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PG&E-8 EXHIBIT

**PG&E 2021 WILDFIRE MITIGATION PLAN – REVISED, DATED
JUNE 3, 2021**

VOLUME 3 OF 3

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PACIFIC GAS AND ELECTRIC COMPANY
2021 WILDFIRE MITIGATION PLAN – REVISED
RULEMAKING 18-10-007
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7.3.6 Grid Operations and Protocols

7.3.6.1 Automatic Recloser Operations

Wildfire Safety Division (WSD) Initiative Definition: *Designing and executing protocols to deactivate automatic reclosers based on local conditions for ignition probability and wildfire consequence.*

1) Risk to be mitigated/problem to be addressed:

Reclosing devices, such as circuit breakers and line reclosers, are used to quickly and safely de-energize lines when a problem is detected. When the problem is cleared, lines are re-energized. Supervisory Control and Data Acquisition (SCADA) devices can remotely de-energize a line for a hazard condition like a tree contacting a line, a car hitting a pole where the pole is broken but the wires are still energized, live wire down on the ground, or a broken wire hanging from the pole, but not contacting a grounded surface. These types of situations can create public safety hazards as well as wildfire risk from a potential ignition.

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

Pacific Gas and Electric Company (PG&E or the Company) Utility Procedure TD-1464P-01 (Fire Index Patrol and Non-Reclose Procedure) establishes precautions for wildfire risks associated with recloser protection functions. Using analyses provided by fire officials and PG&E’s Meteorology team regarding each year’s fire season timeline and exposure, PG&E makes an informed decision on when to disable automatic reclosing/testing during elevated fire conditions in protection zones that intersect Tier 2 or Tier 3 High Fire Threat District (HFTD) areas. Timing for disabling/enabling is based on the condition of fuels and a recommendation made by the Wildfire Safety Operations Center (WSOC) and Meteorology. Once the decision to disable has been approved by the Vice President of Asset Management, Community Wildfire Safety Program, all reclosing devices (for transmission 115 kilovolts (kV) and below) and distribution lines will be disabled during the determined utility fire risk season for protection zones that intersect Tier 2 or Tier 3 HFTD areas.

There are approximately 2,875 distribution reclosing devices on PG&E lines serving Tier 2 and Tier 3 HFTD areas. The devices with reclosing functionality include substation circuit breakers, line reclosers and FuseSavers (single phase reclosers utilized for tap-lines that can have SCADA-capability). There are approximately 2,850 reclosing devices serving Tier 2 and Tier 3 HFTD areas that have SCADA capability. For the remaining non-SCADA distribution reclosing devices serving Tier 2 and Tier 3 HFTD areas, PG&E will manually disable automatic reclosing/testing during the determined utility fire risk season. Note that all remaining TripSavers (single phase reclosers utilized for tap-lines but

do not have SCADA capability) serving the Tier 2 and Tier 3 HFTD areas had their automatic reclosing functionality permanently removed before June 2020, so they are no longer included in the count of reclosing devices.

In addition, reclosing devices located on nearly 400 transmission lines with voltages of 115 kv and below are included in the program. Over 95 percent of the transmission line devices are SCADA-enabled and can be disabled remotely, and like the distribution devices that are not SCADA-enabled, PG&E will manually disable remaining devices during the determined utility fire risk season for protection zones that intersect Tier 2 or Tier 3 HFTD areas.

3) *Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):*

Reclosing is disabled on all automatic devices within the Tier 2 and Tier 3 HFTD areas prior to fire season

4) *Progress on initiative (amount spent, regions covered) and plans for next year:*

As described in the 2020 Wildfire Mitigation Plan (WMP), all TripSavers serving Tier 2 and Tier 3 HFTD areas had the reclosing functionality permanently disabled prior to the 2020 fire season. There are no future actions associated with TripSavers. PG&E initiated reclose disabling in May 2020 and devices remained disabled until fire season was declared over. PG&E will follow the same procedure for 2021.

5) *Future improvements to initiative:*

As referenced above, PG&E Utility Procedure TD-1464P-01 establishes precautions for wildfire risks associated with recloser protection functions. This procedure will continue to be followed for 2021.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

We will continue to follow the utility procedure for automatic recloser disabling prior to fire season and re-enabling after fire season.

7.3.6.2 Crew-Accompanying Ignition Prevention and Suppression Resources and Services

WSD Initiative Definition: *Those staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, and water) that are deployed with construction crews and other electric workers to provide site-specific fire prevention and ignition mitigation during on-site work.*

1) Risk to be mitigated/problem to be addressed:

PG&E's Safety and Infrastructure Protection Team (SIPT) Program consists of two-person International Brotherhood of Electrical Workers (IBEW)-represented crews trained and certified in safety and infrastructure protection. SIPTs are expected to be utilized to mitigate wildfire threats in high fire-threat areas and gather critical data to help PG&E prepare for and manage wildfire risk. During elevated fire risk conditions, SIPTs accompany PG&E personnel during high-risk work activities and perform critical fuel reduction work around PG&E assets to prevent damage from wildfires.

2) Initiative selection ("why" engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

SIPTs are highly trained in fire suppression and prevention. Their presence at PG&E worksites can significantly reduce the risk of ignitions while performing work. SIPTs also review compliance with Standard TD-1464S, Preventing and Mitigating Fires While Performing PG&E Work.

3) Region prioritization ("where" to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as "high-risk"):

SIPTs will accompany teams, when available, in Tier 2 and Tier 3 HFTD areas where wildfire ignition is possible.

4) Progress on initiative (amount spent, regions covered) and plans for next year:

The SIPT has continued to grow, now consisting of 40 crews, one Manager, seven Supervisors, two Clerks and one Analyst. The SIPT continues to develop internal practices and procedures necessary to support program needs.

5) Future improvements to initiative:

When required, SIPT will utilize various data points to aid in work prioritization. Factors include, but are not limited to, meteorological forecasts, location, and geography.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

The SIPT program has proven to be very valuable at PG&E and has filled a gap in providing fire prevention and mitigation services, a capability that was previously unavailable within the Company. It has also demonstrated that asset protection, using fire retardant, prevents asset loss and results in safety improvements and avoided cost savings. For these reasons, the program will remain in existence for the foreseeable future and may expand as the SIPT teams further refine the fire prevention and mitigation needs of PG&E. In the future, SIPTs will continue stabilizing current technology solutions and processes. SIPTs will also assess effectiveness of the program and develop business cases to potentially increase staffing levels and equipment needs.

7.3.6.3 Personnel Work Procedures and Training in Conditions of Elevated Fire Risk

WSD Initiative Definition: *Work activity guidelines that designate what type of work can be performed during operating conditions of different levels of wildfire risk. Training for personnel on these guidelines and the procedures they prescribe, from normal operating procedures to increased mitigation measures to constraints on work performed.*

1) Risk to be mitigated/problem to be addressed:

PG&E Standard TD-1464S, Preventing and Mitigating Fires While Performing PG&E Work, aligns with California Public Resources Code (PRC) Sections 4427, 4428, and 4430. This standard provides detailed requirements on prevention and mitigation actions for PG&E and contractor personnel when performing PG&E work. This supports risk reduction associated with utility-caused ignitions.

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

Standard TD-1464S establishes requirements for PG&E employees and contractors to follow when traveling over, performing work or operating on any forest, brush or grass-covered lands. In 2019, this standard was updated to better reflect PRC Sections 4427, 4428, and 4430 by laying out specific mitigations and restrictions based on the work being performed and daily wildfire danger.

In addition to Standard TD-1464S, two attachments were also posted: Wildfire Mitigation Matrix and Wildfire Mitigation Checklist. The Wildfire Mitigation Matrix reviews various types of daily work performed by PG&E employees and contractors, along with required preventative measures that must be taken based on the daily fire danger. The Wildfire Mitigation Checklist is a guideline that can be used by PG&E employees and contractors to review worksite preventative measures for their specific job. A version of Standard TD-1464S was also created for contractor personnel.

3) Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):

Standard TD-1464S applies to all PG&E employees and contractors working on or near forest, brush or grass-covered lands throughout PG&E’s service area.

4) Progress on initiative (amount spent, regions covered) and plans for next year:

Prior to the 2020 wildfire season, impacted PG&E employees were

identified to complete mandatory web-based training materials, in addition to virtual briefing sessions communicating updates to Standard TD-1464S. Newly-developed SafetyNet observation cards allowed PG&E leadership to observe and coach our employees and note fire mitigation readiness to assure adherence to the standard while work is performed.

The SafetyNet observation cards have been widely utilized by PG&E personnel. In 2020, there have been over 9,500 observation cards submitted through SafetyNet. These cards have shown that 99.1 percent of the observed activities have been safe, and employees have adhered to the standard.

In partnering with SIPTs, the WSOC also developed a pilot quality control audit process to measure adherence to Standard TD-1464S. This pilot is taking place in the Central Coast Region where SIPTs observe work performed by contract crews. The audit results are made available to Contract Management leadership, while learnings from the pilot will be incorporated into PG&E's expansion of the quality control program in 2021.

5) *Future improvements to initiative:*

In 2021, PG&E will finalize learnings from the quality control program pilot and begin to adjust the program as findings require. PG&E will then implement the quality control program to assess contractor fire prevention and mitigation readiness.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

PG&E will annually evaluate the quality of trainings associated with Standard TD-1464S and update standard requirements as needed to support fire mitigation actions. In the next 3-10 years, PG&E will continue to develop and implement our quality control audit process program and expand it to all contractors and employees working in high-fire danger conditions where this standard is applicable.

7.3.6.4 Protocols for Public Safety Power Shutoff (PSPS) Re-Energization

WSD Initiative Definition: *Designing and executing procedures that accelerate the restoration of electric service in areas that were de-energized, while maintaining safety and reliability standards.*

This section covers both distribution and transmission. However, in Table 12 in Attachment 1 – All Data Tables Required by 2021 WMP Guidelines.xlsx we have separated the financials and Risk Spend Efficiency calculations for distribution and transmission.

1) Risk to be mitigated/problem to be addressed:

Prior to re-energization, PG&E inspects lines for incidents of wind-related damages or hazards during patrols of de-energized circuits. Damages are conditions that occurred during the PSPS event, which are likely wind-related and necessitate repair or replacement of PG&E's asset, such as downed wires or a fallen pole. Hazards are conditions that might have caused damages or posed an electrical arcing risk had PSPS not been executed (e.g., a tree limb found suspended in electrical wires). In each case, PG&E repairs or replaces damaged equipment or cleared the hazard before re-energizing the line.

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

PG&E's PSPS re-energization objective is to provide a safe and efficient restoration of PG&E electric facilities (i.e., transmission lines, substations and distribution circuits). Using the Incident Command System as a base response framework, each circuit is assigned a taskforce consisting of Supervisors, crews, Troublemakers and Inspectors. This structure allows PG&E to patrol and perform step restoration in alignment with the centralized control centers. During a weather event, Incident Response teams and PG&E Meteorology teams monitor real-time and forecasted weather conditions based on weather models, weather station data and field observations. Patrol crews and helicopters are also pre-positioned in anticipation of a weather “all clear” to begin patrols. Using this incoming information, weather “all clears” are issued in a phased approach to restore customers as soon as possible.

3) Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):

PSPS re-energization is dependent on the impacted location within PG&E's service territory. PSPS primarily occurs in High Fire Risk Areas (HFRA), but re-energization will occur anywhere in PG&E's service territory that has been affected by a PSPS event.

The PG&E Emergency Operations Center (EOC) Officer-in-Charge

makes the decision to initiate PSPS patrols and re-energization by approving the re-energization of impacted assets within the event footprint as recommended by the PSPS event meteorologist in charge. This approval is termed the weather “all clear”, indicating that a return to weather conditions supporting the commencement of restoration (both the patrol and re-energizing activities) activities in given area(s). Re-energizing activities then commence in the event footprint including conducting patrols and removing and repairing hazards.

The protocol for re-energization (when both transmission and distribution assets, including substations, are involved) typically includes executing re-energizing of both transmission and distribution assets simultaneously. The transmission element is often prioritized to ensure system stability (including the system protection component) is accounted for. It also provides a source for substations and their associated distribution circuits that could be impacted.

The transmission line patrol prioritization strategy is driven by electrical system stability (i.e., ensuring adequate transmission facilities are in service to support the overall grid and accompanying local loads along with ensuring that the system protection component is addressed) followed by the customer impacts associated with each line impacted in the event. Distribution circuit “segmenting” is also used to better align both field and control center Personnel. In supporting and performing distribution circuit-based isolation (segmentation) PG&E uses a circuit-based patrol personnel hierarchy structure. The segmenting process can commence immediately following the impacted distribution assets being de-energized. The process is usually done in a de-energized state (while the weather event is ongoing) and typically consists of using previously created distribution circuit segment guides on impacted circuits to open pre-identified distribution field devices downstream of the open source device (used to de-energize given portion(s) of a distribution circuit). This allows for setting up “step restoration” once the weather “all clear” is received.

To support re-energizing activities, resource needs are identified for the scale and scope of the event footprint during PSPS event pre-planning. Resources typically include helicopters, PG&E personnel, contractors, and mutual aid. These resources are then provided to the impacted areas and staged to support the event.

4) *Progress on initiative (amount spent, regions covered) and plans for next year: next year*

With PG&E’s weather expanded network of weather stations and high-definition wildfire cameras, hawse have improved our ability to forecast and identify safe weather and declare the weather “all clear” in more granular areas. This year, we were able to identify weather “all clears” on a more granular and event specific level, to re-energize more customers faster rather than delaying restoration until the entire area or

“Time-Place” (geographical area with same de-energization time and restoration estimated time) is safe to energize. While this restores service quickly for many customers, it is a complex process to manage and coordinate between the field and EOC teams. PG&E will develop processes to more effectively issue and restore granular weather “all clears” in 2021 to enable an improved restoration to our customers.

As further described in Section 8.1, we are focused on improving our restoration processes from lessons learned in 2020 to improve our restoration time and allow for an improved customer experience.

5) *Future improvements to initiative:*

Going forward, PG&E will review and confirm guidance document, PSPS-1000P-01, and the distribution circuit segmentation process are reviewed and updated as appropriate based on lessons learned from the 2020 wildfire season.

PG&E will work to meet the CPUC requirement that all customers be restored within 24 hours of the weather clearing when safe to do so, but we do not have a specific target for an expected reduction in PSPS event duration in 2021.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

PG&E will also investigate ways for the Incident Command and meteorology teams to improve the monitoring real-time and forecasted weather conditions based on weather models, weather station data, and field observations while working to make the patrol crews and helicopters positioning more efficient in anticipation of the weather “all clear” to begin patrols. These efforts will further increase granularity and allow for earlier customer restoration. PG&E is also investigating increasing the aerial patrol fleet to augment ground and truck restoration patrols as well as studying and benchmarking the use of drone technology in the restoration process. To review PG&E’s aviation support plan, please see Section 7.3.6.7.

7.3.6.5 PSPS Events and Mitigation of PSPS Impacts

WSD Initiative Definition: *Designing, executing, and improving upon protocols to conduct PSPS events, including development of advanced methodologies to determine when to use PSPS, and to mitigate the impact of PSPS events on affected customers and local residents.*

This section covers both distribution and transmission. However, in Table 12 in Attachment 1 – All Data Tables Required by 2021 WMP Guidelines.xlsx we have separated the financials and Risk Spend Efficiency calculations for distribution and transmission.

1) Risk to be mitigated/problem to be addressed:

PG&E's PSPS Program proactively de-energizes a portion of the electric system in the interest of public safety when weather forecasts predict conditions of an extreme fire threat. The principal benefit of de-energization is to prevent PG&E's equipment from causing a catastrophic wildfire that could harm customers' lives and property. Public safety risks of a PSPS de-energization mean impacted communities may spend an extended period of time without electricity. PG&E considers the public safety impacts of de-energizing by looking at the total count of impacted customers and the impact of potential de-energization upon medical baseline customers, critical facilities, back-up generation capabilities of critical facilities that pose societal impact risks if de-energized (e.g., critical infrastructure) and reviews any alternatives and mitigations available prior to making the decision to de-energize.

2) Initiative selection ("why" engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

De-energization is necessary to protect public safety when PG&E believes there is significant risk of strong winds impacting PG&E assets, which may potentially result in destructive wildfires should ignition occur. PSPS is used as a measure of last resort and is only deployed when other measures are not adequate alternatives.

PSPS addresses a specific type of risk. While other measures described in the WMP help reduce the need to de-energize communities, PSPS remains a unique tool at the utility's disposal to use in the interest of public safety if extreme conditions are forecasted. A key objective of the PSPS Program is to implement measures dramatically reducing customer impacts of PSPS events without compromising safety.

3) Region prioritization ("where" to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as "high-risk"):

PSPS de-energization is dependent on the impacted location within

PG&E's service territory. PSPS primarily occurs in HFRA areas, but de-energization will occur anywhere in PG&E's service territory that has been affected by a PSPS event.

PG&E uses the following tools to identify a potential PSPS event, as well as mitigate impacts on our customers who are de-energized for public safety:

Meteorological Guidance

In 2020, the PG&E Meteorology team has improved the granularity of our PSPS guidance tools: Utility Fire Potential Index (FPI) and the Outage Producing Wind Models. These improvements enable the models to predict severe fire weather risks on more focused areas and identify those areas which exceed distribution risk guidance with better geographic precision.

Transmission Line Scoping

Transmission line scoping for 2020 utilizes the same updated Utility FPI Model as the distribution scoping process; however, the process uses transmission-specific thresholds for asset health and outage likelihood. In addition, the transmission asset analysis is more granular than 2019, with assets analyzed against guidance at the structure level.

Temporary Generation

PG&E uses temporary generators to mitigate PSPS impacts on our customers. Temporary generators are used to energize substations and temporary microgrids that keep power on for services supporting community normalcy. This includes stand-alone facilities serving public safety, hospitals supporting coronavirus response and other emergencies, vote tabulation centers, and indoor Community Resource Centers (CRC).

Islanding

In some cases, customers remained energized by "off-grid" islanding. PG&E leverages islanding capabilities to keep some customers islanded apart from the rest of PG&E's transmission system and energized by generation located within the island.

Sectionalizing Devices

PG&E installed over 600 sectionalization devices and 54 transmission switches near and within the boundaries of the Tier 2 and Tier 3 HFTD areas to enable PG&E to narrow the de-energization scope as close as possible to the boundaries of the critical fire weather where it is unsafe to leave PG&E facilities energized.

Community Resource Centers

To minimize public safety impacts during a PSPS event, PG&E opens CRCs in potentially impacted counties and tribal communities. CRCs provide customers and residents a safe location to meet their basic power needs, such as charging medical equipment and electronic devices. For a more in-depth description of our CRC resources, site criteria/locations and in-event coordination, see Section 8.2.1. This section also includes more information on other ways PG&E is mitigating customer impacts during a PSPS event.

See Section 8.1 for a discussion on how PG&E identifies locations for PSPS mitigations. See Section 8.2.4 for information on customer communication during PSPS events and Section 8.4 for information on how PG&E is engaging vulnerable communities during PSPS events.

4) Progress on initiative (amount spent, regions covered) and plans for next year:

PG&E had six PSPS events in 2020 which resulted in approximately 55 percent fewer customer de-energizations than those six weather events would have caused in 2019. While the weather in every year is different, progress in limiting the impact of PSPS can be seen by modeling 2020 event weather with PG&E's 2019 scoping methodology, assets and processes. This modeling shows that the six 2020 events would have resulted in approximately 1.5 million customer de-energizations under 2019, but with the 2020 mitigations and processes in place the actual total of the six 2020 PSPS events was approximately 650,000 customer de-energizations.

5) Future improvements to initiative:

Going forward, PG&E will continue to utilize lessons learned during the PSPS season to lessen the number of customers impacted and mitigate the effects on those who are impacted. PG&E expects to see further PSPS scope reductions as we continue to increase the maturity of our PSPS Program and tools. With the incorporation of descoping criteria into our PSPS tools, PG&E will also begin to see some reductions from our overhead hardened lines. In this time frame, newer technologies currently only in pilot phases such as Rapid Earth Fault Current Limiter and Distribution, Transmission, and Substation: Fire Action Schemes and Technology may begin enabling some lines to remain energized during high wind conditions, contributing to event size reductions. For more details, please see Section 8.1.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

PG&E expects a significant reduction in PSPS impacts as technologies currently in pilot phases are deployed at scale and significant portions of our long-term system hardening program are completed. Further description of long-term planning for PSPS mitigation can be found in Section 8.1.

7.3.6.6 Stationed and On-Call Ignition Prevention and Suppression Resources and Services

WSD Initiative Definition: *Firefighting staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, firefighting foam, chemical extinguishing agent, and water) stationed at utility facilities and/or standing by to respond to calls for fire suppression assistance.*

1) Risk to be mitigated/problem to be addressed:

PG&E's in-house SIPT supports ignition prevention and suppression activities. SIPTs consist of two-person crews. Each crew member is IBEW-represented and trained and certified in safety and infrastructure protection. SIPTs perform wildfire mitigation functions and gather critical data to help PG&E prepare for, and manage, wildfire risk and emergencies. If engaged in any planned assignments, they are prepared to swiftly redirect to an emergency situation by the WSOC and the SIPT Duty Officer.

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

There are 40 SIPTs available to respond Monday through Friday during normal work hours. During the summer preparedness period, eight SIPTs remain on-call, with availability to respond for emergency needs on weekend and holidays. When necessary, additional SIPTs can be mobilized to support. If the wildfire danger risk is elevated, the WSOC and SIPT leadership frequently identify additional standby SIPT personnel to support response.

3) Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):

On-call SIPTs are located throughout the PG&E service territory, primarily focused in Tier 2 and Tier 3 HFTD areas.

4) Progress on initiative (amount spent, regions covered) and plans for next year:

The SIPT has continued to grow, and now consists of 40 crews, one Manager, seven Supervisors, two Clerks and one Analyst. SIPTs have met the commitment outlined to stabilize staffing. By the end of 2021 the SIPT Program will evaluate internal practices and procedures in the Teams site, as necessary, to support additional program needs.

5) Future improvements to initiative:

The SIPT Program will review internal practices and procedures to inform modifications to targeted staffing levels and associated equipment needs

in order to support on-call and standby as needed.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

Given the benefits seen so far, the SIPT program may expand as the SIPT teams further refine the fire prevention and mitigation needs of PG&E. In the future, SIPTs will continue stabilizing current technology solutions and processes. SIPTs will also assess effectiveness of the program and develop business cases to potentially increase staffing levels and equipment needs.

7.3.6.7 Other – Aviation Support

WSD Initiative Definition: *N/A This is not a WSD-defined initiative. This is an initiative that PG&E is adding to the 2021 WMP to describe Aviation Services.*

1) Risk to be mitigated/problem to be addressed:

The Aviation Services team manages all enterprise flight operations (Fixed-wing, Helicopter Operations and Unmanned Aerial Systems [UAS]), vendors and aviation assets. Aviation Services provides scheduling and dispatching for passenger transport, aerial inspection and construction with our internal and third-party assets providing vendor governance, contract management and oversight for all enterprise aviation operations.

The following wildfire-related programs utilize one or more aviation assets:

- Vegetation Inspection/Patrol
- System Hardening
- Wildfire Restoration/Rebuild
- SIPT
- Pre-PSPS Inspections/PSPS Inspections

The increased risk and workload from the above programs are pushing the limits of safe operations due to the de-centralized configuration of the organization. The increase in aerial operations has resulted in the need to increase aviation support staff to safely and efficiently manage aerial assets. With the increase of both staffing and increase in flight hours of helicopters, fixed-wing, and drones there is a need to migrate to a centralized aviation industry corporate aviation model. A centralized fleet and support operations mitigate the following risks:

- Weather is optimal for aviation operations, allowing more Visual Flight Rules flights which decrease flight risk
- Align with creating an in-house helicopter maintenance program to improve heavy-lift availability, controls and oversight for Wildfire Mitigation Operations, a centralized location for all assets' maintenance operations
- Coordination, accessibility, accountability, consistent availability of materials (i.e., maintenance, human external ropes, central warehouse for job materials)

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives: What are our projects?

Aerial resources are currently managed by each aviation services department (in different locations) based on the asset type. Through a centralized model, decisions of what assets are best suited for the work

type will be determined and communicated from one location and one department. There are instances where a helicopter may be scheduled to complete an aerial inspection or when there may be another asset, fixed-wing, drone or a combination of assets available to complete the work needed (which may be more cost efficient and have a greater safety margin).

PG&E's Aviation fleet consists of:

- Four heavy-lift helicopters purchased in 2018/19 to enhance wildfire safety and support utility infrastructure projects. The helicopters guarantee heavy-lift resource availability for PG&E facility restoration and construction support during fire season. The helicopters are fitted with fire suppression equipment such as a Bambi Buckets. If needed and requested, they are available to aid in suppression efforts under the direction of the agency leading the response (e.g., CAL FIRE).
- Two Cessna fixed-wing assets for operational practices: to perform electric system operations in a manner that reduces the possibility of wildfire ignition in times of elevated fire danger conditions and reduces fire spread in the use of PSPS.
- 30 UAS to enhance wildfire safety and support utility infrastructure projects.

PG&E's Aviation Services would consolidate operations to:

- Vacaville: Centralization of PG&E's aviation organization. Removing the current decentralized operations from physically managing and conducting operations from three locations (Concord Fixed-wing/UAS Drone, Vacaville Helicopter, Red Bluff Helicopter) to a centralized model.
- Winters: Identified as a training center away from PG&E's Aviation Base. Due to Federal Aviation Administration (FAA) Regulations, Drone Operations cannot be within five miles of an airport. This is a centralized location for Drone Operations maintenance and flight training.

3) *Region prioritization ("where" to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as "high-risk"):*

PG&E's Aviation Services support wildfire mitigation efforts throughout PG&E's service territory of varied topography.

4) *Progress on initiative (amount spent, regions covered) and plans for next year:*

Aviation Services has successfully completed all wildfire aerial work requests for their various departments, including, but not limited to, over 50,000 tower inspections, 20,000 helicopter poles/tower inspections and 30,000 UAS pole/tower inspections.

5) *Future improvements to initiative:*

Future potential aviation include:

1) Growth of Fixed-Wing Program:

There is potential for an increase to the fixed-wing fleet over the next two years. The increase of these assets within PG&E will reduce, if not eliminate, the need to contract aircraft operators to perform inspection work. In addition, the fleet increase will have a direct impact on the number of helicopter assets required to conduct inspection work in low elevation and long span areas.

2) Wide-scale UAS Adoption:

Over the next two years, Aviation Services will continue to develop and implement further deployments of drones as a tool to support electric system operations and/or wildfire risk reduction. PG&E is participating in a Technical Assist Project for UAS Solution for Linear Infrastructure Inspections with the FAA in order to minimize the risks noted above, PG&E has a large workforce, consisting of Journey Linemen, Apprentice Linemen, Troublemakers and Foremen, that is geographically distributed and can move across PG&E's service territory to handle emergency events as needed.

In coordination with other utilities, PG&E is benchmarking to further develop drone use within our service territory. Through these benchmarking engagements, PG&E continues to source ideas to increase safety margins for our field employees, improve repair, restoration efficiency and reduce costs through the development and incorporation into PG&E's wildfire safety efforts and, potentially, future WMPs.

Working with the Edison Electric Institute (EEI), the FAA and other partner utilities, PG&E is engaged with the development of Beyond Visual Line of Sight (BVLOS), which will allow PG&E to further manage asset usage and reduce the reliance of helicopters and fixed-wing for some inspections.

BVLOS will require a centralized control room to coordinate and manage drone flights concurrent to other aerial operations.

PG&E will continue to leverage the BVLOS development and EEI forums and the relationships developed to share our learnings to date and cast a broad net for best practices, lessons learned, tools, technologies and ideas that can help PG&E and California reduce wildfire risk.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

Aviation Services' long-term work is highly dependent on the Line of Business needs and requirements. Timelines are subject to move up or back based on demand. All strategic planning is driven by the organizations that utilize aerial assets. In addition to the items discussed above in response to Question 5, an additional long-term planning item includes:

Insourcing Helicopter Fleet:

As noted, PG&E has participated in benchmarking discussions with other utilities to understand their use of helicopters and operational management. The insourcing of patrol/medium lift helicopters will reduce the contracting cost inspections and construction, while increasing safety margins through complete mission and operational control.

7.3.7 Data Governance

7.3.7.1 Centralized Repository for Data

Wildfire Safety Division (WSD) Initiative Definition: *Designing, maintaining, hosting, and upgrading a platform that supports storage, processing, and utilization of all utility proprietary data and data compiled by the utility from other sources.*

In addition to providing responses to below five questions for Initiative 7.3.7.1 Centralized Repository for Data, Pacific Gas and Electric Company (PG&E or the Company) is including our response to Condition PGE-16 (Class C) and response to Action PGE-81 (Class B) below.

1) Risk to be mitigated/problem to be addressed:

This section provides an overview and update to PG&E's efforts to operationalize a data analytics environment that integrates asset-related information from disparate data sources into a single environment, enabling data-driven approaches to wildfire risk mitigation. To enable and sustain value from this environment, PG&E is also implementing enterprise data management practices and seeking certification of our asset information/data management practice as part of our Electric Asset Excellence program targeting ISO (International Organization for Standardization) 55000 certification.

A practical data integration approach that utilizes data pipelines from source data systems into an integrated data platform is necessary. This approach, combined with an effective data management practice, enables access to timely, trusted, and consistent information, that can be used for advanced data analytics, thereby enabling the ability to make more effective, data-driven decisions.

2) Initiative selection ("why" engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives.

In 2020, PG&E made significant gains on this initiative. In Q2 2020, we implemented the pilot of a central, enterprise data platform – Palantir's Foundry – and quickly operationalized two data products that dramatically improved our situational awareness, decision-making and customer notifications capability for Public Safety Power Shutoff (PSPS) events in 2020. PG&E also developed two prototype products focused on asset failure analysis and grid fault location detection and prediction, which continue to be matured. In November 2020, based on the successful use-cases, PG&E entered into a long-term contract with Palantir for its data platform services. To-date we have integrated 50+ source data systems, which contain billions of records relevant to asset information, such as our Geographic Information System (GIS), SAP, customer, and SmartMeters™ systems, thereby setting the foundation for future analytics development as described below.

Evolution of PG&E Data Systems

PG&E's data environment has evolved organically over decades with the development and deployment of large, built-for-purpose data source systems (e.g., SAP, GIS). PG&E has historically integrated data between individual systems on a case-by-case basis through data interfaces. This has led to a many-to-many relationship between data systems, with no centrally integrated environment that facilitates an effective development of analytics. In order to mitigate wildfire risks, PG&E must be able to access, integrate, and analyze data across disparate systems. In many instances, existing software systems were not designed to be easily accessed or integrated with other systems. These systems were purpose-built to support specific capabilities. For example, customer data, spatial and as-built data, work management data, operations data, and event data have traditionally been managed in separate systems, with independent data stores, without being integrated centrally. However, there is an increasing need to integrate these data sets and efficiently perform analyses to improve data-driven decision-making around asset and risk management. Electric Operations (EO) systems and processes related to wildfire mitigation have been maturing at an accelerated rate, and the systems that generate and store data relevant to those mitigation activities are seeing aggressive expansion in both volume of data collected and breadth of application since 2019.

Data streams from new technologies, such as remote sensing and Light Detection and Ranging, introduce emerging data needs for high capacity storage and processing, while advanced analytics (including Artificial Intelligence and Machine Learning) offer the potential to leverage data to better manage risk and predict events before they happen. PG&E is responding to these challenges by developing and implementing strategies for data management, integration and access.

Asset & Risk Management Data Architecture

As part of our strategy to mature PG&E's asset and risk management practices, we are developing a central repository of asset and risk management data and implementing data management practices guided by a broader Enterprise Data Management Program. These efforts are responsive to the following drivers of improvements to asset and risk management practices: (i) increasing need for data availability, data quality and trusted analytics; (ii) increasing demand for advanced analytics, Business Intelligence (BI), visualizations, dashboards and data sharing; and (iii) increasing need for data security and privacy.

The central asset data repository will contain governed, trusted and accessible data necessary for critical business decision-making for asset and risk management. This repository will bring together physical, operational, lifecycle and environmental data elements from disparate built-for-purpose data systems into a single environment to better enable access to data in support of asset planning, risk management, and

operations, and embedded data analytics for *ad hoc* analyses (see Figure PG&E-7.3.7-1 below). Within this repository, data objects are curated, data attributes are defined, data sources are documented, data pipelines are governed, and key connections between disparate data sets are established. PG&E will also develop and host BI dashboards, analytics, and data science models in this environment.

This architecture, and the associated data management practices, will significantly advance PG&E's ability to make data-driven decisions around asset and risk management by improving the accessibility, quality, and use of information, maturing analytical capabilities, and enabling deployment and scaling of analytical products.

FIGURE PG&E-7.3.7-1: ASSET & RISK MANAGEMENT DATA ARCHITECTURE

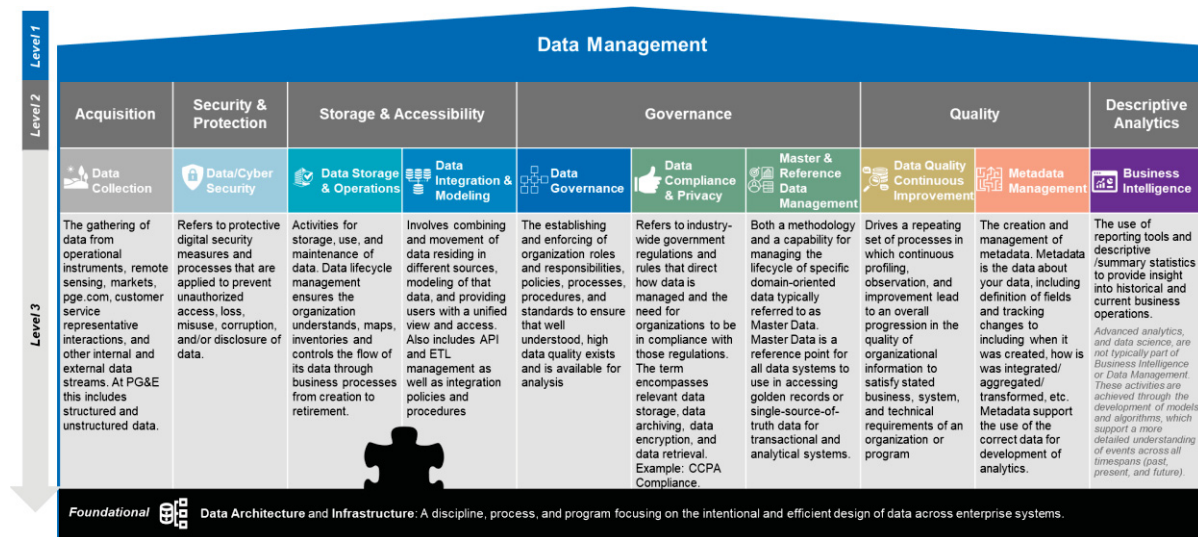


Data Management

In parallel to developing the asset and risk management data architecture, PG&E is maturing our data management capabilities. Data management creates the organization, policies, and processes that are necessary to achieve and sustain capabilities around data-driven decision-making.

PG&E's will mature our data management capabilities in alignment with the domains reflected in Data Management Framework presented in Figure PG&E-7.3.7-2 below. We are taking a phased approach to the data strategy with near-term focus on enhancing Data Maturity (data is high-quality and fit-for-purpose), Data Quality (establishing processes to continuously profile and improve data quality), and Data Security (establishing protective measures to prevent unauthorized access to data).

FIGURE PG&E-7.3.7-2: DATA MANAGEMENT FRAMEWORK



At the enterprise level, PG&E established in 2020 an Enterprise Data Management organization, with a Director of Data Governance. This organization is responsible for developing the enterprise level data strategy, policies, standards and objectives. EO has developed a Data Management and Analytics (DM&A) organization to guide electric data strategy, data quality efforts, and data management efforts. This organization will establish the overall priorities, standards and processes to manage data critical to wildfire risk mitigation. Implementation of the electric data strategy will be led by the DM&A organization in partnership with the Enterprise Data Management team, Information Technology (IT) business partners and EO business units. Centralization of the data management function helps provide alignment of data strategies across EO and the enterprise and improves PG&E's ability to make data-driven decisions around wildfire risk management.

The alternative to the development and implementation of a centralized data platform would be to continue producing analytics through historically siloed systems that were purpose-built and not designed for more efficient integration. This could result in ineffective decision-making based on incomplete data, missed opportunities to improve wildfire risk management decisions by scaling data analytics, under-utilization of our analytic and engineering human resources, and an inability to more effectively share data with external partners (e.g., Wildfire Safety Division (WSD), California Department of Forestry and Fire Protection (CAL FIRE), local government agencies).

3) Region prioritization ("where" to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as "high-risk")

The prioritization and rationalization of the elements contributing to the integration of data are summarized as follows:

- Central Data Platform: In November 2020, PG&E piloted and subsequently procured a DM&A platform, Palantir Foundry, based on results from operational use-cases implemented with Palantir in 2020. This included the successful and impactful migration of situational intelligence for PSPS operations into Foundry for the 2020 wildfire season. This investment was made to advance PG&E's ability to make data-driven decisions by improving the accessibility, quality, and usability of information to inform critical decisions.
- Data Products: PG&E will build on the data foundation created in 2020 and deliver new, high-value data products that improve wildfire mitigation capabilities on the Palantir Foundry platform in 2021. This includes continued development of data products and deployment of analytical risk models, including creation of related data pipelines and curation of data. This work will also create a trusted data foundation for management of distribution, substation and transmission asset lifecycles, including wildfire and risk management. Specific data products to be developed in 2021 are further described in response to question 4 below. The platform and the associated program will be used to maintain data pertaining to the entire PG&E system, including High Fire Threat District (HFTD) areas.
- Data Management: PG&E will establish and implement a data management program with a focus on maintenance of the data architecture, data governance, data quality, and data security. Data management efforts are foundational to ensuring effective use of data for wildfire mitigation.

4) Progress on initiative (amount spent, regions covered) and plans for next year

Foundry Data Platform

In 2020, PG&E contracted with Palantir to implement the Foundry enterprise data platform, to centralize, curate, and transform data into business insights through creation of various data products.

Foundry currently is connected to 50+ source systems, which contain billions of records relevant to asset health analytics such as GIS and SAP. The number of connected systems, records, and enabled analytics models will continue to grow as additional data products are developed. The data platform does not replace the underlying source data systems of record, but rather provides a central platform to enable data

integration/virtualization and access, support for data management and advanced analytics.

PG&E is developing several data product suites in 2021 that are designed to (1) target the integration of critical, foundational datasets from disparate data systems, (2) enhance wildfire risk management capabilities, and (3) enable effective asset management. These data product suites include the following:

- **PSPS Situational Intelligence Platform:** PG&E has built a central platform to inform PSPS decision-making, reporting, and communications. The features include PG&E's Situational Intelligence Reporting, Customer Notification Management, Event Scoping, Re-Energization Management, Regulatory Reporting and more. The platform is also used to generate information shared with external parties such as CAL FIRE and local emergency management agencies.

In 2020, PG&E used this platform to develop and manage situational intelligence for all of our PSPS events, which reduces the impact on customers from PSPS events. This product resulted in significant operational efficiencies and improved accuracy of PSPS customer notification (accuracy of customer contacts for PSPS events was increased to over 99 percent, a significant improvement over 2019).

In 2021, PG&E will develop new features within this platform to continue enhancing PSPS event scoping decisions, customer notification and re-energization management.

- **Asset Failure & Maintenance:** PG&E is developing a platform to investigate and characterize asset failure incidents to inform asset management plans, with the goal of reducing catastrophic asset-failure-related wildfire ignition frequency in the future. This platform will enable us to identify trends in asset condition, create alerting workflows for Asset Managers, build predictive risk metrics, and bring the data asset to field patrols.

In 2020, PG&E built a prototype asset failure analysis tool for conductor and distribution transformer asset failure in Foundry.

In 2021, PG&E will build expand upon the prototype product to develop a framework for end-to-end asset failure management for one asset class (e.g., overhead conductor) and evaluate the ability to extend this framework to other assets.

- **Grid Data Analytics Tool (GDAT):** PG&E is developing a data product that leverages data from distribution system sensors (including SmartMeters™, line reclosers and Supervisory Control and Data Acquisition-enabled reclosers) to more efficiently and rapidly identify and resolve the source of unknown cause outages and to identify and

resolve incipient grid conditions before they result in catastrophic failure.

In 2020, PG&E built a prototype tool to identify the location of unknown cause outages and potential sources of intermittent faults. This will serve as the foundation for the operational GDAT tool.

In 2021, PG&E will enhance this product by integrating additional data and building workflows within the Foundry platform. As part of a related Electric Program Investment Charge project (3.20), PG&E will also test the ability to apply predictive analytics to the grid data and proactively identify/resolve issues before they result in catastrophic failure.

- **Asset Risk Management:** In 2021, PG&E will evaluate whether and how to migrate and continue to develop our 2021 Wildfire Distribution Risk Model and Transmission Operability Assessment Model into the Foundry data platform. This has the potential to mature the access and curation of modeling data and aid in the application of model results to the development of wildfire risk mitigation workplans. The work being developed in Foundry is in support of the risk models discussed in Sections 4.3 and 4.5.1.
- **WSD GIS Data Standard:** In 2021, PG&E will consider whether to leverage the Foundry data platform to develop a central data schema and automate (as much as practical) the production of the quarterly delivery of WSD's GIS Data Standard, which currently takes thousands of person-hours to produce each quarter.
- **Critical Business Terms:** In 2021, through the development of data products mentioned above, PG&E will continue to catalogue and integrate data associated with our critical business terms for EO into Foundry. This will establish a foundational registry and repository of data that can expedite the development of future products that could be used for wildfire risk mitigation.

In 2021, PG&E will also publish and begin implementation of our Metadata Management Standard, which will guide the documentation of critical business terms.

5) *Future improvements to initiative*

As stated above, PG&E intends to operationalize a data analytics environment that integrates asset-related information from disparate data sources into a single environment, enabling data-driven approaches to wildfire risk mitigation. This requires not only the deployment of the platform but also the maturation of data management practices and development of new processes to support effective deployment and utilization of the platform.

ACTION PGE-25 (Class B)

1) *Integrate discussion on long term planning within the respective section of each individual initiative.*

Response:

Long-term plan milestones are under development, with EO in consultation with Enterprise Data Management. These milestones will guide PG&E's efforts to continue building our central data platform, data products and data management capabilities to improve asset and risk management capabilities through efficient and effective data-driven decision making. Below are several data-centric initiatives PG&E is evaluating for 2021 and beyond.

- **Data Schema:** In 2021, PG&E will evaluate and decide whether to develop and implement a central data schema for EO building from the Common Information Model, which has been officially adopted by the International Electrotechnical Commission, in alignment with the WSD GIS data schema. Conceptually, this model would align asset, operational, maintenance and other data to PG&E's assets and operations, creating a "digital twin" of the utility. If PG&E determines that this work should be undertaken, implementation would be a multi-year effort.
- **Product Development:** PG&E, through EO and Enterprise governance processes, will mature the data products mentioned above and add new products that enable wildfire risk mitigation capabilities, including enhanced situational intelligence, risk modeling, asset management and work planning/tracking. PG&E will also evaluate whether to develop an end-to-end asset management platform within its Foundry. Implementation of an end-to-end asset management platform would be a significant, multi-year effort as it would require integration of many separate workflows, processes, and data systems.
- **Data Management:** PG&E has embarked on an effort to mature our Data Management capabilities, which will ultimately enhance our abilities to make effective data-driven decisions around wildfire mitigation. Consistent with the Data Management Framework above, PG&E will continue to advance our data management maturity using a phased approach, with the focus for the next 2-3 years being Data Architecture, Data Governance, Data Quality and Data Security. This will entail the development and implementation of new standards, processes, and tools to support the maturation of data management practices.

Response to Condition PGE-16 (Class C):

PGE-16: *PG&E's record keeping is deficient.*

Deficiency: *PG&E's history of poor record keeping. PG&E is only just moving from a paper records system to digitized records. The California Public Utilities Commission (CPUC or Commission) has found that PG&E's record keeping is*

deficient in other contexts with serious safety implications, including records on the location of its underground natural gas and electric lines. PG&E should explain whether it has detected errors or other problems with its wildfire mitigation records.

Condition: *In PG&E's 2021 WMP update, PG&E shall:*

- i. Disclose any problems with its paper record keeping system described in its WMP, and*
- ii. Outline any gaps (missing records), inaccuracies (inadvertent or intentional) and other errors.*

Response:

PG&E-16 | Class C Condition

(i) As described in the above section, PG&E's core business processes are actively shifting to electronic systems and records. Wildfire mitigation related activities, such as PSPS, detailed inspections, enhanced vegetation management, and system hardening, have fully shifted to using electronic record-keeping systems. However, some elements of maintenance and construction activities will take more time to transition due to legacy systems that rely on paper processes.

PG&E has recently identified some existing paper-related challenges related to our vegetation management program:

1. PG&E discovered that our Vegetation Management Database (VMD) system has a digital character limitation that prevented a complete input of all the information that may have been documented on the associated paper forms. A short-term mitigation has been identified to notate in the VMD when the information on the paper record exceeds the digital character limit and instructing the user to review the physical record.
2. There is a gap where formal QA/QC is not occurring for the data entered by vegetation management contractors from paper forms into the VMD system. While a fully digitized data entry solution is available, some vegetation management contractors work in remote locations with limited network connectivity. Due to the lack of connectivity, paper forms may be used. Once the contractor returns to an area with connectivity, they are required to upload the information recorded on paper forms into the VMD. Upon investigation, no formal process exists for transferring the paper forms into PG&E's custody or confirming if that is necessary. PG&E's Enterprise Records & Information Management (ERIM) team is actively working with the Vegetation Management team to resolve this.

While these challenges are being actively addressed, PG&E has not identified that they drive any limitations or "problems" for PG&E's wildfire risk mitigation Vegetation Management work. PG&E is confident that the upcoming complete shift to electronic form capture and technical enhancements to the VMD system will alleviate the challenges outlined above. In addition, near-term mitigations are already underway

to add manual procedural steps and documentation to begin addressing these known gaps before the comprehensive electronic transition can be completed.

In general, PG&E recognizes that paper-processes require manual oversight and checking, allowing mainly controls that are detective in nature, as opposed to being preventative (such as electronic form pre-validation before submission). Also, information contained within paper records cannot be easily aggregated for systemic trends or statistical analysis. The limited ability to quickly access or analyze the information in historical paper records creates limitations in our ability to review and analyze some data. We have not quantified any precise impacts from this less-accessible data issue on our WMP initiatives, but the general limitations caused by a lack of machine-readable data are:

- Inability to evaluate and improve the effectiveness of processes by identifying trends, making adjustments, and evaluating the impact of those adjustments to confirm impact;
- Incorrectly heightened weight on limited, high profile data points that appear significant due to the inability to confirm if the identified cases are actual trends (as opposed to a limited or singular outlier that can be safely resolved or monitored); and
- Incorrectly diminished weight of individual data points that appear insignificant due to the inability to confirm if cases are anomalies/outliers (as opposed to a signal of a systemic trend that should be acted upon).

(ii) Despite the above discussion, after internal review, PG&E is not aware of any problems, gaps, inaccuracies or other errors with current or on-going paper record keeping systems that impact the quality, execution, effectiveness or performance of WMP initiatives. Paper-centric processes across PG&E have multiple layers of controls and oversight to manage potential human error. However, these layers of manual oversight and remediation are inefficient and time intensive, which is another key motivator to replace them with electronic systems.

A key example of PG&E's improvement in this area is how detailed inspections are now performed and tracked in a purely data-driven manner. Inspections are scoped and completed at the asset-level using equipment records from enterprise systems to confirm exactly which locations require detailed inspection. Completions are recorded back into those same systems with positive confirmation that every location was visited. Compliance is validated using data to ensure nothing is missed. Field employees have been critically valuable and disciplined in aligning to this data-driven approach. If, for any reason, the system data does not line up with the assets the front line team identifies in the field, those issues are flagged and documented for resolution so that the inspection can be completed properly and accurately documented in the system.

Another example of shifting from paper to electronic documentation is that PG&E's Vegetation Management department historically relied on paper Hazard Tree Rating System (HTRS) forms to be filled by inspectors in the field to identify and address possible at-risk tree species. Relying on paper forms to evaluate individual tree risk

and assess the need for mitigation was cumbersome and required additional manual verification. Starting in March 2020, inspectors began evaluating trees using PG&E's digitized Tree Assessment Tool (TAT), which replaced the HTRS. It is a tool that evaluates an individual tree's likelihood of failing and indicates whether to abate the tree. TAT incorporates historical data on tree failures, regional species risk, and local wind gust data and assesses different components of an individual tree's health and risk of falling into PG&E lines or equipment. The TAT is completely digital, and field employees can input data directly into a mobile platform that immediately generates a risk mitigation determination.

Much of PG&E's historic data, including detailed information on specific assets, remains on paper. While many systems, particularly for newly created data and records, have been shifted to electronic systems, the limited ability to quickly access or analyze the information in historical paper records does create limitations in our ability to review and analyze some data. We also know that the conversion processes from paper to digital records, for example from paper maps to PG&E's Geographic Information System (GIS), has resulted in some inaccuracies. We have processes in place to resolve those issues when they are identified.

In particular, PG&E has a defined process to identify and correct issues caused by the shift from paper maps to an electronic GIS system as follows:

When Field Personnel find an inaccuracy between our GIS maps and what they see in the field, they create a Request for Work (RW) Map correction. There are multiple ways to get this map correction to PG&E's mapping department:

1. Field Personnel take photos, fill out a map correction form and hand in or send a picture of the form and photos of the asset to the clerical support for their team. The clerk then has the choice to utilize SAP or the Electric Distribution (ED) or Electric Transmission (ET) GIS Web Viewer to input the RW map correction request. It is routed to the mapping department from SAP for resolution.
2. The Field Personnel can utilize ED or ET GIS Web Viewer directly to input the data themselves, and it will route to the mapping department for resolution.
3. Field Personnel can utilize PG&E's mobile enabled Inspect App to create an RW by choosing "Assets Differ" on their application and fill out the necessary information and add the required photos. It goes through the same process through SAP to the Mappers for resolution.
4. Once a Map correction is completed, the mapper closes out the job in SAP which triggers an email to the initiator and sends the RW notification over to Maintenance Planners to update their maintenance plans (in case the assets have changes which might impact the required maintenance schedule).

PG&E will continue to monitor our data, records and processes to identify further gaps or challenges and resolve them. While we have successfully converted our wildfire mitigation-related record keeping efforts to digital formats, we know that there will be more opportunities to continue to improve

our capturing of records and information to support further maturation of our analysis and risk understanding.

ACTION PGE-81 (Class B)

- 1. Explain whether these developments are solely for newly collected data or if these developments allow retroactive data integration for previously collected data; and*
- 2. If they do not allow for previous data usage, explain (a) why PG&E does not have such capability and (b) why PG&E deems its plan to be sufficient.*

Response:

In our First Quarterly Report, PG&E mentioned the developments of new strategies for data governance, management, integration and access. These new developments will allow retroactive data integration for previously collected data, so that new and retrospective data can be assessed and evaluated together.

PG&E's implementation of these data-focused strategies does not distinguish between previously collected data and newly collected data. For example, Data Governance & Data Management, described in WMP Section 7.3.7.1, is largely focused on robust and comprehensive improvements to how data is modeled and how teams are organized to review, cleanse, and provide guidance of proper data usage as it exists within enterprise systems. PG&E's strategic improvements to our data models & organization will not distinguish between old versus new data, and PG&E does not intend to build data models or organizations that can only be leveraged for newly collected data.

7.3.7.2 Collaborative Research on Utility Ignition and/or Wildfire

WSD Initiative Definition: *Developing and executing research work on utility ignition and/or wildfire topics in collaboration with other non-utility partners, such as academic institutions and research groups, to include data-sharing and funding as applicable.*

1) Risk to be mitigated/problem to be addressed:

PG&E is engaged in various collaborative research projects related to utility ignition and/or wildfire risk. These activities can result in tools, concepts, or analyses that can contribute to risk mitigation in various areas within wildfire risk.

2) Initiative selection ("why" engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives.

PG&E believes that there is significant long-term benefit from engaging in the development of wildfire risk mitigation research, tools or solutions. The potential value that may be identified through new research is unknown, and it is, in the near term, determined by the actual tools or solutions identified through these efforts. Investing in ongoing collaboration has the potential to enhance wildfire risk mitigation activities in a number of ways including providing new ideas for risk mitigation or improve targeting and understanding of wildfire risks. While engaging in the collaborative research has not been quantitatively analyzed, the learnings and outcomes can contribute to quantitative risk reduction and development of alternative risk reduction activities to be evaluated. PG&E does not view the primary alternative of not collaborating with other partners as prudent, particularly in light of the ongoing learnings about wildfire risks in California.

3) Region prioritization ("where" to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as "high-risk")

This work is not performed in a specific geographic area. The solutions and tools identified through these efforts may apply across the entirety of PG&E's service territory or only portions thereof. As a result, no regional prioritization is relevant to this initiative.

4) Progress on initiative (amount spent, regions covered) and plans for next year

PG&E has continued to engage with various non-utility partners on wildfire risk mitigation ideas and research. Some examples of recent, ongoing or upcoming activities include:

- Leveraging nuclear industry risk modelling to develop wildfire risk assessment: PG&E has partnered with the B. John Garrick Institute for

the Risk Sciences at the University of California Los Angeles (UCLA) to leverage the rigorous modeling used in the nuclear industry to perform thorough and complex wildfire risk assessments and management planning. PG&E has used a probabilistic risk assessment model for over 30 years at our Diablo Canyon Nuclear Power Plant. The model is constantly updated with current plant design and state of the art analysis methodologies. Data from 30 years of industry and plant specific experience is used to model component reliability and unavailability. The model can perform quantitative assessment of risks from a multitude of complex factors, including internal plant failures, seismic events, fire and flooding. Each model element has been independently reviewed by industry peer review teams and the results have been audited on numerous occasions by the Nuclear Regulatory Commission. The model is capable of quantitatively risk ranking over 3,000 individual system components including the transmission lines that supply Diablo Canyon with offsite power. PG&E is working with risk experts at UCLA to develop a similar model for wildfire risks for our electrical assets within HFTD areas. PG&E also worked with the UCLA risk experts in 2020 on our High Fire Risk Area analysis as discussed in Section 4.4.2.

- Distribution Arcing Fault Signature Library: As discussed in Section 7.3.2.2.6 – PG&E partnered with two National Laboratories to install a high-fidelity optical sensor technology on a distribution feeder in 2020 for the completion of a Distribution Arcing Fault Signature Library. By end of 2021, the project will have completed at least a 6-month minimum analytic stage capturing all events on the installed circuit (Half Moon Bay 1103). Once the Research and Development project is complete, the team will perform a strategic assessment of the results. If the team can develop a comprehensive fault signature library, this information will be fed into the larger incipient fault analytics tools that will be used to proactively detect and mitigate grid conditions that could result in a wildfire.
- California Polytechnic State University, San Luis Obispo (Cal Poly) Wildland Urban Interface (WUI) Institute: PG&E is engaged in an advisory role with Cal Poly in their establishment of an interdisciplinary Woodland Urban Interface (WUI) Institute to facilitate the research, education, training and outreach needed to address the catastrophic wildfire problem in California and beyond. PG&E is partnering with and advising on the direction of research and associated activities by the institute as it embarks on the development of solutions for sustainable fire resilient communities and safer and more effective fire-preparedness and response operations.

5) *Future improvements to initiative*

In the near future, PG&E will continue to be involved with the three research initiatives described above. Going forward, PG&E will grow and add partnerships with non-utility institutions, as appropriate, as we continue to grow and improve our wildfire risk mitigation efforts. Ongoing

and future engagements generally take one of two forms, either (a) identifying the need for a non-utility partner to help address a specific challenge, as is the case in working with UCLA's Risk Institute to leverage established risk models for understanding wildfire risk, or (b) evaluating opportunities offered to PG&E to participate in existing or new opportunities, as is the case with the Cal Poly WUI Institute. The evolution of PG&E's partnerships will largely be driven by these two factors, needs and opportunities, as PG&E and other entities continue to learn more about wildfire risk mitigation.

ACTION PGE-25 (Class B)

1) Integrate discussion on long term planning within the respective section of each individual initiative.

Response:

PG&E does not have specific long-term plans regarding the changes to our collaborative research engagements over the next 3 to 10 years. Research engagements by their nature evolve and iterate based on findings and identified needs. As research opportunities or needs are identified, we will assess and pursue those opportunities in support of our wildfire risk mitigation efforts.

7.3.7.3 Documentation and Disclosure of Wildfire-Related Data and Algorithms

WSD Initiative Definition: *Design and execution of processes to document and disclose wildfire-related data and algorithms to accord with rules and regulations, including use of scenarios for forecasting and stress testing*

1) Risk to be mitigated/problem to be addressed

PG&E leverages several programs and processes to support the sharing of wildfire-related data with the CPUC and other parties. These programs and processes assist in the overall, ongoing maturity and increasing understanding about wildfire risk and risk mitigation activities.

2) Initiative selection ("why" engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives.

Many of the wildfire-related data sharing and submissions are required by the CPUC and various stakeholders. The programs and processes described below follow specific steps to ensure the information provided, primarily to the CPUC, is properly retrieved, vetted, and accurate.

- WSD Quarterly Submission/GIS Data Standard

PG&E submits quarterly GIS Data Files and associated information in accordance with the *Draft Wildfire Safety Division (WSD) Geographic Information System (GIS) Data Reporting Requirements and Schema for Electrical Corporations* issued on August 5, 2020 (*Draft GIS Requirements*). This submission (collectively referred to as "GIS Data Standard submission") includes data and information for six feature datasets comprising 53 feature classes or related tables. The feature datasets included are as follows:

- (i) Asset Point;
- (ii) Asset Line;
- (iii) Risk Event;
- (iv) PSPS Event;
- (v) Initiatives; and
- (vi) Other.

The data is submitted in the format of a file geodatabase (FGDB) and includes points, lines, polygons, and their associated attribute tables. In addition, PG&E provides WSD with a Status Report which provides information on the data submission, including whether the data is included in the current submission, explanations for why data may be unavailable, processes required to collect or transform missing data into

WSD's schema, and whether data is confidential.

The GIS Data Standard submission requires PG&E to

- (i) collect data from Subject-Matter Experts (SME) teams and core systems;
- (ii) curate data across various sources and architectures;
- (iii) transform the data into a geospatial format (FGDB);
- (iv) run the data through a cybersecurity (Autonomous Vehicle) scan; and
- (v) submit the data via CPUC's Kiteworks secure file transfer.

These processes are detailed at a high level via the bullets below:

- ✓ Data collection: Data is collected from a variety of sources, including but not limited to core data systems, databases, repositories and SME inputs;
- ✓ Data curation: Data is curated across sources and data architectures into single tables to best align with the data schema provided by the WSD in its Draft WSD GIS Data Reporting Requirements and Schema;
- ✓ Data transformation: Data is transformed from table or csv files and database or repository inputs into geospatial file format (FGDB);
- ✓ Cybersecurity Scan: PG&E runs an antivirus/cybersecurity scan of the data to ensure safety and compliance with WSD requirements; and
- ✓ Submission: PG&E submits our data (and other documentation) through CPUC's Kiteworks secure file transfer.

Since the release of the *Draft GIS Requirements*, PG&E has instituted multiple measures to improve on our First Quarterly Report, filed on September 9, 2020. This has resulted in an increase in the number of Feature Classes and data attributes included in our Second Quarterly Report, filed on December 9, 2020, while providing a more comprehensive Status Report to describe the FGDB data elements. To meet the first objective, PG&E implemented internal data collection processes for this new reporting requirement to enable more efficient data collection, curation, and organization and invested significant time in mapping the WSD GIS Schema to PG&E's internal GIS schema. While PG&E aims to continuously improve our submission, future improvements will largely require more complex and integrated operational and technological changes. Future enhancement opportunities will largely require more involved operational and technological changes, including a significant level of resources required to collect, curate, and organize the Data Standard submissions on a recurring basis, while simultaneously advancing our data maturity. PG&E looks forward to continued conversation and collaboration with the WSD and other stakeholders on the *Draft GIS Requirements*.

- Recurring tabular/non-spatial data submissions

In 2020, PG&E undertook an effort to streamline and improve the accuracy and consistency of Maintenance Tag reporting. This effort consisted of the following steps to ultimately produce a standardized and automated Tag Reporting Dashboard:

- ✓ Identifying and documenting data requirements with ongoing reports related to open and closed tags;
- ✓ Identifying and documenting the associated systems of record and filter criteria required to meet the reporting requirements;
- ✓ Building data aggregation tools to centralize data extracts from the system of record;
- ✓ Building dashboards that utilize the documented filter criteria and that leverage the aggregated data; and
- ✓ Reviewing draft outputs of the automated dashboard against manually produced dashboards to ensure automation is working properly.

- Data Response Unit (DRU) Responses to Data Requests associated with wildfires

PG&E's DRU provides wildfire data in response to data requests from the CPUC and other agencies. Wildfire data produced by the DRU is provided by internal PG&E organizations and SME who follow processes discussed in this section. Before any response is delivered by PG&E, the information is reviewed by SME and quality control personnel to ensure the information is accurate and responsive to the request.

Beyond the specific processes discussed above, PG&E also shares and submits numerous other forms of wildfire-related data in alignment with rules and regulations, including our post-PSPS event reports and annual ignition data submissions. Similar to the discussions above, we leverage unique and specific processes for retrieving and vetting these data before they are provided.

3) *Region prioritization ("where" to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as "high-risk")*

Region prioritization is not relevant for this initiative. While PG&E's wildfire mitigation strategies are primarily targeted for the HFTD in our service area, we maintain generally the same data across all of our service area.

4) *Progress on initiative (amount spent, regions covered) and plans for next year*

In response to Question 2 above, PG&E described the progress it made in 2020 to provide wildfire-related data and information to the CPUC and other stakeholders.

5) *Future improvements to initiative*

We continue to evaluate our processes for refinement and improvements. Please see Section 7.3.7.1 for more information on our approach to storing data and the anticipated improvements from new programs that will help in cataloguing and providing data to all external parties.

ACTION PGE-25 (Class B)

1) Integrate discussion on long term planning within the respective section of each individual initiative.

Response:

Documenting data collection, cleansing, transformation, quality assurance/control, and delivery steps are all crucial components of PG&E's long-term goals for data maturity. PG&E is exploring several platforms and approaches to make progress on this front and then scale in a consistent manner across all groups involved to supply data to requestors. This includes:

- Ensuring data stewards and process owners are clearly documented and maintained through the life cycle of a data product;
- Documenting technical steps in a way that can be repeated by resources with similar skillsets;
- Regular scrutiny on reporting capabilities for accuracy and consistency between different resources pulling data or pulling data on different days; and;
- Identifying gaps and implementing solutions to close them through process improvement, enhanced governance, etc.

7.3.7.4 Tracking and Analysis of Near Miss Data

WSD Initiative Definition: Tools and procedures to monitor, record, and conduct analysis of data on near miss events.

1) Risk to be mitigated/problem to be addressed:

Gathering data on “near miss events”, which have been redefined by WSD as “risk events” in the Glossary provided by WSD for the 2021 WMP, can be helpful in analyzing and evaluating events which have a probability of the ignition of a wildfire. The WSD defined a risk event as:

An event with probability of ignition, including wires down, contacts with objects, line slap, events with evidence of heat generation, and other events that cause sparking or have the potential to cause ignition. The following risk events all qualify as risk events:

- Ignitions;
- Outages not caused by vegetation;
- Vegetation-caused outages;
- Wire-down events
- Faults; and
- Other risk events with potential to cause ignitions.⁹⁶

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives

Capturing data concerning risk events to better understand the conditions that lead to potential wildfire ignitions is critical for PG&E. With this data, PG&E can further improve and develop models and procedures to avoid scenarios of increased ignition risk from occurring in the future. The goal is to continue learning the “behavior” of ignitions, or for this purpose, the “behavior” of events that could lead to an ignition. Understanding that behavior will allow us to better inform tool developers, operations, and mitigation initiatives.

PG&E also provides similar risk event data to the CPUC as part of our ongoing reporting obligations. As described in the response to Question 4 below, PG&E provided our initial report of “near hit” data in September 2020.⁹⁷ The next report is scheduled to be provided on February 15, 2021. In addition, we

⁹⁶ Resolution WSD-011-Attachment 2.2, page 12.

⁹⁷ Data was provided in September under D. 20-05-019. In November 2020, as part of R.18-10-007, the WSD renamed “near misses” to “risk events” in WSD-011, Attachment 2.1, p. 17.

provide information in Tables 2, 7.1, and 7.2 (Attachment 1 – All Data Tables Required by 2021 WMP Guidelines.xlsx) of the 2021 WMP involving risk event data.

3) *Region prioritization ("where" to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as "high-risk")*

PG&E tracks risk event data in all areas of our service territory.

4) *Progress on initiative (amount spent, regions covered) and plans for next year*

PG&E has created a focused team to collect risk event data across our service territory. This data is gathered year-round and pulled from several PG&E databases including:

- Field Automation System – (FAS);
- Integrated Logging Information System – Operations Data Base (ILIS-ODB);
- Transmission Operations Tracking & Logging (TOTL); and
- Corrective Action Program database (CAP).

In September 2020, consistent with a corrective action from Decision (D.) 20-05-019, PG&E submitted data to SED providing information regarding "Near Hit" Potential Fire Incidents. This submission contained PG&E's data that defined in a settlement agreement as relating to "Near Hit" events on PG&E's system. The next quarterly data deliverable will be provided on February 15, 2021. Given WSD's recent definition of "risk events," PG&E is working with the CPUC to align future quarterly reporting with the same parameters.

5) *Future improvements to initiative*

As PG&E and other parties such as SED and WSD review and analyze reported risk event data, we anticipate that our collective understanding of the mechanisms that cause ignitions will improve. In order to improve this process, PG&E suggests that a technical working group be created for all utilities, stakeholders, and the WSD to outline a consistent approach to risk event data gathering and to create a well-defined metric supported by all parties.

ACTION PGE-25 (Class B)

1) Integrate discussion on long term planning within the respective section of each individual initiative.

Response:

Risk event reporting provides valuable data for improving wildfire risk management practices. The long-term plan for this initiative is to maximize our learning from risk events. By 2025, PG&E intends to develop a simulation for the potential adverse impacts of risk events, which is an improvement over only considering the immediate consequences. This approach will improve our ability to determine an appropriate level of response to the risk event, i.e., investigation, analysis, and follow-up. It also aligns with best risk practices in other industries.

7.3.7.5 Other, IT projects to support Wildfire Mitigation work

WSD Initiative Definition: *N/A This is not a WSD-defined initiative. This is an initiative that PG&E is adding to the 2021 WMP to describe the IT projects that support wildfire mitigation work.*

1) Risk to be mitigated/problem to be addressed:

Information Technology (IT) is a critical aspect of PG&E's business operations and supports and enables many of the capabilities required for wildfire mitigation. Initiative 7.3.7.1 Centralized Repository for Data is a key foundational component of the overall IT strategy, but there are many additional IT projects that are underway or planned for 2021 and beyond that are needed to deliver PG&E's overall wildfire mitigation plan. This section provides a high-level overview of those projects.

2) Initiative selection ("why" engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives.

As described in this WMP, PG&E is evaluating new technologies as part of our effort to mitigate wildfire risks across our service territory. For example, new and developing technologies like remote sensing and LiDAR offer the potential to leverage data to better manage risk and predict events before they happen. In addition, PG&E now collects significant amounts of weather and environmental data for use in weather modeling, fire spread and consequence modeling and PSPS scoping criteria. In order to take full advantage of new technologies and information, PG&E must develop platforms to manage the significant amounts of data being collected, integrate it with PG&E's legacy systems, and perform analysis to support risk informed decisions.

PG&E is also sponsoring IT projects to improve our ability to provide critical data and information to our customers and other stakeholders. During PSPS events, PG&E wants to improve our ability to provide outage information and customer impact data to our Public Safety Partners. Additionally, we are looking for ways to better share weather modeling, fire penetration shape files, and aerial videos with our external stakeholders in order to improve community responses to wildfire.

These are just a few examples of the IT projects that PG&E has initiated to support our wildfire mitigation work. Further details for the projects are provided in response to Question 4 below.

3) Region prioritization ("where" to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as "high-risk")

Many of PG&E's IT projects relating to data management and communication will support wildfire mitigation work across PG&E's service territory. For example, tools that help PG&E improve our vegetation

management data collection practices will support that work across PG&E's entire territory. In addition, PSPS communication tools will benefit all communities that fall within the scope of a PSPS event. Other IT projects, however, will be focused on gathering data to support mitigation work in HFTDs. Please see the response to Question 4 for more specific information on each project.

4) Progress on initiative (amount spent, regions covered) and plans for next year

Table PG&E-7.3.7-1 below captures the IT projects that are managed under PG&E's CWSP Portfolio and directly support the WMP. These include projects that are in-flight (carryover from 2020) as well as new projects planned to start in 2021. The projects identified here include the IT-specific costs for these projects. Additional activities and costs including 3rd party service providers, change management and other projects aspects are not included.

TABLE PG&E-7.3.7-1: SUMMARY OF 2021 WMP IT PROJECTS

Project Name	Description	Reference Section	Plan Area	2021 Forecast Total (\$000)
Asset Health and Performance Center - Grid Data Analytics Tool	The Asset Health and Performance Center (AHPC) project will develop a Foundry-based toolset with the goal of identifying, locating and rectifying potential fire ignition risks using grid sensor data. The platform will also manage investigation work flows and results to maintain a continuous feedback loop further enhancing outcome accuracy driving a long-term goal to build the ability of auto-detection and auto-field dispatch. This is a new project for 2021 which builds on POC UC5, SIQ, EPIC 3.20/3.43, and Line Sensor projects to provide: 1. Integrated Outage Investigation: Identify targeted areas to patrol, investigate and resolve unknown-cause sustained outages by combining GIS asset information, sensor analytics, and meteorology data. 2. Outage Investigation Inbox: Automatically prioritize unknown-cause outages by relevancy and risk. Track investigation results, artifacts and outcomes collaboratively.	7.1.D.3.9 7.1.D.3.12 7.1.D.3.13	Asset Analytics & Grid Monitoring	\$2,034

Project Name	Description	Reference Section	Plan Area	2021 Forecast Total (\$000)
Asset Failure Data Collection	PG&E plans to improve the tools, systems, and processes involved to collect data when an asset fails. This is a new project for 2021. The objectives of this project include compiling key data needed to perform failure causal analysis, developing frontline data collection tools, and implementing tools with Field Operations processes. In 2021, we will execute a pilot with Field Operations with an application on handheld devices that requests specific key data and photo inputs, links relevant information based on current inputs, and provides further guidance depending on the asset failure. Collected data will be centralized and accessible to other processes and data users.	7.3.4.3	Asset Management and Inspections	\$144
Asset Failure Analysis Data Product	PG&E is committed to improving our understanding of grid asset failure mechanisms and leading indicators in order to reduce the instance of catastrophic failures and ignition events in the future. This is a new project for 2021 that builds on work done in POC UC3 to develop a Foundry data product that enables asset owners to perform asset failure analysis. The objective of this project includes linking multiple backend databases, compiling key metrics to provide asset overviews, incorporating risk-analysis and trending processes, and creating workflows for asset owners to manage their assets. Our focus for 2021 will be on Distribution conductor/wire down incident investigations and transformer failures.	7.3.4.3	Asset Management and Inspections	\$2,557
Aerial Inspection - Sherlock Tool	This project will continue the development of the Sherlock tool suite that leverages AI and advanced analytics to support our Transmission inspection process, including accelerating the identification of FMEA insights from images/media. This is a carryover project from 2020. In 2021, we will build additional machine learning models for computer vision analysis and intend to deliver a suite of over 20 models, including both component identification and potential anomaly detection.	7.1.D.3.8 7.3.4	Asset Management and Inspections	\$7,453
Inspect: Electric Compliance	This project will continue the development of technologies that enable Electric Transmission & Distribution field employees to view and document assigned preventative	7.3.4	Asset Management and Inspections	\$1,540

Project Name	Description	Reference Section	Plan Area	2021 Forecast Total (\$000)
	maintenance work, complete work, and create corrective tags on assets. This is a carryover project from 2020. For 2021, we will make improvements to the application user interface, property access details, digitization of additional paper forms/process, capabilities related to reporting asset registry corrections, pre-submission report summary information, and access to open corrective work notifications are planned for implementation.			
WSD/WMP Automated Reporting	This project will support and improve required WSD data reporting. This is a new project for 2021 that will use Foundry to automate and consolidate the collection of data across source systems (GIS, SAP, ILIS, Work Management Tools, excel spreadsheets, etc.) and associated initiative work (grid hardening, asset inspections, vegetation management) and curate that data into the required WSD schema.	7.3.7.1	Data Governance	\$1,421
Microgrid OIR Portal	This project will create a separate, access-restricted portal for local and tribal governments to access utility data to help identify microgrid development opportunities. This is a new project for 2021 that will provide: (a) Details of utility planned work and grid investments in both tabular and GIS format; (b) GIS layer representation of High Fire Threat Districts; (c) GIS layers including electrical infrastructure; and (d) GIS layers showing weather polygons or other key weather-related determining factors that led to the decision to deenergize distribution and transmission lines during prior PSPS events.	8.2	Emergency Planning and Preparedness	\$1,164
Wildfire Data Viewer	This project will provide an interactive map interface on our website for the general public to access relevant PSPS and wildfire safety initiative information. We will utilize ArcGIS Hubs to collect and share spatially enabled datasets with internal and external stakeholders. This is a new project for 2021 that will deliver a minimum viable product by June 2021 with initial focus on the number of prior PSPS events, a PSPS impact heat map, areas more likely to be impacted by a future PSPS event, and wildfire safety improvement work.	7.3.10.1	Emergency Planning and Preparedness	\$1,097

Project Name	Description	Reference Section	Plan Area	2021 Forecast Total (\$000)
WSOC Incident Viewer	This project will continue development of the platform for the complete workflow of PSPS field observations and the tracking of active wildfires. This is a carryover project from 2020. Key features for 2021 include an effort to increase stability and performance of the WIV tool and the ability for additional situational awareness and decision support to additional users across the Enterprise. The WIV tool will be enhanced with the ability to handle new data and allow other platforms to leverage the data services like an All Hazards Dashboard.	8.1 7.3.9	Emergency Planning and Preparedness	\$2,760
Safety & Infrastructure Protection Team (SIPT) Scheduling	This project will continue development of the SIPT Scheduling tool providing the SIPT crews a system for creating orders and collecting data in the field when performing fire mitigation work around PG&E assets. This is a carryover project from 2020. In the first half of 2021, we will complete the initial project scope in preparation for the 2021 fire season. This includes tracking for prioritization of work by risk rank category for SIPT crews to easily view high priority orders on their iPad to address those orders before lower risk items. This system will increase data integrity by eliminating the current use of excel spreadsheets for data collection and provide the ability take photos to document work completed.	7.3.9	Emergency Planning and Preparedness	\$220
PSPS Trusted Data	This project will continue the development of tools and processes to improve the quality of data needed to support PSPS events and broader wildfire mitigation objectives and build on dashboards and knowledge gained in 2020. This is a carryover project from 2020. Objectives for 2021 include: * EO Data Quality Synch Dashboard – An automated Data Quality dashboard to identify, measure, and monitor data synchronization issues between SAP and GIS for Support Structures. * EO Dashboard: Integrate Risk Data into the EO Synchronization Dashboard to prioritize and resolve high risk data quality issues. * Building out the metadata collection and using the EO Dashboard to monitor and resolve high risk data quality issues.	8.1; 7.3.7.1	Emergency Planning and Preparedness	\$1,958

Project Name	Description	Reference Section	Plan Area	2021 Forecast Total (\$000)
Emergency Web Remediation	This project will increase the stability of our web platform used during emergencies and improve customer user experience with new and enhanced functional capabilities and content. This is a carryover project from 2020. In 2021, PG&E will focus on improvements based on feedback in 2020 such as adding the ability to report an outage and the ability to sign up for notifications. We will also include design improvements and the ability to automate certain back-end tasks.	8.1 7.3.9.2	Emergency Planning and Preparedness	\$3,031
PSPS Field Patrol	This project will continue the development of the PSPS Field Inspection and Patrol solution suite that supports identification of damage, hazards, and risk events and the ability to assign, document, and track PSPS field inspections. This is a carryover project from 2020 that will focus on the following in 2021: * Connection to Palantir Foundry, provide Incident and Investigation Quality Control (I&I QC) and Reporting tool for Damage/Hazard data * Mass Photo Download/management capability * Doc Sync Status and alert * Map Screenshot Capture, Screenshot/photo mark-up features	8.2	Emergency Planning and Preparedness	\$2,365
OMT/DMS Enhancements	This project will continue enhancements to DMS and OMT to support data quality, ETOR management efficiency, hazard tracking and overall workflow and support for PSPS workflows. This is a carryover project from 2020 that will focus on the following for 2021: DMS- The addition of weather polygons into the DMS network model (i.e., map of as-is field conditions for the Distribution grid) that functions as a "layer" providing real-time weather updates for PSPS de-energization zones OMT- 911 Color Coding for resources who are not en route	5.2 7.3.3.8 8.2.1 7.1.D.3.5	Emergency Planning and Preparedness	\$990

Project Name	Description	Reference Section	Plan Area	2021 Forecast Total (\$000)
PSPS Viewer Enhancements	This project will deliver enhancements to the PSPS Viewer that provides the ability to orchestrate the scoping of a PSPS event from planning until the point of de-energization. This is a carryover project from 2020. For 2021, we will add scoping process automation including weather polygon ingestion and quality checks. In addition, we plan to improve the ability to incorporate libraries for abnormal switching configurations and circuit status into the scoping process. Finally, PG&E plans to enhance the integration of temporary generation and microgrids into the scoping process including customer notification outputs.	8.1; 7.3.9 5.2 8.2.1 7.1.D.3.5 7.3.3.8	Emergency Planning and Preparedness	\$4,980
Sharing PSPS Data Externally	This Project will further our capabilities to share PSPS data with Public Safety Partners. This is a carryover project from 2020. In 2021, PG&E plans to enhance and create additional functionality including cloud migration of data processing scripts and end-to-end process automation for sharing of PSPS event data. PG&E plans to enhance user interface based on feedback from PSPS Portal External Working Group of Public Safety Partners. PG&E also plans to consolidate data sharing services and GIS layers, with PSPS outage and restoration data updated every 30 minutes from OMT.	8.1 8.2.1 7.1.D.3.5 7.3.3.8	Emergency Planning and Preparedness	\$3,030
PSPS Situational Intelligence Platform (PSIP)	This platform provides the primary interface to support PSPS events, connecting PSPS data together across multiple systems for real-time intelligence and post-event reporting. This is a carryover project from 2020 and is based on our Foundry platform. In 2021, PG&E plans to reduce sync time between PSIP and the PSPS Viewer. PG&E plans to enhance Situation Reports based on internal debriefs and Public Safety Partner feedback. PG&E plans additional automation and other improvements to advanced de-energization customer notifications. PG&E also plans to connect to additional data sources.	8.1; 7.3.7.1 8.2.1 7.1.D.3.5	Emergency Planning and Preparedness	\$4,088

Project Name	Description	Reference Section	Plan Area	2021 Forecast Total (\$000)
PSPS Field Communication	This program provides radio communications hardware and solutions to support essential roles activated in support of PSPS restoration and patrols. This is a carryover project from 2020. Plans for 2021 include the following: Q1 - *Start VHF assessment for cross banding in common PSPS areas *Complete high value area improvement studies *Utilize historical PSPS area data to set the high priority areas that require improvements in radio coverage *Identify permanent test locations for fill-site quick deploy cabinets *Build up two helicopter-deployable quick deploy radio cabinets. Q2 - *Perform high level aerial coverage testing with fixed and rotary wing for VHF/UHF common PSPS areas *Begin VHF transmitter replacements and crossbanding efforts, focusing on highest impact PSPS sites first *Deploy two quick-build cabinets on impactful fill coverage sites	8.2	Emergency Planning and Preparedness	\$3,000
Transmission Support Structures 2	Transmission Support Structures Loading Calculations (TLC) are generated from T-Line engineering, and PG&E is required to maintain load calculations for the life of all Transmission Support structures. The objectives of this project include a greater understanding of failure modes, establishment of a common repository of data gathered, and updated workflows of key asset systems to align with new data strategies.	7.3.3.15	Grid Design and System Hardening	\$910
Wind Loading Assessment 2	This project will reduce risk by providing asset intelligence to identify locations that need corrective actions and a determination of pole safety factors or limitations for wind speeds. Phase 2 is a new project for 2021 that builds on the original WLA project that will complete in Q1 2021. It addresses the following: * Significant changes to O'Calc 6.0 * Enhancement items from WLA Phase 1 * Expense to cover possible data migration work * Change management/training led by PG&E	7.3.3.13 7.1.D.3.17	Grid Design and System Hardening	\$740*

Project Name	Description	Reference Section	Plan Area	2021 Forecast Total (\$000)
	business resources *The cost is split 80/20 between 2021 and early 2022.			
Wind Loading	This project will reduce risk by providing asset intelligence for Electric Distribution to identify locations that need corrective actions and a determination of pole safety factors or limitations for wind speeds. This is a carryover project from 2020. This project will complete as training is rolled out to the estimators by Q2 2021 and will be followed by Wind Loading Assessment Phase 2.	7.3.3.13 7.1.D.3.17	Grid Design and System Hardening	\$375
Pilot Probabilistic Risk Assessment Model	This will implement UCLA's proprietary risk framework for wildfire risk modelling to inform how possible actions will drive optimal outcomes. This is a new project for 2021 that will enable AWS implementation of the UCLA tool. IT work will involve taking the models/application that UCLA built, refactor to fit PG&E technology stack, enable any data pipelines required to feed data into UCLA mode/application, support testing and deployment to our production environment.	4.5.1	Risk Assessment and Mapping	\$1,361
2022 Wildfire Distribution Risk Model	PG&E is developing a Distribution Asset Risk Model, tuned for Wildfire Risk which will: * Provide situational awareness of the current wildfire risk on the distribution system * Enable risk informed decision making in the budget planning process * Allow PG&E to report risk reduction metrics to regulatory entities. This is a new project for 2021 that builds on a project started in 2020. In 2021, we will deploy the initial model onto the Foundry data platform, completing operationalization (including live integration into PG&E's data systems) and refining the user interface (GUI).	4.3	Risk Assessment and Mapping	\$1,361

Project Name	Description	Reference Section	Plan Area	2021 Forecast Total (\$000)
ET Operability Assessment Model and Probability of Asset Failure	Electric Transmission (ET) Asset Strategy has developed models that predict asset health and behavior in specific situations. The Operability Assessment (OA) Model was developed in 2019 to inform ET line PSPS scope. The Probability of Asset Failure (PAF) model framework was developed in 2019 to predict ET asset health. This is a carryover project from 2020. We will migrate the models developed in 2020 onto the Foundry platform, providing improved integration of source data and model verification that will support improvements to the accuracy and usefulness of their predictions.	7.3.1 7.3.3.17.2	Risk Assessment and Mapping	\$2,795
Sensor IQ (SIQ) Implementation for High Resolution Meter Data	This project will implement Sensor IQ to 500K SmartMeters™ in High Fire Threat Districts and customize data reads and alarms to identify service transformer failures, with other use-cases to be considered based on wildfire risk reduction and/or other business value. This is a carryover project from 2020. Technology deployment to 500K meters in Tier2/3 HFTD will commence in January 2021. The goal is to complete deployment by the end of 2021 and complete the technology evaluation in Q12022.	7.3.2.2.4	Situational Awareness and Forecasting	\$577
Numerical Weather Prediction Upgrade	This project enables a scalable cloud-based computation environment which can be expanded to process current and future weather models and provide access to model outputs. This is a carryover project from 2020. The major areas to be addressed in 2021 are: * Expand the historical weather climatology at 2 x 2 km resolution to back-fill all of 2020 * Explore methodology to back-fill the climatological data each quarter moving forward * Evaluate extending the deterministic forecast to provide another 24 hours of forecast data (from 105 hours currently to 129 hours) * Evaluate if the POMMS EPS ensemble mean is more or less accurate than the deterministic POMMS model.	4.2 7.3.2.1	Situational Awareness and Forecasting	\$4,200

Project Name	Description	Reference Section	Plan Area	2021 Forecast Total (\$000)
Partial Voltage Detection (Enhanced Wires Down) Phase 2	This project extends the partial voltage functionality to the entire meter fleet to provide alerts and locational information of potential asset failures, enabling earlier detection of "wires down" events. This is a carryover project from 2020. Certification of meter firmware with partial voltage detection capability is in progress. There is a plan to complete deployment of meter firmware to 365K meters in Tier2/3 HFTD by Jun 1, 2021.	7.3.2.2.3	Situational Awareness and Forecasting	\$343
Weather Station Installation	PG&E continues to improve real-time environment monitoring on the grid through the implementation of additional weather stations. This is a carryover project from 2020. The plan for 2021 is to install an additional 300 weather stations to bring us to a total of 1300 weather stations.	7.3.2.1	Situational Awareness and Forecasting	\$8,100
Wildfire Consequence Model Updates	We will support continued implementation of Technosylva for Meteorology to enable Wildfire Risk Reduction for Asset Hardening, Wildfire Risk Forecasting and Monitoring & Wildfire Simulation for Real-Time Analysis. This is a carryover project from 2020. In 2021, PG&E plans to achieve the following to enhance our Fuel Moisture Sampling and Modeling efforts: * Evaluate extending the deterministic DFM and LFM forecast to provide another 24 hours of forecast data * Continue the LFM sampling at 30 locations across PG&E's territory to bolster situational awareness and build historical datasets for model calibration. * Evaluate sampling DFM as observations of DFM 100hr and DFM 1000hr fuels are currently sparse	7.3.2.1.2	Situational Awareness and Forecasting	\$3,900
Remote Sensing Data Platform	This project will establish a centralized, ESRI compatible platform that acts as a centralized coordinator of the various remote sensing data sets (LiDAR, hyper/multi-spectral, drone imagery, and thermal), allowing for greater data access and minimizing duplication of remote sensing data capture. This is a new project for 2021/2022 with initial focus on developing standards, governance and infrastructure to ingest, store, and access remote sensing data.	7.3.5.7	Vegetation Management and Inspections	\$2,941

Project Name	Description	Reference Section	Plan Area	2021 Forecast Total (\$000)
Enhanced Vegetation Management	This project continues to enhance the EVM Tools used to help further reduce wildfire risks by reducing vegetation above and adjacent to overhead primary voltage powerlines in CPUC HFTD. This is a carryover project from 2020. Our 2021 focus for EVM includes the following: • Execute EVM platform update (V9) • Provide support to field workers with issues related to the Collector Tool • Work to implement a process for handling P1 and P2 priority tags for Distribution	7.3.5	Vegetation Management and Inspections	\$5,539
One Vegetation Management	This platform will enable a new GIS-based Vegetation Management System that all VM Programs will utilize. This is a new project for 2021. PG&E will complete a detailed project plan in 2021 that will define the primary objectives and milestones to be delivered. This project plan will be utilized as a working document to move this initiative forward.	7.3.5	Vegetation Management and Inspections	\$2,400

5) Future improvements to initiative

In the table above, we set forth our 2021 plans for each IT project that directly supports wildfire mitigation work. Throughout the course of this year, PG&E will evaluate the progress of each project to determine whether the project is feasible and if it supports our goals of wildfire risk mitigation and improved customer and community awareness.

