April 11, 2022 **VIA ELECTRONIC FILING**

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Subject: **Comments of the Public Advocate's Office on General Issues in the 2022 Wildfire Mitigation Plan Updates of the Large Investor-Owned Utilities**

Docket: **2022-WMPs**

Dear Director Thomas Jacobs,

The Public Advocate's Office at the California Public Utilities Commission (Cal Advocates) respectfully submits the following comments on the 2022 Wildfire Mitigation Plan Updates of Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE) and San Diego Gas & Electric Company (SDG&E), as well as general wildfire mitigation issues. Please contact Nathaniel Skinner (Nathaniel.Skinner@cpuc.ca.gov) or Henry Burton (Henry.Burton@cpuc.ca.gov) with any questions relating to these comments.

We respectfully urge the Office of Energy Infrastructure Safety to adopt the recommendations discussed herein.

Respectfully submitted,

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ATTACHMENT A

I. INTRODUCTION

Pursuant to the Office of Energy Infrastructure Safety's (Energy Safety) *Final 2022 Wildfire Mitigation Plan (WMP) Update Guidelines* (2022 WMP Guidelines),[1] the Public Advocate's Office at the California Public Utilities Commission[2] (Cal Advocates) submits these comments on the 2022 Wildfire Mitigation Plan (WMP) Updates submitted by the large investor-owned utilities: Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E). (In these comments, Cal Advocates refers to PG&E, SCE, and SDG&E collectively as IOUs or utilities.[3]) The 2022 WMP Guidelines permit interested persons to file opening comments on the large IOUs' 2022 WMPs by April 11, 2022 and reply comments by April 18, 2022.

The 2022 WMP Guidelines established templates, guidelines, and a schedule for the utilities' 2022 WMP submissions. According to the 2022 WMP Guidelines, SDG&E submitted its 2022 WMP Update on February 11, 2022. SCE submitted its 2022 WMP Update on February 18, 2022. PG&E submitted its 2022 WMP Update on February 25, 2022. The smaller utilities will submit their 2022 WMP Updates in May 2022.

In these comments, Cal Advocates addresses general wildfire mitigation issues that affect the WMPs of PG&E, SCE and SDG&E. We provide technical recommendations applicable to all utilities and recommendations for future improvements in the WMP guidelines and process.

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[1] Energy Safety, *Final 2022 Wildfire Mitigation Plan (WMP) Update Guidelines*, December 15, 2021. See Attachment 5: Guidelines for Submission and Review of 2022 Wildfire Mitigation Plan Updates, pp. 5-6 and 9.

[2] The California Public Utilities Commission is referred to as "the CPUC" in these comments.

[3] Many of the Public Utilities Code requirements relating to wildfires apply to "electrical corporations." *See e,g,* Public Utilities Code Section 8386. These comments use the more common terms "utilities" or "IOUs" and the phrase "electrical corporations" interchangeably to refer to the entities that must comply with the wildfire safety provisions of the Public Utilities Code.

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27	Future WMP guidelines	Energy Safety should adopt final WMP guidelines by September 2022.	VIII.A

III. GRID DESIGN AND SYSTEM HARDENING

A. Energy Safety should convene a working group to collaborate on system hardening programs.

In the 2021 WMP Final Action Statements for each utility, Energy Safety ordered the utilities to develop a consistent approach to evaluating the risk reduction and cost-effectiveness of covered conductor deployment.[4] The resulting report is attached to each of the large utilities' 2022 WMPs.[5] While the utilities did not reach consensus on the effectiveness of covered conductor, the report is nonetheless valuable because it illuminates the advantages and disadvantages of covered conductor. The points of disagreement are also important because they suggest topics for further research or analysis.

The utilities' joint report on covered conductor made clear that even where utilities are using broadly similar system hardening techniques, there continue to be significant differences in practices and costs between the utilities. For example, when PG&E installs covered conductor, most or all poles are replaced with new composite or intumescent wrapped wooden fire resistant poles,[6] and with new crossarms.[7] On the other hand, SCE has indicated that existing poles can

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[4] Key Areas for Improvement and Remedies SCE-21-02, SCE-21-03, and SCE-21-04, *Final Action Statement on the 2021 Wildfire Mitigation Plan Update of Southern California Edison Company*, August 18, 2021.

[5] PG&E 2022 WMP Update, Section 4.6, Attachment 1, Joint Utility Response to Remedy PG&E-21-09, February 25, 2021, pp. 1-12 through 1-77; hereinafter *Joint Utility Report on Covered Conductor.*

See also SCE 2022 WMP Update, pp. 634-696; SDG&E 2022 WMP Update, Attachment H, Joint IOU Response to Action Statement-Covered Conductor.

[6] PG&E states that during covered conductor installation, "often the majority or all poles on a circuit segment will need to be replaced to support the new, heavier covered conductor and associated equipment… PG&E has tested and confirmed that composite poles and intumescent wrapped poles have increased fire damage resiliency." See PG&E 2022 WMP Update, February 25, 2022, p. 539.

PG&E states that 97 percent of covered conductor projects in 2020 and 96 percent of covered conductor projects in 2021 "included pole replacements." Among the projects in 2021 that involved pole replacements, approximately 95 percent of poles were replaced. PG&E's supplemental response to data request CalAdvocates-PGE-2022WMP-17, question 7, April 1, 2022, and PG&E's response to data request CalAdvocates-PGE-2022WMP-20, question 1, April 11, 2022.

[7] PG&E's response to data request CalAdvocates-PGE-2022WMP-17, question 6, March 24, 2022; and information provided to Cal Advocates by PG&E staff during PG&E covered conductor installation site visit, El Dorado County, November 2, 2021.

often be used for covered conductor installations and that SCE's existing standard crossarms are compatible with the new conductor.[8] In contrast to both PG&E and SCE, SDG&E replaces wood poles with steel, and replaces wooden crossarms with fiberglass.[9]

It's also notable that the joint report on covered conductor finds that spacer cable is highly effective at both wildfire and PSPS mitigation, yet only PacifiCorp reports installing spacer cable in significant amounts.[10] Given the broad differences in covered conductor installation techniques across utilities, it is important to better understand the effect of these differences on risk reduction, installation cost, and service life of the conductor.

Energy Safety should consider expanding the collaboration between the utilities to include other system hardening programs besides covered conductor, such as undergrounding. It would be valuable to develop shared understandings of the benefits and costs of various hardening methods.

In particular, given the cost high cost of undergrounding, it would be especially helpful for the utilities to collaborate and share any practices that could lead to cost reductions in undergrounding. In its WMP, SDG&E has determined that undergrounding can be effectively implemented at shallow depths, resulting in a lower cost of installation.[11] While PG&E is currently exploring shallow trenching, it appears to be earlier in its evaluation than SDG&E, and it is unclear whether PG&E has conferred with SDG&E on this research.[12] It is worth exploring whether this technique might lower undergrounding costs for all three large IOUs without adversely impacting risk reduction.

Energy Safety should expand the existing collaboration on covered conductor to consider and report on other system hardening programs. As an initial step, Energy Safety should convene the utilities in summer of 2022 to consider the risk reduction, cost, and variations in practices in undergrounding programs. The utilities should be required to produce a report similar to the joint covered conductor report as an attachment to their 2023 WMPs.

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[8] Meeting between Cal Advocates and SCE, March 15, 2022.

