
**PACIFIC GAS AND ELECTRIC COMPANY
ANNUAL REPORT ON COMPLIANCE
FOR 2020 WILDFIRE MITIGATION PLAN**

MARCH 31, 2021



Pacific Gas and Electric Company
Annual Report on Compliance for 2020 Wildfire Mitigation Plan
(March 31, 2021)

I. INTRODUCTION

In compliance with the Wildfire Safety Division's (WSD) *Compliance Operational Protocols* issued on February 16, 2021, (Protocols) and California Public Utilities Code Section 8386.3(c)(1), Pacific Gas and Electric Company (PG&E) respectfully submits its Annual Report on Compliance for its 2020 Wildfire Mitigation Plan (WMP) for the calendar year 2020 (2020 Annual Report). In completing the 2020 Annual Report, PG&E has followed the outline of contents provided by WSD in the Protocols. The specific Protocol requirements are included in italics and bold below in Section II.

The information provided in this 2020 Annual Report is as of March 31, 2021. We are continuing to review and assess our programs and initiatives, including our inspection programs, and, in that process, may identify additional compliance-related information for the 2020 calendar year. To the extent we do identify any compliance-related information, we will notify WSD, the Commission, and parties as soon as possible.

II. RESPONSES TO ANNUAL REPORT ON COMPLIANCE QUESTIONS

a) An assessment of whether the EC met the risk reduction intent by implementing all of their approved WMP initiatives; i.e., the degree to which initiative activities have reduced ignition probabilities;

i. If the EC fails to achieve the intended risk reduction, EC shall provide a detailed explanation of why and a reference to where associated corrective actions are incorporated into their most recently submitted WMP.

PG&E's 2020 risk reduction efforts and intent are linked to our ability to complete our commitments and successfully execute our WMP initiatives. PG&E identified and tracked 38 commitments made in our 2020 WMP that contributed towards our overall 2020 WMP goals to reduce wildfire ignition potential, fire spread, and the impact of Public Safety Power Shutoff (PSPS) events.¹ In summary, we completed or substantially completed 35 of the 38 commitments described in our 2020 WMP and formally revised two more commitments through the WMP Change Order process that are now included in our 2021 WMP. The one commitment that was not completed, substation asset inspections, was recently described in a letter submitted to WSD on March 4, 2021.² A summary of the status and performance of all 38 commitments can be found in the Appendix, Table 1, of this 2020 Annual Report. This information is also

¹ See 2020 WMP, Executive Summary at pp. 3-18 (describing goals of 2020 WMP). PG&E's 2020 and 2021 WMP are available at: https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/wildfire-mitigation-plan.page?WT.mc_id=Vanity_wildfiremitigationplan

² With a subsequent update letter provided on March 12, 2021.

contained on pages 353 – 363, *Table PG&E-7.2-1: 2020 WMP Commitments and Performance*, of our 2021 WMP, as revised by PG&E’s errata submitted on March 17, 2021.³

In addition to the details of each of the 38 commitments provided in the Appendix, PG&E is concurrently providing information on all 2020 WMP initiatives in its Quarterly Initiative Update for Q4 2020 (QIU). The QIU contains a quantitative and/or qualitative discussion on the completion of planned work for the more than 130 initiatives included in the 2020 WMP.

The risk reduction anticipated from the 2020 WMP commitments and initiatives was identified in the 2020 WMP through the discussion of initiatives and data provided. The risk reduction targeted and described was achieved through the successful completion of nearly all 2020 WMP commitments and initiatives.

Further, the work completed in 2020 has been incorporated as actual units and dollars into Table 12 of the 2021 WMP. The actual units completed and dollars spent in 2020, shown in Columns S through U of Table 12, are used as inputs into the Risk Spend Efficiencies (RSE) for our activities in Columns I through L. Details can be seen in PG&E’s RSE workpapers⁴ where PG&E provides details of calculated Risk Reductions achieved in 2020 from each initiative in tab ‘RSE Results.’⁵ Details of the risk reduction methodology are provided in the RSE Lite Methodology WMP 2021.pdf document that was included as part of the RSE workpaper package with PG&E’s 2021 WMP.

b) A full and complete listing of all operational changes made to WMP initiatives, an explanation of why the changes were necessary, and an assessment of whether the changes achieved the same risk reduction intent;

PG&E’s 2020 work on wildfire mitigation and risk reduction are best documented by a review of our tracking of the 38 commitments from the 2020 WMP and our QIU, which is being provided concurrent with this 2020 Annual Report. With regard to the 38 commitments, 33 were completed as originally planned. The remaining 5 commitments were either formally changed through the WMP Change Order process, substantially completed, or missed. We address each of these 5 commitments in more detail below.

PG&E’s QIU provides an overview of our annual targets and progress on initiatives described in our 2020 WMP, including any changes to the initiatives that occurred in 2020. The QIU also describes a 2020 delay associated with performing pole loading assessments at a rate of approximately 230,000 poles per year in High Fire Threat District (HFTD) Tier 2 and Tier 3 locations through 2024. While the Pole Loading Assessment program fell behind the annual forecasted rate of completion in 2020, the program is still on-track to finish assessments on all

³ PG&E’s 2019, 2020 and 2021 WMPs and related documents, including the 2021 WMP Errata, are available at www.pge.com/wildfiremitigationplan

⁴ See 2021 WMP, 2021WMP_Section7.3_Atch01 workpapers.