ACTION PGE-25 (Class B)

1) Integrate discussion on long term planning within the respective section of each individual initiative.

Response:

The IT projects represented in this section are managed and prioritized on an annual planning cycle at PG&E to ensure that we are focused on the most important work. As mentioned, these projects are all in support of advancing PG&E's capabilities across the WMP initiatives and are aligned with the long-term planning objectives of those sections.

7.3.8 Resource Allocation Methodology

7.3.8.1 Allocation Methodology Development and Application

Wildfire Safety Division (WSD) Initiative Definition: *Development of prioritization methodology for human and financial resources, including application of said methodology to utility decision-making.*

1) Risk to be mitigated/problem to be addressed:

In any work prioritization effort, Pacific Gas and Electric Company (PG&E) puts safety first as we navigate through the challenges of financial and resource constraints. We understand there is a high volume of work to do in our territory, but in an effort to keep costs down for our customers, we go through a prioritization effort that puts a premium on the highest risk work in our system, and currently that is wildfire risk.

2) Initiative selection ("why" engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives.

Allocating financial and human resources to wildfire risk mitigation activities is one aspect of PG&E's overall prioritization process. Below is a high-level flow of a normal prioritization effort.

- Receive work intake from the line of business on volume and cost;
- Assign risk score methodology to the work (PG&E's answers to questions 4 and 5 of this section present the risk model that drives prioritization on both the human and financial side);
- Understand both human and financial constraints as compared to the work identified as a part of the intake process; and
- PG&E will use risk-based methodology to allocate the highest priority work in alignment with the available financial and human resources available.

This prioritization effort is led by Electric Business Operations (EBO) as a part of the revised Five-Year Investment Planning process. EBO works with teams across the business including groups from Asset Strategy, Risk Management & Safety, Work Execution & Delivery, and Business Finance to put forward a safe and affordable plan. Additionally, PG&E is consistently looking to be more affordable. We have an affordability team that is evaluating our portfolio to find cost efficiencies with an effort to execute as much risk mitigating work as possible.

Resource supply is identified for major working groups, particularly the construction, engineering, and estimating resource groups within Electric Operations' (EO) Transmission Operations, Distribution Operations and Major Projects & Programs organizations. These are the primary resources that execute work for, and on, electric assets.

PG&E ensures that our financial plan and workforce plan are aligned in any cycle. This is critical for PG&E to put forward an affordable plan that we can execute.

3) *Region prioritization ("where" to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as "high-risk")*

As indicated above, PG&E emphasizes wildfire risk mitigation work in our prioritization and planning processes. This work mostly occurs in the Tier 2 and Tier 3 High Fire Threat District (HFTD), as defined by the California Public Utilities Commission. We believe that work in the HFTDs addresses the largest amount of wildfire risk in our service territory. PG&E's responses to questions 4 & 5 of this section outline PG&E's risk methodologies.

4) *Progress on initiative (amount spent, regions covered) and plans for next year*

For the 2020 Planning Cycle, PG&E used a 1-9 Ranking Methodology for Risk:

1. Work that prevents fire ignition;
2. Overhead Assets (with strong Safety link);
3. Emergency Preparedness;
4. Underground/Network (with strong Safety link);
5. Compliance/Commitments with strong Safety link;
- 5a. Mitigates System Wide failure risk;
6. New Business and work at the request of others;
7. General Rate Case (GRC) Commitments;
8. Compliance/commitments (low Safety risk); and
9. Reliability (low Safety risk).

PG&E chose this risk methodology so as to prioritize wildfire and public safety above everything else.

5) *Future improvements to initiative*

Starting in 2021, PG&E will be moving towards a Portfolio Prioritization Framework (PPF). One anticipated benefit of this new framework is that it will be consistently used across the company.

The PPF will be framed around 5 work types:

- Emergency Response;
- Customer Requested & Load Growth;
- Compliance;
- Risk Reduction; and
- Operational Coordination.

PG&E recognizes that every work type needs some level of funding within the overall prioritization process to ensure PG&E has a sustainable business intended to prioritize work based on risk. We believe this new framework prioritizes risk and public safety without losing sight of our compliance obligations and commitments to serve new customers.

ACTION PGE-25 (Class B)

1) Integrate discussion on long term planning within the respective section of each individual initiative.

Response:

We believe PG&E is on the right path with regards to prioritizing wildfire, public safety, and our customers within the resource allocation process. Our 3-10 year outlook acknowledges that we have key areas to improve on moving forward. These bullet points below highlight the areas that we will be focusing on.

- Risk effectiveness by mitigation is deeply embedded into the resource allocation process, guiding the prioritization and tradeoff analysis. We believe the rollout of Risk Spend Efficiencies (RSE) across our portfolio will give us the granularity we need to make more sound decisions based off risk.
- Refine use of investment decision optimization tools to achieve completion of both our resource and financial plans in a more streamlined and transparent manner. In 2021, we will be rolling out Copperleaf (C55) to our electric business. We do expect immediate efficiencies such as data integrity and a user friendly interface, but we expect most benefits to come to fruition in 3-5 years as our team members gain expertise working with the tool and we get a chance to build in our Risk Value Framework within the tool.
- Enhance the end-to-end work management processes via the implementation of the EO E2E Work Management Process Improvement program through streamlining both upstream and downstream processes to ensure visibility and alignment across seven key process areas: Plan (includes Manage Assets, Work & Resource Planning, and Investment Planning), Inspect, Design & Estimate, Dependency Management, Schedule, Execute, and Close. Key milestones include completion of current state process mapping, future state process mapping, technology portfolio management integration, process piloting, initial process rollout, and post-deployment adoption and support.
- Improve staff competencies with risk and investment modeling tools by bolstering up the Investment Planning and Workforce Strategy & Resource Management teams to support and maintain the implementation of the Copperleaf C55 system.

7.3.8.2 Risk Reduction Scenario Development and Analysis

WSD Initiative Definition: *Development of modelling capabilities for different risk reduction scenarios based on wildfire mitigation Initiative implementation; analysis and application to utility decision-making.*

1) Risk to be mitigated/problem to be addressed:

Risk models help inform workplans and facilitate decision-making by quantifying risk and identifying circuit segments for targeting mitigation deployment..

2) Initiative selection ("why" engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives.

Quantitative risk models facilitate effective risk quantification and evaluation of risk at a localized (e.g. circuit segment) level and assist in the decision-making process to select the most appropriate mitigation program for that location. The Enterprise Risk Model enables the calculation of a Risk Score at the system level and can adjust the risk score based on planned mitigations. PG&E has developed a number of risk models such as the 2021 Wildfire Distribution Risk Model, which are described in detail in Sections 4.2.A, 4.3, and 4.5.1. Specific risk modeling initiatives are described in Sections 7.3.1.1 through 7.3.1.6.

3) Region prioritization ("where" to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as "high-risk")

Enterprise risk modelling capabilities are focused on a system-wide view, whereas the 2021 Wildfire Distribution Risk Model allows for a more granular examination of circuit segments to allow to better identify where to execute work.

4) Progress on initiative (amount spent, regions covered) and plans for next year

For our distribution system, the 2021 Wildfire Distribution Risk Model has focused on Tier 2 and Tier 3 HFTDs. The granularity of the models continues to improve and is moving from circuit-based to circuit segments. Our plans for development and refinement of our risk models in 2021 and beyond is described in more detail in Section 4.5.1.

5) Future improvements to initiative

PG&E's plans for continued development and refinement of our risk models in 2021 and beyond is described in more detail in Section 4.5.1.

ACTION PGE-25 (Class B)

1) Integrate discussion on long term planning within the respective section of each individual initiative.

Response:

We have outlined a detailed approach in Section 4.5.1 for future improvements which will focus on building out the modeling of risk drivers, improving the granularity of the model results, and providing risk reduction values for mitigation alternatives. Over the next 3 to 10 years, as these focus areas are achieved, the continuous improvement of the wildfire risk models will shift to a more steady-state improvement driven by improvements in input and training data. As we continue to develop and enhance a more formalized long-term perspective, these data improvements will enable model granularity to reach a span and asset level.

7.3.8.3 Risk Spend Efficiency Analysis

WSD Initiative Definition: Tools, procedures, and expertise to support analysis of wildfire mitigation initiative risk-spend efficiency, in terms of MAVF and/ or MARS methodologies.

1) Risk to be mitigated/problem to be addressed:

RSE provides a way for initiatives in a portfolio to be compared against each other to better understand the amount of risk reduced for the dollar spent.

2) Initiative selection ("why" engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives.

RSEs represent the risk reduction divided by the dollar spent, calculated for various initiatives and programs. More specifically, RSEs represent the calculated risk reduction associated with the implementation of an initiative per dollar spent on that initiative and are determined for each initiative by dividing the Risk Reduction by the total cost of the program. All else being equal, the higher the RSE, the more effective the program is at reducing risk for the same dollar spent. However, there are other considerations in determining the prioritization of programs and initiatives. PG&E views RSE as one tool to evaluate risk initiatives and uses it as one input into the Company's overall decision-making process.

3) Region prioritization ("where" to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as "high-risk")

The portfolio level Safety Model and Assessment Proceeding (S-MAP) aligned Enterprise Risk Model used for RSE calculations covers PG&E's entire service territory. The tranches in the S-MAP aligned model are being further refined in response to Safety Policy Division Staff Evaluation Report on PG&E's 2020 Risk Assessment and Mitigation Phase (RAMP) Report (presented on November 30, 2020). This update is projected to be completed by the GRC 2023 submission in June 2021.

4) Progress on initiative (amount spent, regions covered) and plans for next year

Since the 2020 Wildfire Mitigation Plan filing, PG&E has continued to develop our RSE analysis as reflected in our 2020 RAMP Report submitted on June 30, 2020 and in response to Condition Guidance-1 in PG&E's First Quarterly Report, submitted on September 9, 2020.

5) Future improvements to initiative

RSE calculations are continually being refined by better data for effectiveness and scope calculations, coupled with better input from the

SME as the use of data for RSE calculations is better understood with time. PG&E will continue using these methodologies in preparation for the GRC 2023 submission.

ACTION PGE-25 (Class B)

1) Integrate discussion on long term planning within the respective section of each individual initiative.

Response:

PG&E's long-term planning for the RSE initiative is based on the developments of other activities. RSE evaluations will improve as we implement improvements in the following areas:

1. Granularity of risk models with supporting data to segregate risk across the system;
2. Understanding how the risk profile at this granularity is expected to change over time (environmental conditions, asset health, etc.);
3. Understanding and capturing the number of assets, and their health and conditions, at that same level of granularity;
4. Determining the data necessary to calculate effectiveness quantitatively for each initiative; and
5. Collecting and forecasting financial data to support the level of granularity.

Items 1 and 2 help better articulate the current and future level of risk on the system.

Items 3 and 4 help determine the risk reduction each activity provides by taking the difference between baseline and mitigated risk.

Item 5 allows for accurate calculation of risk reduction/spend = RSE.

As each of these five components is developed, the overall efficacy of the RSEs to inform decision-making will improve, and these will be the main focus areas in which PG&E can expect to see improvements in the accuracy and usefulness of RSEs in the long term.

7.3.9 Emergency planning and preparedness

7.3.9.1 Adequate and Trained Workforce for Service Restoration

Wildfire Safety Division (WSD) Initiative Definition: *Actions taken to identify, hire, retain, and train qualified workforce to conduct service restoration in response to emergencies, including short-term contracting strategy and implementation.*

1) Risk to be mitigated/problem to be addressed:

We have several dedicated departments focused on identifying, hiring, retaining and training a qualified field workforce to ensure power is restored for customers safely, efficiently and in a timely manner.

As a guiding training principle, we utilize California Governor's Office of Emergency Services (Cal OES) Standardized Emergency Management System (SEMS). This is to ensure all agencies responding to a potential event (i.e., Cal OES, County Office of Emergency Services (County OES), Pacific Gas and Electric Company (PG&E or the Company), other Investor-Owned Utilities (IOU)) are aligned and can safely and efficiently communicate and respond.

2) Initiative selection ("why" engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

In order to minimize the risks noted above, we have a large workforce, consisting of Journeymen Linemen, Apprentice Linemen, Troublemens and Foremen, that is geographically distributed and can move across PG&E's service territory to handle emergency events as needed. These resources are our primary responders and are critical to restoring power during Public Safety Power Shutoff (PSPS) events.

It is important to note that these field-based roles are within the same Line of Progression (e.g., Apprentices become Linemen; Linemen can become Troublemens or Foremen), and PG&E has dedicated resources focused on identifying, hiring and retaining our workforce.

- **Identification** – PG&E Electric Business Operations prepares a yearly and multiyear demand and supply plan to identify resource needs. Resource needs are external positions typically for the Apprentice, experienced Lineman and internal promotions for Troublesman and Foreman roles.

PG&E's recruiting team puts Apprentices through a number of steps in the selection process to help narrow the candidate pool. Key steps include, but are not limited to:

- Assessing candidates on soft skills while completing field assessments;

- Interviewing with scorecard ratings so interviews are weighted;
- Adding Hiring Hall tiering as a part of the selection process for Hiring Hall employees that are currently working for PG&E line departments in specific areas that have openings;
- Establishing local hiring parameters for all service areas to identify candidates that are rooted in their geographic areas and minimize future movement/churn;
- Updating interview strategies to align with 100 percent local hiring; and
- Continuing to leverage the Advanced Placement Program to attract experienced applicants.

External experienced Linemen go through a similar process that narrows the candidate pool.

- **Hiring** – Human Resource recruiting puts screened and qualified candidates for all roles in front of hiring leaders. Hiring leaders use the standard PG&E multi-interview process to identify candidates for employment.
- **Retention** – PG&E leadership and Labor Relations teams work with the International Brotherhood of Electrical Workers to incentivize and retain the Company's field workforce. Retention strategies include the Letter of Agreement which states that financial incentives are provided to certain job classifications for Bay Area personnel, ongoing updates to union contracts, internal mobility through bidding process to resource work areas of choice and planned over time/double time opportunities.

These roles go through training programs that vary in duration by classification. Apprentices are put through a 3-year classroom and on-the-job training (OJT). Journeymen are put through 4-week training programs and Troublemakers go through a three-week training program. All three classifications also go through refresher trainings annually and/or biannually.

In addition to classification-specific trainings, we require personnel to complete emergency response trainings, such as PSPS-specific trainings. This is to help ensure the internal workforce remains in a steady state of emergency readiness and have the skills and abilities to react and respond to incidents within the service territory. With a trained workforce, we can deploy resources with confidence that restoration efforts are being conducted efficiently and safely, in compliance with standards and regulations.

All Emergency Operations Center (EOC) staff are trained in SEMS and Incident Command System (ICS) procedures to help ensure we are using a systematic approach to respond to emergencies and are coordinating

with other agencies safely and efficiently.

3) *Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):*

PSPS or other emergencies can occur throughout our service territory. While PSPS events are more likely to occur in Tier 2 and Tier 3 areas as defined by the California Public Utilities Commission (CPUC or Commission) High Fire Threat District (HFTD) map, these areas cover over half of our service territory. For this reason, we identify, hire and train personnel throughout the service territory concurrently.

4) *Progress on initiative (amount spent, regions covered) and plans for next year:*

As part of an internal demand and supply review, PG&E has projected a need to hire approximately 40 Linemen and 100 Apprentices each year for the next five years. In 2020, PG&E received over 4,000 applicants and identified and hired 40 Linemen and 100 Apprentices, meeting our hiring goal for the year.

As of November 1, 2020, 100 percent of profiled utility personnel throughout our service territory completed the PSPS-0001WBT PSPS Restoration Overview and the PSPS-0002WBT Distribution Control Center (DCC) Operator Trainings. These courses provide an overview of the ICS and segmenting and assessment processes used when restoring power after a PSPS event. More information on PSPS-0002WBT DCC Operator Training is also referenced in Section 7.3.9.5. As personnel completed this training, status updates were populated in the Learning Management System to track and ensure completion. These trainings are an annual requirement for our utility personnel responding to PSPS events. For 2021, these trainings will be completed by the end of the year. New hires will be required to complete these trainings within 90 days.

As part of PSPS preparedness efforts, utility personnel participated in field exercises by region to test PSPS policies and procedures and identify any gaps or changes needed. We will continue to conduct regional full-scale exercises in 2021.

In February 2020, PG&E, Cal OES, the CPUC, and the other IOUs entered an agreement to help ensure consistent training requirements for all EOC staff. The agreement included the following four-phased approach, targeting completion by 2022:

- **Phase I** – Basic ICS training that includes ICS-100, ICS-200, ICS-700, ICS-800 and SEMS-G606
- **Phase II** – Includes several emergency operational trainings such as G-191 (ICS/Field interface), G775 (EOC Management and Operations),

G197 (Integrating Access and Functional Need) and G626E (Essential EOC Action Planning)

- **Phase III** – ICS 300 and ICS 400
- **Phase IV** – G611 Position Specific

Per the agreement, we completed Phase I training for Command and General staff (that were originally identified) by June 2020. We continue to identify additional EOC staff to support our emergency response efforts. As new staff is brought on, we require they complete Phase I training within 60 days. In 2021, we will continue to train EOC staff, as well as incorporate the remaining operational areas and field personnel, as appropriate.

Due to coronavirus (COVID-19) health considerations, we developed an alternative to the Phase III training, which is typically conducted in-person. In August, we conducted virtual, pilot sessions of ICS 300 and 400 with state training agencies as observers. Both classes were approved by the training agencies to continue virtual until further notice. In 2020, we hosted three ICS 300 trainings, two ICS 400 trainings. All Command staff and select roles in general staff will be required to complete Phase III training by end of Q2 2021.

We will roll out Phase II courses in Q1 2021, including the G197 (Integrating Access and Functional Needs (AFN)) training, which will be completed September 1, 2021. We continue to develop the curriculum for additional parts of Phase II and Phase IV. Following approval of the curriculum by state training agencies, we will roll out these courses virtually (anticipated in 2021).

Note that for Phase IV, the final step in certification is completion of the position-specific task books, showing completion of all required training and demonstrating competency through either exercise or real incident. These training packets will be presented to the state training agencies for sign-off of certification.

5) *Future improvements to initiative:*

Beyond what has been noted above in this section, there are no additional improvements currently identified. We will continue to update the PG&E's identification, hiring and retaining processes. Trainings will also be revised, updated and adjusted to reflect changes in policy and/or processes, as needed. In addition, as new or emerging technologies are identified for use in the field, training will be developed to facilitate timely use in field operations.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

As stated in the section above, there are no further improvements planned at this time.

7.3.9.2 Community Outreach, Public Awareness, and Communications Efforts

WSD Initiative Definition: *Actions to identify and contact key community stakeholders; increase public awareness of emergency planning and preparedness information; and design, translate, distribute, and evaluate effectiveness of communications taken before, during, and after a wildfire, including AFN populations and Limited English Proficiency populations in particular.*

1) Risk to be mitigated / problem to be addressed:

Community outreach and public awareness is a key component of emergency planning and preparedness to ensure customers and communities are informed and adequately prepared prior to a wildfire or PSPS event. PG&E strives to deliver effective communications before, during and after a wildfire and PSPS events.

The goals of PG&E's detailed outreach and engagement plan, supported by ongoing evaluation of the effectiveness of our outreach efforts, facilitates the following benefits, among others:

- Identifying and engaging with key stakeholder groups
- Creating alignment between PG&E, customers, agencies and community needs
- Informing agencies and customers of emergency planning and preparedness and in their area
- Identifying opportunities to collaborate with key local agencies in the design and planning of wildfire mitigation work to leverage efficiencies in project execution or the pursuit of projects that are closely aligned with community priorities and emergency planning and preparedness
- Preparing agencies and customers for power outages during PSPS events to mitigate the risks associated with those events, especially for our most vulnerable customers
- Aligning the understanding of PG&E's Local Public Affairs (LPA) Representatives, Public Safety Specialists (PSS), Customer Relationship Managers (CRM), and other local engagement teams to efficiently and clearly provide support to key stakeholders

In addition, PG&E designs, translates, distributes and evaluates communications before, during, and after a wildfire, including AFN and non-English speaking customers, to help ensure:

- Customer and communities are aware of PG&E's emergency preparedness and in-event resources
- Customers and communities increase their own emergency preparedness based upon effective PG&E communications

- There is balanced communication to customer populations, where the most vulnerable populations have more access to information

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

PG&E develops an outreach and engagement plan for the various stakeholders within our service territory. Key stakeholders include agencies, including federal, state, local and tribal agencies; critical facilities, such as water agencies, communications providers and hospitals; and, customers, including our most vulnerable customers.

Throughout the year, PG&E engages with these stakeholders with a focus on emergency planning and preparedness. PG&E’s main outreach and engagement objectives for 2021 include:

- Listening to customers and community leaders in order to fully understand and respond to concerns and feedback about communications.
- Customizing outreach approach and cadence based upon the community’s past PSPS and wildfire impacts, with a key focus on providing more heavily impacted communities with information and resources.
- Approaching agencies and customers with humility and transparency while providing timely and accurate information that supports emergency preparedness and localized wildfire mitigation efforts.
- Soliciting agency feedback at key milestones in wildfire mitigation planning processes to ensure that local projects meet community priorities, and that opportunities for efficiency in collaboration may be identified and acted upon.
- Adapting to shifting agency needs and priorities in emergency preparedness and wildfire mitigation, including a mindfulness of other key local priorities such as responding to the ongoing COVID-19 crisis.
- Hosting localized discussions with agency- and geography-specific information in order to enhance agency knowledge of drivers for PSPS events and other potential emergency events in their areas.
- Strengthening relationships between local agencies and external-facing PG&E teams so that agencies are aware of their knowledgeable point-of-contact that can address their needs both during an emergency event and throughout the year.

To further explain PG&E’s community engagement approach related to emergency planning and preparedness, we have broken up this section into the following categories:

- A) Actions taken to identify and contact key community stakeholders
 - 1. Federal, State, Local and Tribal Governments
 - 2. Critical Facilities and Infrastructure
 - 3. Customers
- B) Increase public awareness of emergency planning and preparedness information
 - 1. Agency and Critical Facilities Outreach / Advisory Committees
 - 2. Customer and Community Outreach
- C) Design, translate and evaluate effectiveness of communications taken before, during, and after a wildfire (including AFN and non-English speaking customers)
 - 1. Before Wildfires
 - 2. During Wildfires
 - 3. After Wildfires

Please note additional information on outreach conducted during PSPS events is outlined in Section 8.2.4. In addition, PG&E's overall Community Wildfire Safety Program (CWSP) outreach and engagement is outlined in Section 7.3.10.1. It is important to note that many of the strategies and tactics related to emergency planning and preparedness overlaps with PG&E's holistic CWSP outreach and engagement.

A) Actions to Identify and Contact Key Community Stakeholders

PG&E understands the critical importance of identifying key customer, agency and stakeholder contacts so that we can effectively coordinate and collaborate before, during and after emergencies, as required. Below includes information on how PG&E identifies and maintains a contact list to be used during emergency events. For information on how PG&E identifies contacts for additional outreach and engagement activities, see Section 7.3.10.1. In addition, for information on how PG&E engages with these stakeholders during a PSPS event, see Section 8.2.4.

- 1. **Federal, State, Local and Tribal Governments:** As part of an annual outreach effort and in compliance with the CPUC's PSPS Phase I requirements, in May 2020, PG&E's PSSs, LPA representatives, and Tribal Affairs representatives reached out to County OES local and tribal governments dedicated points-of-contact. This was to request that the agency review and confirm that the contact information currently within PG&E's system is still accurate. PG&E's Federal Affairs, State Government

Relations, and Emergency Preparedness and Response (EP&R) personnel also review and provide updates to the federal and state agency contacts within PG&E's system on a year-round basis due to their frequent interactions with agencies. PG&E will continue to conduct this outreach effort in 2021. Please see Section 7.3.10.1 for additional details.

During a PSPS event, these contacts are notified at set cadences identified for Public Safety Partners. Please see Section 8.2.4 for a more detailed description of the cadences and categories of notifications to agencies during emergency events. It is important to note that this is not a comprehensive list of all emergency management, elected and staff within an agency. Instead, PG&E requests a minimum of two contacts, one of which is a 24-hour contact that should be notified during emergency events. The number and types of contacts for each agency vary, but typically the agency includes contacts such as the emergency Manager, fire/police chief, and dispatch center. PG&E updated the system to reflect revisions received during this outreach and throughout the year, as needed.

- 2. Critical Facilities and Infrastructure:** PG&E is committed to coordinating with critical facilities, such as hospitals, fuel suppliers, telecommunications providers, water and wastewater agencies, and transportation agencies, among others, to further understand and more effectively plan for the impacts of wildfires and PSPS on the ability to safely operate these facilities.

PG&E has developed and validated a list of critical facilities directly with these customers as well as through coordination with counties, tribal governments, and Cal OES as part of our emergency preparedness initiatives. This effort is a continual, ongoing process to ensure the list stays updated.

In 2020, PG&E contacted cities, counties, and tribes in the Company's electrical service territory to confirm and verify the critical facilities within their respective jurisdictions and suggest any additional facilities that they recommend PG&E should add. As a result of this outreach, 50 agencies provided input and a total of 239 facilities were updated to a critical designation based on the feedback received.⁹⁸ PG&E updated the critical facilities list with agency-identified facilities, as appropriate (e.g., facilities provided aligned with CPUC definitions, feedback was able to be

⁹⁸ Agencies were asked to provide feedback by June 26, 2020. The outcomes reflect responses received prior to that deadline. PG&E has and will continue to accept additional Critical Facilities feedback from agencies on a rolling basis.

matched to an electric service account, etc.).⁹⁹

To support critical facilities, PG&E also requested that critical facilities provide updated contact information for each location, a 24-hour contact and information about their back-up generation capabilities.¹⁰⁰ PG&E shares insights with critical facilities regarding areas more likely to be subject to a PSPS based on grid configuration and weather risk, and provide information about planned mitigations, backup generation and resources for resiliency planning. As one example of PG&E's engagement with critical facilities, in partnership with United States (U.S.) Environmental Protection Agency Region 9, PG&E supported two water agency resiliency workshops in early 2020, with a focus on small and tribal water systems. After those sessions, PG&E produced quick reference guides and resources in support of emergency planning and PSPS preparedness. We have also partnered with Association of California Water Utilities (ACWA) and the other IOUs to provide resources available for water agency resiliency planning including information on PSPS readiness. And several water agencies participated in our full scale PSPS exercises as players to further enhance their readiness and help us improve critical customer communication and coordination. PG&E plans to continue this type of coordination in 2021.

PG&E provides more details on how it communicates with these customers during a PSPS event in Section 8.2.4.

Additionally, PG&E leverages a team of dedicated Business CRMs to support our industrial, commercial, and agricultural customers with emergency planning. This team ensures that customers update their contact information and provides critical information to customers on emergency preparedness planning, including topics such as business continuity, backup power options, safety, financing, and sourcing.

- 3. Customers:** PG&E leverages a multi-pronged approach to identify and contact key customer stakeholders in addition to those customers and efforts described above. For example, PG&E implements outreach campaigns to encourage customers to update contact information. These campaigns include website banners, where, when first logging into pge.com, customers are

⁹⁹ More details on PG&E's identification of critical facilities is included in our Bi-Weekly Report of PG&E In Compliance with January 30, 2020 Assigned Commissioners' Ruling Section 2.g "2.g Develop and validate the list of critical facilities by coordinating with counties, tribal governments and Cal OES ahead of the events." (Rulemaking (R.) 18-12-005)

¹⁰⁰ PG&E has reached out to critical facilities via Account Managers, outbound call campaigns, and finally through a letter and email campaign.

asked to update their contact information. In addition, PG&E uses other venues such as bill inserts, newsletters and postcards to urge customers to update contact information. For our business customers, PG&E's CRMs reach out to customers to support efforts to update customers' contact information.

B) Actions to Increase Public Awareness of Emergency Planning and Preparedness Information

Prior to peak wildfire season, PG&E designs and executes a comprehensive wildfire safety and PSPS preparedness community outreach strategy, using lessons learned and feedback received from customers and stakeholders. Further, PG&E conducts community outreach to educate agencies, customers and property owners on aspects of our wildfire mitigation practices, such as vegetation management and system hardening, and the role they play in helping to reduce wildfire risks in their communities.

PG&E incorporates multiple platforms and tactics into our engagement approach that enable PG&E to regularly hear and act upon feedback from agencies with an imperative to serve their communities in emergencies, critical facilities, and other key customers, Community-Based Organizations (CBO) and customer associations. We will remain flexible and have the ability to adjust or customize our approach according to community needs, and to focus efforts strongly on jurisdictions and geographies most heavily impacted by PSPS events, while maintaining an inclusive posture for all agencies impacted by PSPS in the 2019 and 2020 fire seasons.

Due to the ongoing COVID-19 pandemic, PG&E will follow prevailing public health guidelines, including hosting meetings virtually when needed. In years' past, PG&E has been able to collaborate with agencies, critical facilities and other stakeholders on the design of outreach forums, including designing in-person meetings and community town halls. The ongoing COVID-19 pandemic has prevented most in-person engagement efforts for most of 2020 and will continue to restrict in-person engagements in 2021. PG&E will continue to follow prevailing public health guidance first and foremost when planning 2021 engagements and will also take into account the preferences of agencies, customers, communities and our own internal staff.

PG&E maintains an Emergency Preparedness Safety Awareness campaign to provide education to customers, residents, and communities throughout our service territory. This campaign helps customers and the community prepare for emergency situations and take preparatory measures such as updating contact information to ensure delivery of PG&E notifications and signing up for the Medical Baseline (MBL) program. PG&E takes a collaborative approach to our public awareness initiatives by partnering with local public safety officials and community stakeholders to expand the reach of our activities. PG&E uses the tactics

in the sections below to increase public awareness of emergency preparedness.

1. Agency and Critical Facilities Outreach / Advisory

Committees: PG&E works closely with agencies and critical facilities to ensure they are informed of the importance of emergency planning and preparedness. PG&E often also relies on these agencies to provide key local guidance and partner with PG&E to gain efficiencies in local wildfire project implementation. For example, a local permit may be needed or PSPS preparedness activities may be required to help minimize customer impacts. That is why PG&E has an extensive outreach plan and dedicated representatives to ensure agencies and critical facilities are informed and have an opportunity to provide feedback. Agencies, critical facilities and community groups may also directly engage with PG&E customers and communities and can provide additional outreach support to increase awareness and support of utility wildfire mitigation activities.

Table PG&E-7.3.9-1 includes the key agency and critical facilities engagements, and the proposed timing of each engagement tactic in 2021.

TABLE PG&E-7.3.9-1: KEY AGENCY AND CRITICAL FACILITIES OUTREACH TACTICS AND TIMING

Type	Description	Timing
PSPS Regional Working Groups	Forum for stakeholders to learn key information on the previous wildfire and PSPS season and to share feedback on wildfire safety work, discuss lessons learned, build regional collaboration and incorporate learnings into future wildfire safety and PSPS plans.	Quarterly
Wildfire Safety Working Sessions	Co-hosted with County OES, this meeting is an opportunity to partner on PSPS planning efforts, share local progress on wildfire mitigation work and track action items.	Q2-Q3 2021
Additional PSPS Trainings & Workshops	Ad-hoc, or as-needed trainings and workshops for agency partners, based upon agency feedback (i.e. PSPS Portal).	Ongoing and as needed
PSPS Listening Sessions	Open forum for PG&E to share information on the previous wildfire and PSPS season and to listen to county, tribal and critical facilities' concerns and gather important feedback on 2021 PSPS events. The feedback will be used to prioritize improvements for 2022.	Q4 2021
PSPS Advisory Committee	Select county, city and tribal governments to obtain focused input, solicit recommendations and gather feedback regarding PSPS improvements.	As needed

Type	Description	Timing
People with Disabilities and Aging Advisory Council (PWDAAC)	Forum that provides insight into the needs of AFN populations related to emergency preparedness and to facilitate co-creation of solutions and resources to serve the customers reliant on power for medical needs	Quarterly
Other AFN Advisory Councils	Statewide IOU AFN Advisory Council Disadvantaged Communities Advisory Group (DAC-AG) Low-Income Advisory Board (LIOB) among others Communities of Color Advisory Group Customer Advisory panels with National Diversity Coalition (NDC) and Communities of Color These are designed to gather customer feedback on our outreach efforts and other important topics impacting low-income, disadvantaged, and under-served communities.	Varies
Energy and Communications Providers Coordination Group	Forum for communications providers to provide feedback on PG&E's current PSPS implementation protocols and to coordinate engagement before and during PSPS events	As needed
Key Customer Association Collaboratives	Ongoing engagement, intelligence sharing, consultative support, and contact updating efforts	Ongoing
Ongoing Outreach and Coordination	Outreach on a myriad of topics related to wildfire safety work.	Ongoing

- PSPS Regional Working Groups:** As required by Decision (D.) 20-05-051, PG&E hosts quarterly meetings with tribal and local government entities, public safety partners, and representatives of AFN and vulnerable customers.¹⁰¹ grouped into five regions across PG&E's territory. These meetings are structured to enable feedback and information sharing on aspects of PSPS event execution and planning. This includes aspects of PSPS, including Community Resource Center (CRC) planning, communication strategies, information sharing, identification of critical facilities, strategies for supporting AFN communities and contingency plans. PG&E began these Regional Working Groups in Q3 2020 and will continue quarterly meetings in 2021.

In 2021, PG&E plans to integrate two other agency outreach regulatory requirements with the Regionalized Working

¹⁰¹ D.20-05-051 at p. 13.

Groups: the semiannual meetings required by D.20-06-017 in the Microgrid Order Instituting Rulemaking (OIR) (at p. 46) to discuss electric grid, microgrid projects and the other wildfire safety related topics;¹⁰² and the semi-annual Wildfire Mitigation Meetings requirement by the I.19-06-015 in the Wildfire Order Instituting Investigation (OII) (at Appendix A, Exhibit C, p. 7) to discuss wildfire mitigation activities and solicit feedback. Every other Regional Working Group will be dedicated to one of the two semi-annual agency engagement meetings described above; this will ensure that each of these meeting types will be held at least twice per year as required.

The public safety partners included in the Regional Working Groups overlap significantly with the audiences of the Microgrid OIR semi-annual meetings and the Wildfire OII semi-annual meetings. The Regional Working Groups provide an existing, successful forum to solicit feedback and encourage collaboration on PSPS events, wildfire mitigation activities, and microgrids and other temporary generation that could be leveraged during PSPS.

- **Wildfire Safety Working Sessions:** PG&E offers to meet with counties and federally recognized tribes within our service territory to share county-specific plans for wildfire mitigation, system resiliency and the steps we are taking to address the feedback received during the listening sessions. This outreach is anticipated to be complete by June 1, 2021. PG&E's PSS and Tribal Representatives work with county and tribal OES to cohost Wildfire Safety Working Sessions for their respective jurisdictions. Invitees to these events include regional key stakeholders, such as cities, tribes, Community Choice Aggregators (CCA), telecommunication providers, water agencies, as well as local California Department of Forestry and Fire Protection (CAL FIRE) and Cal OES representatives. Some county and tribal governments may determine that a meeting with PG&E is not needed. The purpose of the sessions is to provide local agencies with an opportunity to have detailed conversations regarding PG&E's wildfire safety work planned in their community and PSPS improvements. The sessions also provide an opportunity for local officials to learn about the electric system in their community and discuss their needs and suggest any further improvements to the CWSP and PSPS Program. Feedback from the sessions has helped to shape local planning for PSPS events, including critical

¹⁰² See PG&E Advice Letter (AL) 5882-E (at p. 6) filed on July 17, 2020, for more detail on this proposal.

facility locations, CRC locations and local contacts for emergency response.

PG&E will plan to host Wildfire Safety Working Sessions in each jurisdiction impacted by PSPS if desired by that jurisdiction. In 2021, as PG&E determines the content of the Wildfire Safety Working Sessions, we will work to prioritize the needs of jurisdictions impacted the most by PSPS events and wildfires in terms of frequency of events, and total and unique customers impacted, critical facilities impacted, and localized issues that may have caused escalations. While the needs of the most impacted jurisdictions will take highest priority in planning, PG&E will still strive to make these sessions as inclusive and valuable as possible to the broader audience of all jurisdictions.

- **PSPS Exercises and Workshops:** PG&E invites County OES and federally recognized tribal leaders to workshops that review PG&E's PSPS Policies and Procedures document and solicit feedback. PG&E's EP&R department then hosts PSPS full-scale exercises where we test our ability to communicate effectively with our partners during PSPS events, gain efficiencies within roles, and identify possible areas of improvement that PG&E and our partners may undertake in advance of the 2021 fire season. Following the exercises, After-Action Reviews (AAR) are completed to identify adjustments needed to procedures and/or where additional training is required. These PSPS exercise and workshops are a continued best practice in 2021. In 2020, PG&E hosted three regional exercises and workshops.
- **Additional PSPS Trainings and Workshops:** PG&E hosts additional PSPS trainings and workshops for public safety partners, as needed. For example, in 2020, PG&E launched a new PSPS Portal and provided weekly trainings in the summer for public safety partners to ensure appropriate users had access and were able to navigate the tool ahead of any PSPS events.

Similar to the approach taken for the Wildfire Safety Working Sessions, in designing the scope and content of these PSPS trainings and workshops, PG&E prioritizes topics that are most valuable to the jurisdictions most impacted by PSPS in terms of frequency of events, total and unique customers de-energized, impact to critical facilities, and other localized issues that may have caused escalations.

PG&E aims to be more customized in our outreach efforts based on the needs of the agency and remain adaptive.

PG&E is looking to incorporate additional customized options for agencies, with a focus on those most impacted by PSPS and wildfires, such as:

- Hosting field tours to view grid control centers or temporary generation sites
 - Co-creating ideas for new tools and processes with agency partners
 - Establishing additional user testing groups to gather real-time feedback as we build new emergency management tools and processes
 - Hosting topic-specific workshops to provide additional information on PG&E programs, localized drivers of PSPS, wildfire mitigation activities in their communities and other topics of interest
 - Co-hosting public-facing events with agency partners to address questions and concerns from the community related to PSPS and wildfires.
 - Partnering with additional external partners organizations to assist with outreach and engagement
- **Listening Sessions:** PG&E offers to host listening sessions with counties, federally recognized tribal governments, and large commercial customers and critical facilities impacted by PSPS events, if the stakeholder is interested in meeting. This provides an open forum for PG&E to share localized key information on the most recent wildfire and PSPS season, listen to concerns, gather important feedback and identify ways to improve coordination and partnership with local communities going forward. These PSPS Listening Sessions are a continued practice from the 2019 fire season and were well received by agency stakeholders. PG&E uses feedback to guide improvements to our wildfire mitigation activities (i.e., PSPS Portal improvements, PSPS mitigation projects such as sectionalizing and hardening, notifications to customers and agencies, CRC locations and planning, partnerships with CBOs and other topics) and help prioritize key focus areas for the following year. We coordinate with county and tribal emergency Managers to schedule each meeting and to determine the appropriate meeting participants.
- **Advisory Committees:** PG&E's advisory boards provide hands on, direct advisory functions related to PG&E's wildfire mitigation strategies like PSPS. This includes

helping PG&E develop best practices for PSPS protocols, community preparedness, regional coordination and the optimal use of existing and emerging technologies.

- **PSPS Advisory Committee:** PG&E established a PSPS Advisory Board in 2020, which includes representatives from local and tribal governments. These meetings provide a forum for participants to weigh in on a variety of PSPS program updates such as customer notification scripts, wildfire safety working session content and meeting outlines, and PSPS full-scale exercises, among other topics. PG&E plans to continue to host these meetings periodically to gather feedback on PSPS-related topics, including PSPS planning for 2021 and coordination with local communities and shared resources.

In 2021, PG&E will evaluate local and tribal representation on the PSPS advisory committee for diversity of regions and PSPS experiences. PG&E may make adjustments to this committee once that evaluation is complete in early 2021.

- **People with Disabilities and Aging Advisory Council (PWDAAC):** PWDAAC consists of members representing a diverse mix of expertise, backgrounds, and perspectives of the AFN population and provides insight into the needs of AFN populations related to emergency preparedness. The Council facilitates co-creation of solutions and resources to serve the customers reliant on power for medical needs before, during and after a PSPS event in PG&E's territory. More details on PWDAAC is included in Section 8.4 and PG&E's 2021 PSPS AFN Plan.
- **Statewide IOU AFN Council:** PG&E, Southern California Edison Company, and San Diego Gas & Electric Company established the Joint IOU AFN Advisory Council. The Joint Council is a diverse group of recognized CBOs, association and foundation leaders supporting the AFN population, and leaders from various state agencies. It provides insight into the unique needs of the IOUs' most vulnerable customers and stakeholders, offers feedback, makes recommendations, and identifies partnership opportunities to serve the broader AFN population before, during, and after a PSPS event. PG&E will continue to meet with these stakeholders and will periodically bring these groups together, along with other stakeholder groups outlined in D.20-05-051, to

solicit feedback on the PSPS Program.

- **Other AFN Councils:** PG&E hosts meetings with the NDC and Communities of Color to provide safety-related outreach such as wildfire safety, PSPS preparedness and specific safety-related gas or electric projects impacting disadvantaged and under-served communities. Through our relationship with NDC and Communities of Color, we host customer advisory panels designed to provide customer feedback on our outreach efforts related to public safety and other important topics impacting low-income, disadvantaged, and under-served communities. PG&E also hosts an annual executive-level meeting with NDC leadership to better understand NDC members' perspectives and recommendations to improve the effectiveness of PG&E's community outreach and engagement. PG&E also leverages opportunities to share emergency preparedness, and CWSP and PSPS updates at other stakeholder meetings such as the DAC-AG and LIOB among others. Further, we use our network of CBOs to support our AFN stakeholder outreach work, as described in Section 8.4.
- **Energy and Communications Providers Coordination Group:** PG&E initiated this group in early 2020, to create a forum for communications providers to provide feedback on PG&E's current PSPS implementation protocols and to coordinate engagement before and during PSPS events. Attendees include, but are not limited to, representatives from AT&T, Verizon Wireless, Comcast, Charter Communications, Frontier Communications, T-Mobile, Consolidated Communications, U.S. Cellular, Sierra Telephone and Cellular Telecommunications and Industry Association. Throughout 2020, PG&E received valuable feedback from this group. For example, representatives from Verizon, AT&T, Comcast, T-Mobile, U.S. Cellular, Charter Communications, Cox Communications, provided feedback to PG&E, CPUC, and Cal OES about PG&E's September 2020 PSPS events. While feedback was generally positive, the group recommended improvements for more accessibility to PSPS event information, including maps in the PSPS portal and the support role provided during PSPS events by PG&E's Critical Infrastructure Lead. In 2021, PG&E to host, as needed, meetings to discuss collaboration and engagement opportunities before

and during PSPS events, and for other wildfire and “all hazards” resiliency and readiness initiatives.

- **Key Customer Association Collaborative:** PG&E regularly meets with key customer stakeholders including large customers, community groups and business associations. PG&E uses these meetings to provide information about emergency preparedness, local progress on wildfire safety measures, and expanded resources available to prepare for PSPS events. For example, throughout 2020, PG&E met with:
 - California Hospital Association (CHA)
 - Hospital Council Board of Directors of Northern and Central California
 - California Association of Medical Product Providers
 - Telecommunications and broadband providers
 - Water agency members of the ACWA, and directly with water and wastewater agencies
 - Industrial and commercial members of California Large Energy Consumers Association, and the Small Business Utility Advocates

In 2020, PG&E conducted meetings with nearly 300 individual stakeholders. PG&E will continue these meetings throughout 2021. Throughout 2021, PG&E will build on collaborative relationships with the CHA and the Hospital Council of Northern and Central California. PG&E plans to host bi-monthly resiliency workshops with telecommunications and broadband providers, municipal utilities, and with water agencies, both via the ACWA and directly with water and wastewater agencies.

- **Ongoing Outreach and Coordination:** PG&E conducts ongoing outreach with state agencies, counties, cities, tribes, first responders, CCAs, water, wastewater and communication service providers and other local emergency responders and community groups throughout the service area to partner on emergency plans and increase public awareness related to emergency planning and preparedness. Part of this outreach includes reviewing the agency’s contact information on an annual basis to ensure the Company is contacting the correct local stakeholders during an emergency event. PG&E also conducts annual gas and electric safety training for first responders, including law enforcement, fire departments, and public works and

transportation agencies to further align emergency plans with local agencies. Additional information on PG&E's outreach efforts related to PSPS planning and preparedness can be found in Section 7.3.10.1.

- 2. Customer and Community Outreach:** PG&E continuously engages with customers and communities regarding wildfire safety and with customers who may be directly impacted by a PSPS event. This effort is to increase public awareness and support of PG&E's wildfire mitigation activity. PG&E prioritizes engagement with those most likely to be impacted by PSPS, which include those served by electric lines (specifically those served by electric lines 115 kilovolts and below) which traverse Tier 2 and Tier 3 HFTD areas. PG&E also implements additional touchpoints for MBL customers,¹⁰³ those with limited English proficiency and the AFN community.

PG&E will leverage multiple channels, such as open houses and webinars, e-mails, letters, bill inserts, postcards, radio and television (TV) broadcasting, print media, informational videos, social media, digital engagement (e.g., website), and possibly face-to-face meetings.¹⁰⁴ PG&E will continue direct-to-customer outreach campaigns that are focused on, but are not limited to, building PSPS readiness among customers, gathering updated contact information and sharing backup power safety tips.

- **Communications for AFN Populations and Limited English Proficiency Populations:** PG&E translates "critical information" which includes resources focused on emergency preparedness, wildfire safety, and PSPS preparedness in 15 prevalent non-English languages. PG&E customers with limited English proficiency can contact PG&E any time, whether during an emergency or simply for a bill inquiry, and have access to in-language support via our Contact Centers, which are equipped to provide translation support in over 250 languages. Additionally, we have partnerships with CBOs and multicultural media partners to provide in-language outreach spoken by people that occupy significant roles in California's agricultural economy (e.g., Mixteco and Zapoteco). Emergency preparedness materials such as webinar presentations and PSPS notifications are recorded in American Sign Language (ASL) via our collaboration with NorCal Services for Deaf and Hard

¹⁰³ MBL customers are PG&E customers who are eligible for MBL tariffs and receive an additional allotment of electricity and/or gas per month. The tariffs are designed to assist residential customers who have special energy needs due to qualifying medical conditions.

¹⁰⁴ As applicable due to the COVID-19 pandemic and safety concerns with large gatherings

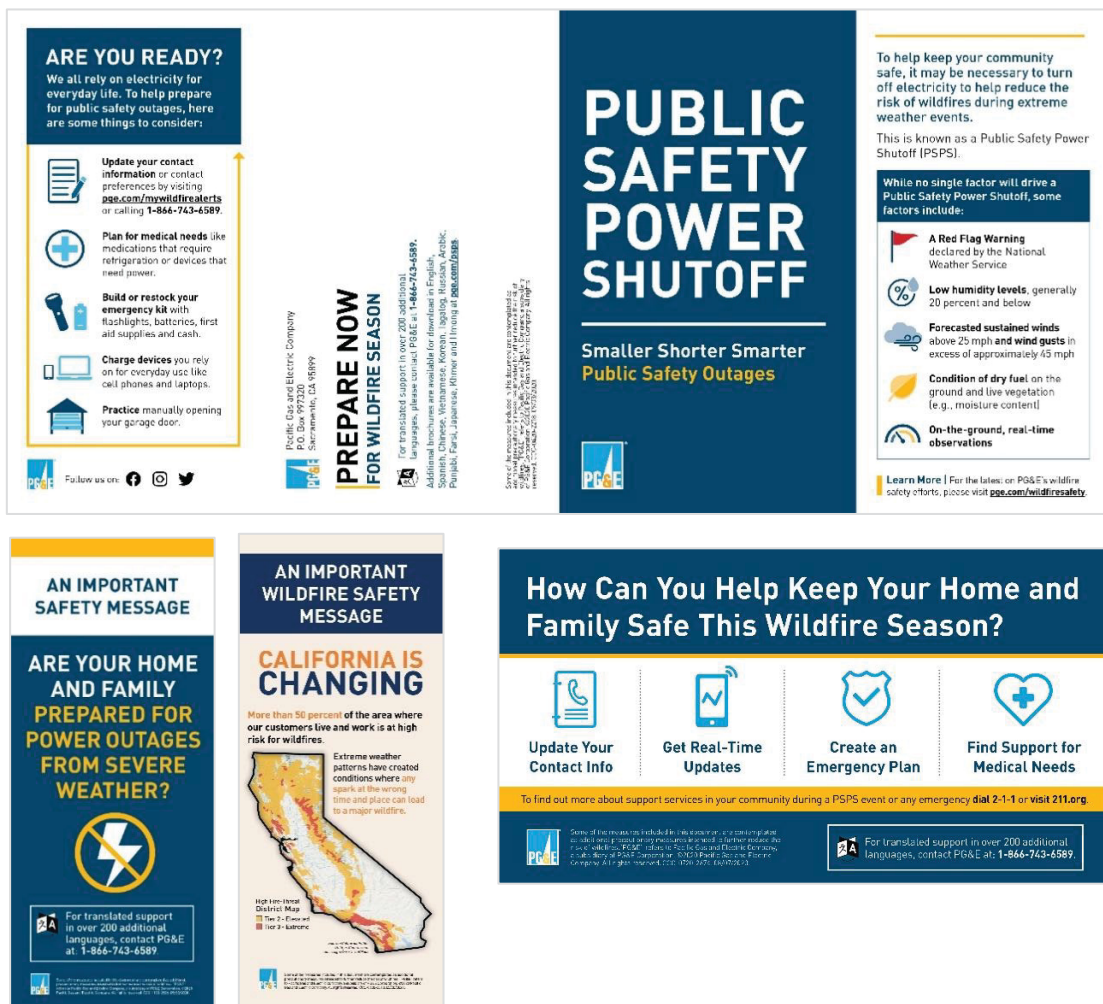
of Hearing. Our wildfire safety and PSPS customer information and materials are available in alternate formats, including Braille and large print, upon request. Please see Section 8.4 for details on PG&E's communications for AFN populations and limited English proficiency populations.

- **“Wildfire Safety Town Halls,” Webinars and other Community Events:** PG&E hosts interactive virtual safety town halls¹⁰⁵ where customers can learn about our work to prevent wildfires, hear about emergency preparedness activities they can take, get answers to their questions, and provide feedback on our wildfire prevention plans and PSPS initiatives. Additionally, PG&E holds webinars for our customers and communities to help them prepare for emergency situations (anticipated by June 2021). PG&E plans to continue to host and/or participate in community events focused on customers with disabilities, seniors, and low-income customers, including targeted webinars and participation in meetings hosted by CBOs. In 2021, the format and timing of community events will depend on the public health safety protocols related to COVID-19. PG&E anticipates that the bulk of community events will occur virtually, like many 2020 events. When it becomes safe for our customers, communities, and employees to gather, PG&E plans to resume to in-person events, based on state and local health guidance.
- **Direct-to-Customer Outreach and Education:** PG&E sends direct mail and e-mails to customers throughout the year with information on emergency preparedness resources and reminders to update contact information so PG&E can reach out to customers in advance of a public safety power outage. PG&E may disseminate educational information through e-mail newsletters or special insert included in customer bills, with an electronic version e-mailed to paperless customers, as applicable.

Figure PG&E 7.3.9-1 includes sample PSPS preparedness brochures, bill inserts, postcards used during PG&E's direct-to-customer outreach.

¹⁰⁵ Per I.19-06-015, Joint Motion of PG&E the Safety and Enforcement Division of the CPUC, Coalition of California Utility Employees, and the Office of the Safety Advocate for Approval of the Settlement Agreement, pp. 25-26.

FIGURE PG&E-7.3.9-1: SAMPLE PSPS PREPAREDNESS BROCHURES, BILL INSERTS, AND POSTCARDS



- Digital Engagement:** PG&E provides emergency preparedness information and safety resources on [pge.com](https://www.pge.com/en_US/safety/emergency-preparedness/emergency-preparedness.page).¹⁰⁶ Our dedicated emergency preparedness webpages have detailed information for customers to help them make a plan so that they are ready for emergency events. PG&E provides customer resources on our website that include details on how to create an emergency supply kit,¹⁰⁷ and instructions on ensuring that customers' properties and homes are prepared for emergencies. For example, PG&E provides information to help customers

¹⁰⁶ https://www.pge.com/en_US/safety/emergency-preparedness/emergency-preparedness.page.

¹⁰⁷ https://www.pge.com/en_US/safety/emergency-preparedness/preparedness-kit/emergency-preparedness-kit.page.

know how to turn off electricity¹⁰⁸ and gas at the main switch and valves.¹⁰⁹ We also provide tips on resiliency, how to safely use a generator¹¹⁰ and preparing solar customers for winter storms.¹¹¹ Additionally, PG&E has created a series of materials¹¹² that will educate children in kindergarten¹¹³ through 6th grade¹¹⁴ about the importance of emergency preparedness in a fun and reassuring manner. To ensure that our customers have information about emergency-related outages, we encourage customers to sign up for outage alerts via our online platform “Your Account.”

- **Safety Action Center:** PG&E has a [dedicated safety webpage \(safetyactioncenter.pge.com\)](https://www.pge.com/en_US/safety/electrical-safety/turning-your-electricity-on-and-off/turning-your-electricity-on-and-off.page) featuring helpful information about wildfire risks and what customers can do to keep their home, family or business safe, including tips on how to create an emergency plan, emergency preparedness guides and videos.
- **Informational Videos:** PG&E uses informational videos as an engaging way to inform customers about or CWSP and PSPS available at the newly launched [pge.com/pspsvideos](https://www.pge.com/en_US/safety/gas-safety/gas-safety-tips.page#p3) webpage. Building off our success in 2020, PG&E will continue a series of videos about the CWSP and PSPS events. For example, in 2020, PG&E developed a series of short (3-5 minute) and long-form videos about the CWSP and PSPS programs. These videos allow us to further the reach of our emergency preparedness messaging and reach a broader group of customers and community members. Our “Preparing for Public Safety Power Shutoff” video, for example, aired between September

¹⁰⁸ https://www.pge.com/en_US/safety/electrical-safety/turning-your-electricity-on-and-off/turning-your-electricity-on-and-off.page.

¹⁰⁹ https://www.pge.com/en_US/safety/gas-safety/gas-safety-tips.page#p3.

¹¹⁰ https://www.pge.com/en_US/safety/electrical-safety/electric-generator-safety/electric-generator-safety.page.

¹¹¹ <https://www.pgecurrents.com/2015/12/14/how-rooftop-solar-homeowners-can-prepare-for-el-nino/>.

¹¹² https://www.pge.com/pge_global/common/pdfs/safety/emergency-preparedness/PGE-Kids-Emergency-Preparedness-Activity-Book.pdf.

¹¹³ https://www.pge.com/pge_global/common/pdfs/safety/emergency-preparedness/PGE-Kids-Emergency-Preparedness-K-3-Placemat.pdf.

¹¹⁴ https://www.pge.com/pge_global/common/pdfs/safety/emergency-preparedness/PGE-Kids-Emergency-Preparedness-4-6-Placemat.pdf.

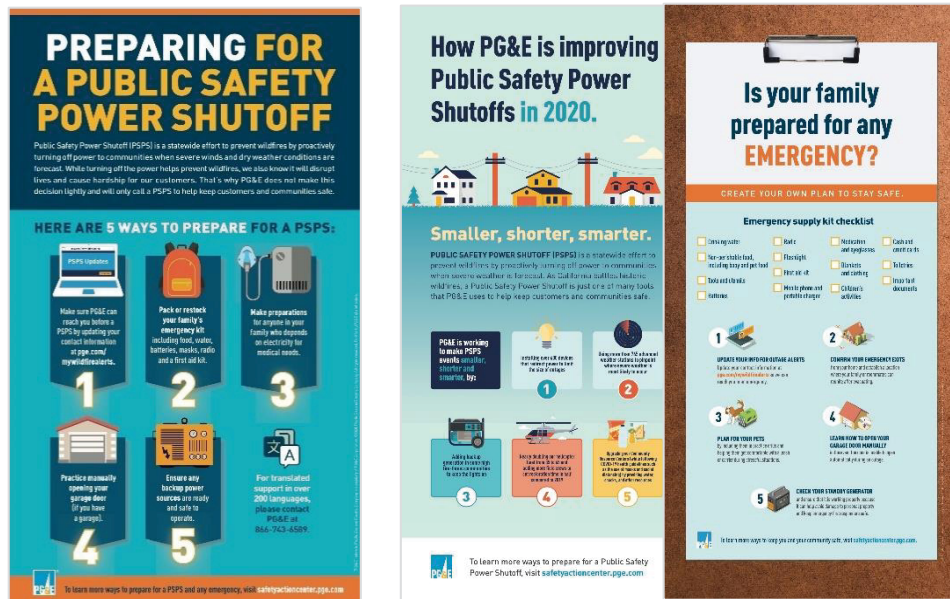
and November 2020 with 25 television placements throughout our Northern and Central California service territory—many of these placements coincided with PSPS events to provide the right information at the right time in affected communities.

- **Media Engagement:** PG&E works closely with external media outlets, including both paid and earned media, to provide broad awareness to Californians to share tips related to wildfire and PSPS preparedness, socialize available resources, and communicate PSPS event information. This includes PG&E multicultural media engagement that reaches our non-English speaking customers and community members, as described in Section 8.4.
 - **Earned Media:** PG&E engages with the media by issuing news releases, conducting and live streaming news conferences with ASL translators, and participating in media interviews. In turn, these media organizations may provide communications on the radio, broadcast, television, and online. PG&E also reaches out to local newspaper outlets for Op-Ed and Letters to the Editors to further prepare customers for emergencies, PSPS events and help provide information on wildfire safety. To serve customers with limited English proficiency, PG&E engages with over 150 multicultural media outlets throughout the year in an effort to promote safety initiatives, including PSPS, to monolingual or difficult to reach populations that may not have access to mainstream television media or read/speak English. PG&E shares news releases and coordinates interview opportunities with these media outlets to help educate limited English-speaking customers on various PG&E programs, including the CWSP, PSPS, emergency preparedness, and public safety among other topics. Additionally, PG&E schedules media visits with these organizations to discuss other partnership opportunities (e.g., Public Service Announcement, advertising, event sponsorships). During PSPS events, select media outlets are notified based on their geographic coverage and frequency in running event updates.
 - **Paid Media and Advertising:** To supplement PG&E's outreach efforts, PG&E runs wildfire safety and emergency messages to reach customers via paid media channels. PG&E purchases a combination of English and in-language radio ads, as well as digital

banners in English and multiplate languages based on targeted ZIP Codes.

Figure PG&E 7.3.9-2 includes sample print advertisements used in 2020.

FIGURE PG&E-7.3.9-2: SAMPLE 2020 ADVERTISEMENTS



- **Social Media:** PG&E regularly provides customer preparedness resources through our official social media channels, including Twitter, Facebook, Instagram, and Nextdoor. During the 2020 PSPS events, PG&E provided event update videos on our social media platforms in English, ASL, Spanish, and Chinese.¹¹⁵ Some social media posts are translated into up to 15 languages. We also developed a three-minute YouTube video on safety tips for those with medical needs. We continue to work with 36 multi-cultural media organizations and five CBOs to assist with in-language communications and share our social media posts before and during PSPS events.

¹¹⁵ See examples of translated social media posts:

- PSPS Alert Banner:
<https://twitter.com/PGE4Me/status/1321169776014667779/photo/1>.
- PSPS Event Update in Chinese:
<https://twitter.com/PGE4Me/status/1321220048791334912?s=20>.
- PSPS Update in Spanish:
<https://twitter.com/PGE4Me/status/1321219692392968193?s=20>.
- PSPS Warning Alert in ASL:
<https://twitter.com/PGE4Me/status/1320423102866542593?s=20>.

PG&E plans to leverage our social media platform throughout 2021.

- **CBO Engagement:** PG&E uses CBOs to support the dissemination of emergency preparedness information, including resources on wildfire and PSPS safety, to their networks via their established communication protocols as well as their social media channels and newsletters. Our CBO network plays an instrumental role in our ability to reach our vulnerable and non-English speaking customers. More details on our CBO engagement are included in Section 8.4.
- **Community Partnerships:** We regularly work with community partners to better prepare for emergencies. For example, PG&E partners with the California Fire Foundation to provide Wildfire Safety and Preparedness grants focused on funding for firefighters and Community/Neighborhood Emergency Response Teams in Northern California, specifically communities identified as extreme or elevated fire risk. PG&E also funds local climate resiliency projects through the Better Together Resilient Communities grant program. Further, PG&E awards grants to local Fire Safe Councils to fund shovel-ready projects to help keep communities safe. The funds help pay for fuel reduction, emergency access and defensible space projects, as well as chipper days in local communities.

For more information, see:

- Section 7.3.10.1 for details on PG&E's outreach related to the CWSP;
- Section 8.2.4 for more information on stakeholder cooperation and community engagement during PSPS events; and
- Section 8.4 for a description of our communication protocols and outreach activities for AFN populations and customers with limited English proficiency. In addition, PG&E includes more details in the 2021 PSPS AFN Plan, filed February 1, 2021.

C) Action to Design, Translate, Distribute, and Evaluate Effectiveness of Communications Taken Before, During, and After a Wildfire

This section describes PG&E's actions to design, translate, and distribute communications taken before, during, and after a wildfire.

1. **Before Wildfires:** Please see the information listed above and

Section 7.3.10.3 and Section 7.3.10.1 for details regarding PG&E's communications before wildfires.

2. **During Wildfires:** PG&E follows the established emergency communication framework outlined in our Company Emergency Response Plan (CERP),¹¹⁶ General Order (GO) 166 standards, and the Electric Emergency Plan. PG&E uses notification systems to alert customers of an electric outage caused by planned or unplanned outages, such as those related to wildfires. PG&E also alert Public Safety Partners. Both notification systems we utilize send automated notifications via calls, text and e-mail to notify recipients of major events affecting their area and at key milestones. Notifications provide incident-related updates if long-duration outages are anticipated, which may include the cause of the outage, estimated times of restoration and notification once power is restored (where possible). Like our PSPS customer notification protocols, PG&E offers customers a choice for these notifications of their preferred communication channel (i.e., Interactive Voice Recording call, e-mail, text). PG&E sends notifications in the customer's preferred language. If a customer has set their notification preferences to receive outage-related updates, a customer will receive automated notifications with status of the outage. See Section 8.2.4 for additional information related to PSPS event notifications.

PG&E also provides situational updates to customers and communities via our website, broadcast media (e.g., radio and TV) and social media (e.g., Twitter and Facebook). PG&E personnel are available 24/7 for media interviews when requested during an event.

- **Agencies and Critical Facilities:** PG&E recognizes the importance of ensuring that agencies and critical facilities have key information during emergency events in order to prepare their own resources, communication channels, and response to community needs. During emergency events, PG&E follows ICS and National Incident Management System structure and protocols to ensure that public safety partners receive timely and appropriate information during PSPS events and other emergencies.

Specifically, the Liaison and Customer Strategy Officer Command Staff functions within PG&E's EOC and local Operations Emergency Centers (OEC) to prepare and disseminate key information to agencies and critical facilities during events. Beyond automated notifications, the teams also work directly with these stakeholders to answer questions in real-time and solicit feedback to ensure that

¹¹⁶ Electric Annex to CERP.

localized and ad-hoc requests during emergencies are fulfilled in a timely manner. Please see Section 8.2.4 for a more information on how PG&E structures the EOC to provide agencies and critical facilities with key information during a PSPS event. This same protocol would be followed for other types of emergencies, with considerations specific to that emergency, under the guidance of the Incident Commander.

PG&E establishes communications with critical facilities such as local water districts, telecommunications infrastructure providers, as well as CBOs, using similar protocols in place for PSPS-related communications.

- **Red-Tagged Customers:** PG&E implements our Emergency Consumer Protection Plan to support eligible customers when the Governor of California or President of the U.S. issues an emergency declaration for a disaster that results in the loss or disruption of the delivery or receipt of utility service and/or results in the degradation of the quality of utility service.¹¹⁷ In these cases, PG&E partners with fire, emergency services, and county representatives to verify premises that are “impacted” or “red-tagged.” PG&E flags “impacted” customers within two miles of the disaster-impacted perimeter area as designated by CAL FIRE or Cal OES or other governmental agencies. An account may carry a “red-tagged” flag because the premise has been deemed dangerous or unfit for human habitation by a government agency, and/or because PG&E’s infrastructure was damaged beyond short term restoration capabilities by the disaster, both resulting in the premise being unserviceable.

These customers will receive a notice from PG&E to help raise awareness of the customer protections that will be available to them (see Section 7.3.9.3 for more details on the consumer protections available to customers). The notice will also include information on how to access in-language support for customers with limited English proficiency.

3. **After Wildfires:** Once a wildfire is fully contained, ongoing communications efforts will continue to ensure key stakeholders and customers have the most up to date information about PG&E’s response and rebuild and recovery efforts. Please see Section 7.3.9.3 for details on PG&E rebuild and recovery customer resources and consumer protections for customers impacted by wildfires.

¹¹⁷ D.19-07-015, Ordering Paragraph (OP) 2.

Throughout the year, PG&E collects feedback to evaluate agency and customer awareness, understanding, satisfaction, and experience, regarding wildfire safety preparedness and PSPS. This includes quantitative and qualitative research, such as surveys, fora, and other types of direct customer feedback, and by tracking customer engagement (e.g., web traffic, click-through-rates of advertisements, and conversion rates/actions taken by customers as a result of the outreach). Additionally, we gather customer feedback across multiple channels including web surveys, contact center calls, text and e-mail notification responses, live chat focus groups, and select social media posts.

PG&E will adjust as needed to ensure the effective use of available outreach channels.

PG&E provides more details on our CWSP outreach effectiveness evaluation initiatives in Section 7.3.10.1. PG&E submitted our findings from the 2020 CWSP Outreach Effectiveness study, filed with CPUC on December 31, 2020.

3) *Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):*

PG&E conducts outreach to customers and communities throughout the entire service territory. However, as mentioned previously, PG&E customizes agency outreach based upon agency need. The level of customization will vary according to the 2020 PSPS impact, with the most impacted agencies receiving the most customization in terms of localized topics covered and type of engagement. These agencies are often located in HFTD areas. Accordingly, in 2021, certain agencies may receive more frequent and more customized engagements according to their needs based upon their past experiences with PSPS and wildfires.

4) *Progress on initiative (amount spent, regions covered) and plans for next year:*

In an effort to explain the outreach approach fully and as streamlined as possible, we have included the progress of each outreach initiative in the response to question number two above. For additional references, below are some of PG&E’s key 2020 engagement and outreach highlights:

- Hosted over 200 meetings with agencies to share information related to PG&E’s CWSP.
- Held over 35 listening sessions with cities, counties, tribes and customers (e.g., telecom providers) to better understand their 2019 PSPS experiences and identify key areas for improvements.

- Co-hosted 34 Wildfire Safety Working Sessions with County OESs.
- Hosted over 15 PSPS Portal trainings with public safety partners.
- Established the various advisory committees and hosted ongoing meetings with each committee.
- Established the five Regional Working Groups and hosted two meetings in each region (Q3 and Q4 meetings).
- Held three regional PSPS workshops and three full-scale PSPS exercises.
- Hosted 15 regional and three systemwide virtual open houses and one safety town hall with over 5,000 attendees to provide a localized update on wildfire safety work happening in respective communities and answer customer questions.
- Placed over 200 posts on PG&E social media channels.
- Sent 17 direct mail pieces to customers.
- Conducted 25 customer e-mail outreach campaigns.
- Had 84 million average monthly advertising impressions in advance of and during the months with the highest likelihood of wildfire and PSPS events (July-November).

Additional information on progress related to community outreach, public awareness, and communications can be located PG&E's 2020 WMP quarterly reports. The May to July¹¹⁸ and Third Quarter,¹¹⁹ Condition PGE-28, filed with the CPUC can be found here:

- May and July 2020:
https://www.pge.com/pge_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/wildfire-mitigation-plan/PGE-WildfireMitigationPlans-QuarterlyReport.pdf.
- Third Quarter:
https://www.pge.com/pge_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/wildfire-mitigation-plan/PGE-WildfireMitigationPlans-QuarterlyReport-Q3-2020.pdf.

In 2021, PG&E plans to continue our territory-wide awareness campaigns established and implemented in 2020, with a focus on customers and

¹¹⁸ PG&E Quarterly Report on 2020 WMP for May to July 2020, submitted September 9, 2020, Condition PGE-28.

¹¹⁹ PG&E Quarterly Report on 2020 WMP for Third Quarter 2020, submitted December 9, 2020, Condition PGE-28.

stakeholders who have been repeatedly impacted by PSPS events given the significant customer impacts associated with PSPS. Please see the response to question number two for PG&E's 2021 outreach and engagement objectives, a table of the planned engagement tactics and a more in-depth description of each engagement tactic.

We will drive execution of customer outreach and engagement, enhanced through ongoing customer and stakeholder feedback, to propel improved customer, community, and utility readiness and resiliency in the face of growing wildfire threat. COVID-19 considerations and other unforeseen factors may also have an impact on PG&E's outreach approach for 2021.

5) Future improvements to initiative:

As referenced in our response above to questions two and four, over the next several years. For example, if our large commercial account customers provide feedback that they desire more listening sessions, our Business Enterprise Solutions account representative team would host more sessions to ensure we are capturing and incorporating real-time feedback into our wildfire mitigation efforts. For more detailed information on the various fora where stakeholders have the opportunity to provide feedback, see the response to questions two and four above.

