, text or email.

2019 Performance: PG&E had documented and implemented processes in place to provide additional notifications to life support and MBL customers throughout 2019 PSPS events.

4.8 Notification Tools

Completed

Refine customer notification tools and educate customers and communities to prepare for PSPS execution

2019 WSP Commitment: Deploy pre-wildfire season outreach efforts, including open houses, webinars, and direct mail/email campaigns to prepare customers and communities for PSPS events. Document processes, testing, functionality and use of notification tools for PSPS events.

2019 Performance: PG&E successfully executed a pre-wildfire season outreach and engagement plan and then implemented improved notification functionality throughout the 2019 PSPS events. Improvements during 2019 included streamlining the notifications, providing a multi-premise view of impacted addresses, and providing updated scripts with links to PSPS event maps for public safety partners.



Public Safety Power Shutoff (PSPS)

4. Public Safety Power Shutoff (PSPS) – continued

4.9 Mitigate Impact on Telecom / Water Utilities

On Track

Proactively identify PSPS impacts to critical customers and services that support emergency response and preparedness

2019 WSP Commitment: Ensure accurate contact information is on file for notification purposes and provide resources (advanced notification expectations, GIS planning maps, fact sheets, websites) for emergency preparedness planning that clarifies the process for engagement and the information received during a PSPS event.

2019 Performance: During 2019 PSPS events, PG&E implemented the advanced notices with Public Safety Partners (PSPs) and Critical Facilities, including engagement with CCAs, telecommunication service providers and transmission customers. Further improvements for critical service provider engagement were identified through the October events, such as granting access to the PSPS data portal for Telecommunication providers

4.10 Mapping and Communication Protocols

On Track

Ensure sufficient mapping, planning and communication protocols are developed prior to potential PSPS initiation

2019 WSP Commitment: Develop protocols to provide event-specific maps, depicting areas under consideration for potential de-energization, to state and local officials as well as the public. Provide planning maps in advance of events for use by local officials and public safety partners for planning purposes. Develop robust communications protocols and procedures to support timely notification and communication to all stakeholders, from public safety partners to residential customers, in advance of a given PSPS event. Communications media include a combination of automated calls, emails, texts, and where applicable and appropriate live calls to public safety partners.

2019 Performance: In 2019 PG&E provided impact maps in the PSPS data portal first with availability to the public as PSPS event notifications expanded. PG&E is currently working towards adding additional circuit-level information to the online PSPS portal site for advanced notification to public safety partners, and to the public through the pge.com website.



Resilience Zones

5. Resilience Zones

5.1 Resilience Zone - Pilot

Completed Late

Operationalize one resilience zone by June 1, 2019. Evaluate performance and effectiveness through post event review. Incorporate learnings into future Resilience Zone establishment.

2019 WSP Commitment: The operationalization target is met when the first resilience zone becomes ready to use during PSPS. To reach readiness, the following needs to be complete:

1) installation of sectionalizing devices to enable isolation of the intended area from the rest of the distribution grid during PSPS, 2) installation of a pre-installed interconnection hub to enable the rapid connection of mobile generation during PSPS and 3) completion of any necessary hardening treatment(s) to enable safe energization of the intended area during PSPS weather conditions.

2019 Performance: As of 09/24/2019, PG&E's first resilience zone pilot project (in Angwin, Napa County) was completed and ready to be operated during relevant PSPS events. This pilot Resilience Zone in Angwin was operated during the three PSPS Events in October 2019 in which the adjacent area was in-scope for de-energization (Oct 05, Oct 23, and Oct 26-29).

5.2 Additional Resilience Zones

On Track

Continue efforts to develop Resilience Zones in other towns in alignment with system hardening and targeted sectionalizing efforts

2019 WSP Commitment: PG&E is continuing efforts to develop additional Resilience Zones.

2019 Performance: PG&E has four additional resilience zone sites currently in the implementation phase with an operationally-ready target date in 2020. Additionally, during 2019 PSPS events PG&E was able to safely operate three additional temporary microgrids in communities that do not yet have pre-installed interconnection hubs (PIHs). While these sites were not considered Resilience Zones (because they did not leverage fully pre-engineered infrastructure), they achieved the same purpose, which is to energize islanded zones within communities impacted by PSPS events and thereby enable some community resources (e.g. commercial corridors and critical facilities) to continue serving the nearby population.



Operations

6. Operations

6.1 Response, Recovery and Restoration

Completed on Time

To respond more quickly and effectively to major wildfires, regardless of the source of ignition (e.g., third party, lightning, etc.), and to prepare to rebuild and recover from a disaster safely, efficiently, effectively, and consistently. PG&E's plan is to be ready to meet this objective by June 1, 2019 by developing the wildfire response and post-incident recovery capabilities described in this Plan

2019 WSP Commitment: Have plans in place and ready to deploy to support rapid, well-coordinated response and recovery activities for wildfire impacted communities.