[9] 2022 WMP Update Progress Report, Effectiveness of Covered Conductor, Attachment to SDG&E 2022 WMP Update, p. 52.

[10] SCE 2022 WMP Update, pp. 654; see also SCE 2022 WMP Update, p. 611 (SCE reports that it is piloting using spacer cable in some situations, but does not provide additional details).

[11] SDG&E's 2022 WMP, pp. 20 and 391.

[12] PG&E's response to data request CalAdvocates-PGE-2022WMP-17, question 9.

B. Energy Safety should require IOUs to develop plans for co-trenching shared utilities.

Co-trenching (that is, using the same trench for multiple utilities' equipment) with gas or telecommunications utilities offers an opportunity to create cost efficiencies and public safety benefits. However, it requires additional planning and coordination between the utilities. Currently, all three large IOUs attempt to co-trench with other utilities whose facilities share poles, but there is no formal requirement that they do so and it is unclear how effective these ad hoc efforts are.

Co-trenching offers cost efficiencies. Undergrounding of distribution infrastructure provides superior mitigation of ignition risk, but generally does so at a cost that is not sustainable to ratepayers when employed at scale. Co-trenching, however, could reduce overall costs and spread the costs among several utilities.

Co-trenching has public safety benefits, as well. In the case of egress risk, coordination on undergrounding is essential to achieving some of the safety benefits of undergrounding projects. During a wildfire, utility poles and wires can fall in roadways, blocking routes for citizens to evacuate and first responders to arrive. Electric lines often share poles with telecommunications lines. If the telecommunications lines are not placed underground, then the poles remain in place and still pose a risk of blocking roadways. In these cases, egress risk can only be fully mitigated if *all* utilities sharing the pole underground their assets.

To clarify the public safety considerations, Energy Safety should require electric utilities to develop formal plans to co-trench shared utility facilities, and to submit those plans as a part of their 2023 WMP submissions. Each utility should identify locations in its service territory with limited ingress and egress and should categorize its circuits in the HFTD as high, medium, or low importance for co-trenching based on the circuit's proximity to major roadways. The plans should also identify any logistical, financial, and regulatory barriers that currently impede cooperation between utilities.

IV. ASSET MANAGEMENT AND INSPECTIONS

A. Energy Safety should require each utility to establish a program to examine the links between ignitions and overdue maintenance.

In 2020, PG&E established its Asset Failure Analysis Team, which investigates equipment-caused ignition events to determine apparent causes.[13] In 2021, this team identified 11 ignitions linked to pre-existing maintenance notifications on PG&E's equipment.[14, 15] This is valuable information, as it potentially allows PG&E to identify maintenance notifications that are more commonly linked to ignitions, and to therefore prioritize remediation of such notifications in the future. The analysis may also help PG&E identify operational or environmental trends that indicate widespread issues across its system. This could help PG&E identify corrective actions that will mitigate similar problems in the future.

As noted in our comments on PG&E's WMP, PG&E has a significant number of overdue maintenance notifications within its HFTD, several of which have been linked to recent ignitions.[16] Identifying the root causes of such ignitions and implementing effective corrective actions – such as prioritizing remediation of common causes or implementing process improvements to eliminate ignition hazards – can reduce the risk of equipment-caused ignitions in the future. PG&E's creation of a team to analyze the causes of asset failures, therefore, is a positive step that can improve safety in the long run.

Unfortunately, other utilities in California do not appear to be systematically investigating the root causes of ignitions and asset failures. For example, while SCE's Fire Incident Preliminary Analysis process can involve root cause analysis of risk events, the process does not specifically examine the potential links between pending maintenance tags and ignitions.[17] It appears that some of SCE's ignitions would benefit from closer scrutiny. SCE's

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[13] PG&E's response to data request CalAdvocates-PGE-2022WMP-08, question 5.

[14] PG&E's response to data request CalAdvocates-PGE-2022WMP-08, question 5.

[15] In 2021, PG&E had 129 CPUC-reportable ignitions in the HFTD and 466 system-wide. PG&E's 2022 WMP, Table 7.2.

[16] "In 2021, the AFA Team identified or affirmed the Apparent Causes of 11 equipment-caused CPUC reportable ignitions with pre-existing work tags on the asset which were determined to be relevant to the ignition." PG&E's response to data request CalAdvocates-PGE-2022WMP-08, question 5.

[17] See SCE's 2022 WMP, pp. 471-473; SCE's response to data request CalAdvocates-SCE-2022WMP-13, April 7, 2022, question 1.

ignition data show nine ignitions in 2021 that were caused by "equipment/facility failure" and were linked to an asset with an open priority 1 or priority 2 maintenance tag at the time.[18] SCE investigated each of these incidents, but did not analyze whether the open maintenance tag caused or contributed to the ignition.[19] It is troubling that SCE has not examined whether these existing maintenance issues contributed to the ignitions (especially the priority 1 tag, which represents a high-risk issue[20]). A complete root cause investigation is warranted to determine why the ignitions occurred, whether they were preventable, and what changes in SCE's operational practices might prevent similar incidents in the future.

Effective root cause analysis and implementation of corrective actions are widely applicable best practices that can improve safety for employees and the public.[21] Energy Safety should require all IOUs to establish a program to evaluate the root causes of equipment-caused ignitions, and to implement corrective actions. These programs should examine all root causes, with a particular focus on whether existing, unaddressed maintenance contributed to the ignition. Each utility should include such a program in its 2023 WMP and should describe the program's scope, its goals, the status of the program's development, and its recent findings. Additionally, Energy Safety should facilitate working groups on this topic to ensure information sharing across utilities and with other interested stakeholders.

B. Energy Safety should convene a technical working group to examine the effectiveness of drone inspections across the three large IOUs.

In the 2021 WMPs, the three large IOUs (PG&E, SCE, and SDG&E) had varying conclusions regarding the usefulness of drones for asset inspections. In the 2022 WMP updates, the three large IOUs indicate an increased usage of drones for asset inspections. To facilitate this promising technology, Energy Safety should convene a working group to consider different approaches, examine the effectiveness of asset inspections using drones, and develop best practices for the large IOUs and potentially the smaller IOUs. Considering the recent

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[18] SCE's response to CalAdvocates-SCE-2022WMP-07, question 9, March 15, 2022.

[19] SCE's response to data request CalAdvocates-SCE-2022WMP-13, April 7, 2022, question 2.

[20] SCE's 2022 WMP, p. 345.

[21] See, for example *The Importance of Root Cause Analysis During Incident Investigation*, fact sheet developed by OSHA and the EPA, available at https://www.osha.gov/sites/default/files/publications/OSHA3895.pdf

developments in the use of drones among the large IOUs, there are potential synergies in sharing best practices in a workgroup.

In contrast to its 2021 WMP, SCE's 2022 WMP places increased emphasis on conducting in-house, rather than contractor, drone inspections for PSPS restoration and in some cases for routine asset inspections. SCE states its belief that "increasing internal [unmanned aerial systems] capabilities in the near-term will produce better results (more efficient patrols) sooner and potentially for a lower cost than using outside vendors."[22] SCE has identified further benefits of drones, including supplementing in-person patrols and allowing qualified personnel to more quickly assess circuit conditions in terrains that would otherwise require a lengthy hike or helicopter patrols.[23] SCE started a pilot program of training its own operators, and in spite of Covid restrictions, SCE had "60 operators pass the qualifying exam."[24] In addition to this, SCE has directed some of its artificial intelligence programs at processing the images from unmanned inspections. This is another beneficial advancement from its 2021 WMP.[25]

SCE intends to expand the drone program in the future as it can help the utility restore service to customers following PSPS events.[26] In 2022, SCE aims to learn more about the technology and how it can be incorporated into their operations.