As new information, best practices, and lessons learned are available, PG&E will refine stakeholder outreach and community engagement approach as we have done over the course of two years.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

Table PG&E-7.3.9-2 addresses PG&E's long-term plan regarding community outreach, public awareness, and communication efforts.

TABLE PG&E-7.3.9-2: LONG-TERM PLAN FOR COMMUNITY OUTREACH, PUBLIC AWARENESS, AND COMMUNICATION EFFORTS

Year Range	Focus Areas
2023-2026	Continue to gather and incorporate feedback from community partners and first responders and refine outreach plans, as applicable. Develop new partnerships to build upon, and complement, current outreach.
2027-2030	Continue to coordinate with stakeholders (e.g., agencies, customers, CBOs) to improve outreach, education, and communication efforts based on data, customer insights and feedback. Maturation of processes to seamlessly share information with industry peers, communities government and tribal leaderships, and others inside and outside California.

7.3.9.3 Customer Support in Emergencies

WSD Initiative Definition: Resources dedicated to customer support during emergencies, such as website pages and other digital resources, dedicated phone lines, etc.

1) Risk to be mitigated / problem to be addressed:

Electric service is a critical resource for customers and when it is disrupted due to an emergency, it is important that PG&E provides information and resources that help customers mitigate the impact to the furthest extent possible.

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

PG&E administers an Emergency Consumer Protection Plan to “help stabilize communities in the wake of a disaster that affects utility customers, ensure the restoration of basic services, assist with restoring community functionality, and support access to resources that facilitate recovery.”¹²⁰ PG&E uses a diverse set of tactics to increase customer awareness of available assistance,¹²¹ which includes a dedicated webpage on customer protections, outbound e-mails/calls, media advisories, social media posts, access to live agents via our Contact Center, CBO partnerships and communicating protections in accessible formats.¹²² To further explain, we have broken up this section into the following categories:

- A. PG&E’s Consumer Protection Resources
- B. Rebuilding After a Wildfire
- C. Customer Communications and Coordination

A) PG&E’s Consumer Protection Resources

In March 2018, the Commission opened the *OIR Regarding Emergency Disaster Relief Program to Support California Residents* (Rulemaking (R.) 18-03-011) to consider adopting a comprehensive post-disaster customer protections program.

In July 2019, the Commission required PG&E to establish a permanent emergency disaster relief program via D.19-07-015. Pursuant to D.19-07-015, PG&E offers a suite of assistance measures when the Governor of California or President of the U.S. issues an emergency

¹²⁰ D.19-07-015, p. 8.

¹²¹ D.19-07-015, Conclusion of Law (COL) 23.

¹²² D.19-07-015, pp. 35-36.

proclamation for a disaster that results in the loss or disruption of the delivery or receipt of utility service and/or results in the degradation of the quality of utility service.¹²³

Specifically, PG&E offers the following customer protections for up to 12 months from the emergency proclamation for an eligible disaster:¹²⁴

- **Waive deposit requirements for affected customers seeking to re-establish service and expedite move in and move out service requests:** PG&E waives security deposit requirements to reestablish service for customers whose home(s) or small business(es) were destroyed by the disaster. In addition to offering this protection, PG&E notes that the Commission adopted D.20-06-003 in June 2020, which prohibits PG&E from requiring re-establishment of service deposits from residential customers.¹²⁵ PG&E stopped requiring such deposits from customers, consistent with D.20-06-003.

In accordance with our Emergency Consumer Protection Plan,¹²⁶ PG&E also allows customers whose homes or businesses were red-tagged and had been served under a rate that has since been closed to new customers, to re-establish service under their prior rate schedule at their current location or an alternative location, regardless of the current applicability of their prior rate schedule, as long as the rate schedule is still available and has not been retired.

D.19-07-015 also requires PG&E to expedite move-in and move-out service requests for affected customers.¹²⁷ PG&E expedites these requests based on the date requested by the customer.¹²⁸ Consistent with our Emergency Consumer Protection Plan,¹²⁹ PG&E also waives the cost for temporary power under Electric Rule 13 for affected customers.

¹²³ D.19-07-015, Ordering Paragraph (OP) 2.

¹²⁴ D.19-07-015, COL 14.

¹²⁵ D.20-06-003, OP 9.

¹²⁶ The Commission approved PG&E's proposal in AL 4014-G/5378-E to revise Electric Rule 12 to allow customer to reestablish service under a prior rate schedule as part of its Emergency Consumer Protection Plan.

¹²⁷ D.19-07-015, COL 14.

¹²⁸ This does not include any meter sets, including multi-unit meter sets or any other requests that require inspections, and/or criteria as required in the PG&E Electric and Gas Service Requirements Handbook.

¹²⁹ The Commission approved PG&E's proposal in AL 4014-G/5378-E to add waiving fees for temporary service to its Emergency Consumer Protection Plan.

- **Stop estimated usage for billing attributed to the period when a home/unit was unoccupied due to a disaster:** During natural disasters, PG&E identifies general areas that were evacuated and recalibrates our approach for any bills in the area requiring estimation.
- **Discontinue billing and prorate minimum delivery charges:** PG&E identifies premises of affected customers whose service has been disrupted or degraded and discontinues billing these premises without assessing a disconnection charge. PG&E also prorates any monthly access charge or minimum charges for affected customers.¹³⁰
- **Implement payment plan options, including customers with employment impacted by a disaster:** Following a disaster, PG&E offers impacted and red-tagged customers our most lenient payment arrangement term, which requires a 20 percent down payment and a repayment period of 12 months. Customers are eligible to pay off their arrearage sooner if preferred.

In addition, customers who indicate that their employment was impacted by the disaster are also eligible for favorable payment plans.¹³¹

- **Suspend disconnections for non-payment, waive deposit and late fee requirements:** PG&E suspends disconnections for all red-tagged customers for up to 12 months from the Governor or President's emergency proclamation.¹³² PG&E waived deposits as described previously and clarifies that it does not charge late fees.
- **Support for low-income customers:** PG&E provides support for low-income customers, including freezing California Alternate Rates for Energy (CARE) eligibility standards and high-usage post-enrollment verification requests, increasing the assistance cap for emergency assistance program, and modifying qualification requirements for the Energy Savings Assistance Program by allowing customers to self-certify they meet income qualifications. PG&E leverages our CARE community outreach contractors to inform customers of the protections available to them. Additionally, PG&E coordinates with the program

¹³⁰ D.19-07-015, p. 21.

¹³¹ The Commission approved PG&E AL 4145-G/5643-E on October 30, 2019. This AL revised PG&E's Emergency Consumer Protection Plan under Gas and Electric Rule 1 in compliance with D.19-05-037, OP 24.

¹³² Note that due to the COVID-19 pandemic and pursuant to Resolution M-4842, PG&E suspended disconnections for non-payment for all residential and small business customers through April 16, 2021.

administrator of the Relief for Energy Assistance Through Community Help (REACH), a PG&E and customer-funded emergency assistance program, to request increasing the assistance cap amount for red-tagged customers from \$300 to \$600. This assistance allows customers who lost their homes to receive additional financial assistance to pay their current utility bill or to set up new service. PG&E informs all REACH agencies of this financial support for customers.

- **Offer repair processing and timing assistance and timely access to utility representatives:** D.19-07-015 requires PG&E to offer repair processing and timing assistance and timely access to utility customers pursuant to CPUC Section 8386(c)(18).¹³³ PG&E works with the impacted community to communicate priorities and timelines for repairs and restoration. Specifically, PG&E calls red-tagged customers directly to notify them of the protections available and to provide a single point of contact at PG&E for related support. This includes providing information on the process for receiving temporary power. In addition to directly contacting red-tagged customers, impacted customers have access to utility representatives through multiple channels, such as PG&E's call center, public affairs and customer account representatives, and field teams.
- **Consumer protections for Net Energy Metering (NEM) customers:**¹³⁴ In the event a NEM customer is impacted by a natural or man-made disaster, PG&E allows the customer to:
 1. Size their replacement generating system to produce no more than the expected annual usage (kilowatt-hours) of their new premises and remain on their original NEM or NEM2 tariff;¹³⁵
 2. Be exempt from paying interconnection application fee when reapplying to resume service on NEM2 (with some restrictions); and
 3. Identify on the application form that they are disaster-impacted customers to benefit from these provisions

¹³³ D.19-07-015, COL 15.

¹³⁴ On April 25, 2019, the CPUC approved PG&E AL 5404-E that, through revisions to its tariff provisions in the NEM Tariff and NEM Successor Tariff (NEM2), allows PG&E to offer these additional protections to NEM customers.

¹³⁵ The new NEM system is limited to a maximum of 1,000 kilowatts, otherwise it is required to move to the successor tariff (NEM2). The customer must comply with the NEM or NEM2 tariff provisions, as appropriate.

B) Rebuilding After a Wildfire

PG&E is committed to helping our communities throughout the rebuild process. During and after a wildfire, we want to help ensure our customers' and our communities' safety. We prioritize restoring service in wildfire zones as soon as it is safely possible. PG&E has resources and programs in place to help our customers through this difficult process. For example, PG&E has established single points-of-contact for customers seeking to rebuild after wildfires. Our Building and Renovation Services department works directly with customers impacted by wildfires who need temporary power to rebuild structures or live on their properties, and subsequent permanent electric and natural gas services. As described above in the discussion on customer protections, PG&E assists customers affected by wildfires by waiving the fee for connecting temporary power. Additionally, PG&E's offers customers a step-by-step guide on how to safely start their rebuilding journey.¹³⁶

C) Customer Communications and Coordination

- **Webpages and other Digital Resources:** In Section 7.3.9.2, PG&E explains how it uses our website and other digital resources to provide customers and communities with information about emergency-related outages and wildfire safety-related messages. In addition, PG&E established a dedicated webpage as an ongoing resource to help raise awareness about the protections available to customers,¹³⁷ which is available for customers to use anytime. This webpage is available in all 15 prevalent non-English languages.¹³⁸ PG&E also has a dedicated webpage to support customers during and after a wildfire.¹³⁹ This webpage includes resources on how to safely return to premises after a wildfire, having power restored and other safety and wildfire program-specific information.
- **Contact Centers/Dedicated Phone Lines:** PG&E's customer service representatives are available to answer any customer questions or concerns regarding the customer protections. PG&E uses a leading translation service provider in the industry, Language Line Services, to provide translation services in over 250 languages (including 10 indigenous languages) in our Contact Centers. See Section 8.4 for more details on PG&E's in-language support.

¹³⁶ https://www.pge.com/pge_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/natural-disaster-rebuilding.pdf.

¹³⁷ www.pge.com/consumer-protections.

¹³⁸ Mandarin and Cantonese), Vietnamese, Korean, Tagalog, Russian, Arabic, Farsi, Punjabi, Japanese, Khmer, Hmong, Thai, Hindi, and Portuguese.

¹³⁹ www.pge.com/wildfiresupport.

- **Direct Outreach to Red-Tagged Customers:** PG&E sends letters to all red-tagged customers that provide information on the available protections and direct customers to PG&E's customer protections website for more information. In addition, PG&E has a dedicated team to conduct targeted outreach to highly impacted customers who were unable to receive utility service. PG&E's account representatives contact red-tagged customers through outbound calls, personalized e-mails, and sending brochures with information on how PG&E could help them to rebuild and recover. PG&E also offers the Rebuild@pge.com e-mail box dedicated to customers going through the rebuild process. This e-mail solution allows customers direct access to PG&E's team of rebuild experts and resources.
- **Coordination with Local Government Staff and Elected Officials:** During a natural disaster such as a wildfire, PG&E coordinates with local governments on a regular basis by e-mail and phone to provide updates on outage impacts and estimated time of restoration. In addition to these regular updates, PG&E provides additional updates in response to requests from county and city leaders, including elected officials. In addition, PG&E's Division Leadership Team and Government Relations team provides outreach materials with information on available assistance to local governments to share with impacted communities.

After a wildfire, PG&E coordinates with local cities, counties and elected officials to support the community's rebuild efforts, as needed and required. Through our Government Relations team, PG&E supports local governments in their rebuild process. For example, PG&E will participate in Town Hall events to provide community members information on PG&E's rebuild process such as customer connections and service planning process, and hazard tree removal policies. Additionally, PG&E proactively obtains the status of city-owned electric infrastructure progress to understand and communicate local government implications to the rebuild (e.g., streetlights, lot clearance, permits, street closure, traffic management, water management).

- **News Releases:** Typically, after a wildfire or other natural disaster, PG&E issues news releases that outline the customer protections. The news releases are circulated to all media outlets in the impacted counties for the best possible reach to applicable customers.
- **Coordination with CCAs:** PG&E coordinates with CCAs during disasters to share information on affected customers.¹⁴⁰ PG&E

¹⁴⁰ D.19-07-015, COL 18.

offers CCAs an automated solution that allows CCAs to have timely access to a list of impacted and red-tagged customers. PG&E uses this process to coordinate with CCAs during disasters.

3) Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):

PG&E offers protections to customers impacted by natural disasters, including wildfires. As such, customers located in those regions (e.g., counties) that have been impacted by the natural disaster are eligible for the protections. PG&E’s communications (e.g., webpages) that describe consumer protections are accessible by all customers throughout our territory.

4) Progress on initiative (amount spent, regions covered) and plans for next year:

Since establishing our Emergency Consumer Protection Plan in 2019, PG&E has provided customer protections for the following disasters:¹⁴¹

TABLE PG&E 7.3.9-3: CUSTOMER PROTECTIONS OVERVIEW

Date of Proclamation	Disaster	Affected County	Advice Letter
October 25, 2019	Kincade Fire	Sonoma	4176-G/5682-E 4325-G/5980-E
March 4, 2020	COVID-19	All	4244-G-B/5816-E-B
August 18, 2020	August 2020 Fires	All affected by fires	4305-G/5939-E
September 6, 2020	Creek Fire	Fresno, Madera, Mariposa	4311-G/5957-E
September 25, 2020	Oak Fire	Mendocino	4322-G/5972-E
September 28, 2020	Glass and Zogg Fires	Napa, Sonoma, Shasta	

Pursuant to D.19-07-015, PG&E will continue to offer protections for eligible customers impacted by disasters in 2020 for up to 12 months from the date of the emergency proclamation noted above. In addition, PG&E will offer protections for eligible customers impacted by any new disasters in 2021.

PG&E also filed AL 5744-E on January 24, 2020 to request approval for a

¹⁴¹ For more information, see “Emergency Consumer Protection Plan” in PG&E’s Electric and Gas Rule 1.

pilot program to provide underground electric service pedestals, including installation, to eligible residential customers who request temporary service under Electric Rule 13 for properties impacted by the Camp Fire. The CPUC approved this AL on February 24, 2020.

In 2021, PG&E will continue to offer consumer protections and rebuild resources, and our communications to support our customers before, during and after a wildfire as outlined above. PG&E will also continue to gather feedback from customers and communities and adjust our approach, as required.

5) *Future improvements to initiative:*

As described in response to questions two and four above, over the next several years, PG&E will continue to evaluate the needs of our customers in order to support them in response to future emergencies and work with the CPUC to seek approval on further emergency protections, as applicable.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

PG&E's Emergency Consumer Protection Plan is largely driven by requirements and guidance set forth by the CPUC through the OIR Regarding Emergency Disaster Relief Program to Support California Residents (R.18-03-011), which through various Decisions (e.g., D.19-07-015), adopted comprehensive post-disaster customer protections. PG&E's long-term plans center on continued compliance with any and all CPUC Decisions related to emergency consumer protections. In addition, we will gather feedback and insights from our customers, communities and stakeholders, and based on data, propose additional and/or modified emergency consumer protections to the CPUC for consideration, as applicable and as needed. Further, we will continue to refine outreach processes to ensure eligible customers receive information about the protections afforded to them. We will also continue to offer support to agencies and disaster response professionals as requested during emergencies.

7.3.9.4 Disaster and Emergency Preparedness Plan

WSD Initiative Definition: *Development of plan to deploy resources according to prioritization methodology for disaster and emergency preparedness of utility and within utility service territory (such as considerations for critical facilities and infrastructure), including strategy for collaboration with Public Safety Partners and communities.*

1) Risk to be mitigated / problem to addressed:

Any limitation to quickly executing emergency resource deployments can have a significant negative impact on customers and community members by delaying restoration of service. In addition, delays to restoration also impact county and state agencies responsible for community welfare and require them to augment safety-related services, such as food, shelter and lodging.

Because of the dependency on utility service and the impact it has on agencies to ensure community safety, it is critical that agencies and the utility are aligned on potential risks and disaster planning. Failure by the utility to share emergency plans with agencies would leave the utility out of compliance with California Public Utilities Code (PUC) 768.6, which requires each IOU to conduct biennial regional meetings between the utility and agency stakeholders to share our emergency response plans and solicit feedback.

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

To minimize the risks noted above, we developed and maintain a CERP. The CERP outlines our response to any type of hazard, including any natural or man-made hazard. The CERP is further supplemented by “Annex” documents that cover specific emergency response protocols ranging from wildfire to cyber incidents to earthquakes. Each Annex is reviewed and updated annually in accordance with GO 166.

In 2020, we updated the CERP to include more in-depth processes for the various outage management tools to determine where emergency resources should be deployed. For example, this includes:

- **Outage Management Tool (OMT):** This tool provides a graphical representation of electric service outages within the Company’s electrical service area. It is used to determine where to deploy electric asset restoration crews. In addition, public safety partner facilities, including 911 dispatch centers, local government EOCs, trauma centers/hospitals and fire and police stations, are monitored in the OMT. PG&E utilizes OMT information to prioritize restoration to these facilities during unplanned outage events, when possible.

- **Storm Outage Prediction Project:** This system utilizes over 20 years of observed weather activity across our service territory to forecast the potential customer impacts approximately four days in advance of a potential storm outage and the resources required to effectively and safely restore power. This allows us to pre-stage resources in those areas that are anticipated to be most impacted days in advance.
- **Automated Roster Call Out System:** We use this system to schedule and send automated calls to repair crews that respond to electric emergency outage situations or unplanned events. This automated system allows us to streamline the process and reduce outage duration times by identifying resources and getting them onsite quicker.
- **Field Operations Resource Calculation of Estimated Time of Restoration (FORCE):** This tool is utilized to determine resources needed to patrol and inspect de-energized lines prior to re-energization during PSPS events. Based on a range of inputs and assumptions including resource availability, circuit configurations, terrain, vegetative cover and accessibility, this tool provides recommendations on the number of helicopters and ground patrols units that would be required to meet our restoration requirement.

In recognition of large-scale events that may exceed internal capability, we also work with other utilities to streamline mutual assistance resource deployments, including crew arrival, staging, intake and onboarding in support of emergency field operations. For more information on mutual assistance, see Section 7.3.9.7.

In addition to the biennial outreach requirement of PUC 768.6, PG&E PSS teams interact directly with county emergency management staff throughout the year, particularly during emergencies. For more information on outreach and engagement with county and tribal emergency management agencies, see Section 7.3.9.2 and Section 7.3.10.3.

3) *Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):*

The rollout of the annual CERP is completed on a service territory-wide approach, rather than by region or area. As noted in the CERP, PG&E’s prioritization for deploying resources during emergencies is dependent upon where the incident is located and the key objectives for the incident.

Regarding outreach to public safety partners and communities about emergency plans, PSS team members are each assigned an area at the county-level. Outreach is not prioritized by region, but rather conducted concurrently across PG&E’s service territory. For more information on PG&E’s outreach and engagement with local and tribal agencies, see Section 7.3.9.2, Section 7.3.10.1 and Section 7.3.10.3.

4) Progress on initiative (amount spent, regions covered) and plans for next year:

This year, we completed the following milestones:

- Updated our Emergency Response Plans Standard, EMER-2001S. This internal standard includes a revised hazard and functional annex update schedule tailored to capture lessons learned from previous responses, including, any process or procedural improvements to resource forecasting and deployment.
- Published the 2020 CERP, which includes expanded roles and responsibilities of the EOC that are consistent with SEMS and ICS. This aligns our emergency response management system with our public partners, facilitating stronger coordination and alignment during emergency response.
- In 2020, EP&R improved the AAR process to be more thorough and efficient in our identification of strengths and improvement opportunities during exercises and emergency response. The new process includes tools for soliciting and receiving feedback from employees and stakeholders, development of formal corrective actions and input and tracking of these in our Corrective Action Program (CAP). The process collects real-time data during an event or exercise to assist with the identifying strengths and opportunities, in an effort to continuously improve.

As mentioned above, our PSS teams interact directly with county emergency management staff throughout the year, particularly during emergencies. In 2020, the PSS team conducted or participated in over 600 external meetings throughout the service territory. For more information on outreach and engagement with county and tribal emergency management agencies, see Section 7.3.9.2 and Section 7.3.10.3.

In 2021, we will update the CERP and expand the Annexes to include severe weather and tsunamis. Many of the plan elements included in these Annexes can be used in wildfire response including, scalability of the ICS organization, use of Incident Management Teams to support the geographic subdivision of areas inside our service territory based on level of damage, resource needs and complexity.

We will also implement our biennial outreach in compliance with PUC 768.6, which will include coordination related to the CERP and several Annexes, including Electric, Gas, and Power Generation.

5) Future improvements to initiative:

We will further integrate circuit patrol and resource data to update the FORCE tool to optimize the development of a resource plan and deployment of electric asset damage assessors.

- During the years 2021 and 2022, we will develop plan metrics and guidance.
- Beginning in 2021 the EP&R Strategy and Execution CERP Planning Team will integrate concurrent hazard response concepts and methodologies from existing CERP Hazard Response Annexes into the annual revisions of CERP.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

Within 10 years, we expect to be using robust emergency management plans and strategies that meet and exceed best practices established in the industry. To reach that goal, the following timeline and milestones will be implemented.

- Beginning in 2022, and annually thereafter, EP&R SE will integrate the WMP with the CERP and Hazard Annexes by including completed temporary WMP projects and initiatives that result in adopted program controls.
- Additional Hazard annexes will be developed according to a Threat and Hazard Identification and Risk Assessment process starting in 2022, and annually thereafter.
- In 2023, the EP&R SE Planning Unit will review the developed metrics and guidance to ensure they reflect current industry best practices and planning guidance.
- The Process Improvement and CERP Planning team will work with the AAR Program Owner to identify program enhancements from AAR reports from exercises and events.

7.3.9.5 Preparedness and Planning for Service Restoration

WSD Initiative Definition: *Development of plans to prepare the utility to restore service after emergencies, such as developing employee and staff trainings, and to conduct inspections and remediation necessary to re-energize lines and restore service to customers.*

1) Risk to be mitigated/problem to be addressed:

PG&E's electric system is a complex set of assets, including transmission lines and distribution circuits, which connect to both internal facilities and external utilities and deliver energy to millions of customers. Qualified and skilled personnel that are properly trained in restoring power after emergencies are essential to minimize public safety concerns, injuries to employees and damage to public and Company assets.

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

PG&E provides responding personnel with in-depth training so that electric service is consistently restored to our customers after emergencies in a safe, efficient and timely manner. This is essential given the size and complexity of our electric system. Responding personnel utilize formal PG&E processes and procedures to ensure that service is restored properly. There are no acceptable alternatives for ensuring procedural compliance while meeting PG&E's key objective of restoring power safely, efficiently and in a timely manner.

PG&E tests the processes and procedures it currently has in place through field exercises. These are hosted regionally and completed annually. Additional information on how PG&E identifies, hires, retains and trains personnel is included in Section 7.3.9.1.

3) Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):

The roll out of the policies and procedures to personnel associated with service restoration in conjunction with wildfire mitigation and/or PSPS efforts are completed on a service territory-wide approach, rather than by region or area. This is because over half of the PG&E service territory consists of Tier 2 and Tier 3 HFTD as defined by the CPUC, so all personnel need to be informed and trained concurrently. See Section 7.3.9.1 for more training details.

4) Progress on initiative (amount spent, regions covered) and plans for next year:

To explain progress and the plans for next year, this section is broken out by 2020 progress and 2021 plans, and provide updates on the following

topics:

- PG&E Standards and Trainings
- PG&E PSPS Field Exercises
- PG&E PSPS Aircraft
- PG&E Distribution Circuit Pre-Flights
- PG&E Distribution Circuit Segmenting Updates

A) 2020 Progress

- **PG&E Standards and Trainings:** The primary policies and procedures that personnel were trained on and utilized in 2020 for wildfire and PSPS response are outlined in the following PG&E documents:
 - **TD-1464S: Preventing and Mitigating Fires While Performing PG&E Work** – Process for working on or near facilities within forest, brush or grass-covered lands using equipment that could result in fire ignition. This is applicable for routine and emergency activities, including PSPS.
 - **TD-1464P-01: Fire Index Patrol and Non-Reclose Procedure** – Outlines process for disabling, reclosing and testing electric circuits along with patrol and restoration actions required during fire season (except during PSPS events).
 - **PSPS-1000S: Public Safety Power Shutoff (PSPS)** – Standard which establishes the guidelines for PG&E's PSPS Program and utilized only during PSPS events.
 - **PSPS-1000P-01: Public Safety Power Shutoff for Electric Transmission and Distribution*** – Utilized only during PSPS events and provides the following procedures:
 - 1) Scoping and Pre-Event Planning
 - 2) De-energizing Procedure
 - 3) Restoration Procedure

Please note that in 2020, to align with the creation of Standard PSPS-1000S, TD1464B-002: Public Safety Power Shutoff for Electric Transmission and Distribution was updated and converted to Procedure PSPS-1000P-01, which provides for focused procedural alignment with the new PSPS Standard. At a high-level, changes included key previous process elements and:

- PG&E’s Officer-in-Charge issues the weather “all clear” for each PSPS impacted area, as applicable. Weather “all clear” indicates that the weather event has passed.
- All impacted transmission and distribution overhead lines that are identified as “event specific assets at risk” in High Fire Risk Areas (HFRA), as directed by the EOC, must be patrolled (via aerial or ground) in their entirety, and all trouble found must be isolated or cleared prior to energizing.

For transmission, patrols occur on the de-energized sections of all lines with identified “event specific assets at risk” as directed by the EOC.

For distribution, patrols occur on all impacted primary (and secondary that extends beyond primary) overhead lines identified as “event specific assets at risk” as directed by the EOC. Secondary does not include service drops.

- If damage to the facilities (i.e., electrical line is down) or hazards (i.e., tree branches touching the electrical line) are interfering with the ability to safely energize the facility, field crews repair the facility or remove the hazard.
- Energization of the electrical line.

The overall process incorporates a holistic “end to end” sequential grouping of the activities associated with PSPS events to allow for maintaining the well-trained workforce required to consistently manage these events safely and consistently.

To further ensure procedural awareness and compliance with both PSPS-1000S and PSPS-1000P-01, the following trainings were developed, formalized and conducted with field and control center personnel:

- PSPS-0001 PPS Restoration Process (for field personnel)
- PPS-0002 PPS Execution for DCC Operators
- **PG&E PPS Field Exercises:** In June, July and August of 2020, PG&E conducted regional (i.e., North, Central and South) full-scale exercises designed to drill personnel involved with PPS on processes and procedures, particularly PPS-1000S and PPS-1000P-01. All functions and a few external stakeholders participated in the exercises, which allowed PG&E to not only test the procedures, but also gather feedback, identify any gaps and refine the procedures further. Personnel and functions involved ranged from the PG&E EOC, Regional Emergency Centers, OECs, DCCs, and included field personnel performing actual ground and helicopter patrols of the selected HFRA assets within

the given exercise.

These exercises included HFRA selected assets in 18 of the 19 Divisions in PG&E's territory. Though the exercises excluded the San Francisco Division (which does not contain any HFRA), personnel from that Division were included in other exercises so that personnel from the Division could be utilized in an emergency, as needed.

- **PG&E PSPS Aircraft:** By September 2020, PG&E secured 65 helicopters, as well as two fixed-wing aircraft equipped with MX-15 cameras and capable of night flying. These aircraft were utilized during PSPS events to expedite patrols and restoration activities and supported emergent wildfire events and other activities as they occurred.
- **PG&E Distribution Circuit Pre-Flights:** By August 31, 2020, as part of the preparation for potential PSPS events, PG&E utilized local knowledge and/or flew helicopters on each distribution circuit with assets located in a HFRA. The purpose of these patrols was to:
 - Provide critical information used to develop effective plans for air and ground resource needs during PSPS events. This included noting circuits that require ground or air patrols only and ensuring the resources are appropriately staged during events.
 - Improve planning capabilities to ensure more accurate estimated times of restoration forecasting (by gathering patrol time data).
 - Identify potential hazards on circuits and take appropriate action.
 - Enhance patrollers training and expand patrollers resource pool by providing practical and realistic OJT to ensure that an experienced workforce will be available during events.
- **PG&E Distribution Circuit Segmenting Updates:** The HFRA distribution circuit segment guides utilized for “segmenting” during PSPS execution activities were updated from being Fire Index Area (FIA)-based to individual circuit-based. This effort also supported the more detailed meteorology event boundaries which reduced customer impacts and restoration times. The guides also included the additional Supervisory Control and Data Acquisition (SCADA) (remote-controlled) devices installed throughout the year. This allowed distribution field personnel to streamline the process by having the ability to more readily obtain both the segment guides and maps on circuits deemed within scope rather

than needing to identify the circuit based on FIA, as circuits can cross multiple FIAs. This change also significantly reduced both the number of segment guides and accompanying maps, resulting in less ongoing data maintenance and minimized confusion. Migrating to individual circuit-based segment guides was a direct result of feedback from the 2019 PSPS events.

B) 2021 Plan

For 2021, the focal points remain largely the same as 2020. They consist of ensuring processes and trainings are developed (or updated, as needed) to support the safe, efficient and timely service restoration following emergencies while providing for and maintaining procedural compliance.

- **PG&E Standards and Trainings:** Policies and procedures will be updated, as needed, based on any changes or feedback from the 2020 exercises and PSPS events.

To further continue ensuring procedural awareness and compliance with both PSPS-1000S and PSPS-1000P-01, the following trainings associated with this process for field and control center personnel will be reviewed, updated (as needed) and conducted:

- PSPS-0001 PSPS Restoration Process (for field personnel)
- PSPS-0002 PSPS Execution for DCC Operators

Restoration skills and abilities training will be delivered and measured in the classroom, web-based training and restoration field exercises throughout the service territory at a periodicity driven by performance and behavior. Trainings will be revised, updated and adjusted to reflect changes in policy and/or processes, as needed (i.e., based on lessons learned, technology advancements, etc.). See Section 7.3.6.3, Section 7.3.6.4 and Section 7.3.9.1 for more information.

- **PG&E PSPS Field Exercises:** PG&E will continue to perform PSPS exercises utilizing selected HFRA assets from Divisions within the service territory. These exercises will continue to increase in complexity and difficulty to strengthen PG&E's preparedness posture. The periodicity and number of exercises along with whether they will be full scale or potentially separated into EOC and field exercises will be determined based on feedback that is still being collected and reviewed.
- **PG&E PSPS Aircraft:** PG&E will continue to have helicopters and fixed wing aircraft to support PSPS events and other emergent wildfire events and activities.

- **PG&E Distribution Circuit Segmenting Updates:** Segment Guides and maps will be updated based on new equipment installations, circuit reconfigurations or as otherwise needed.

5) *Future improvements to initiative:*

PG&E will continue to utilize previous PSPS event(s) performance data (i.e., customer restoration metrics) and incorporate lessons learned, best practices and regulatory changes to update field exercises and trainings.

PG&E also continues to identify and develop technologies to support planning and preparedness for service restoration following an emergency. For example, the Advanced Distribution Management System combines electric distribution circuit mapping with SCADA (remote control-equipped field devices) and can automate the reconfiguring of circuits. In addition, it has the potential to provide visibility of the impacted distribution assets against the defined meteorological boundaries during PSPS events. This helps reduce the time it takes to restore power following emergency events and is an initiative we hope to incorporate in the future.

We are looking into the use of unmanned aerial vehicles that could allow for potential expansion of patrol flight time hours, risk reduction, supplanting existing resources to increase overall patrol capabilities.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

Long term planning consists namely on expansion of the themes noted above including:

- Continuous improvement based on utilizing lessons learned, best practices and regulatory changes to update field exercises and trainings to support improved execution of service restoration following emergencies.
- Evolution, procurement and utilization of developing technologies as they become available to support planning and preparedness for service restoration following emergencies.

7.3.9.6 Protocols in Place to Learn from Wildfire Events

WSD Initiative Definition: *Tools and procedures to monitor effectiveness of strategy and actions taken to prepare for emergencies and of strategy and actions taken during and after emergencies, including based on an accounting of the outcomes of wildfire events.*

1) Risk to be mitigated / problem to be addressed:

Wildfire response is complex, multifaceted and requires PG&E to continuously review and adjust policies and procedures quickly, as needed. In 2020, we established a formalized AAR process to identify key lessons learned from every EOC activation. We use the lessons learned to improve and adjust our responses to future incidents.

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

As mentioned above, it is imperative that PG&E is flexible and can adjust our processes and procedures quickly to adapt to the current environment. That is why we have formalized an AAR process to identify key lessons learned from each EOC activation. These AARs are conducted immediately after an incident or exercise. PG&E then uses this information to inform the adjustments needed for future incidents. For reference, below is an overview of the steps PG&E takes to identify and apply the lessons learned:

- Gather feedback from EOC staff who supported the activation;
- Develop an improvement plan and disseminate to the appropriate internal stakeholders within the affected Lines of Business;
- Identify corrective actions and enter them into PG&E’s CAP for tracking purposes;
- Develop and track individual action items, as appropriate; and
- Monitor and track action items and report status to PG&E leadership.

To formalize PG&E’s AAR process and help ensure consistency across all events, we developed the following documents which outline the AAR process and provide instructions on how to fill out and complete related forms:

- CERP per CPUC GO 166, “Standards for Operation, Reliability and Safety During Emergencies and Disasters”
- Activation AAR Process standard (EMER-2003S)

- AAR Process Owner Procedure (EMER-2003P-01)
- 5 Minute Meeting Incident Command Data Collection Briefing
- EOC Daily Hotwash Form (EMER-2003S-JA01)

3) *Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):*

PG&E’s AAR process applies to all PG&E EOC activations and exercises that take place within our service territory. The results of the AAR process are used to inform systemwide emergency protocols.

4) *Progress on initiative (amount spent, regions covered) and plans for next year:*

2020 Progress

In 2020, we incorporated corrective actions and lessons learned into our full-scale exercises. We also developed the AAR standard and procedure and were able to execute this process during PSPS events. This provided an opportunity for us to more quickly identify opportunities for improvement and strength of performance. Improvements included short-term items for immediate improvements, with plans to continue their development throughout the season. For example, we adjusted the delivery of the Cal OES Form to include a verbal review of the form with Cal OES and answer any questions during submission. This improved the alignment of the form information and improved submission quality. We also implemented the use of the PSPS dashboard in the virtual EOC Teams site. This helped ensure alignment among the EOC team on the current playbook version, playbook phase, and the estimated time of delivery of collateral from team members necessary to complete playbook development, which improved alignment between dependent processes.

2021 Plan

We will evaluate the AAR process with the intent of incorporating process improvements into the AAR Standard and procedure. This includes, but is not limited to, updating the process to more formally receive feedback from local, state and federal governments following each event and improving the management of corrective actions to follow through to closure.

5) *Future improvements to initiative:*

Future improvements to the AAR process beyond 2021 include, but are not limited to, identifying technology solutions for efficiently capturing, categorizing and prioritizing feedback received (i.e., hotwash items).

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

Use Lean Six Sigma methodologies to continuously improve the AAR Standard and After-Action Procedures which outline the execution steps of the AAR process. Evaluate the overall process at least annually for improvement opportunities to the After-Action Procedures which outline the execution steps of the AAR process.

7.3.9.7 Other, Mutual Assistance Support

WSD Initiative Definition: *N/A This is not a WSD-defined initiative. This is an initiative that PG&E is adding to the 2021 WMP to describe Mutual Assistance Support.*

1) Risk to be mitigated/problem to be addressed:

In cases where there are electrical outages during emergencies, such as during PSPS events or wildfires, without mutual assistance, restoration may be delayed for communities. Mutual assistance can provide additional personnel, equipment and materials to support the restoration efforts during emergencies. Pre-planning for these resources is equally as important to ensure personnel can be deployed quickly, as needed.

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

We manage mutual assistance agreements with other utilities through the California Utilities Emergency Association (CUEA), Western Region Mutual Assistance Agreement (WRMAA), Edison Electric Institute (EEI) and American Gas Association (AGA). Through these agreements, PG&E has access to over 80 percent of the public utility industry across the U.S. and Canada.

Mutual assistance is an effective tool used by utilities to provide emergency response assistance in support of one another. During an emergency, mutual assistance allows us access to additional personnel, equipment, and materials to supplement internal resources and increase the speed of restoration. Mutual assistance can only be utilized in emergencies and when restoration cannot be completed with our personnel in a reasonable timeframe.

We consider several factors before requesting mutual assistance. For example, due to the travel time of these resources, it may be determined that mutual assistance would not increase the speed of restoration. The type of work is also a factor we consider. The type of personnel needed to support the emergency response may require qualified electrical workers that have been trained on our specific utilities in order to ensure safety.

3) Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):

Mutual assistance is not prioritized based on region, but rather where an emergency event is located and if additional support is needed.

4) Progress on initiative (amount spent, regions covered) and plans for next year:

In 2020, we did not need to utilize mutual assistance during PSPS or wildfire events because of the necessary travel time of the mutual assistance resources and the type of work at issue. In addition, our prior experience completing wildfire mitigation efforts has improved our ability to restore customers quickly during a PSPS event, without the need of mutual assistance.

We participated in mutual assistance agreement updates and operational coordination calls as part of the normal preparation and response processes.

In 2021, We will maintain mutual assistance agreements through CUEA, WRMAA, EEI, and AGA. These resources will be utilized during emergency events, as needed. We recognize the climate crisis continues to increase the need and frequency of mutual assistance. As a result, we will continue to foster relationships and pre-planning activities through effective coordination with our utility partners.

Note: Mutual assistance is an unplanned expense based on the need for outside agency support. For each agreement, costs are calculated by reimbursing 100 percent of actual costs incurred by the responding utility. As such, specific costs related to Mutual assistance vary based on emergency use. In 2020, no emergency response Mutual assistance costs were incurred.

5) *Future improvements to initiative:*

We will develop a profile for each mutual assistance member and region that provides visibility to deployment timeframe, capabilities and key safety work methods to improve coordination when support is requested. Mutual assistance is coordinated as part of long-established agreements with existing membership organizations. As needed, improvements are made to mutual assistance processes through concurrence among the members at annual meetings.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

We will continue to improve sharing resources between utilities during emergencies. Modeling after east coast mutual assistance response to hurricanes and ice storms, we will be engaging western utilities to follow a similar model. This will include developing common equipment and personnel contingents to better facilitate rapid movement of like resources. Further, similar to other mutual assistance regions, we will be developing a regional plan for the pre-positioning of resources ahead of anticipated storm impacts versus waiting until damage and restoration times are known. These efforts will result in significantly improved restoration times when additional resources can quickly supplement our emergency response field crews.

7.3.10 Stakeholder Cooperation and Community Engagement

7.3.10.1 Community Engagement

Wildfire Safety Division (WSD) Initiative Definition: *Strategy and actions taken to identify and contact key community stakeholders; increase public awareness and support of utility wildfire mitigation activity; and design, translate, distribute, and evaluate effectiveness of related communications. Includes specific strategies and actions taken to address concerns and serve needs of Access and Functional Needs (AFN) populations and Limited English Proficiency populations in particular.*

This section also addresses Actions PGE-36 (Class A), PGE-37 (Class A), PGE-38 (Class A) and PGE-39 (Class A).

1) Risk to be mitigated / problem to be addressed:

Working together with agencies and customers is an important part of Pacific Gas and Electric Company's (PG&E or the Company) Community Wildfire Safety Program (CWSP). This is to help ensure that communities understand the critical safety work underway in their area and are adequately prepared for wildfire season, specifically Public Safety Power Shutoff (PSPS) events.

The goals of PG&E's detailed outreach and engagement plan, supported by ongoing evaluation of the effectiveness of our outreach efforts, facilitates the following benefits, among others:

- Identifying and engaging with key stakeholder groups;
- Creating alignment between PG&E, customers, agencies and community needs;
- Informing agencies and customers of wildfire safety work across the system and in their area;
- Identifying opportunities to collaborate with key local agencies in the design and planning of wildfire mitigation work to leverage efficiencies in project execution or the pursuit of projects that are closely aligned with community priorities;
- Preparing agencies and customers for power outages during PSPS events to mitigate the risks associated with those events, especially for our most vulnerable customers; and
- Aligning the understanding of PG&E's Local Public Affairs (LPA) Representatives, Public Safety Specialists (PSS), Customer Relationship Managers (CRM) and other local engagement teams to efficiently and clearly provide support to key stakeholders

In addition, PG&E designs, translates, distributes and evaluates communications, including AFN and non-English speaking customers, to help ensure:

- Customer and communities are aware of PG&E's wildfire mitigation efforts;
- Customers and communities increase their own PSPS preparedness; and
- There is balanced communication to customer populations, where the most vulnerable populations have more access to information.

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

PG&E develops an outreach and engagement plan for the various stakeholders within our service territory. Key stakeholders include agencies, including federal, state, local and tribal agencies; critical facilities, such as water agencies, communications providers and hospitals; and, customers, including our most vulnerable customers.

Throughout the year, PG&E engages with these stakeholders regarding PG&E's critical wildfire mitigation efforts. PG&E's main outreach and engagement objectives for 2021 include:

- Listening to customers and community leaders in order to fully understand and respond to concerns and feedback about communications;
- Customizing outreach approach and cadence based upon the community's past PSPS and wildfire impacts, with a key focus on providing more heavily impacted communities with information and resources;
- Approaching agencies and customers with humility and transparency while providing timely and accurate information that supports emergency preparedness and localized wildfire mitigation efforts;
- Soliciting agency feedback at key milestones in wildfire mitigation planning processes to ensure that local projects meet community priorities, and that opportunities for efficiency in collaboration may be identified and acted upon;
- Adapting to shifting agency needs and priorities in emergency preparedness and wildfire mitigation, including a mindfulness of other key local priorities such as responding to the ongoing coronavirus (COVID-19) crisis;

- Hosting localized discussions with agency and geography—specific information in order to enhance agency knowledge of drivers for PSPS events and other potential emergency events in their areas; and
- Strengthening relationships between local agencies and external-facing PG&E teams so that agencies are aware of their knowledgeable point-of-contact that can address their needs both during an emergency event and throughout the year.

To further explain PG&E's community engagement approach for the CWSP, we have broken up this section into the following categories:

- A. Strategy and actions taken to identify and contact key community stakeholders;
- B. Increase public awareness and support of utility wildfire mitigation activity;
 - 1. Agency and Critical Facilities Outreach / Advisory Committees; and
 - 2. Customer and Community Outreach.
- C. Strategy and Actions Taken to Design, Translate, Distribute, and Evaluate Effectiveness of Related Communications; and
- D. Strategies and Actions Taken to Address Concerns and Serve Needs of AFN Populations and Non-English-Speaking Customers.

Please note additional information on outreach conducted during PSPS events is outlined in Section 8.2.4. In addition, emergency planning and preparedness outreach is outlined in Section 7.3.9.2.

A) Strategy and Actions Taken to Identify and Contact Key Community Stakeholders

PG&E understands the importance of identifying key community stakeholders. PG&E aims to work together with stakeholders to inform them of wildfire safety work in their area and address unique, local issues in real-time. This is also an opportunity for PG&E to gather feedback and adjust the CWSP to minimize impacts to these groups.

Because public safety partner agencies and other community organizations evolve over time, PG&E must work to keep contact lists updated throughout the year. That is why PG&E has dedicated representatives within our Federal Affairs, State Government Relations, LPA, PSSs, and Tribal Relations departments. These dedicated representatives are solely responsible for identifying and maintaining relationships within federal, state, local, and tribal agencies. These relationships enable PG&E representatives to hear directly from agencies if, and when, there is staff turnover or potentially an additional

agency that requires engagement. PG&E representatives make note of these changes throughout the year and embed them in PG&E's internal tracking systems so that new contacts will be automatically included in future outreach engagements and in-emergency notifications. There are more than 50 representatives among these groups and those that coordinate closely with local agencies are divided into regions to best serve these stakeholders at a local level. PG&E also has CRMs that coordinate regularly with critical facilities and large businesses and are responsible for identifying and maintaining these contacts.

PG&E's representatives work to build trust with their respective stakeholder groups over time and are equipped to share information and seek feedback on future wildfire mitigation work. While teams engage with agencies and critical facilities on a proactive and as needed basis, there are several established engagement activities that also provide a forum for these stakeholders to learn about PG&E's wildfire safety work and provide feedback. This will be addressed further below.

Beyond PG&E's existing relationships, PG&E's Customer Care Department has established partnerships with Community-Based Organizations (CBO) and AFN entities that assist PG&E in our outreach and engagement efforts. These entities can also assist with identifying stakeholder groups that require additional outreach. PG&E also follows best practice guidelines and seeks input from the other California Investor Owned Utilities (IOU) and through our advisory committees to identify additional stakeholders.

For further information on how PG&E identifies and maintains agency and critical facility contact information for PSPS and emergency event notifications, see Section 7.3.9.2.

B) Increase Public Awareness and Support of Utility Wildfire Mitigation Activity

Prior to peak wildfire season, PG&E designs and executes a comprehensive wildfire safety and PSPS preparedness community outreach strategy, using lessons learned and feedback received from customers and stakeholders. Further, PG&E conducts community outreach to educate agencies, customers, and property owners on aspects of our wildfire mitigation practices, such as vegetation management and system hardening, and the role they play in helping to reduce wildfire risks in their communities.

PG&E incorporates multiple platforms and tactics into our engagement approach that enable PG&E to regularly hear and act upon feedback from agencies with an imperative to serve their communities in emergencies, critical facilities, and other key customers and customer associations. PG&E incorporates multiple platforms and tactics into our engagement approach that, enable PG&E to regularly hear and act upon feedback from agencies with an imperative to serve their communities in

emergencies, critical facilities, and other key customers and customer associations. We remain flexible and have the ability to adjust or customize our approach according to community needs, and to focus efforts strongly on jurisdictions and geographies most heavily impacted by PSPS events, while maintaining an inclusive posture for all agencies impacted by PSPS in the 2019 and 2020 fire seasons.

Due to the ongoing COVID-19 pandemic, PG&E will follow prevailing public health guidelines, including hosting meetings virtually when needed. In years' past, PG&E has been able to collaborate with agencies, critical facilities and other stakeholders on the design of outreach forums, including designing in-person meetings and community town halls. The ongoing COVID-19 pandemic has prevented most in-person engagement efforts for most of 2020 and will continue to restrict in-person engagements in 2021. PG&E will continue to follow prevailing public health guidance first and foremost when planning 2021 engagements and will also consider the preferences of agencies, customers, communities, and our own internal staff.

1. Agency and Critical Facilities Outreach/Advisory Committees:

PG&E works closely with agencies and critical facilities to ensure they are informed of PG&E's wildfire safety work in their area. PG&E often also relies on these agencies to provide key local guidance and partner with PG&E to gain efficiencies in local wildfire project implementation. For example, a local permit may be needed or PSPS preparedness activities may be required to help minimize customer impacts. That is why PG&E has an extensive outreach plan and dedicated representatives to ensure agencies and critical facilities are informed and have an opportunity to provide feedback. Agencies, critical facilities, and community groups may also directly engage with PG&E customers and communities and can provide additional outreach support to increase awareness and support of utility wildfire mitigation activities.

Table PG&E-7.3.10-1 includes the key agency and critical facilities engagements, and the proposed timing of each engagement tactic in 2021.

TABLE PG&E-7.3.10-1: KEY AGENCY AND CRITICAL FACILITIES OUTREACH TACTICS AND TIMING

Type	Description	Timing
PSPS Regional Working Groups	Forum for stakeholders to learn key information on the previous wildfire and PSPS season and to share feedback on wildfire safety work, discuss lessons learned, build regional collaboration and incorporate learnings into future wildfire safety and PSPS plans.	Quarterly
Wildfire Safety Working Sessions	Co-hosted with County Office of Emergency Services (County OES), this meeting is an opportunity to partner on PSPS planning efforts, share local progress on wildfire mitigation work and track action items.	Q2-Q3 2021
PSPS Exercises & Workshops	Review and test PSPS policies, procedures and tools with public safety partners, with a focus on enhancements and new features in advance of the 2021 wildfire and PSPS season.	Q2-Q3 2021
Additional PSPS Trainings & Workshops	Ad-hoc, or as-needed trainings and workshops for agency partners, based upon agency feedback (i.e., PSPS Portal).	Ongoing and as needed
PSPS Listening Sessions	Open forum for PG&E to share information on the previous wildfire and PSPS season and to listen to county, tribal, and critical facilities' concerns and gather important feedback on 2021 PSPS events. The feedback will be used to prioritize improvements for 2022.	Q4 2021
PSPS Advisory Committee	Select county, city and tribal governments to obtain focused input, solicit recommendations and gather feedback regarding PSPS improvements.	As needed
People with Disabilities and Aging Advisory Council (PWDAAC)	Forum that provides insight into the needs of AFN populations related to emergency preparedness and to facilitate co-creation of solutions and resources to serve the customers reliant on power for medical needs	Quarterly
Other AFN Advisory Councils	Statewide IOU AFN Advisory Council Disadvantaged Communities Advisory Group (DAC-AG) Low-Income Advisory Board (LIOB) among others Communities of Color Advisory Group Customer Advisory panels with National Diversity Coalition (NDC) and Communities of Color These are designed to gather customer feedback on our outreach efforts and other important topics impacting low-income, disadvantaged, and underserved communities.	Varies
Energy and Communications Providers Coordination Group	Forum for communications providers to provide feedback on PG&E's current PSPS implementation protocols and to coordinate engagement before and during PSPS events	As needed
Key Customer Association Collaboratives	Ongoing engagement, intelligence sharing, consultative support, and contact updating efforts	Ongoing
Ongoing Outreach and Coordination	Outreach on a myriad of topics related to wildfire safety work.	Ongoing

- PSPS Regional Working Groups:** As required by Decision (D.) 20-05-051, PG&E hosts quarterly meetings with tribal and local government entities, public safety partners, and representatives of AFN and vulnerable customers¹⁴² grouped into five regions across PG&E's territory. These meetings are structured to enable feedback and information sharing on aspects of PSPS event execution and planning. This includes aspects of PSPS, including Community Resource Center (CRC) planning, communication strategies, information sharing, identification of critical facilities, strategies for supporting AFN communities and contingency plans. Please see Section 7.3.9.2 for a description of how PG&E is planning to integrate two out of four quarterly Regionalized Working Groups with the Wildfire Order Instituting Investigation (OII) (Investigation (I.) 19-06-015) requirement to host Semi-Annual Wildfire Mitigation Meetings. These meetings will provide a forum for PG&E to share regional updates on local wildfire mitigation activities hear critical feedback in each of the five regions.

PG&E began these Regional Working Groups in Q3 2020 and will continue quarterly meetings in 2021. Please see Section 7.3.9.2 for a description of how PG&E is planning to integrate two out of four quarterly Regionalized Working Groups with the Wildfire OII (I.19-06-015) requirement to host Semi-Annual Wildfire Mitigation Meetings. These meetings will provide a forum for PG&E to share regional updates on local wildfire mitigation activities hear critical feedback in each of the five regions.

- Wildfire Safety Working Sessions:** PG&E meets with counties and tribes within our service territory to share county-specific plans for wildfire mitigation, system resiliency and the steps we are taking to address the feedback received during the listening sessions. PG&E's PSSs and Tribal Representatives work with county and tribal Office of Emergency Services (OES) to cohost Wildfire Safety Working Sessions for their respective jurisdictions. Invitees to these events include regional key stakeholders, such as cities, tribes, Community Choice Aggregators (CCA), telecommunication providers, water agencies, as well as local California Department of Forestry and Fire Protection (CAL FIRE), and California Governor's Office of Emergency Services (Cal OES) representatives. Some county and tribal governments may determine that a meeting with PG&E is not needed. The purpose of the

¹⁴² D.20-05-051 at p.13.

sessions is to provide local agencies with an opportunity to have detailed conversations regarding PG&E's wildfire safety work planned in their community and PSPS improvements. The sessions also provide an opportunity for local officials to learn about the electric system in their community and discuss their needs and suggest any further improvements to the CWSP and PSPS Program. Feedback from the sessions has helped to shape local planning for PSPS events, including critical facility locations, CRC locations and local contacts for emergency response.

PG&E will plan to host Wildfire Safety Working Sessions in each jurisdiction impacted by PSPS if desired by that jurisdiction. In 2021, as PG&E determines the content of the Wildfire Safety Working Sessions, we will work to prioritize the needs of jurisdictions impacted the most by PSPS events and wildfires in terms of frequency of events, and total and unique customers impacted, critical facilities impacted, and localized issues that may have caused escalations. While the needs of the most impacted jurisdictions will take highest priority in planning, PG&E will still strive to make these sessions as inclusive and valuable as possible to the broader audience of all jurisdictions.

- **PSPS Exercises and Workshops:** PG&E invites County OES and Tribal Leaders to workshops that review PG&E's PSPS Policies and Procedures document and solicit feedback. PG&E's Emergency Preparedness and Response (EP&R) Department then hosts PSPS full-scale exercises where PG&E test our ability to communicate effectively with our partners during PSPS events, gain efficiencies within roles, and identify possible areas of improvement that PG&E and our partners may undertake in advance of the 2021 fire season. Following the exercises, after action reviews are completed to identify adjustments needed to procedures and/or where additional training is required. These PSPS exercise and workshops are a continued best practice in 2021. In 2020, PG&E hosted three regional exercises and workshops.
- **Additional PSPS Trainings and Workshops:** PG&E hosts additional PSPS trainings and workshops for public safety partners, as needed. For example, in 2020, PG&E launched a new PSPS Portal and provided weekly trainings in the summer for public safety partners to ensure appropriate users had access and were able to navigate the tool ahead of any PSPS events.

Similar to the approach taken for the Wildfire Safety Working Sessions, in designing the scope and content of these PSPS trainings and workshops, PG&E prioritizes topics that are most valuable to the jurisdictions most impacted by PSPS in terms of frequency of events, total and unique customers de-energized, impact to critical facilities, and other localized issues that may have caused escalations.

PG&E aims to be more customized in our outreach efforts based on the needs of the agency and remain adaptive. PG&E is looking to incorporate additional customized options for agencies, with a focus on those most impacted by PSPS and wildfires, such as:

- Hosting field tours to view grid control centers or temporary generation sites;
 - Co-creating ideas for new tools and processes with agency partners;
 - Establishing additional user testing groups to gather real-time feedback as we build new emergency management tools and processes;
 - Hosting topic-specific workshops to provide additional information on PG&E programs, localized drivers of PSPS, wildfire mitigation activities in their communities and other topics of interest;
 - Co-hosting public-facing events with agency partners to address questions and concerns from the community related to PSPS and wildfires; and
 - Partnering with additional external partners organizations to assist with outreach and engagement.
- **Listening Sessions:** PG&E will host listening sessions with counties, tribal governments, and large commercial customers and critical facilities impacted by PSPS events, if the stakeholder is interested in meeting. This provides an open forum for PG&E to share localized key information on the most recent wildfire and PSPS season, listen to concerns, gather important feedback and identify ways to improve coordination and partnership with local communities going forward. These PSPS Listening Sessions are a continued practice from the 2019 fire season and were well received by agency stakeholders. PG&E uses feedback to guide improvements to our wildfire mitigation activities (i.e., PSPS Portal improvements, PSPS mitigation projects such as sectionalizing and hardening, notifications to customers and agencies, CRC locations and planning,

partnerships with CBOs and other topics) and help prioritize key focus areas for the following year. We coordinate with county and tribal emergency Managers and customers, to schedule each meeting and to determine the appropriate meeting participants.

- **Advisory Committees:** PG&E's advisory boards provide hands-on, direct advisory functions related to PG&E's wildfire mitigation strategies like PSPS. This includes helping PG&E develop best practices for PSPS protocols, community preparedness, regional coordination and the optimal use of existing and emerging technologies.

- **PSPS Advisory Committee:** PG&E established a PSPS Advisory Board in 2020, which includes representatives from local and tribal governments. These meetings provide a forum for participants to weigh in on a variety of PSPS Program updates such as customer notification scripts, wildfire safety working session content and meeting outlines, and PSPS full-scale exercises, among other topics. PG&E plans to continue to host these meetings periodically to gather feedback on PSPS-related topics, including PSPS planning for 2021 and coordination with local communities and shared resources.

In 2021, PG&E will evaluate local and tribal representation on the PSPS advisory committee for diversity of regions and PSPS experiences. PG&E may make adjustments to this committee once that evaluation is complete in early 2021.

- **People with Disabilities and Aging Advisory Council (PWDAAC):** PWDAAC consists of members representing a diverse mix of expertise, backgrounds, and perspectives of the AFN population and provides insight into the needs of AFN populations related to emergency preparedness. The Council facilitates co-creation of solutions and resources to serve the customers reliant on power for medical needs before, during and after a PSPS event in PG&E's territory. More details on PWDAAC is included in Section 8.4 and PG&E's 2021 PSPS AFN Plan.
- **Statewide IOU AFN Council:** PG&E, Southern California Edison Company (SCE), and San Diego Gas & Electric Company established the Joint IOU AFN Advisory Council. The Joint Council is a diverse group of recognized CBOs, association and foundation leaders supporting the AFN population, and leaders from various state agencies. It provides insight into the

unique needs of the IOUs' most vulnerable customers and stakeholders, offers feedback, makes recommendations, and identifies partnership opportunities to serve the broader AFN population before, during, and after a PSPS event. PG&E will continue to meet with these stakeholders and will periodically bring these groups together, along with other stakeholder groups outlined in D.20-05-051, to solicit feedback on the PSPS Program.

- **Other AFN Councils:** PG&E hosts meetings with the NDC and Communities of Color to provide safety-related outreach such as wildfire safety, PSPS preparedness and specific safety-related gas or electric projects impacting disadvantaged and underserved communities. Through our relationship with NDC and Communities of Color, we host customer advisory panels designed to provide customer feedback on our outreach efforts related to public safety and other important topics impacting low-income, disadvantaged, and underserved communities. PG&E also hosts an annual executive-level meeting with NDC leadership to better understand NDC members' perspectives and recommendations to improve the effectiveness of PG&E's community outreach and engagement. PG&E also leverages opportunities to share emergency preparedness, and CWSP and PSPS updates at other stakeholder meetings such as the DAC-AG and the LIOB among others. Further, we use our network of CBOs to support our AFN stakeholder outreach work, as described in Section 8.4.
- **Energy and Communications Providers Coordination Group:** PG&E initiated this group in early 2020, to create a forum for communications providers to provide feedback on PG&E's current PSPS implementation protocols and to coordinate engagement before and during PSPS events. Attendees include, but are not limited to, representatives from AT&T, Verizon Wireless, Comcast, Charter Communications, Frontier Communications, T-Mobile, Consolidated Communications, U.S. Cellular, Sierra Telephone, and Cellular Telecommunications and Industry Association. Throughout 2020, PG&E received valuable feedback from this group. For example, representatives from Verizon, AT&T, Comcast, T-Mobile, U.S. Cellular, Charter Communications, Cox Communications, provided feedback to PG&E, California Public Utilities Commission (CPUC or Commission), and Cal OES

about PG&E's September 2020 PSPS events. While feedback was generally positive, the group recommended improvements for more accessibility to PSPS event information, including maps in the PSPS portal and the support role provided during PSPS events by PG&E's Critical Infrastructure Lead. In 2021, PG&E to host, as needed, meetings to discuss collaboration and engagement opportunities before and during PSPS events, and for other wildfire and "all hazards" resiliency and readiness initiatives.

- **Key Customer Association Collaborative:** PG&E regularly meets with key customer stakeholders including large customers, community groups and business associations. PG&E uses these meetings to provide information about wildfire mitigation efforts, local progress on wildfire safety measures and expanded resources available to prepare for PSPS events. For example, throughout 2020, PG&E met with:
 - California Hospital Association (CHA);
 - Hospital Council Board of Directors of Northern and Central California;
 - California Association of Medical Product Providers;
 - Telecommunications and broadband providers;
 - Water agency members of the Association of California Water Agencies (ACWA), and directly with water and wastewater agencies; and
 - Industrial and commercial members of California Large Energy Consumers Association and the Small Business Utility Advocates.

In 2020, PG&E conducted meetings with nearly 300 individual stakeholders. PG&E will continue these meetings throughout 2021. Throughout 2021, PG&E will build on collaborative relationships with the CHA and the Hospital Council of Northern and Central California. PG&E plans to host bi-monthly resiliency workshops with telecommunications and broadband providers, municipal utilities, and with water agencies, both via the ACWA and directly with water and wastewater agencies.

- **Ongoing Outreach and Coordination:** As noted above, PG&E's Federal Affairs, State Government Relations, LPA, PSSs, Tribal Relations, and Customer Care departments

have dedicated representatives responsible for ongoing coordination with their respective stakeholder groups.

For example, PG&E supports the unique and complex needs of our largest industrial, commercial, and agricultural customers with a dedicated team of over 60 CRMs supporting over 3,500 business customers. PG&E's dedicated CRMs provide critical information and timely updates before, during and after a PSPS event to large business customers. PG&E will continue to engage with business and critical customer accounts to support wildfire, PSPS and emergency preparedness planning, including topics such as business continuity, backup power options, safety, financing, and sourcing.

- 2. Customer and Community Outreach:** PG&E continuously engages with customers and communities regarding wildfire safety and with customers who may be directly impacted by a PSPS event. This effort is to increase public awareness and support of PG&E's wildfire mitigation activity. PG&E prioritizes engagement with those most likely to be impacted by PSPS, which include those served by electric lines (specifically those served by electric lines 115 kilovolts and below) which traverse Tier 2 and Tier 3 High Fire Threat District (HFTD) areas. PG&E also implements additional touchpoints for Medical Baseline (MBL) customers,¹⁴³ those with limited English proficiency and the AFN community.

PG&E will leverage multiple channels, such as open houses and webinars, e-mails, letters, bill inserts, postcards, radio and Television (TV) broadcasting, print media, informational videos, social media, digital engagement (e.g., website), and possibly face-to-face meetings.¹⁴⁴ PG&E will continue direct-to-customer outreach campaigns that are focused on, but are not limited to, building PSPS readiness among customers, gathering updated contact information and sharing backup power safety tips.

- **Communications for AFN Populations and Limited English Proficiency Populations:** PG&E translates "critical information" which includes resources focused on emergency preparedness, wildfire safety, and PSPS preparedness in 15 prevalent non-English languages. PG&E customers with limited English proficiency can contact PG&E any time, whether during an emergency or simply for a bill inquiry and have access to in-language

¹⁴³ MBL customers are PG&E customers who are eligible for MBL tariffs and receive an additional allotment of electricity and/or gas per month. The tariffs are designed to assist residential customers who have special energy needs due to qualifying medical conditions.

¹⁴⁴ As applicable due to the COVID-19 pandemic and safety concerns with large gatherings.

support via our Contact Centers, which are equipped to provide translation support in over 250 languages. Additionally, we have partnerships with CBOs and multicultural media partners to provide in-language outreach spoken by people that occupy significant roles in California's agricultural economy (e.g., Mixteco and Zapoteco). Many of our materials such as webinar presentations and PSPS notifications are recorded in American Sign Language (ASL) via our collaboration with NorCal Services for Deaf and Hard of Hearing. Our wildfire safety and PSPS customer information and materials are available in alternate formats, including Braille and large print, upon request. Please see Section 8.4 for details on PG&E's communications for AFN populations and limited English proficiency populations.

- **Wildfire Safety Town Halls,¹⁴⁵ Webinars and other Community Events:** PG&E hosts interactive virtual safety town halls and webinars to share safety and utility service-related information with attendees and gather feedback from members of the community (anticipated by June 2021). These events are designed for anyone who is interested in learning more about our CWSP and allow community members to learn more about wildfire safety and emergency preparedness, meet with PG&E representatives, ask questions and share feedback. The presentation portion of certain webinars are recorded in 16 languages, including ASL. PG&E makes the full schedule of webinars, along with presentation documents and recorded and translated videos of presentations, available at pge.com/firesafetywebinars. PG&E plans to continue to host and/or participate in community events focused on customers with disabilities, seniors, and low-income customers, including targeted webinars and participation in meetings hosted by CBOs. In 2021, the format and timing of community events will depend on the public health safety protocols related to COVID-19. PG&E anticipates that the bulk of community events will occur virtually, like many 2020 events. When it becomes safe for our customers, communities, and employees to gather, PG&E plans to resume to in-person events, based on state and local health guidance.
- **Direct-to-Customer Outreach:** To help customers prepare for emergencies and a potential PSPS event, PG&E plans to conduct a multi-channel outreach and awareness campaign throughout 2021 including letters, e-mails, emergency

¹⁴⁵ Per I.19-06-015, Joint Motion of PG&E the Safety and Enforcement Division of the CPUC, Coalition of California Utility Employees, and the Office of the Safety Advocate for Approval of the Settlement Agreement, pp. 25-26.

preparedness resources, tenant education kits, postcards and more. These include, but are not limited to large customer “Update your contact information” e-mails; Public safety partner e-mails (water, telecom, transportation); a PSPS awareness bill package; Residential customer “Update your contact information” postcards; Master Meter MBL tenant e-mails; Master Meter tenant education e-mails; tenant education kits; “No Contact Information” bill packaging/envelope messaging; PSPS awareness e-mails; MBL acquisition letter/e-mails; PSPS awareness bill insert/envelope messaging; Backup power education e-mails; and PSPS preparedness brochure/MBL brochures.

As mentioned above, PG&E also supports the unique and complex needs of our largest industrial, commercial and agricultural customers.

Figure PG&E-7.3.10-1 includes a sample brochure, fact sheet, bill insert, postcards and doorhanger used during PG&E’s direct-to-customer outreach.

FIGURE PG&E-7.3.10-1: SAMPLE BROCHURE, FACT SHEET, BILL INSERT, POSTCARDS, AND DOORHANGER



- Wildfire Program Outreach:** PG&E conducts community outreach to educate customers/property owners on the details of PG&E's wildfire safety programs and the potential need for their participation to reduce wildfire risks in their communities. PG&E maintains an open channel of communication with customers and communities who proactively reach out to PG&E when identifying safety risks related to these programs.

To identify and implement efficient and appropriate customer and community communications, PG&E assesses the anticipated program impacts related to planned road closures, property access needs, tree removal, pole inspections, and helicopter operations, among others. To set expectations with customers and with the goal of limiting work refusals or access issues, PG&E uses various communication methods, such as letters, postcards, text messages, e-mails, and automated calls through Interactive Voice Recordings. PG&E will provide translated outreach in

alignment with the language access and translations strategy described in Section 8.4.2..

Outreach includes broad communications about PG&E's wildfire safety-related work scope in neighborhoods, cities, and counties, as well as direct communications to customers/property owners who may be impacted by PG&E employees and contractors requiring access to their sites to conduct the necessary safety-related wildfire prevention work.

PG&E also responds to issues raised by customers/property owners including general access issues (e.g., locked gate), or sensitive access issues (e.g., medical concerns). In some cases, properties requiring access/work may be occupied by a customer of record that differs from the property owner, in which case PG&E will engage with both. PG&E addresses these issues by contacting the customers/property owners directly to understand their concerns and to develop a mutual solution that allows access to complete the relevant wildfire safety work.

In certain instances, such as in the system inspections program, if PG&E is unable to coordinate access to our facilities with the customer/property owner, PG&E may leverage authorization via Rule 11 to turn off customers' power to complete safety-related work to inspect or repair facilities. PG&E will only consider this tactic to ensure safety related work can be completed and will work to limit such instances. Customers will receive multiple advanced communications from PG&E if this action must be implemented.

PG&E works with customers to develop solutions to resolve property owner non-compliance issues (e.g., property access or work refusals) and escalated CPUC complaints by landowners that are impacted by PG&E's CWSP programs, including Electric Vegetation Management, system hardening, and system inspections.

Throughout 2021, PG&E will continue to conduct customer outreach and respond to customer-related access issues. As we do with all customer outreach, we will look for ways to improve our programs, focusing on building relationships with property owners where PG&E assets are located.

- **Digital Engagement:** PG&E's website is a key tool in ensuring customers and community members have access to information about wildfire mitigation activities, PSPS readiness initiatives, and PSPS event information. PG&E's

website ([pge.com](https://www.pge.com)) allows customers to have access to 24/7 information before, during and after a wildfire and/or PSPS event. PG&E's website provides customers with convenience and flexibility by allowing them access to a variety of topics associated with wildfire related including wildfire safety ([pge.com/wildfiresafety](https://www.pge.com/wildfiresafety)), emergency preparedness ([pge.com/emergencypreparedness](https://www.pge.com/emergencypreparedness)) and PSPS planning and preparedness information ([pge.com/pssp](https://www.pge.com/pssp)). Our wildfire safety webpages provide customer resources that include details on wildfire safety events, program resources such as the MBL Program, and information on preparing for multiple day outages. Our web-based CWSP resources provide customers and community members important information about our wildfire safety initiatives, and a bi-weekly update on the progress we have made toward our commitments. To ensure that our customers have information about emergency-related outages, including those related to wildfire and/or PSPS, we encourage customers to sign up for outage alerts via our online platform "Your Account."

An important feature of our website is our "Safety Action Center,"¹⁴⁶ which is a [dedicated safety webpage](https://www.pge.com/safetyactioncenter) featuring helpful information about wildfire risks and what customers can do to keep their home, family or business safe, including tips on how to create an emergency plan, emergency preparedness guides and videos.

To ensure scalability during high volume emergency events, including PSPS events, PG&E launched a standalone cloud-based website called the "Safety and Alerts Center." The Safety and Alerts Center is located at pgealerts.alerts.pge.com; however, consumers do not need to learn this new Uniform Resource Locator. Whenever there is a high-volume event, PG&E will redirect traffic from [pge.com](https://www.pge.com) over to the standalone site. Once on the new site, users can choose to stay there to get PSPS information or to continue on to [pge.com](https://www.pge.com). PG&E's main website [pge.com](https://www.pge.com), currently has the capacity to serve 400 million hits¹⁴⁷ per hour, and PG&E's emergency website, which maintains the PSPS event update information, can serve 240 million hits per hour. Both sites use a cloud-based provision solution. The alerts site allows PG&E to handle traffic spikes while maintaining normal course of business (e.g., customers log

¹⁴⁶ <https://www.safetyactioncenter.pge.com/>.

¹⁴⁷ Website hits measure requests for data sent to a server when a user accesses a webpage (e.g., images viewed, data downloaded). One page visit or page view can result in one or more hits.

into their accounts to view energy statements, pay a bill, submit a service application).

Other website improvements include an “all-in-one” map that includes both PSPS planned outages and actual outages (previously two separate maps and webpages), more precise event maps at the parcel level (rather than buffered polygons that may falsely indicate certain addresses are included or excluded from the event scope). Today, the website provides lower bandwidth options, including “no map” outage tools on the website, which are easier to access for certain customers (such as cell phone users), and uses more concise language and layouts for fast, clear information delivery.

PG&E’s website is also accessible for customers with AFN. For example, our emergency website, used during PSPS, includes 15 non-English languages. Additionally, many of our wildfire and emergency preparedness webpages are also available in 15 non-English languages. Further, the PSPS alert site has been designed with accessibility in mind and that each feature has been tested by our accessibility partner, Level Access, before moving the feature into production. More details on PG&E’s support for customers with limited English proficiency and AFN website accessibility can be found in Section 8.4.

- **Informational Videos:** PG&E uses informational videos to inform customers about or CWSP and PSPS available at the newly-launched pge.com/pspsvideos webpage. Building off our success in 2020, PG&E will continue a series of videos about the CWSP and PSPS events. For example, in 2020, PG&E developed a series of short (3-5 minute) and long-form videos (30 minutes) about the CWSP and PSPS programs. Topics include PSPS improvements, PSPS decision-making, and weather monitoring. PG&E also created and aired a 30-minute television program, called “Preparing for Public Safety Power Shutoff,” which provides details of our CWSP and shares ways customers and communities can plan and prepare for PSPS events. The program aired between September and November 2020 with 25 television placements throughout our Northern and Central California service territory—many of these placements coincided with PSPS events to provide the right information at the right time in affected communities. PG&E is planning to develop additional short-form videos about other wildfire safety topics, including electric vegetation management, microgrids, PSPS power restoration steps and more.

- **Media Engagement:** PG&E works closely with external media outlets, including both paid and earned media, to provide broad awareness to Californians to share tips related to wildfire and PSPS preparedness, socialize available resources, and communicate PSPS event information. This includes PG&E multicultural media engagement that reaches our non-English speaking customers and community members, as described in Section 8.4.
 - **Media Outreach:** PG&E engages with the media by issuing news releases, conducting and live streaming news conferences with ASL translators, and participating in media interviews. In turn, these media organizations may provide communications on the radio, broadcast, TV, and online. PG&E also reaches out to local newspaper outlets with PG&E Letters to the Editors to further prepare customers for emergencies, PSPS events and help provide information on wildfire safety. To serve customers with limited English proficiency, PG&E engages with over 150 multi-cultural media outlets throughout the year in an effort to promote safety initiatives, including PSPS, to monolingual or difficult to reach populations that may not have access to mainstream television media or read/speak English. PG&E shares news releases and coordinates interview opportunities with these media outlets to help educate limited English-speaking customers on various PG&E programs, including the CWSP, PSPS, emergency preparedness, and public safety among other topics. Additionally, PG&E schedules media visits with these organizations to discuss other partnership opportunities (e.g., Public Service Announcement, advertising, event sponsorships). During PSPS events, select media outlets are notified based on their geographic coverage and frequency in running event updates.
 - **Paid Media and Advertising:** To supplement PG&E's outreach efforts, PG&E runs wildfire safety and emergency messages to reach customers via paid media channels. PG&E purchases a combination of English and in-language radio ads, as well as digital banners in English and multiple languages based on targeted zip codes.

Figure PG&E-7.3.10-2 includes sample print advertisements used in 2020.

FIGURE PG&E-7.3.10-2: SAMPLE 2020 ADVERTISEMENTS



- **Social Media:** PG&E regularly provides customer preparedness resources through our official social media channels, including Twitter, Facebook, Instagram, and Nextdoor. During the 2020 PSPS events, PG&E provided event update videos on our social media platforms in English, ASL, Spanish, and Chinese.¹⁴⁸ Some social media posts are translated into up to 15 languages. We also developed a three-minute YouTube video on safety tips for those with medical needs. We continue to work with 36 multi-cultural media organizations and five CBOs to assist with in-language communications and share our social media posts before and during PSPS events. PG&E plans to leverage our social media platform throughout 2021.
- **Community Partnerships:** We regularly work with community partners to better prepare for emergencies. For example, PG&E partners with the California Fire Foundation to provide Wildfire Safety and Preparedness grants focused on funding for firefighters and Community/Neighborhood

¹⁴⁸ See examples of translated social media posts:

- PSPS Alert Banner:
<https://twitter.com/PGE4Me/status/1321169776014667779/photo/1>.
- PSPS Event Update in Chinese:
<https://twitter.com/PGE4Me/status/1321220048791334912?s=20>
- PSPS Update in Spanish:
<https://twitter.com/PGE4Me/status/1321219692392968193?s=20>
- PSPS Warning Alert in ASL:
<https://twitter.com/PGE4Me/status/1320423102866542593?s=20>

Emergency Response Teams in Northern California, specifically communities identified as extreme or elevated fire risk. PG&E also funds local climate resiliency projects through the Better Together Resilient Communities grant program. Further, PG&E awards grants to local Fire Safe Councils to fund shovel-ready projects to help keep communities safe. The funds help pay for fuel reduction, emergency access and defensible space projects, as well as chipper days in local communities.

C) Strategy and Actions Taken to Design, Translate, Distribute, and Evaluate Effectiveness of Related Communications

As noted above, PG&E engages with agencies and critical facilities in multiple fora that foster open and transparent communication and encourage key stakeholders to provide candid feedback. The feedback is then reviewed internally and determined if feasible and appropriate to implement into PG&E's operational and/or engagement plans. Below is a list of evaluation mechanisms that PG&E employs to assess effectiveness of agency and critical facility outreach and identify improvements as needed:

- **After engagement surveys:** Provided to agencies, critical facilities, large businesses and other stakeholders that have participated in engagement efforts to ask for feedback on effectiveness of the engagement and solicit ideas for engagement improvement and future topics for engagements and trainings.
- **After-engagement internal evaluations:** After each type of engagement (e.g., listening sessions and regional working groups), PG&E evaluates feedback from stakeholders received on the effectiveness of the meeting and determines where improvements can be made before the next engagement effort. In this way, PG&E seeks to continuously improve in terms of the value of engagements to our stakeholder partners.
- **Advisory committees and councils:** The advisory committees and councils described in the section above (*Strategies and Actions Taken to Identify and Contact Key Community Stakeholders*) are designed to help PG&E improve our actions to help communities prepare for emergencies including PSPS, and to provide input on our wildfire mitigation activities generally. Part of this scope will include committee and council evaluations on effectiveness of communications, covering stakeholder engagement throughout the year, as well as in-emergency stakeholder notifications. PG&E will take committee and council feedback into account when designing future engagements and communication plans.

- **Feedback from local PG&E representatives:** Local PG&E representatives—PSS, LPA, Tribal Representatives, and CRMs—seek feedback on communication effectiveness from agencies, community stakeholders and customers throughout the year, both in formal engagements and during informal conversations. These local PG&E representatives share this valuable feedback internally and it is then used to evaluate effectiveness of communications and to identify specific actions that PG&E can take to improve.

The section above (*Strategies and Actions Taken to Identify and Contact Key Community Stakeholders*) also notes the various ways PG&E engages with customers. We understand that every customer is different, and it is important to have various engagement types on to engage frequently. To measure effectiveness, PG&E collects feedback from customers on outreach and identifies barriers and areas for improvement. The feedback is collected both prior to and after wildfire and/or PSPS events.

We evaluate outreach effectiveness around wildfire safety and PSPS preparedness through both qualitative and quantitative research. Examples of qualitative research include input from small groups of customers. Quantitative research involves representative surveys of a specific population (customers, CBOs, etc.) that may measure statistically significant progress over time. These include measures of message awareness and recall, message understanding, and reported changes in behavior. Non-survey quantitative measures include web-traffic, click-through rates of advertisements and conversion rates / actions taken by customers as a result (e.g., attendance of a webinar, updates made to contact information, or adoption of various customer programs).