2019 Performance: As of 06/01/19, PG&E had developed wildfire response and post-incident recovery capabilities, documented in the Company Emergency Response Plan (CERP), prior to the start of the wildfire season. PG&E has enhanced and documented its commitment to support timely, well-coordinated activities between Service Planning & Design, Gas and Electric Construction, and External Engagement, as documented in PG&E's Disaster Rebuild Annex.

6.2 Personnel Work Procedures

Completed

Update guidance in TD 1464S and verify annual refresher training is completed for all field employees in advance of exposure to elevated wildfire risk conditions.

2019 WSP Commitment: Update guidance document TD-1464S, regarding operational practices during elevated fire risk conditions, and implement to operational teams across the company.

2019 Performance: Leading up to the 2019 wildfire season, PG&E refreshed field employee and contractor teams on safe operations during wildfire risk conditions through in-person Wildfire Season Readiness Kick-off meeting. PG&E finalized a comprehensive update to guidance document TD 1464S and associated Safety training courses in August 2019. PG&E also verified that field employee annual refresher training on safe operations during wildfire risk conditions was completed.

6.3 Situational Awareness

Completed

Incorporate wildfire risk situational awareness into daily briefings

2019 WSP Commitment: Incorporate wildfire risk situational awareness into daily briefings..

2019 Performance: As of 06/19/2019, PG&E's WSOC had incorporated wildfire risk situational awareness into Distribution and Transmission daily briefings. The Wildfire Incident report includes fire conditions, fire locations, assets at risk, potential impact, and outage information pertaining to active incidents.



Technology

6. Technology

6.4 Rapid Earth
Fault Current
Limiter, Pilot

On Track

Implement R&D Rapid Earth Fault Current Limiter (REFCL) pilot project

2019 WSP Commitment: REFCL is a technology that rapidly reduces the energy in certain three-wire overhead distribution systems when it detects phase-to-earth faults, reducing the risk of an ignition. PG&E planned to begin engineering and design work in 2019 for pilot field implementation of this technology in 2020.

2019 Performance: PG&E completed the four key components of preparations for 2020 pilot field implementation: 1) Civil design, 2) Electrical substation design, 3) Ground Fault Neutralizer (GFN) and substation regulator specifications, and 4) Contract awarded. 2020 workplan includes system installation, release to operations and activation of SCADA functionality.

6.5 Enhanced
Wires Down
Detection

100%

Completed

Enhanced Wires Down Detection Project

2019 WSP Commitment: Deliver the phase 1 scope of the project, SmartMeter Partial Voltage (PV) alert functionality (firmware) deployed to provide Operations and Dispatch situational awareness of a majority of single-phasing conditions that may indicate the occurrence of a wire down event.

2019 Performance: PG&E had successfully deployed the Phase 1, enhanced wires down alert functionality (firmware) to over 4.5 million SmartMeters by the end of March.

6.6 Disable Manual
Reclosers

100%

Completed

Disable any remaining manual reclosing devices in advance of exposure to elevated wildfire risk conditions.

2019 WSP Commitment: Disable manual reclosing devices (both Distributing and Transmission) by the beginning of the Wildfire Season (05/31/2019).

2019 Performance: Note that commitment 4.1 "Recloser Operations" had SCADA enabled the majority of active / operational line reclosers in the Tier 2 and Tier 3 HFTD areas, by 05/29/2019. The small volume of remaining manual reclosing devices were deactivated prior to wildfire season.

6.7 Recloser Daily
Operations

100%

Completed

Recloser daily operations conformance with TD-1464B-001 and monitor program for effectiveness

2019 WSP Commitment: Recloser daily operations conform to TD-1464B-001 and monitor program for effectiveness.

2019 Performance: As of 09/30/2019, PG&E implemented a change in the process to disable reclosing during period of potential fire risk. Rather than disabling the devices that feed into Tier 2 and Tier 3 based on local conditions, PG&E has disabled all reclosing devices that feed into Tier 2 and Tier 3 for the entirety of fire season. This change exceeded the level of risk reduction implicit in this commitment as PG&E implement this change in order to have even greater assurance that the appropriate devices are disabled during elevated risk conditions.



Situational Awareness

7. Situational Awareness – Safety & Infrastructure Protection Teams (SIPT) & WSOC

7.1 Aviation Resources

Completed Late

Operate four heavy-lift helicopters to aid in fire suppression and restoration efforts by May 2019, available at CAL-Fire's discretion

2019 WSP Commitment: PG&E acquired four heavy-lift helicopters in 2018 and will operate them to respond to agency (e.g., CAL-Fire) requests for PG&E to operate under agency's control to support in the 2019 fire season, unless unavailable.

2019 Performance: As of 06/14/2019, PG&E had 4 heavy-lift helicopters available and authorized by the FAA for operations to respond to agency (Cal-Fire) request to support fire events in 2019 fire season.

7.2 Safety & Infrastructure Protection Teams (SIPT)

Completed Late

Safety & Infrastructure Protection Teams (SIPT)

2019 WSP Commitment: Obtain and operate a minimum of 25 trucks + 3 trucks for extra coverage and the capability of type 6 wildland engines, staffed with 60 employees through an internal PG&E SIPT in partnership with International Brotherhood of Electrical Workers (IBEW)

2019 Performance: As of 07/19/2019, PG&E had 28 trucks operational and over 60 employees staffed to further support SIPT.