⁵ Please note that for certain initiatives, risk reduction benefits extend through multiple years and are discounted and aggregated together as a net present value.

poles in Tier 2 and Tier 3 HFTD areas by the end of 2024 as originally forecasted. The QIU also describes some of the 2020 WMP initiatives that are still in progress.

1. Commitments Missed

Substation Asset Inspections: On March 4, 2021, PG&E submitted an update to WSD on our 2019 and 2020 WMPs where we self-identified an error discovered in the course of our asset management improvement processes. In 2020, we missed enhanced inspections on 24 hydroelectric substations in Tier 3 HFTD areas, as well as enhanced inspections on a portion of the 39 hydroelectric substations in Tier 2. As a result, the status of the substation asset inspection commitment has been revised from “completed” (in prior reporting on the 2020 WMP commitments including our January 29, 2021 Quarterly Advice Letter⁶) to “missed.” Since our self-identified errors, we have completed remedial inspections on all the hydroelectric substations (24 Tier 3 and 16 Tier 2)⁷ and all generated A tags associated with the remedial inspections were repaired as of March 19.⁸ We are also completing a root cause evaluation to assess how these assets were missed and to prevent a recurrence of similar issues in the future.

Pole Inspections: In addition to substation inspections, PG&E is currently investigating pole inspections which occurred during calendar year 2020 to determine whether these inspections were performed consistent with the 2020 WMP commitments and initiatives. Once that investigation is complete, to the extent necessary, we will update the 2020 Annual Report to reflect additional information learned during the investigation.

2. Commitments Subject to Change Orders

PG&E made two changes to 2020 WMP Commitments through the WMP Change Order process, both of which involved new technology implementation efforts that ran into software/firmware challenges.

Sensor IQ: The Change Order submitted on September 11, 2020, revising the implementation timeline for the Sensor IQ project (referenced in Section 5.3.2.2.6 of our 2020 WMP⁹) was approved by WSD on January 5, 2021. As was described in our Change Order, the Sensor IQ Pilot was originally expected to utilize Sensor IQ data deployed on 500K Smart Meters™ in Tier 2 and 3 HFTD areas before the start of wildfire season to explore the development of improved preventative maintenance analytics to detect system anomalies, potential equipment failure, and ignition sources by December 31, 2020. Due to incompatibility issues identified between the firmware version currently installed on the Smart Meters™ and the Sensor IQ software, PG&E

⁶ See Advice Letter 6068-E dated January 29, 2021 at p. 12.

⁷ PG&E updated WSD on progress via a letter on March 12 that notified WSD of the completion of the Tier 3 inspections and repair tags, as well as the fact that we had found the records that confirmed that inspections had been performed on five distribution poles originally included in the March 4 letter.

⁸ We targeted inspections on 16 hydroelectric substations located in Tier 2 HFTD areas to ensure alignment with the Tier 2 inspection frequency requirement of once every three years or approximately 33%.

⁹ 2020 WMP at p. 5-94.

determined that it was technically infeasible to deploy the originally planned version of the Sensor IQ tool to PG&E's Smart Meters™.

With the delay in the Sensor IQ deployments described above, there will be an associated delay in conducting a strategic assessment to understand what operational value can be derived using granular load, voltage, and outage data collected by the Sensor IQ technology to improve preventative maintenance analytics to detect system anomalies, potential equipment failure, and ignition sources. Since the use cases for this data are unknown until a strategic assessment is conducted, the potential impact of the revised timeline for this initiative is also unknown, including any impacts on ignition probability or PSPS risk reduction outcomes.

Partial Voltage Detection: The Change Order submitted on December 11, 2020, for the Partial Voltage Detection project (referenced in Section 5.3.2.2.3 of our 2020 WMP¹⁰) was approved on January 28, 2021. As was described in our Partial Voltage Detection Change Order, PG&E planned to deploy Partial Voltage Detection software to an additional 365,000 Three-Phase SmartMeters™ (in addition to the 4.5 million single-phase SmartMeters™ where it has already been deployed) before the 2021 WMP Annual Update. However, during the initial deployment of Partial Voltage Detection firmware to 1,000 in-service meters a technical, product issue arose that impacted the reliability of billing reads coming from the SmartMeters where this firmware was been deployed. This issue did not present itself during extensive testing of firmware in PG&E's test environments, but prevented further, large-scale deployment of the firmware as doing so may impact PG&E's ability to provide timely billing information to impacted customers. As discussed in the 2021 WMP, this technology is now anticipated to be installed on all targeted meters by the end of June 2021.¹¹ This delay in the Partial Voltage Detection firmware deployment may drive an associated delay in the ability to detect and locate downed distribution lines more quickly to enable faster response to wire down situations or potential wire down-related ignitions if they occur. However, PG&E anticipates that the delay will have minimal impact on the overall wildfire risk mitigation objectives because we still expect to have the capability in place before the majority of the 2021 Wildfire Season.

3. Commitments Substantially Completed

Commitments that were substantially completed include the Remote Grid new technology deployment effort (referenced in Section 5.1.D.3.8 of our 2020 WMP¹²) and the PSPS restoration initiative (referenced in Section 4.1 of our 2020 WMP¹³). These commitments are described in more detail below.

Remote Grid: This new technology deployment commitment was substantially completed in 2020. The primary objectives of learning through the development of actual projects were accomplished and are outlined below. One program component experienced delays: "Deploying the 4-8 initial sites." At the end of 2020, PG&E had five (5) Remote Grid sites in the advanced

¹⁰ 2020 WMP at p. 5-91.