- **Opinion Surveys:** Before and after the start of wildfire season, PG&E conducts semi-annual surveys with customers (in both English and Non-English languages) to capture awareness and recall, understanding of, and satisfaction with PG&E's customer communications and to measure statistically-significant changes over time.
- **Transactional Surveys:** PG&E hosts website surveys that allow customers to provide direct feedback on the site page and topic. PG&E's e-mail newsletters also provide customers the option to score the value of the content and to provide direct comments.
- **Customer Feedback:** PG&E regularly reviews customer sentiment received directly by account Managers, via the Contact Center, the website, and other social outlets during and after events. Additionally, PG&E conducts qualitative research in collaboration with customers to identify solutions and potential program offerings to improve future customer experience and outreach.

- **Input from local organizations:** PG&E continues to work with CBOs that serve the AFN populations to both amplify messaging and solicit feedback before and after outreach.

PG&E also quantitatively tracks customer engagement at different periods of time throughout wildfire season to understand customer behavior in the following ways:

- **Web Traffic:** Traffic to relevant pages on PG&E's website, such as wildfire alerts, updates to contact information, wildfire safety pages, safety action center, statewide PSPS program. Website traffic is currently measured by assessing number of unique visitors, visits, and page views.¹⁴⁹
- **Click-through-rates of advertisements:** Click-through-rate of advertisements is an industry-accepted standard that measures the number of people visiting a webpage who access a hyperlink to an advertisement (e.g., wildfire safety). To note, advertisement click-through-rates measure the immediate response to an advertisement but not necessarily the overall response. Customers may see the advertisement, absorb the messaging, and choose to act later.
- **Conversion rates / actions taken by customers as a result:** Conversion rates of customers are the measurable actions taken by customers based on the outreach (e.g., updating contact information, attending an open house, enrolling in MBL Program).

As required by D.20-03-004 OP 16, PG&E filed our independent survey results that assess the effectiveness of 2020 community outreach on December 31, 2020.

PG&E will continue to apply best practices and leverage lessons learned from our 2020 customer outreach experience. Going forward, we support a collaborative, data driven process to define the most effective and appropriate outreach and in-language translation requirements.

D) Strategies and Actions Taken to Address Concerns and Serve Needs of AFN Populations and Non-English-Speaking Customers¹⁵⁰

PG&E is committed to providing additional services to AFN and medically sensitive customers by partnering with organizations that

¹⁴⁹ Unique visitors are the number of individuals that visit the specific webpage. These unique visitors may make multiple visits to the webpage. Page views account for all webpages served by the website (pge.com) whereby a unique visitor goes to multiple pages on the website.

¹⁵⁰ Section 8.4 Engaging Vulnerable Communities includes the definition of AFN populations and prevalent languages in PG&E's territory.

assist and provide services to the AFN community. PG&E will continue to engage and collaborate with local governments and CBOs that serve AFN groups to encourage awareness and enrollment of the MBL Program.

Please see Section 8.4 that provides more details on our AFN population support strategy before and during PSPS events, including programs that serve these customers, preparedness outreach approaches that are focused on vulnerable populations, and in-event customer communications that serve AFN populations. This is also detailed in PG&E's 2021 PSPS AFN Plan, filed February 1, 2021.

- **MBL Program Outreach:** MBL enrollments increased significantly in 2020 due to a new acquisition campaign, the launch of the online self-certification, the COVID-19 customer protections that suspended program removals and the ability for customers to provide authorization of eligibility from a qualified medical practitioner.¹⁵¹ PG&E will continue to conduct additional outreach to eligible customers to drive participation in the program, collect contact information in preparation for PSPS events, and share other relevant PG&E program and services information to streamline communications, as appropriate. This support includes:
 - Continuing our acquisition campaign using our propensity model to better target eligible customers;
 - Launching an online process that allows qualified medical practitioners to electronically certify that a customer is eligible for the program;
 - Providing financial support to CBOs for marketing, outreach, and other services to MBL customers;
 - Increasing our engagement with the healthcare industry to encourage more program enrollments;
 - Providing master meter tenant education with both owners and tenants; and

¹⁵¹ In light of the COVID-19 pandemic, shelter-in-place requirements and customers' limited access to medical practitioners, PG&E made significant revisions to our MBL Program requirements for the coming year. On May 1, 2020, PG&E filed in Advice Letter (AL) 4244-G/5816-E (and supplemented with two additional ALs, AL 4244-G-A/5816-E-A and AL 4244-G-B/5816-E-B), which included the following modifications to the MBL Program: (1) Allowing customers to self-certify their eligibility to enroll in the MBL Program without a signature from a qualified medical professional; (2) Suspending all customer removals from the MBL Program; and (3) No longer sending forms to customers that require them to re-certify for the MBL Program through a doctor or other eligible medical professional.

- Adding self-identified vulnerable, vulnerable senior, and disabled customers to our MBL outreach efforts.

In 2021, PG&E plans to implement improvements to the MBL enrollment and unenrollment processes such as:

1. Creating an electronic process for medical practitioners to certify and renew customer MBL eligibility,
 2. Sending e-mail reminders to customers to recertify eligibility, and
 3. Providing a welcome package that includes additional information about the MBL Program.
- **CBO-Engagement and Multi-Cultural Media Organizations:** PG&E partners with CBOs throughout the year in targeted communities to increase their capacity to serve AFN communities, such as medically sensitive customers, low-income, limited- English speaking and tribal customers. Our focus is on EP&R, disaster resiliency and expanded access to 211 referral services. We partner with multicultural media organizations to help translate communications and make them more accessible for people with disabilities. Through CBO collaborations, PG&E also seeks to provide additional, customer-specific support to AFN community member customers during a PSPS event, such as medical device charging at local Independent Living Centers, accessible transportation to PG&E CRCs, funds for hotel stays and short-term loans of a portable backup power batteries.

As of December 2020, PG&E has engaged with over 250 CBOs for information sharing and has secured contracts with 66 CBOs to provide additional resources to customers during PSPS events (e.g., portable battery provision, food replacement and translation services/event communications in indigenous languages). PG&E will continue outreach for, and management of, ongoing customer support programs such as the Disability Disaster Access and Resources Program, Portable Battery Program, MBL Program, Tribal Engagement, Food Bank and Meals on Wheels Programs, Well Pump Generator Rebate Program, Self-Generation Incentive Program, CRC Program, and 211 referral service. More details on these customer support programs can be found in Section 8.2.1 and Section 8.4.

- **Income-Qualified Customers and Disadvantaged Communities:** PG&E will engage stakeholders who represent, support and advocate for our income-qualified customers and disadvantaged communities. This includes engaging with Communities of Color, the CPUC's DAC-AG and the LIOB to provide relevant PSPS Program updates and gain input from

participants regarding approaches to support disadvantaged communities. PG&E will also leverage California Alternate Rates for Energy and Energy Savings Assistance contractor networks to help educate customers on wildfire and PSPS preparedness. PG&E will continue to seek other ways and opportunities to engage disadvantaged and underserved communities' stakeholders and customers.

- **AFN Populations Feedback and Research:** PG&E continually seeks formal and informal feedback to improve our CWSP and PSPS-related outreach and education. We do this through consultation with PG&E PWDAAAC, Statewide IOU AFN Council, DAC-AG, LIOB, local government advisory councils and working groups, Communities of Color Advisory Group, as well as research directly with customers. Please see Section 8.4, which describes how PG&E incorporated feedback from these groups into our programs and services.

Please see Section 8.4 for more details on our AFN population support strategy before and during PSPS events, the programs that serve these customers, the preparedness outreach approaches that are focused on vulnerable populations, and the in-event customer communications that serve AFN populations. This is also detailed in PG&E's 2021 PSPS AFN Plan, filed February 1, 2021, as part of Rulemaking (R.) 18-12-005 and in compliance with Decision (D.) 20-05-051.

3) *Region prioritization ("where" to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as "high-risk"):*

PG&E conducts outreach to customers and communities throughout the entire service territory. However, as mentioned previously, PG&E customizes agency outreach based upon agency need. The level of customization will vary according to the 2020 PSPS impact, with the most impacted agencies receiving the most customization in terms of localized topics covered and type of engagement. These agencies are often located in HFTD areas. Accordingly, in 2021, certain agencies may receive more frequent and more customized engagements according to their needs based upon their past experiences with PSPS and wildfires.

4) *Progress on initiative (amount spent, regions covered) and plans for next year:*

In an effort to explain the outreach approach fully, and in a streamlined manner, we have included the progress of each outreach initiative in the response to question number two above. For additional references, below are some of PG&E's key 2020 engagement and outreach highlights:

- Hosted over 200 meetings with agencies to share information related to PG&E's CWSP;
- Held over 35 listening sessions with cities, counties, tribes and customers (e.g., telecom providers) to better understand their 2019 PSPS experiences and identify key areas for improvements;
- Co-hosted 34 Wildfire Safety Working Sessions with County OESs;
- Hosted over 15 PSPS Portal trainings with public safety partners;
- Established the various advisory committees and hosted ongoing meetings with each committee;
- Established the five Regional Working Groups and hosted two meetings in each region (Q3 and Q4 meetings);
- Held three regional PSPS workshops and three full-scale PSPS exercises;
- Hosted 15 regional and three systemwide virtual open houses and one safety town hall with over 5,000 attendees to provide a localized update on wildfire safety work happening in respective communities and answer customer questions;
- Placed over 200 posts on PG&E social media channels;
- Sent 17 direct mail pieces to customers;
- Conducted 25 customer e-mail outreach campaigns; and
- Had 84 million average monthly advertising impressions in advance of and during the months with the highest likelihood of wildfire and PSPS events (July-November).

Additional information on progress related to stakeholder cooperation and community engagement can be located PG&E's 2020 Wildfire Mitigation Plan (WMP) quarterly reports. The May to July¹⁵² and Third Quarter,¹⁵³ Condition #28, filed with the CPUC can be found here:

- May and July 2020:
https://www.pge.com/pge_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/wildfire-mitigation-plan/PGE-WildfireMitigationPlans-QuarterlyReport.pdf

¹⁵² PG&E Quarterly Report on 2020 WMP For May to July 2020, submitted September 9, 2020, Condition PGE-28.

¹⁵³ PG&E Quarterly Report on 2020 WMP for Third Quarter 2020, submitted December 9, 2020, Condition PGE-28.

- Third Quarter:
https://www.pge.com/pge_global/common/pdfs/safety/emergency-preparedness/natural-disaster/wildfires/wildfire-mitigation-plan/PGE-WildfireMitigationPlans-QuarterlyReport-Q3-2020.pdf

In 2021, PG&E plans to continue our territory-wide awareness campaigns established and implemented in 2020, with a focus on customers and stakeholders who have been repeatedly impacted by PSPS events. Please see the response to question number two for PG&E's 2021 outreach and engagement objectives, a table of the planned engagement tactics, and a more in-depth description of each engagement tactic. We will drive execution of customer outreach and engagement, enhanced through ongoing customer and stakeholder feedback, to propel improved customer, community, and utility readiness and resiliency in the face of growing wildfire threat. COVID-19 considerations and other unforeseen factors may also have an impact on PG&E's outreach approach for 2021.

5) *Future improvements to initiative:*

As referenced in our response above to questions two and four, over the next several years, PG&E will continue to ground our stakeholder cooperation and community engagement initiatives in customer and stakeholder feedback that we receive throughout each year on an annual basis.

As new information, best practices, and lessons learned are available, PG&E will refine stakeholder outreach and community engagement approach as we have done over the course of two years.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

In response to Action PGE-25, Table PG&E-7.3.10-2 illustrates PG&E's long-term plan regarding community outreach, public awareness, and communication efforts.

TABLE PG&E-7.3.10-2: LONG-TERM PLAN FOR COMMUNITY OUTREACH, PUBLIC AWARENESS, AND COMMUNICATION EFFORTS

Year Range	Focus Areas
2023-2026	Continue to gather and incorporate feedback from community partners and first responders and refine outreach plans, as applicable. Develop new partnerships to build upon and complement current outreach.
2027-2030	Continue to coordinate with stakeholders (e.g., agencies, customers, CBOs) to improve outreach, education, and communication efforts based on data, customer insights and feedback. Maturation of processes to seamlessly share information with industry peers, communities, government and tribal leaderships, and others inside and outside California.

ACTION PGE-36 (Class A):

In its 2021 WMP update, PG&E shall describe how it vets and chooses PSPS Advisory Committee representatives.

Response:

PG&E’s approach to soliciting advice from key stakeholders on all aspects of the PSPS Program parallels the approach other IOUs have implemented and complies with all CPUC requirements. We have selected a representative group of state, tribal, county and city emergency Managers in both rural and urban areas across our service territory to participate in our monthly PSPS advisory committee. In selecting PSPS Advisory Committee participants, we strove for a diversity of geography, jurisdiction size and category (state, city, county, tribal), and further refined the list based on jurisdictions’ level of engagement with us around PSPS performance, prioritizing the most engaged jurisdictions. Once we selected candidates for participation, we extended invitations to join the PSPS Advisory Committee.

PG&E’s PSPS advisory committee is comprised of seven counties, one city, two tribal agencies, and representatives from League of Cities and California State Associate of Counties. We developed this participant list to ensure a two-way dialogue that provides committee members the opportunity to provide feedback and share lessons learned in an open and collaborative format, while also keeping meeting sizes manageable and productive. We vetted this advisory committee based upon their level of experience in emergency management, their responsibilities to serve communities during emergencies (often based on the scope of their current positions), and/or their deep knowledge of local issues and concerns facing cities, counties and tribes in the context of wildfire mitigation and PSPS.

We are revisiting the PSPS advisory committee structure for 2021. In fact, we may broaden the participant list to include additional key stakeholders, to ensure greater engagement of participants and to bring in fresh perspectives. We are open to

suggestions from the Commission and others on how we can continue to improve inclusivity while still encouraging participants to share feedback and lessons learned.

ACTION PGE-37 (Class A):

In its 2021 WMP update, PG&E shall explain how it intends to remedy the lack of communication with the three counties that declined to meet for the Wildfire Safety Working Sessions.

Response:

In 2020, PG&E reached out to counties within our electric service territory to partner in hosting Wildfire Safety Working Sessions for local agencies and organizations. Five counties (Amador, Glenn, Merced, San Luis Obispo, and Sutter) formally declined PG&E's offer to partner in hosting a Wildfire Safety Working Session.

PG&E's PSSs followed-up multiple times via phone and e-mail to offer to meet at a time that worked best for the county. Each county provided different reasons for declining our offer, including, but not limited to:

- Having limited time to meet due to the COVID-19 pandemic response efforts; especially in light of shelter-in-place response activities and guidelines;
- Having minimal PSPS or other wildfire mitigation activity impacts in their community; and
- Having a current understanding of the wildfire safety efforts in their community without further questions.

We provided county-specific Wildfire Safety Working Session meeting materials via e-mail to all five counties that declined a meeting, and our PSSs remain available to answer questions.

In general, PG&E provides multiple opportunities for counties, cities, and tribes to engage on wildfire mitigation issues throughout the year because agencies, specifically office of emergency services, are often balancing multiple issues simultaneously and may need to decline a meeting. In Spring of 2021, we will provide all counties in our service territory the opportunity to participate in a Wildfire Safety Working Session. We plan to take the same approach described above to counties that decline a session.

ACTION PGE-38 (Class A):

In its 2021 WMP update, PG&E shall provide a list of every PG&E contact and their counterparts and the cities, counties, tribal governments, and first responder entities and description of their interaction.

Response:

See 2021WMP_ClassA_Action-PGE-38_Atch01.xlsx for a list of the current PG&E contacts and their primary counterparts (name and department) in cities, counties,

tribal governments, including first responder entities. We have also included dispatch centers, where PG&E coordinates with the on-duty staff, rather than a single point-of-contact. Note that this information is as of January 1, 2021 and subject to change as we continuously develop new contacts and external counterparts change positions.

Table PG&E-7.3.10-3 provides a general description of the engagement activities conducted for each department type. This includes planning and preparedness outreach, outreach during a PSPS event and outreach after a PSPS event. Please note the below summary is not all-inclusive.

**TABLE PG&E-7.3.10-3: GENERAL DESCRIPTION OF ENGAGEMENT ACTIVITIES
BY DEPARTMENT TYPE**

Dept	PG&E Owner	Planning and Preparedness Outreach	During a PSPS Event	After a PSPS Event
OES	PSSs	Invited to Wildfire Safety Working Sessions; Provided opportunity to invite other local organizations Invited to PSPS workshops, exercises, and other trainings Provided direct access to their local PSS to answer questions, share information, discuss PSPS preparedness, etc. Note: A subset of OES leads are also included in Regional Working Groups and PSPS Advisory Committee	Receives automated calls, texts and e-mails at key milestones before, during and after an event Assigned an Agency Representative that can answer questions in real-time Invited to daily Systemwide Cooperators Call Access to PSPS Portal where maps, situational reports and other event information is located	Receives post-PSPS event de-energization report for feedback Invited to PSPS Listening Session; Provided opportunity to invite first responder entities, cities and other agencies/organizations Ongoing coordination with PSS
First Responder Entities	PSSs	Invited to emergency planning trainings Ongoing PSS coordination	Receives automated calls, texts and e-mails at key milestones before, during and after an event Invited to daily Systemwide Cooperators Call Access to PSPS Portal where maps, situational reports and other event information is located	Receives post-PSPS event de-energization report for feedback Ongoing coordination with PSS

**TABLE PG&E-7.3.10-3: GENERAL DESCRIPTION OF ENGAGEMENT ACTIVITIES
BY DEPARTMENT TYPE
(CONTINUED)**

Dept	PG&E Owner	Planning and Preparedness Outreach	During a PSPS Event	After a PSPS Event
City/County Gov't	LPA Rep	Invited to Wildfire Safety Working Session Ongoing coordination with LPA Note: A subset of city/county representatives are also included in Regional Working Groups and PSPS Advisory Committee	Receives automated calls, texts and e-mails at key milestones before, during and after an event Invited to daily Systemwide Cooperators Call Ongoing coordination with LPA Access to PSPS Portal where maps, situational reports and other event information is located	Receives post-PSPS event de-energization report for feedback Ongoing coordination with LPA
Tribal Gov't	Tribal Relations Rep	Invited to Wildfire Safety Working Sessions Invited to PSPS workshops, exercises, and other trainings Ongoing coordination with Tribal Rep Note: A subset of tribal representatives are also included in Regional Working Groups and PSPS Advisory Committee	Receives automated calls, texts and e-mails at key milestones before, during and after an event Assigned a Tribal Agency Rep that can answer questions in real-time Invited to daily Systemwide Cooperators Call Invited to twice daily Tribal Cooperators Calls Access to PSPS Portal where maps, situational reports and other event information is located	Receives post-PSPS event de-energization report for feedback Invited to PSPS Listening Session Ongoing coordination with Tribal Rep
Note: For most outreach activities, PG&E follows the Standardized Emergency Management System model, where the primary contact and coordination is with County/Tribal OES. The OES lead then cascades pertinent information to other first responder entities or cities within their jurisdiction.				

ACTION PGE-39 (Class A):

In its 2021 WMP update, PG&E shall explain how it intends to remedy any planned meetings that were not completed and ensure adequate communication is maintained when meetings are not held.

Response:

In 2020, over 50 scheduled engagement activities were cancelled or postponed, primarily due to COVID-19 considerations. Where applicable, PG&E representatives transitioned the activity to a virtual engagement, such as a WebEx meeting or addressing the engagement activity over e-mail/phone call. This effort included, but was not limited to, one-on-one meetings with government officials as well as Board of Supervisor meetings. However, some activities, such as the 2020 Earth & Arbor Day event, were cancelled for the year and will resume once it is deemed safe.

In many cases, agencies requested that engagements be cancelled or postponed, such as neighborhood meetings or local conferences. In instances where PG&E needed to cancel or postpone an engagement, a PG&E representative coordinated with the affected agency to confirm they agreed to the cancelation or postponement and to mutually determine next steps. Possible next steps included, but were not limited to, the following:

- Rescheduling the engagement to a later date;
- Canceling the engagement but following up by providing relevant materials and information; or
- Canceling the engagement entirely.

Please see the response to Action PGE-37 for a list of potential reasons why agencies declined meetings in 2020. We will continue to reach out to agencies to reschedule meetings that have been postponed to determine the appropriate next steps.

PG&E's LPA Representatives, PSSs, and Tribal Relations Representatives are responsible for maintaining relationships with local and tribal agencies. These dedicated representatives have an ongoing, two-way dialogue with each of their counterparts and agencies and can contact their appropriate representative 24/7 to address unique, local issues in real-time.

In addition to the ongoing coordination, PG&E has an extensive, proactive outreach approach that provides multiple forums for agencies to gather information and provide feedback. For more information, see the following sections:

- Section 7.3.9.2 which includes emergency planning and preparedness outreach;
- Section 7.3.10.1 which includes PG&E's CWSP outreach; and
- Section 8.2.4 which includes PG&E's outreach during PSPS events.

7.3.10.2 Cooperation and Best Practice Sharing With Agencies Outside CA

WSD Initiative Definition: *Strategy and actions taken to engage with agencies outside of California to exchange best practices both for utility wildfire mitigation and for stakeholder cooperation to mitigate and respond to wildfires.*

1) Risk to be mitigated / problem to be addressed:

Preventing wildfires is a challenge that goes beyond California's borders. With continuous operational improvements being a part of PG&E's mission statement, we actively participate in various industry groups to benchmark and identify potential alternative solutions from industry leaders around the world.

2) Initiative selection ("why" engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

As mentioned above, continuous operational improvements are part of PG&E's core mission. We engage with parties both inside and outside the state of California, as also discussed in Section 7.3.10.3, to share practices, tools and approaches on numerous topics, including wildfire risk reduction. This includes but is not limited to benchmarking with:

- Utilities in Australia on their experiences from that country's wildfire / bushfire challenges. For example, the Rapid Earth Fault Current Limiter technology that PG&E installed in 2020 and is actively testing to assess wildfire risk mitigation benefits (see Section 7.3.3.17.4) was developed in Australia.
- Entities beyond the utility industry to identify synergies and lessons learned for addressing wildfire risks. As noted in Section 7.3.10.4, PG&E has been engaged with federal landowners on how to partner on mitigating wildfire risks on those lands. PG&E is also partnering with educational institutions and firms from across the country to explore technologies or tools (like risk models from the nuclear industry) that may contribute to reducing wildfire risk. Examples include the Distribution Fault Anticipation Technology (Section 7.3.2.2.3) and Fault Signature (Section 7.3.2.2.6) technology.
- Utilities in the United States through industry associations like the Edison Electric Institute to facilitate a series of engagements regarding "Wildfire Technology" exploration, sharing, and discussion. The California IOUs also meet weekly to discuss topics such as outreach and engagement strategies, CPUC requirements, technology solutions and operational plans.

PG&E is also a founding member of the Utility Executive Steering Group for the International Wildfire Risk Mitigation Consortium (IWRMC). The consortium is industry-sponsored and provides a forum for members of the global utility

community to share wildfire risk mitigation insights and strategies. The group hosts regular technical working group meetings to discuss:

- Asset Management;
- Risk Management;
- Operational Practice; and
- Vegetation Management.

Through these working groups, PG&E continues to benchmark our operational and wildfire-related practices and identify areas for further review and refinement.

3) *Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):*

The benefits of benchmarking are applicable across PG&E’s service territory. Regional prioritization is not applicable to this initiative.

4) *Progress on initiative (amount spent, regions covered) and plans for next year:*

As noted above, PG&E’s engagements with numerous entities continued in 2020 and grew with the founding of the IWRMC in 2020. The efforts mentioned above are ongoing with adjustments and improvements made as gaps or opportunities are identified.

5) *Future improvements to initiative:*

PG&E will continue to engage with partners from inside and outside California to share experiences and identify tools, technologies or other best practices to reduce wildfire risk. As one key aspect, PG&E will continue building the IWRMC by supporting the inclusion of additional industry players in an effort to identify additional wildfire mitigation solutions. In light of some of the experiences from the 2020 wildfire season, PG&E is also seeing increased interest and engagement from utilities in the Pacific Northwest on wildfire knowledge and best practices.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

PG&E plans to continue to grow the number of parties we engage with in cooperation and coordination efforts over the long-term through supporting additional parties joining industry forums (like IWRMC, as noted above) and scanning for and reaching out to other entities or groups with potentially helpful insights. Additionally, PG&E

plans to better standardize and operationalize our process for identifying, reviewing and implementing best practices or other ideas that can provide wildfire risk mitigation benefits.

7.3.10.3 Cooperation With Suppression Agencies

WSD Initiative Definition: *Coordination with CAL FIRE, federal fire authorities, county fire authorities, and local fire authorities to support planning and operations, including support of aerial and ground firefighting in real-time, including information-sharing, dispatch of resources, and dedicated staff.*

1) Risk to be mitigated / problem to be addressed:

Providing ongoing coordination with CAL FIRE, federal fire authorities, county fire authorities and local fire authorities to support planning and operations serves to eliminate gaps between PG&E and these agencies. This helps to promote more effective safety alignment and emergency response operations. It also improves future collaboration with these agencies.

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

To minimize the risks noted above, PG&E has a team of 25 PSSs (and three Supervisors) that are dedicated to maintaining established relationships with agency partners and supporting emergency planning activities and information sharing during emergency events. Every member of the PSS team has an extensive public safety background, including previous law, fire or emergency management experience.

During active emergency events, PSSs serve as PG&E’s Agency Representatives and are responsible for coordinating and integrating PG&E’s response with Agencies Having Jurisdiction (AHJ). The Agency Representatives assist with facilitating communication between relevant AHJs, PG&E Incident Management Teams, PG&E first responders, PG&E Operational Emergency Centers, Emergency Operations Center staff, and the Wildfire Safety Operations Center personnel, as well as supporting other internal Lines of Business. The real-time intelligence sharing includes, but is not limited to, PG&E’s tactical plans and the deployment of necessary aerial and ground resources to support fire mitigation and asset protection activities.

These efforts mitigate risks associated with communication gaps, as well as the potential for incongruent mission response activities between PG&E and local emergency responders. Not only is the coordination critical for emergency response and event/incident coordination, it is also important for advanced planning and post-event (after action) support.

3) Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):

The PSS team is organized into North, Central and Southern response areas to ensure timely and effective response presence across the PG&E service territory. Each area has an assigned Supervisor and each respective PSS is assigned to one or more counties to support both regulatory compliance needs and

emergency response engagement. Within the respective counties, PSS contacts have been pre-identified and PSS members are responsible for maintaining coordination and engagement with their assigned agency contacts on an ongoing basis. While there is no specific prioritization of external engagement, these assignments allow for simultaneous outreach to local, state and federal agencies across PG&E's service territory.

4) *Progress on initiative (amount spent, regions covered) and plans for next year:*

In 2020, the PSS team underwent a consolidation, combining PSS members from Gas Operations and Electric Operations. PG&E also hired 11 additional members, expanding the team to 25 PSSs and three Supervisors.

Throughout the year, the PSS team supported over 600 external engagement activities including, but not limited to attending and/or hosting:

- PSPS listening sessions;
- Wildfire Safety Working Sessions;
- Regional Working Group meetings;
- Gas/electric safety workshops;
- Professional group meetings;
- Wildfire safety trainings; and
- Gas safety outreach with external public safety partners.

Given the numerous wildfire response efforts in 2020, the PSS team worked closely with external fire safety partners, which improved overall operational efficiencies and communication. For 2021, the PSS team is positioned to provide similar support and engagement.

5) *Future improvements to initiative:*

There are no additional improvements identified for this initiative at this time. The PSS team will continue to support engagement activities, along with cross-training and information sharing opportunities, for even greater collaboration. As the program develops, the PSS team will adjust their outreach and coordination approach.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

As stated in the section above, there are no further improvements planned at this time.

7.3.10.4 Forest Service and Fuel Reduction Cooperation and Joint Roadmap

WSD Initiative Definition: *Strategy and actions taken to engage with local, state, and federal entities responsible for or participating in forest management and fuel reduction activities; and design utility cooperation strategy and joint stakeholder roadmap (plan for coordinating stakeholder efforts for forest management and fuel reduction activities).*

1) Risk to be mitigated / problem to be addressed:

As a result of severe drought periods and the bark beetle infestation over the past decade in California, the United States Forest Service (USFS) land has more dead and dying trees than ever before. These factors have had a direct impact on forest lands and create additional fuel which in turn increases the likelihood of catastrophic wildfires, placing PG&E facilities and the surrounding communities at risk.

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

The Fuels Reduction Partnership Program was initiated due to the current state of the national forest land within PG&E service territory. As mentioned above, a decade of accumulated fuel loads, bark beetle infestation and the California drought, has created an increased likelihood of wildfires, creating risk for PG&E’s facilities and the surrounding communities.

PG&E has had long-standing relationships with the USFS and other federal landowners upon whose land PG&E assets are located. PG&E coordinates frequently with these agencies regarding proposed work on their property. In some cases, PG&E assets on government lands pre-date the existence of the federal mandate establishing the forest, park or entity that now manages the land.

PG&E’s relationships with federal entities have evolved over the last decade and become more cohesive in recent years, as the risk of wildfires in California has grown. PG&E and the USFS have recognized the need for faster action to support wildfire risk mitigation. Since 2013, the USFS and PG&E have worked together under a partnership Memorandum of Understanding (MOU) 13-MU-11020000-014 to proactively improve the ecological function, health, and resiliency of National Forests.

As part of this MOU, PG&E developed the Fuels Reduction Partnership Program which provides funding to the USFS to address fuel reduction for all 11 forests within PG&E’s service territory. This program focuses on areas where PG&E does not have land rights or authorization to complete these fuel reduction activities. The program’s main objectives include:

- Identifying and funding projects that provide sustainable and lasting ecological benefits to the forest; and

- Accelerating the time of completion of prescribed burns, bio-mass removal and other fuel treatment methods by providing resources to the USFS; For example,
 - The USFS was able to acquire the necessary machinery to efficiently and safely complete fuels reduction project work in 2020. This machinery will also support additional fuels reduction work over multiple years on acreages above and beyond the 2020 work areas.
 - Many “implementation ready” projects are available for field crews to complete fuel reduction work. This program allows USFS to hire contractors and provide staff time to get this work completed, which would not otherwise be completed due to lack of funding.

In some cases, the USFS uses this funding to partner with local and state governments to leverage their funding in order to complete larger scale fuel reduction projects.

While PG&E staff members are in near-daily, operational contact and communication with USFS staff, PG&E leadership also meets with USFS leadership on a biannual basis to explore opportunities where both parties can collaborate further to reduce wildfire risk within California. Topics that have been explored through these meetings are clarifying the process for the disposition of felled trees (e.g., timber sale, lop and scatter, chipping), funding USFS positions to assist with the review of PG&E work requests and the Integrated Vegetation Management approach that would allow the use of USFS-approved herbicides to control utility-incompatible vegetation while seeking to encourage a low-growing stable plant community around powerlines.

PG&E also has activities underway with other federal and state landowners in addition to the USFS. Some highlights include:

- **California State Parks:** PG&E has finalized a process agreement that allows for streamlining utility work throughout California State Parks across the entire service territory. This agreement allows for non-invasive and emergency work to proceed without delay and minor wildfire fuels reduction work to proceed after a two-week notification process;
- **Bureau of Land Management (BLM):** Building on ongoing efforts to reduce the threat of wildfires through active management, the BLM California State Office worked with SCE and PG&E to issue a new policy to limit fire risk from power lines crossing BLM-managed public lands. The new policy was enacted May 20, 2019 and extended through 2025, and it allows PG&E to facilitate and expedite Operations and Maintenance (O&M) activities necessary to reduce the risk of wildfire by conducting the activities without prior authorization. Additionally, PG&E continues to work with the BLM Bakersfield Field Office on a Programmatic Right-of-Way (ROW) renewal process and

O&M Plan which may be used as a template to streamline process with other field offices in the future; and

- **National Park Service (NPS):** In 2019, PG&E worked with the NPS Pacific West Region to put establish eight park-specific 1-Year Special Use Permits for 2020 which will allow PG&E to expedite critical, routine O&M activity within NPS- managed land. The permits require park approval within 15 days for most routine utility O&M activity and will also authorize drone usage within parks for utility purposes like asset inspections.

3) *Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):*

Activities supported by the Fuels Reduction Partnership Program focus on work outside of PG&E ROWs, which are areas where PG&E does not have rights to complete fuel reduction activities. Typically, the USFS prioritizes the project areas based on seasonal access, equipment available, and fire risk to nearby communities. In addition, projects funded by the program are assessed, taking into consideration both proximity and risk to PG&E assets.

4) *Progress on initiative (amount spent, regions covered) and plans for next year:*

2020 Progress

The Fuels Reduction Partnership Program provided \$5 million in funds to the USFS’ 11 forests in Region 5. Funds were granted to the following 6 USFS areas for fuel reduction implementation work projects covering approximately 5,000 acres of USFS land: Los Padres National Forest, Shasta-Trinity National Forest, Stanislaus National Forest, Plumas National Forest, Sequoia National Forest, and Six Rivers National Forest.

While PG&E does not dictate the timing of projects, during the last joint meeting, the USFS indicated they are on track to complete 2020 projects. Please see the response in question number two above for additional 2020 progress updates.

2021 Plan

The Fuels Reduction Project Program is currently being examined to include applications for funding from both the USFS and the NPS. Funding in the amount of \$5 million would potentially be allocated between both agencies and create a utility designed cooperation effort for forest management on both USFS and NPS lands.

5) *Future improvements to initiative:*

PG&E is the first IOU in California to partner with a federal agency on a program of this type. The Company is always looking at ways to improve and make the Fuels Reduction Partnership Program more effective. As we gain experience

partnering with the USFS, we will continue to improve and solve timing issues to speed up the process from time of application to project completion. For example, we have already streamlined the collection agreement process, cutting several months from previous review process by USFS and PG&E.

Future coordination of the program will also identify and focus on areas of improvement such as funding adjustments, use of new technologies, and new process developments for fuels management.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

This is a pilot program and while we have seen successes in the 2019 partnership awards, PG&E plans to develop an internal committee to look at the overall program in the 4th quarter of 2021 and decide if the program should continue into future years.

7.3.10.5 Project Management Office (PMO) and General Wildfire Support

WSD Initiative Definition: *N/A This is not a Wildfire Safety Division-defined initiative. This is an initiative that PG&E is adding to the 2021 WMP to describe the PMO office and general wildfire support.*

1) Risk to be mitigated / problem to be addressed:

Wildfire safety work is complex and multi-faceted. It requires a wide range of internal subject matter experts—both operational, supporting and focused on communications—to assist with developing comprehensive solutions and supporting our customers, communities, and other partners. The CWSP PMO aims to:

- Coordinate with the various operational teams to develop cohesive operational plans that maximize wildfire risk reduction and minimize community and customer impacts;
- Monitor, govern and support wildfire risk mitigation workstreams in the delivery of activities to meet goals, align with plans, and aggressively reduce wildfire risk;
- Coordinate with various outreach teams to have a coordinated communications plan for engaging with customers, agencies, tribes, critical facilities, and other key stakeholders;
- Have accurate and timely data for internal tracking, governance and management and that can be shared with external stakeholders;
- Lead and facilitate regulatory reporting and filings on Wildfire programs, including the WMP process; and
- Provide a feedback loop from external stakeholders to the operational teams.

Given the increase in the volume of work in our Wildfire Mitigation Programs, regulatory reporting requirements and focus on execution of these mitigations, PG&E has seen growth in the management, oversight, and support needed for wildfire programs. This management support spans across various functions in Electric Operations, providing leadership and oversight to the various wildfire mitigations the Company is undertaking.

2) Initiative selection (“why” engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives:

Given the breadth of skillsets needed to complete PG&E’s CWSP, the PMO acts as a central hub to support the critical delivery of wildfire risk mitigation activities through:

- Providing governance to ensure the program goals are met;

- Ensuring that PG&E is meeting regulatory requirements and responding to stakeholder needs;
- Increasing communications and transparency cross functionally;
- Providing a feedback loop from external stakeholders to the operational teams;
- Encouraging innovative problem solving; and
- Providing a forum for leadership and cross-functional decision making.

The CWSP PMO is comprised of leaders from various PG&E departments including, but is not limited to: Electric Operations, Government Affairs, Regulatory Relations, Customer Care, Marketing and Communications, Information Technology, Finance and Law department.

3) *Region prioritization (“where” to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as “high-risk”):*

The activities of the CWSP PMO and related support functions are applicable across PG&E’s service territory, particularly focused on HFTD areas. Regional prioritization is not applicable for this initiative.

4) *Progress on initiative (amount spent, regions covered) and plans for next year:*

The CWSP PMO Team has grown in 2020 to include seven dedicated PG&E staff plus contractor support that cover program management, work tracking, regulatory deliverables (including the development of the WMP itself), wildfire workstream coordination, communications planning and issue resolution. The cross-functional PMO partner team from across PG&E continues to meet at least weekly and will operate with a similar approach in 2021.

In part due to the support of the CWSP PMO, PG&E continues to meet, and in some cases exceed, our operational goals and has improved our outreach to communities and customers. For example, in 2020, the CWSP engagement PMO has improved turnaround time to respond to agency inquiries, while also providing more detailed data and information. For more information on PG&E’s engagement efforts and status, which are coordinated by the PMO, please reference Section 7.3.10.1, Section 7.3.9.2, and Section 8.2.4. The CWSP PMO will change as the program evolves and as new best practices are identified.

CWSP PMO and support functions experienced growth in 2020 to ensure the right level of leadership and support was available to enable the successful execution of our wildfire mitigations. We will continue to see growth in 2021 as we continue to focus on delivering wildfire risk mitigation activities and the increasing volume of regulatory reporting requirements.

5) *Future improvements to initiative:*

There are no material future improvements planned for this initiative at this time. PG&E will continually improve and the CWSP PMO will provide leadership, governance and coordination as PG&E's wildfire activities change as new approaches or best practices are identified. The PMO also helps facilitate wildfire benchmarking and collaborative activities which can drive improvement opportunities across the wildfire program.

ACTION PGE-25 (Class B)

1) Integrate discussion on long-term planning within the respective section of each individual initiative.

Response:

The PMO functions in support of wildfire mitigation activities and is anticipated to remain similar to the current model over the long-term.

PACIFIC GAS & ELECTRIC COMPANY

SECTION 8

**PUBLIC SAFETY POWER SHUTOFF (PSPS),
INCLUDING DIRECTIONAL VISION FOR PSPS**

8.1 Directional Vision for Necessity of Public Safety Power Shutoff (PSPS)

Describe any lessons learned from PSPS since the utility's last Wildfire Mitigation Plan (WMP) submission and expectations for how the utility's PSPS program will evolve over the coming 1, 3, and 10 years. Be specific by including a description of the utility's protocols and thresholds for PSPS implementation. Include a quantitative description of how the circuits and numbers of customers that the utility expects will be impacted by any necessary PSPS events is expected to evolve over time. The description of protocols must be sufficiently detailed and clear to enable a skilled operator to follow the same protocols.

When calculating anticipated PSPS, consider recent weather extremes, including peak weather conditions over the past 10 years as well as recent weather years and how the utility's current PSPS protocols would be applied to those years.

Pacific Gas and Electric Company's (PG&E or the Company) most important responsibility is protecting the health, welfare, and safety of our customers and the communities we serve. When severe weather or other circumstances threaten the ability to provide electricity safely, PG&E must take the appropriate steps necessary to protect the public. PG&E's PSPS program proactively de-energizes a portion of the Company's electric system, in the interest of public safety, as the wildfire prevention measure of last resort when there is a potential for a catastrophic wildfire should the lines be left energized. PG&E understands that de-energizing customers causes significant disruption and is actively working to reduce the impact on our customers.

Due to severe weather, in 2020, PG&E implemented multiple PSPS events, including some of the largest events in California history. While our execution of PSPS events in 2020 was significantly improved in terms of making each event smaller, shorter and smarter for our customers, PG&E acknowledges there is room for further improvement in our implementation of PSPS. PG&E is committed to learning from each event and advancing our PSPS tools and practices for the future. PG&E is committed to executing our PSPS program in a manner that exceeds Resolution ESRB-8, Decision (D.) 19-05-042 and other California Public Utilities Commission (CPUC or Commission) directives¹⁵⁴ in addition to minimizing the effects of these events for our customers.

In 2020, PG&E executed six PSPS events. These events took place during a historic fire season in California where over four million acres burned and five of the six largest fires in California history occurred in PG&E's service territory.¹⁵⁵ The six PSPS events ranged widely in scale, from affecting approximately 600 to 345,000 customers and ranging in average total duration from 19 to 37 hours.

Importantly, despite 2020's record-breaking weather and fire season, PG&E successfully executed on our goals of making PSPS events smaller, shorter, and

¹⁵⁴ See Resolution Extending De-Energization Reasonableness Notification, Mitigation and Reporting Requirements in D.12-04-024 to all Electric investor-owned utilities (IOU).

¹⁵⁵ <https://www.fire.ca.gov/incidents/2020/>.

smarter. PG&E's efforts to make events "smaller" refers to reducing the number of customers impacted by each event given the event's weather footprint. The intent of "shorter" is to reduce the power restoration time after the weather "All Clear". The "smarter" objective is to reduce the impact to customers and communities that are de-energized, along with executing PSPS with excellence, keeping in mind lessons learned.

At the time of this filing, there is significant outstanding uncertainty about the scope of PSPS in 2021 as a result of recent proposed conditions under consideration as it pertains to how we implement the PSPS program. This uncertainty impacts PG&E's ability to set specific targets around reducing the size and length of PSPS events in 2021. Notwithstanding this uncertainty and potential scope increase, PG&E's intent—as outlined throughout the PSPS portions of this 2021 WMP—is to reduce the impact of PSPS on our customers and communities wherever possible consistent with overall public safety. Throughout this document there are references to ongoing initiatives to make PSPS smaller and shorter and that work and intent will continue unabated. However, the ability to achieve overall reductions in PSPS size and duration across the 2021 fire season is uncertain at this time for the reasons outlined above, and should not be confused with the intent of or language describing these various initiatives to lessen the impact on customers by striving to make events "smaller" or "shorter."

In this section, PG&E describes our progress in reducing overall PSPS impact to customers and communities in 2020 and identifies actions and areas for improvement in 2021. PG&E also describes the specific short-, medium-, and long-term actions we will take to reduce the impact of, and need for, de-energization events to mitigate wildfire risk as directed by CPUC Decision D.20-05-051.¹⁵⁶ Additionally, this section also addresses Action PGE-16 (Class A).

Smaller PSPS Events

Smaller PSPS Events in 2020

In 2020, PG&E used improved scoping techniques and mitigation strategies to significantly reduce the size of our PSPS events. We reduced the number of customers impacted by each PSPS event by approximately 55 percent on average in 2020, when compared to the number of customers that would have been impacted by the same weather conditions under our 2019 PSPS program and infrastructure. For instance, October 25th was PG&E's largest PSPS event in 2020. It had a weather footprint similar to the large weather events that drove the use of PSPS in October 2019. However, our 2020 PSPS improvements resulted in PG&E de-energizing approximately 47 percent less or more than 300,000 fewer customers on during the October 25, 2020 event than we would have de-energized for the same weather event in 2019.

¹⁵⁶ This information will also be made available and easily accessible on PG&E's public website at www.pge.com/wildfiremitigationplan.

Key PSPS impact mitigation initiatives that PG&E deployed to achieve these results included the following:

- **Transmission Line Sectionalizing:** PG&E installed 54 Supervisory Control and Data Acquisition (SCADA) switches on transmission lines in 2020, 36 before September 1st, to minimize the number of customers impacted by PSPS outages. More information is provided in Section 7.3.3.8.2.
- **Transmission Scoping Tools:** PG&E refined our transmission scoping tools and completed transmission line repairs and Vegetation Management (VM) in 2020. The overall impact of this activity was that approximately 80 percent of transmission lines in the High Fire-Threat District (HFTD) had a reduced likelihood of coming into scope for a PSPS event. More information can be found in the following sections: Section 4.5.1(f) (Transmission Operability Assessment), Section 7.3.3.17.2 (Transmission Hardening), and Section 7.3.5.3 (Right of Way Expansion within “Detailed Inspections of Vegetation Around Transmission Electric Lines and Equipment” section).
- **Meteorology Models and Scoping Guidance Updates:** Improved granularity in meteorological guidance tools enabled PG&E to predict severe fire weather risks on more focused (smaller) areas and to identify those areas which exceeded risk guidance with better geographic precision. More information on these improvements to the meteorological models and scoping guidance is provided in Section 7.3.2.1. The discussion of PG&E’s protocols and thresholds for PSPS implementation can be found in Section 8.2.2.
- **Distribution Line Sectionalizing:** PG&E installed 603 automated distribution sectionalizing devices, which enabled customers outside of the weather footprint of an event to remain energized. More information is provided in Section 7.3.3.8.1.
- **Temporary Substation Microgrids:** PG&E prepared 62 substations to receive temporary generation, with 18 substations having generation actively interconnected and tested on site in preparation for PSPS events. More information is provided in Section 7.3.3.11.1.
- **Islanding:** For the 2020 fire season, PG&E reconfigured the Humboldt Bay Generating Station and the Caribou Island plant to be able to operate in island mode, separated from the larger grid. Island mode was used during multiple PSPS events to maintain service to customers when the transmission lines normally supplying them were de-energized. PG&E kept as many as 74,800 customers energized in a single PSPS event through these transmission islands. More information is provided in Section 7.3.3.17.2.
- **Temporary Distribution Microgrids:** PG&E prepared six distribution microgrids to support communities by energizing “main street corridors” with shared services and critical facilities when the distribution line serving those areas was de-energized. In 2020, PG&E operated four distribution microgrids, thereby energizing over 2,000 unique service points (customers) for as many as four

PSPS events per service point. More information is provided in Section 7.3.3.11.1 (Generation for PSPS Mitigation).

Efforts to Make PSPS Smaller in 2021

Even as we continue to execute PSPS events into January 2021 as part of this extraordinary “2020” fire season, PG&E is in the process of planning for how to continue to reduce the size of PSPS events for the 2021 fire season. PG&E’s strategy for 2021 is to target our mitigations to the locations that are most likely to be impacted by PSPS events while also focusing towards the suite of activities that will enable continued PSPS scope reduction in the long-term.

The foundational data set that PG&E is using to identify locations most likely to be impacted by PSPS is an analysis of 10 years of historical weather events. This “historical lookback” evaluates actual weather events and models the associated PSPS events that would have occurred, including both transmission and distribution system impacts. This analysis identifies approximately 30 weather events across the past 10 years that would have triggered a PSPS event under the 2020 PSPS decision-making protocols.

Although a valuable planning tool, the historical lookback is based on experienced climatology and is not a forecast of the locations for future PSPS events. It is not possible to forecast PSPS events more than a week ahead of time, but this lookback provides the best data set to use for planning purposes. Our planning therefore assumes that these locations have a higher likelihood of again experiencing weather conditions that may trigger a PSPS event in the future. However, weather is highly variable year to year, which drives variability in not only the location of events, but also the number of events and their size and duration.

The historical lookback is a computationally-intensive analysis that we completed in the Fall of 2020. It does not include updates to the PSPS scoping models anticipated to be incorporated before the 2021 fire season, based on work our PG&E meteorologists and data scientists will be performing over the coming months. These include re-calibrating the Fire Potential Index (FPI) Model and incorporating Technosylva wildfire consequence data if and where it provides value for PSPS. A more granular climatology lookback and additional studies are still underway and are not expected to be complete until the end of summer. While our data and analysis are constantly improving and evolving, waiting for an improved data set was not feasible given the lead times required for work execution on most of our PSPS impact reduction initiatives.

PG&E is using the historical lookback in conjunction with actual PSPS events to project locations most likely to be impacted by PSPS in 2021. PG&E is prioritizing circuits that show up most frequently in the lookback and in actual events, while also considering the number of addressable customers that a mitigation at that location might serve. PG&E is currently still in the process of identifying and vetting locations for mitigations as we seek to deploy mitigations that maximize scope reduction. While the likelihood of an area being impacted and addressable customer counts are the key criteria, each PSPS mitigation program also must consider its technology-specific site selection criteria and work execution constraints. Most mitigation initiatives also

support other objectives besides PSPS scope reduction and must also balance PSPS mitigation with those objectives.

Based on the lookback and 2020 actuals, approximately 100 transmission lines in the HFTD have a higher likelihood than other transmission lines in the HFTD of being within the weather scope of a PSPS event. Based on an initial review of these lines, PG&E has identified at least 50 transmission lines where transmission VM, repairs, or switches could significantly reduce the likelihood of a line being in scope for a PSPS event or enable customers to remain energized if a line must be de-energized. PG&E points out that under the most extreme weather conditions it is not possible to entirely rule out the possibility of a transmission line being de-energized during a PSPS event, even if mitigation activities like VM, repairs, or switches have been performed. Lines where work is performed could still be included in PSPS under stronger weather conditions or “Black Swan” (worst case scenario) conditions. Furthermore, whether a line with mitigation is included in PSPS scope depends on exactly where the event-specific weather falls relative to the location of the mitigation.

For locations in the lookback and PSPS actuals where transmission mitigation is not possible or is deemed to be insufficient as a stand-alone PSPS mitigation, temporary generation at substations may be a good PSPS mitigation alternative. Substation temporary generation may also be a good fit for substations that otherwise would be de-energized because they are indirectly affected due to the need balance the overall Electric Transmission grid. For these indirectly impacted substations, transmission mitigations such as VM would not address the underlying issue.

PG&E is expecting to prepare at least eight substations to receive temporary generation in 2021. All of these substations served by temporary generation have historically served some customers who are safe-to-energize, which refers to customers that are outside of the weather footprint or served by lines hardened such that they meet the distribution descoping criteria (see Action PGE-16 (Class A) below). The significant work completed in 2020 on transmission lines, improvements in PSPS modeling and tools, and the additional work expected to be completed in 2021 has reduced the number of substations for which PG&E expects temporary generation to be needed in 2021 relative to 2020. For 2021, PG&E also plans to pursue at least one clean substation temporary generation pilot that will use diesel-alternative technologies. We are also exploring potential behind-the-meter and demand response opportunities at substations that are likely to need temporary generation.

At the distribution level, PG&E will focus in several areas in 2021 to reduce the scope of PSPS. PG&E’s key mitigations at this level are sectionalizing devices, temporary distribution microgrids, and distribution hardening.

In 2021, PG&E plans to install at least 250 more distribution sectionalizing devices. These devices enable PG&E to segment distribution circuits near the HFTD area boundary to reduce the scope of PSPS events. PG&E plans to focus efforts primarily on counties and specific areas that are repeatedly impacted by PSPS and show up repeatedly in the 10-year historical lookback. This includes but is not limited to Butte, Yuba, Sonoma, Napa, Nevada, and El Dorado counties.

PG&E is planning to develop at least five additional temporary distribution microgrids with pre-installed interconnection hubs (PIHs) in 2021 to energize “main street corridors” with shared services (i.e., services involving food, fuel, healthcare and shelter) and critical facilities during PSPS events. These distribution microgrids will be located on circuits most likely to be impacted by PSPS events. One example of a planned 2021 temporary distribution microgrid location is Magalia in Butte County, which, when completed, will energize approximately 40 customers, including a medical clinic, water district pumps, sheriff station, gas station, and grocery store. This temporary distribution microgrid in Magalia is on a circuit that was impacted by PSPS 5 times in 2020 and is also frequently impacted in the historical lookback.

PG&E plans to exclude circuits from PSPS that have been undergrounded as part of PG&E’s broader wildfire distribution hardening program. Three of PG&E’s underground distribution grid hardening projects with direct PSPS benefits are expected to be completed in 2021 or early 2022, though the exact timing is uncertain. The Frogtown 1702 project in Calaveras County consists of 1.09 miles and could reduce the numbers of customers exposed to PSPS on this circuit from approximately 4,000 to approximately 2,100. The Rincon 1101/1103 project in Santa Rosa (Sonoma County) consists of 1.48 underground miles and could reduce the numbers of customers exposed to PSPS on this circuit from approximately 6,300 to approximately 2,700. The Rincon 1102/1104 project consists of 1.78 miles and could reduce the numbers of customers exposed to PSPS on this circuit from approximately 8,600 to approximately 1,150. Note that the exact customers benefits associated with any single PSPS event for each of these projects depends on the precise boundaries of the PSPS weather polygon. Furthermore, if the upstream electricity source serving these circuits is de-energized, these PSPS benefits may not be realized at all.

In addition to executing on the mitigation programs described above, PG&E is also focusing efforts in 2021 in key programs that will reduce PSPS event size over the next few years and the long-term. These include the Butte Rebuild project and incorporation of distribution descope criteria into the PSPS tools.

PG&E will provide PSPS mitigation to the town of Paradise and some surrounding areas that were destroyed in the 2018 Camp Fire as part of the Butte Rebuild project. As this project to rebuild utility infrastructure is executed over the next several years, undergrounded areas of Paradise can remain energized during PSPS events. Scoping for the Butte Rebuild is prioritizing PSPS mitigation while working with the community to align with their rebuild plans. More information is provided in Section 7.3.3.17.6.

Another key effort in 2021 will be incorporating modified PSPS criteria for distribution facilities that have been overhead hardened into the PSPS scoping tools. The goal of this effort is to enable hardened lines that meet certain criteria to remain energized during PSPS events. In 2020, PG&E developed distribution PSPS descope criteria to identify candidate distribution circuit segments for de-scoping from PSPS events. We are currently in the process of seeking third party validation for the criteria that has been developed. In preparation for the 2021 PSPS season, the criteria are being evaluated through application to circuit segments for which hardening projects have been completed. More information is provided in Action PGE-16 (Class A) below.

Despite the activities described above, PG&E has not set a “smaller” target for 2021 because it is evaluating conditions not currently included in the scoping of PSPS events that may drive an expansion in the scope of 2021 PSPS. As the underlying purpose of PSPS is to prevent catastrophic wildfire ignitions during severe weather conditions, PG&E is reviewing what conditions warrant calling a PSPS to prevent catastrophic wildfires, in alignment with external feedback on this issue. Specifically, we are assessing how to incorporate the presence of known, high-risk vegetation conditions adjacent to powerlines into PSPS decision making. This assessment may result in PG&E executing PSPS in 2021 for powerlines where high priority vegetation tags¹⁵⁷ have been identified, including on lines that may not have met the 2020 PSPS event criteria. PG&E is still working to determine what changes to the PSPS decision making criteria may be needed to account for this risk. Following that activity over the next few months, PG&E will need to analyze the likely impact of that updated criteria in making PSPS events larger and compare that impact to the actions being taken to make PSPS events smaller.

Planning to Make PSPS Smaller in the Long-Term

In the three and ten-year horizons, solely continuing to implement PG&E’s 2020 PSPS mitigations will not enable PG&E to continue realizing the significant gains in reducing PSPS scope made in 2020. The large reduction in size of PSPS events in 2020 relative to 2019 are mainly attributed to significant improvements in meteorology tools, transmission scoping tools, reconfiguration of generating stations to provide significant islanding opportunities, and distribution switch installations. While further decreases to PSPS scope are anticipated every year as PG&E continues with tool improvement and existing infrastructure deployment mitigations, these mitigations cannot yield the large, step-function improvement in PSPS footprints as was achieved in 2020. Further improvements are expected to be more incremental in enabling PG&E to execute smaller events. As an example, PSPS size reduction gains from distribution sectionalizing tools will be less significant, even beginning this year. With the addition of at least 250 switches in 2021, PG&E will have installed over a thousand SCADA-enabled sectionalizing devices in three years. While more switches are anticipated to be added annually, further devices may have diminishing returns in terms of the volume of PSPS scope reduction relative to the switches already installed. In the foreseeable future, PG&E expects further segmentation benefits to be greatly reduced. Within the 10-year time frame, PG&E expects that all HFTD areas will be fully sectionalized where beneficial.

To continue to significantly reduce the number of customers that are within the scope of PSPS in the 10-year horizon, PG&E has identified a set of activities it must carry out in the following few years: (1) Descope hardened distribution circuits; (2) Improve

¹⁵⁷ Namely “Priority 1” and “Priority 2” vegetation tags which are created when trained vegetation inspectors identify trees or limbs that currently present elevated risk and must be worked on an expedited basis. Inspectors use Priority 1 tags for vegetation (i) in contact or showing signs of previous contact with a primary conductor; (ii) actively failing or at immediate risk of failing and which could strike PG&E’s facilities; or (iii) presenting an immediate risk to PG&E’s facilities. Inspectors use Priority 2 tags for vegetation that does not rise to the level of Priority 1 but has encroached within the PG&E minimum clearance requirements or has an identifiable potential safety issue requiring expedited work.

mitigation coordination across transmission and distribution; and (3) Transition to operational technologies that enable lines to remain energized during PSPS weather conditions.

PG&E is refining how to maximize the PSPS mitigation value of distribution circuit hardening while continuing to reduce wildfire risk. PG&E has already shifted our hardening program to evaluate an underground design alternative for high priority circuit segments where the meteorology lookback data indicates that an area is likely to be impacted by PSPS or has a certain number of addressable customers. PG&E will continue on our current path of incorporating descope criteria for overhead distribution circuits into our PSPS scoping tools while also consider how to optimally incorporate PSPS benefits into our prioritization of locations for system hardening. As PG&E continues to evolve the models that support distribution hardening and PSPS scoping, we are looking at how to maximize our system hardening program to deliver more PSPS benefits.

To achieve maximum benefit from our PSPS mitigations, PG&E also needs to improve our mitigation planning process to further increase coordination of PSPS transmission and distributions mitigations. For a customer to be protected from any particular PSPS event, both the transmission and distribution circuits serving them must remain energized. Although a customer may experience a lower likelihood of PSPS if the distribution line serving them is hardened or the transmission line primarily serving them is descope, it is only when both of these lines, and thus the primary power flow path to serve that customer is hardened or protected that the greatest reduction in PSPS likelihood can occur. Improving our planning process to consider the number of customers “fully mitigated”¹⁵⁸ from PSPS will be essential for continuing to reduce PSPS event size in the long-term.

Finally, significant reduction in the size of PSPS events in the long-term will require PG&E to adopt technology that enables more lines to be safely energized during PSPS weather conditions. Promising new technologies currently being piloted, deployed and tested in this area will be accelerated and scaled, if they prove to be reliable at preventing utility ignitions during high wind events. These line-sensing and operational technologies, two of which are highlighted below, may enable lines that would otherwise be within a PSPS event footprint to remain energized.

Distribution, Transmission, and Substation: Fire Action Schemes and Technology (DTS-FAST) is a PG&E-developed technology currently in the pilot phase that uses fraction-of-a-second technologies to detect objects approaching energized power lines and responds quickly to shut off power, before object impact (see Section 7.1.D.3.4). In addition, DTS-FAST may detect elevated fire risk conditions associated with energized power lines, quickly shutting off power when such risks occur, including downed power lines, downed and leaning towers and poles, and equipment failures. PG&E completed a proof of concept for DTS-FAST in 2020 and is moving forward with this technology in 2021, constructing a pilot on a 115 kV transmission circuit and evaluating the possibility of piloting it on a 12 kV distribution

¹⁵⁸ Note that under extreme weather conditions it is still possible that even circuits and customers that have been identified as “fully mitigated” from PSPS events may still need to be de-energized.

circuit as well. If proven, DTS-FAST is potentially a game-changer for PSPS because it can be deployed far more rapidly, widely, and at lower cost relative to some of PG&E's other PSPS mitigation technologies (like undergrounding).

Another promising technology is Rapid Earth Fault Current Limiter (REFCL), which mitigates ignitions from line to ground faults such as wire down or tree contacts using technology that detects such faults and limits the fault current to below ignition thresholds (see Section 7.3.3.17.4). PG&E has a pilot project for REFCL technology installed in Calistoga, an area with wildfire risk and historical line-ground outage events. PG&E finished construction on the pilot in 2020 and has begun functional testing to determine the overall effectiveness of the technology. Final results from the pilot project are expected in 2021. If the result of the pilot supports additional deployment, a long-term strategy will be developed to install REFCL in PSPS-prone, HFTD areas.

The strategies described above may be adjusted as PG&E continues to evaluate viable opportunities and technology continues to evolve. The absolute number of customers impacted in the 1-, 3- or 10-year time frames is unknown and will be dependent largely on the weather in a given year, including the growth or drying out of vegetation (fuels), the amount of snow and rain received during the rainy season, and the number and scope of high-risk fire weather wind events.

Shorter PSPS Events

Shorter PSPS Events in 2020

While PG&E cannot control the duration of the weather conditions that require a PSPS event, we do have the ability to shorten PSPS events for customers through control of the post-event patrol and re-energization processes. In 2020, PG&E significantly scaled and improved our restoration operations. PG&E undertook the following activities to shorten restoration times once weather events were cleared:

- **Aerial inspection equipment and personnel:** PG&E nearly doubled the number of dedicated helicopters and trained aerial inspection personnel available for aerial patrols. By September 1, 2020, PG&E had procured 65 dedicated helicopters—an increase from 35 dedicated helicopters in 2019. More information is provided in Section 7.3.6.7.
- **Fixed-wing aerial inspections:** PG&E commissioned two fixed-wing aircraft with MX-15 cameras and infrared technology for use during day-and-night-time transmission line patrols. More information is provided in Section 7.3.6.7.
- **New standards and procedures:** PG&E implemented new standards and procedures to improve operational management of PSPS Estimated Time of Restoration (ETOR) and associated customer notifications. More information is provided in Section 8.2.4.
- **Pre-Season helicopter patrols:** To improve restoration planning, crew allocation and ETOR forecasting, PG&E conducted helicopter circuit patrols in Tier 2 and Tier 3 areas to collect data and identify the optimum air or ground patrol methods and requirements before potential 2020 PSPS events.

- **Weather “All-Clear” Targeting:** In 2020, PG&E also leveraged our improved meteorology granularity to begin declaring weather “all clear” on a more granular level, which allowed patrols to begin sooner and customers to be restored earlier.

On an aggregate basis, average outage duration after weather “all clear” for the 2020 PSPS events improved by over 40 percent compared to PSPS events in 2019, from an average of about 17 hours in 2019 to an average of around 10 hours in 2020. As noted above, PG&E implemented all of the planned improvements to support faster restoration times and substantially complete the PSPS restoration commitment from the 2020 WMP.

However, PG&E did not fully achieve one ambitious goal within our PSPS restoration commitment: restoring 98 percent of customers impacted by a PSPS event within 12 daylight hours after the weather “all clear.” Our cumulative restoration performance for 2020, 96 percent within 12 daylight hours, was hampered primarily by the inability to fly helicopters due to smoke caused by wildfires during the first PSPS event of 2020, beginning on September 7th. Substantial smoke during this event from ongoing, non-utility-related wildfires from the August lightning complex obscured visibility such that it prevented PG&E from safely flying more than half of the helicopters we had staged and ready to support PSPS restoration. To complete the necessary restoration inspections, PG&E needed to rely more heavily on ground patrols, which are slower than aerial inspections. The cumulative impact is that 91 percent of customers during that one large event were restored within 12 daylight hours, bringing down our performance for the full year.

Planning to Make PSPS Shorter in 2021 and the Long-Term

The “shorter” PSPS goal is largely related to the “smaller” PSPS goal described above. While PG&E has some ability to flex the size of our patrol and restoration resources through mutual aid and other mechanisms, restoration times are largely correlated with the number of circuit-miles PG&E needs to patrol prior to restoring power. Because event size is a major driver of the time it takes to complete restoration, the potential changes to PSPS decision-making criteria described above could also impact restoration time.

For 2021, our restoration goal is to restore all customers as soon as possible and within 24 hours from the termination of the de-energization event, unless it is unsafe to do so. For any circuits that require more than 24 hours for restoration, we will provide an explanation in our post event reports.

Typical safety exclusions based on past events have been (but are not limited to):

- No access due to:
 - Police activity (i.e., security)
 - Fire activity (i.e., fire agency requests not to re-energize)
 - Road closure (i.e., public/private roadway closed/blocked and requires agency/customer response)

- Customer equipment damaged (i.e., requires customer repairs prior to energizing)

Some additional reasons why circuits may require more than 24 hours to restore include:

- Inability to utilize planned helicopter resources due to smoke / fog / other visibility concerns
- Lack of resources to patrol all the overhead conductors that were de-energized
- Restoration delayed due to repairs / correction of PSPS hazard or damage found on assets to be restored
- Equipment issues encountered when restoring circuit segment—not caused by PSPS damage

Despite the uncertainty with respect to the PSPS event sizes and therefore overall restoration times, PG&E will leverage our three years of restoration experience and data to continue improving our ability to quickly restore customers after the severe weather has passed. PG&E has identified opportunities via tool improvement, patrol boundary refinements, process improvements, and customized restoration plans. PG&E describes each of these areas below.

First, PG&E will refine the internal tools that we use to forecast the resource need based on event specifics and size. This effort includes updating our understanding of what types of resources are needed and the capabilities of each resource. Based on lessons learned from this year, we will also incorporate conditions that could affect helicopter availability for patrolling (e.g., smoke and fog) into our forecasts.

Second, PG&E plans to use enhanced event weather information to improve patrol boundaries. During PSPS events, some portions of distribution circuits are de-energized not because they are in the defined event weather boundary, but because they are downstream from other parts of the circuit that are within the event weather boundaries. The PG&E assets along these parts of the circuit do not require a patrol in order to be re-energized.

Third, PG&E plans to continue reducing event durations through event process improvements. We will improve and streamline the way we develop the restoration playbook during PSPS events. The quicker this restoration playbook is developed, the quicker resources can be pre-staged so that work can begin as soon as the “all clear” is called. As an example, one particular area for improvement is better aligning and prioritizing transmission and distribution patrol and restoration activities to maximize customer restoration. In addition, we will continue to improve the process of declaring weather “all clears” on a more granular level, further enabling more customers to be restored more quickly.

Finally, PG&E will focus directly on the circuits that have posed restoration challenges in the past. These are often longer circuits in more rugged terrain. We will evaluate the options PG&E has for restoring these circuits and develop customized restoration plans to support meeting the 24-hour target.

In the long-term, restoration times will continue to shorten as PG&E continues to shrink the size of our PSPS footprint through the various mitigations discussed above. PG&E will also continue to track technology and laws related to inspecting with drones in order to potentially leverage this technology for post-PSPS patrols. While drones are presently used for some types of asset inspections, we currently do not use drones for PSPS inspections because they require a flight path beyond visual line of sight (BVLOS). We will continue to explore BVLOS operations for PSPS and other enterprise initiatives over the next few years. More information regarding this issue is available in Section 7.3.6.7.

More information on PG&E's PSPS re-energization operations is also provided in Section 7.3.6.4.

Smarter PSPS Events

PG&E's "smarter" PSPS event goal refers broadly to our execution of PSPS events. In this WMP filing, PG&E separates this goal into two key components: (1) better community and customer awareness, coordination, and support; (2) improving our PSPS execution, processes and tools based upon lessons learned from 2020. Progress in both of these areas are described below.

Better Community and Customer Awareness, Coordination and Support

In 2020, PG&E delivered on many of the CPUC's and PG&E's goals to make PSPS events less burdensome for our customers. We supported de-energized customers and communities with better communications, resources, and assistance. The accomplishments described below would not have been possible without extensive input over the past year from PG&E's advisory councils, regional councils, customer input and state and local officials.

- **Customer Notifications:** PG&E notified over 99 percent of the affected customers prior to de-energization, despite in-event weather shifts that caused PSPS footprint changes in every event. These notifications included improved content that was tested for usability and accessibility. More information is provided in Section 8.2.4.
- **Medical Baseline (MBL) Customer Notifications:** PG&E notified over 99 percent of impacted MBL customers through automated notifications and in-person door visits, if needed. More information is provided in Section 8.2.4.
- **Access and Functional Needs (AFN) customers:** PG&E developed partnerships with 56 Community-Based Organizations (CBO) to support customers with AFN with resources before, during and after PSPS events. Together with these CBOs, PG&E provided 30,000 food boxes to vulnerable customers, delivered approximately 4,000 batteries to qualifying customers, and served approximately 4,500 customers with services including food replacement, gas vouchers, hotel stays, grocery delivery and accessible transportation. More information is provided in Section 7.3.10.1.

- **Translated information:** Through new partnerships with multicultural media organizations and in-language CBOs, PG&E shared PSPS preparedness, awareness, and status information broadly across PSPS-affected areas in 20 non-English languages and American Sign Language (ASL), using a variety of social media, news, and written materials.
- **Community Resource Centers (CRC):** PG&E provided as many as 106 CRCs during a single event to support customers in affected local and tribal communities, providing snacks and a variety of resources and information at each CRC. Nearly 50,000 customers visited our CRCs during the 2020 PSPS events.
- **Website and call center:** Making considerable improvements from the 2019 PSPS season, PG&E maintained a stable and continuous website and responsive call center support throughout events. More information is provided in Section 8.2.4.
- **PSPS Portal Tool:** PG&E unveiled our updated PSPS Portal tool for 2020, providing maps, situation reports, critical facility lists and MBL customer lists to local and state agencies and first responders (cities, counties, and tribes) at the time of the initial notification of PSPS events and throughout events.

Customers have noticed these efforts; In a recent survey of customers impacted by PSPS events in 2020, 60 percent reported that PG&E improved the handling of PSPS events over 2019 and only 10 percent reported our handling to be worse.¹⁵⁹ In 2021, PG&E will continue to build on these customer efforts, grounding our outreach, programs and services in customer and stakeholder feedback, research, and data to continuously improve. PG&E discusses these various efforts in Section 8.2.1 and 8.2.4. A few areas targeted for improvement in 2021 are highlighted below.

- **CRC strategy:** PG&E will refine our CRC strategy working in close collaboration with our county, tribal and CBO partners.
- **Customer Contact Information:** PG&E will improve data collection so that we have the right customer contact information including information on our master-meter customers and other non-account holders (e.g., renters), know our customers' language preferences, and allow opportunities for customers to self-identify as vulnerable without impinging on data privacy laws.

¹⁵⁹ The remaining responses were 24 percent responding, “about the same” and 6 percent being, “unsure.” The survey featured responses from just over 1,000 customers who experienced at least one PSPS event in 2020, half of which were residential and half business customers.

- **Customer Notifications:** PG&E will refine our communications and notifications to make them as clear and accessible as possible for customers and community members (e.g., ETOR accuracy, shortened phone messages, etc.). This includes a focus on customer segmentation to ensure our communications meet the needs of specific customer segments (e.g., customers responsible for multiple premises).
- **Electric Vehicle (EV) Charging Network Support and Resiliency:** PG&E's planned additional enhancements for the 2021 wildfire season include updates to EV charging station maps to show which stations are potentially impacted by PSPS events and direct outreach to EV customers with information on PSPS impacts to EV drivers.

Finally, PG&E anticipates the COVID-19 situation to remain dynamic for much or all of 2021. As we did in 2020, PG&E will continue to monitor the public health situation and adjust plans and programs as necessary, in alignment with the communities we serve.

PSPS Execution, Operations, and Lessons Learned From 2020 PSPS Events

PG&E is expanding our “smarter” goal to include efforts to improve PSPS execution with the appropriate infrastructure and systems. These efforts, which include both technology and process improvements, contribute to smooth PSPS event operations, reduce the possibility for errors, allow PG&E to shift as the weather changes and drive towards a more seamless community, partner and customer experience. Below, PG&E describes its significant strides in these areas in 2020.

- **Information Alignment and Availability:** PG&E implemented a new PSPS situation report process in 2020, which leveraged a new data management technology platform. The platform provided increased functionality through a centralized data foundation which allowed PG&E to manage PSPS data and business logic. This has increased organization collaboration, driven new analyses and enhanced organizational knowledge. In 2020, improvements were made to the PSPS situation report by centralizing data so the latest information about the PSPS event through the planning, de-energization and restoration phases of the PSPS event was in one location and accessible to the whole team. The platform also allowed PG&E to automate many elements of PSPS scope creation and playbook analysis for 2020. Additionally, PG&E launched an improved information sharing ‘PSPS Portal’ to share maps and the latest incident information with our Public Safety Partners. This allowed PG&E to communicate with our Public Safety Partners and keep them informed of any changes to the key incident information before and throughout the PSPS event.
- **Scoping Process Enhancements:** In 2020, PG&E significantly reduced the time it took to ‘scope’ or translate the impacts of the weather system onto PG&E's assets. This was accomplished by tool enhancements and automation which allowed PG&E to quickly update our event scope during PSPS events. This in turn allowed more time for customer notifications and for the planning of PSPS mitigation activities such as CRCs and temporary generation.

- **Virtual Emergency Operations Center (EOC):** Due to the impacts of COVID-19, PG&E adjusted our EOC operations to be entirely remote and virtual in 2020. PG&E and partner organizations exercised simulated PSPS events in the virtual EOC environment three times prior to the PSPS season in 2020 and then applied learnings from those simulations during actual PSPS events. PG&E was able to operate all the PSPS events in 2020 through the utilization of the Virtual EOC and built many tools and processes to keep the team members aligned throughout events.

PG&E will continue to improve our planning and preparedness with respect to data, training, tools, and EOC operations. The key lessons learned from PSPS events in 2020, especially from an operational perspective, are described in PG&E's De-energization Report submissions to the CPUC in compliance with Resolution ESRB-8. Based on the cumulative lessons learned, PG&E has identified the following areas to prioritize continued improvement to the processes, infrastructure and systems that support PSPS.

- 1) **Scoping Process and Tools:** PG&E will continue focusing our efforts on reducing the amount of time the scoping process takes to be able to further handle late weather changes and the subsequent downstream effects (e.g., customer notifications and mitigation enablement).
- 2) **External Communications and Notifications Process:** Similar to the scoping process, PG&E's external communications and customer notification processes showed large improvements in 2020. PG&E will prioritize this as an area for further improvement in 2021 focusing primarily on decreasing the amount of time required to send customer notifications and further automating the processes for issuing cancellation notifications.
- 3) **PSPS Data Management and Alignment:** While PG&E successfully shifted EOC activities to a virtual environment in 2020, we found that ensuring alignment with and access to the latest event data was critical to having clear team alignment and smooth execution. This is an area where we can improve further in the future. In 2021, PG&E will improve our tools to support improved data clarity and focus on formalizing our training around our in-event data access and availability.
- 4) **Other Utility/Independent Power Producer (IPP) Coordination:** PG&E has identified a small number of locations where we have customers downstream of distribution lines operated by other utilities, as well as locations where customers of other utilities are downstream of PG&E's distribution powerlines. An example is where PG&E and SCE's service territories connect along the I-5 corridor. PG&E will coordinate with these other utilities to build a stronger understanding of how to operationally manage these situations during PSPS events, with a particular focus on providing accurate customer notifications.

- 5) EOC Staffing and Training:** The unpredictable nature of PSPS events make EOC staffing and training a challenge. In 2021, PG&E plans to clarify the EOC on-call schedule and further utilize role-specific live, virtual and recorded trainings to improve the overall level of preparedness for the employees responding to PSPS events.
- 6) Virtual EOC:** As mentioned above, PG&E was largely successful in our virtual EOC rollout. However, we have identified additional opportunities to further build out the virtual EOC tools and tailor our EOC operations and process to a virtual environment. PG&E will pursue opportunities to further improve the virtual EOC environment in 2021.

Below, PG&E highlights 1, 3, and 10-year PSPS goals.

Given the ongoing analysis into how to incorporate the presence of known, high-risk vegetation conditions adjacent to powerlines into PSPS decision-making (see above, “Planning to Make PSPS Smaller in 2021”), we have not set overall 2021 PSPS targets, but we are taking substantial actions to make PSPS events in 2021 smaller, shorter, and smarter.

Within the 1-year timeframe, PG&E will execute actions that will drive further reductions in the extent of PSPS impacts, in alignment with the strategies used in 2020 and described above. PG&E also plans to continue piloting new technologies to pave the way for further customer reductions in future years.

- Before the next annual WMP submission:
 - PG&E’s activities supporting the “smaller” objective will include continuing with programs to sectionalize our Transmission and Distribution systems undertaking transmission VM and repairs, installing more distribution microgrids, and incorporating modified criteria for overhead hardened lines into our PSPS scoping models. PG&E will also pilot new technologies to pave the way for further customer impact reductions in future years.
 - PG&E’s activities supporting “shorter” PSPS events will include undertaking in-event restoration process improvements and developing customized restoration plans for circuits that have posed restoration challenges in the past.
 - PG&E’s activities supporting “smarter” PSPS execution will leverage lessons learned in 2020 to more effectively communicate with state, local, and tribal partners; refine our CRC strategy in close collaboration with local partners; ensure that our customer communications are timely, accessible, and accurate, and further partner with CBOs and others to provide services to PSPS-impacted customers, particularly those with AFN or other needs.
 - Please also see Section 8.3 for the subset of all 2021 WMP commitments that have the potential to impact PSPS in the 1-year time frame.

- Within the next three years:
 - PG&E expects to see further PSPS scope reductions as we continue to increase the maturity of our PSPS program and tools. With the incorporation of descope criteria into our PSPS tools, PG&E will also begin to see more reductions from system hardening activities. In this time frame, newer technologies currently in pilot phases, such as REFCL and DTS-FAST, may also allow some lines to remain energized during high wind conditions, contributing to event size reductions.
 - Additionally, further development of tools may allow for more accurate and faster scoping of PSPS events to improve execution, communications and mobilization of customer support resources.
- Within the next 10 years:
 - PG&E expects a significant reduction in PSPS impacts as technologies currently in pilot phases are deployed at scale and significant portions of our long-term distribution hardening program are completed.

PG&E has learned a lot since we first executed PSPS in 2018 and expects to continue to learn, adapt and evolve this critical risk-mitigation program in the coming years. In addition to expected advances in technology and utility approaches, stakeholder input and Commission direction through various proceedings¹⁶⁰ may also drive changes to PG&E's PSPS program.

ACTION PGE-16 (Class A)

In its 2021 WMP update, PG&E shall: (1) provide the timeline for which it expects "hardened" circuits to be "reflected" in future PSPS events, (2) define what "hardened" circuits consists of, (3) explain how "hardened" circuits will be "reflected" in future PSPS events (i.e., scope, location, thresholds for initiating), (4) explain how long it takes to perform the analysis to determine the impact of "hardened" circuits on PSPS, and (5) explain the factors that PG&E is monitoring and analyzing to determine the impact of "hardened" circuits on PSPS.

Response:

- 1) In 2020, PG&E developed the Distribution PSPS descope criteria to identify candidate distribution circuit segments for de-scoping from PSPS events. This development followed the Risk Framework outlined in Section 4.5.1. In Q1 2020, the Scope and Data Intake steps were completed. Building on these first two steps, in Q2 2020, the Risk ID and Risk Assessment steps were completed by applying Failure Effect Mode Analysis (FEMA) to develop effectiveness factors for each mitigation type. Utilizing these effectiveness factors, the de-scoping criteria was established, and circuit segments were reviewed to identify candidate circuit segments in Q3 of 2020 as part of the Risk Management step. Through

¹⁶⁰ Examples of PSPS-related proceedings include the Order Instituting Investigation, Investigation 19-11-013 and Rulemaking 18-12-005.