SDG&E concludes that drones are useful for conducting inspections throughout its territory and is using drones to inspect both distribution and transmission infrastructure in HFTD areas.[27] This is similar to its use of drones in 2021, when SDG&E conducted drone inspections on approximately 1,000 transmission structures and over 21,000 distribution structures as part of

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[22] SCE's 2022 WMP, p. 32.

[23] SCE's 2022 WMP, p. 445:

> SCE will be further piloting the use of [unmanned aerial systems] and remote sensing capabilities to assist with PSPS patrols and data gathering for situational awareness during any events that may be necessary in 2022. Although SCE is in the early phases of the pilot, [unmanned aerial systems] are proving to be valuable to supplement in-person patrols, allowing qualified personnel to more quickly assess circuit conditions on conductor segments that traverse rugged and heavily vegetated terrain and would otherwise require a lengthy hike or helicopter patrols.

[24] SCE's 2022 WMP, p. 147.

[25] SCE's 2022 WMP, p. 199.

[26] SCE's 2022 WMP, p. 226.

[27] SDG&E's 2022 WMP, p. 10 Table 4: Year-by-Year Timeline for Maturing Asset Management and Inspections.

its drone pilot program.[28] SDG&E's drone program involves flight planning, drone flight and image capture, image assessment and determination of issues, and repair.[29] Beyond being able to observe issues with its assets, SDG&E also uses the images captured by drones to help improve the models (based on machine learning technology) that process the image data and detect damage in drone inspections.[30] Additionally, SDG&E has used the information from drone inspections to improve its risk-based inspection methodology.[31]

SDG&E has recently transitioned its drone inspection program "from a pilot program to a more defined initiative through development of workflows and process and procedure documents."[32] SDG&E touts the "effectiveness" of its drone inspection program, because "a 62 percent reduction was observed in issues found during Corrective Maintenance Program (CMP) inspections in 2021 in the Tier 3 HFTD, despite a 20 percent increase in inspection of distribution poles."[33] SDG&E concluded that the drone program was beneficial and effective, as SDG&E found fewer problems while conducting more inspections.

Unlike SCE and SDG&E, PG&E does not currently have a program for aerial inspection of distribution assets. Cal Advocates noted in its 2021 comments that SCE and SDG&E had seen significant value in aerial inspections of distribution assets, and that Energy Safety should require PG&E to study the benefits of performing aerial inspections of distribution assets.[34]

PG&E launched a drone inspection pilot program in the fourth quarter of 2021 on its distribution assets, with "promising results."[35] In 2022, PG&E states that it plans to conduct an expanded pilot program on its distribution assets by conducting aerial inspections from both

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[28] SDG&E's drone program is called the Drone Investigation, Assessment and Repair (DIAR) Program. SDG&E's 2022 WMP, pp. 4, 20 and 184.

[29] SDG&E's 2022 WMP, p. 261.

[30] SDG&E's 2022 WMP, p. 261.

[31] SDG&E's 2022 WMP, p. 261.

[32] SDG&E's 2022 WMP, pp. 184 and 263.

[33] SDG&E's 2022 WMP, p. 20.

[34] *Comments of the Public Advocates Office on the 2021 Wildfire Mitigation Plan Update of Pacific Gas and Electric Company,* March 29, 2021, pp. 41-42.

[35] PG&E's 2022 WMP, Section 4.6, Attachment 2, p. 14.

drones and helicopters. PG&E expects that this pilot program will help it define a distribution aerial inspection program that will launch in 2023.[36]

For transmission assets, PG&E's plan for 2022 is similar to what it did in 2021. All PG&E's transmission assets will be inspected every three years, at a minimum, with more frequent inspections scheduled for assets with increased risk as determined by PG&E's Wildfire Transmission Risk Model.[37] All transmission assets will receive a ground inspection and an aerial inspection (which may be conducted by drone, helicopter, or aerial lift). Additionally, 500 kV towers will receive climbing inspections."[38]

Overall, PG&E indicates that it sees value in conducting aerial inspections (by drone or helicopter) of its assets. However, PG&E has been slower than SCE and SDG&E to adopt aerial inspections for distribution assets.

Considering the differences in how the large utilities use drones for inspections, Energy Safety should convene a technical working group to seek consensus on the most effective approaches to aerial inspections. For the technical working group, Energy Safety should require each utility to submit a separate report that analyzes the potential applications of drone inspections, addressing the effectiveness and limitations of each application. These reports will provide a starting point for the working group's discussions.

The technical working group should meet this summer and fall, prior to the 2023 WMP submissions. In this working group, stakeholders should consider:

- The effectiveness of drone inspections for different types of assets (e.g., distribution versus transmission) and for detecting different types of safety hazards;
- Circumstances in which helicopters are preferable to drones for aerial asset inspections, and vice versa;
- Best practices for drone inspections;
- Standardized angles and heights for images produced by the drones;
- Whether utilities can create a shared database of images to develop machine learning or artificial intelligence algorithms; and
- Training requirements for staff using drones.

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[36] PG&E's 2022 WMP, Section 4.6, Attachment 2, p. 14.

[37] PG&E's 2022 WMP, pp. 149 and 575.

[38] PG&E's 2022 WMP, p. 574.

This working group can enable stakeholders and utilities to improve the effectiveness of drone-based asset inspections. It will also allow Energy Safety and stakeholders to evaluate whether drone inspections should be a mandatory component of future WMPs.

V. VEGETATION MANAGEMENT

A. Energy Safety should require IOUs to provide details in future WMP filings on how in-house and contract labor are used in vegetation management programs.

As discussed in Cal Advocates' comments on SCE's 2022 WMP, there are important differences between in-house and contract vegetation management staff. The IOUs should provide detailed information on the current mix of staff employed by each program and on the reasoning for current staffing choices so that Energy Safety and stakeholders can better understand which type of labor is most appropriate to each type of work.

Energy Safety should include a requirement in the 2023 WMP guidelines for each utility to describe the current mix of in-house and contract staff employed by each vegetation management program, including the utility's reasoning for current staffing decisions.

VI. GRID OPERATIONS AND PROTOCOLS

A. Energy Safety should facilitate a working group in 2022 with the large IOUs to develop consistent practices for fast recloser settings.

Fast recloser settings are an effective and efficient way to prevent ignitions.[39] However, fine-tuning the settings is important to achieve the right balance of improving safety while maintaining reliability of service. PG&E, SCE, and SDG&E each implement some form of fast recloser settings during the fire season.[40] SCE and SDG&E have had such programs for several years,[41] while PG&E's was first implemented in 2021.[42]

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[39] In our comments on the 2021 WMPs of PG&E, SCE, and SDG&E, Cal Advocates recommended that all three utilities be required to implement extremely short de-energization delays for reclosers on distribution lines during high fire-threat days. See *Comments of the Public Advocates Office on the 2021 Wildfire Mitigation Plan Updates of the Large Investor-Owned Utilities*, March 29, 2021, pp. 35-38.