¹¹ 2021 WMP at pp. 440-441.

¹² 2020 WMP at p. 5-19

¹³ 2020 WMP at p. 4-1.

stages of deployment, with the first project forecasted to begin operations in 2021. These projects were primarily delayed by permitting constraints associated with sensitive species. This initiative has been identified as Substantially Completed given the successful completion of the primary goal of learning about remote grid applications given the focus of this initiative as a new technology deployment effort.

From the work completed on this initiative in 2020 PG&E learned:

- That the technology combination of Solar Photovoltaic Generation and Battery Energy Storage with supplemental Propane Generators is the most cost-effective, reliable, and cleanest solution for initial Remote Grid sites.
- There was sufficient initial vendor interest and availability to engage in contracting to deploy systems with specifications and terms responsive to PG&E's requirements.
- That Remote Grids are a viable solution that can contribute to our wildfire risk mitigation efforts by allowing us to completely eliminate miles of overhead powerlines in HFTD areas by deploying Standalone Power Systems (SPSs) to serve customer meters.
- A number of site-specific conditions can reduce individual project feasibility or delay implementation. Examples include customer acceptance, physical space constraints, shading, and other constructability-related considerations such as grading and geological conditions, permitting challenges such as the presence of threatened species, cultural heritage, or adjacency to a scenic highway.
- The parameters of an appropriate "Terms of Service" which have been drafted into a form of Supplemental Provisions to the Electric Rules, as a tariffed form agreement. The proposed form of Supplemental Provisions Agreement was filed with the Commission in Advice Letter 6017-E on December 15, 2020. Commission approval of this Advice Letter will be a key enabler of scaling up this wildfire risk reduction approach.
- The terms and elements that were developed into reusable contract templates for (1) the SPS Purchase and Sale Agreement and (2) the Maintenance Agreement. These documents can standardize and streamline Remote Grid engagements going forward.
- The technical specifications that have been iteratively refined through the detailed design of the in-flight projects. These specifications can be used to standardize and streamline the Remote Grid design process going forward.

Leveraging the learnings from the 2020 Remote Grid initiative, PG&E has been developing additional projects which will follow in 2021 and 2022. These projects will draw on the lessons learned referenced above to enable the scale-up of this new solution for reducing wildfire risk in

applicable locations. A more detailed discussion of how these lessons learned are being reflected in PG&E's remote grid efforts going forward is included in our 2021 WMP.¹⁴

PSPS Restoration: In preparation for 2020 PSPS events, PG&E increased its exclusive use helicopter fleet from 35 to 65 helicopters and prepared two fixed-wing aircraft to support PSPS restoration inspections. In 2020, PG&E executed a total of six PSPS events (in September, October, and December). Our restoration improvement efforts made events significantly shorter in duration in 2020 with an average restoration time after the weather "all-clear" of approximately 10 hours, which represented a more than 40% improvement over the 2019 performance of approximately 17 hours. So while we achieved our overall goal of improving PSPS Service Restoration and making PSPS events shorter, we did not achieve one target within this initiative of restoring 98% of customers within 12 daylight hours of the weather "all-clear", our performance on this measure in 2020 was 96%.

The primary factor that impaired our ability to attain the 98% restoration target was the heavy smoke created by on-going fires during the first PSPS event of 2020 (the September 7th event) which prevented PG&E from safely flying helicopters to perform restoration inspections as planned. The limited visibility made it such that only 28 of the 60 ready helicopters were able to fly. This forced a shift of planned aerial inspections to instead be executed by slower, ground-based inspections. This ultimately drove 91% performance for that one event, impacting overall performance for the year. A secondary factor was the large geographic breadth of the October 25th PSPS event which stretched restoration teams and resulted in 96% restoration with 12 daylight hours of the weather "all-clear" for that event. In total, 2020 performance fell short of this target by about 2%, with 96% restored within 12 daylight hours, or by about one hour, with 98% of customers across all 2020 events having been restored within 13 daylight hours.

This initiative has been identified as Substantially Completed given the successful completion of our overall initiative goal of making PSPS events shorter for impacted customers, with an over 40% faster average restoration time, despite the disruption described above that, prevented full completion of one portion of this commitment.

c) Descriptions of all planned WMP initiative spend vs actual WMP initiative spend and an explanation of any differentials between the planned and actual spends;

PG&E is providing as an attachment to this 2020 Annual Report the details of all 2020 forecast WMP initiative spend versus actual 2020 WMP initiative spend.¹⁵ The primary variance drivers (such as Volume, Unit Cost, Initiative Realignment, or MAT Code Realignment) are identified and explained in Columns L-R (for expense) and Z-AF (for capital) of the attachment.

Maintenance Activity Type (MAT) codes identify and capture a single category of work as PG&E budgets, tracks, and manages our various utility operations programs. WSD-defined initiatives generally do not line up exactly with the MAT code structure PG&E uses to track our work, therefore there are a number of MAT code to initiative relationships incorporated into our

¹⁴ 2021 WMP at pp. 573-577.

¹⁵ See PGE_2020 ARC_20210331__2020 Variance Explanations.xlsx.