7.3 SIPT support WSOC

Completed

SIPT Support of the Wildfire Safety Operations Center (WSOC)

2019 WSP Commitment: The SIPT will assist in WSOC decision making by acting as observers on high-fire risk days to inform PSPS decision making, protect PG&E assets, and assist with emergency response as approved and directed by the Agency Having Jurisdiction (AHJ) e.g. CAL FIRE

2019 Performance: As of July SIPT teams were in place with these activities as part of their normal work duties. Further, by October, PG&E had developed and operationalized two tools that allowed STIP crews to submit field observations and a comprehensive view of those field observations to WSOC analysts to further inform wildfire risk assessments and PSPS decision making.

7.12 WSOC

Completed

WSOC Technology Implementation

2019 WSP Commitment: Increase situational awareness by integrating technology and processes intended to reduce wildfire risk into the WSOC to enable PG&E's collaboration with external and internal stakeholders and respond more effectively to wildfires

2019 Performance: As of 11/30/19, PG&E's WSOC had implemented new technology into the Wildfire Incident Viewer (WIV) tool, that allow for additional situational awareness of the ignitions, as they occur throughout the service territory.



Situational Awareness

7. Situational Awareness – Wildfire Safety Operations Center (WSOC) Tools

7.4 Camera
Deployment – Q2

103%

Completed on Time

HD Cameras by End of Second Quarter

2019 WSP Commitment: Operationalize and install 30 HD cameras by June 30, 2019, in HFTD areas

2019 Performance: As of 06/30/19, 31 cameras were installed and operationalized in HFTD areas.

7.5 Camera
Deployment – EOY

187%

Completed on Time

HD Cameras by End of Year

2019 WSP Commitment: Operationalize and install 71 HD cameras by the end of 2019, in HFTD areas

2019 Performance: By end of year, 133 HD Cameras had been installed and operationalized in the HFTD areas.

7.7 Fire Spread
Model – Phase 1

Completed Late

Deploy operational fire spread modeling, driven by POMMS weather model, to allow improved understanding of catastrophic fire risk before the upcoming wildfire season (June 1, 2019)

2019 WSP Commitment: Deploy an operational fire spread model with weather and fuels information being driven by the PG&E POMMS weather model by June 1, 2019.

2019 Performance: As of 10/04/2019, PG&E had developed and operationalized two operational fire spread models on the vendors server, that use the POMMS weather model data as input in 2019. Further integration and enhancements for ease of tool use occurred through the remainder of 2019.

7.8 Satellite Fire
Detection

Completed on Time

Implement Satellite Fire Detection before wildfire season

2019 WSP Commitment: Develop, deploy, and maintain an automated tool to detect and track new fires as they occur, issue alerts about new fires, as well as simulate the potential spread of new and existing fires before the upcoming wildfire season.

2019 Performance: As of June, PG&E had developed and operationalized an automated satellite fire detection and alerting system tool available on PG&E's intranet. When a new fire is detected the system disseminates email alerts to applicable areas and PG&E leadership.



Situational Awareness

7. Situational Awareness – Meteorology

7.6 Meteorological
Operations

On Track

Deploy enhanced PG&E Operational Mesoscale Modeling System (POMMS) if accuracy can be improved

2019 WSP Commitment: Deploy the next generation of weather forecasting using High Performance Computer capabilities (i.e. supercomputers) or cloud computing.

2019 Performance: PG&E implemented POMMS enhancements in the first half of 2019. In the second half of 2019 PG&E kicked off a project to further build out POMMS 3.0 in the cloud using supercomputing resources. Planned completion in mid-2020. Vendors have been selected for system deployment

7.9 Storm Outage
Prediction Model
(SOPP)

Completed

Automate analog storm matching and prediction functions in the SOPP model

2019 WSP Commitment: The automated analog storm matching tool being implemented utilizes the latest forecast from the federal Global Forecast System (GFS) and matches the storm variables against historical data. The 'Outage Producing Wind' (OPW) model returns the historical outage frequency in an area based on the forecasted wind speed.

2019 Performance: As of June, PG&E had developed and operationalized the automated analog storm matching and prediction functions in the SOPP model.

7.10 Weather
Stations – Q2

125%

Completed on Time

Weather Stations by End of Second Quarter

2019 WSP Commitment: Install 200 weather stations by June 30, 2019, in HFTD areas

2019 Performance: As of 06/30/19, PG&E had installed and operationalized 249 weather stations

7.11 Weather
Stations – Sept 1

107%

Completed Late

Weather Stations by September 1

2019 WSP Commitment: Install 400 weather stations by September 1, 2019, in HFTD areas

2019 Performance: PG&E completed this initiative just a few days late, as the 400th weather station was installed by 09/04/19. By the end of 2019 426 weather stations had been installed and operationalized.