Q3 and Q4 of 2020, the performance of the identified candidate circuit segments was monitored as part of the Risk Mitigation step. In 2021, the Distribution PSPS de-scoping criteria will be integrated into the PSPS tools for the 2021 fire season. In Q1 2021, another review of circuit segments will be conducted to identify candidate circuit segments. In Q2 2021, candidate circuit segments sites will be inspected to confirm vegetation, line, and fuel conditions. These candidate circuit segments will be presented to the Wildfire Risk Governance Steering Committee before being flagged in the PSPS tools as candidate circuit segments for de-scoping. As such, PG&E expects to incorporate hardened circuit segments into PSPS scoping decisions for the 2021 PSPS season.

- 2) As outlined in Section 7.3.3.17.1, PG&E's System Hardening Program focuses on the mitigation of potential catastrophic wildfire risk caused by distribution overhead assets. This program targets the highest wildfire risk miles and applies various mitigations such as line removal, conversion from overhead to underground, application of remote grid alternatives, mitigation of exposure through relocation of overhead facilities, and overhead system hardening in place such as covered conductor. A hardened circuit is any combination of these alternatives along an entire circuit segment within the PSPS event footprint.
- 3) In order to be considered for de-scoping, circuit segments will be pre-identified as meeting the criteria. The Distribution PSPS de-scoping criteria is met when a circuit segments has an adjusted Distribution Large Fire Potential (LFP_D) value below the PSPS threshold and there are no strike potential trees or open maintenance tags on the segment. As detailed in Section 4.2.A(c) – 4.2.A(g), the probability of the distribution line failing during a given weather event is based on historical performance of the line. For pre-identified lines, effectiveness factors to account for the improvement from hardening are determined. For example, if covered conductor is installed on a circuit segment this mitigation will reduce the probability of certain failure modes causing an ignition. The effectiveness factor represents the improvement to historical probability of ignition. These effectiveness factors are applied to the circuit segment within the PSPS tools. If the effectiveness factor reduces the historical probability of a catastrophic fire below the PSPS threshold, it is identified for de-scoping. The second part of the criteria concerning the absence of strike potential trees and open maintenance tags is confirmed by a review of LiDAR data and a site visit by Public Safety Specialists and Arborists.
- 4) PG&E interprets this question to request how much empirical evidence is needed to determine the impact or effectiveness of hardened circuit segments. After a hardening mitigation type is installed, performance data and analysis of any failure events will be used to supplement the effectiveness factors for each mitigation type each year. As learnings are applied to refine the effectiveness factors, it is anticipated that a period of 3 to 5 years will be needed to form a solid basis of empirical data from which to determine the impact or effectiveness of hardening mitigations.

- 5) During the time period described in the response to item #4, PG&E is monitoring the performance of hardened circuit segments and analyzing any failure events to refine the effectiveness factors developed as part of the PSPS de-scoping criteria.

Instructions for Table 8-1: Anticipated characteristics of PSPS use over next 10 years

Rank order the characteristic of PSPS events (in terms of numbers of customers affected, frequency, scope, and duration) anticipated to change the most and have the greatest impact on reliability (be it to increase or decrease) over the next 10 years. Rank in order from 1 to 9, where 1 means greatest anticipated change or impact and 9 means minimal change or impact on ignition probability and estimated wildfire consequence. To the right of the ranked magnitude of impact, indicate whether the impact is to significantly increase reliability, moderately increase reliability, have limited or no impact, moderately decrease reliability, or significantly decrease reliability. For each, include comments describing expected change and expected impact, using quantitative estimates wherever possible.

TABLE 8-1: ANTICIPATED CHARACTERISTICS OF PSPS USE OVER NEXT 10 YEARS

Rank order 1-9.	PSPS characteristic	Significantly increase; no change; decrease; significantly decrease	Comments
1	Number of customers affected by PSPS events (normalized by fire weather, e.g., Red Flag Warning line mile days)	Significant Decrease	PG&E has a suite of mitigations that potentially reduce customers affected through microgrids, segmentation, and resiliency zones in the short term, and we continue to implement and explore new opportunities to remove customers from PSPS scope through system hardening, undergrounding and technology pilots in the long term.
2	Scope of PSPS events in circuit-events, measured in number of events multiplied by number of circuits targeted for de-energization (normalized by fire weather, e.g., Red Flag Warning line mile days)	Significant Decrease	PG&E views the accuracy of the scope of a PSPS event based on how well we forecast weather conditions that meet the criteria for PSPS and the number of circuits that will be adversely affected by the elevated fire weather threat. While a significant reduction in “circuit-events” is expected going forward, there will still be circuits impacted, just in smaller portions. Reducing circuit-events can be influenced by system hardening and segmentation investments in targeted locations. PG&E’s objective is to enact smaller and more surgical PSPS events.
3	Duration of PSPS events in customer hours (normalized by fire weather, e.g., Red Flag Warning line mile days)	Decrease	PG&E interprets this as the total number of hours an average customer is de-energized in a PSPS event. ^(a) The duration of a PSPS event is generally attributed to two parts, the weather duration, and the restoration duration. PG&E is enacting actions to further optimize the post-PSPS patrol & re-energization processes, but we cannot control the duration of an elevated fire weather event.
4	Number of customers affected by PSPS events (total)	Decrease	While an absolute decrease is expected in the number of customers affected for the reasons described above (1), long-term climate models point to a higher probability of more frequent fire weather conditions. The total number of customers impacted by PSPS in any given year is dependent on the weather patterns and events experienced in that year.
5	Scope of PSPS events in circuit-events, measured in number of events multiplied by number of circuits targeted for de-energization (total)	Decrease	While an absolute decrease is expected in circuit events for the reasons described above (2), long-term climate models point to higher probability of more frequent fire weather conditions. The total number of PSPS circuit-events in any given year is dependent on the weather patterns and events experienced in that year.

Rank order 1-9.	PSPS characteristic	Significantly increase; increase; no change; decrease; significantly decrease	Comments
6	Duration of PSPS events in customer hours (total)	Decrease	While an absolute decrease is expected in customer hours for the reasons described above (3), long-term climate models point to higher probability of more frequent fire weather conditions. The total customer hours driven by PSPS in any given year is dependent on the weather patterns and events experienced in that year.
7	Frequency of PSPS events in number of instances where utility operating protocol requires de-energization of a circuit or portion thereof to reduce ignition probability (normalized by fire weather, e.g., Red Flag Warning line mile days)	No Change	No change in the frequency of events compared to all fire weather days or red flag warnings could occur as PSPS may not be required for marginal weather events based on reasons described above (1) and (2). In order to reduce the number of PSPS events, the area of the system under threat of adverse weather would need to be either: (1) built to hardened standards to withstand extreme weather, or (2) mitigated by PSPS impact reduction equipment and services. Other alternatives such as switching or sectionalizing equipment may not be fully effective in reducing frequency of events.
8	Frequency of PSPS events in number of instances where utility operating protocol requires de-energization of a circuit or portion thereof to reduce ignition probability (total)	No Change	While PG&E strives to reduce the frequency of PSPS events, given that long term climate models point to a higher probability of more frequent fire weather conditions, it is expected that the absolute number of PSPS events will not change, or may even increase. The actual number of PSPS events in any given year is dependent on the weather patterns and events experienced in that year.
9	Other	N/A	N/A
Note: External factors include but are not limited: urban expansion in the wildland urban interface, fuels treatment programs performed by state and federal agencies, changes in bark-beetle tree damage and tree mortality (e.g., sudden oak death), fuel loading, general population changes, changes in regulatory requirements, climate change, droughts, and frequency and duration of dry wind events ***The absolute number of customers, scope, frequency, and duration during this timeframe is unknown and dependent on numerous external factors. *** (a) Note: This interpretation is different from PG&E's 2020 WMP submission based on re-interpretation of the PSPS characteristic designations and cross-referencing our interpretation with other large California IOUs. PG&E's 2020 WMP submission interpreted "duration in customer hours" as the product of customers impacted, average event duration, and the total number of events per year.			

8.2 Protocols on PSPS

Describe protocols on PSPS (PSPS or de-energization), to include:

- 1) Strategy to minimize public safety risk during high wildfire risk conditions and details of the considerations, including but not limited to list and description of community assistance locations and services provided during a de-energization event;*
- 2) Outline of tactical and strategic decision-making protocol for initiating a PSPS/de-energization (e.g., decision tree);*
- 3) Strategy to provide for safe and effective re-energization of any area that was de-energized due to PSPS protocol;*
- 4) Company standards relative to customer communications, including consideration for the need to notify priority essential services – critical first responders, public safety partners, critical facilities and infrastructure, operators of telecommunications infrastructure, and water utilities/agencies. This section, or an appendix to this section, shall include a complete listing of which entities the electrical corporation considers to be priority essential services. This section shall also include description of strategy and protocols to ensure timely notifications to customers, including AFN populations, in the languages prevalent within the utility's service territory; and*
- 5) Protocols for mitigating the public safety impacts of these protocols, including impacts on first responders, health care facilities, operators of telecommunications infrastructure, and water utilities/agencies.*

In this section, PG&E describes our: (1) strategy to minimize public safety risks during high wildfire risk conditions; (2) PSPS decision making protocols (3) re-energization strategy; (4) customer, agency, and external communications; and (5) protocols for mitigating the public safety impacts of these protocols.

8.2.1 Strategy to Minimize Public Safety Risk During High Wildfire Risk Conditions

- *Strategy to minimize public safety risk during high wildfire risk conditions and details of the considerations, including but not limited to list and description of community assistance locations and services provided during a de-energization event.*

A) Strategy to Minimize Public Safety Risk

As outlined in Section 8.1, PG&E will continue to initiate and improve programs to reduce the impacts of PSPS on customers, while decreasing catastrophic wildfire risks.

B) Mitigating Impacts on De-energized Customers

PG&E recognizes the customer and community impacts that result from a PSPS, and understands, in many cases, the same customers may be impacted by multiple events. PG&E aims to minimize PSPS impacts through a variety of customer services and programs.

In 2021, PG&E will continue to ground programs and services in customer and stakeholder feedback, research, and data to continuously improve efforts to support customers and communities. PG&E will use this feedback and research to:

- Refine CRC strategy, working in close collaboration with county, tribal and CBO partners.
- Enhance solutions for customers frequently impacted by PSPS events (e.g., Butte County).

To further explain how PG&E mitigates impacts on de-energized customers, we have broken up this section into the following categories:

1) CRCs

2) Customer Resiliency Programs and Continuous Power Solutions:

- Disability Disaster Access and Resources (DDAR) Program;
- Portable Battery Program (PBP);
- Self-Generation Incentive Program (SGIP);
- Well-Pump Generator Program;
- Backup Power Education through Online Marketplace and Safety Action Center;
- EV Charging Network Support and Resiliency;
- Community Microgrid Enablement Program (CMEP);

- Individual Critical Customer Back Up Power Support; and
- Other Resource Programs.

PG&E also conducts extensive proactive education and outreach (outlined in Section 7.3.10.1), as well as sends customer and community notifications, during a PSPS event to assist with mitigating PSPS impacts (which are described in Section 8.2.4).

1. Community Resource Centers

To minimize public safety impacts during a PSPS event, PG&E opens CRCs in potentially impacted counties and tribal communities. CRCs provide customers and residents a safe location to meet their basic power needs, such as charging medical equipment and electronic devices.

PG&E developed the CRC strategy in consultation with regional, local and tribal governments, advisory councils, public safety partners, representatives of the disability and AFN communities, senior citizen groups, business owners, CBOs and public health and healthcare providers.

Resources

CRCs open the day PG&E de-energizes until the day electric service is fully restored. CRC standard operating hours are from 8 a.m. – 10 p.m.

PG&E adapted the 2020 CRC approach to reflect appropriate public health considerations due to COVID-19. In some cases, indoor CRCs were replaced with Micro CRCs (smaller, open air tents) and Mobile CRCs (vans) to accommodate physical distancing and COVID-19 guidelines. See the Figure PG&E-8.2-1 outlining the different CRC types and resources available at PG&E's CRCs.

FIGURE PG&E-8.2-1: CRC TYPES AND RESOURCES

				
Details/Resources	Indoor	Tent	Micro	Mobile
CRC Overview	Indoor site (i.e., Community Center)	Soft-sided tent at outdoor site	Open air tents at outdoor site	Sprinter van and tents at outdoor site
If Physical Distancing Required	Grab-and-go bags*; metering and physical distancing	N/A; due to size limits of tent, will not use	Grab-and-go bags*; metering and physical distancing	
COVID-19 Health and Safety Measures	×	×	×	×
ADA-Accessible Restroom and Hand-Washing Station	×	×	×	×
Heating and Cooling	×	×		
Device Charging	×	×	×	×
Wi-Fi Service	×	×	×	×
Bottled Water	×	×	×	×
Non-Perishable Snacks	×	×	×	×
Tables and Chairs	×	×	×	×
Bagged Ice	×	×		
Blankets (quantities limited)	×	×	×	×
Security Personnel	×	×	×	×
Wind/Weather-Resistant	×	Limited		

*Bag contains device charger, water, snacks and info card. **On-site charging for medical devices only. ***Tables and chairs for customers charging medical devices.

To keep PG&E customers and communities safe, all CRCs reflect appropriate COVID-19 health considerations and state and county guidelines:

- Facial coverings, physical distancing and limits on the number of visitors at any time are required;
- Temperature checks are administered before entry into indoor facilities;
- Supplies are handed out so customers can “grab and go.” At outdoor sites, seating is available for medical equipment charging only;
- Surfaces are regularly sanitized; and
- For the health and safety of the community, we ask customers not to visit a center if sick with a fever, cough, sore throat or runny nose

As the COVID-19 situation evolves, PG&E will implement these same safety protocols during the 2021 wildfire season and modify as needed.

Site Criteria/Locations

When identifying potential CRC locations, PG&E consults with regional, local and tribal governments, advisory councils, public safety partners, representatives of the disability and AFN communities, senior citizen groups, business owners, CBOs and public health and healthcare providers.

PG&E’s planned indoor CRCs are locations known to the public and identified in coordination with local and tribal agencies, such as community centers, libraries, schools, churches and senior centers. Outdoor CRCs (Tent, Micro and Mobile) are set up in local lots in similar locations.

PG&E takes into consideration the below criteria when identifying and reviewing potential CRC locations:

Indoor CRC Site Criteria:

- Compliant with safety requirements (i.e., earthquake/fire codes, occupancy limits, meets all local codes, possesses interior and exterior lighting);
- ADA-accessible, meeting all associated facility and parking guidelines;
- Backup generation capabilities;
- Approximately 1,800+ square feet;
- Outfitted with restroom(s) and indoor plumbing or portable ADA-compliant restroom(s) and handwashing station(s);
- Able to accommodate off-street paved parking; and
- Equipped with a level-loading area for loading and unloading.

Outdoor CRC Site Criteria:

- Approximately half acre or more in size;
- Paved, accessible lot; and
- Able to accommodate portable ADA-compliant restroom and handwashing station.

As of December 2020, PG&E has secured 362 indoor and outdoor event-ready locations with site agreements executed between PG&E and landowners.¹⁶¹ Note that these are PG&E-operated. See 2021WMP_Section 8.2.1_Atch01 for a list of these sites.

In-Event Coordination

During PSPS events, PG&E's dedicated Agency Representatives coordinate with potentially impacted counties and tribes to review the proposed scope of the event. Agreement on the selected locations for the CRCs is based on the anticipated areas of de-energization.

PG&E begins with pre-identified county and tribe-vetted CRC locations. In some cases, PG&E may procure additional locations during a PSPS event when unable to open a pre-identified site (e.g., unable to contact property owners, CRC is needed closer to impacted customer areas). In these instances, PG&E seeks feedback from counties and tribes to open additional approved locations for the event.

¹⁶¹ As of December 16, 2020.

PG&E may decide not to open a CRC due to agency requests, faster than anticipated restoration, safety concerns or other factors.

PG&E shares CRC site locations on our website, social media and media press releases. These locations are shared with state and county officials as well, in addition to California Foundation for Independent Living Centers (CFILC) and other CBOs to reach our AFN customers.

Disability and Aging/AFN Communities and MBL Considerations

To meet a variety of safety needs for disability and aging/AFN communities, as well as MBL customers, PG&E has taken the following steps to base the CRC Plan on local demographic data:

- ADA-evaluation and remediation investment at indoor sites, along with compliance checklists for onsite personnel;
- Consultation with counties and tribes via Local Public Affairs (LPA) Representatives, Public Safety Specialists and Tribal Representatives regarding CRC locations based on county and tribal-specific and/or local demographics;
- Public transit evaluation of distance and accessibility for indoor and outdoor sites;
- Evaluation of accessible parking either through restriping, signage and/or cones; and
- Provision of:
 - ADA-compliant, portable restroom(s) and handwashing station(s) at all CRC sites;
 - Information cards with in-language resources;
 - Clear face shields for customers who are hard of hearing and/or read lips for accessible communication;
 - Signage compliance; and
 - Medical equipment charging at all CRC sites.

PG&E will continue site reviews and improvements at additional CRC sites as needed.

2. Customer Resiliency Programs and Continuous Power Solutions

PG&E offers solutions to reduce adverse impacts of PSPS events to customers, including those with medical and independent living needs, such as low-income customers. In advance of wildfire season and throughout 2021, PG&E will continue to work with partner organizations to provide outreach and support to vulnerable customers through programs such as the ones listed below.

See Section 7.3.3.11.1, which describes in detail PG&E efforts to support critical facilities and other customers' generation needs during PSPS events.

- **DDAR Program:** In April 2020, PG&E and CFILC¹⁶² launched the [DDAR Program](#), a joint effort to aid people living with disabilities, who have medical and independent living needs and older adults.

CFILC administers the program through partnerships with participating Independent Living Centers (ILCs)¹⁶³ in local communities throughout PG&E's service territory. DDAR enables local ILCs to provide qualifying customers who use electrical medical devices with access to backup portable batteries through a grant, lease-to-own, or the FreedomTech¹⁶⁴ low-interest financial loan program. DDAR focuses on understanding customer needs through conversation, discussing emergency plan preparedness and assessing the best resiliency solution for each customer during a PSPS event. It also provides accessible transportation resources, lodging, food and gas vouchers, emergency planning, education and outreach about PG&E programs, such as the MBL Program.

Table PG&E-8.2-1 showcases the resources provided to customers through DDAR in 2020 (as of January 19, 2021).¹⁶⁵

TABLE PG&E-8.2-1: RESOURCES PROVIDED TO CUSTOMERS THROUGH DDAR PROGRAM IN 2020 (AS OF 01/19/21)

Resources/Engagement with Customers Before, During and After 2020 PSPS Events	Approximate Resources Provided to Customers in 2020
Customer Energy Assessments	1,750
Batteries Delivered	1,000
Food Vouchers	900
Hotel Stays	550
Gas Cards	50
Transportation	30

In 2021, PG&E anticipates the DDAR Program will continue to offer a variety of resources to customers including batteries, hotel stays, food vouchers, gas cards and transportation.

¹⁶² CFILC is a 501(c)(3) non-profit organization that provides a wealth of programs and coalitions to support individuals with disabilities and older adults and offers PG&E a connection with this community to ensure their safety during power shutoffs.

¹⁶³ The Find an ILC tool lists participating ILCs.
https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/independent-living-centers.page?WT.mc_id=Vanity_disabilityandaging.

¹⁶⁴ <https://freedomtech.org/>.

¹⁶⁵ As of January 19, 2021.

- **PBP:** Launched in August 2020, the PBP provides free portable backup battery solutions to low-income¹⁶⁶ MBL customers in Tier 2 and 3 HFTD areas to support resiliency during PSPS events.

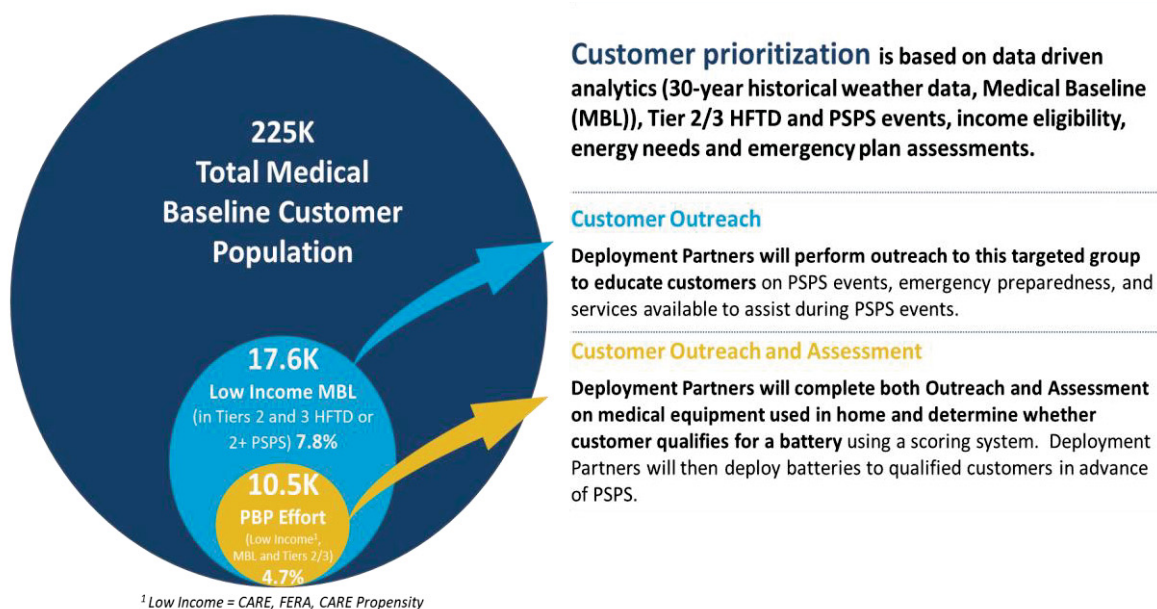
Five Low-Income Home Energy Assistance Program (LIHEAP) providers administer the PBP: Butte Community Action Agency, Central Coast Energy Services, Community Resource Project, North Coast Energy Services and Redwood Community Action Agency. Richard Heath & Associates, a third-party energy program implementer focused on underserved communities, is also working with PG&E on the program. These PG&E partner organizations actively reach out directly via mail and phone to all customers who meet the criteria. The delivery partner then completes an assessment of the power needs of the customer's medical equipment and provides a battery, if appropriate. Customers do not need to apply for the program. Like the DDAR Program, PBP focuses on understanding customers' needs through conversation, discussing emergency plan preparedness and assessing the best resiliency solution for each customer during a PSPS event. PBP partners conduct outreach, assess the customers' energy needs¹⁶⁷ for medical devices and the household's overall preparedness for a PSPS event and deliver a right-sized battery to qualified customers.

Figure PG&E-8.2-2 describes the PBP program model, with data as of July 2020, which includes customer prioritization, outreach and assessment approaches.

¹⁶⁶ Enrolled in CARE or Family Electric Rate Assistance Program (FERA).

¹⁶⁷ The number of completed energy assessments and battery deliveries depend on customers who respond to outreach, are willing to participate, and have medical devices that are eligible to be supported by a battery.

FIGURE PG&E-8.2-2: PBP MODEL



The PBP provides a range of batteries from smaller lightweight batteries to larger batteries (such as 5000 watt-hour (Wh) batteries), which can weigh over 300 pounds. The larger batteries have been delivered to higher energy needs residential customers, as well as some non-residential customers in HFTD, such as Food Banks and Meals on Wheels, without backup power to keep appliances powered for bulk perishable food items and communications to support operations.

PG&E worked with each of the delivery organizations to design the assessment and develop prioritization guidelines. Final customer prioritization is at the discretion of the local organization with consultation with PG&E, as needed. This approach provides a simple, streamlined customer experience that meets local community needs and does not require capital outlay from participating customers.¹⁶⁸ Throughout 2020, PBP implementers offered over 8,800 assessments and delivered over 5,550 batteries to PG&E's medically-sensitive customers (as of January 19, 2021).

In 2021, PG&E and partner organizations plan to continue delivering portable batteries to qualifying customers.

- **SGIP:** SGIP provides incentives for permanent battery systems for backup power. Over the last several years, SGIP has evolved, with a focus on vulnerable customer resiliency. Under SGIP's equity resiliency budget category, incentives can cover up to 100 percent of funding, including battery cost, installation and rewiring to eligible customers.

¹⁶⁸ Customers are responsible for the costs of charging the batteries, but all efforts are made to deliver the battery with a full charge whenever possible.

In 2020, the majority of SGIP funding was reserved for customers who met equity and/or equity resiliency criteria,¹⁶⁹ with a focus on MBL customers and customers who rely on electric well pumps at their primary residence. Higher base incentives are reserved for those who are both vulnerable to PSPS outages and provide critical functions for customers during the outage(s).¹⁷⁰

PG&E also received approval for the residential component of our SGIP Financial Assistance pilot. This pilot adjusts the timing of SGIP incentive payment structures to provide a fifty percent (50 percent) upfront payment to approved contractors installing SGIP-eligible measures for qualifying residential customers applying for equity and equity resiliency SGIP incentive funds. This payment structure removes cost barriers to enable vulnerable residential customers in improving their energy resiliency before PSPS events and other emergencies.

PG&E recognizes the need to help support critical facilities, like schools, that serve customers with AFN to adopt continuous power solutions. Because schools are currently ineligible for equity resiliency SGIP incentives, PG&E is seeking approval for a SGIP on-bill financing program to support schools' backup generation and storage needs, with an anticipated launch date of Q2 2021.¹⁷¹

- **Well-Pump Generator Program:** PG&E recognizes the challenges that PSPS events pose for rural customers who rely on well-water powered by electricity. To support these customers during PSPS events, low-income residential customers on PG&E's California Alternate Rate for Energy (CARE)/FERA (those who rely on pumped wells for water service and reside in a Tier 2 or 3 HFTD) can receive a \$500 rebate for qualifying backup generators. Eligible customers that are not enrolled in the CARE/FERA program can qualify for a \$300 rebate. The rebate is available to eligible customers who have purchased a qualifying generator after May 1, 2020.
- **Backup Power Education through Online Marketplace and Safety Action Center:** It is important for all customers to be prepared for different types of outages, whether they are PSPS events called by PG&E, wildfire-related outages initiated at the request of first responders such as California Department of Forestry and Fire Protection or rotating outages initiated by the California Independent System Operator (CAISO). PG&E is supporting customer preparedness and resiliency outreach by providing information and resources to

¹⁶⁹ Commission D.19-09-027 established a new "equity resiliency budget" set-aside for customers participating in one of two low-income solar generation programs or vulnerable households that are located in Tier 2 and Tier 3 HFTD, as well as for critical service facilities serving those areas. D.20-01-021 authorized statewide annual ratepayer collections of \$166 million annually through 2024 for the SGIP program. This decision prioritized allocation of funds to benefit customers affected by PSPS events or located in areas with extreme wildfire risk, including adopting a resiliency adder and a renewable generation adder to promote critical resiliency needs during PSPS events.

¹⁷⁰ Customers eligible for the equity resiliency incentive will receive a \$1 per-watt-hour incentive for energy storage projects.

¹⁷¹ PG&E Advice Letter 4360-G/6052-E.

customers interested in backup power solutions. This includes tools for comparing backup power options and an online marketplace (marketplace.pge.com) to find vendors. PG&E Marketplace currently hosts Portable Power Stations and Portable Generator categories to provide customers with the vendor options and retail purchase options. Through our online Safety Action Center (safetyactioncenter.pge.com), PG&E offers customers tools and tips to learn more about backup power safety. PG&E plans to provide information on backup power options during virtual webinars and other outreach events throughout our service territory.

PG&E will continue to explore additional continuous power-related program offerings to support backup power needs for potentially impacted customers.

- **EV Charging Network Support and Resiliency:** During PSPS events, PG&E's website defaults to a PSPS information site. Customers looking for information on EV charging stations are redirected to mapping resources found on PG&E's "Locate an EV Charger" page (ev.pge.com/charging-stations), which allows customers to find charging locations near them or along their route. Customers can confirm the charging station's status by visiting the network provider's page, which is linked on PG&E's EV savings calculator.

PG&E's planned additional enhancements for the 2021 wildfire season include updates to EV charging station maps to show which stations are potentially impacted by PSPS events, direct outreach to EV customers with information on PSPS impacts to EV drivers, and continued collaboration with EV Service Providers to support communication efforts with EV owners.

PG&E continues to explore emerging technologies and possible turn-key solutions to deploy L3 fast charging for areas affected by PSPS events.¹⁷² PG&E is leveraging an existing research-based subscription service to expedite the search for EV charging solutions to inform the forthcoming Request for Information in early 2021. PG&E is on track to deploy one or more mobile DC (i.e., L3) fast-charge solutions by the 2021 fire season.

- **CMEP:** PG&E's CMEP provides incremental technical and financial support to communities seeking resilience for critical facilities and vulnerable customer groups. The program helps communities plan and implement a resilience solution so that they can power critical resources when the utility grid is shut down due to extreme weather or PSPS events. The support includes technical expertise and cost offsets to pay for the cost of distribution system upgrades to enable the safe islanding of a microgrid.

The program consists of four elements:

- 1) **Enhanced Utility Technical Support** – Serves to facilitate the development of a multi-customer microgrid from initial concept exploration, through solution assessment, to solution execution.

¹⁷² D.20-05-051.

- 2) **Enhanced Self-Service Information and Project Tools** – PG&E's Community Resilience Guide (www.pge.com/resilience) will provide updated financial, technical, and interconnection resources for community resilience projects.
- 3) **Community Microgrid Enablement Tariff** – PG&E submitted a pro forma tariff as part of our CMEP Advice Letter 5918-E to govern the eligibility, engineering studies, development, and island and transitional operation of community microgrids.
- 4) **Cost Offsets** – PG&E will offset the cost of that equipment necessary to enable the safe islanding of a community microgrid, up to \$3 million per project.

PG&E expects to launch the CMEP in 2021, once the final program details are approved by the CPUC. Finally, PG&E also notes that a new Microgrid Incentive Program was adopted in D.21-01-018. PG&E looks forward to working with the other investor-owned utilities and stakeholders in 2021 through a collaborative workshop process to further define this program to support resilience for our customers.

- **Individual Critical Customer Back Up Power Support:** See Section 7.3.3.11.1, which describes in detail PG&E's efforts to support critical facilities and other customers' generation needs during PSPS events.
- **Other Resource Programs:** See Section 8.4 for information on PG&E's in-event support (e.g., foodbanks, grocery delivery programs etc.) for AFN customers.

See Section 8.2.4 for information on in-event customer coordination, communications and notification processes.

8.2.2 PSPS Decision-Making Protocols

- *Outline of tactical and strategic decision-making protocol for initiating a PSPS/de-energization (e.g., decision tree).*

This section describes PG&E's 2020 process for determining when to initiate a PSPS event. This section also addresses Action PGE-66 (Class B).

A PSPS cannot eliminate all wildfire risks and is utilized as a last resort measure to reduce the risk of catastrophic fires and maintain public safety. At this time, there is no singular algorithm for criteria that yields an objective result. Thus, PG&E evaluates PSPS decision-making criteria on an ongoing basis. This ongoing evaluation may result in changes to PG&E's PSPS criteria and decision-making process in 2021 and beyond.

PG&E initiates a PSPS when the weather forecast is for such severe weather that people's safety, homes and businesses may be in danger of wildfires. As each weather situation is unique, PG&E carefully reviews a combination of factors when deciding if power must be turned off.

Key factors that determine PSPS is weather and the fuel moisture in living and dead vegetation. Weather models inform many operational decisions throughout PG&E to prepare for forecast conditions and to mitigate fire risk, including PSPS. PG&E has tested and deployed high-resolution weather models and built high-resolution historical datasets by partnering with external experts. These high-resolution historical datasets and forecasts drive the what is known as the Large Fire Probability (LFP) model. The LFP model (Distribution), represented as LFP_D , is the product of our Outage Producing Winds (OPW) and Utility FPI Models, which are the main inputs into the framework PG&E utilizes to make the decision to execute a PSPS event.

The OPW Model is based on an analysis of windspeeds for every unplanned sustained and momentary outage that occurred over the last decade and forecasts the probability of unplanned outages associated with wind events occurring in PG&E's service area. The OPW Model is driven by PG&E's high-resolution weather modeling output. The OPW Model is trained through an analysis of wind speeds during approximately 400,000 outages on PG&E's distribution grid. For every sustained and momentary outage, the wind speed was extracted from PG&E's historical dataset based on the time and location that each event occurred. This extraction allowed PG&E data scientists to develop wind-outage relationships and models that can then be run in forecast-mode. The OPW Model forecasts the probability of a wind-driven outage based on forecast windspeed for each grid cell for every hour of the forecast. Outage-producing winds vary across PG&E's system based on differences in topography, vegetation and climatological weather exposure in different parts of PG&E's service territory.

The Utility FPI Model uses logistic regression to predict the probability of a fire growing to 1,000 acres or more in a given geographic location based on three decades of meteorological data (including weather, fuel moisture and climatology data) and 26 years of historical wildfire data from the United States Forest Service (USFS) in PG&E's service territory. Similar to the OPW Model, PG&E extracted the

weather data and dead and live fuel moisture data for each historical fire in the USFS fire occurrence dataset in California. PG&E's data scientists constructed over 4,000 Utility FPI Model variants to determine the optimal combination of the fire weather parameters, dead and live fuel moisture, and other factors. The Utility FPI Model takes the forecast meteorological and fuel conditions for each grid cell as an input and provides, for each forecast hour, the probability of a fire growing to 1,000 acres or more.

Using the outputs from the OPW and Utility FPI Models together as well as other criteria listed below, the LFP_D Model indicates for each two kilometer (km)-by-two km and three km-by-three km grid cell each hour, a categorization relating to the probability of a large fire originating from PG&E distribution equipment. The 6.0 LFP_D threshold is the product of PG&E's OPW and Utility FPI models. The LFP_D Model categorizes each grid cell over the forthcoming 104-hour period into one of four categories (called "dx_conditions"):

- "Below_Guidance" indicates that the grid cell fails to meet minimum fire-potential conditions which are the minimum atmospheric and fuel conditions present during the vast majority of large fires in California history based on the USFS fire occurrence data, and so the model does not recommend de-energization.
- "Fire_Potential" indicates that the grid cell meets the minimum fire-potential conditions that must be exceeded for de-energization to be considered. However, the product of the OPW and the Utility FPI Models (LFP_D) does not exceed 6.0, indicating that the forecast probability of a large fire occurring, while possible, is insufficient for the model to recommend de-energization based on the set threshold. This value was chosen after a detailed historical study by back-casting the LFP_D through our historical weather datasets to determine what value captures the significant wind-driven wildfires of the past while also carefully balancing customer impacts to limit the size of PSPS events. Based on this historical review of LFP_D values, verification of the weather scenarios where LFP_D exceeds 6.0, and also considering customer impacts due to PSPS, a LFP_D value of 6.0 was chosen as the quantitative guidance value to consider for PSPS on the distribution system.
- "Dx_Fire_Potential" indicates that the grid cell meets the minimum fire-potential conditions and that the product of the OPW and the Utility FPI Models (LFP_D) exceeds 6.0, PG&E's threshold for recommending de-energization.
- "Black_Swan" indicates that the grid cell meets the minimum fire-potential conditions and the product of the OPW and the Utility FPI Models does not exceed 6.0, but that the potential consequences of a fire igniting are severe enough that, regardless of the likelihood of such a fire, de-energization is still recommended.

The PG&E meteorology team is not limited to only analyzing or considering for de-energization the grid cells that meet the 6.0 LFP_D threshold or the Black Swan criteria. Members of PG&E's meteorology team are able to review those grid cells that are below the recommended guidance (e.g., on the border) and utilize their expertise and knowledge of past weather events to recommend areas that do not

satisfy the 6.0 threshold or the Black Swan criteria for de-energization based on the totality of the meteorological data available. For example, the team can review earlier model run outputs because the LFP_D Model is run four times a day—at 00:00, 06:00, 12:00 and 18:00 UTC. Because weather forecasts constantly change, this look-back can identify areas that are not currently satisfying the criteria but that may have previously exceeded guidance or that may be on the cusp of satisfying the criteria and could exceed criteria if there are relatively small weather shifts. Trends in the forecast are also considered. For example, in the event the forecast has been trending stronger or weaker in the past few model simulations. In addition, PG&E meteorologists utilize other public and proprietary weather forecast model data to help put PG&E's weather forecast model in perspective and better understand the forecast uncertainty.

While the primary initial driver of the scope of a de-energization decision is the algorithmic output of the two km-by-two km LFP_D Model and its application of the Black Swan criteria based on objective weather data, PG&E also considers additional factors in deciding on the recommended de-energization scope. The decision is ultimately a judgment by the meteorology team based on all the available data. These data include the LFP_D model run on three km-by-three km grid cells and weather forecasts generated by other weather models.

The meteorology department cannot begin scoping specific areas for de-energization until approximately four days before a potential de-energization event when our high-resolution forecast model data become available. Once inside that time window, the meteorology department begins the process of analyzing the LFP_D Model on each of those grid cells and analyzing the results on a grid cell-by-grid cell basis. The LFP_D Model estimates the probability of a large fire originating in each grid cell that traverses the geographical scope of a potential PSPS event. When the LFP_D Model's output indicates that the forecast weather conditions in certain grid cells exceed guidance values, or when the output approaches those guidance values, PG&E's meteorology team considers whether to recommend de-energizing those grid cells and any surrounding area. To convey the geographical and temporal recommendation for the scope of de-energization, PG&E's meteorology department develops polygons in our ArcGIS Pro mapping program based on the LFP_D and passes the GIS data and associated metadata on to the PSPS Viewer Team to determine which of PG&E's distribution assets traverse that area of the map—in essence, converting the geographical/temporal polygon into a list of distribution circuits to be de-energized. PG&E's meteorology team has to make the initial recommendation for the scope of any de-energization 72 hours in advance and again 24-48 hours in advance of the de-energization window because PG&E needs time to operationally prepare for the shut-off and the subsequent re-energization and because PG&E is required to notify public safety partners and affected customers in advance of an anticipated de-energization.

Timing of the Decision to De-energize

As indicated above, the PG&E Meteorology team begins scoping grid cells for possible de-energization approximately four days before a potential de-energization event because that is when the high-resolution forecast model data becomes available. Once the model data is available, PG&E meteorologists begin to run and

analyze the results of the LFP_D Model on a grid cell-by-grid cell basis using Geographic Information System (GIS) technology.

During this time, PG&E meteorologists also compare internal fire risk forecasts with forecasts from external agencies to validate observations of high fire risk across the California meteorology community including:

- Model data from public weather models, including pressure gradient forecasts that are known indicators of Offshore/Diablo winds and severe fire weather for Northern California;
- NWS issuance of Fire Weather Watches and RFWs;
- Northern and Southern CA Predictive Services units of the Geographic Area Coordination Centers (GACC) forecasts of “High Risk” zones with Critical Burn Environment factors and Dry Wind Triggers; and
- The National Oceanic and Atmospheric Administration’s (NOAA) Storm Prediction Center’s Fire Weather Outlooks indicating Elevated, Critical and Extreme fire-weather conditions across California.

Once PG&E’s Fire Science and Meteorology team has identified an upcoming severe weather event (typically a period of adverse weather combined with dry fuels), it is monitored for an increased potential of a PSPS event. At this point, PG&E issues an “Elevated” forecast in the PG&E 7-day PSPS Potential (pge.com/weather). The “Elevated” forecast also triggers an internal transition to PSPS readiness posture, wherein select PG&E employees take on roles to prepare for an EOC activation. PSPS readiness posture allows PG&E to better prepare for EOC activities and potential PSPS, enhancing operational execution. Readiness posture activities are intended to be completed on an as-needed basis, driven by forecasted PSPS potential and dependent on the timing and amount of advanced warning required for the event.

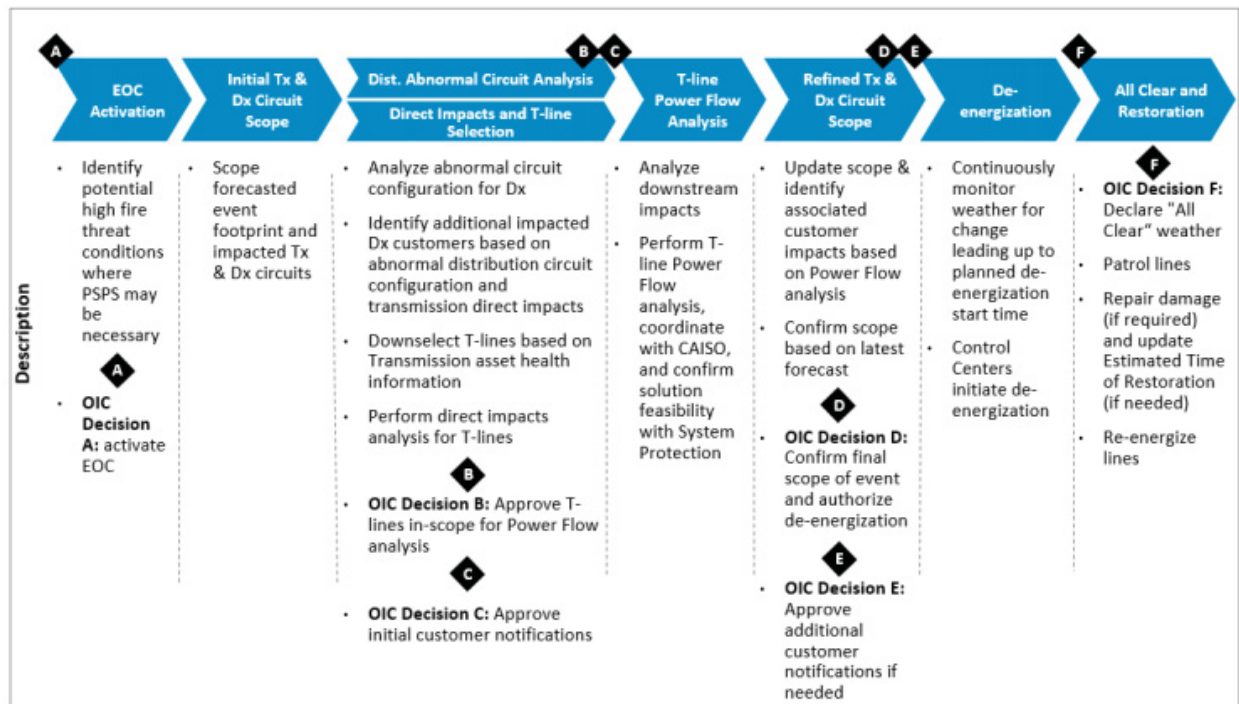
Once the PG&E meteorology team determines that forecast weather and fire potential conditions meet or may meet (if the forecast becomes more severe) the required thresholds for a PSPS event, PG&E activates our EOC, with a designated Officer-in-Charge (OIC). PG&E’s meteorology team then issues a “PSPS Watch” on PG&E’s public facing weather website (pge.com/weather). Under the EOC structure, PG&E Planning and Intelligence, Operations and other Incident Command System (ICS) teams continually monitor weather forecasts and update the OIC on the real-time status of the factors listed above.

During a PSPS event, the OIC is responsible for making the following decisions, which are also depicted in Figure PG&E-8.2-3 below:

- Activating the PG&E EOC in response to a forecasted PSPS event;
- Approving the list of transmission lines determined to be directly within the scope of the PSPS event;
- Approving initial customer notifications;

- Approving de-energization of distribution and transmission lines within the final event scope (including indirectly affected transmission circuits outside the weather polygon); and
- Approving weather “all clear” announcements after weather conditions subside and beginning the process of patrols and restoration.

**FIGURE PG&E-8.2-3: PSPS DECISION-MAKING PROCESS WITH OIC DECISION POINTS
(SUBJECT TO CHANGE AS REQUIRED BY PROGRAM EVOLUTION)**



During a PSPS event, the PG&E meteorology team continually evaluates the latest available forecast data for changes and provides updates to the EOC command staff and OIC regarding how the weather event may be changing and if there are any changes to the timing of the event. The meteorology team bases these updates on their expertise, comparative plots from several forecast models to evaluate confidence and uncertainty, PG&E's LFP_D Model forecasts, and any changes to external forecasts like Fire Weather Watches and RFWs issued by NOAA and forecasts from Northern and Southern California GACC Predictive Services, as well as the Storm Prediction Center. The PG&E EOC, Distribution Control Center, and Transmission Grid Control Center (GCC) then coordinate to ensure customers have been identified, notified, and that work is underway to identify and alternatives or mitigations to for possible de-energization.

Before the weather and PSPS event is expected to begin in a local to regional area, which is called the weather start time, a confirm/abort meeting is held by the EOC Incident Commander (IC) to review the latest set of meteorological and field observation data before switching operations begin. PG&E positions our crews and control centers to be able to perform the switching operations needed to deenergize

areas before dangerous conditions arrive. PG&E Meteorology reviews with the EOC IC the latest forecast model data, the model trends, forecast uncertainty and confidence by comparing against other model data, as well as verifying the event is arriving as scheduled, later or weaker than expected. If the event is arriving weaker than expected, by evaluating forecasted pressure gradients and wind speeds versus actuals, a decision may be made to delay in order to continue monitoring.

On an event-by-event basis, PG&E considers the health of each transmission structure, vegetation risk near each structure, the local area wind speed and Utility FPI Model forecasts. Given the specific forecast and factors listed above, PG&E determines which structures exceed a risk guidance value outputting a preliminary scope of transmission lines to be de-energized. The primary drivers of determining which structures and lines should be considered for PSPS is the LFP model (Transmission) or LFP_T Model, which is the combination of the Utility FPI Model and Operability Assessment (OA) Model. The model produces outputs for every transmission structure on an hour-by-hour basis. A Vegetation LiDAR Risk Score Model is also considered. This takes advantage of LiDAR information of trees surrounding transmission lines and is used to prioritize those lines that have higher risk of vegetation impacts. Black Swan criteria is also considered. This represents the situation where minimum fire-potential conditions are exceeded to the point that, regardless of the likelihood of asset failure leading to ignition, de-energization is recommended. Based on the relative wildfire risk calculated for each transmission structure in the footprint, PG&E will exercise expert judgment to identify which transmission lines, if any, should be considered for de-energization. The transmission lines identified during this evaluation process drive the initial transmission PSPS scope.

PG&E will then conduct a total impact analysis, in coordination with the CAISO, to ensure the initial transmission PSPS scope is feasible and will not compromise reliable bulk power system operations. This step is critical to support compliance with the Federal Energy Regulatory Commission, the North American Electric Reliability Corporation Reliability Standards and to ensure de-energizations will not negatively impact the integrity of bulk power systems.

This assessment process identifies the total count of customers who are likely to be impacted by a transmission PSPS event, including any publicly owned utilities (POU)/electric cooperatives, adjacent jurisdictions, small/multi-jurisdictional utilities, as well as other facilities interconnected at the transmission level. This step may also result in the identification of additional downstream PG&E distribution customers that would be impacted by transmission de-energization. Because of networked configuration of the transmission system, customers and entities impacted by a transmission PSPS event may not be directly located within the weather event footprint itself or in a HFTD area.

If a potential transmission PSPS scope is feasible from a grid operations standpoint, while maintaining compliance with regulatory standards, the benefits of de-energizing the potential transmission lines will be weighed against the public safety risks. If it is determined that the benefits of de-energization outweigh the risks, PG&E will de-energize the identified transmission lines in coordination with the CAISO, following approval by PG&E's OIC.

ACTION PGE-66 (Class B)

- 1) *Provide the percent reduction to transmission de-energization during PSPS events associated with Transmission Vegetation Management (TVM), including a description and supporting data of how such was calculated.*
- 2) *Describe how PG&E factors in areas that have not undergone TVM when determining transmission de-energization during PSPS events, including all supporting procedures and models used.*
- 3) *Describe all instances in which a transmission line stayed energized due to TVM being completed, where it otherwise would have been subject to PSPS.*

Response:

- 1) For 2020, PG&E targeted vegetation right-of-way clearing on seven PSPS circuits, based on the 2019 Transmission PSPS criteria. During the 2020 PSPS events, eight occurrences were avoided because of TVM, which represents an approximate 11 percent reduction in what could have occurred without this vegetation right-of-way clearing. This was calculated based on all lines where completed right-of-way clearing allows the line to not exceed 2020 transmission line vegetation scoping criteria, divided by the total 2020 transmission line PSPS de-energization occurrences due to vegetation. The final time where the line had to remain in the direct scope was due to extreme weather conditions, rather than vegetation risk.
- 2) For 2020, transmission lines were scoped into PSPS due to vegetation exceeding the following thresholds:
 - Meeting fire potential conditions;
 - Meeting at least 40 mph wind gusts; and
 - Meeting at least 1 tree in the 99.7th percentile of LiDAR risk and/or meeting at least 50 trees in the 95th percentile of LiDAR risk.

These thresholds applied to all transmission lines. LiDAR data for transmission is captured annually, providing up to date vegetation data for PSPS decision making. This data is used to develop the vegetation LiDAR Risk Score Model (see Section 7.3.5.8), which informs the PSPS transmission line scoping process (see Section 8.2.2) at the thresholds described above. In 2021, PG&E will continue to refine our vegetation risk model and update the model with new LiDAR data.

- 3) The vegetation management right-of-way clearing work has been ongoing since approximately 2017, prior to PG&E's implementation of PSPS events for transmission. Based on 2020 PSPS criteria, there were eight occurrences that would have been de-energized if not for completed TVM work.

During the 9/7/2020 Event, PG&E was able to leave energized three transmission lines that would have been de-energized if not for completed TVM work.

During the 9/26/2020 Event, PG&E was able to leave energized one transmission line that would have been de-energized if not for completed TVM work.

During the 10/14/2020 Event, PG&E was able to leave energized two transmission lines that would have been de-energized if not for completed TVM work.

During the 10/21/2020 Event, PG&E was able to leave energized one transmission line that would have been de-energized if not for completed TVM work.

During the 10/25/2020 Event, PG&E was able to leave energized one transmission line that would have been de-energized if not for completed TVM work.

8.2.3 Re-Energization Strategy

- *Strategy to provide for safe and effective re-energization of any area that was de-energized due to PSPS protocol.*

When restoring customers during PSPS events, PG&E's main objective is to re-energize our electric facilities safely and in a timely manner. When possible, PG&E prioritizes re-energizing critical infrastructure and transmission lines.

Once PG&E's meteorology team has determined the weather event has passed, PG&E's OIC provides the weather "all clear" approval. This provides the field team with approval to begin the steps listed below on the impacted assets within the PSPS footprint:

- Preparation for re-energization
- Patrol
- Mitigate hazards/repairs

Preparation for re-energization

When PG&E opens our EOC for a PSPS event, the restoration team (including Control Centers and Field personnel) conducts the following activities leading up to re-energization:

- Prepare an event-specific restoration plan based on the weather data;
- Identify restoration resources needed, including helicopters, planes, company personnel, contractors, and mutual aid;
- Provide distribution circuit segment guides to field personnel listing the devices used to segment circuits for patrolling;
- Print distribution circuit segment maps, with a circuit map and individual maps for each segment that needs to be patrolled;
- Distribute switching logs to the field for the de-energization operations; and
- Following de-energization, segment impacted distribution circuits into sections, which are prioritized based on the critical nature of the infrastructure and the number of affected customers.

Patrols

Per PG&E's PSPS-1000P-01 (*Utility Procedure: Public Safety Power Shutoff for Electric Transmission and Distribution*), all impacted transmission and distribution overhead lines that are identified as "event-specific assets at risk" in High Fire Risk Areas (HFRA), as directed by the EOC, must be patrolled in their entirety. Additionally, all hazards must be cleared and/or damages repaired prior to re-

energization. Hazards include tree branches entangled in the conductor; damages include fallen lines or poles.

For transmission circuits, patrols occur on the de-energized sections of all lines with identified “event-specific assets at risk,” as directed by the EOC. For distribution circuits, patrols occur on all impacted primary (and secondary that extends beyond primary) overhead lines identified as “event-specific assets at risk,” as directed by the EOC. Secondary does not include service drops.

Patrols are accomplished by a combination of the following methods:

- **Ground Patrols:** Conducted by Qualified Electrical Workers (QEW) from PG&E, contractors and mutual aid utilities
- **Aerial Patrols:** For distribution and transmission patrols performed by helicopters or planes during flyable daytime hours. Aerial patrols are used to cover a large amount of circuit miles when the terrain cannot be safely patrolled by ground in a reasonable period
 - **Night Aerial Patrols:** These can be completed using InfraRed (IR) technology on helicopters or planes. Night Aerial patrols are currently only conducted on transmission lines.

Following the weather “all clear”, a distribution circuit segment is patrolled and re-energized starting at the source, then systematically patrolled and re-energized out towards the end of the circuits. Equipment that requires repair is isolated. The field patrol hierarchy typically consists of the following for a given distribution circuit:

- **Task Force Lead:** The single point-of-contact (POC) for a given PSPS impacted distribution circuit(s) who is responsible for ensuring PSPS patrols are completed and who works with the Control Center to safely re-energize distribution circuit segment(s). This single POC methodology promotes increased safety and efficiency due to more focused attention of patrol personnel (both aerial and ground) engaged in the PSPS restoration process. This ensures the Control Center is only providing/receiving direction to/from one person
- **Segment Lead:** Personnel responsible for oversight of assigned patrol personnel (both aerial and ground) on given segment(s) of a distribution circuit, reports to their assigned Task Force Lead
- **Patroller:** Individuals (internal, contract and mutual aid) responsible for patrolling assigned portions of a distribution circuit, reports to their assigned Segment Lead

The transmission line patrol prioritization strategy is driven by electrical system stability. This includes ensuring adequate transmission facilities are in service to support the overall grid and accompanying local loads, ensuring the system protection component is addressed and reviewing customer impacts associated with each line impacted in the event.

When both transmission and distribution assets (including substations) are involved, and it is operationally feasible, PG&E conducts patrols during the re-energization

process on all types of assets simultaneously. In some cases, re-energization of the transmission line is prioritized to ensure that system stability (including the system protection component) is accounted for and to provide a source for substations and associated distribution circuits that could be impacted.

Mitigate Hazards/Repair Damages

Due to severe weather events, PG&E may find hazards or damages to our facilities during patrols. Prior to restoring power, these hazards need to be removed and damages need to be repaired in order to mitigate the following risks:

- Arcing or sparks being created from damaged equipment when re-energized
- The public getting too close to, or needing access around, damaged equipment
- Electrocution or shock from damaged or unsecured equipment
- Additional equipment damage if circuit is re-energized while faulted
- Increasing the size or duration of the outage if damage is not isolated or repaired prior to re-energizing

For reference, examples of hazards and damages found during the 2020 PSPS events include:

- Damaged cross-arms on poles
- Damaged insulators and wire connectors
- Damaged splices or sections of conductors
- Vegetation intertwined with the electrical lines
- Trees falling onto assets

If damage is found in an individual segment due to a weather event, PG&E may be able to adjust the restoration order to allow for the overall restoration process to continue while repairs to the affected segment are initiated. This is supported with the visibility provided by the custom distribution circuit maps detailing both the circuit's individual segment(s) and overall circuit connectivity.

Some hazards, like a small tree limb found resting across the conductors, can be removed by the QEW performing the patrol using appropriate high voltage tools and Personal Protective Equipment.

Re-Energization

PG&E's Control Centers coordinate with other centers and field resources to manage all the information related to re-energizing the facilities and then direct the re-energization processes concisely. Many of the customer updates are automatically created by the computer applications being used by the Control

Centers while re-energizing. The Control Centers can also operate remote control devices Supervisory Control and Data Acquisition (SCADA) to re-energize once the segment or transmission line has been patrolled and released for re-energization.

If no issues or concerns are found, or repairs are completed, the Task Force Lead will coordinate with the Control Center to re-energize a segment up to the next open device (segment boundary). This restoration sequencing is based on the “step restoration” methodology which allows for re-energizing customers in a safe, controlled and efficient manner, rather than waiting to patrol the entire circuit and then re-energizing. This process typically follows the pre-identified segmenting alphabetical sequence (i.e., A-B-C-D, etc.).

Re-energization information (i.e., segment guides, switching logs and maps) is provided to both the field and control center personnel prior to executing the PSPS restoration activities.

To support the re-energizing activities, resource needs are identified for the scale and scope of the event footprint during the event pre-planning. Resources typically include helicopters, company personnel, contractors and mutual aid. These resources are then provided to the impacted areas and staged to support the event.

2021 Restoration Goal

For 2021, our restoration goal is to restore all customers as soon as possible and within 24 hours from the termination of the de-energization event, unless it is unsafe to do so. For any circuits that require more than 24 hours for restoration, we will provide an explanation in our post event reports.

Typical safety exclusions based on past events have been (but not limited to):

- No access due to:
 - Police activity (i.e., security)
 - Fire activity (i.e., fire agency requests not to re-energize)
 - Road closure (i.e., public/private roadway closed/blocked and requires agency/customer response)
- Customer equipment damaged (i.e., requires customer repairs prior to energizing)

Some additional reasons why circuits may require more than 24 hours to restore include:

- Inability to utilize planned helicopter resources due to smoke/fog/other visibility concerns
- Lack of resources to patrol all the overhead conductors that were de-energized
- Restoration delayed due to repairs/correction of PSPS hazard or damage found on assets to be restored

- Equipment issues encountered when restoring circuit segment - not caused by PSPS damage

To further enhance PG&E's restoration process, two areas that will be improved upon during the planning phase of the PSPS restoration process are:

- Developing forecasts that identify flying conditions that could affect helicopter availability for patrolling (ex: wildfire smoke, fog, storm, etc.)
- Utilizing enhanced event weather information to identify patrol boundary opportunities. These opportunities typically consist of portions of distribution circuits de-energized during a PSPS event (due to connectivity) that are not in the defined event weather boundary "event-specific assets at risk" area, and as such do not require a patrol in order to be re-energized.

For more information on PG&E's 2021 plans related to standards, trainings and circuit guides and maps, please see Section 7.3.9.5.

8.2.4 Customer, Agency, and External Communications

- *Company standards relative to customer communications, including consideration for the need to notify priority essential services – critical first responders, public safety partners, critical facilities and infrastructure, operators of telecommunications infrastructure, and water utilities/agencies. This section, or an appendix to this section, shall include a complete listing of which entities the electrical corporation considers to be priority essential services. This section shall also include description of strategy and protocols to ensure timely notifications to customers, including AFN populations, in the languages prevalent within the utility's service territory.*

PG&E understands how disruptive it is for our customers, agencies and communities to be without power. In this section, PG&E outlines the outreach and engagement conducted during PSPS events to ensure customers, agencies and the general public are notified ahead of a power shutoff and have the information they need until power is fully restored. This section is broken up into the following categories:

A) Automated Notifications (Calls, Texts, Emails)

B) Additional Outreach and Engagement by Customer Type

- Local and State Agencies and First Responders;
- General Customers;
- MBL Customers;
- Communications to Customers with Limited English Proficiency and Other Needs;
- CBO In-Event Support and Resources;
- Critical Facilities and Infrastructure;
- Telecommunications and Water Providers;
- Transmission-level Entities;
- Third-Party Commodity Suppliers; and
- General Public/Media.

PG&E's in-event communications are in accordance with the CPUC PSPS Guidelines (D.19-05-042).

Based on feedback from agencies and customers on the 2019 PSPS events, PG&E focused our efforts in 2020 on key initiatives to enhance the communications during an event. This includes, but is not limited to:

- Providing alerts and notifications with more information about when power will be

turned off and back on. These notifications include improved content tested for usability and accessibility with simple and straightforward messaging on relevant event information (e.g., location of impact(s), estimated time of shutoff and restoration);

- Working more collaboratively with cities, counties, tribes, critical service providers and other public safety partners through advisory committees and other forums. This was to gather their feedback, identify their needs during PSPS events and update PG&E's policies and procedures to reflect and act upon the feedback received;
- Expanding the PSPS EOC staffing plan to have dedicated Agency Representatives that can work with local agencies and address issues in real-time. An Agency Representative is typically a member of the Public Safety Specialist or LPA teams who have existing relationships with these local agencies;
- Enhancing website capacity to manage higher bandwidth during activated PSPS events. PG&E's main website (pge.com) is prepared to handle 400 million hits per hour and our emergency website, which maintains the PSPS event update information, can serve 240 million hits per hour. During PG&E's largest event of 2020 (October 25), top traffic to these websites only reached 1.3 million hits per hour and two million hits per hour, respectively. PG&E's call center answer PSPS-related calls with an average speed of answer within five seconds;
- Partnering with the CFILC and other CBOs to conduct outreach and provide resources for individuals reliant on power for medical or independent living needs; and
- Providing emergency information in 15 non-English languages on our website, in-event PSPS customer notifications and select print material.

For more information on outreach that PG&E conducts on an ongoing basis on wildfire mitigation efforts, see Section 7.3.10.1. Additional information on outreach related to emergency planning and preparedness, see Section 7.3.9.2.

A) Once the weather event is over and PG&E begins patrolling: Automated Notifications (Calls, Texts, Emails)

When PG&E's EOC activates for a potential PSPS event, PG&E sends notifications to public safety partners¹⁷³ and customers at key milestones throughout the event, typically once a day. These are automated notifications via calls, texts and emails and are supplemented by additional outreach activities. Timing of notifications is subject to change based on weather conditions and other factors.

¹⁷³ Public safety partners are defined by the CPUC as "first/emergency responders at the local, state, tribal and federal level, water, wastewater and communication service providers, affected community choice aggregators, POU/electrical cooperatives, the CPUC, the California Governor's OES, and the California Department of Forestry and Fire Protection."

- **Advanced Notification:** After PG&E's EOC is activated, direct contact is made to California Office of Emergency Services (Cal OES, Public Safety Answering Points (PSAP) and county Office of Emergency Services (OES)/tribal contacts. PG&E also sends automated notifications to all public safety partners that may be impacted by the event. This is to provide public safety partners with advanced notice so they can begin implementing their emergency response plans, ahead of customer notifications;
- **Potential De-Energization (Watch Notification):** When weather allows, PG&E sends Watch Notifications two days ahead, one day ahead and on the day-of de-energization to public safety partners and customers. The notifications include potentially impacted addresses, estimated window of de-energization, estimated duration of the weather event, ETOR¹⁷⁴ and resource links (e.g., PSPS updates webpage with CRC information, resources for customers with AFN, maps and other updates needed for agency emergency response efforts);
- **De-Energization Initiated (Warning/Imminent Notification):** PG&E sends Imminent (Warning) notifications to public safety partners and customers when forecasted weather conditions confirm that a safety shutoff will happen soon. Whenever possible, Warning notifications are sent 4 to 12 hours in advance of power being shut off; these serve as PG&E's De-Energization Initiated notifications. These notifications give an estimated time when the customer's power will be shut off and the ETOR;
- **Restoration in Progress (weather "all clear" notification):** PG&E sends notifications to public safety partners and customers after the weather event has passed and the area is declared "all clear" to safely begin patrols and restoration (called the weather "all clear" notification). Customers can opt-out of receiving event update notifications after de-energization has occurred; and
- **Restoration in Progress:** After the weather "all clear" notifications, PG&E sends event update notifications to customers if their ETOR changes from the original ETOR provided based on two scenarios:
 - Customers receive an updated ETOR based on field or meteorology conditions, which may be sooner or later than original ETOR provided; and
 - **The weather event is over, and damage found during patrols of equipment:** Customers receive an updated ETOR accounting for repair time.

¹⁷⁴ The initial ETOR provided to customers prior to de-energization is based on the forecasted timing of the end of the weather event and PG&E's goal to restore power within 12 daylight hours of weather clearing.

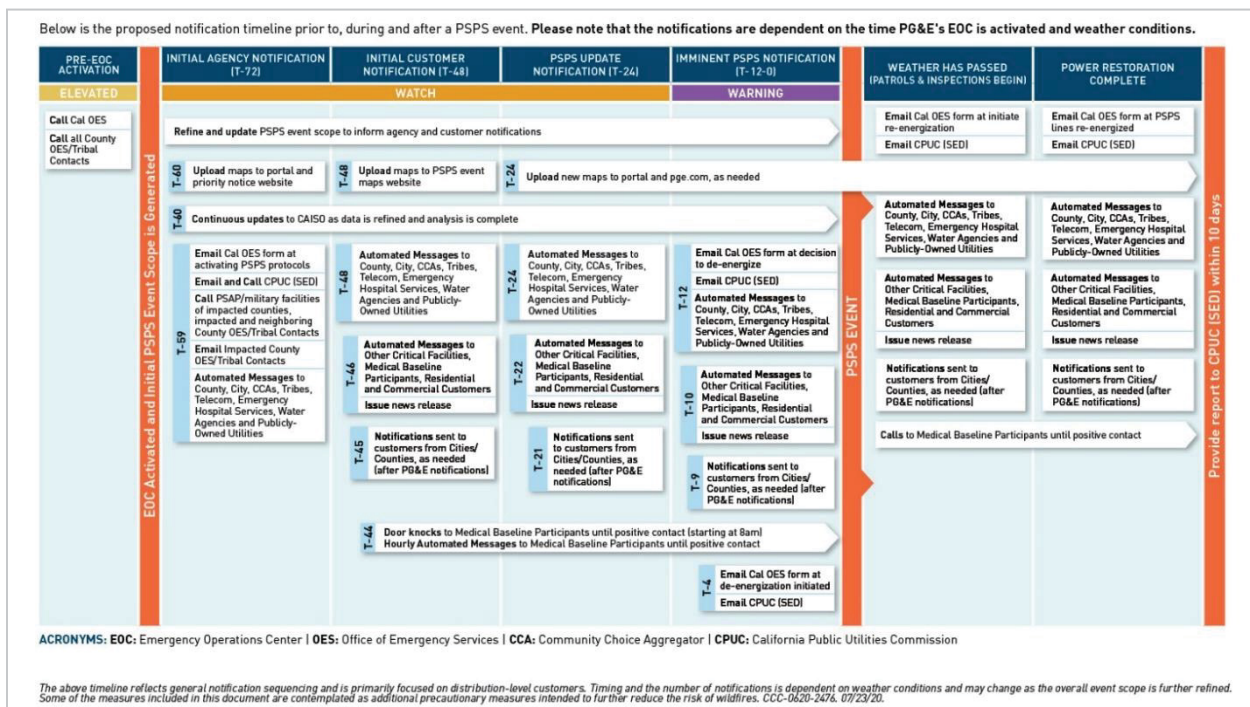
By providing individualized updates at the segment level on a circuit, PG&E gives customers more timely and accurate information about how much longer they might be out of power.

Additionally, when a microgrid is determined that the microgrid is safe and ready to operate during a PSPS event and is planned for a community, PG&E sends notifications to customers served by the microgrid to indicate that they might experience an outage for up to four hours as we re-configure their service from backup power to the electric grid.

- **Restoration Complete Notification:** Restoration Complete notifications are sent automatically to customers when customers are safely restored. This is done using an automated process that issues customer notifications every 15 minutes upon restoration of service. For cities, counties and tribes, Restoration Complete notifications are sent once all customers within the jurisdiction have been restored; and
- **Cancellation Notification:** Anticipated PSPS events may be avoided altogether if weather conditions improve. In such instances, PG&E will notify public safety partners and customers that weather conditions have improved in their area, and PG&E does not anticipate the need to turn off power for safety. PG&E also encourages customers to visit safetyactioncenter.pge.com for tips on putting together an emergency preparedness plan for their home or business.

Figure PG&E 8.2-4 outlines the PSPS notification process explained above.

FIGURE PG&E-8.2-4: PSPS NOTIFICATION PROCESS FLOWCHART



In 2021, PG&E will continue to identify opportunities to improve the notifications, such as:

- Conducting new message testing with customers and attempting to shorten the automated phone calls (while still complying with the required content);
- Streamlining non-PSPS-related outage notifications that can overlap with PSPS-related notifications (e.g., rotating outages); and
- Emphasizing our data collection efforts so that PG&E (1) has accurate customer contact information, including information on master-meter customers and other non-account holders (e.g., renters), (2) knows customers' language preferences, (3) allows opportunities for customers to self-identify as vulnerable (e.g., self-certified vulnerable, self-identified disabled, alternate format communications) without impinging on any HIPAA and CCPA data privacy laws.

B) Additional Outreach and Engagement by Customer Type

- **Local and State Agencies and First Responders:** In addition to the automated notifications noted above, PG&E's Liaison EOC Team is dedicated to conducting outreach and supporting local and state agencies. During emergency events, PG&E follows the ICS of the National Incident Management System structure and protocols to ensure that public safety partners receive timely and appropriate information during PSPS events and other emergencies. This is to ensure that local and state agencies receive timely updates as PSPS event conditions evolve. It is imperative that local and state agencies receive timely updates so that they can initiate their own preparedness efforts to serve their communities. Examples of these locally-driven preparedness efforts include, but are not limited to locally sponsored CRCs, procurement of temporary generation for targeted customers and facilities, enhanced public safety personnel resources in impacted areas, and other efforts. The Liaison Team's outreach is supported by the Incident Commander, as well as the Public Information Officer (PIO), Customer Strategy Officer and Planning Team. The outreach includes, but is not limited to:
 - Submitting the PSPS State Notification Form to Cal OES with the latest event information and sending emails to the CPUC at the key event milestones identified by Cal OES;
 - Conducting live calls to PSAP or dispatch centers when PG&E's EOC is first activated to inform them ahead of customers of a potential event, as their call volume may increase as customers' notifications begin;
 - Hosting daily State Executive Briefings with state agencies to provide the latest event information and to answer questions. PG&E's Liaison Officer facilitates the call with updates from the IC, Assistant Customer Strategy Officer and Public Information Officer;
 - Hosting daily Systemwide Cooperators Calls, where all Public Safety

Partners in the service territory are invited to join and hear the latest event information. PG&E's Liaison Officer facilitates the call and provides event updates, along with a member of the Meteorology Team, the Assistant Customer Strategy Officer and Public Information Officer;

- Hosting Tribal Cooperators Calls with potentially impacted tribes to provide the latest event information and answer unique, local questions in real-time. PG&E's Tribal Liaison Branch Manager facilitates the call and provides event updates;
 - Conducting ongoing coordination with local County OES and tribal contacts through dedicated Agency Representatives. Each Agency Representative works with the agency to determine a set cadence and communication type for event updates. These Agency Representatives are directly connected to PG&E's EOC during a PSPS event and coordinate internally to gather critical, timely, and location-specific information requested. During a PSPS event, PG&E's Liaison EOC Team aims to address requests for localized information in a timely manner to complement the standard cadence of notifications to all impacted communities described in this section;
 - Embedding a PG&E Agency Representative into the Cal OES State Operations Center to answer questions in real-time, at the request of Cal OES; and
 - Providing PSPS-related maps, situation reports, critical facility lists and MBL customer lists by jurisdiction via the PSPS Portal at the time of the initial notification and as event scope changes. During an activated PSPS event, PG&E's PSPS Portal Team is also available 24/7 to assist public safety partners with access or technical support.
- **General Customers:** PG&E aims to share what we know about the weather and our equipment as soon as we can, keeping in mind weather conditions can be uncertain. Our goal, whenever the forecast will allow, is to send automated notifications to potentially impacted customers two days ahead before shutting off power and at least once a day until power has been restored.

Customers who have selected their language preference receive in-language (translated) notifications. PG&E provides notifications to customers in English, with information on how to get event information in 15 non-English languages.¹⁷⁵

PG&E will continue to look for opportunities to optimize the frequency and accuracy of notifications and will also explore new solutions and improved technologies to best communicate PSPS event updates and impacts with customers in the channel of their choice. Example approaches include, but

¹⁷⁵ Spanish, Chinese (Mandarin and Cantonese), Vietnamese, Korean, Tagalog, Russian, Arabic, Farsi, Punjabi, Japanese, Khmer, Hmong, Thai, Hindi, and Portuguese.

are not limited to, considering new approaches for translated notifications or web technologies, and/or exploring options to provide a more personalized customer experience on the web, call center and/or direct notifications. PG&E continues to pursue feedback from customers, agencies, CBO, tribal leaders and other relevant stakeholders to inform and improve the customer notification experience;

- **MBL Customers:** During PSPS events, MBL customers receive automated calls, text and emails at the same intervals as the general customer notifications. PG&E provides unique PSPS Watch and PSPS Warning notifications¹⁷⁶ to MBL program customers¹⁷⁷ and additional calls and texts at hourly intervals until the customer confirms receipt of the automated notifications by either answering the phone, responding to the text or opening the email. If confirmation is not received, a PG&E representative visits the customer's home to check on the customer (referred to as the "door knock" process) while hourly notification retries continue.¹⁷⁸ If the customer does not answer, the representative leaves a door hanger at the home to indicate PG&E had visited. In each case, the notification is considered successful.¹⁷⁹ At times, PG&E may also make Live Agent phone calls in parallel to the automated notifications and door knocks, as an additional attempt to reach the customer prior to and/or after de-energization.

PG&E shares MBL customer lists with appropriate county, city and tribal agencies via the PSPS Portal. The MBL customer lists identify individuals who have not confirmed receipt of their notifications. PG&E notifies agencies that the data is available on the PSPS Portal, encouraging them to inform these customers of available resources. Please note that agencies are required to accept the PSPS Portal online agreement to receive confidential customer information. PG&E also only provides agencies information to customers within their jurisdiction;

- **Communications to Customers with Limited English Proficiency and Other Needs:** Please see Section 8.4 for a detailed description of our services for limited English proficiency customers and AFN populations;
- **CBO In-Event Support and Resources:** Please see Section 8.4 for details on CBO in-event support and resources; and

¹⁷⁶ All notifications include reference to resources available to customers including a link to www.pge.com/disabilityandaging.

¹⁷⁷ Including MBL Program customers who are master-metered tenants (e.g., renters or tenants in mobile home park).

¹⁷⁸ Until late evening (approximately 9 p.m.) or PG&E suspends outreach for the night.

¹⁷⁹ For MBL customers, the in-person door knock visit where a door hanger is left, but no contact made with the customer is considered "successful contact," but not confirmed as "received." If the representative makes contact with the customer, this is considered "received."

- **Critical Facilities and Infrastructure¹⁸⁰:** Critical facilities and critical infrastructure¹⁸¹ are those that are essential to public safety and that require additional assistance and advance planning to ensure resiliency during de-energization events. Critical facilities will receive the following notifications and support by PG&E during a PSPS event:
 - Notification in advance of customers for preparedness efforts;
 - Maps of potentially impacted areas in advance of customer notifications; and
 - A dedicated single point of contact to communicate frequently via live calls for situation awareness updates and operational support.

Before a PSPS event, PG&E sends automated notifications to potentially impacted critical facilities and asks them to confirm receipt of the notifications. If these customers do not confirm receipt of the automated notification, PG&E representatives from local Operations Emergency Centers (OEC), Customer Relationship Managers (CRM) or Critical Infrastructure Lead (CIL) make direct calls to the critical facility contacts to ensure they are aware of the potential PSPS event, and they provide localized support for other public safety partners such as water agencies and emergency hospitals.

When PG&E's EOC is activated for a PSPS event, a single POC at PG&E will provide timely updates with event scope and status and answer individual questions for facilities that meet the requirements of being both a critical facility and public safety partner.

During PSPS events, PG&E leverages a dedicated team of Customer Relationship Managers to support critical facilities and other business customers. In addition to the CIL, PG&E's CRMs act as dedicated points-of-contact available 24/7 to conduct direct outreach, provide event updates and answer individualized questions for these customers.

In 2020, PG&E held listening sessions with critical facility customers and established the Telecommunications Resiliency Collaborative to enhance information sharing and wildfire season preparedness. This forum helped PG&E set realistic service expectations and planning needs, better coordinate during emergency and disaster events and promote overall resiliency with Telecommunication providers in support of mutual communities served. These forums are described in detail in Section 7.3.10.1.

- **Telecommunications and Water Providers:** When weather allows, PG&E sends advanced notifications (approximately 72-48 hours in advanced of de-energization) via automated calls, texts, and emails to impacted communications and water providers ahead of general customers, as they are

¹⁸⁰ D.19-05-042, Appendix A and D.20-05-051, Appendix A.

¹⁸¹ PG&E uses the terms 'critical facilities' and 'critical infrastructure' synonymously.

considered public safety partners.

These customers are also invited to PG&E's daily Systemwide Cooperator Call for situational updates and have access to the PSPS Portal that contains maps and other event information (e.g., impacted site lists, situation reports).

Communications providers receive support from PG&E's CIL, and water providers receive escalated support through PG&E's local OECs.

- **Transmission-level Entities:** PG&E's CIL notifies impacted transmission-level entities, including POUs, of the event as soon as practically possible. Transmission-level entities receive automated notifications through PG&E's customer notification system once transmission-level impacts are officially determined, which is typically 36 hours in advance of de-energization. PG&E's GCC operators make live calls to these transmission-level entities before both de-energization and re-energization.

POUs are invited to PG&E's daily Systemwide Cooperator Call to receive situational updates and have access to the PSPS Portal that contains maps and other event information (e.g., maps, impact lists, situation reports).

- **Third-Party Commodity Suppliers:** When PG&E's EOC is activated for a PSPS event, Community Choice Aggregator (CCA) Relations Managers directly contact the affected CCAs to warn of the possibility of the impending PSPS event. Throughout an event, PG&E's CCA Relations Managers give CCAs dedicated support, fielding questions, sharing situational updates and handling miscellaneous requests. PG&E send CCAs automated notifications at the same cadence as other public safety partners, invite them to PG&E's daily Systemwide Cooperator Call for situational updates and provide access to the PSPS Portal that contains maps and other event information (e.g., customer impact lists, situation reports).
- **General Public/Media:** In addition to direct customer notifications and communications, PG&E uses multiple platforms to communicate through the various stages of an event including PG&E's website and contact center, media outlets, including radio and social media channels and alternative customer notification methods.
 - **Alerts:**¹⁸² Customers and non-account holders can sign up for pre de-energization alerts (automated calls¹⁸³ and texts¹⁸⁴) based on specified addresses outside of their permanent residence (anticipated by

¹⁸² See pgealerts.alerts.pge.com/outages/psps-address-alert.

¹⁸³ By June 2021, available in 16 spoken languages – Spanish, Mandarin, Cantonese, Vietnamese, Korean, Tagalog, Russian, Arabic, Farsi, Punjabi, Japanese, Khmer, Hmong, Thai, Hindi, and Portuguese.