WMP financial data. There are situations where one MAT code is broken into multiple WMP initiatives or where multiple MAT codes combine into one WMP initiative. Due to these relationships, MAT code to WMP initiative realignment can occur based upon changes to the WMP Initiative structure and/or PG&E subject matter expert feedback. As a result, PG&E realigned certain programs from the 2020 WMP to the 2021 WMP to tie back to the described work and outcomes of the initiatives. The impact of these changes on the financial results is identified in the “MAT code or Initiative Realignment” column of the attachment.

d) A description of whether the implementation of WMP initiatives changed the threshold(s) for triggering a PSPS event and/or reduced the frequency, scale, scope, and duration of PSPS events.

PG&E worked to make PSPS events smaller, shorter, and smarter for our customers and communities in 2020. Those efforts were largely successful as the six PSPS events in 2020 were, in aggregate, 55 percent smaller than those PSPS events would have been in 2019 had the same weather patterns occurred. PG&E also succeeded in making PSPS events shorter as we reduced the average time to restore power once the severe weather cleared by more than 40 percent.

Changes in threshold(s) for triggering PSPS events and reduced frequency:

- Improvements to our PSPS criteria and meteorology tools in advance of the 2020 PSPS season contributed to reducing PSPS event frequency. PG&E executed nine PSPS events in 2019, but the historical analysis of events incorporating the improvements made in 2020 shows that potentially only four of these events would have been executed using PG&E’s improved situational awareness, meteorology tools, and 2020 threshold values and tools.
- A key improvement involved moving from a 3 kilometer (km) by 3 km to 2 km by 2 km granularity on our meteorology model. The magnitude of these improvements translated into a reduction in the number of PSPS events.

Reduced scale and scope:

- The deployment of over 600 automated sectionalizing devices (on both the distribution and transmission system) allowed PG&E to more narrowly target PSPS events to the areas where severe weather occurred in 2020. In conjunction with the additional devices, the PG&E Distribution Circuit Segmenting guides utilized for “segmenting” circuits during PSPS events were updated to a more-targeted, individual, circuit-based approach. This effort also supported the more detailed meteorology event boundaries which reduced the number of customers impacted and sped up restoration times.
- The additional devices and above mentioned segmenting guides allowed distribution field personnel to streamline the PSPS event execution process by having the ability to more readily obtain both the segmentation guides and maps on circuits deemed

within scope rather than the lesser level of detail used previously (often at the Fire Index Area level).

- The deployment of temporary microgrids at the local and substation levels, with the use of Temporary Generation resources, also allowed PG&E to keep “safe to energize” customers in power while nearby locations were impacted by PSPS events.
- Overall, through the meteorology and situational awareness improvements and the implementation of these event execution improvements, PG&E targeted making 2020 PSPS events impact 33% fewer customers than would have impacted by the same weather patterns in 2019. Instead, the multiple actions we took were successful in reducing customers impacted by 55%, meaning that over 800,000 customers did not experience a 2020 PSPS event that would have been impacted in 2019.

Duration:

- The above activities to reduce the scope and more specifically target PSPS events also contribute to being able to restore power more quickly once the severe weather event passes.
- Based on the improved PSPS event targeting, and through the acquisition of additional aerial assets (helicopters and fixed-wing aircraft), PG&E restored power more than 40% faster in 2020 after the severe weather passed, as compared to 2019. On average post-PSPS inspections were completed and power was restored for customers 10 hours after the weather “all clear” in 2020, as compared to 17 hours in 2019.

e) A summary of all defects identified by the WSD within the annual compliance period, the corrective actions taken and the completion and/or estimated completion date.¹⁶

1. Inspection Reports

The WSD began inspections in May of 2020. During the 2020 compliance period, the WSD provided a total of 108 inspection reports for inspections on 558 PG&E assets, both in HFTD and non-HFTD areas. From the 558 asset inspections, WSD reported a total of 149 defects. A monthly breakdown of defect findings is shown below in Table 1.

Table 1: Total of Monthly Defects Identified by WSD

May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
15	22	22	19	33	21	6	11	149

In response to each defect finding, PG&E took the following actions:

¹⁶ For purposes of this portion of the 2020 Annual Report, PG&E understands a “defect” to be a defect identified in an Inspection Report or Audit Report. See Protocols at pp. 11-12.

1. Sent a crew to assess the field condition and remediate findings as warranted.
2. Reported the field conditions and any remaining conditions requiring follow-up to a central compliance team.
3. The compliance team prepared and submitted a response to WSD.

Responses explaining PG&E's disposition of defect findings and relevant corrective actions were provided back to WSD generally within ten (10) business days. PG&E utilizes our Corrective Action Program (CAP) database to track corrective actions and commitments made in the inspection responses to the WSD. The corrective action resolution timeline for the defects identified during WSD inspections is based on the severity of each defect finding. For defect findings identified in the reporting period (May – December 2020), WSD did not identify the severity of the defects.¹⁷ Therefore, in the response to WSD findings, we provided estimated completion dates in alignment with our existing electric corrective tag prioritization approach.

a. Summary of findings

The corrective action status of the 149 defects is summarized below. Please see attachment PGE_2020_ARC_20210331_WSD_ARC_Tracker.xlsx for further details on the defects identified in 2020, the corrective actions taken, and the completion or estimated completion dates.

At a high level, the 149 defect findings from WSD resulted in the following actions¹⁸:

- 63 defect findings have been remediated in the field. PG&E has confirmed the remediation through the creation and closure of a work order or electric corrective (EC) notification, and/or capturing photos validating that the asset is compliant.
- 36 defect findings did not require any corrective action by PG&E
 - 6 defects resulted in Third-Party Notifications (TPN) where the asset in question is actually owned and operated by a third party (often a telecommunications or cable company). PG&E has notified the third party of the concern. An example would be a defect regarding a down guy (vegetation contact) where, upon inspection, it was determined that the down guy is owned by a third party. PG&E completes a TPN and sends it to the third party to inform the third party of the non-conformance.
 - 30 defects were reviewed by PG&E and determined the conditions identified did not meet the WSD's definition of a defect and therefore no action is required. PG&E leveraged the following processes to arrive at this determination:

¹⁷ WSD started providing "defect severity" classifications in its inspection reports starting in February 2021.