[40] See PG&E's 2022 WMP, pp. 730-739; SCE's 2022 WMP, pp. 439-440; SDG&E's 2022 WMP, pp. 307-308.

[41] Per SCE's response to data request CalAdvocates-SCE-2022WMP-08, question 1, SCE's fast curve settings were initially installed in 2018. "SDG&E developed the settings and the operating standard around these settings in 2015." SDG&E's 2022 WMP, p. 307.

[42] PG&E's 2022 WMP, p. 730.

While the purpose of these programs is largely aligned among all three utilities – to rapidly de-energize lines upon detection of a fault that may indicate an ignition-causing failure – the implementation varies significantly between the utilities. For example, SCE and SDG&E both use wind conditions as a criterion for activating these settings. SCE implements its Fast Curve settings during red flag warnings, or when SCE's Weather Service declares an increased risk of fire weather.[43] Similarly, SDG&E enables its sensitive relay settings during extreme Fire Potential Index (FPI) days and during red flag warnings.[44] In contrast, PG&E's Enhanced Powerline Safety Settings are activated during periods of increased Fire Potential Index, as determined by PG&E's risk models, and do not separately factor in red flag warnings.[45]

As a second example, the sensitivity of these settings varies substantially between utilities. SCE's fast curve settings currently operate in the range of 0 to 2 cycles (0 to 0.03 seconds).[46] PG&E's Enhanced Powerline Safety Settings operate in approximately 6 cycles (0.1 seconds).[47] This timing refers to the duration of an electrical fault that is required to trigger the switching device.

PG&E's implementation of its Enhanced Powerline Safety Settings in 2021 resulted in numerous unplanned and lengthy outages.[48] While PG&E became aware of SCE's and SDG&E's programs in 2019,[49] and states that it coordinated with SCE and SDG&E prior to

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[43] Per SCE's response to data request CalAdvocates-SCE-2022WMP-08, question 1, SCE's fast curve settings are enabled under the following conditions: Red Flag Warning issued by the National Weather Service, Fire Weather Threat declaration made by SCE Weather Service, Fire Climate Zone declaration made by SCE Weather Service, Thunderstorm Threat declaration made by SCE Weather Service.

[44] SDG&E's 2022 WMP, p. 62.

[45] "Once the devices are programmed, they will be capable of being enabled into EPSS mode. Enablement (activation) of EPSS settings will be determined based on FPI ratings throughout the service territory." PG&E's 2022 WMP, p. 734.

PG&E's FPI model is discussed in its 2022 WMP, pp. 174-186. The FPI model predicts the probability that an ignition would cause a small, large, or catastrophic wildfire under forecasted conditions.

[46] SCE's response to data request CalAdvocates-SCE-2022WMP-08, question 1.

[47] PG&E's 2022 WMP, p. 735.

[48] "Since PG&E initiated the Fast Trip setting practice on 11,500 miles of lines in High Fire Threat Districts in late July, it has caused over 500 unplanned power outages impacting over 560,000 customers. These Fast Trip-caused outages occur with no notice and can last hours or days." President Batjer's letter to PG&E, p.1, October 25, 2021.

[49] PG&E's response to data request CalAdvocates-PGE-2022WMP-17, question 3.

implementing its program,[50] the rollout was flawed. The resulting outages created safety hazards for customers who rely on electricity for medical needs but received no warning of the shutoffs. These outages are indicative of poor planning.

All three large utilities agree that fast recloser settings prevent ignitions, and thus are especially valuable in times and places with a high risk of catastrophic wildfires. However, the differences between the utilities' practices suggest that there is considerable room for research and knowledge sharing about how best to fine-tune these settings. Since fast recloser settings will almost certainly be a permanent element of the utilities' wildfire mitigation strategies, it is crucial to properly balance safety and reliability. A working group should convene with the aim of bringing the practices of the three utilities into alignment and developing consistent best practices.

Prior to the filing of the 2023 WMPs, Energy Safety should initiate and oversee a working group on fast recloser settings that includes PG&E, SCE, and SDG&E. The working group should be open to participation by small utilities. Prior to the first meeting, each participating utility should submit a written description of its current fast recloser practices and the reasoning for those choices. This working group should identify the differences in each utilities' implementation of such settings and whether these differences are necessary, develop consistent best practices, and identify questions that require further research or testing. Each utility should report on the results of this working group in its 2023 WMP, or in a separate submission prior to the 2023 WMP with an opportunity for stakeholder comments.

B. Energy Safety should require the large IOUs to report fast-trip outages in quarterly reports beginning with the 2nd quarter of 2022.

Energy Safety currently requires the IOUs to report data on proactive de-energization events in Table 11 of their quarterly reports.[51] Additionally, in their WMPs, utilities are required to identify circuits that have frequently been proactively de-energized for wildfire mitigation

[50] PG&E's response to data request CalAdvocates-PGE-2022WMP-17, question 4.

[51] 2022 Wildfire Mitigation Plan Update Guidelines Template, Office of Energy Infrastructure Safety, Attachment 2, pp. 82-83.

purposes, and to describe the measures taken or planned to reduce the need for future de-energization of those circuits.[52]

As discussed earlier in these comments, PG&E, SCE, and SDG&E each have fast recloser settings to near-instantly de-energize lines when a fault is detected.[53] While the nature of these fast-trip outages and proactive de-energizations are different across the IOUs, they serve a similar purpose: to de-energize lines under conditions that present an increased risk of wildfire ignition or spread. While all three utilities report on the success of their programs,[54] the utilities are not required to report on fast-trip outages in a uniform fashion. As a result, the data is scattered and inconsistent with regard to the effect of such programs on customer reliability.

Beginning on November 8, 2021, PG&E began filing monthly reports to the Safety and Enforcement Division at the CPUC on the number, scope, duration, and cause of fast-trip outages.[55], [56] This data is necessary for the CPUC and stakeholders to evaluate the effects of these unplanned and unannounced outages. However, at this time, only PG&E is required to file such reports.

To facilitate collection of data on the effects of fast-trip outages on reliability, Energy Safety should require all utilities to include a table similar to Table 11 in future quarterly reports, containing information on fast-trip outages.[57] The utilities should begin reporting this data in the quarterly data reports for quarter 2 of 2022.

In addition, Energy Safety should revise its WMP guidelines for 2023 to require utilities to identify circuits that have frequently been subject to unplanned fast-trip outages. The utilities

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[52] Pub. Util. Code Section 8386(c)(8).

[53] See PG&E's 2022 WMP, pp. 730-739; SCE's 2022 WMP, pp. 439-440; SDG&E's 2022 WMP, pp. 307-308.

[54] See PG&E's 2022 WMP, p. 733; SDG&E's 2022 WMP, pp. 62-64; SCE's response to data request CalAdvocates-SCE-2022WMP-08, question.

[55] Per President Batjer's letter to PG&E, p. 4, October 25, 2021.

[56] These reports are available on the CPUC website at https://www.cpuc.ca.gov/industries-and-topics/wildfires/pacific-gas-and-electric-heightened-equipment-sensitivity-wildfire-mitigation-program

[57] This table should include quarterly data on the number of outages due to fast-trip settings, the number of circuits affected, the total customer-minutes of such outages, the number of customers affected, the number of medical baseline customers affected, the number of access and functional needs customers affected, and the number of critical facilities affected. In addition to this overall data, the utilities should report the same data narrowed to fast-trip outages that occurred during red flag warnings or high wind warnings.

should describe measures taken or planned to reduce the number, duration, and scope of fast-trip outages on those circuits in the future.