¹⁸⁴ By June 2021, available in 15 written languages – Spanish, Chinese (Mandarin and Cantonese) Vietnamese, Korean, Tagalog, Russian, Arabic, Farsi, Punjabi, Japanese, Khmer, Hmong, Thai, Hindi, and Portuguese.

September 2021). Anyone can use PG&E's PSPS Address Alerts including CBOs, tenants of a master meter, renters, and others. This important communication tool allows customers to track certain locations, such as their children's school or place of work. The functionality is similar to that which is sent to the account holder for that address and replaces previous alerts that customers were able to receive by ZIP Code.

- **Website:** PG&E's website allows customers to have access to 24/7 information before, during and after a PSPS event. During a PSPS event, PG&E's website tools and resources include, but are not limited to:
 - Customer impact address lookup tool;
 - PSPS event maps and information;
 - Weather awareness updates;
 - PSPS collateral (including translated materials);
 - Media engagement and links to social media; and
 - Short informational or event-specific videos (e.g., process after a weather "all clear" is called, PSPS decision making process, ASL and translated videos).

Before the first PSPS event of 2020, PG&E significantly improved our website, including pge.com, and established a new emergency website with better scalability and stability. PG&E's main website pge.com, currently has the capacity to serve 400 million hits¹⁸⁵ per hour and PG&E's emergency website, which maintains the PSPS event update information, can serve 240 million hits per hour. Both sites use a cloud-based provision solution.

During PSPS events, PG&E places banners on multiple pages on pge.com to drive traffic to PG&E's PSPS event site. In addition, upon entering pge.com, users are taken to a splash screen on the PSPS event site giving the user a choice of visiting pge.com or the PSPS updates web pages. PG&E updates the website with information on CRCs as soon as sites are confirmed (up to two days before de-energization for some locations), including locations listed by county, resources available at each center, type of CRC (e.g., indoor, outdoor) and operating hours. CRC locations are also indicated on the PSPS impact map.

In addition to the PSPS-related websites, which are accessible and translated in 15 non-English languages, PG&E also maintains a special

¹⁸⁵ Website hits measure requests for data sent to a server when a user accesses a webpage (e.g., images viewed, data downloaded). One-page visit or page view can result in one or more hits.

resources webpage¹⁸⁶ that highlights PSPS impact mitigation resources available during an event, including an overview of the services provided through PG&E's partnership with CFILC as described in Section 8.4, and a list of local ILCs to contact. The site also includes a video of an ASL interpreter that provides an overview of the resources available through local ILCs.

- **Contact Centers:** PG&E operates four contact centers in the state of California and provides 24/7 emergency live-agent service for customers to report emergencies, or obtain PSPS-related updates, as needed. PG&E's Contact Center agents are trained in how to handle customers dealing with natural gas and electric emergencies with specific procedures to escalate life-threatening situations, which is available for translation services in 240 languages. PG&E may implement the "PSPS call strategy,"¹⁸⁷ as needed, to increase call center staffing to help ensure elevated service with minimal wait times for customers during a PSPS event.
- **Social Media:** During an event, PG&E provides event updates on social media to provide awareness and updates on the event. These tactics include:
 - Posting information and event updates at regular intervals on a variety of channels (i.e., Twitter, Facebook, Nextdoor, Instagram);
 - Varying the information to reflect the current status of the PSPS event;
 - Producing social media content in English, Chinese, and Spanish; and
 - Sharing an event recap from the public briefings across social channels.
- **Advertising:** During an event, PG&E secures spot advertisements on local radio and print media outlets, including in-language publications. Information includes, but is not limited to:
 - Event information and resources for customers in need, including the PSPS Disability and Aging website and recommendations for calling 211 for a full list of support services; and
 - Backup communication channels should cell service be unavailable for

¹⁸⁶ www.pge.com/disabilityandaging.

¹⁸⁷ During an event, PG&E will consider implementing the PSPS call strategy, as needed, to ensure elevated service with minimal wait times for customers potentially affected by an active PSPS event customers. The PSPS call strategy includes maintaining full staffing across Contact Center Operations and training Credit and Billing representatives to be able to handle PSPS call types, and only accepting emergency-related calls (including calls related to downed wires, gas leaks, outages and PSPS) when notifications are sent to over 100,000 customers for an active PSPS event.

direct customer notifications.

- **Media Engagement:** During an event, PG&E proactively and reactively engages with local media to provide awareness, event updates and general education on PSPS events. These engagements include:
 - Issuing news releases one to two times a day to update customers and the media on the latest developments;
 - Holding evening public briefings which are live streamed with an ASL translator for customers and the media where press outlets are invited to ask questions;
 - Distributing morning video updates on social media to provide customers with the latest event updates and ways to prepare; and
 - Reaching out for interviews and responding to local media outlet questions and requests for interviews throughout the service territory.

See 2021WMP_Section 8.2.4_Atch01 for a confidential list of priority essential service entities, as defined by the CPUC. Note that the entity name is created by the customer through the account setup process and entities could have multiple accounts, separated by facility location or operational function. Because of this, the attachment may appear to have duplicate listings.

8.2.5 Protocols for Mitigating Public Safety Impacts of PSPS

Protocols for mitigating the public safety impacts of these protocols, including impacts on first responders, health care facilities, operators of telecommunications infrastructure, and water utilities/agencies.

Between 2021-2023, PG&E will mitigate public safety impacts of PSPS activities on public safety partners (i.e., first responders, health care facilities, operators of telecommunications infrastructure and water utilities/agencies) by engaging in the following:

- Adopting PSPS impact mitigation efforts as described in Section 8.2.1;
- Coordinating with public safety partner(s) to collectively plan and prepare for emergencies, as described in Section 8.2.4;
- Effectively communicating with public safety partners in advance of a potential PSPS event, as described in Section 8.2.4;
- Effectively communicating information regarding planning and preparation (i.e., more detailed planning maps, improvements to the impact map-sharing process, weather conditions and other situational awareness updates, insight into impacted MBL customers, etc.), as described in Section 8.2.4;
- Developing COVID-19 considerations following state and county guidelines, if shelter-at-home and physical distancing requirements are in place during PSPS events, as described in Section 8.2.1; and
- Deploying temporary backup generation sources to energize substations and temporary microgrids for services supporting community normalcy, standalone facilities serving public safety, hospitals supporting emergency response, vote tabulation centers and CRCs, as described in Section 8.2.1.

PG&E will continue improving our PSPS protocols and the resources we provide based on feedback from relevant stakeholders. PG&E will also continue to refine its protocols and procedures based on lessons learned after each PSPS event, as described in the Post Event De-Energization Reports filed by PG&E following PSPS events.

Response to Critical Issue No. PGE-01

Critical Issue Title: *Omission of Quantitative Targets for Reduction in PSPS Scale, Scope, and Frequency*

Required Remedies:

1. *PG&E shall describe any changes to its PSPS Protocols (2021 WMP Update Section 8.2) to reflect all current information.*
2. *PG&E shall provide quantitative targets for reducing the scale, scope, and frequency of PSPS:*
 - a. *Assuming no additional PSPS decision-making criteria will be implemented in 2021 as a result of PG&E's federal criminal probation.*
 - b. *If PG&E currently plans to include any additional criteria for de-energizations in 2021 in light of the federal probation, specify how that would alter its quantitative PSPS targets and provide the revised quantitative PSPS targets.*
3. *PG&E shall fully describe the methodology that supports its quantitative PSPS targets, for 2.a and 2.b, and provide any supporting calculations.*
4. *For each programmatic commitment listed in Tables 8.3-1, 8.3-2, and 8.3-3 of its 2021 WMP Update, PG&E shall provide the expected quantitative reduction of PSPS scale, scope, and/or frequency. For commitments where the quantitative reduction of PSPS scope, scale, and frequency is zero or unobtainable, PG&E must justify why the values are zero or unobtainable and explain how the commitment is otherwise expected to reduce PSPS impact.*
5. *PG&E shall describe in full and complete detail how the major programs in the following initiative categories are factored into its PSPS projections for 2021 and 2022 (Table 11).*
 - a. *Risk Assessment and Mapping*
 - b. *Situational Awareness and Forecasting*
 - c. *Grid Design and System Hardening*
 - d. *Asset Management and Inspections*
 - e. *Vegetation Management and Inspections*
 - f. *Grid Operations and Operating Protocols*
 - g. *Emergency Planning and Preparedness*
 - h. *Stakeholder Cooperation and Community Engagement*

6. *PG&E shall explain in full and complete detail why its projected planned customer outage hours for 2021 and 2022 (Table 11, Row 2.a) are an increase over its 2020 actual customer outage hours.*

8.2.6 Response to Critical Issue No. PGE-01, Remedy 1

- 1) PG&E shall describe any changes to its PSPS Protocols (2021 WMP Update Section 8.2) to reflect all current information.

In Section 8.2.2, we outlined our tactical and decision-making protocols for initiating PSPS/de-energization events.¹⁸⁸ In that section, we emphasized that a PSPS event is a measure of last resort to reduce the risk of catastrophic fires and maintain public safety. Historically, the key factors that we have used to determine whether to initiate a PSPS event are weather conditions and fuel moisture in living and dead vegetation and we have used various models based on high-resolution data sets to measure weather conditions and fuel moisture levels.

Although we have historically used weather and fuel moisture as the key considerations for initiating PSPS events, we are also continually evaluating our PSPS Protocols. In May 2021, we revised our PSPS Protocols to include consideration of Tree Overstrike Potential and Priority 1 and Priority 2 tags.¹⁸⁹ We are continuing to evaluate and improve the models that we use to inform our PSPS decisions and expect to complete this evaluation in August 2021. Thus, in 2021, it is likely that we will utilize three different PSPS Protocols at different points in time.

For clarity, we are providing in Table PG&E-Revision Notice-8.2-1 below the naming convention that we will use for each of these protocols and the time periods that we expect the protocols to be in effect. Because the 2021 PSPS Protocols have not yet been finalized or approved, the period of time that they are in effect may change.

TABLE PG&E-REVISION NOTICE-8.2-1: OVERVIEW OF PG&E'S PSPS PROTOCOLS

PSPS Protocol Name	Time Period in Effect
2020 PSPS Protocols ¹⁹⁰	June 2020 – May 2021
2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags	May 2021 – August 2021
2021 PSPS Protocols	August 2021 – June 2022

¹⁸⁸ For purposes of this section of the 2021 WMP, we will refer to the decision-making criteria that we use for PSPS events as “PSPS Protocols.”

¹⁸⁹ Tree Overstrike Potential and Priority 1 and Priority 2 tags are described in more detail below.

¹⁹⁰ The 2020 PSPS Protocols were in effect in 2020 and through May 2021 and are the protocols that were described in the 2021 WMP that was submitted on February 5, 2021.

The 2020 PSPS protocols were described in Section 8.2.2 of the 2021 WMP. In the remainder of this section, we describe: (1) the 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags; and (2) the 2021 PSPS Protocols.

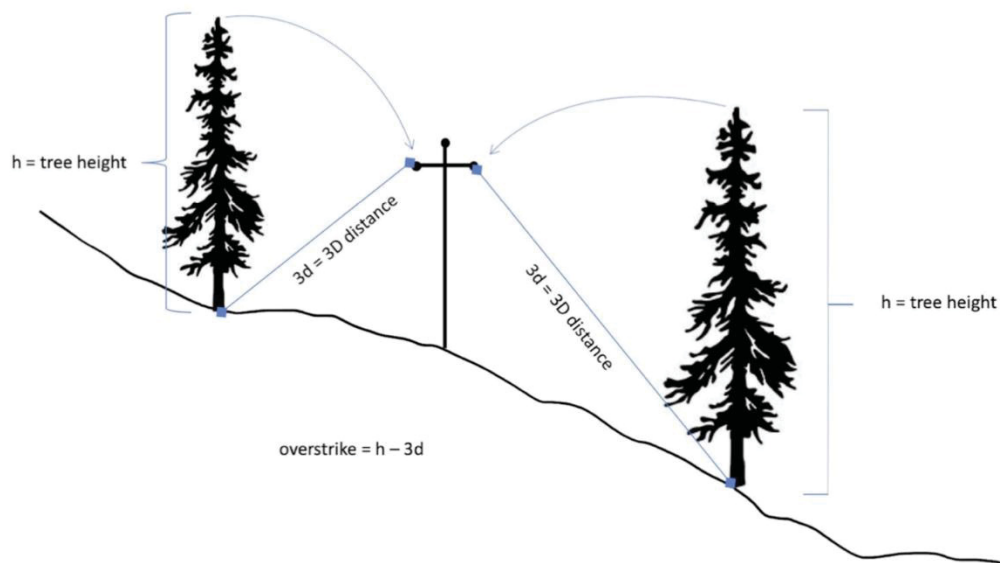
1. 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags

Since the PSPS program was initiated in 2018, we have continued to evaluate our PSPS Protocols and improve our models. In early 2021, we evaluated how to incorporate the presence of high-risk vegetation conditions into our PSPS Protocols. Below we describe: (a) the Tree Overstrike Potential; (b) Priority 1 and 2 Tags; and (c) the 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags.

(a) Tree Overstrike Potential

In an effort to understand and incorporate vegetation risk, PG&E recently completed an analysis of LiDAR-collected tree density data, as well as high priority vegetation tags. We presented these findings in an April 20, 2021 tree overstrike workshop hosted by the CPUC. The data shows that areas with a higher density of trees tall enough to strike overhead conductors produce more vegetation outage events than locations with lower densities. We refer to this as Tree Overstrike Potential.¹⁹¹ An example of Tree Overstrike Potential is provided in Figure PG&E-Revision Notice-8.2-1 below.

FIGURE PG&E-REVISION NOTICE-8.2-1: DIAGRAM SHOWING TREE OVERSTRIKE POTENTIAL AS A FUNCTION OF TREE HEIGHT MINUS 3D DISTANCE



¹⁹¹ Overstrike is defined by the amount of timber in which one tree could strike our lines. For example, a taller tree next to our lines would have a higher amount of overstrike than a shorter tree in the same location. This is a function of the Tree Height minus the 3D distance (shortest path from tree to conductor) as illustrated in Figure PG&E-Revision Notice-8.2-1.

As a result of our analysis, in May 2021, we updated our 2020 PSPS Protocols to consider Tree Overstrike Potential. In order to accomplish this with operational feasibility in mind, the point overstrike LiDAR data calculated from each individual tree top was aggregated to each 2 x 2 km grid cell in PG&E's weather and PSPS model by taking the sum of overstrike in each cell. These overstrike values were translated into percentile values by ranking each grid cell from highest to lowest in terms of feet of overstrike. In our review of the LiDAR dataset, PG&E identified more than five million trees with a total of more than 150 million feet of tree overstrike potential in the HFTD.

Based on a further analysis of the propensity of tree-related outages and the tree overstrike exposure near the Zogg Fire ignition point, we proposed to modify the 2020 PSPS Protocols to include the 70th percentile or above Tree Overstrike Potential areas. We presented this analysis in an April 20, 2021 tree overstrike workshop hosted by the CPUC. Based on this analysis, locations with a Tree Overstrike Potential in the 70th percentile or above will be directly considered when evaluating potential PSPS events.¹⁹² For reference and clarity, we found that at the 70th percentile value, a 2 x 2 km grid cell contains approximately 10,000 ft of overstrike or approximately 10,000 ft of timber measured from the point of the trees that could first impact our conductors to the top of the trees that could impact our conductors. Additionally, the 70th percentile and above grid cells capture approximately 92% of the tree overstrike potential in the HFTD. The amount of overstrike in feet increases as the percentile increases.

(b) Priority 1 and 2 Tags

In addition to considering tree overstrike as part of our current PSPS Protocols, PG&E has worked to include assets that are adjacent to trees with Priority 1 and Priority 2 tags as a part of our PSPS Scope due to their higher risk of contact with our assets or failure. Trees with Priority 1 tags are either in contact or showing signs of previous contact with a primary conductor; actively failing or at immediate risk of failing and which could strike PG&E's facilities; or presenting an immediate risk to PG&E's facilities and must be addressed within 24 hours. Trees with Priority 2 tags have either encroached within the PG&E minimum clearance requirements; or have any other identifiable potential safety issues, including the ability to strike PG&E facilities, requiring expedited work, and must be addressed within 20 business days, unless constrained.¹⁹³

In order for a tree with a Priority 1 or Priority 2 tag to bring our assets into PSPS scope, the area must first fall within our Minimum Fire Potential Conditions in scope for PSPS. If the area meets our Minimum Fire Potential Conditions and has assets with Priority 1 or Priority 2 tags, PG&E will work to remediate the trees as quickly as possible to avoid de-energizing the assets and our customers. While the inclusion of

¹⁹² Areas that are below 70th percentile of Tree Overstrike Potential are indirectly considered in the PSPS Protocols through our Large Fire Probability Model, which is the product of the OPW and FPI Models, or through Black Swan decision criteria.

¹⁹³ Constraints include environmental issues, customer refusals, site access and line clearances.

Priority 1 and Priority 2 tags into our PSPS protocols is currently a manual process, we are working to automate processes and tools to more quickly identify and locate these tags in advance of PSPS events and ensure we can communicate with customers potentially brought into PSPS scope by a Priority 1 or Priority 2 tag being identified just prior to de-energization. PG&E expects to build tools and a dashboard that automates key processes to include Priority 1 and Priority 2 tags into our PSPS protocols by August 2021.

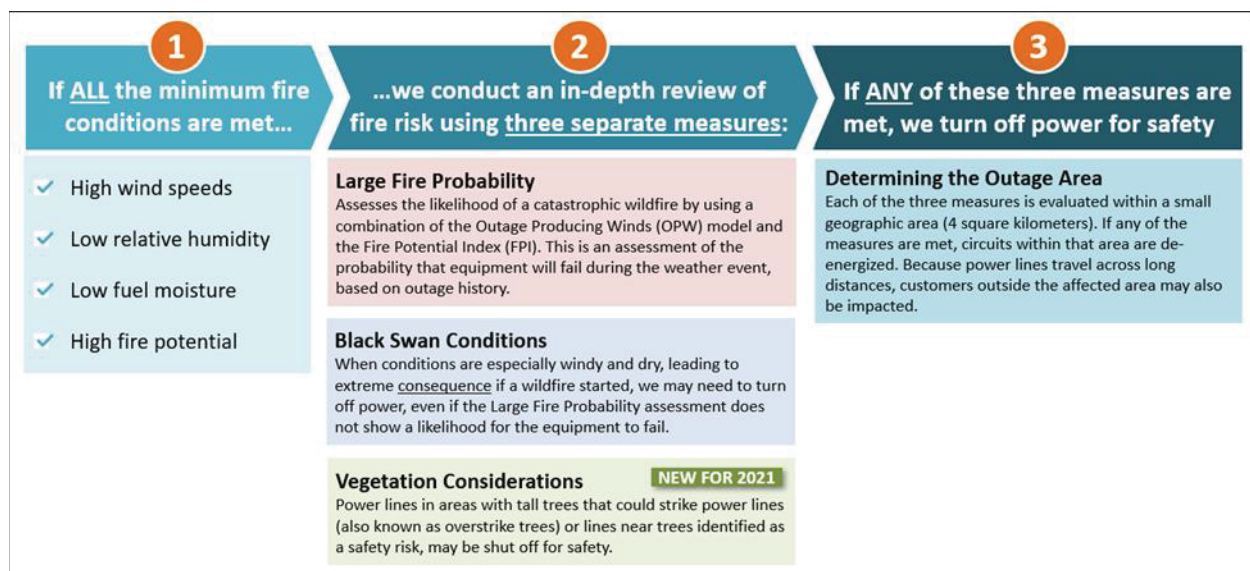
An analysis of potential quantitative impacts of Priority 1 and Priority 2 tags on 2019 and 2020 PSPS events has shown that almost all Priority 1 and Priority 2 tags are captured by our tree overstrike criteria, and the addition of Priority 1 and Priority 2 tags to our PSPS protocols would not have significantly increased the number of customers impacted by our 2020 PSPS Protocols with the overstrike criteria only. The estimated increase in customer impacts from Priority 1 and Priority 2 tags over the overstrike criteria alone for 2019 and 2020 PSPS events was less than 1%. However, this figure assumes no trees associated with Priority 1 or Priority 2 tags were specifically mitigated prior to the PSPS events. Given that PG&E will work to mitigate Priority 1 and Priority 2 tags in advance of PSPS events, and the estimated quantitative impact of such tags is minimal, we have not included estimated quantitative impacts of Priority 1 and Priority 2 tags in this analysis.

(c) 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags

We refer to the revised 2020 PSPS Protocols, which now include Tree Overstrike Potential and Priority 1 and Priority 2 tags, as the 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags. Figure PG&E-Revision Notice-8.2-2 below depicts at a high level the 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags. In Step 1, minimum fire conditions are evaluated. If these minimum fire conditions are met, the three separate measures in Step 2 are evaluated. The Large Fire Probability Model and Black Swan Conditions were described in the 2021 WMP that we submitted in February 2021.¹⁹⁴ The third measure, Vegetation Consideration (i.e., Tree Overstrike Potential and Priority Tags) is new. If any one of these three measures are met, a PSPS event may be initiated in Step 3.

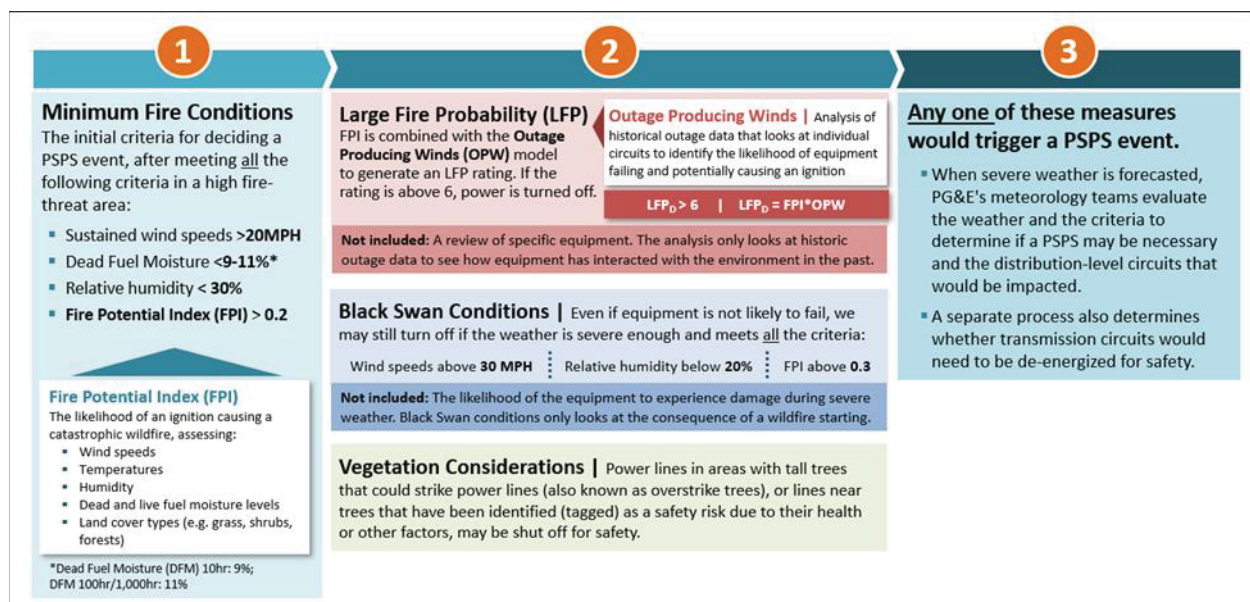
¹⁹⁴ See 2021 WMP, Section 8.2.2.

FIGURE PG&E-REVISION NOTICE-8.2-2: 2020 PSPS PROTOCOLS PLUS TREE OVERSTRIKE POTENTIAL AND PRIORITY TAGS



In addition to the high-level overview of our 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags in Figure PG&E-Revision Notice 8.2-2 above, Figure PG&E-Revision Notice-8.2-3 below provides a quantitative summary of our 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags.

FIGURE PG&E-REVISION NOTICE-8.2-3: QUANTITATIVE SUMMARY OF 2020 PSPS PROTOCOLS PLUS TREE OVERSTRIKE AND PRIORITY TAGS



2. 2021 PSPS Protocols

While the 2020 PSPS Protocols Plus Overstrike Tree Potential and Priority Tags are currently being used to determine when to initiate a PSPS event, it is likely that this approach will change in August 2021. We are currently evaluating revisions to our PSPS-related models, as well as potential inclusion of distribution asset tags, which may result in changes to our approach to PSPS. These revisions have not yet been approved by PG&E leadership for use during PSPS events. However, we wanted to inform the Commission, WSD, and stakeholders that this evaluation is ongoing, and the results of this evaluation may substantially modify the current 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags. We refer to the potentially new PSPS protocols as the 2021 PSPS Protocols.

The 2021 PSPS Protocols will include enhancements to our Outage Producing Wind Model (OPW) and our Fire Potential Index (FPI) Model. The OPW Model forecasts the probability of a wind-driven outage on our system based on forecast windspeeds for each grid cell associated with our distribution lines for every hour of a forecast. The FPI Model uses logistic regression to predict the probability of a fire growing to 1,000 acres or more in a given geographic location based on three decades of meteorological data (including weather, fuel moisture and climatology data) and 26 years of historical wildfire data from the United States Forest Service (USFS) in PG&E's service territory. Below we describe: (a) the Fire Potential Index Model; (b) Outage Producing Winds Model; and (c) the inclusion of asset tags.

(a) Fire Potential Index Model

As we indicated in Section 7.3.2.4 of the 2021 WMP, we are enhancing the FPI Model by using additional data and an enhanced fire occurrence dataset and expect these enhancements to be completed by this summer. Specifically, in 2020, PG&E partnered with Sonoma Technology Inc. to produce an enhanced fire occurrence dataset using satellite fire detections from MODIS and VIIRS. This enhanced dataset combines traditional data sets but augments them with granular satellite information to provide daily growth metrics for each fire. We are evaluating if the FPI Model predictive skill is improved by using this new dataset over previous USFS datasets.

(b) Outage Producing Winds Model

In addition, as we indicated in Section 7.3.2.6 of the 2021 WMP, we are also recalibrating the OPW Model using the 2 km climatology that will be extended to capture all outage events in 2020. This includes all 2020 sustained and momentary outages, as well as damages found during post-PSPS event patrols in 2020. In addition, we are examining the efficacy of incorporating tree overstrike risk directly into the OPW Model to further inform vegetation-based outage risk.

(c) Inclusion of Asset Tags

In addition to the FPI and OPW Model updates, PG&E is evaluating the inclusion of distribution asset tags as a part of our PSPS Protocols. We are currently assessing which tags may be included in our 2021 PSPS Protocols and developing processes to effectively incorporate them into the protocols. It should be noted that the 2020

Transmission PSPS protocols already consider the health of our assets when selecting the lines for de-energization.

We currently anticipate that the updates to our 2021 PSPS processes and models will be incorporated into our 2021 PSPS Protocols by August of 2021. For this update, we are evaluating whether the new model updates capture the risk included in our 70th percentile tree overstrike guidance and whether the 70th percentile overstrike guidance should be separately included in our 2021 PSPS Protocols.

8.2.7 Response to Critical Issue No. PGE-01, Remedies 2 and 3

- 1) *PG&E shall provide quantitative targets for reducing the scale, scope, and frequency of PSPS:*
 - a) *Assuming no additional PSPS decision-making decision criteria will be implemented in 2021 as a result of PG&E's federal criminal probation.*
 - b) *If PG&E currently plans to include any additional decision criteria for de-energizations in 2021 in light of the federal probation, specify how that would alter its quantitative PSPS targets and provide the revised quantitative PSPS targets.*
- 2) *PG&E shall fully describe the methodology that supports its quantitative PSPS targets, for 2.a and 2.b, and provide any supporting calculations*

Below, we describe our estimated, quantitative targets regarding the scope, frequency, and duration of forecasted PSPS events in 2021. Consistent with WSD's request, we describe our quantitative targets without factoring in any additional PSPS decision-making protocols beyond those described in the 2021 WMP (i.e., the 2020 PSPS Protocols) in response to Remedy 2.a. These quantitative targets mirror those presented in our February 26, 2021 Supplemental Filing to the 2021 WMP (February Supplemental Filing) in response to Action PGE-11 (Class B).¹⁹⁵

In response to Remedy 2.b, we forecast 2021 PSPS events after incorporating the Tree Overstrike Potential and Priority Tag decision criteria described in Section 8.2.6 (i.e., the 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags).

We are also including in this Section our response to Remedy 3 regarding the methodology to support our quantitative targets for Remedies 2.a and 2.b. The methodology for both sets of quantitative targets is based on the workpapers attached as 2021 WMP_Revision_PGE_01_Atch01.

1. Quantitative Targets Assuming No Additional Decision Criteria – 2020 PSPS Protocols (Remedy 2.a)

In our February Supplemental Filing, we estimated the following potential impacts to our PSPS scope, duration, and frequency as a result from the 2021 planned mitigations and process improvements outlined in our 2021 Wildfire Mitigation Plan.

¹⁹⁵ February Supplemental Filing, pp. 11-26.

TABLE PG&E-REVISION NOTICE-8.2-2: TARGETS FOR 2020 PSPS PROTOCOLS

	Targeted Reductions as a Result of PG&E's 2021 WMP Planned Mitigations
Average PSPS Scope Per Event	8% Reduction ¹⁹⁶
Per-Customer Duration Per Event	2% Reduction ¹⁹⁷
Event Frequency	No Impact relative to 2019 and 2020

This analysis was completed by reviewing the circuits that would have been impacted by our 2020 PSPS Protocols in 2019 and 2020. This totaled 10 PSPS events, four in 2019 (a reduction from the nine experienced utilizing our 2019 PSPS protocols) and the six events experienced in 2020. To calculate the scope reductions, PG&E then analyzed the mitigations described in our 2021 WMP against the 10 events and calculated the numbers of customers that would have been removed from each PSPS events should the planned infrastructure work been in place. This resulted in a removal of ~141,000 customer impacts over the two years or approximately an 8% reduction in customers impacted per event. As part of our responses to PGE-11 to PGE-14 (Class B) of the February Supplemental Filing, PG&E noted the potential for a half hour reduction in restoration time per customer per event as a result of restoration process improvements. This half hour reduction in restoration time per customer results in a 2% reduction in customer outage durations per event. These estimates are based on an assumption that our planned PSPS mitigations are completed prior to the 2021 PSPS season, and the estimated reductions reflect a comparison to forecasts for PSPS events without the mitigations.¹⁹⁸ The methodology for calculating these estimated reductions are further described below in Subsection 4. It is important to note that these forecasted reductions are estimates and not WMP commitments. As discussed throughout the 2021 WMP, PSPS impacts in any given year are ultimately dependent on weather patterns and events experienced.

2. Quantitative Targets with Additional Decision Criteria – 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags (Remedy 2.b)

With the addition of the Tree Overstrike Potential and Priority Tag decision criteria into the 2020 PSPS Protocols, PG&E now estimates the following changes over the 2020 PSPS Protocols. To illustrate the effect of our 2021 WMP Planned mitigations and the updated 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags separately and together we have built the following three scenarios:

¹⁹⁶ February Supplemental Filing, p. 24.

¹⁹⁷ February Supplemental Filing, p. 29 (based on an estimated a 30-minute reduction in PSPS events as a result of mitigations).

¹⁹⁸ February Supplemental Filing, pp. 24-25 (describing mitigations impacting PSPS).

- **Scenario 1:** Scenario 1 is based off the 2020 PSPS Protocols and our planned 2021 WMP Mitigations. The reductions were calculated based on 2020 PSPS Protocols and illustrate the effect of the planned mitigation, infrastructure and process work as outlined in Remedy 3.b, Remedy 4 and the workpapers attached as 2021 WMP_Revision_PGE_01_Atch01.
- **Scenario 2:** Scenario 2 illustrates the difference between our 2020 PSPS Protocols and our 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags. Note that the average event size and scope shrink as there are more comparatively small events with the added overstrike and priority tree criteria which brings the overall averages down while frequency of events increases.
- **Scenario 3:** Scenario 3 illustrates the effects of the 2021 WMP Planned mitigations with our current 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags in comparison to the 2020 PSPS Protocols only. This forecast best estimates the expected scope of PSPS impacts as a result of our current PSPS protocols assuming all 2021 WMP Planned Mitigations were completed.

TABLE PG&E-REVISION NOTICE-8.2-3: TARGETS FOR 2020 PSPS PROTOCOLS PLUS TREE OVERSTRIKE POTENTIAL AND PRIORITY TAGS

	Scenario 1: 2020 PSPS Protocols with 2021 Planned WMP Mitigations	Scenario 2: 2020 PSPS Protocols Plus Overstrike Potential and Priority Tags in Comparison to 2020 PSPS Protocols ¹⁹⁹	Scenario 3: 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags <u>and</u> Planned 2021 WMP Mitigations in Comparison to our 2020 PSPS Protocols
Average PSPS Scope Per Event	8% Reduction	7% Reduction	14% Reduction
Per-Customer Duration Per Event	2% Reduction	2% Reduction	4% Reduction
Event Frequency	No Impact Relative to 2019 and 2020	74% Increase	74% Increase

These scenarios align to our updated Table 11 as described below. These estimates are based on an assumption that our 2021 WMP Planned mitigations are completed

¹⁹⁹ When compared to the 2020 PSPS Protocols, the scope and duration of the 2020 PSPS Protocols Plus Tree Overstrike and Priority Tags decrease, on average, as a result smaller size and shorter duration of the additional events.

prior to the 2021 PSPS season and the use of the additional criteria for the Tree Overstrike Potential and Priority Tags. The estimated reductions reflect a comparison to forecasts for PSPS events with the planned PSPS mitigations, as well as forecasts without the planned mitigations. The methodology for calculating these estimated reductions is described below in Subsection 5.

It is important to note, however, that these forecasted reductions are estimates and not WMP commitments. As discussed throughout the 2021 WMP, PSPS impacts in any given year are ultimately dependent on weather patterns and events experienced.

3. Overview of Table 11 (Remedies 2.a and 2.b)

In order to more fully explain the impacts of the 2021 WMP Planned mitigations and changes to 2020 PSPS protocols, we are providing as Attachment “Revision Notice Attachment 1 – All Data Tables Required by 2021 WMP Guidelines – June 3 2021” a more detailed Table 11 that compares PSPS forecasts based on the 2020 PSPS Protocols, the 2020 PSPS Protocols with the 2021 WMP Planned mitigations, and the 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags with the 2021 WMP Planned mitigations broken out into the following four sections:

- 1) **Historical Data:** This is recorded data from actual PSPS events and reliability data.
- 2) **Forecasted Data:** This is forecasted data that was developed as an average of PSPS lookbacks and/or actual event/reliability data utilizing our 2020 PSPS Protocols. The source of the forecast is listed in Table 11 under the column “Baseline Forecast Comments”.
- 3) **Forecasted Data with 2021 WMP Planned Mitigations in Place:** This section illustrates the potential reduction in size and duration applied to our Forecasted Data if the 2021 WMP Planned mitigations are implemented. This aligns with Scenario 1 above.
- 4) **Forecasted data with 2021 Mitigations and 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags Criteria Added:** This section illustrates the effects of the 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags combined with the 2021 WMP Planned mitigations. This aligns with Scenario 3 above.

4. Estimated PSPS Quantitative Targets Based on 2020 PSPS Protocols (Remedy 3.a)

The estimated quantitative targets for PSPS scope, duration, and frequency described below are based on the analysis provided in response to Action Items PGE-11 to PGE-14 (Class B) included in PG&E’s February Supplemental Filing.

In order to calculate the estimated targets, we utilized the 2020 actual PSPS event data, as well as the 2019 PSPS event data from the 10-year historical weather

lookback data set²⁰⁰ that is described in more detail in Section 8.1. We projected our 2021 portfolio of planned mitigation work against the 2020 actual and 2019 lookback PSPS events to quantify the impacts of the 2021 WMP Planned mitigation work on PSPS thresholds, scope, frequency, and duration.²⁰¹ This analysis is described in detail in our February Supplemental Filing.²⁰² In Table PG&E-Revision Notice-8.2-4 below, we provide our estimated impact for each of the 2021 PSPS mitigation.

TABLE PG&E-REVISION NOTICE-8.2-4: ESTIMATED IMPACT OF 2021 WMP PLANNED MITIGATIONS

WMP Initiative	Mitigations	Customers Mitigated	Mitigated %	Customers Mitigated Per Event	Customer Hours	Customer Hours Per Event
7.3.3.8.2	Transmission Lines – Switching	5,800	0.3%	580	209,728	20,973
7.3.3.17.2	Transmission Lines – Repairs ²⁰³	0	0.0%	0	0	0
7.3.5.3	Transmission Lines – Vegetation	87,894	5.0%	8,789	2,048,013	204,801
7.3.3.11.1B	Temporary Substation Microgrids ²⁰⁴	3,254	0.2%	325	76,875	7,688
7.3.3.11.1C	Temporary Distribution Microgrids	7,259	0.4%	726	179,280	17,928
7.3.3.16	Hardening: Underground Projects	12,969	0.7%	1,297	425,819	42,582
7.3.3.8.1	Distribution Sectionalizing	19,605	1.1%	1,961	572,064	57,206

²⁰⁰ Although a valuable planning tool, the historical lookback is based on experienced climatology and is not a forecast of the locations for future PSPS events. It is not possible to forecast PSPS events more than a week ahead of time, but this lookback provides the best data set to use for planning purposes. Our planning therefore assumes that these locations have a higher likelihood of again experiencing weather conditions that may trigger a PSPS event in the future. However, weather is highly variable year-to-year, which drives variability in not only the location of events, but also the number of events and their size and duration.

²⁰¹ The customer impacts do not include power generators and other transmission customers.

²⁰² February Supplemental Filing, pp. 24-25, 29.

²⁰³ Transmission line repairs did not result in customers mitigated in the 2-year backcast scenario; however, this work provides value by reducing the likelihood of transmission lines being in scope in PSPS events.

²⁰⁴ At the time of this analysis, only three substation temporary generation sites were selected. Thus, this analysis only accounts for the customers mitigated by those three sites. Achieving the full 2021 commitment of eight substation temporary generation sites is expected to increase the number of customers and customer-hours mitigated beyond the number reported here.

WMP Initiative	Mitigations	Customers Mitigated	Mitigated %	Customers Mitigated Per Event	Customer Hours	Customer Hours Per Event
7.3.3.17.1	Descoping Hardened OH ²⁰⁵	4,127	0.2%	413	89,818	8,982
Total-Customers Mitigated		140,908	8.0%	14,091	3,601,596	360,160

- Scope: The estimates above show an approximately 8% reduction in PSPS scope. Transmission right-of-way (ROW) vegetation mitigation (part of Initiative 7.3.5), undergrounding, and sectionalizing of distribution emerge as the largest drivers of PSPS scope reduction. The actual frequency of PSPS events in any given year is largely determined by the weather. However, PG&E's mitigation activities can only eliminate PSPS events if their impacts are at the same scale as weather events themselves. For example, PG&E's significant improvements to our PSPS Protocols and meteorology tools in advance of the 2020 PSPS season contributed to reducing PSPS event frequency. These improvements included 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. In 2021, PG&E's meteorology and PSPS teams will continue tool and decision criteria refinement, but these improvements are not expected to yield the large, step-function improvement in PSPS footprints that was achieved in 2020. This analysis is described in more detail in the February Supplemental Filing.²⁰⁶
- Duration: We have estimated a 2% reduction in the duration of PSPS events using the 2020 PSPS Protocols if the 2021 WMP Planned mitigations are implemented. This estimate is based on a regression analysis which was described in detail in the February Supplemental Filing.²⁰⁷
- Frequency: The back-cast analysis indicates no change in PSPS event frequency due to PG&E's 2021 WMP Planned mitigation activities. This result is not surprising given that to remove an event from scope entirely, the summed scope footprint of all of PG&E's mitigation activities would need to cover all the assets in the entire weather footprint of a 2020 event or 2019 lookback event. Neither any individual mitigation activity, nor the sum of all of PG&E's 2021 WMP Planned mitigation activities, achieves this challenging goal. For example, undergrounded circuits could translate into an average potential reduction in event scope of 1,297 customers per event; but this impact did not entirely remove any 2020 PSPS event or 2019 lookback event. While there is no expected frequency reduction due to incremental activities in 2021, the benefit of these activities is expected to accrue over time, such that their scale and magnitude should match that of weather events themselves and therefore eliminate actual PSPS events in the future.

²⁰⁵ This program is pending internal approval for use during PSPS events.

²⁰⁶ February Supplemental Filing, pp. 24-25.

²⁰⁷ February Supplemental Filing, p. 29 and Attachment 2021WMP_ClassB_Action-PGE-13_Atch02.

5. Estimated PSPS Quantitative Targets Based on 2020 Protocols Plus Tree Overstrike Potential and Priority Tags (Remedy 3.b)

To determine the impacts of our 2021 WMP Planned mitigations to PSPS scope, duration, and frequency based on our 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags, we performed a look-back analysis to identify where and when PSPS events would have occurred in the past 10 years. The 10-year look-back study was developed using the years 2010-2019 to simulate events using: (1) the 2020 PSPS Protocols; and (2) the 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags.²⁰⁸ These lookbacks were developed using distribution impact only to more directly understand the impacts of Tree Overstrike Potential criteria.

- Scope: Based on the lookback analysis, the average scope of each PSPS event decreased as a result of the addition of the Tree Overstrike Potential and Priority Tag criteria in the 10-year lookback analysis. As mentioned during the April 20, 2021 CPUC Overstrike Workshop, the existing PSPS Events (not solely triggered by tree overstrike and priority tag criteria) get larger. However, when comparing the 2020 PSPS Protocol events to the 2020 PSPS Protocol Plus Tree Overstrike Potential and Priority Tags events, the average event size of the PSPS events was 7% smaller. The average event size was reduced due to incremental smaller events which are triggered when overstrike is included. This may seem counter-intuitive, but the smaller size of the newly added events outweighs the increase in the added scope to the existing events bringing the overall average down.
- Duration: The average duration per event decreased following inclusion of the Tree Overstrike Potential criteria into our 2020 PSPS scoping process. As mentioned during the April 20, 2021 CPUC Tree Overstrike Workshop, the existing PSPS events (not solely triggered by tree overstrike) get longer. However, when comparing the 2020 PSPS Protocol events to the 2020 PSPS Protocol Plus Tree Overstrike Potential and Priority Tags events, the average duration of the PSPS events incorporating the 70th percentile tree overstrike decision criteria and Priority 1 and Priority 2 tags was 2% shorter. The average event duration was also reduced due to incremental smaller events which are triggered when overstrike is included. The shorter duration of the newly added events outweighs the increased customer hours of the existing events which brings the overall average duration down.

²⁰⁸ As mentioned in Response to Critical Issue No. PGE-01, Remedy 1, the estimated increase in customer impacts from Priority 1 and Priority 2 tags over the Tree Overstrike Potential alone for 2019 and 2020 PSPS events is less than 1% and assumes no trees associated with Priority 1 or Priority 2 tags are mitigated prior to an event. Given that PG&E will work to mitigate Priority 1 and Priority 2 tags in advance of PSPS events, and the estimated quantitative impact of such tags is minimal, we have not included the estimated quantitative impacts of Priority 1 and Priority 2 tags in this analysis. However, we refer to the current (May 2021 – August 2021) PSPS protocols as the 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags when discussing quantitative targets for naming consistency throughout this Revision Notice.

- **Frequency:** This 10-year look-back analysis resulted in the 2020 PSPS Protocols producing 27 total PSPS events from 2010 to 2019.²⁰⁹ When the Tree Overstrike Potential criteria is added to the 2020 baseline decision criteria, the lookback analysis produced 47 events from 2010-2019. Thus, the addition of the tree overstrike created 20 more PSPS events, which represents a 74% increase in PSPS frequency over the 10-year look-back.

In the table and waterfall chart below, PG&E illustrates the effects of three years of PSPS protocols over our largest PSPS event to date. To do so, we have first shown the actual customer impacts of the October 26, 2019 PSPS event, which was executed using our 2019 PSPS Protocols in Step 1. Then we have shown how the 2020 Protocols would have reduced the size of the PSPS event in Step 2. Then we have shown the effect of our 2020 PSPS Protocols plus our 2021 WMP Planned mitigations on the same event in Step 3. And finally, we have shown how that same event would grow utilizing our 2020 PSPS Protocols, the 2021 WMP Planned mitigations with Tree Overstrike Potential and Priority 1 and Priority 2 tag inclusion in Step 4. It is important to note that this is an illustrative example of one weather event utilizing multiple analyses to understand how different PSPS Protocols and mitigations potentially affect the number of customers impacted. However, each event is unique and may be impacted these protocols and mitigations in different ways depending on the location and timing of the weather.

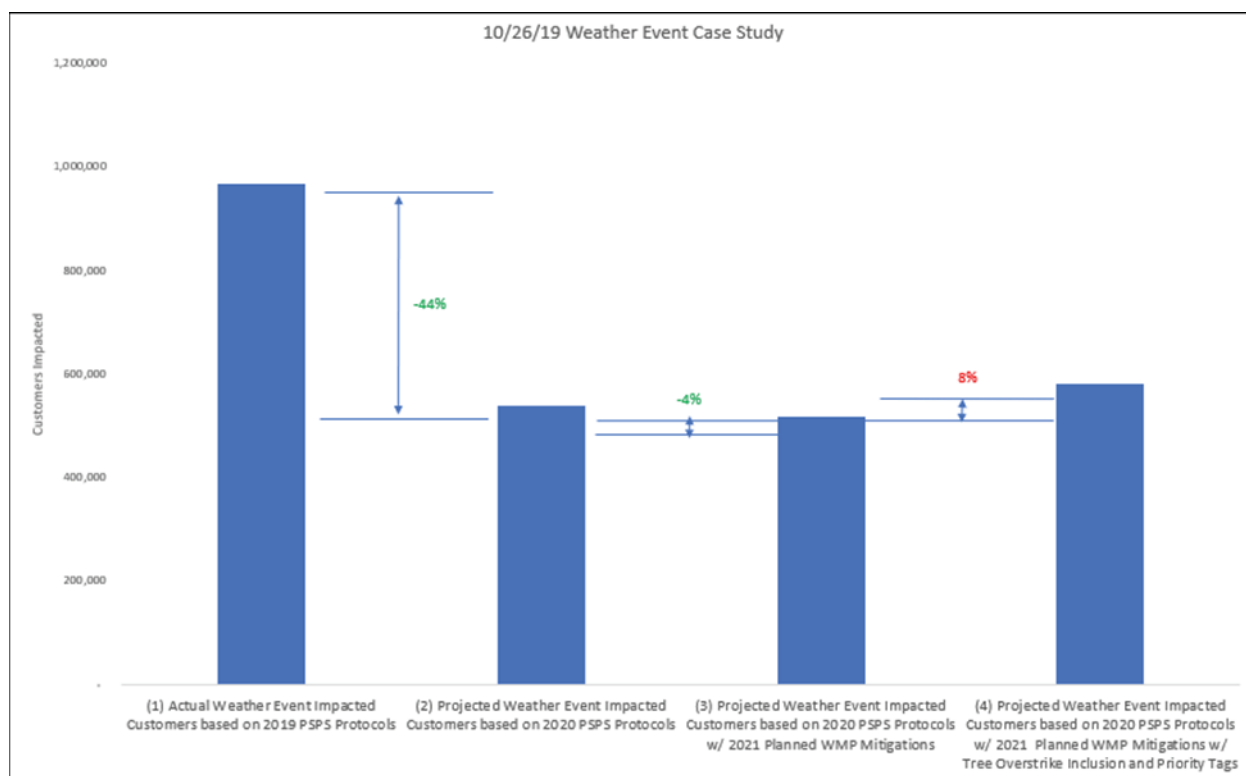
TABLE PG&E-REVISION NOTICE-8.2-5: DETAILED DESCRIPTION OF OCTOBER 26, 2019 WEATHER EVENT CASE STUDY

#	Step	Description	Customer (Change)
1	Actual Weather Event Impacted Customers as Executed with 2019 PSPS Protocols	These are the actual customer impacts from the weather event experienced on October 26, 2019.	967K
2	Projected Weather Event Impacted Customers based on 2020 PSPS Protocols	These are the projected customer impacts if the October 26, 2019 PSPS event had been executed using our 2020 PSPS Protocols. The reduction in event size is a result of our 2020 PSPS Protocols which included the following improvements over our 2019 PSPS Protocols; changes in meteorological guidance, transmission switching, distribution and substation temporary generation, and distribution sectionalizing. With these improvements, PG&E would have seen approximately 430 thousand less customers affected as compared to Step 1.	538K (-44% as compared to Step 1)
3	Projected Weather Event Impacted Customers	These are the projected customer impacts if PG&E had executed the October 26, 2019 PSPS event utilizing our 2020 PSPS Protocols with our 2021 WMP Planned Mitigations completed. PG&E forecasts that the 2021 WMP Planned Mitigations would correlate to a 4% reduction is	517K (-4% as compared to Step 2)

²⁰⁹ Note that the meteorology and PSPS customer impacts in Table 11 are built on an 11-year lookback which includes an average of 2.9 PSPS events per year while the impacts to our overstrike criteria were built off of a 10-year lookback which includes 2.7 PSPS events per year.

#	Step	Description	Customer (Change)
	based on 2020 PSPS Protocols with 2021 MP Planned Mitigations	customer impacts based on transmission switching, distribution and substation temporary generation, underground hardening, and distribution sectionalizing. Also included is descoping criteria associated with overhead hardening, however, this program is pending internal approval to take lines out of PSPS scope. Meteorological guidance is not reflected as PG&E is not shrinking the granularity of the weather polygons, but continues to undertake refinements in meteorological guidance, improving the accuracy, but not necessarily reducing the scope of PSPS. This aligns to scenario 1 in Table PG&E-Revision Notice-8.2-3: Targets For 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags.	
4	Projected Weather Event Impacted Customers with 2021 WMP Planned Mitigations based on 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags	These are the projected customer impacts if PG&E had executed the October 26, 2019 PSPS Event utilizing our 2020 PSPS Protocols with both the 2021 WMP Planned mitigations and Tree Overstrike and Priority Tags included. PG&E estimates the impact of including the overstrike tree and priority tag inclusion to increase event size by 8%, increasing the customers scoped from 538 thousand to 579 thousand. Overall, the inclusion of the tree overstrike and priority tags will increase the customers impacted, as compared to the weather event with 2020 PSPS protocols, but not reach the levels actually experienced on 10/26/19. This aligns to scenario 3 in Table PG&E-Revision Notice-8.2-3: Targets For 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags.	579K (+8% as compared to Step 2)

FIGURE PG&E-REVISION NOTICE-8.2-4: OCTOBER 26, 2019 WEATHER EVENT CASE STUDY



Due to these impacts on event scope, duration, and frequency, the expected benefit of 2021 WMP Planned mitigations will also be impacted by the inclusion of the Tree Overstrike Potential and Priority 1 and Priority 2 Tag criteria. In Table PG&E-Revision Notice-8.2-6 below, we provide our estimated impact for each of the 2021 WMP Planned mitigations when including the Tree Overstrike Potential and Priority Tag criteria.²¹⁰

TABLE PG&E-REVISION NOTICE-8.2-6: ESTIMATED IMPACT OF 2021 PSPS MITIGATIONS WITH TREE OVERSTRIKE POTENTIAL AND PRIORITY TAGS

WMP Initiative	Mitigations	Customers Mitigated	Mitigated %	Customers Mitigated Per Event	Customer Hours	Customer Hours Per Event
7.3.3.8.2	Transmission Lines – Switching	9,406	0.3%	541	331,609	19,058
7.3.3.17.2	Transmission Lines – Repairs ²¹¹	0	0.0%	0	0	0
7.3.5.3	Transmission Lines – Vegetation	142,536	5.0%	8,192	3,238,191	186,103
7.3.3.11.1B	Temporary Substation Microgrids	5,277	0.2%	303	121,551	6,986
7.3.3.11.1C	Temporary Distribution Microgrids	11,772	0.4%	677	283,466	16,291
7.3.3.16	Hardening – Underground Projects	21,032	0.7%	1,209	673,278	38,694
7.3.3.8.1	Distribution Sectionalizing	31,793	1.1%	1,827	904,512	51,983
7.3.3.17.1	Descoping Hardened OH ²¹²	6,693	0.2%	385	142,015	8,162
Total-Customers Mitigated		228,508	8.0%	13,133	5,694,621	327,277

²¹⁰ PG&E has applied the 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tag multipliers holistically to both Transmission and Distribution mitigations for the purpose of showing the estimated increase in impact in this table.

²¹¹ Transmission line repairs did not result in customers mitigated in the 2-year backcast scenario, however this work provides value by reducing the likelihood of transmission lines being in scope in PSPS events.

²¹² This program is pending internal approval for use during PSPS events.

The number of customers and customer-hours mitigated per event are expected to decrease due to the inclusion of the Tree Overstrike Potential and Priority Tag criteria. While initially counterintuitive, this is due to the decrease in average event size and duration after the inclusion of the Tree Overstrike Potential and Priority Tag criteria—the new events added by this criteria occur during relatively weaker weather conditions which would not have triggered a PSPS criteria with purely 2020 PSPS Protocol guidance, and thus are smaller and shorter than average. However, the overall number of customers and customer-hours impacted increase due to the increased frequency of PSPS events—this is reflected in the total number of customers and customer-hours mitigated.

8.2.8 Response to Critical Issue No. PGE-01, Remedy 5

- 1) *PG&E shall describe in full and complete detail how the major programs in the following initiative categories are factored into its PSPS projections for 2021 and 2022 (Table 11).*

Below we describe how the major programs in the following eight initiative categories are factored into PG&E's projections for 2021 and 2022. This discussion includes references to programs that are directly factored into PSPS projections, even if the estimated, quantified impacts of the programs are zero for the 2021-2022 PSPS projections for the reasons explained below.

Other initiatives described throughout the 2021 WMP have indirect impacts on PSPS events but are not directly factored into PSPS projections for 2021 and 2022. For further details on the indirect impacts of those initiatives, please refer to PG&E's responses to PGE-11 to PGE-14 (Class B) of the February Supplemental Filing.

a) Risk Assessment and Mapping

The programs in this initiative category do not directly influence event scope, duration, or frequency of PSPS events and are not factored into PG&E's PSPS calculations and projections for 2021 and 2022.

b) Situational Awareness and Forecasting

Several initiatives in this category are directly factored into PG&E's PSPS projections for 2021 and 2022: numerical weather prediction (7.3.2.1.1), fuel moisture sampling and modeling (7.3.2.1.2), forecast of a fire risk index (7.3.2.4), and weather forecasting and estimating impacts on electric lines and equipment (7.3.2.6).

In 2020, the PG&E Meteorology team facilitated significant reductions in PSPS scope through improvement of the granularity of our PSPS guidance tools: FPI and OPW Models. These improvements enable the models to predict severe fire weather risks on more focused areas and identify those areas which exceed distribution risk guidance with better geographic precision. While the PG&E team is continuing to improve upon the meteorology models in advance of the 2021 fire season, these improvements are not currently expected to yield another step-function improvement in 2021, so the benefits of these activities for this year has been quantified as 0.

In addition to the meteorology initiatives described above, personnel monitoring areas of electric lines and equipment in elevated fire risk conditions (7.3.2.5) can directly influence PSPS scope. When PG&E activates our EOC for a PSPS event, Safety and Infrastructure Protection Teams (SIPTs) are deployed to collect valuable weather and fuel data. This information is used to support de-energization and the weather "all clear" processes, in support of meteorology review of real time conditions. Their assessment of real-time conditions is also an opportunity to consider circuit-specific thresholds for PSPS execution, which can change event scope. However, PG&E is not planning any significant process changes for SIPT deployment that would lead to expected changes in PSPS scope, duration or frequency in 2021 or 2022, so the benefit of this activity has been quantified as 0.

c) Grid Design and System Hardening

A number of programs in this initiative category are directly factored into PG&E's PSPS projections for 2021 and 2022. To calculate the impact of each of these grid mitigations, PG&E projected our 2021 anticipated portfolio of new mitigation locations (temporary generation, undergrounding, overhead system hardening, and transmission and distribution sectionalizing) against the 2020 actual and 2019 lookback PSPS events to quantify their impacts on forecasted PSPS thresholds, scope, frequency, and duration.

Generation for PSPS mitigation (temporary distribution and substation generation, 7.3.3.11.1) can allow "safe-to-energize" customers to remain energized even while the assets that normally serve them are de-energized, supporting PSPS scope reduction. To calculate the impact of temporary generation, PG&E projected our 2021 anticipated portfolio of new temporary generation locations against the 2020 actual and 2019 lookback PSPS events to quantify their impacts on PSPS thresholds, scope, frequency, and duration. Temporary distribution microgrids are expected to reduce PSPS scope by 0.4% and substation generation by 0.2%. These scope reductions lead to a reduction in duration of 179,280 customer hours for temporary distribution microgrids and 76,875 customer hours for substation generation over 10 events. With the inclusion of the Tree Overstrike Potential and Priority 1 and Priority 2 Tags, the same percent mitigation results in a reduction in duration of 283,466 customer hours for temporary distribution microgrids and 121,551 customer hours for substation generation over 17.4 events.²¹³

Underground lines and equipment (7.3.3.16) do not need to be de-energized due to ignition risk during PSPS events though customers may still be de-energized if, for example, the transmission feeding the undergrounded distribution circuit is in scope for a PSPS event. Undergrounding projects are expected to reduce scope by 0.7%. This scope reduction leads to a reduction in duration of 425,819 customer hours over 10 events. With the inclusion of the Tree Overstrike Potential and Priority 1 and Priority 2 Tags, the same percent mitigation results in a reduction in duration of 673,278 customer hours over 17.4 events.

Distribution System Hardening/covered conductor installation (7.3.3.17.1, 7.3.3.3) significantly reduce the potential of ignition from phase-to-phase contact and objects falling into the line. PG&E plans to incorporate modified PSPS Protocols for overhead hardened distribution lines into our 2021 PSPS scoping models prior to the 2021 fire season. To calculate the impact of overhead system hardening, PG&E included only the 2020 or 2021 anticipated portfolio of new system hardening locations that meet the modified decision criteria, not all new system hardening locations. Overhead system hardening projects are expected to reduce scope by 0.2%. This scope reduction leads to a reduction in PSPS duration of 89,818 customer hours over 10 events. With the inclusion of the Tree Overstrike

²¹³ 17.4 events are the number of projected events PG&E would have experienced over the 2020 and 2019 with the 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags. This is calculated by taking the 10 events that we would have experienced with the 2020 PSPS Protocols and multiplying it by the 74% increase in event frequency as a result of the 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags.

Potential and Priority 1 and Priority 2 Tags, the same percent mitigation results in a reduction in duration of 142,015 customer hours over 17.4 events.

Distribution Sectionalizing devices (7.3.3.8.1) create flexibility to control which areas of the grid more precisely are impacted by a PSPS event, allowing parts of a circuit to remain energized even when other parts of the circuit must be de-energized due to the weather footprint. Distribution sectionalizing devices are expected to reduce PSPS scope by 1.1%. This scope reduction leads to a reduction in duration of 572,064 customer hours over ten events. With the inclusion of the Tree Overstrike Potential and Priority Tag criteria, the same percent mitigation results in a reduction in duration of 904,512 customer hours over 17.4 events.

Transmission line sectionalizing devices (7.3.3.8.2) create flexibility in operating the grid by more precisely controlling where PSPS de-energizations occur and support the long-term vision to reduce PSPS scope. Transmission sectionalizing devices are expected to reduce PSPS scope by 0.3%. This scope reduction leads to a reduction in duration of 209,728 customer hours over ten events. With the inclusion of the Tree Overstrike Potential and Priority Tag criteria, the same percent mitigation results in a reduction in duration of 331,609 customer hours over 17.4 events.

Rapid Earth Current Fault Limiter (7.3.3.17.4) could enable lines to remain energized during PSPS events, reducing the scope and frequency of events. The benefits of Rapid Earth Fault Current Limiter (REFCL) are currently projected to be 0 because it is still in pilot stages and not anticipated to allow lines to remain energized during 2021 PSPS events.

Remote Grid (7.3.3.17.5) has potential to function as a PSPS mitigation. When a remote area is "safe to energize" but subject to PSPS events due to the upstream connection to the grid being in the weather scope, then a remote grid can reduce or eliminate customers in that area from PSPS scope. The benefits of Remote Grid are projected to be 0 because of uncertainties associated with the timing of project execution and because site designs have not yet been evaluated for PSPS impacts. However, given that typically only a handful of customers are served by each remote grid location, the contribution of this initiative to PSPS scope reduction is expected to be relatively minor.

d) Asset Management and Inspections

The major programs in this initiative category do not directly influence event scope, duration, or frequency of PSPS events and are not factored into PG&E's PSPS calculations and projections for 2021 and 2022.

e) Vegetation Management and Inspections

Several major programs of this initiative category are directly factored into PG&E's PSPS projections for 2021 and 2022. To calculate the impact of each of these initiatives, PG&E projected our 2021 anticipated portfolio of new work locations against the 2020 actual and 2019 lookback PSPS events to quantify their impacts on forecasted PSPS thresholds, scope, frequency, and duration in 2021 and 2022.

Detailed Inspections of Vegetation Around Transmission Electric Lines and Equipment (7.3.5.3) and LiDAR inspections of vegetation around transmission electric lines and equipment (7.3.5.8) directly reduce the scope of PSPS events. Together, these activities and Right of Way (ROW) Expansion within “Detailed Inspections of Vegetation Around Transmission Electric Lines and Equipment” directly reduce the scope of PSPS events by enabling lines to be descope from events. LiDAR data allows for additional understanding of vegetations risks surrounding our electric assets. PG&E can use this data to identify the vegetation-related ignition risk at a more granular level to identify additional opportunities to descope transmission lines from PSPS events, supporting reductions in PSPS scope. For example, in 2019 and 2020, a line would be designated as in scope even if only a portion of the line was being impacted by high winds. Beginning in 2021, PG&E will be able to narrow down vegetation risk from the circuit level (high level) to the span level (more detailed) which can be cross referenced with the meteorological forecast. This will provide a much more detailed view of actual risk at a specific location and should allow for descope of some line that would have otherwise been in-scope in previous year’s PSPS events. Transmission ROW expansion is expected to reduce scope by 5%. This scope reduction leads to a reduction in duration of 2,048,013 customer hours over ten events. With the inclusion of the Tree Overstrike Potential and Priority 1 and Priority 2 tags the same percent mitigation results in a reduction in duration of 3,238,191 customer hours over 17.4 events.

LiDAR data from inspections around distribution electric lines and equipment (7.3.5.7) allows for additional understanding of vegetations risks surrounding our electric assets, supporting PSPS scope and frequency decreases. Furthermore, LiDAR data allows PG&E to ensure that overhead hardened distribution circuits meet PSPS descope decision criteria, thereby affecting PSPS thresholds. In PG&E’s analysis, this benefit is included in the benefit associated with overhead system hardening (7.3.3.17.1).

Emergency response vegetation management due to red flag warning or other urgent conditions (7.3.5.4) has an impact on PSPS scope, but it is quantified as 0 in this analysis. PG&E cannot use our backcast analysis to calculate impacts for our transmission emergency vegetation removal program because we cannot target specific locations for this activity due the emergency nature of the program. No customers directly benefitted (avoided a PSPS event) from this program in 2020.

f) Grid Operations and Operating Protocols

Two major programs in this initiative category are directly factored into PG&E’s PSPS projections for 2021 and 2022. These initiatives are quantified independently from the 2-year backcast analysis because they are not location-specific.

Protocols for PSPS re-energization (7.3.6.4-D and 7.3.6.4-T) are expected to reduce the average customer restoration time by 30-minute for 2021 due to tool and process improvements. We believe this benefit will apply to all impacted customers. Overall, Protocols for PSPS re-energization is expected to reduce PSPS duration per customer per event by 2%. This leads to a reduction in duration of 879,105 customer

hours over 10 events This reduction in customer hours is included in the baseline assumption for customer hours calculated in each of the mitigations analyzed.

PG&E will achieve these benefits by improving and streamlining the way we develop the re-energization playbook during PSPS events. The re-energization playbook indicates which facilities need to be patrolled prior to re-energization based on the location of the PSPS meteorology polygons for the event and the PSPS risk area map. The faster the re-energization playbook is developed, the faster resources can be pre-staged so that work can begin as soon as the weather “All Clear” is called and the conditions are safe to commence patrols.

g) Emergency Planning and Preparedness

The major programs in this initiative category do not directly influence event scope, duration, or frequency of PSPS events and are not factored into PG&E’s PSPS calculations and projections for 2021 and 2022.

h) Stakeholder Cooperation and Community Engagement

The major programs in this initiative category do not directly influence event scope, duration, or frequency of PSPS events and are not factored into PG&E’s PSPS calculations and projections for 2021 and 2022.

8.2.9 Response to Critical Issue No. PGE-01, Remedy 6

- 1) *PG&E shall explain in full and complete detail why its projected planned customer outage hours for 2021 and 2022 (Table 11, Row 2.a) are an increase over its 2020 actual customer outage hours.*

The projected planned customer outage hours for 2021 and 2022 in Table 11 as part of our original submission showed an increase above 2020 actual customer outage hours because the forecasted data is based on the 11-year average of simulated PSPS historical events. The historical events are called lookback events, which are simulated events based on historical data using 2020 PSPS scoping decision criteria to understand the customer impacts of the historical weather events. In the lookback simulation, the duration each customer experienced was calculated as the complete weather duration plus restoration time. The lookback analysis does not have individual customer outage times like an actual event. Therefore, all customers experienced the maximum event hours for both total weather duration and restoration time, which results in overstated total outage hours. For this reason, projected planned customer outage hours for 2021 and 2022 exceed 2020 actual customer outage hours.

Please note that the quantitative targets for reducing the scale, scope, and frequency of PSPS resulting from the application of 2021 WMP Planned mitigations and the Tree Overstrike Potential criteria discussed in Sections 8.2.6 through 8.2.8 above are based on the 11-year backcast provided in our 2021 WMP errata submitted on March 17, 2021.

8.3 Projected changes to PSPS impact

Describe organization-wide plan to reduce scale, scope and frequency of PSPS for each of the following time periods, highlighting changes since the prior WMP report and including key program targets used to track progress over time,

- 1) By June 1 of current year;*
- 2) By September 1 of current year; and*
- 3) By next Annual WMP Update.*

As described in Section 8.1, PG&E has developed, and will continuously refine, our PSPS mitigation plan in order to reduce PSPS impacts over the 10-year planning horizon. Please see Section 8.1 for a detailed discussion regarding PG&E's recent and future efforts to make PSPS events smaller, shorter, and smarter.

Table PG&E-8.3-1 (updated as Table PG&E-Revision Notice-8.3-1), Table PG&E-8.3-2 (updated as Table PG&E-Revision Notice-8.3-2) and Table PG&E-8.3-3 (updated as Table PG&E-Revision Notice-8.3-3) provides a high-level summary of PG&E's planned deliverables—in way of advancing PSPS mitigation programs—over the next WMP cycle. While many of these program advancements are targeted to immediately further reduce PSPS impacts, some are designed to advance PG&E's capabilities to accelerate PSPS impact reduction in the future.

Response to Critical Issue No. PGE-01, Remedy 4

- 1) For each programmatic commitment listed in Tables 8.3-1, 8.3-2, and 8.3-3 of its 2021 WMP Update, PG&E shall provide the expected quantitative reduction of PSPS scale, scope, and/or frequency. For commitments where the quantitative reduction of PSPS scope, scale, and frequency is zero or unobtainable, PG&E must justify why the values are zero or unobtainable and explain how the commitment is otherwise expected to reduce PSPS impact.*

The estimated quantitative reductions to frequency, scope, and duration included in the Tables below are based on the current 2020 PSPS Protocols Plus Tree Overstrike Potential and Priority Tags. Estimated quantitative reductions to frequency, scope, and duration based on the 2020 PSPS Protocols without Tree Overstrike Potential were included as part of PG&E's February Supplemental Filing on pages 13-23.