¹⁸ This data on the 2020 defect findings is accurate as of March 24, 2021 and is continuously updated.

- i. Field site visits (9) – PG&E subject matter experts performed a follow-up inspection and found no defect. For example, Inspection Report AS-PGE-022 identified a tree that appeared hazardous due to the color of the subject tree and the surrounding trees being green. PG&E performed a site visit and determined that the subject tree is a Madrone species that sheds during the summer and had no signs of disease/dying. PG&E also noted that there appeared to be significant summer leaves on the ground in the vicinity of the subject tree due to a customer in the area performing tree clearing. Due to the reasons presented above, PG&E identified that the tree does not present a hazard at this time.
 - ii. Clarifying rule interpretations (13) – WSD identified a General Order (GO) 95 defect, but PG&E clarified with a subject matter expert that the rule does not apply in this case. For example, Inspection Report AS-PGE-015 involved an alleged defect regarding missing visibility strips. GO 95, Rule 56.9 requires installation of “substantial markers of suitable material.... To all anchor guys” but contains no requirements for visibility strips. As noted in the inspection report, this location does have a guy marker. Regarding visibility strips, PG&E’s Overhead Inspection job aid TD-2305M-JA02, expands upon requirements for guy markers by specifying that visibility strips shall be installed on guy markers located within 15 feet of the paved surface or 15 feet from the edge of the traveled, unpaved portion of the city or county roads were not protected by curbs. Since the closest roadway to this pole is more than 15 feet away, visibility strips are not required on this guy marker.
 - iii. Scheduling of Enhanced Vegetation Management (EVM) work in progress (8) – WSD identified defect findings for locations where PG&E had not yet planned and completed EVM work. For example, Inspection Report MJ-PGE-026 identified trees that had not been worked per the EVM program. However, the EVM-related findings identified by the WSD consist of vegetation work that was not included in the 2020 EVM plan, and thus did not meet the definition of a defect.
- 50 defect findings are pending and awaiting remediation:
 - 31 defects had been previously identified as requiring work and had existing EC notifications that were created as part of PG&E’s inspection and maintenance program. The defects will be worked in accordance with GO 95 timeline requirements and PG&E’s prioritization of identified corrective action tags.

- 11 defects resulted in the creation of a priority “E” or “F” EC notification and will be worked in accordance with GO 95 timeline requirements and PG&E’s prioritization of identified corrective action tags.¹⁹
- The remaining 8 defects involve the following:
 - Remediation of communication wires that do not meet the minimum clearance requirements. PG&E will be sending out a contracting crew to adjust the clearances to align with GO 95, Rule 54.4 G.
 - PG&E identified a design flaw regarding covers that were improperly installed on conductors and taps. PG&E is evaluating the engineering of the cover to determine if changes need to be made to the construction process.

PG&E is prioritizing these 50 defects in its work plan for 2021 and anticipates completing all open defect findings by August 31, 2021.

b. Implementation of the WSD Compliance Operating Protocols and Guidance

In February 2021, WSD issued the Compliance Operating Protocols and Guidance. The Compliance Operating Protocol established severity and resolution timelines. PG&E is aligning its process, much of which is described above, to adhere to these resolution timelines based on severity. PG&E is also preparing closure packages to provide documented evidence of remediation to WSD including work completion documentation, pictures, and other documentation. PG&E will continue to work with WSD to address their findings in accordance with their established timelines and reach a consensus on the closure of the defects. PG&E recognizes that the WSD inspection process is new, and we are committed to working collaboratively with WSD to comply with the operating protocols and to satisfactorily resolve each defect.

2. Audit Reports

PG&E received one Audit Report from WSD related to the implementation of the 2020 WMP: the *Audit of PG&E’s Implementation of their Enhanced Vegetation Management Program in 2020* (EVM Audit Report). PG&E provided a response to the EVM Audit Report on February 23, 2021, and an update on March 2, 2021. PG&E’s responses describe the defects identified in the EVM Audit Report, the corrective actions taken, and the completion or estimated completion of those actions.

3. 2020 WMP Deficiencies and Action Items

¹⁹ With WSD-provided defect severity classifications being issued beginning in February 2021, the 2020 defect findings that are the subject of this report were scheduled and prioritized based on existing prioritization guidelines. Examples of E and F notifications include the replacement of a high voltage sign and the adjustment of a slack guy wire.

In response to our 2020 WMP, WSD identified a number of “deficiencies” identified as Class A, Class B, and Class C deficiencies that we addressed in a Remedial Compliance Plan submitted on July 27, 2020, our Quarterly Reports which were submitted on September 9, 2020, December 9, 2020, and February 5, 2021 and our 2021 WMP filed on February 5, 2021.