VII. PUBLIC SAFETY POWER SHUTOFFS

A. Energy Safety should require the large IOUs to be more specific in modeling inputs, outputs, and assumptions when calculating Public Safety Power Shutoff (PSPS) risk to customers.

Energy Safety released changes to the WMP guidelines in advance of the 2022 WMP filings. One of the new guidelines requires the IOUs to describe the methods they use to evaluate the potential consequences of PSPS and wildfires. Specifically:

> the utility is required to discuss how the relative consequences of PSPS and wildfires are compared and evaluated. In addition, the utility must report the wildfire risk thresholds and decision-making process that determine the need for a PSPS.[58]

In their WMPs, the IOUs generally address PSPS as a wildfire mitigation technique without providing enough information on how the IOUs make decisions to de-energize their customers. The IOUs extensively focus on the value of PSPS in terms of avoided ignitions but largely ignore the impacts that PSPS has on customers. This is contrary to the WMP guidelines' requirement to evaluate potential consequences of PSPS. The IOUs' primary focus on reducing wildfire risk, therefore, consistently skews the IOUs' risk-benefit calculations in favor of holding PSPS events. Below, Cal Advocates discusses each IOU's shortcomings in how it considers PSPS events.

1. PG&E

PG&E describes PSPS in terms of calculating avoided ignitions but does not adequately describe how PG&E weighs decision-making factors and risks.[59] PG&E's models are tailored to determine when a PSPS event should be held to avoid fire ignition: "PSPS events may be

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[58] Attachment 1: Changes for the 2022 Wildfire Mitigation Plan (WMP) Update Guidelines, New Guideline 8a in Section 8.2, p. 29.

[59] For example, PG&E notes on p. 138 of its WMP Update that in its "2022 WDRM v3 model, virtual outage and ignition indicators (the attributes used to model outages and ignitions) are assigned to PSPS events to account for the risks they would pose if the power were on, calibrated with weights that reflect the expected number of outages and ignitions that would have occurred had the PSPS events not occurred." While helpful for determining fire risk, customer harms from PSPS do not appear to be included as part of this model.

initiated when there is a high possibility of utility caused ignitions combined with a high probability of catastrophic fires in both space and time."[60]

PG&E's actual assessments of risks and harms to customers caused by PSPS are vague and undefined. This does not allow for meaningful stakeholder analysis of how PG&E quantifies risks to its customers in its PSPS consequence model. PG&E indicates that the PSPS consequence model's primary purpose is to "assess the impacts of PSPS de-energizations in support of making PSPS mitigation planning decisions."[61] However, PG&E is unclear to what extent that includes assessing the impacts that PSPS has on its customers. For example, PG&E's PSPS Consequence Model includes an adjustment for critical customers,[62] but PG&E does not specify the extent to which this assessment affects PG&E's PSPS decision-making.

Similarly, PG&E's Multi-Attribute Value Function model for estimating PSPS consequence values produces "unitless" numbers.[63] This is problematic because it does not show how consequences to customers are weighted relative to other estimated consequence values such as a fire ignition. Furthermore, the lack of units in the Multi-Attribute Value Function consequence values makes it nearly impossible to ascertain how PG&E is determining the weights of the outcomes of its consequence modeling equations against other PSPS decision-making factors, such as its Fire Potential Index and Ignition Probability Weather model.[64]

Reasoned decision making requires this information. Energy Safety should therefore direct PG&E to address the data gaps described above in its next WMP submission. Energy Safety should also update the WMP guidelines to strengthen the data reporting requirements for PSPS, described in Section VII.B below.

2. SCE

SCE's WMP has similar issues as PG&E in regard to evaluating potential consequences to customers. SCE's use of the IOUs' 2019 post-event reports to inform its estimate of harms to

[60] PG&E's 2022 WMP, p. 187.

[61] PG&E's 2022 WMP, p. 196.

[62] PG&E's 2022 WMP, p. 197: "Weighting assessment by customer classifications to adjust consequence and prioritization for critical customers based on the [Subject Matter Expert] feedback,"

[63] PG&E's 2022 WMP, p. 199.

[64] For the role of the Fire Potential Index and Ignition Probability Weather models in PSPS decision-making, see PG&E's 2022 WMP, pp. 896-897; see also pp. 367, 418, 715, and 858.

customers has shortcomings.[65] It is well-documented that the IOUs had difficulties implementing and reporting on the 2019 PSPS events.[66] This casts doubt on the reliability of the IOUs' 2019 post-event reports as an input to SCE's present PSPS consequence modeling (and, in turn, SCE's decisions to call PSPS events). Even if such reports were reliable, SCE does not provide any information on how its analysis of the widespread 2019 PSPS events informed its present calculation of harms and risks to customers caused by PSPS.

Energy Safety should require SCE to provide further detail in its future WMPs regarding how its new machine learning models are expected to improve SCE's weather forecasting abilities. In theory, this should improve SCE's geographical scoping of its PSPS events and the associated customer notification processes.[67, 68] Energy Safety should require SCE to provide further detail regarding how SCE validated its new machine learning model's performance in a given year against wind events in the prior year that resulted in PSPS events. SCE should also be required to identify and describe the year-over-year improvements in the new model's accuracy at predicting hazardous weather conditions, as well as how the new model's predictive accuracy compares to the performance of SCE's previous weather models.[69]

Finally, Energy Safety should direct SCE to report in next year's WMP submission on improvements and progress in its modeling techniques to address the problem of "forecast bias" as a barrier to issuing timely notifications to customers about PSPS events.[70] Forecast bias in this context can generally be described as a tendency to overestimate or underestimate hazardous weather conditions that causes SCE to execute a PSPS event. These biases in weather

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[65] SCE's 2022 WMP, p. 523.

[66] *See* Order to Show Cause against PG&E as to why it should not be sanctioned by the Commission for violation of Pub. Utils. Code Section 451, D.19-05-042, and Resolution ESRB-8 during its Fall 2019 PSPS Events in Rulemaking 18-12-005; and Order Instituting Investigation (I.) 19-11-013 against PG&E, SCE, and SDG&E to review the use of PSPS events in late 2019.

[67] SCE's 2022 WMP, p. 267.

[68] The Commission's required schedule of notifications is described at D.19-05-042, pp. A8-9.

[69] SCE's forecasting performance in 2021 was poor, which led to tens of thousands of missed notifications and PSPS event scope changes immediately before de-energization. SCE must improve its forecasting abilities. See *Comments of the Public Advocates Office on the IOUs' Post-Season Reports for the 2021 Public Safety Power Shutoff Events*, March 21, 2022, filed in CPUC Rulemaking 18-12-005, pp. 6-8.