1. By June 1 of current year

TABLE PG&E-REVISION NOTICE-8.3-1: PSPS IMPACT MITIGATION COMMITMENTS TO BE COMPLETED BY JUNE 1, 2021

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
Situational Awareness and Forecasting	B.02	7.3.2.1.2	Enhancements to Fuel Moisture Sampling and Modeling efforts	Expand the historical Dead Fuel Moisture (DFM) and LFM Live Fuel Moisture (LFM) climatology at 2 x 2 km resolution to back-fill all of 2020.	0	0	N/A	The moisture content in living and dead vegetation is a critical component of PG&E's FPI model used in PSPS event scoping. This initiative has zero direct impacts to frequency and scope and the impact of duration is not readily quantifiable. This is not readily quantifiable, as it will improve the accuracy of our PSPS models which may add or remove areas from PSPS scope based upon the enhancements.	6/1/2021
Situational Awareness and Forecasting	B.03	7.3.2.1.2	Enhancements to Fuel Moisture Forecasting	Evaluate extending the deterministic DFM and LFM forecast to provide another 24 hours of forecast data.	0	0	N/A	The moisture content in living and dead vegetation is a critical component of PG&E's FPI model used in PSPS event scoping. This initiative has zero direct impacts to frequency and scope and the impact of duration is not readily quantifiable. This will not affect our final PSPS scope but will improve our forecasting accuracy in advance of a PSPS event.	6/1/2021

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
Situational Awareness and Forecasting	B.07	7.3.2.1.6	Information Sharing	Adjust the public 7-day forecast to provide more granularity and clarity around the potential for a PSPS event.	N/A	N/A	N/A	This initiative is foundational, so it does not directly support the evolution of the PSPS program. However, this initiative indirectly supports the evolution of the PSPS program by enabling the meteorology tools and models that directly are used in event scoping. These enabling activities include high performance cloud computing, building Diablo seasonal wind forecasting capabilities, and addressing weather forecast model uncertainty.	6/1/2021

2. By September 1 of current year

TABLE PG&E-REVISION NOTICE-8.3-2: PSPS IMPACT MITIGATION COMMITMENTS TO BE COMPLETED AFTER JUNE 1, 2021, AND PRIOR TO SEPTEMBER 1, 2021

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
Situational Awareness and Forecasting	B.11	7.3.2.4	Enhancements to Fire Potential Index (FPI) Model	Enhance the FPI Model by September 1, 2021 using additional data and an enhanced fire occurrence dataset. PG&E also plans to incorporate the new Technosylva fuel mapping layer into FPI calculations if it provides more predictive skill of large fires.	0	0	N/A	The FPI Model is used as an hourly input to PG&E's PSPS framework. Improvements to this model could directly impact PSPS scope and frequency. However, this work is not complete or approved so PG&E cannot quantify how this impacts models.	9/1/2021
Situational Awareness and Forecasting	B.13	7.3.2.6	Enhancements to Outage Producing Wind (OPW) Model	Recalibrate the OPW Model using the 2 km climatology that will be extended to capture all events in 2020, including sustained and momentary outages, as well as damages found in PSPS events of 2020.	0	0	N/A	Improved granularity in forecasting wind events and their impact on electrical equipment can directly reduce the scope and frequency of PSPS events. In addition to SOPP, the OPW model that is part of the initiative is directly used in PSPS scoping. However, this work is not complete or approved so PG&E cannot quantify how this impacts models.	9/1/2021

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
Grid Design and System Hardening	C.03	7.3.3.11.1/ 7.3.3.11.1B	Generation for PPS Mitigation (Substation Distribution Microgrids)	Prepare at least 8 substations to receive temporary generation for 2021 PPS mitigation.	0	303	6,986	Temporary distribution and substation generation can allow "safe-to-energize" customers to remain energized even while the assets that normally serve them are de-energized, supporting PPS scope reduction. See the quantified benefits. The incorporation of this mitigation is expected to have a non-zero impact on PPS scope and duration. However, it is expected to have zero impact on event frequency because this mitigation does not have a footprint large enough to eliminate an entire PPS event (please see the discussion for Remedy 3 of this Revision Notice response for discussion).	8/1/2021
Grid Design and System Hardening	C.07	7.3.3.8.2	Transmission Switches	Install 29 SCADA transmission switches to provide switching flexibility and sectionalization for PPS events.	0	541	19,058	Transmission switches create flexibility in operating the grid by more precisely controlling where PPS de-energizations occur. See quantified benefits. The incorporation of this mitigation is expected to have a non-zero impact on PPS scope and duration. However, it is expected to have zero impact on event frequency because this mitigation does not have a footprint large enough to eliminate an entire PPS event (please see the discussion for Remedy 3 of this Revision Notice response for discussion).	9/1/2021

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
Grid Design and System Hardening	C.10	7.3.3.17.4	Rapid Earth Fault Current Limiter (REFCL) Pilot	PG&E plans to have the results from this pilot project by September 2021 to inform the long term REFCL strategy.	N/A	0	0	This pilot technology could enable lines to remain energized during PSPS events, reducing the scope and frequency of event in the long-term. This technology is currently in pilot mode and not expected to be used to keep lines energized during PSPS events in 2021, so the impact has been quantified as 0.	9/1/2021

3. Next Annual WMP Update

TABLE PG&E-REVISION NOTICE-8.3-3: PSPS MITIGATION COMMITMENTS TO BE COMPLETED AFTER SEPTEMBER 1, 2021 AND PRIOR TO THE NEXT ANNUAL UPDATE

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-hours)	Explanation if values are zero / unobtainable	Commitment Date
Risk Assessment and Mapping	A.01	7.3.1.5	Match drop simulations (24 additional hours of forecast data)	Enhance the wildfire spread project in 2021 by expanding the forecast horizon from three to four days.	N/A	N/A	N/A	This initiative is foundational, so it does not directly reduce PSPS scope, frequency, or duration. However, this initiative indirectly supports the evolution of the PSPS program by helping PG&E understand the level of wildfire consequence given an ignition on our system. By understanding locations where the consequence of a wildfire is high, PG&E can target investments in minimizing wildfire risk, as well as understand locations that would be affected by PSPS due to the consequence of a wildfire.	12/31/2021
Risk Assessment and Mapping	A.02	7.3.1.5	Match drop simulations (update fuel model layers)	Update the fuel model layers on annual basis (Technosylva).	N/A	N/A	N/A	This initiative is foundational, so it does not directly reduce PSPS scope, frequency, or duration. However, this initiative indirectly supports the evolution of the PSPS program by helping PG&E understand the level of wildfire consequence given an ignition on our system. By understanding locations where the consequence of a wildfire is high, PG&E can target investments in minimizing wildfire risk, as well as understand locations that would be affected by PSPS due to the consequence of a wildfire.	12/31/2021

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
Risk Assessment and Mapping	A.03	7.3.1.3	Re-Train Vegetation and Equipment Probability of Ignition Models	PG&E's Vegetation Probability of Ignition and Equipment Probability of Ignition Models will see more improvements with another year of data (2020) incorporated.	N/A	N/A	N/A	This initiative is foundational, so it does not directly reduce PSPS scope, frequency, or duration. However, this initiative indirectly supports the evolution of the PSPS program by helping PG&E understand which locations have higher ignition probabilities either from asset or vegetation failures. With this information, this presents PG&E the ability to target investments in those areas to minimize wildfire risk.	12/31/2021
Risk Assessment and Mapping	A.04	7.3.1.1/ 4.5.1	Risk Mapping Improvements (Transmission)	Improve Transmission Risk Modeling to provide more standardized wildfire risk mapping/ranking between the various controls and mitigations.	N/A	N/A	N/A	This initiative is foundational, so it does not directly reduce PSPS scope, frequency, or duration. However, this initiative indirectly supports the evolution of the PSPS program by helping PG&E understand the level of wildfire risk at various circuit segments of PG&E's system. In combination with the potential frequency of PSPS events in this location, this initiative presents PG&E the ability to selectively apply mitigations that benefit both wildfire and the PSPS program.	12/31/2021
Risk Assessment and Mapping	A.05	7.3.1.1/ 7.3.1.4	Risk Mapping Improvements (Distribution)	Improve Distribution Risk Modeling to include: (1) ability to compare wildfire risks for different risk drivers, (2) ability to measure the risk reduction of specific mitigations, (3) add wildfire risk values for distribution line locations beyond the HFTD and High Fire Risk Areas (HFRA) areas to include all of PG&E's distribution lines.	N/A	N/A	N/A	This initiative is foundational, so it does not directly reduce PSPS scope, frequency, or duration. However, this initiative indirectly supports the evolution of the PSPS program by helping PG&E understand the level of wildfire risk at various circuit segments of PG&E's system. In combination with the potential frequency of PSPS events in this location, this initiative presents PG&E the ability to selectively apply mitigations that benefit both wildfire and the PSPS program.	12/31/2021

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
Risk Assessment and Mapping	A.06	4.5.1/ 4.1	Model PSPS customer impacts at circuit level	Develop a more granular, circuit level model, to assess PSPS customer impacts.	N/A	N/A	N/A	This initiative is foundational, so it does not directly reduce PSPS scope, frequency, or duration. However, this initiative indirectly supports the evolution of the PSPS program by helping PG&E understand the level of PSPS consequence at each circuit of PG&E's system, providing much more accuracy and granularity. With scope, frequency, and duration of PSPS events at the circuit level, this initiative allows PG&E the ability to selectively apply mitigations to better target the need at the circuit level.	9/30/2021
Situational Awareness and Forecasting	B.01	7.3.2.1.1	Numerical Weather Prediction	Make enhancements to numerical weather prediction program.	0	0	N/A	Improved granularity of weather forecasts can directly reduce footprint of PSPS events (i.e., scope, or frequency, or both) and is a significant contributor to the long-term PSPS vision. However, PG&E does not expect a significant improvement in granularity of weather forecasts so this, so we quantified the impact as 0.	12/31/2021
Situational Awareness and Forecasting	B.04	7.3.2.1.3	Enhancements to Weather Station Project (Installations and Optimization)	Install or optimize the location of 300 weather stations throughout PG&E's territory.	0	0	N/A	Data from weather stations installed in PG&E's service area are used to help forecast and monitor for high fire-risk weather conditions, which helps inform implementation of additional precautionary measures such as PSPS. These weather stations could indirectly impact PSPS thresholds, scope, and frequency. However, this work is not complete so PG&E cannot quantify how this impacts models.	12/31/2021

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
Situational Awareness and Forecasting	B.05	7.3.2.1.3	Enhancements to Weather Station Project (Wind Gust Model)	Develop a weather-station specific wind gust model based on machine-learning or statistical techniques.	0	0	N/A	Data from weather stations installed in PG&E's service area are used to help forecast and monitor for high fire-risk weather conditions, which helps inform implementation of additional precautionary measures such as PSPS. These weather stations could indirectly impact PSPS thresholds, scope, and frequency. However, this work is not complete so PG&E cannot quantify how this impacts models.	12/31/2021
Situational Awareness and Forecasting	B.06	7.3.2.1.6	Medium- to Seasonal-Range Diablo Wind Forecasting	Develop and deploy a seasonal Diablo wind event forecasting system to obtain longer lead-times of upcoming Diablo wind events.	N/A	N/A	N/A	This initiative is foundational, so it does not directly influence scope, duration, or frequency. However, this initiative indirectly supports the evolution of the PSPS program by enabling the meteorology tools and models that directly are used in event scoping. These enabling activities include high performance cloud computing, building Diablo seasonal wind forecasting capabilities, and addressing weather forecast model uncertainty.	12/31/2021
Grid Design and System Hardening	C.01	7.3.3.8.3	Assess Motorized Switch Operator (MSO) switches	Assess various alternatives to address the ignition risk associated with MSO switches. Explore several pilot options to inform the best alternatives and select the appropriate corrective action for MSO's for the next WMP update.	N/A	N/A	N/A	This initiative does not directly contribute to reducing PSPS scope, duration, or frequency. However, this initiative addresses the ignition risk associated with MSO switches, and thus represents a potential reduction in wildfire risk.	12/31/2021

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
Grid Design and System Hardening	C.02	7.3.3.11.1/ 7.3.3.11.1 C	Generation for PSPS Mitigation (Temporary Distribution Microgrids)	Develop at least five additional distribution microgrid Pre-installed Interconnection Hubs (PIH).	0	677	16,291	See quantified benefits. The incorporation of this mitigation is expected to have a non-zero impact on PSPS scope and duration. However, it is expected to have zero impact on event frequency because this mitigation does not have a footprint large enough to eliminate an entire PSPS event (please see the discussion for Remedy 3 of this Revision Notice response for discussion).	12/31/2021
Grid Design and System Hardening	C.04	7.3.3.11.3	Emergency Back-up Generation – PG&E Service Centers & Materials Distribution Centers	Equip at least 23 PG&E Service Centers & Materials Distribution Centers to receive permanent or temporary generation.	N/A	N/A	N/A	Equipping PG&E Service Centers & Materials Distribution Centers to receive permanent or temporary generation will not have a direct impact on PSPS event characteristics, but enables PG&E employees supporting PSPS events and restoration efforts to complete their work, accessing fuel islands, gate operators, and buildings at these PG&E facilities.	12/31/2021
Grid Design and System Hardening	C.05	7.3.3.17.5	Remote Grid	Begin operations of the first Remote Grid site by the end of 2021.	N/A	0	0	When a remote area is "safe to energize" but subject to PSPS events due to the upstream connection to the grid being in the weather scope, then a remote grid can reduce or eliminate customers in that area from PSPS scope. The benefits of Remote Grid are projected to be zero because of uncertainties associated with the timing of project execution and because site designs have not yet been evaluated for PSPS impacts. However, given that typically only a handful of customers are served by each remote grid location, the contribution of this initiative to PSPS scope reduction is expected to be relatively minor. Remote Grid is expected to have zero impact on event frequency because this mitigation does not	12/31/2021

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
								have a footprint large enough to eliminate an entire PSPS event (please see the discussion for Remedy 3 of this Revision Notice response for discussion).	
Grid Design and System Hardening	C.06	7.3.3.8.1	Distribution Sectionalizing (automated devices)	Install at least 250 more distribution sectionalizing devices integrating learnings from 2020 PSPS events, 10-year historical look-back of previous severe weather events, and feedback from county leaders and critical customers.	0	1,827	51,983	See quantified benefits. Sectionalizing devices create flexibility to control which areas of the grid more precisely are impacted by a PSPS event. The incorporation of this mitigation is expected to have a non-zero impact on PSPS scope and duration. However, it is expected to have zero impact on event frequency because this mitigation does not have a footprint large enough to eliminate an entire PSPS event (please see the discussion for Remedy 3 of this Revision Notice response for discussion).	12/31/2021
Grid Design and System Hardening	C.08	7.3.3.9.1	Distribution line legacy 4C controllers	Replace all remaining (~84) distribution line legacy 4C controllers that are in Tier 2 and Tier 3 HFTD areas.	N/A	N/A	N/A	This initiative does not directly contribute to reducing PSPS scope, duration, or frequency. However, the replacement of the legacy SCADA recloser controls protecting fire Tier 2 and 3 HFTD areas with new recloser controllers that enable the use of protective features designed to address high impedance fault conditions contributes to maintaining the health of existing assets, which may indirectly contribute to enabling these assets to stay energized during a PSPS event. Improved asset health may also indirectly decrease PSPS outage duration times by eliminating hazards that would otherwise increase the time needed to patrol and inspect after the weather "All Clear."	12/31/2021

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
Grid Design and System Hardening	C.09	7.3.3.9.2	Fuse Savers (Single phase reclosers)	Install 70 sets of single phase reclosers.	N/A	N/A	N/A	This initiative does not directly contribute to reducing PSPS scope, duration, or frequency. However, by eliminating the risk associated with wire down events where a downed feed condition, single phase reclosers indirectly contribute to enabling these assets to stay energized during a PSPS event. System automation contributes to further flexibility in operating the grid and indirectly contributes to the long-term vision to reduce scope and duration of PSPS events. Single phase reclosers can be used as automatic sectionalizing devices where field conditions do not require a three phase recloser, supporting reductions in PSPS scope.	12/31/2021
Grid Design and System Hardening	C.13	7.3.3.17.1	System Hardening (line miles)	Harden 180 highest risk miles.	N/A	385	8,162	System Hardening significantly reduces the potential of ignition from phase-to-phase contact and objects falling into the line. Subject to Wildfire Steering Governance Committee approval, PG&E plans to incorporate modified PSPS criteria for overhead hardened distribution lines into our PSPS scoping models. The incorporation of this mitigation is expected to have a non-zero impact on PSPS scope and duration. However, it is expected to have zero impact on event frequency because this mitigation does not have a footprint large enough to eliminate an entire PSPS event (please see the discussion for Remedy 3 of this Revision Notice response for discussion).	12/31/2021

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
Grid Design and System Hardening	C.14	7.3.3.17.6	Butte County Rebuild	Underground 23 miles.	N/A	0	0	Over the course of several years, PG&E is rebuilding electric circuits in the towns of Paradise and Magalia by undergrounding close to 200 miles. Customers on fully undergrounded circuits (from customer to substation) will be removed from PSPS scope in events where the substation has transmission that is in service. The Butte Rebuild Program will reduce PSPS event scope over time and is incorporating PSPS mitigation into the work prioritization while working with the community to align with their rebuild plans. However, the underground work is being completed in a patchwork manner, so wholesale PSPS elimination in these two towns is not anticipated until the completion of the work, currently scheduled for the end of 2025.	12/31/2021
Grid Design and System Hardening	C.15	7.3.3.17.2	System Hardening - Transmission Conductor	Replace or remove approximately 92 miles of conductor on lines traversing HFTD, including associated asset hardware.	N/A	0	0	The main purpose of this WMP commitment is to demonstrate that line replacement work in HFTD has the effect of transmission system hardening. While conductor replacement will increase the likelihood that a transmission line meets transmission health requirements that are part of the OA model, this work is not targeted to address PSPS or lines likely to be in scope for PSPS. Even if these repairs do improve lines that may be in scope for PSPS, the repairs may not always enable transmission lines to remain energized if the weather is strong enough or customers may still be de-energized due to distribution impacts. For all these reasons, PG&E quantifies the benefits of this activity as 0.	12/31/2021

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
Vegetation Management and Inspections	E.01	7.3.5.15	EVM (line miles)	Complete 1,800 circuit miles	N/A	0	0	PG&E's current EVM program is targeted to maximize wildfire risk reduction and not specifically at lines likely to be impacted by PSPS, so PG&E has quantified the impact of EVM to be 0. However, by removing trees that may be hazardous, especially during PSPS wind conditions, EVM has the potential to decrease PSPS scope by allowing additional electric circuits to remain energized during a PSPS event through tree removal.	12/31/2021
Vegetation Management and Inspections	E.03	7.3.5.3	VM Transmission Right of Way Expansion	Perform Transmission ROW expansion on approximately 200 miles within HFTD areas.	N/A	8,192	186,103	Right of Way Expansion within "Detailed Inspections of Vegetation Around Transmission Electric Lines and Equipment" directly reduces the scope and duration of PSPS events. See quantified benefits. However, it is expected to have zero impact on event frequency because this mitigation does not have a footprint large enough to eliminate an entire PSPS event (please see the discussion for Remedy 3 of this Revision Notice response for discussion).	12/31/2021
Emergency Planning and Preparedness	I.01	7.3.9.1	Staffing to Support Service Restoration	Hire approximately 40 Linemen and 100 Apprentices.	N/A	N/A	N/A	This initiative is foundational, so it does not directly support the evolution of the PSPS program. However, this initiative indirectly supports the evolution of the PSPS program because workforce training on PSPS tools and processes is essential to efficient execution of re-energization and supports the long-term vision to reduce duration of PSPS events.	12/31/2021

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
Emergency Planning and Preparedness	I.02	7.3.9.1	Trained Workforce for Service Restoration	All required personnel complete identified trainings to improve PSPS event execution (including SEMS, Access and Functional Needs and other critical training).	N/A	N/A	N/A	This initiative is foundational, so it does not directly support the evolution of the PSPS program. However, this initiative indirectly supports the evolution of the PSPS program because workforce training on PSPS tools and processes is essential to efficient execution of re-energization and supports the long-term vision to reduce duration of PSPS events.	12/31/2021
Stakeholder Cooperation and Community Engagement	J.01	7.3.10.1/ 8.4	Community Based Organizations (CBO) Coordination	Partner with CBOs in targeted communities to increase their capacity to serve AFN communities, such as medically sensitive customers, low-income, limited-English speaking and tribal customers.	N/A	N/A	N/A	While these activities do not directly reduce event frequency, scope, or duration, they do support the long-term vision of limiting negative impacts from PSPS events by improving the preparedness of the most vulnerable customers for PSPS events.	12/31/2021
Stakeholder Cooperation and Community Engagement	J.02	7.3.9.2/ 7.3.10.1	Community Engagement	Engage community stakeholders through offering: Wildfire Safety Working Sessions, workshops that review PG&E's PSPS Policies and Procedures document, listening sessions, and Energy and Communications Providers Coordination Group meetings.	N/A	N/A	N/A	While these activities do not directly reduce event frequency, scope, or duration, they do support the long-term vision of limiting negative impacts from PSPS events by ensuring that the voices of impacted communities are heard so that PG&E can continue to improve our PSPS program.	2/1/2022

Plan Area	Unique ID	Section Reference	Activity	Commitment Description	Estimated quantitative reduction of frequency (Number of Events)	Estimated quantitative reduction of scope (Number of Customers)	Estimated quantitative reduction of duration (Customer-Hours)	Explanation if values are zero / unobtainable	Commitment Date
Stakeholder Cooperation and Community Engagement	J.03	7.3.9.2/ 7.3.10.1	Customer and Community Outreach	Continue to enhance communications and engagement efforts with a focus on wildfire safety and preparedness for PSPS events—including Webinars/Community Meetings, Direct-to-Customer Outreach, developing and delivering informational video resources.	N/A	N/A	N/A	While these activities do not directly reduce event frequency, scope, or duration, they do support the long-term vision of limiting negative impacts from PSPS events by improving customer preparedness for PSPS events.	12/31/2021
Protocols on Public Safety Power Shutoff	K.01	8.4/ 8.2.4	Customer and Agency Outreach During PSPS Events	Improve Customer and Agency Outreach During PSPS Events by developing opt-in address alerts, conducting new message testing, promoting enrollment, hosting briefings, hosting cooperator calls.	N/A	N/A	N/A	While these activities do not directly reduce event frequency, scope, or duration, they do support the long-term vision of limiting negative impacts from PSPS events by improving customer preparedness for PSPS events.	12/31/2021
Protocols on Public Safety Power Shutoff	K.02	8.2.1	Mitigate Impacts on De-Energized Customers	Work with partner organizations to provide outreach and support to vulnerable customers through programs such as the Disability Disaster Access and Resources Program (DDAR) and the Portable Battery Program (PBP).	N/A	N/A	N/A	While these activities do not directly reduce event frequency, scope, or duration, they do support the long-term vision of limiting negative impacts from PSPS events by improving the preparedness of the most vulnerable customers for PSPS events.	12/31/2021

8.4 Engaging Vulnerable Communities

Report on the following:

- 1) *Describe protocols for PSPS that are intended to mitigate the public safety impacts of PSPS on vulnerable, marginalized and/or at-risk communities. Describe how the utility is identifying these communities.*
- 2) *List all languages which are “prevalent” in utility’s territory. A language is prevalent if it is spoken by 1,000 or more persons in the utility’s territory or if it is spoken by 5 percent or more of the population within a “public safety answering point” in the utility territory (D.20 03-004).*
- 3) *List all languages for which public outreach material is available, in written or oral form.*
- 4) *Detail the community outreach efforts for PSPS and wildfire-related outreach. Include efforts to reach all languages prevalent in utility territory.*

One of PG&E’s highest priorities during wildfire-related emergencies, including PSPS events, is to protect the health and safety of our vulnerable/AFN customers and communities.⁶¹ PG&E conducts outreach related to emergency preparedness, provides an improved notification experience during PSPS events, and offers additional services and resources to these customers in advance of and during PSPS events—either directly or in partnership with CBOs.

Throughout 2020, PG&E delivered on many of the CPUC’s and PG&E’s goals to make PSPS events less burdensome for our customers. These accomplishments include, but are not limited to:

- Developed partnerships with 61 resource CBOs to help support AFN customers with resources before, during and after PSPS events or wildfires. These partnerships included 21 food banks, 18 Meals on Wheels organizations, 16 ILCs, five LIHEAP providers, and one grocery delivery organization. Together, PG&E provided 30,000 food boxes to vulnerable customers, conducted more than 11,000 customer energy assessments for backup power support, delivered approximately 6,000 batteries to qualifying customers through the PBP and DDAR Program combined, served approximately 4,500 customers with services

⁶¹ In D.19-05-042, p. 28, the Commission adopted a definition that comports with that used by Cal OES, and henceforth referred to vulnerable populations as populations with AFN (AFN populations). The term “AFN populations” refers to those populations with AFN as set forth in Government Code § 8593.3. Government Code § 8593.3 lists ‘AFN populations as follows: ...the “AFN population” consists of individuals who have developmental or intellectual disabilities, physical disabilities, chronic conditions, injuries, limited English proficiency or who are non-English speaking, older adults, children, people living in institutionalized settings, or those who are low income, homeless, or transportation disadvantaged, including, but not limited to, those who are dependent on public transit or those who are pregnant.

including food replacement, gas vouchers, hotel stays, grocery delivery and accessible transportation.

- Increased MBL program enrollment by 26 percent since the start of 2020—from approximately 193,400 to over 243,400 customers, enabling us to send additional communications and PSPS notifications among other benefits.
- Established and leveraged new partnerships with 36 multicultural media organizations and five in-language CBOs. PG&E was able to amplify our support for customers with limited English-speaking proficiency by sharing PSPS preparedness, awareness and status information broadly across PSPS-affected areas in 20 non-English languages and ASL, using a variety of forums such as social media, news outlets, written material and more.

PG&E was able to better serve customers by receiving and updating the program to include the extensive input received over the past year from PG&E's advisory councils, regional councils, customer input and state and local officials.

In 2021, PG&E plans to continue our partnerships with CBOs and ensure we are fully integrated into our PSPS operations. PG&E wants to make sure the right programs and services are in place to support our vulnerable/AFN customers. More specifically, PG&E is working to ensure that we know our customers' language preferences and offering more opportunities for customers to self-identify as vulnerable (e.g., self-certified vulnerable, self-identified disabled, alternate format communications) without impinging on any HIPAA and/or CCPA data privacy laws. PG&E's work in this space will be grounded in customer and stakeholder feedback, research and data so that our solutions align with PG&E's vulnerable customers' needs. As part of this focus, PG&E plans to perform a gap analysis of current CBO resource partners to better target recruitment for additional partners and drive consistency of resources and services across the service territory.

For this initiative, PG&E has four sub-initiatives: (1) protocols to mitigate public safety impacts during PSPS events (Section 8.4.1); (2) prevalent languages in PG&E's territory (Section 8.4.2); (3) translated public outreach materials (Section 8.4.3) and community outreach efforts for Project Specific Safety Plan and wildfire-related outreach (Section 8.4.4)

Note that PG&E addresses the specific reporting requirements from Resolution WSD-011. PG&E's 2021 PSPS AFN Plan, filed February 1, 2021, provides more details on PG&E's goals, strategies and tactics to support AFN customers and communities before, during and after PSPS events.

8.4.1 Protocols to Mitigate Public Safety Impacts during PSPS Events

Describe protocols for PSPS that are intended to mitigate the public safety impacts of PSPS on vulnerable, marginalized and/or at-risk communities. Describe how the utility is identifying these communities.

PG&E implements a variety of tactics to mitigate the public safety impacts of PSPS on our most vulnerable customers, including low-income, medically sensitive and/or limited English proficiency customers. To further explain, this section has been broken up into the following categories:

- A) PSPS Protocols to Mitigate Public Safety Impacts
- B) Additional Resources and Services
- C) Identifying Vulnerable Customers

A) PSPS Protocols to Mitigate Public Safety Impacts

The information below provides a summary of PG&E activities:

- **Notifications During PSPS Events:** See Section 8.2.4 and the discussion on notifications for MBL customers and customers who self-identify as requiring additional support. PG&E also includes more details in the 2021 PSPS AFN Plan, filed February 1, 2021. PG&E also goes into more details about in-language support during PSPS events later in this section.
- **Media Engagement:** Before and during PSPS events, PG&E engages with the **media**, including multicultural news organizations to issue press releases, augment paid advertising, issue radio spot advertisements, conduct live streaming news conferences with ASL translators, and participate in media interviews. In turn, these media organizations may provide communications on the radio, broadcast, TV and online.

PG&E continues to enhance our social media communications to AFN communities, which are currently conducted via Facebook, YouTube, Instagram, Nextdoor and Twitter. For example, during the 2020 PSPS events, PG&E provided translated event update videos on our social media platforms in ASL, Spanish and Chinese.⁶² Leading up to and during PSPS events, PG&E promotes PSPS awareness and preparedness on TV, radio, pre-roll video (advertising videos that play before

⁶² See examples of translated social media posts:

- PSPS Alert Banner:
<https://twitter.com/PGE4Me/status/1321169776014667779/photo/1>.
- PSPS Event Update in Chinese:
<https://twitter.com/PGE4Me/status/1321220048791334912?s=20>.
- PSPS Update in Spanish:
<https://twitter.com/PGE4Me/status/1321219692392968193?s=20>.
- PSPS Warning Alert in ASL:
<https://twitter.com/PGE4Me/status/1320423102866542593?s=20>.

watching a featured video) and digital banner ads in Spanish, Cantonese, and Mandarin.

- **In-Event CBO and Community Partnerships:** PG&E has a dedicated team during PSPS events to engage with resource CBOs (e.g., CFILC, food banks, Meals on Wheels and CBOs that provide translations in indigenous languages), as well as information-only CBOs, to manage two-way communication leading up to and during each PSPS event.

During PSPS events, PG&E invites all CBOs to participate in the daily Systemwide Cooperators Call hosted by EOC staff to share PSPS situational updates. CBOs are also provided courtesy email notifications and access to a dedicated email box during events.

To ensure CBO Resource Partners are prepared to support PG&E customers during an event, they are sent PSPS advance notifications to prepare resources for deployment. PG&E's EOC team hosts a CBO Resource Partner coordination call which allows resource CBOs supporting the PSPS event to ask questions and share best practices. In addition, PG&E will refer MBL customers who call the PG&E Contact Center and request assistance to participating regional ILCs to coordinate the appropriate support through the DDAR Program described in Section 8.2.1.2.

- **In-language CBO and Multicultural Media Partnerships:** PG&E holds contracts with six CBOs and 36 multicultural media partners to provide in-language communication support before and during PSPS events to support customers who come from indigenous communities that occupy significant roles in California's agricultural economy.
- **Information Sharing with CBO/Multicultural Partnerships:** During events, PG&E leverages our network of over 250 CBOs to support customers. For example, PG&E provides courtesy notification updates, e-mails with links to PG&E's PSPS information toolkit and/or one-on-one direct e-mail communications. The toolkit can include press releases, fact sheets and other relevant information that partners could share with their constituents, including videos with relevant PSPS updates in 15 non-English languages and ASL. Many CBOs and multicultural media partners help PG&E provide customers with resources (e.g., in-language support, food replacement partnerships) during PSPS events. Additionally, PG&E provides maps of impacted counties, the number of total customers and MBL customers impacted and impacts by ZIP Code to CBOs.
- **Resource Partnerships:** PG&E formed partnerships with more than 50 CBOs to offer additional resources (e.g., food replacement) during and after a PSPS event or wildfire, as more fully described in the *Additional Resources and Services* section below.

B) Additional Resources and Services

PG&E provides AFN customers with a suite of resources and services before, during and after PSPS events. Figure PG&E-8.4-1 outlines the PG&E programs.

FIGURE PG&E-8.4-1: PG&E CUSTOMER RESOURCES AND SERVICES PROGRAMS

Program		Description
	Disability Disaster Access and Resource Program	Enables ILCs to provide qualifying customers who use electric medical devices with access to portable batteries
	Portable Battery Program	Leverage Low Income Home Energy Assistance Program (LIHEAP) providers and Richard Health and Associates (RHA) to support targeted residential customers
	Self-Generation Incentive Program	Financial Incentives for targeted customers to install permanent battery storage
	Well Pump Generator Rebate Program	Rebate program for low-income residential customers who have well water for their water service
	Food Bank Resource Partnership	Provide customers experiencing food loss with food replacements
	Community Food Bank Grants	Provide grant funds to Food Banks to support the services they provide during emergencies
	Meals on Wheels Partnerships	Additional meal to impacted PSPS seniors per day of shutoff
	Grocery Delivery Services	Grocery bag for homebound individuals due to medical conditions
	Medical Baseline Program	Additional notifications before and during PSPS events and pre-qualification to resiliency programs
	Energy Savings Assistance Program	Free home weatherization, energy-efficient appliances, and energy education services to income-qualified PG&E customers
	Community Resource Center	Location where community members can access basic resources, including charging stations
	211	Informational services to assist customers in locating resources

- **Battery and Generator Programs:** See Section 8.2.1 for a description of battery programs and other resources for AFN customers during a PSPS event. This includes a full description of the DDAR Program, PBP, SGIP and Well Pump Generator Rebate Program. In addition, please refer to PG&E's 2021 PSPS AFN Plan, filed February 1, 2021, that also details these battery programs.
- **Food Bank Partnerships and Grants:** We recognize food replacement is a critical need for some individuals with AFN, particularly those who are low income. PG&E plans to continue efforts made during the 2020 PSPS event season to establish agreements with food banks⁶³ throughout our service area. This is to provide food replacement to customers who experience food loss as the result of a PSPS event.

Additionally, PG&E will continue to offer grants to food banks⁶⁴ to provide critical services to vulnerable customers during emergencies, including wildfires, power outages and PSPS. PG&E includes more details in our 2021 PSPS AFN Plan, filed February 1, 2021.

- **Meals on Wheels Partnerships:** PG&E has partnered with Meals on Wheels providers throughout our service area to provide seniors who are impacted by a PSPS event with one or two additional meal(s) per day for the duration of the power shutoff. In addition to the meal, the provider completes an in-person wellness visit that includes messaging about the potential PSPS event and guidance to additional resources available through PG&E. During the PSPS

⁶³ PG&E is actively working toward executing agreements with two additional foodbanks.

⁶⁴ Approximately \$220,000 of the \$675,000 total was provided in Q4 2020.

events executed in 2020, PG&E served almost 2,900 seniors with an additional meal (or two) and wellness check through the services offered by the Meals on Wheels organizations throughout the territory. PG&E currently has agreements with 18 providers and will explore opportunities for additional partnerships in 2021. PG&E includes more details in the 2021 PSPS AFN Plan, filed February 1, 2021.

- **Grocery Delivery Services:** Food for Thought, based in Sonoma County, provides groceries to customers who are impacted by a PSPS event and are homebound due to advanced medical conditions (e.g., COVID-19, congestive heart failure, HIV/AIDS). Groceries provide the participating individual enough food for three meals a day for a week. Through this program, during the PSPS events implemented in 2020, PG&E provided food delivery to over 100 customers in Sonoma County. In 2021, PG&E will seek to identify similar resource providers in other regions of our service area. PG&E includes more details in the 2021 PSPS AFN Plan, filed February 1, 2021.
- **MBL Program:** The MBL Program, also known as MBL Allowance, is an assistance program for residential customers who have special energy needs due to qualifying medical conditions. The program includes two different kinds of help for customers (1) a lower rate on the customer's monthly energy bill;⁶⁵ and (2) unique notifications in advance of a PSPS event.⁶⁶
- **Energy Savings Assistance (ESA) Program:** PG&E's ESA program provides free home weatherization, energy-efficient appliances and energy education services to income-qualified PG&E customers⁶⁷ throughout our service territory. PG&E's ESA contractors share information about emergency preparedness, PSPS and the MBL Program. In 2020, PG&E completed over 65,000 education sessions.⁶⁸ Some of these sessions were done virtually due to COVID-19. Others were done through in-home educational activities, following all public safety protocols. PG&E plans to continue to leverage ESA contractors to help support our income-qualified customers' PSPS readiness.
- **CRC:** See Section 8.2.1 for a description of CRCs and information on how PG&E tailors CRCs to meet the needs of our vulnerable customers. In addition, refer to PG&E's 2021 PSPS AFN Plan, filed February 1, 2021.
- **2-1-1 Referral Services:** Through our charitable grant program, PG&E provides funding to 2-1-1 so that 2-1-1 service providers refer individuals to social services

⁶⁵ All residential customers receive an allotment of energy every month at the lowest price available on their rate, called the Baseline Allowance. Customers who are eligible for MBL receive an additional allotment of electricity and/or gas per month (approximately 500 kilowatt-hours of electricity and/or 25 therms of gas per month. This helps ensure that more energy to support qualifying medical devices is available at a lower rate.

⁶⁶ See Section 8.2.4 for details on PSPS event notification process for MBL customers.

⁶⁷ To qualify for the ESA program, a residential customer's household income must be at or below 200 percent of Federal Poverty Guidelines, as required in D.05-10-044.

⁶⁸ Through October 31, 2020.

available in their community. This is to help minimize the hardships associated with PSPS. PG&E includes more details in the 2021 PSPS AFN Plan, filed February 1, 2021.

C) Identifying Vulnerable Customers

PG&E understands the importance of identifying vulnerable/AFN customers to ensure that such populations receive the education and notification they need to maximize resiliency during a PSPS event. Using a variety of data sources (e.g., internal PG&E data like the Customer Care and Billing (CC&B) database, and publicly available data such as United States (U.S.) census data), PG&E has determined that, based on the CPUC's definition of AFN populations, over 80 percent of residential PG&E customers may have one or more AFN attributes. To identify and calculate specific customers and/or households that are considered AFN, PG&E uses the following categories for which data is available in our internal databases (e.g., CC&B and others):

- Customers enrolled in the MBL program;
- Customers enrolled in CARE or FERA;
- Customers that self-identify to receive an in-person visit before disconnection for non-payment (e.g., vulnerable)⁶⁹;
- Customers that self-identify as having a person with a disability in the household (e.g., disabled)⁷⁰;
- Customers who self-select to receive utility communications in non-standard format (e.g., in braille or large print); and
- Customers who indicate a non-English language preference.

In 2021, PG&E plans to promote customer enrollment in the vulnerable categories (e.g., self-certified vulnerable, self-identified disabled, alternate format communications, etc.) without impinging on any HIPAA and CCPA data privacy laws, as well as continue to encourage customers with limited English proficiency to update their account information by selecting their language preference.

⁶⁹ In accordance with D.12-03-054, customers that are not enrolled or qualify for the MBL Program can “certify that they have a serious illness or condition that could become life threatening if service is disconnected.” PG&E uses this designation to make an in-person visit prior to disconnection. This designation remains on their account temporarily for 90 days, and can be extended to 12 months if the customers submits an application. The customer characteristic vulnerable senior is no longer included in the Disconnect OIR based on D.20-06-003, p. 14, and therefore not included in this metric.

⁷⁰ Customers can self-identify with PG&E that they have a person in the household with a disability. This customer designation currently has no end date. In accordance with D.12-03-054, if customers have previously been identified as disabled and identified a preferred form of communication, the utility shall provide all information concerning the risk of disconnection in the customer's preferred format (e.g., phone, text, e-mail, TDD/TTY).

- **MBL Program:** As the vulnerable/AFN customer definition is quite broad⁷¹ and extensive, PG&E uses the MBL program as the primary source of data to identify customers that require additional notifications and support during PSPS events.⁷² Using this designation, PG&E is able to ensure that those customers dependent upon life-sustaining medical equipment that requires electricity are identified so that PG&E and our public safety partners can ensure they are notified of an impending PSPS event, as well as assist them in developing a de-energization and/or emergency preparedness action plan.

PG&E also coordinates with local and state agencies to ensure medically-sensitive customers have the right information to ensure their safety.⁷³ For example, as discussed in Section 8.2.4, PG&E shares lists of the MBL customers who have not confirmed receipt of their notifications with local and tribal agencies twice-daily during PSPS events. Due to customer privacy concerns, this information is only provided via the PSPS Portal to users that have accepted PG&E's online agreement. PG&E also only provides agencies information for customers within their jurisdiction;

- **Customer Self-Identified as Vulnerable:** For other disabled and vulnerable customers not enrolled in the MBL program,⁷⁴ PG&E encourages customers to self-identify if they require an in-person visit before a disconnection, if they have a person with a disability in the household and/or if they prefer to receive utility communications in non-standard format (e.g., in braille or large print).

These designations allow PG&E to provide in-event PSPS notifications that meet these customers' diverse needs. PG&E is working to expand the types of customers included in enhanced notification process (i.e., hourly retries, door knocks or live call outs) to additional self-identified categories in 2021.

All notifications include, and will continue to include, a reference to resources available to customers including a link to pge.com/disabilityandaging. Customers that self-identify as vulnerable are also eligible for assistance as part of CFILC's DDAR program, as enrollment in the MBL program is not a requirement to obtain resources; and

⁷¹ D.19-05-042, pp. 77-78.

⁷² Recognizing privacy concerns, the Commission does not require the electric IOUs to develop a comprehensive contact list of AFN customers nor to share individual customer information with local jurisdictions; rather, the Commission encourages that, through local agency partnerships, the electric IOUs and local jurisdictions can together provide up front education and outreach before and communication during a de-energization event in formats appropriate to individual AFN populations..." D.19-05-042, p .82.

⁷³ D.19-05-042, p. 81.

⁷⁴ "each electric IOU shall identify, above and beyond those in the MBL population, households that self-identify to receive an in-person visit before disconnection for nonpayment or receive utility communications in a non-standard format or self-identify as having a person with a disability in the household, to help provide support for those with medical needs during a de-energization event." D.20-05-051, Appendix A, p. 7.

- **Additional PG&E Measures to Identify Vulnerable Customers:** PG&E understands that using the MBL and self-certification designations may not go far enough in ensuring that PG&E's vulnerable customers receive up front education and outreach before, during, and after a PSPS event. Customers who select a non-English language as their preference for communications and notifications, and low-income customers,⁷⁵ are also part of PG&E's vulnerable customer identification and outreach efforts. In addition to targeted outreach efforts to these groups, PG&E will continue to leverage partnerships with CBOs, tribes, and local and state agencies to create outreach materials and implement events appropriate to these populations, as discussed in more detail below.

⁷⁵ Enrolled in the CARE and/or FERA program, and/or are eligible for enrollment.

8.4.2 Prevalent Languages in PG&E's Territory

List all languages which are “prevalent” in utility’s territory. A language is prevalent if it is spoken by 1,000 or more persons in the utility’s territory or if it is spoken by 5 percent or more of the population within a “public safety answering point” in the utility territory (D.20-03-004).

PG&E considers the following as prevalent languages⁷⁶ in our territory: English, Spanish, Chinese (Mandarin and Cantonese), Vietnamese, Korean, Tagalog, Russian, Arabic, Farsi, Punjabi, Japanese, Khmer, Hmong, Thai, Hindi, and Portuguese.⁷⁷

Throughout 2020, PG&E expanded the list of languages used for Community Wildfire Safety Program (CWSP) and PSPS communications and notifications from six non-English languages to 15 non-English-languages. This includes the translation of in-event PSPS notifications, as well as PG&E’s website.

PG&E recognizes the importance of communicating with customers that occupy significant roles in California’s agricultural economy and speak indigenous languages, such as Mixteco and Zapoteco. These languages are served and supported through varying channels such as CBO communications and multi-cultural media outlets, discussed in Section 8.4.

In addition, in the ALJ Ruling, the Commission asked IOUS to investigate languages that might be considered minority languages in particular counties, but have more than 1,000 speakers in one or more large IOU territories.⁷⁸ As explained in PG&E’s Compliance Filing,⁷⁹ based on the Public Use Microdata Sample U.S. Census data, PG&E finds that Filipino languages Ilocano and Cebuano; Indian subcontinent

⁷⁶ A language is prevalent if “It is spoken by 1,000 or more people in the affected service territory (based on identified data sources); It is spoken by indigenous communities that occupy significant roles in California’s agricultural economy, regardless of prevalence, such as Mixteco and Zapoteco; and

It is required by statute, regardless of prevalence, which include English, Spanish, and top three languages: Chinese, Tagalog and Vietnamese, as well as Korean and Russian (where prevalent). To note, these languages PG&E has already adopted for translated support for wildfire and PSPS communications. D.20-03-004, OP 1 and 2.

⁷⁷ In our CWSP Outreach Workplan *Section 2.2 Identification of Language Prevalence*, filed on May 15, 2020, PG&E explained the methodology we use to determine language prevalence in our service territory. *Administrative Law Judge’s Ruling Regarding Compliance Filings Submitted in Response to Decision 20-03-004 Related to In-Language Outreach Before, During and After a Wildfire and Surveys of Effectiveness of Outreach* (Administrative Law Judge (ALJ) Ruling) further expanded the requirements.

⁷⁸ ALJ Ruling, p. 5.

⁷⁹ Pacific Gas and Electric Company’s Compliance Filing per ALJ’s Ruling Regarding Compliance Filings Submitted in Response to D.20-03-004 Related to In-Language Outreach Before, During and After a Wildfire and Surveys of Effectiveness of Outreach, December 31, 2020.

languages⁸⁰ Gujarati, Bengali, Tamil and Telugu; Pashto; and Min Nan Chinese are prevalent languages in our territory. PG&E provides outreach to speakers of these languages through call center translation services via vendor Language Line Services and through CBO partners.

⁸⁰ PG&E has included Punjabi as one of the prevalent languages in our Community Outreach Budget and Workplan compliance filing.

8.4.3 Translated Public Outreach Materials

List all languages for which public outreach material is available, in written or oral form.

To explain PG&E's translation approach of public outreach materials, this section is broken up into the following categories:

- A) In-Event PSPS Notifications and Communications for Customers with Limited English Proficiency and Other Needs
- B) Website
- C) Printed Material

A) In-Event PSPS Notifications and Communications for Customers with Limited English Proficiency and Other Needs

PSPS customer notifications are available in the following 15 non-English languages,⁸¹ Spanish, Chinese (Mandarin and Cantonese), Vietnamese, Korean, Tagalog, Russian, Arabic, Farsi, Punjabi, Japanese, Khmer, Hmong, Thai, Hindi, and Portuguese.

PG&E also has contracts with five CBOs to provide in-language communications to customers in a variety of indigenous languages both for preparedness outreach and in-event communications during a PSPS event. These CBOs provide in-language outreach using social media, in-person communications, and one-on-one phone calls in one or more of the following languages: Mixteco, Tlapaneco, Triqui, Zapoteco, Maya, Nahuatl, Chatino, Chinanteca, and Katz el.

As for an option for in-language support, PG&E directs customers to call the Contact Center. PG&E's Contact Center will continue to be equipped to provide translation support in over 250 languages.

PG&E expanded in-language support services through a new, in-language tool for customer-facing employees to use in the field during customer interactions, such as door knocks to MBL customers during PSPS events. The Insight App helps bridge the communication gap by allowing employees to converse and interact with customers who do not speak English or are deaf or hard-of-hearing in the field by providing video and/or audio translation for customers.

To support customers that are deaf or hard of hearing, PG&E has also published a video in ASL to explain the PSPS process. PG&E collaborates with NorCal Services for Deaf and Hard of Hearing to record PG&E's PSPS event notifications in ASL and messaging directing customers to pge.com for a current list of affected counties. A PSPS overview video recorded in ASL also directs customers to PG&E's address look-up tool during PSPS events. PG&E shares these PSPS ASL recordings on our social media channels (e.g., Facebook and Twitter). PG&E also includes NorCal Services for Deaf and Hearing and other Deaf agencies in PSPS CBO

⁸¹ In accordance with the ALJ Ruling.

communications so that the information and links can be shared within the Deaf community.

B) Website

A focused set of “critical” pages, including PG&E’s PSPS webpage and the alert site, is translated in the following written languages: English, Spanish, Chinese (Mandarin and Cantonese), Vietnamese, Korean, Tagalog, Russian, Arabic, Farsi, Punjabi, Japanese, Khmer, Hmong, Thai, Hindi, and Portuguese.⁸² In addition, tools such as the address lookup tool and the outage map are available in-language. Table PG&E-8.4-1 is a list of critical webpages that have been translated.

⁸² See example translated sites for the PSPS Updates page, which can also be found by clicking the language icon at the top of the screen on the English page: Spanish: www.pge.com/pspsupdates-es; Chinese: www.pge.com/pspsupdates-zh; Korean: www.pge.com/pspsupdates-ko; Russian: www.pge.com/pspsupdates-ru; Tagalog: www.pge.com/pspsupdates-tl; Vietnamese: www.pge.com/pspsupdates-vi.

TABLE PG&E-8.4-1: CRITICAL PG&E WEBPAGES THAT ARE TRANSLATED

Webpage	URL	Languages Available
PSPS Landing Page	pge.com/psps	16
PSPS Event Updates Page	pge.com/pspsupdates	16
Wildfire Safety Landing Page	pge.com/wildfiresafety	16
PSPS Language Resources Page	pge.com/pspslangaugehelp	16
MBL Program	pge.com/medicalbaseline	16
PSPS Updates and Alerts	pge.com/en_US/residential/outages/public-safety-power-shutoff/psps-updates-and-alerts.page	16
PSPS Address Alert Signup	pge.com/pspsalerts	16
PG&E Disability and Aging (AFN) Page	pge.com/disabilityandaging	16 + ASL
Open House Webinar Schedule & Presentations	pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/community-wildfire-safety-open-house-meetings.page	16 + ASL
PSPS Support	pge.com/en_US/residential/outages/public-safety-power-shutoff/psps-support.page	16
Prepare for PSPS	pge.com/en_US/residential/outages/public-safety-power-shutoff/prepare/prepare-for-psps.page	16
Why PSPS Events Occur	www.pge.com/en_US/residential/outages/public-safety-power-shutoff/why-psps-events-occur.page	16
Minimizing PSPS Events	pge.com/en_US/residential/outages/public-safety-power-shutoff/minimizing-psps-events.page	16
Wildfire Recovery & Support	pge.com/en_US/residential/outages/public-safety-power-shutoff/psps-support.page	16
Consumer Protections	pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/consumer-protection.page	16
PSPS Event Reports	pge.com/pspsreports	16

- **Accessibility of Communications:** PG&E's online customer communications, including our website and PSPS customer notification emails, are tested for usability and accessibility to meet Web Content Accessibility Guidelines (WCAG) 2.0 AA accessibility standards. Before any new feature is introduced or code change is made to an existing feature, the communications content is tested by our accessibility partner, Level Access. They test the page(s) for functional usability and technical conformance using both automated tools and a manual process, including:
 - Running the site through their automated Accessibility Management Platform (AMP) tool to identify defects; and
 - Testing using Job Access with Speech, a popular computer program that allows visually impaired or blind users to read the screen either with a text-to-speech output or by a refreshable Braille display.

Any severe defects found are fixed and the updated code is resubmitted for testing to ensure there are no severe defects when the code is deployed to production. Videos published online also meet WCAG 2.0 AA accessibility standards, with audio description, closed captioning and written transcripts.

C) Printed Material

PG&E translates "critical information/documents," which include resources focused on wildfire safety, emergency preparedness and PSPS preparedness in 15 prevalent non-English languages. PG&E's CWSP/PSPS customer information and materials are available in alternate formats, including Braille and large print, upon request. PG&E provides fully translated educational collateral to support in-person education efforts for customers in their preferred language (where prevalent), and to share with partners that help PG&E socialize their messages.

PG&E takes three approaches when translating collateral material, such as brochures and fact sheets, and web content, including:

- 1) Full translations of "critical information/documents"
- 2) Tagline translations in 15 languages for non-critical information/documents (unless the primary content has been covered in a key critical document)
- 3) Language icon and text in English that points customers to PG&E's Language Services Line for non-critical documents (if space is limited)

The criteria for each approach are described below:

- **Full Translation of Critical Information/Documents:** Critical information/documents are defined as materials focused on wildfire and PSPS preparedness and available resources, as well as PSPS notifications;

PG&E reviews collateral materials to ensure items deemed as "critical information/documents" are available in collateral catalog in all 15 prevalent languages. These materials can be downloaded as PDFs for electronic

distribution (shared with CBOs, affinity groups, etc.) and/or printed-on-demand where PG&E or third-party representatives can order printed versions for events, presentations, among other engagements.

- **Tagline Translations for Non-Critical or Supplemental Information/Documents:** For non-critical materials, or materials that supplement those that already exist, and where space is available, PG&E includes a translated sentence referencing customers to call PG&E and/or view translated content online.

Additionally, PG&E points customers to the contact center that can provide support in 250 languages using a universally recognizable language translation icon. PG&E has conducted benchmarking to determine the most appropriate and recognizable universal language icon to leverage in these instances. Figure PG&E-8.4.2 illustrates an example of the tagline translations.

FIGURE PG&E-8.4-2: SAMPLE TAGLINE TRANSLATION FOR NON-CRITICAL OR SUPPLEMENTAL INFORMATION/DOCUMENTS

Para ayuda en español por favor llame al 1-866-743-6589 要用粵語/國語請求協助 · 請致電 1-866-743-6589 Để được giúp đỡ bằng tiếng Việt, xin gọi 1-866-743-6589 한국어로 더 도움을 받으시려면 전화하세요 1-866-743-6589 Para tulong sa Tagalog, mangyari lamang na tumawag sa 1-866-743-6589 Для получения помощи на русском языке, пожалуйста, позвоните по телефону: 1-866-743-6589 日本語でのサポートはこちらまでお電話下さい 1-866-743-6589	مُؤَرَّب لَصِنَاتَا ، دِي بَرَعَالَا دَغَلَلَاب قَدَعِاسَمَلَل 1-866-743-6589 សម្រាប់ជំនួយជាភាសាខ្មែរសូមទូរស័ព្ទទម្រង់កម្ពុជា 1-866-743-6589 Yog xav tau kev pab ua hais lus Hmoob, hu rau 1-866-743-6589 ਪੰਜਾਬੀ ਵੱਲੋਂ ਮਦਦ ਲਈ, ਕਰਿਪਾ ਕਰਵੇ 1-866-743-6589 ਤੇ ਕਾਲ ਕਰੋ نفلت هرامش اب افطل ،يسراف نابز هب رتشيب تاعالطابسك يارب دي ياجرفب لصاح سامت ١-٨٦٦-٧٤٣-٦٥٨٩
	 For translated support in over 200 additional languages, please contact PG&E at 1-866-743-6589

- **Language Icon for Non-Critical or Supplemental Information/Documents**

Items that are classified as non-critical or supplemental and have space constraints contain a universal “icon” and short message in English to inform customers that PG&E can provide in-language support. As mentioned above, PG&E conducted benchmarking to determine a universally recognizable language translations icon to use in these instances as seen in Figure PG&E-8.4-3.

FIGURE PG&E-8.4-3: SAMPLE ICON FOR NON-CRITICAL OR SUPPLEMENTAL INFORMATION/DOCUMENTS



For translated support in over 200 languages, please contact PG&E at **1-866-743-6589**.

The number that is included on these translated materials directs customers to one of four PG&E Contact Centers in California. Support from live agents is available 24/7 and can support customers in over 250 languages, including almost 10 indigenous languages, such as Mixteco, Zapoteco, and Triqui. PG&E will continue to leverage the Contact Centers to handle customer inquiries and additional translation services as needed.

8.4.4 Community Outreach Efforts for PSPS and Wildfire-Related Outreach

Detail the community outreach efforts for PSPS and wildfire-related outreach. Include efforts to reach all languages prevalent in utility territory.

PG&E provides a variety of outreach and education for vulnerable customers and communities in advance of wildfire season, and before, during, and after PSPS events. These outreach efforts are critical so that these customers can be prepared to address the unique impacts of wildfire, de-energization and other natural disaster emergencies. PG&E makes a considerable effort to use a diversity of channels to best reach customers in the format of their choice.⁸³ PG&E intends to continue to explore additional channels and technologies for communications, while also refining details and scope of implementation to improve content, accessibility, awareness, and effectiveness.

In this section, PG&E provides a summary of the community outreach efforts for PSPS and wildfire-related outreach, including efforts to reach all languages prevalent in utility territory. The section is broken up by the following categories:

- A) Website;
- B) Media Engagement;
- C) Community Events;
- D) PSPS and Wildfire Preparedness Regional Open Houses (Webinars);
- E) Community Based Organization Engagement;
- F) MBL Customer Outreach;
- G) Tribal Community; and
- H) Advisory Boards.

Details on wildfire and PSPS-related outreach are included in Section 7.3.9.2 and Section 7.3.10.1. Further, PG&E detailed specific customer and community outreach efforts for AFN populations in the 2021 PSPS AFN Plan.⁸⁴

A) Website

PG&E's website allows customers to have access to a wide variety of information ranging from wildfire preparedness to PSPS event-specific information 24/7, providing customers with convenience and flexibility.

In 2020, PG&E also updated content and navigation of the AFN-targeted web page, <http://www.pge.com/disabilityandaging>, based on feedback received by members of the People with Disabilities and Aging Advisory Council (PWDAAC). The goal of the

⁸³ D.20-03-004, OP 3.

⁸⁴ D.20-05-051, Conclusion of Law 36.

update was to make the page more intuitive for customers seeking information. The webpage is organized by four categories of need, with applicable resources for each category. The categories include:

- 1) If you rely on power for medical/and or independent living needs;
- 2) If you need financial assistance;
- 3) If you are disabled or an older adult; and
- 4) If you need language support.

PG&E updates this webpage during each PSPS event as new resource partners are added. Please see the above section, *Translated Public Outreach Materials*, where PG&E discuss in-language offerings as they relate to the website.

PG&E will continue to explore and identify improvements for the website based on continued user and messaged testing, feedback from surveys and more.

B) Media Engagement

PG&E works closely with external media outlets, including both paid and earned media, to provide broad awareness to Californians to share tips related to wildfire and PSPS preparedness, socialize available resources and communicate PSPS event information. PG&E is also focused on enhancing and formalizing coordination with multicultural media organizations for both preparedness outreach and in-event communications.

- **Earned Media:** To serve non-English speaking customers, PG&E engages with over 150 multicultural media outlets throughout the year in an effort to promote safety initiatives, including PSPS, to monolingual or difficult-to-reach populations that may not have access to mainstream television media and/or read/speak English.

PG&E shares news releases and coordinates interview opportunities with media outlets to help educate non-English speaking customers on various PG&E programs, including the CWSP, PSPS, emergency preparedness, public safety, consumer protections and income qualified programs, to name a few. PG&E also schedules media visits with these organizations to discuss other partnership opportunities (e.g., Public Service Announcements, advertising, event sponsorships). In 2020, PG&E identified 36 multicultural media outlets to partner with on PSPS and wildfire safety education.

PG&E also staffs bilingual and multilingual employees to serve in the EOC to support the PIO multimedia engagement function. These employees provide urgent translation support, such as verification and approval of ad hoc written translations during emergencies. These staff assist PG&E with avoiding delays that can occur when engaging outside vendors for translation needs during an active event or wildfire.

- **Paid Media and Advertising:** To supplement PG&E's outreach efforts during PSPS events, PG&E runs PSPS emergency messages to reach customers via paid media channels. PG&E purchases a combination of English and in-language radio ads, as well as digital banners in English and multiple languages based on targeted ZIP Codes. PG&E is in the process of identifying available media outlets to cover the 12 identified languages and the associated costs, which are variable based on geography and season.

In 2021, PG&E will run a series of print ads across our service territory highlighting in-language support available via the website and Call Center.

- **Social Media:** PG&E uses social media, including Facebook,⁸⁵ Twitter,⁸⁶ Nextdoor⁸⁷ and Instagram to direct users to the website where they can access important emergency preparedness information, as well as PSPS event resources in their supported language of preference. Using PG&E's social media accounts, PG&E posts key messages from news releases, such as the launch of the DDAR Program,⁸⁸ invitations to wildfire safety and preparedness webinars,⁸⁹ promoting the MBL program,⁹⁰ and PSPS event updates, including CRCs⁹¹ information. PG&E's social media efforts also include publishing content, including informational preparedness and/or event-specific videos, such as PSPS, processes and insight into frequently asked questions. During PSPS events, PG&E also creates event-specific morning video updates, translated in Spanish and Chinese, and shares on social media to provide event updates in additional languages.
- **Videos:** PG&E creates a variety of informational videos ranging from 30 seconds to 30 minutes. These videos provide a high-level overview of expectations and protocols for PSPS for the territory. Additionally, PG&E covers content discussed during PG&E webinars, including approaches to mitigate for wildfire risk and how customers can prepare for emergencies. These videos are available for customers at pge.com/pspsvideos, YouTube and on social media. PG&E also creates PSPS event-specific morning video updates in English, Spanish and Chinese to share on social media.

C) Community Events

PG&E plans to host and/or participate in community events focused on customers with disabilities, seniors and low-income customers. The format and timing of community events will depend on COVID-19. PG&E anticipates that the bulk of

⁸⁵ www.facebook.com/pacificgasandelectric/.

⁸⁶ www.twitter.com/PGE4Me.

⁸⁷ www.nextdoor.com/agency-detail/ca/san-francisco/pacific-gas-and-electric-company-13/.

⁸⁸ www.twitter.com/PGE4Me/status/1255636675939708931.

⁸⁹ www.twitter.com/PGE_Paul/status/1255562436230381570.

⁹⁰ www.twitter.com/PGE4Me/status/1204900971505209344.

⁹¹ www.twitter.com/PGE4Me/status/1197530202735296513.

community events will occur virtually, like many 2020 events. When it becomes safe for PG&E's customers, communities and employees to gather, PG&E plans to pivot to in-person events.

In 2020, as part of the State Council on Developmental Disabilities Virtual Conference, PG&E produced a three-minute video starring Christina Mills, CFILC Executive Director, to highlight available resources for the AFN population including DDAR and MBL. The video is posted on PG&E's YouTube channel.⁹²

PSPS and Wildfire Preparedness Regional Open Houses (Webinars)

PG&E plans to host wildfire safety and PSPS preparedness webinars for representatives of people and communities with AFN. The preparedness webinars include subtitles in English, Spanish and Chinese, and has an ASL interpreter.

During these webinars, PG&E plans to share a summary of PG&E's efforts to mitigate wildfire risk, engage with local organizations during events and information on event notifications. In addition, PG&E will share an overview of resources available to customers, including the MBL Program, CRC overview (including COVID-19 contingencies), funding and incentives for backup power resources through the PBP and SGIP, as well as PG&E's DDAR Program offerings (transportation, backup power, hotel and food vouchers).

To facilitate residential customer participation, PG&E plans to host the webinars after standard working hours. For customers who are deaf or hard of hearing and those with limited English proficiency, PG&E will ensure that each webinar includes closed captioning in English and translated closed captioning in Spanish and Chinese. PG&E will record the presentation portion of the webinar in 16 languages, including ASL, and make the recordings available on PG&E's website at pge.com/openhouse.

D) Community Based Organization Engagement

PG&E recognizes the important roles that CBOs play in the community because of their established relationships and ability to serve as trusted communication channels to customers.

PG&E is actively engaged with 250+ CBOs to provide education and awareness information to customers through a variety of channels including the contractors that serve PG&E's income qualified. PG&E coordinates with CBOs that have existing relationships and serve disadvantaged and/or hard-to-reach communities to conduct outreach to customers proactively and/or communicate with customers to provide in-language/translated education and/or PSPS event updates.

Through these partnerships, CBOs help amplify our wildfire and PSPS preparedness messaging and provide event updates with their constituents. PG&E engages with these organizations in one or more of the following ways:

- Conducting bi-annual trainings with contractors that serve PG&E's customers in the CARE program, which include information on relevant PG&E programs,

⁹² <https://www.youtube.com/watch?v=uvukoac8cYg>.

including the CWSP and PSPS, so the contractors can assist with educating their clientele throughout the year;

- Providing CWSP/PSPS literature for sharing through CBO communication channels and ESA contractor networks;
- Offering the CBO Direct program to empower non-profits with resources to assist in the distribution of important safety messaging to their networks of customers in Tier 2 and Tier 3 areas;
- Providing PSPS webinars tailored to the needs of AFN organizations;
- Providing in-person PSPS presentations at local events; and
- Providing a PG&E exhibitor booth at events supporting AFN populations.

PG&E will build on the successes with these CBOs to further support these communities in 2021.

E) MBL Customer Outreach

PG&E encourages customer participation and enrollment in the MBL Program through direct-to-customer outreach, CBO promotion, and building strong relationships with the health care industry. This outreach aims to help individuals with AFN prepare for PSPS and connect with relevant resources for support.

PG&E plans to implement direct-to-customer outreach tactics, such as sending PSPS preparedness brochures to all MBL, self-certified vulnerable and disabled customers. The brochure will feature focused resources and preparedness tips for AFN. Additionally, PG&E will send PSPS notification reminders and resource postcards and emails to MBL, self-certified vulnerable senior or disabled customers in areas likely to experience PSPS events. Postcards and emails will include focused information and tips for individuals with AFN.

In addition to the direct-to-customer mail and email campaigns, PG&E employees in the Customer Service Offices will continue to proactively contact customers who have self-identified as having a disability, seniors and other vulnerable populations to promote the MBL Program. This outreach will also verify contact information and communication preferences, review emergency preparedness plans and promote other programs and services that could help during a PSPS event. This customer call campaign also promotes our Customer Programs such as the DDAR Program, PBP and SGIP.

Throughout 2020, PG&E implemented an MBL acquisition campaign to drive program enrollment. PG&E's marketing efforts led to nearly a 30 percent increase in enrollments in 2020. PG&E plans to continue extensive outreach in 2021 and to find more ways to make it easier for eligible customers to enroll in the program, as described in the 2021 PSPS AFN Plan and Advice Letter 4293-G/5916-E.

One of the main outcomes of PG&E's MBL customer research was to engage directly with the health care industry to enlist healthcare providers' assistance in informing

customers of the MBL Program and encouraging enrollment. PG&E is engaging with a variety of healthcare providers, medical associations and durable medical equipment suppliers to build relationships and provide education about the relevant programs that can help the clients we mutually serve. PG&E is providing these stakeholders with PSPS preparedness information and toolkits, including MBL Program applications and fact sheets.

PG&E has joined health care industry conferences and meetings to present information about the program and provided training on the program to health care industry staff. We are asking these partners to promote the MBL Program and encourage customer enrollment by adding a link to PG&E's MBL Program on their website.

F) Tribal Community

PG&E assists tribal members throughout our service area to mitigate the impacts of PSPS events, and other emergency situations such as the COVID-19 pandemic, wildfires and rolling blackouts. PG&E provides grants to tribes impacted by wildfires and COVID-19 and conducts e-mail outreach to tribal leaders and staff to increase awareness of available assistance options. This assistance options include:

- Suspending disconnections for non-payment for all residential and small business customers;
- Offering flexible payment plans;
- Supporting online bill payment while local offices are temporarily closed;
- Providing bill reductions for income-qualified customers through the CARE and FERA programs;
- Offering free energy-efficiency programs to help reduce home energy use;
- Suspending MBL re-certifications;
- Providing online tools to assist tribes in preparation for a PSPS;
- Working with local regional organizations to provide support for AFN community members during PSPS events;
- Providing backup battery suitcases to the Hopland Tribe and conducting an online training for tribal staff and elders on proper use and maintenance; and
- Engaging tribal governments to help them prepare their tribal memberships for PSPS events and other potential outages.

PG&E continues to refine the customer database for tribal lands to facilitate real-time reporting of tribal-specific impacts. For example, PG&E added the Pit River Tribe, Montgomery Creek Reservation, Roaring Creek Reservation and Burney Reservation to our customer database. For additional information related to the PSPS support that PG&E provides tribal leaders, see Section 8.2.4.

G) Advisory Boards

PG&E understands the importance of engaging with interested parties and advisory councils to gain feedback on approaches for serving customers before, during and after PSPS events. PG&E has instituted advisory boards at the suggestion of representatives of AFN and other stakeholders to inform our wildfire safety and PSPS-related initiatives.

- **PWDAAC:** PWDACC (“Council”) provides a forum to gather insight on the needs of AFN populations related to emergency preparedness and to facilitate co-creation of solutions and resources to serve customers reliant on power for medical needs in relation to a PSPS event. The PWDAAC is a diverse group of recognized CBO leaders supporting people with developmental or intellectual disabilities, physical disabilities, chronic conditions, injuries and older adult communities, as well as members and advocates from within these communities.

The Council provides independent expertise to help ensure that PG&E’s customer programs, operations and communications incorporate best practices to support these populations now and in the future. The Council:

- Actively identifies issues, opportunities and challenges related to PG&E’s ability to minimize the impacts of wildfire safety including PSPS, and other emergencies to Northern and Central California over the long term;
- Serves as a sounding board and offers insights, feedback and direction on PG&E’s customer strategy, programs and priorities; and
- Shares experiences, perspectives and best practices for improving PG&E’s customer performance.

In 2020, PG&E met with PWDACC nine times to facilitate a quick and productive ramp up. At a minimum, in 2021, PG&E will convene the Council for four in-person meetings per year, COVID-19 restrictions permitting. We will use online fora (e.g., WebEx) until in-person meetings are safe to conduct.

- **Statewide IOU AFN Advisory Council:** The Joint IOUs established the Statewide IOU AFN Advisory Council to engage with members, advocates and leaders across all populations identified as vulnerable, to inform a more holistic and strategic view on how to help the many constituencies served by the utilities. The Joint IOUs will convene the Council no less than four times per year, but likely monthly, consistent with 2020 practices. Ideally the meetings will be in-person, however, given the current COVID-19 pandemic conditions, online forums (e.g., Microsoft Teams) will be used until in-person meetings are safe to conduct. In addition to the quarterly and/or monthly Advisory Council meetings, the Joint IOUs plan to host interim sessions with stakeholders to make meaningful progress in implementing the various recommendations.
- **Other Advisory Groups:** PG&E will also continue to engage with and solicit feedback on wildfire and PSPS-related outreach from other existing advisory groups, including:

- **Disadvantaged Communities Advisory Group:** An advisory group that meets quarterly led by the CPUC and California Energy Commission (CEC), with representatives from disadvantaged communities. The purpose of this group is to review and provide advice on proposed clean energy and pollution reduction programs and determine whether those proposed programs will be effective and useful in disadvantaged communities. PG&E engages with this group to provide information and gain input about wildfire mitigation activities, including PSPS;
- **Low Income Oversight Board (LIOB):** A board established to advise the CPUC on low-income electric and gas customer issues and programs. PG&E also engages with this group to provide information and gain input about wildfire mitigation activities, including PSPS;
- **Local Government Advisory Councils and Working Groups:** PG&E includes representatives from the AFN community on both the PSPS Regional Working Groups. Additionally, PG&E hosts local wildfire safety sessions with each County OES in advance of wildfire season. PG&E's plans to ensure AFN populations are included in these sessions for awareness and opportunity for feedback; and
- **Communities of Color Advisory Group:** PG&E will continue to solicit input from Communities of Color Advisory Group which assists PG&E in crafting outreach and engagement with communities on color on a broad spectrum of issues impacting diverse communities.

PG&E provides more details on Advisory Boards in the 2021 PSPS AFN Plan.

8.5 PSPS-Specific Metrics

PSPS data reported quarterly. Placeholder tables below to be filled in based on quarterly data.

Instructions for PSPS Table 11:

In the attached spreadsheet document, report performance on the following PSPS metrics within the utility's service territory over the past five years as needed to correct previously-reported data. Where the utility does not collect its own data on a given metric, the utility shall work with the relevant state agencies to collect the relevant information for its service territory, and clearly identify the owner and dataset used to provide the response in the "Comments" column.

PG&E has enclosed the Table 11 data in Attachment 1 – All Data Tables Required by 2021 WMP Guidelines.xlsx. In addition, PG&E is providing the following comments below on the Table 11 data.

Comments for Table 11:

PG&E has outlined the past and forecasted PSPS metrics in Table 11, which is utilizing historic recorded data for actuals and an analysis of the past ten years of weather data to provide the forecasted metrics. The forecasted numbers are largely weather dependent and do not include any event size or length reductions from the 2020 planned work. Further information historical lookback of the last 10 years of weather data and its uses and limitations can be found in Section 8.1.

In addition, PG&E projected PSPS metrics in 2021, and Table 11 keeps those values static for 2022. PG&E anticipates continued improvement from 2021 to 2022, but we do not yet have analysis on the value of those improvements. Thus, for the purposes of this table, no improvements have been assumed.

PACIFIC GAS & ELECTRIC COMPANY

SECTION 9

APPENDIX

9.1 Definitions of Initiative Activities by Category

These definitions were provided by the California Public Utilities Commission (CPUC or Commission) Wildfire Safety Division (WSD) for the purposes of the utilities in categorizing wildfire mitigation activities into initiatives in Section 7.3.

These initiative definitions have been reproduced here for ease of cross-referencing and to maintain consistent organization for Section 9.

Category	Initiative activity	Definition
A. Risk mapping and simulation	A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment	Development and use of tools and processes to develop and update risk map and simulations and to estimate risk reduction potential of initiatives for a given portion of the grid (or more granularly, e.g., circuit, span, or asset). May include verification efforts, independent assessment by experts, and updates.
	Climate-driven risk map and modelling based on various relevant weather scenarios	Development and use of tools and processes to estimate incremental risk of foreseeable climate scenarios, such as drought, across a given portion of the grid (or more granularly, e.g., circuit, span, or asset). May include verification efforts, independent assessment by experts, and updates.
	Ignition probability mapping showing the probability of ignition along the electric lines and equipment	Development and use of tools and processes to assess the risk of ignition across regions of the grid (or more granularly, e.g., circuits, spans, or assets).
	Initiative mapping and estimation of wildfire and PSPS risk-reduction impact	Development of a tool to estimate the risk reduction efficacy (for both wildfire and PSPS risk) and risk-spend efficiency of various initiatives.
	Match drop simulations showing the potential wildfire consequence of ignitions that occur along the electric lines and equipment	Development and use of tools and processes to assess the impact of potential ignition and risk to communities (e.g., in terms of potential fatalities, structures burned, monetary damages, area burned, impact on air quality and greenhouse gas, or GHG, reduction goals, etc.).
B. Situational awareness and forecasting	Advanced weather monitoring and weather stations	Purchase, installation, maintenance, and operation of weather stations. Collection, recording, and analysis of weather data from weather stations and from external sources.
	Continuous monitoring sensors	Installation, maintenance, and monitoring of sensors and sensorized equipment used to monitor the condition of electric lines and equipment.
	Fault indicators for detecting faults on electric lines and equipment	Installation and maintenance of fault indicators.
	Forecast of a fire risk index, fire potential index, or similar	Index that uses a combination of weather parameters (such as wind speed, humidity, and temperature), vegetation and/or fuel conditions, and other factors to judge current fire risk and to create a forecast indicative of fire risk. A sufficiently granular index shall inform operational decision-making.

Category	Initiative activity	Definition
	Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions	Personnel position within utility service territory to monitor system conditions and weather on site. Field observations shall inform operational decisions.
	Weather forecasting and estimating impacts on electric lines and equipment	Development methodology for forecast of weather conditions relevant to utility operations, forecasting weather conditions and conducting analysis to incorporate into utility decision-making, learning and updates to reduce false positives and false negatives of forecast PSPS conditions.
C. Grid design and system hardening	Capacitor maintenance and replacement program	Remediation, adjustments, or installations of new equipment to improve or replace existing capacitor equipment.
	Circuit breaker maintenance and installation to de-energize lines upon detecting a fault	Remediation, adjustments, or installations of new equipment to improve or replace existing fast switching circuit breaker equipment to improve the ability to protect electrical circuits from damage caused by overload of electricity or short circuit.
	Covered conductor installation	Installation of covered or insulated conductors to replace standard bare or unprotected conductors (defined in accordance with GO 95 as supply conductors, including but not limited to lead wires, not enclosed in a grounded metal pole or not covered by: a "suitable protective covering" (in accordance with Rule 22.8), grounded metal conduit, or grounded metal sheath or shield). In accordance with GO 95, conductor is defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency (12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D.

Category	Initiative activity	Definition
	Covered conductor maintenance	Remediation and adjustments to installed covered or insulated conductors. In accordance with GO 95, conductor is defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency (12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D.
	Crossarm maintenance, repair, and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing crossarms, defined as horizontal support attached to poles or structures generally at right angles to the conductor supported in accordance with GO 95.
	Distribution pole replacement and reinforcement, including with composite poles	Remediation, adjustments, or installations of new equipment to improve or replace existing distribution poles (i.e., those supporting lines under 65kV), including with equipment such as composite poles manufactured with materials reduce ignition probability by increasing pole lifespan and resilience against failure from object contact and other events.
	Expulsion fuse replacement	Installations of new and CAL FIRE-approved power fuses to replace existing expulsion fuse equipment.
	Grid topology improvements to mitigate or reduce PSPS events	Plan to support and actions taken to mitigate or reduce PSPS events in terms of geographic scope and number of customers affected, such as installation and operation of electrical equipment to sectionalize or island portions of the grid, microgrids, or local generation.
	Installation of system automation equipment	Installation of electric equipment that increases the ability of the utility to automate system operation and monitoring, including equipment that can be adjusted remotely such as automatic reclosers (switching devices designed to detect and interrupt momentary faults that can reclose automatically and detect if a fault remains, remaining open if so).
	Maintenance, repair, and replacement of connectors, including hotline clamps	Remediation, adjustments, or installations of new equipment to improve or replace existing connector equipment, such as hotline clamps.
	Mitigation of impact on customers and other residents affected during PSPS event	Actions taken to improve access to electricity for customers and other residents during PSPS events, such as installation and operation of local generation equipment (at the community, household, or other level).

Category	Initiative activity	Definition
	Other corrective action	Other maintenance, repair, or replacement of utility equipment and structures so that they function properly and safely, including remediation activities (such as insulator washing) of other electric equipment deficiencies that may increase ignition probability due to potential equipment failure or other drivers.
	Pole loading infrastructure hardening and replacement program based on pole loading assessment program	Actions taken to remediate, adjust, or install replacement equipment for poles that the utility has identified as failing to meet safety factor requirements in accordance with GO 95 or additional utility standards in the utility's pole loading assessment program.
	Transformers maintenance and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing transformer equipment.
	Transmission tower maintenance and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing transmission towers (e.g., structures such as lattice steel towers or tubular steel poles that support lines at or above 65kV).
	Undergrounding of electric lines and/or equipment	Actions taken to convert overhead electric lines and/or equipment to underground electric lines and/or equipment (i.e., located underground and in accordance with GO 128).
	Updates to grid topology to minimize risk of ignition in HFTDs	Changes in the plan, installation, construction, removal, and/or undergrounding to minimize the risk of ignition due to the design, location, or configuration of utility electric equipment in HFTDs.
D. Asset management and inspections	Detailed inspections of distribution electric lines and equipment	In accordance with GO 165, careful visual inspections of overhead electric distribution lines and equipment where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.
	Detailed inspections of transmission electric lines and equipment	Careful visual inspections of overhead electric transmission lines and equipment where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.
	Improvement of inspections	Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors.

Category	Initiative activity	Definition
	Infrared inspections of distribution electric lines and equipment	Inspections of overhead electric distribution lines, equipment, and right-of-way using infrared (heat-sensing) technology and cameras that can identify "hot spots", or conditions that indicate deterioration or potential equipment failures, of electrical equipment.
	Infrared inspections of transmission electric lines and equipment	Inspections of overhead electric transmission lines, equipment, and right-of-way using infrared (heat-sensing) technology and cameras that can identify "hot spots", or conditions that indicate deterioration or potential equipment failures, of electrical equipment.
	Intrusive pole inspections	In accordance with GO 165, intrusive inspections involve movement of soil, taking samples for analysis, and/or using more sophisticated diagnostic tools beyond visual inspections or instrument reading.
	LiDAR inspections of distribution electric lines and equipment	Inspections of overhead electric distribution lines, equipment, and right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
	LiDAR inspections of transmission electric lines and equipment	Inspections of overhead electric transmission lines, equipment, and right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
	Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations	Inspections of overhead electric transmission lines, equipment, and right-of-way that exceed or otherwise go beyond those mandated by rules and regulations, including GO 165, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
	Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations	Inspections of overhead electric distribution lines, equipment, and right-of-way that exceed or otherwise go beyond those mandated by rules and regulations, including GO 165, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
	Patrol inspections of distribution electric lines and equipment	In accordance with GO 165, simple visual inspections of overhead electric distribution lines and equipment that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.

Category	Initiative activity	Definition
	Patrol inspections of transmission electric lines and equipment	Simple visual inspections of overhead electric transmission lines and equipment that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.
	Pole loading assessment program to determine safety factor	Calculations to determine whether a pole meets pole loading safety factor requirements of GO 95, including planning and information collection needed to support said calculations. Calculations shall consider many factors including the size, location, and type of pole; types of attachments; length of conductors attached; and number and design of supporting guys, per D.15-11-021.
	Quality assurance/quality control of inspections	Establishment and function of audit process to manage and confirm work completed by employees or subcontractors, including packaging QA/QC information for input to decision-making and related integrated workforce management processes.
	Substation inspections	In accordance with GO 175, inspection of substations performed by qualified persons and according to the frequency established by the utility, including record-keeping.
E. Vegetation management and inspection	Additional efforts to manage community and environmental impacts	Plan and execution of strategy to mitigate negative impacts from utility vegetation management to local communities and the environment, such as coordination with communities to plan and execute vegetation management work or promotion of fire-resistant planting practices
	Detailed inspections of vegetation around distribution electric lines and equipment	Careful visual inspections of vegetation around the right-of-way, where individual trees are carefully examined, visually, and the condition of each rated and recorded.
	Detailed inspections of vegetation around transmission electric lines and equipment	Careful visual inspections of vegetation around the right-of-way, where individual trees are carefully examined, visually, and the condition of each rated and recorded.
	Emergency response vegetation management due to red flag warning or other urgent conditions	Plan and execution of vegetation management activities, such as trimming or removal, executed based upon and in advance of forecast weather conditions that indicate high fire threat in terms of ignition probability and wildfire consequence.
	Fuel management and reduction of "slash" from vegetation management activities	Plan and execution of fuel management activities that reduce the availability of fuel in proximity to potential sources of ignition, including both reduction or adjustment of live fuel (in terms of species or otherwise) and of dead fuel, including "slash" from vegetation management activities that produce vegetation material such as branch trimmings and felled trees.
	Improvement of inspections	Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors.

Category	Initiative activity	Definition
	LiDAR inspections of vegetation around distribution electric lines and equipment	Inspections of right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
	LiDAR inspections of vegetation around transmission electric lines and equipment	Inspections of right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
	Other discretionary inspections of vegetation around distribution electric lines and equipment	Inspections of rights-of-way and adjacent vegetation that may be hazardous, which exceeds or otherwise go beyond those mandated by rules and regulations, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
	Other discretionary inspections of vegetation around transmission electric lines and equipment	Inspections of rights-of-way and adjacent vegetation that may be hazardous, which exceeds or otherwise go beyond those mandated by rules and regulations, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
	Patrol inspections of vegetation around distribution electric lines and equipment	Visual inspections of vegetation along rights-of-way that is designed to identify obvious hazards. Patrol inspections may be carried out in the course of other company business.
	Patrol inspections of vegetation around transmission electric lines and equipment	Visual inspections of vegetation along rights-of-way that is designed to identify obvious hazards. Patrol inspections may be carried out in the course of other company business.
	Quality assurance/quality control of vegetation inspections	Establishment and function of audit process to manage and confirm work completed by employees or subcontractors, including packaging QA/QC information for input to decision-making and related integrated workforce management processes.
	Recruiting and training of vegetation management personnel	Programs to ensure that the utility is able to identify and hire qualified vegetation management personnel and to ensure that both full-time employees and contractors tasked with vegetation management responsibilities are adequately trained to perform vegetation management work, according to the utility's wildfire mitigation plan, in addition to rules and regulations for safety.
	Remediation of at-risk species	Actions taken to reduce the ignition probability and wildfire consequence attributable to at-risk vegetation species, such as trimming, removal, and replacement.
	Removal and remediation of trees with strike potential to electric lines and equipment	Actions taken to remove or otherwise remediate trees that could potentially strike electrical equipment, if adverse events such as failure at the ground-level of the tree or branch breakout within the canopy of the tree, occur.

Category	Initiative activity	Definition
	Substation inspection	Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping.
	Substation vegetation management	Based on location and risk to substation equipment only, actions taken to reduce the ignition probability and wildfire consequence attributable to contact from vegetation to substation equipment.
	Vegetation inventory system	Inputs, operation, and support for centralized inventory of vegetation clearances updated based upon inspection results, including (1) inventory of species, (2) forecasting of growth, (3) forecasting of when growth threatens minimum right-of-way clearances ("grow-in" risk) or creates fall-in/fly-in risk.
	Vegetation management to achieve clearances around electric lines and equipment	Actions taken to ensure that vegetation does not encroach upon the minimum clearances set forth in Table 1 of GO 95, measured between line conductors and vegetation, such as trimming adjacent or overhanging tree limbs.
F. Grid operations and protocols	Automatic recloser operations	Designing and executing protocols to deactivate automatic reclosers based on local conditions for ignition probability and wildfire consequence.
	Crew-accompanying ignition prevention and suppression resources and services	Those firefighting staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, and water) that are deployed with construction crews and other electric workers to provide site-specific fire prevention and ignition mitigation during on-site work
	Personnel work procedures and training in conditions of elevated fire risk	Work activity guidelines that designate what type of work can be performed during operating conditions of different levels of wildfire risk. Training for personnel on these guidelines and the procedures they prescribe, from normal operating procedures to increased mitigation measures to constraints on work performed.
	Protocols for PSPS re-energization	Designing and executing procedures that accelerate the restoration of electric service in areas that were de-energized, while maintaining safety and reliability standards.
	PSPS events and mitigation of PSPS impacts	Designing, executing, and improving upon protocols to conduct PSPS events, including development of advanced methodologies to determine when to use PSPS, and to mitigate the impact of PSPS events on affected customers and local residents.
	Stationed and on-call ignition prevention and suppression resources and services	Firefighting staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, firefighting foam, chemical extinguishing agent, and water) stationed at utility facilities and/or standing by to respond to calls for fire suppression assistance.

Category	Initiative activity	Definition
G. Data governance	Centralized repository for data	Designing, maintaining, hosting, and upgrading a platform that supports storage, processing, and utilization of all utility proprietary data and data compiled by the utility from other sources.
	Collaborative research on utility ignition and/or wildfire	Developing and executing research work on utility ignition and/or wildfire topics in collaboration with other non-utility partners, such as academic institutions and research groups, to include data-sharing and funding as applicable.
	Documentation and disclosure of wildfire-related data and algorithms	Design and execution of processes to document and disclose wildfire-related data and algorithms to accord with rules and regulations, including use of scenarios for forecasting and stress testing.
	Tracking and analysis of near miss data	Tools and procedures to monitor, record, and conduct analysis of data on near miss events.
H. Resource allocation methodology	Allocation methodology development and application	Development of prioritization methodology for human and financial resources, including application of said methodology to utility decision-making.
	Risk reduction scenario development and analysis	Development of modelling capabilities for different risk reduction scenarios based on wildfire mitigation initiative implementation; analysis and application to utility decision-making.
	Risk spend efficiency analysis	Tools, procedures, and expertise to support analysis of wildfire mitigation initiative risk-spend efficiency, in terms of MAVF and/or MARS methodologies.
I. Emergency planning and preparedness	Adequate and trained workforce for service restoration	Actions taken to identify, hire, retain, and train qualified workforce to conduct service restoration in response to emergencies, including short-term contracting strategy and implementation.
	Community outreach, public awareness, and communications efforts	Actions to identify and contact key community stakeholders; increase public awareness of emergency planning and preparedness information; and design, translate, distribute, and evaluate effectiveness of communications taken before, during, and after a wildfire, including Access and Functional Needs populations and Limited English Proficiency populations in particular.
	Customer support in emergencies	Resources dedicated to customer support during emergencies, such as website pages and other digital resources, dedicated phone lines, etc.
	Disaster and emergency preparedness plan	Development of plan to deploy resources according to prioritization methodology for disaster and emergency preparedness of utility and within utility service territory (such as considerations for critical facilities and infrastructure), including strategy for collaboration with Public Safety Partners and communities.

Category	Initiative activity	Definition
	Preparedness and planning for service restoration	Development of plans to prepare the utility to restore service after emergencies, such as developing employee and staff trainings, and to conduct inspections and remediation necessary to re-energize lines and restore service to customers.
	Protocols in place to learn from wildfire events	Tools and procedures to monitor effectiveness of strategy and actions taken to prepare for emergencies and of strategy and actions taken during and after emergencies, including based on an accounting of the outcomes of wildfire events.
J. Stakeholder cooperation and community engagement	Community engagement	Strategy and actions taken to identify and contact key community stakeholders; increase public awareness and support of utility wildfire mitigation activity; and design, translate, distribute, and evaluate effectiveness of related communications. Includes specific strategies and actions taken to address concerns and serve needs of Access and Functional Needs populations and Limited English Proficiency populations in particular.
	Cooperation and best practice sharing with agencies outside CA	Strategy and actions taken to engage with agencies outside of California to exchange best practices both for utility wildfire mitigation and for stakeholder cooperation to mitigate and respond to wildfires.
	Cooperation with suppression agencies	Coordination with CAL FIRE, federal fire authorities, county fire authorities, and local fire authorities to support planning and operations, including support of aerial and ground firefighting in real-time, including information-sharing, dispatch of resources, and dedicated staff.
	Forest service and fuel reduction cooperation and joint roadmap	Strategy and actions taken to engage with local, state, and federal entities responsible for or participating in forest management and fuel reduction activities; and design utility cooperation strategy and joint stakeholder roadmap (plan for coordinating stakeholder efforts for forest management and fuel reduction activities).