After evaluating our Remedial Compliance Plan and First Quarterly Report, on December 30, 2020, and January 8, 2021, respectively, WSD identified a total of 123 Action Items for follow-up. This additional feedback has been helpful in shaping our 2021 WMP. The 2021 WMP addresses 38 of the 39 Actions Items that WSD identified after reviewing our Remedial Compliance Plan. Our 2021 WMP also responds to the majority of the 84 Actions Items identified by WSD that related to the First Quarterly Report. Section 4.6 of PG&E’s 2021 WMP²⁰ lists all of the 2020 WMP deficiencies as well as the Action Items and explains the resolution of each and/or a reference to where the resolution is described.

Finally, on February 26, 2021, PG&E provided a supplemental filing that responded to all of the remaining Action Items identified from the WSD’s review of the Remedial Compliance Plan and First Quarterly Report.

III. CONCLUSION

PG&E appreciates the opportunity to submit this 2020 Annual Report to provide a summary of its compliance with the 2020 WMP. As outlined above and described in PG&E’s 2021 WMP, much progress has been made but much more work remains to be done. Through the implementation of our 2019 and 2020 WMPs lessons have been learned, improvements have been identified and we continue to refine and grow our wildfire risk mitigation efforts. PG&E looks forward to continuing to work with the Commission, WSD, communities, customers, and other stakeholders on developing, implementing, and improving programs and initiatives that reduce the risk of catastrophic wildfire throughout our service territory.

²⁰ See 2021 WMP at p. 156.

APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE

2020 Commitments ^(a)	WMP Commitment	Summary of 2020 Performance
B.1 Upgraded POMMS Model to 2km	Increase POMMS model resolution to 2 km, increase model lead time to ~96 hours, deploy 0.67 km forecasts on demand, and deploy a high-resolution model ensemble package with 8 model members at 2 km resolution	PG&E's 2KM model is run 4 times per day. On-demand simulations and vendor-hosted training have been completed. The 8-member model ensemble is also being produced and delivered to PG&E daily
B.2 NOAA-20 Satellite Data	Add NOAA-20 data including Visible Infrared Imaging Radiometer Suite (VIIRS) into the suite of fire detection tools	PG&E has incorporated NOAA-20 data into the existing fire detection workflow
B.3 Wind Event Forecasting Tool (Diablo)	Develop and deploy a (2 to 4 week) Diablo wind event forecasting system based on statistical, machine learning and/or artificial intelligence techniques	An internal long-range diablo wind forecast was created internally by Meteorology. This was done after analysis of teleconnections against Diablo winds revealed that the Madden-Julian Oscillation could be used to indicate the potential for an increased or decreased risk of diablo winds. This forecast is now produced twice a week.

(a) Color code legend: Blue Fill = Commitment is completed; Green Fill= Commitment is on target; Amber Fill = ~one month or less behind plan/"At Risk" or "Substantially Complete, if after due date"; Red = >one month behind plan / "High Risk" or "Commitment Missed, if after due date."

APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments ^(a)	WMP Commitment	Summary of 2020 Performance
B.4 Wildfire Spread Model – Operational Impacts	PG&E will evaluate incorporating the fire spread model consequence into decision support frameworks including PSPS	<p>Phase 2: Implementation of territory-wide fire risk, probabilistic fire spread modeling, improved urban encroachment into WUI areas and improved fire spotting algorithm was all completed in May 2020.</p> <p>Phase 3: CalFire validated this technology in 2019 with a pilot project and is likely to move forward with state-wide fire spread solution; improvements with Technosylva scoped for 2020. PG&E has evaluated and sees value in incorporating fire spread outputs directly into PSPS decision making going forward</p>
B.5 Live Fuel Moisture (LFM) Sampling	Conduct LFM sampling utilizing Safety and Infrastructure Protection Team (SIPT) resources. Targeting samples from 10 locations by 06/01, and 15 additional sites by 9/01 for a 2020 total of 25	As of the end of September 25 sites (not counting two sites that were established but lost due to wildfire damage) are actively being sampled by SIPT crews. Sampling will be done on the 1st and 15th of each month going forward.
B.6 Re-calibrate the OPW and FPI models	Reproduce 30-year weather and fuel moisture climatology at the same 2 km resolution and model configuration as the enhanced operational POMMS model. Re-calibrate the OPW and FPI models using the new 2 km historical dataset	The 30-year climatology production of weather, DFM and LFM was entirely completed by 10/1.

(a) Color code legend: Blue Fill = Commitment is completed; Green Fill= Commitment is on target; Amber Fill = ~one month or less behind plan/“At Risk” or “Substantially Complete, if after due date”; Red = >one month behind plan / “High Risk” or “Commitment Missed, if after due date.”

APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments ^(a)	WMP Commitment	Summary of 2020 Performance
<u>B.7 SmartMeters™ - Partial Voltage Detection</u>	Deploy 365,000 Three-Phase Smart Meters™ and extend the partial voltage detection enhancement to 3-phase Smart Meters™ and 4-Wire Distribution systems	<p>Technical issues identified in November drove delays in product deployment. A Change Order was submitted on 12/11/20 informing CPUC change in deployment timing and was approved on 1/28/21.</p> <p>PG&E received a proposed firmware fix at the beginning of February 2021, we will test the new firmware and deploy firmware to field meters upon successful certification. PG&E expects to have Partial Voltage Implementation in place on Three Phase meters in June 2021.</p>
B.8 Smart Meters™ – Sensor IQ Pilot Deployment	Deploy Sensor IQ pilot to 500K Smart Meters™ covering ~25,597 distribution line miles in HFTD and customize reads and alarms to identify service transformer failures	A vendor product issue and technology constraints in the current datacenter necessitated change in deployment timing. A Change Order submitted to WSD on 9/11 was approved 1/5/21. Deployment of Sensor IQ profiles to field meters began in January 2021. PG&E plans to complete the full program scope of 500K meters in 2021.