[70] On page 542 of its WMP, SCE identifies "forecast bias" as an issue associated with failure to notify customers of PSPS events. SCE plans to address this issue via a "buffer" and additional machine learning forecasts (SCE's 2022 WMP, p. 268).

forecasting can directly lead to forecasting error, causing the geographic scoping of PSPS events to be too large or too small (which in turn leads to over-notification or under-notification of customers). Forecasting error can cause significant harm to SCE customers in the form of sudden changes in PSPS event scope and failure to meet the Commission's required schedule of notifications. For example, difficulty forecasting incoming hazardous weather played a significant role in SCE's failure to provide any notice of de-energization to 28,257 customers in its November 24 to 26, 2021 PSPS event.[71]

3. SDG&E

SDG&E's transparency regarding PSPS modeling inputs, outputs, and assumptions needs to be improved. For example, SDG&E states that asset age is "critical for failure rate calculations" in its probability of ignition (POI) model.[72] The POI model is a factor in SDG&E's PSPS decision-making process.[73] However, SDG&E confusingly states that it does not integrate installation dates for older assets (i.e., asset age) into its POI modeling.[74] SDG&E should be clearer as to what data it uses for its PSPS decision-making. SDG&E's customers should not suffer the risks and harms posed by PSPS merely because SDG&E does not have a clear process for factoring asset age into its PSPS decision-making.

Similarly, SDG&E's PSPS consequence calculations rely on an implausibly low estimate of the safety risks to customers.[75] SDG&E calculates safety consequences of PSPS by using an estimate of the number of Serious Injuries and Fatalities per customer-minute of PSPS outage. In response to discovery, SDG&E indicates that the "Serious Injuries and Fatalities" variable is tiny (one per 10 *billion* customer-minutes), "based on a history of 0 fatalities in SDG&E [territory] during PSPS events."[76] Put in context, 10 billion customer-minutes equates to de-energizing one million customers (two-thirds of SDG&E's customers) *for a week*.[77] This implies

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[71] *Comments of the Public Advocates Office on the IOUs' Post-Season Reports for the 2021 Public Safety Power Shutoff Events*, March 21, 2022, filed in CPUC Rulemaking 18-12-005, pp. 6-8.

[72] SDG&E's 2022 WMP, p. 90.

[73] SDG&E's 2022 WMP, pp. 86, 129-130 (discussing the WiNGS-Ops model), and 357-360 (discussing the PSPS decision-making process).

[74] SDG&E's Response to Data Request CalAdvocates-SDGE-2022WMP-08, question 11.

[75] SDG&E's 2022 WMP, p. 130. Table 4-19 illustrates how SDG&E calculates PSPS Consequences.

[76] SDG&E Response to Cal Advocates Data Request CalAdvocates-SDGE-2022WMP-13, Q04.

[77] To be precise, 6 days, 22 hours, and 40 minutes.

that SDG&E would expect only one serious injury or fatality in a massive, week-long PSPS event. This seems unlikely given the large number of SDG&E customers who rely on electricity for essential medical equipment.[78] It is concerning that, for lack of sufficient data on serious injuries or fatalities during its PSPS events, SDG&E estimates nearly zero safety consequences, which implies that SDG&E sees little to no safety risk to its customers caused by PSPS.[79]

To address the dubious assumptions in SDG&E's PSPS consequence calculations, Energy Safety should direct SDG&E to reassess and show greater empirical support for its estimate of the safety risks of PSPS. To better estimate the safety hazards of PSPS to customers, SDG&E could use data from non-PSPS outages and data from other utilities.

Energy Safety should also direct SDG&E to make its PSPS decision-making processes more transparent in its next WMP submission. Specifically, SDG&E should be required to go into further detail and provide real-world examples (or hypothetical examples, if no real PSPS events are pertinent) of the variables it uses in its calculations and how they are relatively weighted. For example, SDG&E could walk through each step of its decision-making process for its November 24 to 26, 2021 PSPS event and state the weight of each variable in that process. Providing this type of information is critical to identify lessons that may benefit SDG&E's future decision criteria, as well as other utilities in California.

4. Summary and recommendations

As discussed above, each of the IOUs' WMPs fall short of the requirement to explain how PSPS consequences are evaluated as part of the new 2022 WMP Guidelines. The IOUs' WMPs contain similar shortcomings regarding how they calculate safety and financial risks to customers caused by PSPS events. This presents significant barriers to understanding how the IOUs weigh their customers' welfare against the need to prevent catastrophic wildfires.

In future WMP guidelines, Energy Safety should specify that utilities must explicitly explain (and provide concrete examples of) how their PSPS consequence models measure harms to customers caused by PSPS and weigh these risks against those caused by potential wildfires.

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[78] For example, 477 Medical Baseline customers were de-energized for approximately two days in SDG&E's December 23-24, 2020 PSPS Event.

[79] For comparison, SCE assumes one fatality per 4.25 billion customer-minute of interruption and one serious injury per 525 million customer-minute of interruption. This is more than double SDG&E's assumed rate of serious injuries and fatalities caused by outages. CalAdvocates-SCE-2022-WMP-14, question 1, April 8, 2022.

B. Energy Safety should modify the WMP guidelines to improve how the IOUs describe and document decisions to execute PSPS events.

The 2022 WMP guidelines require the IOUs to describe the method used to evaluate the potential consequences of PSPS and wildfires.[80] Unfortunately, the IOUs have not demonstrated in their WMPs that they are accurately evaluating the harms to customers from PSPS. Furthermore, in their WMPs the IOUs refer to documents and data requests filed in other proceedings at the CPUC, in support of their PSPS events, without providing those documents.[81] For this reason, Cal Advocates recommends that Energy Safety require that any documentation cited by the IOUs in support of their statements in the WMPs be included as an appendix to the IOUs' WMP filings.

Specifically, Cal Advocates recommends the following changes to New Guideline 8a in Section 8.2 to improve the clarity of utility decision-making on PSPS:

> Method used to evaluate the potential consequences of PSPS and wildfires. Specifically, the utility is required to discuss how the relative consequences of PSPS and wildfires are compared and evaluated. The utility must provide examples (hypothetical or real-world) of the inputs, outputs, and weighting of variables in its PSPS decision-making models. In addition, the utility must report the wildfire risk thresholds and decision-making process that determine the need for a PSPS. If the utility cites supporting documentation not readily available on the Energy Safety docket, the utility must attach the document in an appendix to its WMP or post it as an online appendix on its WMP webpage.

These changes would improve the clarity of the IOUs' reporting on how they weigh risks to customers caused by PSPS against the risk of wildfire ignition. Increased clarity will lead to improved stakeholder engagement and understanding of the IOUs' PSPS decision-making processes.

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[80] Attachment 1: Changes for the 2022 Wildfire Mitigation Plan (WMP) Update Guidelines, New Guideline 8a, p. 29.

[81] For example, PG&E cites "RAMP Report, pp. 3-3 to 3-15 and 2023 GRC workpapers in response to Energy Division GRC-2023-PhI_DR_ED_001_Q01Supp01" and "PG&E response to CPUC Energy Division Data Request GRC-2023-Ph1-DR_ED_001_Q01Supp01" in support of its MAVF methodology, but it is unclear how stakeholders can access this information in parallel with a review of PG&E's WMP.

VIII. FUTURE WMP GUIDELINES

A. Energy Safety should convene meetings with stakeholders to discuss guidelines for the 2023-2025 WMP cycle.

The current 2022 WMP update submissions are the final submission of the current three-year cycle established in Public Utilities Code Section 8386(b).[82] In past comments on WMPs[83] and WMP Guidelines,[84] Cal Advocates and other stakeholders have made suggestions to streamline and otherwise improve the process of developing and reviewing the plans. Before the start of a new cycle is the ideal time to revise this process, and Energy Safety should engage with stakeholders soon to develop mutually agreeable process revisions in time to incorporate changes into the 2023 comprehensive WMP submissions.