9.2 Citations for relevant statutes, proceedings and orders

Throughout the WMP, cite relevant state and federal statutes, Commission directives, orders, and proceedings. Place the title or tracking number of the statute in parentheses next to comment, or in the appropriate column if noted in a table. Provide in this section a brief description or summary of the relevant portion of the statute. Track citations as end-notes and order (1, 2, 3...) across sections (e.g., if section 1 has 4 citations, section 2 begins numbering at 5).

WMP Section/Category	State and Federal Statutes, Commission Directives, Orders and Proceedings	Description
1.2 Initial Explanatory Notes and Comments	1. CPUC Resolution WSD-011 2. CPUC A.20-06-012 3. CPUC R. 08-11-005, D. 14-02-015	1. Resolution Implementing the Requirements of PUC 8389(d)(1), (2) and (4), Related to Catastrophic Wildfire Caused by Electrical Corporations 2. Application of PG&E to Submit its 2020 Risk Assessment and Mitigation Phase Report (RAMP) 3. Decision Adopting Regulations to Reduce the Fire Hazards Associated with Overhead Electric Utility Facilities
2. Adherence to Statutory Requirements	1. Public Utilities Code § 8386(c) 2. Public Utilities Code § 768.6 3. CPUC R.18-12-005, D.20-05-051	1. Duties of Electrical Corporations Relating to Wildfire Risk Mitigation 2. Emergency and Disaster Preparedness Plans 3. Decision Adopting Phase 2 Updated and Additional Guidelines for De-Energization of Electrical Facilities to Mitigate Wildfire Risk
3.2 Summary of Ratepayer Impact	1. CPUC R.18-10-007, D.19-05-037 2. CPUC I.19-06-015, D.20-05-019 3. CPUC A.20-09-019 4. CPUC A.15-09-001, D.17-05-013 5. PG&E's twentieth Transmission Owner rate case at the Federal Energy Regulatory Commission (FERC), Docket No. ER19-13-000 (TO20) 6. CPUC A.18-12-009, D.20-12-005 7. CPUC R.19-09-009 8. CPUC A.18-03-015 9. CPUC A.17-07-011, D.18-06-029 10. CPUC A.20-02-004 11. Assembly Bill 1054	1. Decision on PG&E's 2019 Wildfire Mitigation Plan Pursuant to SB 901 2. Decision Approving Proposed Settlement Agreement with Modifications 3. PG&E Application for Recovery of Recorded Expenditures Related to Wildfire Mitigation and Catastrophic Events 4. Decision Authorizing PG&E GRC Revenue Requirement for 2017-2019 5. PG&E's rate case for FERC-jurisdictional transmission rates 6. Decision Addressing the Test Year 2020 GRC of PG&E

WMP Section/Category	State and Federal Statutes, Commission Directives, Orders and Proceedings	Description
		7. OIR re: Microgrids Pursuant to SB 1339 8. Application of PG&E to Recover Costs Recorded in the Catastrophic Event Memorandum Account Pursuant to PUC 454.9 and Res. ESRB-4 9. Alternate Decision Authorizing Establishment of Wildfire Expense Memorandum Account 10. Application of PG&E to Recover Insurance Costs Recorded in the Wildfire Expense Memo Account 11. Public Utilities: Wildfires and Employee Protection
4.1 Lessons Learned: How Tracking Metrics on the 2020 Plan has Informed the 2021 Plan	1. CPUC A.20-06-012	1. Application of PG&E to submit its 2020 Risk Assessment and Mitigation Phase Report (RAMP)
4.2 Understanding Major Trends Impacting Ignition Probability and wildfire Consequence	1. CPUC General Order 95, Rule 31.1 2. CPUC A.15-05-002, D.18-12-014 3. CPUC A.15-05-002, D.16-08-018 4. CPUC R.08-11-005, D.14-02-015 5. CPUC R.96-11-004, D.98-07-097	1. Overhead electric/telecom line construction (Rule 31.1) 2. Phase Two Decision Adopting S-Map Settlement Agreement with Modifications 3. Interim Decision Adopting the Multi-Attribute Approach Directing Utilities to Uniform Risk Management Framework 4. Decision Adopting Regulations to Reduce the Fire Hazards with Overhead Electric Utility Facilities & Aerial Communications Facilities 5. Opinion Adopts Final Rules to Govern Major Power Outages
4.4.2 Research Findings	1. Public Resources Code § 4292	1. Firebreak Maintenance
4.5.1 Additional models for ignition probability, wildfire and PSPS risk	1. CPUC A.15-05-002, D.18-12-014 2. CPUC General Order 95, Rule 18	1. Phase Two Decision Adopting S-Map Settlement Agreement with Modifications 2. Maintenance Programs and Resolution of Potential Violations of General Order 95
4.5.2 Calculation of key metrics	1. Government Code § 8593.3 2. CPUC R.18-12-005, D.19-05-042 3. CPUC A.18-01-004, D.20-04-003 4. CPUC R.10-02-005, D.12-03-054	1. Integration of Access and Functional Needs Population into County Emergency Plan

WMP Section/Category	State and Federal Statutes, Commission Directives, Orders and Proceedings	Description
	5. CPUC R.18-07-005, D.20-06-003 6. 38 Code of Federal Regulations § 17.701 7. CPUC General Order 165	2. Decision Adopting De-Energization Guidelines (Phase 1 Guidelines) 3. Order Correcting Error 4. Decision on Phase II Issues: Adoption of Practices to Reduce the number of Gas and Electric Service Disconnections 5. Phase I Decision Adopting Rules and Policy Changes to Reduce Disconnections 6. Definitions of Highly Rural 7. Inspection Requirements for Electric Distribution and Transmission Facilities
4.6 Progress Reporting on Past Deficiencies	1. CPUC WSD-002 2. CPUC WSD-003	1. Guidance Resolution on 2020 Wildfire Mitigation Plans 2. Resolution Ratifying Action of the WSD on PG&E's 2020 WMP
5.2 The Objectives of the Plan	1. Public Utilities Code § 8386(a)	1. Duties of Electrical Corporations Relating to Wildfire Risk Mitigation
5.4 Planning for Workforce and Other Limited Resources	1. CPUC General Order 95	1. Rules for Overhead Electric Line Construction
5.4.1: Target Role: Vegetation Inspections	1. CPUC General Order 95	1. Rules for Overhead Electric Line Construction
5.4.2 Target Role: Vegetation management projects	1. CPUC General Order 95 2. Title 29, Code of Federal Regulations, Part 1910, Subpart R, § 1910.269 3. California Code of Regulations, Title 8 § 2950	1. Rules for Overhead Electric Line Construction 2. Electric Power Generation, Transmission, and Distribution 3. Line Clearance Tree Trimming Operations Application
5.4.3 Target Role: Asset Inspections	1. California Code of Regulations, Title 8 2. Title 29, Code of Federal Regulations, Part 1910, Subpart S	1. Industrial Relations 2. Electrical Safety Requirements
5.4.4 Target Role: Grid Hardening	1. California Code of Regulations, Title 8	1. Industrial Relations
5.4.5 Target Role: Risk Event Inspections	1. California Code of Regulations, Title 8	1. Industrial Relations
6.2 Recent Performance on Outcome Metrics, Annual and Normalized for Weather, Last 5 Years.	1. CPUC R.18-12-005, D.19-05-042 2. CPUC R.18-12-005, D.20-05-051 3. CPUC R.08-11-005, D.14-02-015	1. Decision Adopting De-Energization Guidelines (Phase 1 Guidelines) 2. Decision Adopting Phase 2 Updated and Additional Guidelines

WMP Section/Category	State and Federal Statutes, Commission Directives, Orders and Proceedings	Description
		for De-Energization of Electric Facilities to Mitigate Wildfire Risk 3. Decision Adopting Regulations to Reduce the Fire Hazards w/overhead Electric Utility Facilities & Aerial Communications Facilities
6.7 Recent and Projected Drivers of Ignition Probability	1. CPUC R.08-11-005, D.14-02-015	1. Decision Adopting Regulations to Reduce the Fire Hazards w/overhead Electric Utility Facilities & Aerial Communications Facilities
7.1.A PG&E's Approach to Managing Wildfire Risk	1. CPUC A.15-05-002, D.18-12-014	1. Phase Two Decision Adopting S-Map Settlement Agreement with Modifications
7.1.D.1 Impact on Strategies	1. CPUC R.11-10-003, D.12-05-037	1. Phase 2 Decision Establishing Purposes and Governance for Electric Program Investment Charge and Establishing Funding Collections for 2013-2020
7.1.D.2 Implementation Approach and Integration of New or Emerging Technologies	1. CPUC R.11-10-003, D.11-12-035 2. CPUC R.19-10-005	1. Phase 1 Decision Establishing Interim Research, Development and Demonstration, and Renewables Programs Funding Levels 2. CPUC Rulemaking to Consider Renewal of the Electric Program Investment Charge Program
7.1.D.3 New or Emerging Technologies – Project Details	1. CPUC Resolution WSD-003 2. D.15-09-005, Advice Letter 6043-E	1. Resolution Ratifying Action of the WSD on PG&E's 2020 WMP 2. Request Approval of New Electric Program Investment Charge (EPIC) Projects
7.2.A Monitor and Audit WMP Implementation	1. Public Utilities Code § 8386.3(c) 2. CPUC, I. 19-06-015	1. The Wildfire Safety Division shall oversee compliance with the WMP. 2. Order Instituting Investigation and Order to Show Cause
7.2.D Report in a Format that matches across WMPs, Quarterly Reports, Quarterly Advice Letters, and annual compliance assessment	1. CPUC General Order 96-B	1. Rules that Govern Advice Letter Submittals
7.3.1.2 Climate Driven Risk Map and Modeling Based on Various Relevant Weather Scenarios	1. Senate Bill 100 2. Calif. Executive Order N-79-20	1. California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases 2. Zero Emission Executive Order

WMP Section/Category	State and Federal Statutes, Commission Directives, Orders and Proceedings	Description
7.3.2.1.3 Weather Stations	1. CPUC General Order 95	1. Rules for Overhead Electric Line Construction
7.3.3.3 Covered Conductor Installation	1. CPUC General Order 95, Rule 22.8 2. CPUC General Order 95, Rule 21.6	1. Protective Covering Standards 2. Definition of Insulated
7.3.3.4 Covered Conductor Maintenance	1. CPUC General Order 95, Rule 22.8 2. CPUC General Order 95, Rule 21.6 3. CPUC General Order 165	1. Protective Covering Standards 2. Definition of Insulated 3. Inspection Requirements for Electric Distribution and Transmission Facilities
7.3.3.5 Crossarm Maintenance, Repair, and Replacement	1. CPUC General Order 95 2. CPUC General Order 165	1. Rules for Overhead Electric Line Construction 2. Inspection Requirements for Electric Distribution and Transmission Facilities
7.3.3.6 Distribution Pole Replacement and Reinforcement, Including with Composite Poles	1. CPUC General Order 165	1. Inspection Requirements for Electric Distribution and Transmission Facilities
7.3.3.11.1 Generation for PSPS Mitigation	1. CPUC R.19-09-009, D.21-01-018 2. CPUC R.19-09-009 3. Senate Bill 100	1. Decision Adopting Rates, Tariffs, and Rules Facilitating the Commercialization of Microgrids 2. CPUC Rulemaking Order Regarding Microgrids 3. California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases
7.3.3.12.4 Maintenance, Distribution	1. CPUC General Order 165	1. Inspection Requirements for Electric Distribution and Transmission Facilities
7.3.3.13 Pole Loading Infrastructure Hardening and Replacement Program Based on Pole Loading Assessment Program	1. CPUC General Order 95 2. CPUC General Order 95, Rule 44	1. Rules for Overhead Electric Line Construction 2. Safety Factors
7.3.3.14 Transformers Maintenance and Replacement	1. CPUC General Order 165	1. Inspection Requirements for Electric Distribution and Transmission Facilities
7.3.3.16 Undergrounding of Electric Lines and/or Electric Equipment	1. CPUC General Order 128	1. Rules for Construction of Underground Electric Supply and Communication Systems
7.3.3.17.5 Remote Grid	1. PG&E Advice Letter 6017-E	1. Remote Grid SPS Supplemental Provisions Agreement

WMP Section/Category	State and Federal Statutes, Commission Directives, Orders and Proceedings	Description
7.3.4 Assets Management and inspections	1. CPUC General Order 165 2. CPUC General Order 174	1. Inspection Requirements for Electric Distribution and Transmission Facilities 2. Rules for electric substations
7.3.4.1 Detailed Inspections of Distribution Electric Lines and Equipment	1. CPUC General Order 165 2. CPUC General Order 95, Rule 18	1. Inspection Requirements for Electric Distribution and Transmission Facilities 2. Maintenance Programs and Resolution of Potential Violations of General Order 95 and Safety Hazards
7.3.4.2 Detailed Inspections of Transmission Electric Lines and Equipment	1. CPUC General Order 165	1. Inspection Requirements for Electric Distribution and Transmission Facilities
7.3.4.6 Intrusive Pole Inspections	1. CPUC General Order 165	1. Inspection Requirements for Electric Distribution and Transmission Facilities
7.3.4.9 Other Discretionary Inspection of Distribution Electric Lines and Equipment, Beyond Inspections Mandated by Rules and Regulations	1. CPUC General Order 165	1. Inspection Requirements for Electric Distribution and Transmission Facilities
7.3.4.10 Other Discretionary Inspection of Transmission Electric Lines and Equipment, Beyond Inspections Mandated by Rules and Regulations	1. CPUC General Order 165	1. Inspection Requirements for Electric Distribution and Transmission Facilities
7.3.4.11 Patrol Inspections of Distribution Electric Lines and Equipment	1. CPUC General Order 165 2. CPUC General Order 95, Rule 18	1. Inspection Requirements for Electric Distribution and Transmission Facilities 2. Maintenance Programs and Resolution of Potential Violations of General Order 95 and Safety Hazards
7.3.4.12 Patrol Inspections of Transmission Electric Lines and Equipment	1. CPUC General Order 165 2. CPUC General Order 95, Rule 18	1. Inspection Requirements for Electric Distribution and Transmission Facilities 2. Maintenance Programs and Resolution of Potential Violations of General Order 95 and Safety Hazards
7.3.4.13 Pole Loading Assessment Program to Determine Safety Factor	1. CPUC General Order 95 2. CPUC A.13-11-003, D.15-11-021 3. CPUC General Order 95, Rule 44 4. CPUC R.08-11-005, D 09-08-029	1. Rules for Overhead Electric Line Construction 2. Decision on Test Year 2015 General Rate Case for SCE

WMP Section/Category	State and Federal Statutes, Commission Directives, Orders and Proceedings	Description
		3. Safety Factors 4. Decision in Phase 1 – Measures to Reduce Fire Hazards in California Before the 2009 Fall Fire Season
7.3.4.14 Quality Assurance/Quality Control of Inspections	1. CPUC General Order 95, Rule 18	1. Maintenance Programs and Resolution of Potential Violations of General Order 95 and Safety Hazards
7.3.4.15 Substation Inspections	1. CPUC General Order 174	1. Rules for Electric Utility Substations
7.3.5 Vegetation Management and Inspections	1. Public Resources Code § 4292 2. Public Resources Code § 4293 3. CPUC General Order 95, Rule 35 4. NERC FAC-003-4 5. CPUC R.08-11-005, D.14-02-015	1. Firebreak Maintenance 2. Fire Protection Responsibility 3. Vegetation Management Requirements 4. Transmission Vegetation Management 5. Decision Adopting Regulations to Reduce the Fire Hazards w/overhead Electric Utility Facilities & Aerial Communications Facilities
7.3.5.2 Detailed Inspections of Vegetation Around Distribution Electric Lines and Equipment	1. CPUC General Order 95, Rule 35 2. Public Resources Code § 4292 3. Public Resources Code § 4293	1. Vegetation Management Requirements 2. Firebreak Maintenance 3. Fire Protection Responsibility
7.3.5.3 Detailed Inspections of Vegetation Around Transmission Electric Lines and Equipment	1. NERC FAC-003-4 2. CPUC General Order 95, Rule 35 3. Public Resources Code § 4292 4. Public Resources Code § 4293	1. Transmission Vegetation Management 2. Vegetation Management Requirements 3. Firebreak Maintenance 4. Fire Protection Responsibility
7.3.5.9 Other Discretionary Inspection of Vegetation Around Distribution Electric Lines and Equipment, Beyond Inspections Mandated by Rules and Regulations	1. CPUC Resolution ESRB-4	1. Directs Investor Owned Electric Utilities to take Remedial Measures to Reduce the Likelihood of Fires Started by or Threatening Utility Facilities
7.3.5.17.1 Substation Inspections, Distribution	1. Public Resources Code § 4291	1. Defensible Space
7.3.5.17.2 Substation Inspections, Transmission	1. Public Resources Code § 4291	1. Defensible Space

WMP Section/Category	State and Federal Statutes, Commission Directives, Orders and Proceedings	Description
7.3.5.18.1 Substation Vegetation Management, Distribution	1. Public Resources Code § 4291	1. Defensible Space
7.3.5.18.2 Substation Vegetation Management, Transmission	1. Public Resources Code § 4291	1. Defensible Space
7.3.5.20 Vegetation Management to Achieve Clearances Around Electric Lines	1. CPUC General Order 95, Table 1	1. Basic Minimum Allowable Vertical Clearance of Wires above Railroads, Thoroughfares, Ground or Water Surfaces
7.3.6.3 Personnel Work Procedures and Training in Conditions of Elevated Fire Risk	1. Public Resources Code § 4427 2. Public Resources Code § 4428 3. Public Resources Code § 4430	1. Operation of Fire Causing Equipment 2. Use of Hydrocarbon Powered Engines Near Forest, Brush, or Grass Covered Lands Without Maintaining Firefighting Tools 3. Steam Operated Equipment, Force Pump or Water Under Pressure
7.3.7.4 Tracking and Analysis of Near Miss Data	1. CPUC Resolution WSD-011 2. CPUC R.19-06-015, D.20-05-019 3. CPUC R.18-10-007	1. Resolution implementing the requirements of PUC 8389(d)(1), (2) and (4), related to catastrophic wildfire caused by electrical corporations 2. Decision Approving Settlement 3. CPUC Rulemaking to Implement the Provisions of Senate Bill 901
7.3.9.2 Community Outreach, Public Awareness, and Communications Efforts	1. CPUC R.18-12-005, D.20-05-051 2. PG&E's Advice Letter 5882-E, D.20-06-017 3. CPUC R.19-09-009, D.20-06-017 4. CPUC I. 19-06-15 5. CPUC General Order 166 6. CPUC R.18-03-011, D.19-07-015	1. Decision Adopting Phase 2 Updated and Additional Guidelines for De-Energization of Electric Facilities to Mitigate Wildfire Risk 2. PG&E's Plans to Conduct Semi-Annual Public Safety Power Shutoffs (PSPS) Grid Resiliency Workshops 3. Decision Adopting Short-Term Actions to Accelerate Microgrid Deployment and Related Resiliency Solutions 4. CPUC Order Instituting Investigation Into the Maintenance, Operations, and Practices of PG&E with Respect to its Electric Facilities 5. Standards for Operation Reliability, and Safety During Emergencies and Disasters

WMP Section/Category	State and Federal Statutes, Commission Directives, Orders and Proceedings	Description
		6. Decision Adopting an Emergency Disaster Relief Program for Electric, Natural Gas, Water and Sewer Utility Customers
7.3.9.3 Customer Support in Emergencies	1. CPUC R.18-03-011, D.19-07-015 2. CPUC R.18-03-011 3. CPUC R.18-07-005, D.20-06-003 4. PG&E Advice Letter 4014-G/5378-E, D.18-08-004 5. PG&E Advice Letter 4145-G/5643-E, D.19-05-037 6. CPUC R.18-10-007, D.19-05-037 7. CPUC Resolution M-4842 8. Public Utilities Code § 8386(c)(18) 9. PG&E Advice Letter 5404-E, D.18-08-004 10. PG&E Advice Letter 5744-E	1. Decision Adopting an Emergency Disaster Relief Program for Electric, Natural Gas, Water and Sewer Utility Customers 2. Emergency Disaster Relief Program. 3. Phase I Decision Adopting Rules and Policy Changes to Reduce Residential Disconnections 4. Expansion of Emergency Consumer Protection Plan 5. Revision to the Emergency Consumer Protection Plan 6. Decision on PG&E's 2019 Wildfire Mitigation Plan Pursuant to Senate Bill 901 7. Emergency Authorization and Order Directing Utilities to Implement Emergency Customer Protections to Support California Customers During the COVID-19 Pandemic 8. Duties of Electrical Corporations Relating to Wildfire Risk Mitigation 9. Proposed Changes to NEM Tariff and the NEM Successor Tariff (NEM 2) to Revise the Provisions for Customers Impacted by Natural or Man-Made Disasters 10. Request for Pilot Pedestal Program
7.3.9.4 Disaster and Emergency Preparedness Plan	1. Public Utilities Code § 768.6 2. CPUC General Order 166	1. Emergency and Disaster Preparedness Plans 2. Standards for Operation, Reliability and Safety During Emergencies and Disasters
7.3.9.6 Protocols in Place to Learn from Wildfire Events	1. CPUC General Order 166	1. Standards for Operation, Reliability and Safety During Emergencies and Disasters
7.3.10.1 Community Engagement	1. CPUC R.18-12-005, D.20-05-051 2. CPUC I.19-06-015 3. CPUC R.18-10-007, D.20-03-004	1. Decision Adopting Phase 2 Updated and Additional Guidelines for De-Energization of Electric Facilities to Mitigate Wildfire Risk

WMP Section/Category	State and Federal Statutes, Commission Directives, Orders and Proceedings	Description
	4. PG&E Advice Letter 4244-G/58136-E, Res. M-4842 5. PG&E Advice Letter 4244-G-A/5816-E-A, Res. M-4842 6. PG&E Advice Letter 4244-G-B/5816-E-B, Res. M-4842	2. CPUC Order Instituting Investigation Into the Maintenance, Operations, and Practices of PG&E with Respect to its Electric Facilities 3. Decision on Community Awareness and Public Outreach Before, During and After a Wildfire, and Explaining Next Steps for Other Phase 2 Issues 4. PG&E Emergency Consumer Protection Plan to Support Customers During COVID-19 5. Supplemental PG&E Emergency Consumer Protection Plan to Support Customers During COVID-19 6. Second Supplemental PG&E Emergency Consumer Protection Plan to Support Customers During COVID-19
8.1 Directional Vision for Necessity of PSPS	1. CPUC Resolution ESRB-8 2. CPUC R.18-12-005, D.19-05-042 3. CPUC I. 19-11-013 4. CPUC R.18-12-005 5. CPUC R.18-12-005, D.20-05-051	1. Resolution Extending De-Energization Reasonableness Notification, Mitigation, and Reporting Requirements in Decision 12-04-024 2. Decision Adopting De-Energization Guidelines (Phase 1 Guidelines) 3. CPUC Order Instituting Investigation on the Commission's Own Motion on the Late 2019 Public Safety Power Shutoff Events 4. CPUC Order Instituting Rulemaking to Examine Electric Utility De-Energization of Power Lines in Dangerous Conditions 5. Decision Adopting Phase 2 Updated and Additional Guidelines for De-Energization of Electric Facilities to Mitigate Wildfire Risk
8.2.1 Strategy to Minimize Public Safety Risk During High Wildfire Risk Conditions	1. CPUC R.12-11-005, D.19-09-027 2. CPUC R.12-11-005, D.20-01-021 3. PG&E Advice Letter 4360-G/6052-E 4. CPUC R.18-12-005, D.20-05-051	1. Decision Establishing A Self-Generation Incentive Program Resiliency Budget etc. 2. Self-Generation Incentive Program Revisions Pursuant To Senate Bill 700 and Other Program Changes

WMP Section/Category	State and Federal Statutes, Commission Directives, Orders and Proceedings	Description
	5. PG&E Advice Letter 5918-E, D.20-06-017 6. CPUC R.19-09-009, D.21-01-018	3. Proposal to Implement an On-Bill Financing Resiliency Pilot for K-12 Schools 4. Decision Adopting Phase 2 Updated and Additional Guidelines for De-Energization of Electric Facilities to Mitigate Wildfire Risk 5. Implementation Plan for Community Microgrid Enablement Program 6. Decision Adopting Rates, Tariffs, and Rules Facilitating the Commercialization of Microgrids
8.2.4 Customer, Agency, and External Communications	1. CPUC R.18-12-005, D.19-05-042 2. CPUC R.18-12-005, D.20-05-051	1. Decision Adopting De-Energization Guidelines (Phase 1 Guidelines) 2. Decision Adopting Phase 2 Updated and Additional Guidelines for De-Energization of Electric Facilities to Mitigate Wildfire Risk
8.4 Engaging Vulnerable Communities	1. CPUC R.18-10-007, D.20-03-004 2. CPUC R.18-12-005, D.19-05-042 3. Government Code § 8593.3 4. CPUC Resolution WSD-011	1. Decision on Community Awareness and Public Outreach Before, During and After a Wildfire 2. Decision Adopting De-Energization (PSPS) Guidelines (Phase 1 Guidelines) 3. Integration of Access and Functional Needs Population into County Emergency Plan 4. Wildfire Safety Division Implementing the Requirements of PUC 8389(d)(1), (2) and (4), Related to Catastrophic Wildfire Caused by Electrical Corporations
8.4.1 Protocols to Mitigate Public Safety Impacts During PSPS Events	1. CPUC R.04-01-006, A.05-06-005, D.05-10-044 2. CPUC R.10-02-005, D.12-03-054 3. CPUC R.18-07-005, D.20-06-003 4. CPUC R.18-12-005, D.19-05-042 5. CPUC R.18-12-005, D.20-05-051	1. Interim Opinion Approving Various Emergency Program Changes 2. Decision on Phase II Issues: Adoption of Practices to Reduce Disconnections 3. Phase I Decision Adopting Rules and Policy Changes to Reduce Customer Disconnections 4. Decision Adopting De-Energization Guidelines (Phase 1 Guidelines) 5. Decision Adopting Phase 2 Updated and Additional Guidelines

WMP Section/Category	State and Federal Statutes, Commission Directives, Orders and Proceedings	Description
		for De-Energization of Electric Facilities to Mitigate Wildfire Risk
8.4.2 Prevalent Languages in PG&E's Territory	1. CPUC R.18-10-007, D.20-03-004	1. Decision on Community Awareness and Public Outreach Before, During and After a Wildfire
8.4.4 Community Outreach Efforts for PSPS and Wildfire-Related Outreach	1. CPUC R.18-10-007, D.20-03-004 2. CPUC R.18-12-005, D.20-05-051 3. PG&E Advice Letter 4293-G/5916-E, D.20-06-003	1. Decision on Community Awareness and Public Outreach Before, During and After a Wildfire 2. Decision Adopting Phase 2 Updated and Additional Guidelines for De-Energization of Electric Facilities to Mitigate Wildfire Risk 3. Plan to Implement SB 1338's Requirements in Support of the Medical Baseline Program

9.3 Wildfire Safety Division Glossary of Defined Terms

Term	Definition
10-hour dead fuel moisture content	Moisture content of small dead vegetation (e.g., grass, leaves, which burn quickly but not intensely), which can respond to changes in atmospheric moisture content within 10 hours.
Access and functional needs populations	Per Government Code § 8593.3 and D.19-05-042, individuals who have developmental or intellectual disabilities, physical disabilities, chronic conditions, injuries, limited English proficiency or who are non-English speaking, older adults, children, people living in institutionalized settings, or those who are low income, homeless, or transportation disadvantaged, including, but not limited to, those who are dependent on public transit or those who are pregnant.
Authority Having Jurisdiction	AHJ, party with assigned responsibility, depending on location and circumstance.
Asset (utility)	Electric lines, equipment, or supporting hardware.
At-risk species	Species of vegetation that are particularly likely to contact power lines in the event of high winds and/or ignite if they catch a spark.
Baseline (ignition probability, maturity)	A measure, typically of the current state, to establish a starting point for comparison.
Carbon dioxide equivalent	Tons of greenhouse gases (GHG) emitted, multiplied by the global warming potential relative to carbon dioxide.
Circuit mile	The total length in miles of separate circuits regardless of the number of conductors used per circuit
Contractor	Any individual in the temporary and/or indirect employ of the utility whose limited hours and/or time-bound term of employment are not considered as “full-time” for tax and/or any other purposes.
Critical facilities and infrastructure	For brevity in the 2021 WMP, “critical facilitates and infrastructure” may be shortened to “critical infrastructure” and/or “critical facilities” throughout the WMP. Critical facilities and infrastructure is defined in accordance with the definition adopted in D.19-05-042 and modified in D.20-05-051: those facilities and infrastructure that are essential to the public safety and that require additional assistance and advance planning to ensure resiliency during de energization events. Namely: Emergency Services Sector Police Stations Fire Station Emergency Operations Centers Public safety answering points Government Facilities Sector Schools Jails and prisons Healthcare and Public Health Sector Public Health Departments Medical facilities, including hospitals, skilled nursing facilities, nursing homes, blood banks, health care facilities, dialysis centers and hospice facilities (excluding doctor offices and other non-essential medical facilities)

Term	Definition
	Energy Sector Public and private utility facilities vital to maintaining or restoring normal service, including, but not limited to, interconnected publicly-owned utilities and electric cooperatives Water and Wastewater Systems Sector Facilities associated with the provision of drinking water or processing of wastewater including facilities used to pump, divert, transport, store, treat and deliver water or wastewater Communications Sector Communication carrier infrastructure including selective routers, central offices, head ends, cellular switches, remote terminals and cellular sites Chemical Sector Facilities associated with the provision of manufacturing, maintaining, or distributing hazardous materials and chemicals (including Category N-Customers as defined in D.01-06-085) Transportation Sector Facilities associated with automobile, rail, aviation, major public transportation, and maritime transportation for civilian and military purposes
Customer hours	Total number of customers, multiplied by the average number of hours (e.g., of power outage).
Data cleaning	Calibrating raw data to remove errors (including typographical and numerical mistakes).
Dead fuel moisture content	Moisture content of dead vegetation, which responds solely to current environmental conditions and is critical in determining fire potential.
Detailed inspection	In accordance with GO 165, an inspection where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.
Enhanced inspection	Inspection whose frequency and thoroughness exceeds the requirements of the detailed inspection, particularly if driven by risk calculations.
Evacuation impact	Number of people evacuated, with the duration for which they are evacuated, from homes and businesses, due to wildfires.
Evacuation zone	Areas designated by CAL FIRE and local fire agency evacuation orders, to include both "voluntary" and "mandatory" in addition to other orders such as "precautionary" and "immediate threat".
Fuel density	Mass of fuel (vegetation) per area which could combust in a wildfire.
Fuel management	Removing or thinning vegetation to reduce the potential rate of propagation or intensity of wildfires.
Fuel moisture content	Amount of moisture in a given mass of fuel (vegetation), measured as a percentage of its dry weight.
Full-time employee	Any individual in the ongoing and/or direct employ of the utility whose hours and/or term of employment are considered as "full-time" for tax and/or any other purposes.
GO 95 nonconformance	Condition of a utility asset that does not meet standards established by General Order 95.
Greenhouse gas (GHG) emissions	Health and Safety Code 38505 identifies seven greenhouse gases that ARB is responsible to monitor and regulate in order to reduce emissions: carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), sulfur hexafluoride (SF ₆),

Term	Definition
	hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and nitrogen trifluoride (NF3).
Grid hardening	Actions (such as equipment upgrades, maintenance, and planning for more resilient infrastructure) taken in response to the risk of undesirable events (such as outages) or undesirable conditions of the electrical system in order to reduce or mitigate those events and conditions, informed by an assessment of the relevant risk drivers or factors.
Grid topology	General design of an electric grid, whether looped or radial, with consequences for reliability and ability to support de-energization (e.g., being able to deliver electricity from an additional source).
High Fire Threat District (HFTD)	Per D.17-01-009, areas of the State designated by the CPUC and CAL FIRE to have elevated wildfire risk, indicating where utilities must take additional action (per GO 95, GO 165, and GO 166) to mitigate wildfire risk.
Highly rural region	In accordance with 38 CFR 17.701, “highly rural” shall be defined as those areas with a population of less than 7 persons per square mile. For the purposes of the WMP, “area” shall be defined as census tracts.
High Wind Warning (HWW)	Level of wind risk from weather conditions, as declared by the National Weather Service. For historical NWS data, refer to the Iowa State University Iowa archive of NWS watch/warnings. ¹
HWW overhead (OH) Circuit Mile Day	Sum of overhead circuit miles of utility grid subject to High Wind Warnings (HWW, as defined by the National Weather Service) each day within a given time period, calculated as the number of overhead circuit miles that were under an HWW multiplied by the number of days those miles were under said HWW. For example, if 100 overhead circuit miles were under an HWW for 1 day, and 10 of those miles were under HWW for an additional day, then the total HWW OH circuit mile days would be 110.
Ignition probability	The relative possibility that an ignition will occur, probability is quantified as a number between 0% and 100% (where 0% indicates impossibility and 100% indicates certainty). The higher the probability of an event, the more certainty there is that the event will occur. (Often informally referred to as likelihood or chance).
Ignition-related deficiency	Any condition which may result in ignition or has previously resulted in ignition, even if not during the past five years.
Impact/consequence of ignitions	The effect or outcome of a wildfire ignition, affecting objectives, which may be expressed by terms including, although not limited to health, safety, reliability, economic and/or environmental damage.
Initiative	Measure or activity proposed or in process designed to reduce the consequences and/or probability of wildfire or PSPS.
Inspection protocol	Documented procedures to be followed in order to validate that a piece of equipment is in good condition and expected to operate safely and effectively.
Invasive species	Non-native species whose proliferation increases the risk of wildfires.
Level 1 finding	In accordance with GO 95, an immediate safety and/or reliability risk with high probability for significant impact.
Level 2 finding	In accordance with GO 95, a variable (non-immediate high to low) safety and/or reliability risk.
Level 3 finding	In accordance with GO 95, an acceptable safety and/or reliability risk.

¹ <https://mesonet.agron.iastate.edu/request/gis/watchwarn.phtml>.

Term	Definition
Life expectancy	Anticipated years that a piece of equipment can be expected to meet safety and performance requirements.
Limited English Proficiency (LEP)	Populations with limited English working proficiency based on the International Language Roundtable scale.
Line miles	The number of miles of transmission and/or distribution line. Differs from circuit miles because individual circuits, such as the two circuits of a double-circuit line, are not counted separately in circuit miles but are counted as separate total miles of line.
Live fuel moisture content	Moisture content within living vegetation, which can retain water longer than dead fuel.
Lost energy	Energy that would have been delivered were it not for an outage.
Major roads	Interstate highways, U.S. highways, state and county routes.
Match drop simulation	Wildfire simulation method that takes an arbitrary ignition and forecasts propagation and consequence/impact.
Member of the public	Any individual not employed by the utility.
Multi-attribute value function	Risk calculation methodology introduced during CPUC's S-MAP and RAMP proceedings.
Near miss	Previously used to define an event with probability of ignition. Redefined under "Risk event."
Need for PSPS	When utilities' criteria for utilizing PSPS are met.
Noncompliant clearance	Rights-of-way whose vegetation is not trimmed in accordance with the requirements of GO 95.
Outages of the type that could ignite a wildfire	Outages that, in the judgement of the utility, could have ignited a wildfire.
Outcome metrics	Measurements of the performance of the utility and its service territory in terms of both leading and lagging indicators of wildfire, PSPS, and other consequences of wildfire risk, including the potential unintended consequences of wildfire mitigation work, such as acreage burned by utility-ignited wildfire.
Overcapacity	When the energy transmitted by utility equipment exceeds that of its nameplate capacity.
Patrol inspection	In accordance with GO 165, a simple visual inspection of applicable utility equipment and structures that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.
Percentile conditions	Top X% of a particular set (e.g., wind speed), based on a historical data set with sufficient detail. For example, "Top 95 percentile wind speeds in the last 5 years" would refer to the 5% of avg daily wind speeds recorded by each weather station. If 1,000 weather stations recorded average daily wind speeds over 10 days, then the 95 th percentile wind speed would be the top 5% of weather station-days. In this example, there will be 10 days each with 1,000 weather station reports and a total of 10,000 weather station-days, so 50 observations will be in the top 5%. The lowest wind speed in this top 5% would be the "95 th percentile wind speed".
Planned outage	Electric outage announced ahead of time by the utility.
Preventive maintenance (PM)	The practice of maintaining equipment on a regular schedule, based on risk, elapsed time, run-time meter readings, or number of operations. The intent of PM is to "prevent" maintenance problems or failures before they take place by

Term	Definition
	following routine and comprehensive maintenance procedures. The goal is to achieve fewer, shorter, and more predictable outages.
Priority essential services	Critical first responders, public safety partners, critical facilities and infrastructure, operators of telecommunications infrastructure, and water utilities/agencies.
Program targets	Quantifiable measurements of activity identified in WMPs and subsequent updates used to show progress towards reaching the objectives, such as number of trees trimmed or miles of power lines hardened.
Progress metrics	Measurements that track how much utility wildfire mitigation activity has changed the conditions of utility wildfire risk exposure or utility ability to manage wildfire risk exposure, in terms of leading indicators of ignition probability and wildfire consequences.
Property	Private and public property, buildings and structures, infrastructure, and other items of value that were destroyed by wildfire, including both third-party property and utility assets.
PSPS event	Defined as the time period from the first public safety partner notified of a planned public safety de-energization to the final customer re-energized.
PSPS risk	The potential for the occurrence of a PSPS event expressed in terms of a combination of various outcomes of the event and their associated probabilities.
PSPS weather	Weather that exceeds a utility's risk threshold for initiating a PSPS.
Red Flag Warning (RFW)	Level of wildfire risk from weather conditions, as declared by the National Weather Service. For historical NWS data, refer to the Iowa State University Iowa archive of NWS watch/warnings. ²
RFW OH Circuit Mile Day	Sum of overhead circuit miles of utility grid subject to Red Flag Warning each day within a given time period, calculated as the number of overhead circuit miles that were under an RFW multiplied by the number of days those miles were under said RFW. For example, if 100 overhead circuit miles were under an RFW for 1 day, and 10 of those miles were under RFW for an additional day, then the total RFW OH circuit mile days would be 110.
Risk event	An event with probability of ignition, including wires down, contacts with objects, line slap, events with evidence of heat generation, and other events that cause sparking or have the potential to cause ignition. The following risk events all qualify as risk event: - Ignitions - Outages not caused by vegetation - Vegetation-caused outages - Wire-down events - Faults - Other risk events with potential to cause ignitions
Risk event simulation	Simulation of what the consequence would have been of an ignition had it occurred.
Risk-spend efficiency (RSE)	An estimate of the cost-effectiveness of initiatives, calculated by dividing the mitigation risk reduction benefit by the mitigation cost estimate based on the full set of risk reduction benefits estimated from the incurred costs. For ongoing initiatives, the RSE can be calculated by determining the "marginal benefit" of additional spending in the ongoing initiative. For example, the RSE

² <https://mesonet.agron.iastate.edu/request/gis/watchwarn.phtml>.

Term	Definition
	of an ongoing initiative could be calculated by dividing the mitigation risk reduction benefit from a 5% increase in spend by the cost associated with a 5% increase in spend.
Rule	Section of public utility code requiring a particular activity or establishing a particular threshold.
Run-to-failure	A maintenance approach that replaces equipment only when it fails.
Rural region	In accordance with GO 165, "rural" shall be defined as those areas with a population of less than 1,000 persons per square mile as determined by the United States Bureau of the Census. For the purposes of the WMP, "area" shall be defined as census tracts.
Safety Hazard	A condition that poses a significant threat to human life or property.
Simulated wildfire	Propagation and impact/consequence of a wildfire ignited at a particular point ('match drop'), as simulated by fire spread software.
Span	The space between adjacent supporting poles or structures on a circuit consisting of electric lines and equipment. "Span level" refers to asset-scale granularity.
System Average Interruption Duration Index (SAIDI)	System-wide total number of minutes per year of sustained outage per customer served.
Third-party contact	Contact between a piece of electrical equipment and another object, whether natural (tree branch) or human (vehicle).
Time to expected failure	Time remaining on the life expectancy of a piece of equipment.
Top 30% of proprietary fire potential index	Top 30% of FPI or equivalent scale (e.g., "Extreme" on SCE's FPI; "extreme", 15 or greater, on SDG&E's FPI; and 4 or above on PG&E's FPI).
Trees with strike potential / hazard trees	Trees that could either 'fall in' to a power line, or have branches detach and 'fly in' to contact a power line in high-wind conditions.
Unplanned outage	Electric outage that occurs with no advance notice from the utility (e.g., blackout).
Urban region	In accordance with GO 165, "urban" shall be defined as those areas with a population of more than 1,000 persons per square mile as determined by the United States Bureau of the Census.
Utility-ignited wildfire	Wildfires ignited by utility infrastructure or employees, including all wildfires determined by AHJ investigation to originate from ignition caused by utility infrastructure. For the purposes of the WMP, "area" shall be defined as census tracts.
Vegetation management	Trimming and clearance of trees, branches, and other vegetation that poses the risk of contact with electric equipment.
Vegetation risk index	Risk index indicating the probability of vegetation-related outages along a particular circuit, based on the vegetation species, density, height, and growth rate.
Weather normalization	Adjusting metrics based on relative weather risk factors or indices
Wildfire impact/ consequence	The effect or outcome of a wildfire affecting objectives, which may be expressed, by terms including, although not limited to health, safety, reliability, economic and/or environmental damage.
Wildfire risk	The potential for the occurrence of a wildfire event expressed in terms of ignition probability, wildfire impact/consequence.
Wildfire-only WMP programs	Activities, practices, and strategies that are only necessitated by wildfire risk, unrelated to or beyond that required by minimum reliability and/or safety

Term	Definition
	requirements. Such programs are not indicated or in common use in areas where wildfire risk is minimal (e.g., territory with no vegetation or fuel) or under conditions where wildfires are unlikely to ignite or spread (e.g., when rain is falling).
Wildland urban interface (WUI)	A geographical area identified by the state as a "Fire Hazard Severity Zone", or other areas designated by the enforcing agency to be a significant risk from wildfires, established pursuant to Title 24, Part 2, Chapter 7A.
Wire down	Instance where an electric transmission or distribution conductor is broken and falls from its intended position to rest on the ground or a foreign object.

9.4 PG&E Glossary of Additional Defined Terms

Term	Definition
2017 GRC Decision	CPUC decision in PG&E's 2017 GRC proceeding (D.17-05-013).
2020 GRC Decision	CPUC decision in PG&E's 2020 GRC proceeding (D.20-12-005).
2020 RAMP Report	PG&E's 2020 Risk Assessment Mitigation Phase Report filed on June 30, 2020 in CPUC Application 20-06-012.
Buffer Zone	An extension of the HFTD Tier 2 or Tier 3 boundary into non-HFTD areas to allow for complete deployment of a mitigation program in the HFTD to account for any deviations in GIS layers or circuit diagrams.
Distribution	Electric facilities that have a voltage below 60kV.
First Quarterly Report	The Quarterly Report submitted by PG&E on September 9, 2020 for the period May to July 2020.
HFRA Map	The HFRA Map considers catastrophic fire risk factors and utility infrastructure and was developed by considering incremental changes to the HFTD map boundaries to add areas where risk factors for the potential of catastrophic fire from utility infrastructure ignition during offshore wind events is higher. The HFRA Map is described in Section 4.2.1.
Long-Term Grid Architecture Study	The Long-Term Grid Architecture Study aims to identify how certain externalities will impact load and capabilities to help determine what an optimal grid design should look like to safely and reliably provide electricity to customers in a 30-year lookahead.
Remedial Compliance Plan or "RCP"	The Remedial Compliance Plan submitted by PG&E on July 27, 2020.
Second Quarterly Report	The Quarterly Report submitted by PG&E on December 9, 2020 for the third quarter of 2020.
Transmission	Electric facilities that have a voltage that is 60 kV or above.
Wildfire OII	CPUC Investigation 19-06-015 initiated in June 2019.
WMCE Application	PG&E's application for its Wildfire Mitigation and Catastrophic Events cost recovery in A.20-09-019.

9.5 PG&E Glossary of Models

PG&E is providing the follow glossary of models described in the 2021 Wildfire Mitigation Plan (WMP). For models with a date in the name, the date reflects what year prioritization and work will be informed by the model, rather than the year the model was developed.

Model Name	Description
2019-2020 Wildfire Risk Model	Model developed in 2018 to assist in prioritizing distribution circuits and circuits segments for wildfire mitigation programs and used in 2019 and 2020. Replaced by the 2021 Wildfire Risk Model.
2021 Wildfire Distribution Risk Model	Wildfire risk model based on the Maximum Entropy algorithm in developing the ignition probability and Technosylva for wildfire consequence. Composed of Vegetation Probability of Ignition Model and Equipment Probability of Ignition Model which, when combined with the Wildfire Consequence Model, produces a MAVF calibrated risk score. The 2021 Wildfire Distribution Risk Model will be used to prioritize and inform 2021 work. This model is used for electric distribution facilities.
2022 Wildfire Distribution Risk Model	Next wildfire risk model that is under development and will be used to prioritize and inform 2022 work. This model will have the added ability to compare wildfire risks for additional risk drivers as well as measuring the risk reduction for specific mitigations.
2022 Wildfire Transmission Risk Model	Wildfire risk model that is under development and will be used to prioritize and inform 2022 work for the electric transmission system.
2023 Wildfire Transmission Risk Model	Wildfire risk model that is under development and will be used to prioritize and inform 2023 work for the electric transmission system. This model will have the added ability to compare wildfire risks for additional risk drivers as well as measuring the risk reduction for specific mitigations.
Conductor Risk Model	A model to address conductor risk that is based on the Equipment Probability of Ignition Model and the Wildfire Consequence Model.
Enterprise Risk Model	The risk model developed for the RAMP proceeding that evaluates all RAMP risks and provides an enterprise-wide assessment and modeling. This model is used to calculate RSE scores at a program level for the WMP.
Equipment Probability of Ignition Model	MaxEnt machine learning probability model trained on 2015 – 2018 conductor related ignitions. Produces the odds of at least one ignition within each 100m x 100m grid pixel per fire season. When multiplied with the corresponding wildfire consequence for a location, produces the wildfire risk for that grid location. The Equipment Probability of Ignition Model currently only addresses risks associated with conductors, but will be expanded to include other electrical equipment.
Fire Potential Index Model, or FPI Model, or Utility FPI Model	The Fire Potential Index Model, also referred to as the FPI Model or the Utility FPI Model, combines several factors including a fire weather index (wind, temperature, and humidity) with fuel moisture data (10-hour dead fuel moisture and live fuel moistures), and landcover type (grass, shrub/brush, or forest). The FPI Model outputs the probability of a small fire becoming a large fire. The FPI forecast describes the potential for fires to spread rated on a scale from “R1” (lowest) to “R5” (highest). The FPI Model is run at 2 x 2 km resolution and provides hourly forecasts out 4 days.

Model Name	Description
Fuel Conditions Models: DFM Model and LFM Model	Models used within the FPI Model to assess the moisture in living and dead vegetation. Includes the Dead Fuel Moisture (DFM) Model and the Live Fuel Moisture (LFM) Model.
Large Fire Probability Model (Distribution), or LFP_D Model	The Large Fire Probability Model for distribution is the product of the probability of an outage (OPW Model) and probability of large fires (FPI Model). This model is used for PSPS events.
Large Fire Probability Model (Transmission), or LFP_T Model	The Large Fire Probability Model for transmission is the product of the probability of an outage (OA Model) and probability of large fires (FPI Model). This model is used for PSPS events.
LiDAR Risk Score Model	The LiDAR Risk Score Model calculates the relative risk of individual trees within the HFTD that have strike potential to a transmission conductor.
MaxEnt	Short for Maximum Entropy. The name given to a family of models that seek to maximize the information entropy (i.e., instead of the likelihood or some other optimization criteria) of the probability distribution associated with a given set of conditions – in this case, ignition probability, given environmental and asset characteristics. It can also be interpreted as finding the least unique distribution that fits the underlying data.
Outage Producing Wind Model, or OPW Model	The OPW Model is based on an analysis of windspeeds for every unplanned outage that occurred over the last decade and forecasts the probability of unplanned outages associated with wind events occurring in PG&E's service area. The model is run in forecast mode at 2 km x 2 km resolution.
Pilot Probabilistic Risk Assessment	A model that PG&E is currently developing which will integrate other models into one electric system view for wildfire risk. PG&E is currently anticipating developing a reference model in 2021.
Pole Loading Model	During a pole's service life, pole loading calculations are performed when a load is added to a pole or if a suspected overload condition is observed during an inspection. Pole loading calculations are performed in O-Calc software during the design phase to ensure poles are sized correctly to satisfy GO 95 requirements.
POMMS	PG&E Operational Mesoscale Modeling System (POMMS) that provides a high-resolution numerical weather prediction system.
Future State of PSPS Consequence Model	PG&E is in the early stages of developing a model in 2021 to assess PSPS consequences to customers at a distribution circuit granularity level. This model will leverage our PSPS 30-Year Historical Climatology Model for probability of de-energization scope and estimate consequence scores using PG&E's MAVF framework.
Technosylva	Suite of wildfire simulation software applications whose propagation and consequence outcomes are based on available fuels, topography, and weather; as well as building and population locational data. Technosylva simulation outputs are used as the source of spatially resolved fire severity data that is the primary input into the spatial consequence calculations.
Storm Outage Prediction Program and Model (SOPP)	One of the primary tools PG&E uses to mitigate operational risk from all adverse weather drivers that create an increased volume of outages above "blue sky" weather days. These drivers are primarily

Model Name	Description
	heat, wind, rain, and snow. This model guides PG&E to be proactive and thus prepared for storm events of any type.
Transmission Operability Assessment Model, or Transmission OA Model, or OA Model	The OA Model was developed to assess physical condition of transmission facilities in windy conditions and is used primarily for PSPS events but was also used as a factor in making maintenance, operations, and asset strategy decisions.
Vegetation Probability of Ignition Model	MaxEnt machine learning probability model trained on 2015 – 2018 vegetation related ignitions. Produces the odds of at least one ignition within each 100m x 100m grid pixel per fire season. When multiplied with the corresponding wildfire consequence for a location, produces the wildfire risk for that grid location.
Vegetation Risk Model	A model to address vegetation risk that is based on the Vegetation Probability of Ignition Model and the Wildfire Consequence Model.
Wildfire Consequence Model	The spatial data set based on Technosylva fire simulations under dangerous fire conditions and calibrated to be compatible with PG&E's reported MAVF values. When multiplied with the corresponding ignition probability for a location, produces the wildfire risk for that grid location.

9.6 List of Acronyms and Abbreviations

Acronym	Term/Definition
A.	Application
AAR	After Action Reviews
ACC	Accumulated Critical Current
ACWA	Association of California Water Utilities
ACSR	Aluminum Conductor Steel Reinforced
ADA	Americans with Disabilities Act
ADF	Asset Data Foundation
ADMS	Advanced Distribution Management System
AFN	Access and Functional Needs
AGA	American Gas Association
AHJ	Agency Having Jurisdiction
AI	Artificial Intelligence
ALJ	Administrative Law Judge
amp	ampere
AMP	Asset Management Plans
ANSI	American National Standards Institute
API	Application Programming Interface
ARCOS	Automated Roaster Call Out System
ASL	American Sign Language
AUC	Area Under the Precision/Recall Curve
ATS	Applied Technical Services
AWS	Amazon Web Services

Acronym	Term/Definition
BLM	Bureau of Land Management
BOA	Breaker Oil Analysis
BVLOS	Beyond Visual Line of Sight
CA	California
CAISO	California Independent System Operator
CAL FIRE	California Department of Forestry and Fire Protection
Cal OES	California Governor's Office of Emergency Services
CAMP	California Association of Medical Product Providers
CANSAC	California and Nevada Smoke and Air Committee
CAP	Corrective Action Program
CARE	California Alternate Rate for Energy
CBA	Collective Bargaining Agreement
CBM	Condition-Based Maintenance
CBO	Community Based Organizations
CCA	Community Choice Aggregator
CC&B	Customer Care and Billing
CCPA	California Consumer Privacy Act
CEC	California Energy Commission
CEMA	Catastrophic Event Memorandum Account
CEQA	California Environmental Quality Act
CERP	Company Emergency Response Plan
CERT/NERT	Community/Neighborhood Emergency Response Teams
CEU	Continuing Education Units
CFILC	California Foundation for Independent Living Centers

Acronym	Term/Definition
CHA	California Hospital Association
CIL	Critical Infrastructure Lead
CIM	Common Information Model
CIRT	Centralized Inspection Review Team
CLECA	California Large Energy Consumers Association
CMC	Canadian Meteorologist Centre
CMI	Customer Minutes Interrupted
CoRE	Consequence of Risk Event
COL	Conclusion of Law
County OES	County Office of Emergency Services
COVID-19	Coronavirus disease of 2019
CPUC or Commission	California Public Utilities Commission
CPZ	Circuit Protection Zone
CRCs	Community Resource Centers
CRESS	Corporate Real Estate Strategy & Services
CRM	Customer Relationship Manager
CSO	Customer Service Offices
CUEA	California Utilities Emergency Association
CWSP	Community Wildfire Safety Program
D.	Decision
DAC-AG	Disadvantaged Communities Advisory Group
DCC	Distribution Control Center
DCD	Downed Conductor Detection
DDAR	Disability Disaster Access and Resources
DER	Distribution Energy Resource

Acronym	Term/Definition
DERMS	Distributed Energy Resource Management System
DFM	Dead Fuel Moisture
DG	Distributed Generation
DGA	Dissolved Gas Analysis
DGEM	Distribution Generation Enabled Microgrid Services
DLT	Division Leadership Team
DM&A	Data Management and Analytics
DMS	Demand Management System
D-OH	Distribution-Overhead
DPAM	Dynamic Pattern and Analog Matcher
DRI	Desert Research Institute
DRPP	Distribution Routine Patrol Procedure
DRU	Data Response Unit
DTS-FAST	Distribution, Transmission, and Substation: Fire Action Schemes and Technology
EC	Electric Corrective
ECMWF	European Centre for Medium-Range Weather Forecasts
ECOP	Electric Corrective Optimization Program
EDA	Explanatory Data Analysis
EDF	Enterprise Data Foundation
EDGIS	Electric Distribution Geographic Information System
EDMP	Enterprise Data Management Program
EDPM	Electric Distribution Procedure Manual
EEI	Edison Electric Institute
EF	Equivalent Fatalities
EFD	Early Fault Detection

Acronym	Term/Definition
EFO	Emergency Forced Outages
EOC	Emergency Operations Center
EORM	Enterprise and Operational Risk Management
EP&R	Emergency Preparedness and Response
EPA	United States Environmental Protection Agency
EPIC	Electric Program Investment Charge
EPRI	Electric Power Research Institute
EPS	Ensemble Prediction System (from ECMWF)
ESA	Energy Savings Assistance
ETE	Evacuation Time Estimates
ETOR	Estimated Time of Restoration
ETPM	Electric Transmission Preventive Maintenance
EV	Electric Vehicle
EV	Expected Value
EVM	Enhanced Vegetation Management
EVSP	Electric Vehicle Service Providers
EQM	Electric Quality Management
FAA	Federal Aviation Administration
FAN	Field Area Network
FAS	Field Automation System
FDA	Facility Damage Action
FDA's	Fire Detection and Alert System
FEA	Finite Element Analysis
FERA	Family Electric Rate Assistance
FERC	Federal Energy Regulatory Commission

Acronym	Term/Definition
FF+	Fire Family Plus (aka Family Plus)
FFWI	Fosberg Fire Weather Index
FIA	Fire Index Area
FMEA	Failure Modes and Effects Analysis
FORCE	Field Operations Resource Calculation of Estimated Time of Restoration
FPI	Fire Potential Index
FRP	Fire Radiative Power
FSR	Field Safety Reassessment
ft lb	foot-pound
FTE	Full Time Equivalent
FWW	Fire Weather Warning
GACC	Geographic Area Coordination Centers
GADI	Geospatial Asset Data Improvement
GCC	Grid Control Center
GDAT	Grid Data Analytics Tool
GEFS	Global Ensemble Forecast System
GFN	Ground Fault Neutralizer
GFS	Global Forecast System
GIS	Geographic Information System
GO	General Order
GPR	Ground Potential Rise
GRC	General Rate Case
HD	High-Definition
HHW	High Wind Warning
HIPAA	Health Insurance Portability and Accountability Act

Acronym	Term/Definition
HFRA	High Fire Risk Area
HFTD	High Fire Threat District
HN	Hazard Notification
HREF	High Resolution Ensemble Forecast
HRRR	High Resolution Rapid Refresh
HTRS	Hazard Tree Rating System
IA	Internal Audit
IBEW	International Brotherhood of Electrical Workers
IC	Incident Commander
ICS	Incident Command System
IEEE	Institute of Electrical and Electronic Engineers
IID	Imperial Irrigation District
ILCs	Independent Living Centers
ILIS-ODB	Integrated Logging Information System-Operations Data Base
IMT	Incident Management Teams
IOU	Investor-Owned Utility
IPP	Independent Power Producer or Independent Power Production
IPP	Integrated Planning Process
IR	Infrared
IRWIN	Integrated Reporting of Wildland-Fire Information
IVM	Integrated Vegetation Management
IVR	Interactive Voice Recording
IWRMC	International Wildfire Risk Mitigation Consortium
JATC	Joint Apprentice and Training Committee

Acronym	Term/Definition
JAWS	Jobs Access with Speech
Km	Kilometer
kV	Kilovolt
kV/in	kilovolts per inch
LADWP	Los Angeles Department of Water & Power
LC	Line Corrective
LDSP	Light Duty Steel Pole
LEP	Limited English Proficiency
LF 2.0.0	LANDFIRE Remap 2016
LIOB	Low Income Oversight Board
LFM	Live Fuel Moisture
LFP _D	Large Fire Probability Model - Distribution
LFP _T	Large Fire Probability Model - Transmission
LiDAR	Light Detection and Ranging
LIHEAP	Low-Income Home Energy Assistance Program
LIOB	Low Income Oversight Board
LMS	Learning Management System
LNO	Liaison Officers
LOB	Line of Business
LoRE	Likelihood of a Risk Event
LPA	Local Public Affairs
MAA	Mutual Assistance Agreements
MADIS	Meteorological Assimilation Data Ingest System
MARAC	Mutual Aid Regional Advisory Council
MARS	Multi-Attribute Risk Scores

Acronym	Term/Definition
MAT	Maintenance Activity Type
MAVF	Multi-Attribute Value Function
MBL	Medical Baseline
MEDs	Major Event Days
MEO	Miscellaneous Equipment Operator
MET	Model Evaluation Tools
MODIS	Moderate Resolution Imaging Spectroradiometer
MOU	Memorandum of Understanding
mph	Miles Per Hour
MSO	Motorized Switch Operator
MW	megawatt
MWC	Main Work Center
NAM	North American Mesoscale Model
NARR	North American Regional Reanalysis
NCAR	National Center for Atmospheric Research
NCEP	National Center for Environmental Prediction
NDC	National Diversity Coalition
NEETRAC	National Electric Energy Testing Research and Applications Center
NEM	Net Energy Metering
NEPA	National Environmental Protection Act
NERC	North American Electric Reliability Corporation
NFDRS	National Fire Danger Rating System
NFMDB	National Fuel Moisture Database
NIC	Network Interface Card
NIMS	National Incident Management Systems

Acronym	Term/Definition
NOAA	National Oceanic and Atmospheric Administration
NPP	National Polar-orbiting Partnership
NPS	National Park Service
NWA	Non-Wires Alternative
NWCG	National Wildfire Coordinating Group
NWS	National Weather Service
O&M	Operations and Maintenance
OA	Operability Assessment
OBF	On-Bill Financing
OEC	Operational Emergency Centers
OES	Office of Emergency Services
OH	Overhead
OIC	Officer-in-Charge
OII	Order Instituting Investigation
OIR	Order Instituting Rulemaking
OJT	On the job training
OMS	Outage Management System
OMT	Outage Management Tool
OP	Ordering Paragraph
OPW	Outage Producing Wind
OSA	Office of Safety Advocates
OSHA	Occupational Safety and Health Administration
PCC	Provider Cost Center
PCORP	PacifiCorp
PBP	Portable Battery Program

Acronym	Term/Definition
PD	Partial Discharge
PDAC	Primary Distribution Alarm and Control
PEV	Post Enrollment Verification
PG&E or the Company	Pacific Gas and Electric Company
PHMSA	Pipeline and Hazardous Materials Safety Administration
PIH	Pre-installed Interconnection Hubs
PIO	Public Information Officer
Plan	Wildfire Mitigation Plan
PLDB	Pole Landing Database
PLDN	PG&E Lighting Detection Network
PMD	Project Management Database
PMO	Project Management Office
PO	Purchase Order
POC	Point-of-Contact
POMMS	PG&E Operational Mesoscale Modeling System
POU	Publicly-Owned Utilities
PPE	Personal Protective Equipment
PPF	Portfolio Prioritization Framework
PRC	Public Resources Code
PSAP	Public Safety Answering Points
PSIP	PSPS Situational Intelligence Platform
PSPS	Public Safety Power Shutoff
PSS	Public Safety Specialists
PSSP	Project Specific Safety Plan
PT&T	Pole Test & Treat

Acronym	Term/Definition
PTZ	Pan/Tilt/Zoom
PUC	Public Utilities Code
PV	Photovoltaic
PWAS	PG&E Wind Alert System
PWDAAC	People with Disabilities and Aging Advisory Council
QA	Quality Assurance
QC	Quality Control
QA/QC	Quality Assurance/Quality Control
QCR	Qualified Company Representative
QEW	Qualified Electrical Workers
QM	Quality Management
QV	Quality Verification
R.	Rulemaking
RAMP	Risk Assessment and Mitigation Phase
RCA	Root Cause Analysis
REACH	Relief for Energy Assistance through Community Help
REFCL	Rapid Earth Fault Current Limiter
Res.	Resolution
RF	Radio Frequency
RFI	Request for Information
RFW	Red Flag Warning
RH	Relative humidity
RIBA	Risk Informed Budget Allocation
RMAR	Risk Mitigation Accountability Reporting
ROC	Receiver Operating Characteristic

Acronym	Term/Definition
ROW	Right-of-Way
RPS	Renewable Portfolio Standard
RSAR	Risk Spend Accountability Reporting
RSE	Risk Spend Efficiencies
RW	Request for Work
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SB 209	Senate Bill 209
SB 247	Senate Bill 247
SBUA	Small Business Utility Advocates
SCADA	Supervisory Control and Data Acquisition
SCCD	State Council on Developmental Disabilities
SCE	Southern California Edison Company
SDG&E	San Diego Gas & Electric Company
SED	Safety Enforcement Division
SEMS	Standardized Emergency Management System
SF6	Sulfur Hexafluoride
SGF	Sensitive Ground Fault
SGIP	Self-Generation Incentive Program
SI	Smart Inverter
SIPT	Safety and Infrastructure Protection Teams
SJSU	San Jose State University
SLP	Structured Learning Path
S-MAP	Safety Model and Assessment Proceeding
SmartMeter™	Brand Name for Automated Metering Initiative (AMI)

Acronym	Term/Definition
SMEs	Subject-Matter Experts
SM&C	Substation Maintenance and Construction
SMUD	Sacramento Municipal Utility District
SOPP	Storm Outage Prediction Model
SOW	Statement of Work
SPC	Storm Prediction Center
SPD	Safety Policy Division
SPS	Standalone Power System
SSEC	Space Science and Engineering Center
STAR	System Tool for Asset Risk
TA	Tail Average
TAD	Temperature Alarm Device
TD&D	Technology Demonstration and Deployment
T&D	Transmission and Distribution
TG	Temporary Generation
T-OH	Transmission Overhead
TOTL	Transmission Operation Tracking and Logging
TRAQ	Tree Risk Assessment Qualification
TVM	Transmission Vegetation Management
TVMR Program	Transmission Vegetation Management Reliability Program
UAS	Unmanned Aerial Systems
UCLA	University of California Los Angeles
U.S.	United States
USFS	United States Forest Service
USL	Uncoupled Surface Layer

Acronym	Term/Definition
UT	Ultrasonic
VFR	Visual Flight Rules
VIIRS	Visible Infrared Imaging Radiometer Suite
VM	Vegetation Management
VP	Vice President
VPM	Vegetation Program Managers
VRI	Vegetation Risk Index
WAPA	Western Area Power Administration
WBT	Web Based Training
WCAG	Web Content Accessibility Guidelines
WECC	Western Electricity Coordinating Council
WEMA	Wildfire Expense Memorandum Account
WFA	Wildfire Analyst Enterprise
Wh	Watt-hour
WIV	Wild Incident Viewer
WMCE	Wildfire Mitigation and Catastrophic Events Application (A.20-09-019)
WMM	Wildfire Maturity Model
WPE	Work Procedure Error
WRF	Weather Research and Forecast
WRGSC	Wildfire Risk Governance Steering Committee
WRMAA	Western Regional Mutual Assistance Agreement
WSD	Wildfire Safety Division
WSOC	Wildfire Safety Operations Center
WUI	Wildland-Urban Interface
WV	Work verification

Acronym	Term/Definition
WSIP	Wildfire Safety Inspection Program
WMP	Wildfire Mitigation Plan
WRMAA	Western Region Mutual Assistance Agreement
XLPE	Crosslinked Polyethylene

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

**DECLARATION SUPPORTING CONFIDENTIAL DESIGNATION
ON BEHALF OF
PACIFIC GAS AND ELECTRIC COMPANY (U 39 E)**

1. I, Edlyn Louie, am the Data Response Unit Quality Control (“DRU QC”) Supervisor, of Pacific Gas and Electric Company (“PG&E”), a California corporation. Debbie Powell, Interim Head of Electric Operations at PG&E, delegated authority to me to sign this declaration. My business office is located at:

Pacific Gas and Electric Company
77 Beale Street
San Francisco, CA 94105

2. PG&E will produce the information identified in paragraph 3 of this Declaration to the California Public Utilities Commission (“CPUC”) or departments within or contractors retained by the CPUC in response to a CPUC audit, data request, proceeding, or other CPUC request.

Name or Docket No. of CPUC Proceeding (if applicable): N/A

3. Title and description of document(s):

Attachment	Title	Description
A	2021WMP_ClassA_Action-PGE-24_Atch01_CONF.pdf	Maintenance Manual
B	2021WMP_ClassA_Action-PGE-24_Atch02_CONF.pdf	Maintenance Manual
C	2021WMP_ClassA_Action-PGE-38_Atch01_CONF.xlsx	List of the current PG&E contacts and their primary counterparts
D	2021WMP_ClassB_Action-PGE-47_Atch01_CONF.xlsx	GIS File with replaced fuse locations
E	2021WMP_Section 8.2.4_Atch01_CONF.xlsx	Priority Essential Customers
F	2021WMP_ClassB_Action-PGE-43_Atch02_CONF.kmz	GIS File

G	2021WMP_ClassB_Action-PGE-43 Atch01_CONF.csv	Planned Camera Installations
H	PDF_WildfireMitigationPlans_Report_PGE_20210205-CONF.pdf	WMP Narrative

4. These documents contain confidential information that, based on my information and belief, has not been publicly disclosed. These documents have been marked as confidential, and the basis for confidential treatment and where the confidential information is located on the documents are identified on the following chart:

Check	Basis for Confidential Treatment	Where Confidential Information is located on the documents
☒	Customer-specific data, which may include demand, loads, names, addresses, and billing data (Protected under PUC § 8380; Civ. Code §§ 1798 et seq.; Govt. Code § 6254; Public Util. Code § 8380; Decisions (D.) 14-05-016, 04-08-055, 06-12-029)	Confidential information is outlined red/highlighted grey/ marked on GIS file name on: Atch C. Sheet "Sheet1" Column C Atch D. Sheet "2020" Columns G, H, J Atch E. Sheet "CC List" Column A Atch F. The entire file is deemed confidential. Atch G. Sheet "2021WMP_ClassB_Action-PGE-43_At" Columns H, I
☐	Personal information that identifies or describes an individual (including employees), which may include home address or phone number; SSN, driver's license, or passport numbers; education; financial matters; medical or employment history (not including PG&E job titles); and statements attributed to the individual. (Protected under Civ. Code §§ 1798 et seq.; Govt. Code § 6254; 42 U.S.C. § 1320d-6; and General Order (G.O.) 77-M)	

-
- ☐ Physical facility, cyber-security sensitive, or critical infrastructure data, including without limitation critical energy infrastructure information (CEII) as defined by the regulations of the Federal Energy Regulatory Commission at 18 C.F.R. § 388.113 and/or General Order 66-D (“The subject information: (1) is not customarily in the public domain by providing a declaration in compliance with Section 3.2(c) stating that the subject information is not related to the location of a physical structure that is visible with the naked eye or is available publicly online or in print; and (2) the subject information either: could allow a bad actor to attack, compromise or incapacitate physically or electronically a facility providing critical utility service; or discusses vulnerabilities of a facility providing critical utility service”).

(Protected under Govt. Code § 6254(k), (ab);
6 U.S.C. § 131; 6 CFR § 29.2)

- ☐ Proprietary and trade secret information or other intellectual property and protected market sensitive/competitive data

(Protected under Civ. Code §§3426 *et seq.*; Govt. Code §§ 6254, *et seq.*, e.g., 6254(e), 6254(k), 6254.15; Govt. Code § 6276.44; Evid. Code §1060; D.11-01-036)

- ☐ Corporate financial records

(Protected under Govt. Code §§ 6254(k), 6254.15)

- ☐ Third-Party information subject to non-disclosure or confidentiality agreements or obligations

(Protected under Govt. Code § 6254(k); see, e.g., CPUC D.11-01-036))

- ☒ Other categories where disclosure would be against the public interest (Govt. Code § 6255(a): Due to sensitivity around names, LAN IDs and phone numbers for individual employees, the public interest in maintaining the confidentiality of this information outweighs the public interest in disclosure.

Confidential information is outlined red/highlighted grey on:

Atch A. Pages 2, 63, 84, 92, 93, 175, 176

Atch B. Page 65

Atch C. Sheet “Sheet1”
Column G

Atch H. Pages 21-23

5. The importance of maintaining the confidentiality of this information outweighs any public

interest in disclosure of this information. This information should be exempt from the public

disclosure requirements under the Public Records Act and should be withheld from disclosure.

6. I declare under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge.
7. Executed on the date indicated below at San Francisco, California.

Edlyn
Louie

Digitally signed
by Edlyn Louie
Date:
2021.02.05
13:27:42 -08'00'

Edlyn Louie
DRU QC Supervisor
Data Response Unit
Pacific Gas and Electric Company

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

**DECLARATION SUPPORTING CONFIDENTIAL DESIGNATION
ON BEHALF OF
PACIFIC GAS AND ELECTRIC COMPANY (U 39 E)**

1. I, Edlyn Louie, am the Data Response Unit Quality Control (“DRU QC”) Supervisor, of Pacific Gas and Electric Company (“PG&E”), a California corporation. Debbie Powell, Vice President, Asset and Risk Management at PG&E at PG&E, delegated authority to me to sign this declaration. My business office is located at:

Pacific Gas and Electric Company
77 Beale Street
San Francisco, CA 94105

2. PG&E will produce the information identified in paragraph 3 of this Declaration to the California Public Utilities Commission (“CPUC”) or departments within or contractors retained by the CPUC in response to a CPUC audit, data request, proceeding, or other CPUC request.

Name or Docket No. of CPUC Proceeding (if applicable): R.18-10-007

3. Title and description of document(s):

Attachment	Title	Description
	Please refer to details starting on Page 4 of this declaration	

4. These documents contain confidential information that, based on my information and belief, has not been publicly disclosed. These documents have been marked as confidential, and the basis for confidential treatment and where the confidential information is located on the documents are identified on the following chart:

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☒	Proprietary and trade secret information or other intellectual property and protected market sensitive/competitive data (Protected under Civ. Code §§3426 <i>et seq.</i>; Govt. Code §§ 6254, <i>et seq.</i>, e.g., 6254(e), 6254(k), 6254.15; Govt. Code § 6276.44; Evid. Code §1060; D.11-01-036)	Confidential information is outlined red, please refer to details starting on Page 4 of this declaration

☐	Corporate financial records (Protected under Govt. Code §§ 6254(k), 6254.15)	
☒	Third-Party information subject to non-disclosure or confidentiality agreements or obligations (Protected under Govt. Code § 6254(k); see, e.g., CPUC D.11-01-036)	Confidential information is outlined red, please refer to details starting on Page 4 of this declaration
☒	Other categories where disclosure would be against the public interest (Govt. Code § 6255(a): Due to sensitivity around names, LAN IDs and phone numbers for individual employees, the public interest in maintaining the confidentiality of this information outweighs the public interest in disclosure.	Confidential information is outlined red, please refer to details starting on Page 4 of this declaration

5. The importance of maintaining the confidentiality of this information outweighs any public interest in disclosure of this information. This information should be exempt from the public disclosure requirements under the Public Records Act and should be withheld from disclosure.
6. I declare under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge.
7. Executed on the date indicated below at San Francisco, California.

Edlyn
Louie

Digitally signed
by Edlyn Louie
Date:
2021.06.03
19:15:25 -07'00'

Edlyn Louie
DRU QC Supervisor
Data Response Unit
Pacific Gas and Electric Company

Sequence	FOLDER NAME	DOCUMENT NAME/TITLE	DESCRIPTION	CATEGORY OF CONFIDENTIALITY [1]	CATEGORY OF CONFIDENTIALITY [2]	OTHER CATEGORIES where disclosure would be against the public interest	LOCATION PAGE
1	2021WMP Revision_PGE-06_Atch03_CONF	ENVR-0070 - Storyline output_ENVR-0070_CONF.pdf	WBT Document	Proprietary			1-88
2	2021WMP Revision_PGE-06_Atch03_CONF	ENVR-0220WBT Habitat Conservation Plans - Storyline output_ENVR-0220WBT Habitat Conservation Plans_CONF.pdf	WBT Document	Proprietary			1-150
3	2021WMP Revision_PGE-06_Atch03_CONF	ENVR-0402WBT - Storyline output_ENVR-0402WBT_CONF.pdf	WBT Document	Proprietary			1-124
4	2021WMP Revision_PGE-06_Atch03_CONF	ENVR-9032WBT VELB Habitat Awareness Training - Storyline output ENVR-9032WBT VELB Habitat Awareness Training_CONF.pdf	WBT Document	Proprietary			1-127
5	2021WMP Revision_PGE-06_Atch03_CONF	ENVR-9090RVL - EVM Green and Amber ERTC - Storyline output ENVR-9090RVL - EVM Green and Amber ERTC_CONF.pdf	WBT Document	Proprietary			1-6
6	2021WMP Revision_PGE-06_Atch03_CONF	ENVR-9091RVL - Veg Management General Awareness - Storyline output_ENVR-9091RVL - Veg Management General Awareness_CONF.pdf	WBT Document	Proprietary			1-6
7	2021WMP Revision_PGE-06_Atch03_CONF	VEGM-0101WBT - Introduction to Pre-Inspection Basics (1) CONF.pdf	WBT Document	Proprietary			1-247
8	2021WMP Revision_PGE-06_Atch03_CONF	VEGM-0102WBT Mapping Patrol Line Segments_CONF.pdf	WBT Document	Proprietary			1-34
9	2021WMP Revision_PGE-06_Atch03_CONF	VEGM-0103WBT V1.0 Pre-Inspection Tools and Practices_CONF.pdf	WBT Document	Proprietary			1-154
10	2021WMP Revision_PGE-06_Atch03_CONF	VEGM-0104WBT Tree Assessment Tool (TAI) CONF.pdf	WBT Document	Proprietary			1-98
11	2021WMP Revision_PGE-06_Atch03_CONF	VEGM-0105WBT_Tree Strike Potential_v1.0 (1) CONF.pdf	WBT Document	Proprietary			1-183
12	2021WMP Revision_PGE-06_Atch03_CONF	VEGM-0106WBT Assess Major Woody Stem Exemption v1.0 CONF.pdf	WBT Document	Proprietary			1-179
13	2021WMP Revision_PGE-06_Atch03_CONF	VEGM-0107WBT_Tree Growth Potential v1.0 CONF.pdf	WBT Document	Proprietary			1-157
14	2021WMP Revision_PGE-06_Atch03_CONF	VEGM-0108WBT- Abnormal Field Conditions v1.0 CONF.pdf	WBT Document	Proprietary			1-91
15	2021WMP Revision_PGE-06_Atch03_CONF	VEGM-0109WBT Assess Treatment of Re-Sprouting Stumps_CONF.pdf	WBT Document	Proprietary			1-43
16	2021WMP Revision_PGE-06_Atch03_CONF	VEGM-0110WBT_Skill Assessment for Pre-Inspector Basics v1.0 CONF.pdf	WBT Document	Proprietary			1-212
17	2021WMP Revision_PGE-06_Atch03_CONF	VEGM-0301WBT - Annual Review of Best Management Practices_CONF.pdf	WBT Document	Proprietary			1-75
18	2021WMP Revision_PGE-06_Atch03_CONF	VEGM-0302WBT_v1.0_VEGM-0302WBT_VC Fire Risk Assessment v1.0 (1) CONF.pdf	WBT Document	Proprietary			1-130
19	2021WMP Revision_PGE-06_Atch03_CONF	VEGM-0303WBT Vegetation Control Equipment ID, Exemptions, Claims and Refusals_CONF.pdf	WBT Document	Proprietary			1-63

20		2021WMP_Revision_PGE-06_Atch02_CONF.xlsx	Spreadsheet	Third-Party			Tab 2a Response columns F and G; Tab 2d & 2e Response, columns D and E
21		PDF_WildfireMitigationPlans_Report_PGE_20210603_CONF.pdf	WMP Narrative	Other			21-23
22		PDF_WildfireMitigationPlans_Report_PGE_20210603CONF_Redline.pdf	WMP Redline Narrative	Other			PDF Pages 2-4