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APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments ^(a)	WMP Commitment	Summary of 2020 Performance
B.9 High-Definition Cameras Deployment	Deploy an additional 200 cameras by December 31, 2020	216 cameras were installed, 16 units ahead of the target.
B.10 Weather Stations	Install 400 weather stations in 2020	404 stations were installed, 4 units ahead of the target
C.1 SCADA Transmission Switching (switches)	Install 23 SCADA transmission switches to provide switching flexibility and sectionalizing for PSPS events	54 SCADA Switches installed in 2020; 39 by 9/1 exceeding the 9/1 target of 23 to support 2020 PSPS events
C.2 Distribution Segmentation (automated devices)	Enhance distribution segmentation by adding 592 automated sectionalizing devices by 9/1/20	603 devices commissioned by 9/1, exceeding the target
C.3 Remote grids	Deploy 4-8 initial sites to validate use cases, design standards, deployment processes and commercial arrangements and deliver recommendations for scale-up	Commitment substantially complete. The primary objectives of learning through the deployment of actual projects have been completed. Five Remote Grid sites are currently in the advanced stages of deployment, with the first forecast to be operationalized in 2021, primarily delayed by challenging permitting constraints associated with sensitive species.

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APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments ^(a)	WMP Commitment	Summary of 2020 Performance
C.4 Transmission Line Evaluation for PSPS Scoping	Evaluate all 552 transmission lines in HFTD areas to determine which lines can potentially be removed from future PSPS Event scope	Evaluation of all 552 Transmission lines was completed in Q1
C.5 System Hardening (SCADA enabled circuit breakers)	Enable SCADA capability on the remaining circuit breakers within HFTD (excluding 4kV).	All of the remaining distribution circuit breakers in HFTD area were enabled with SCADA as planned.
C.6 System Protection (surge arresters)	Replace 8,850 non-exempt surge arresters with exempt surge arresters in Tier 2 and Tier 3 HFTD areas in 2020	10,263 non-exempt surge arresters were replaced (Installed and QA verified) in Tier 2 and Tier 3 HFTD areas in 2020.
C.7 System Protection deploy DCD (reclosers)	Based on High Impedance Fault Detection pilot results, deploy newer protection capabilities Downed Conductor Detection (DCD) to 100 reclosers in Tier 2 & 3 HFTD	PG&E had 126 reclosers within Tier 2 & 3 fire areas with DCD enabled to alarm for a wire down condition by the end of June, exceeding the target of 100.
C.8 Rapid Earth Fault Current Limiter (REFCL) Pilot	REFCL demonstrations are planned to begin in 2020 on operational assets to test its capabilities.	All pieces of the REFCL system have been installed (construction completed for both all substation and distribution line equipment) to support in-field testing and evaluation of the REFCL Technology.

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APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments ^(a)	WMP Commitment	Summary of 2020 Performance
C.9 System Hardening Criteria Refinement (Dist.)	Refining Criteria for Hardened Distribution Facilities During Potential PSPS Events Includes, simulate OH performance using Finite Elements Analysis (FEA)	Calibration of the criteria with PSPS tools is complete. The criteria were applied during the 10/25 PSPS event, to simulate the application of the criteria for the future descopeing of a segment of the Oakland K 1102 circuit.
C.10 System Hardening (line miles)	System Hardening; 221 miles in 2020 (excludes Butte County Rebuild see C.11)	342 miles completed
C.11 Butte County Rebuild (UG de-energized miles)	Butte County Rebuild; 20 miles in 2020 (noted as tracking separately from other 221 miles)	Completed 21.3 WMP miles, exceeding the 20-mile target
C.12 Expulsion Fuse Replacement (non-exempt equipment)	Continue implementing the non-exempt fuse replacement program at a forecast rate of 625 fuses/cutouts per year.	643 Non-Exempt Fuses replaced in 2020
D.1 Ultrasonic Inspections Pilot	Commence a pilot of Ultrasonic technology in both transmission and distribution	PG&E’s ATS Team completed the pilot, produced summary conclusions, and received and reviewed a 3rd party vendor validation report

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APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments ^(a)	WMP Commitment	Summary of 2020 Performance
D.2 Distribution HFTD Inspections (poles)	Perform detailed overhead inspections on 100 percent of HFTD Tier 3, and 33 percent of HFTD Tier 2 Distribution assets	Completed all targeted inspections, 100 percent of Tier 3 and 33 percent of Tier 2, with 339,728 distribution structures inspected in 2020.
D.3 Transmission HFTD Inspections (structures)	Perform detailed overhead inspections on 100 percent of HFTD Tier 3, and 33 percent of HFTD Tier 2 Transmission assets	Completed all targeted inspections, 100 percent of Tier 3 and 33 percent of Tier 2, with 26,282 transmission structures inspected in 2020.
D.4 Substation HFTD Inspections (substations)	Inspections once annually for all HFTD Tier 3 stations, on a three-year cycle for stations in HFTD Tier 2	Completed inspections on electric transmission and distribution substations: 100% of Tier 3 and ~33% of Tier 2; As reflected in the March 4, 2021 letter entitled “PG&E 2019 and 2020 Wildfire Mitigation Plan Update”, PG&E did not complete full detailed inspections on 100% of Tier 3 and ~33% of Tier 2 power generation switchyards.
E.1 EVM (line miles)	In 2020, complete and validate an additional 1,800 EVM circuit miles on distribution lines in HFTD areas	1,878-line miles completed and validated
F.1 SIPT Crews and Engines Resourcing	Increase staffing to budgeted level of 98 STIP crew members and place 40 Engines, and maintain SIPT Viewer daily usage rate of 90 percent	Target exceeded with 42 engine trucks operational, 102 STIP crew members staffed and a SIPT Viewer daily usage rate at the end of May of 91 percent.