Cal Advocates appreciates that Energy Safety has announced a workshop on WMP guideline development this month and looks forward to participating. This workshop will provide an important opportunity for stakeholders and utilities to determine lessons from the prior WMP cycle and to consider improvements for the next three-year cycle. For example, the WMP approval process employed by Energy Safety has changed in each of the past three years, and it is not clear at present under what circumstances Energy Safety would reject a WMP.

As a second example, at present there has been no functional differentiation between the comprehensive three-year WMP filings and the annual WMP updates. In fact, 2022's WMP update filings were each substantially longer than the 2020 and 2021 comprehensive filings they were intended to update. Clarifying the differences between comprehensive and update filings could lighten the load of WMP submissions and reviews for all parties involved.[85] This could potentially enable quicker review and approval for the "update" WMPs in future years.

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[82] Public Utilities Code Section 8386(b) states that "in its discretion, the division may allow the annual submissions to be updates to the last approved comprehensive wildfire mitigation plan; provided, that each electrical corporation shall submit a comprehensive wildfire mitigation plan at least once every three years."

[83] See *Comments of the Public Advocates Office on the 2021 Wildfire Mitigation Plan Updates of the Large Investor-Owned Utilities*, March 29, 2021, pp. 42-65, included here as Attachment A.

[84] See *Comments of the Public Advocates Office, Mussey Grade Road Alliance, and The Utility Reform Network on the Draft 2022 Wildfire Mitigation Plan Update Guidelines, Docket #: 2022-WMPs,*

[85] *Comments of the Public Advocates Office on the 2021 Wildfire Mitigation Plan Updates of the Large Investor-Owned Utilities*, March 29, 2021, pp. 47-49 and Appendix D.

As a third point, Energy Safety should stagger the comprehensive filing years so that the electric utilities do not all file comprehensive WMPs in the same year.[86] This would benefit the utilities through simplifying the submission process in update years, and benefit stakeholders who are currently undertaking review of six full WMPs every year.

Fourthly, Energy Safety should revise the WMP submission schedule to emphasize proactive planning. The current schedule can be improved, as currently WMPs are approved several months into the year (the 2022 schedule envisions final action statements on large IOUs in June and small IOUs in September).[87] Utilities should submit WMPs earlier, so that the plans can be reviewed and approved before they are in progress. If the planning year (the period covered by the WMP) remains the calendar year, then the utilities should submit WMPs in August or September, which would allow Energy Safety to issue action statements by December.[88]

Finally, public participation on wildfire mitigation issues (including the annual WMP review process and quarterly reports) has been declining. Energy Safety should seek ways of encouraging greater participation by non-utility intervenors and members of the public.

Cal Advocates submitted comments on WMP schedules and guidelines along with our comments on the 2021 WMPs.[89] Most of our recommendations remain relevant, and Cal Advocates encourages Energy Safety to review those comments.

Convening workshops is a positive step, and provides an opportunity to collaboratively develop a longer-term schedule for the full three-year WMP cycle. Energy Safety should ensure that the schedule includes adequate time both for stakeholder participation and for Energy's Safety's own review and approval. The workshops should identify stakeholder concerns, discuss areas of improvement, and to solicit stakeholder proposals. To create a comprehensive record, this should include a written workshop report followed by comments and reply comments.

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[86] *Comments of the Public Advocates Office on the 2021 Wildfire Mitigation Plan Updates of the Large Investor-Owned Utilities*, March 29, 2021, pp. 44-45.

[87] Office of Energy Infrastructure Safety, *Final 2022 Wildfire Mitigation Plan (WMP) Update Guidelines*, December 15, 2021. See Attachment 5: Guidelines for Submission and Review of 2022 Wildfire Mitigation Plan Updates, pp. 5-6.

[88] *Comments of the Public Advocates Office on the 2021 Wildfire Mitigation Plan Updates of the Large Investor-Owned Utilities*, March 29, 2021, pp. 42-44 and Appendix C.

[89] See Attachment A: Excerpt from the *Comments of the Public Advocates Office on the 2021 Wildfire Mitigation Plan Updates of the Large Investor-Owned Utilities*, March 29, 2021, pp. 42-65.

Energy Safety should then release a staff proposal and provide an opportunity for stakeholders to file comments and reply comments on the staff proposal. This should occur on a timeline that allows Energy Safety to adopt final guidelines by September 2022. Adopting the final guidelines by September 2022 is necessary to provide adequate time for utilities to make adjustments while developing their next comprehensive WMPs, especially if the submission schedule is moved forward as recommended above.

IX. CONCLUSION

Cal Advocates respectfully requests that Energy Safety adopt the recommendations discussed herein.

Respectfully submitted,

/s/ ***Carolyn Chen***

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April 11, 2022

ATTACHMENT A

Excerpt from the
Comments of the Public Advocates Office on the 2021 Wildfire Mitigation Plan Updates of the Large Investor-Owned Utilities

March 29, 2021

STATE OF CALIFORNIA GAVIN NEWSOM, *Governor*

PUBLIC ADVOCATES OFFICE

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

March 29, 2021 **Via Electronic Mail**

Caroline Thomas Jacobs, Director
Wildfire Safety Division
California Public Utilities Commission
San Francisco, CA 94102
Wildfiresafetydivision@cpuc.ca.gov

Subject: Comments of the Public Advocates Office on the 2021 Wildfire Mitigation Plan Updates of the Large Investor-Owned Utilities

Dear Director Thomas Jacobs,

The Public Advocates Office at the California Public Utilities Commission (Cal Advocates) respectfully submits the following comments on the 2021 Wildfire Mitigation Plan Updates of Southern California Edison Company (SCE) and San Diego Gas & Electric Company (SDG&E), as well as general wildfire mitigation issues. Please contact Nathaniel Skinner (Nathaniel.Skinner@cpuc.ca.gov) or Henry Burton (Henry.Burton@cpuc.ca.gov) with any questions relating to these comments. We respectfully urge the Wildfire Safety Division to adopt the recommendations discussed herein.

Respectfully submitted,

/s/ ***Carolyn Chen***

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about the same rate on its detailed ground inspections of transmission towers: about one high-priority finding for every 100 structures inspected.[156], [157], [158]

The fact that PG&E's climbing inspection program could identify findings that are undetectable from the ground strongly suggests that the other utilities should consider implementing similar programs, or at a minimum conduct a study of whether climbing inspections would be effective in detecting issues undetected by ground and aerial inspection.

The WSD should consider these findings and establish a working group to consider the efficacy of deploying climbing inspections in conjunction with aerial and ground inspections of transmission structures. This would allow the WSD to determine if climbing inspections should be a mandatory component of WMPs. If the working group concludes that climbing inspections are worthwhile, it should also consider the appropriate inspection cycles.

VI. RECOMMENDATIONS FOR FUTURE WMP GUIDELINES

A. The WSD should modify the WMP schedule to encourage more proactive planning.

The current WMP submission and review schedule is infeasible. While only in its third year, the WMP cycle has progressively grown in complexity and volume by the year. These additional developments inevitably compress timeframes for meaningful review and resolution of the year's WMPs.

Going forward, the WSD should modify the WMP submission schedule to encourage more proactive planning by the IOUs. Effective and meaningful planning should occur in advance of implementation. However, the current WMP schedule has the utilities submitting plans during the same year when implementation is already underway, with the result that the plans may be approved or denied halfway through the plan implementation year. Currently, the earliest timeframe for the WSD to act on the large utilities' WMPs is in May, with Commission ratification in June.[159] This is only two or three months before the peak wildfire season.