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APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments ^(a)	WMP Commitment	Summary of 2020 Performance
F.2 Protocols for PSPS Re-Energization¹	Update standard (TD-1464B-002) to include lessons learned from 2019 PSPS events and latest meteorology inputs, update the existing DCC Operator training materials to incorporate revisions to the standard, and confirm that required PG&E personnel complete annual TD-1464S training.	Completed all phases: (1) standard updated, (2) DCC operator training materials finalized and released in June, (3) all DCC operators completed training, and (4) all needed employees (over 10,000) completed TD-1464S training.
F.3 Removal of TripSaver Auto-Reclosing Functionality	Permanently remove the automatic reclosing functionality of the remaining TripSavers serving the Tier 2 and Tier 3 HFTD areas	All 273 devices in scope were either replaced or had auto-reclosing functionality removed prior to June 1, 2020
I.1 Emergency Preparation & Restoration¹	Finalize TD-1464B-002, perform field and classroom exercises, and conduct classroom / web-based training to prepare utility personnel to restore services after emergencies	Completed all phases: (1) standard updated, (2) performed field and classroom exercises, and (3) training completed as of 10/3

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APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments ^(a)	WMP Commitment	Summary of 2020 Performance
<p>I.2 PSPS - Service Restoration</p>	<p>PG&E has adopted a new goal of conducting safety patrols and restoring service to 98 percent of PSPS-affected customers within 12 daylight hours of the weather “all-clear” declaration.</p>	<p>Commitment substantially completed for the year. Aerial assets acquired as planned. Total average restoration time after the “all-clear” reduced by more than 40% from 2019. Goal of 98 percent restoration within 12 daylight hours nearly achieved with 96% performance. Driver of performance was (1) heavy smoke during the first PSPS event of 2020 (9/7) such that only 28 of 60 helicopters were able to fly, driving ~91 percent performance for that event; and (2) the 10/25 PSPS event taxed restoration teams due to its geographic breadth, driving 96 percent performance for that event.</p>
<p>I.3 PSPS Customer Impact Mitigation</p>	<p>Mitigate PSPS customer impacts by using 1) advanced meteorology tools to forecast wildfire risk conditions, 2) apply improved analysis on system facing high fire risk, and 3) improving switching / sectionalizing, to affect smaller portions of the grid.</p>	<p>All three phases completed: (1) completed in alignment with commitments B.1 “Upgraded POMMS Model” and B.2 “NOAA-20 Satellite Data” advancing meteorology forecasting tools. (2) Completed and improved analysis was utilized in the approved 2020 guidance for T&D PSPS decision making. (3) Switching / sectionalizing goals completed as of 9/1/20 with 603 distribution sectionalizing devices and 36 transmission switches completed, exceeding targets.</p>

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APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments ^(a)	WMP Commitment	Summary of 2020 Performance
I.4 Community Based Organizations (CBOs) Coordination	PG&E will enhance coordination with Community Based Organizations (CBOs) and multi-cultural media partners that have existing relationships and serve disadvantaged and/or hard to reach communities to provide in-language / translated education	PG&E conducted outreach to 264 CBOs and 38 multicultural media organizations that serve various groups within the AFN community to share information about PSPS preparedness. Overall a total of 250 CBOs and 36 multicultural media organizations agreed to share PG&E awareness & preparedness messages with their consumers / network before and / or during PSPS events as applicable.
I.5 CERP (Update and Publish)	Update and publish the Company Emergency Response Plan (CERP)	2020 CERP updated and published with final 2020 revisions completed and published in October.
I.6 Microgrids for PSPS Mitigation (operationalized units)	Mitigate the customer impacts of PSPS through permanent and temporary front-of-the-meter microgrid solutions	<p>Target achieved through multiple microgrid tools available to support PSPS event mitigation:</p> <ul style="list-style-type: none"> 1) 392 MWs of temporary generation reserved and available to be deployed to mid-feeder microgrids or substations that are safe to energize during 2020 PSPS events 2) 6 temporary microgrids operational for 2020 PSPS events 3) 60 substation sites made Operationally Ready or ready to receive temporary generation and energize safely within 48 hours of need to deploy prior to a PSPS event

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APPENDIX TABLE 1: 2020 WMP COMMITMENTS AND PERFORMANCE (CONTINUED)

2020 Commitments ^(a)	WMP Commitment	Summary of 2020 Performance
I.7 PSPS - 24/7 Information Updates	Mitigating Impacts on De-energized Customers during PSPS through 24/7 Information Updates. PG&E's website and call center allow customers 24/7 access	De-energized Customers during PSPS received 24/7 Information Updates and had uninterrupted access to website and call center information.
I.8 CRC Mitigate PSPS Customer Impacts	Mitigating Impacts on De-energized Customers during PSPS through Community Resource Centers (CRCs)	PG&E had 362 event-ready outdoor and indoor CRC sites available to support PSPS events as needed in 2020.

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