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[156] In 2020, PG&E performed 61,606 detailed ground inspections of transmission structures, including those at lower voltages than 500 kV. PG&E identified 620 Priority A and B work orders as a result of those inspections, or about one high-priority issue for every 100 transmission structures inspected.

[157] PG&E Response to CalAdvocates-PGE-2021WMP-02, Question 6.

[158] Attachment 2 of PG&E Response to CalAdvocates-PGE-2021WMP-10, Question 11.

[159] Wildfire Safety Division, WMP updated schedule guidance, providing updates to Tables 1 and 2 in WSD-011 Attachment 3, January 22, 2021.

Should the WSD or other stakeholders find flaws or deficiencies in a WMP, the current schedule provides little time for the utility to revise and adjust its mitigation activities. The WSD should consider requiring the utilities to submit their WMPs in the third or fourth quarter of the year prior to the year covered by the plan. This would provide the WSD and stakeholders a meaningful opportunity to review and revise plans well in advance of wildfire season.

Cal Advocates recommends that the WSD hold a workshop to consider alternative schedules for the submission and review of WMPs. The goal should be to correct the issue of reviewing plans that are already being implemented. Additionally, the WSD and stakeholders should work toward a schedule that is workable for all parties and provides meaningful opportunities for course correction when needed.

Cal Advocates provides two alternative calendars for the WSD's consideration (see Appendix C for details). Calendar A would keep the submission date approximately the same but change the period covered by each WMP. With this approach, the "planning year" covered by each WMP would run from July of a given year through the following June. The utilities would submit WMPs at the beginning of February for the period beginning July 1. As it does now, the WSD would review WMPs in the spring and issue determinations (including any required changes) at the beginning of May.

Calendar B would have the utilities submit WMPs around August 1st of each year. The plans would cover the year beginning the following January. This would allow the WSD and stakeholders to review and analyze the plans five months before the implementation year begins. The WSD would issue its evaluations, and approve or deny the plans, around November 1.

An August 1 submission date is workable. For one thing, the utilities could submit quarterly data reports for the second quarter in early August, as well. This would allow stakeholders to evaluate each utility's mitigation efforts in the first half of the current calendar year as part of the WMP review process. This is important because many wildfire mitigation activities (such as inspections and vegetation management) should occur in the first half of the year.

Additionally, an August 1 submission would allow intervenors to perform most WMP-related analysis and discovery in August and September, prior to the months of October to

January when most de-energization events occur.[160] De-energization events and the related post-event reports demand staffing resources for both utilities and intervenors.

In Appendix C, Cal Advocates offers proposed schedules for the WMP review process, for both Calendars A and B described above. The dates listed are approximate.[161] For simplicity of presentation, these calendars omit reply comments, which should be scheduled 14 days after each set of comments.

Either Calendar A or B would provide sufficient time to revise or improve the plans if the WSD or stakeholders identify concerns, or if the utilities identify errata, during the course of the review. Each possible schedule has its own logistical obstacles that would need to be weighed against the benefits of reviewing plans further in advance of a given wildfire season. The WSD and interested parties should discuss those benefits and obstacles in a workshop immediately after this WMP review cycle, ideally in May or June 2021.

B. The WSD should create a process for determining whether each utility needs to submit a comprehensive WMP in the subsequent year.

The WSD should establish a process to evaluate whether each utility should submit a comprehensive WMP or an update in the subsequent year. This decision should depend on each utility's level on the Maturity Model and progress in wildfire mitigation.

The WSD should set a date in the summer for all stakeholders (including the utilities) to submit comments on this issue. The WSD should then issue direction to each utility at least four months before the next annual submission is due.

Certain types of problems should generally require a utility to submit a new comprehensive WMP in the following year. For example, if a utility's most recent WMP has major or numerous deficiencies, then an annual update is not appropriate. If the WSD's Compliance Branch identifies serious or numerous instances of non-compliance with the approved WMP, or the utility's equipment causes a major wildfire, or the utility experiences an

[160] According to Table 11 of the large IOUs' Non-spatial Data Tables, only three PSPS events occurred during Quarter 3 of 2020, out of 20 events over the course of the entire calendar year. Ten events occurred in the fourth quarter and seven events occurred in the first quarter.

[161] Any dates that fall on a weekend or holiday would roll over to the following business day.

unusual number of worker fatalities and injuries, then the utility should be required to submit a new comprehensive plan that discusses how the utility will remedy these problems.

C. The WSD should set a staggered schedule of comprehensive WMP submissions.

The WSD should move toward a schedule that has utilities submit comprehensive WMPs in different years. If all three large utilities submit comprehensive plans in the same year, it is very challenging for stakeholders and the WSD to thoroughly review the submissions.

The specific schedule of comprehensive WMP submissions should depend on the factors and the stakeholder input discussed in the previous section. However, in general, the WSD should aim to avoid having more than two large utilities submit comprehensive plans in the same year.

The next large utility to submit a comprehensive WMP should be PG&E. As discussed previously, the WSD should deny PG&E's 2021 WMP and require PG&E to resubmit within 90 days, which implies a submission in July or August 2021. Following a denial, PG&E's resubmission cannot be a continuation or "update" of PG&E's previous WMPs. It should be substantially new and refocused, to rectify the flaws in PG&E's current submission. Therefore, this must be a new, comprehensive plan. It should address the period from 2021 through December 2023.

Currently SCE and SDG&E are both required to submit comprehensive WMPs by 2023, since their current WMPs only address the 2020-2022 period.

Beyond these considerations, the timing of comprehensive WMP submissions will depend on whether the WSD adopts Calendar A or Calendar B, discussed above in Section A. For the moment, Cal Advocates offers the following recommendations.

1. Proposed schedule of WMP submissions with Calendar A.

If the WSD adopts Calendar A, we recommend that SDG&E submit a comprehensive WMP in early 2022, covering the period from July 2022 to June 2025.

SCE should submit an annual update in February 2022 (covering the period from July 2022 to June 2023), then a comprehensive WMP in February 2023, covering the period from July 2023 to June 2026.

Table G **Recommended Schedule of WMP Submissions** According to Calendar A			
Utility	**July 2021**	**February 2022**	**February 2023**
PG&E	**Comprehensive** (through 2023)	Update (through 6/23)	**Comprehensive** (7/23 to 6/26)
SCE	None	Update (through 6/23)	**Comprehensive** (7/23 to 6/26)
SDG&E	None	**Comprehensive** (7/22 to 6/25)	Update (through 6/25)

2. Proposed schedule of WMP submissions with Calendar B

If the WSD adopts Calendar B, Cal Advocates proposes the following schedule of submissions.

Table H **Recommended Schedule of WMP Submissions** According to Calendar B			
Utility	**July 2021**	**August 2022**	**August 2023**
PG&E	**Comprehensive** (through 2023)	Update (through 2023)	**Comprehensive** (2024-2026)
SCE	None	**Comprehensive** (2023-2025)	TBD
SDG&E	None	**Comprehensive** (2023-2025)	TBD

D. The WSD should hold workshops in summer 2021 to develop revised WMP guidelines.

The WSD should convene a series of workshops or working group meetings in summer 2021 to consider improvements to the WMP guidelines. The WSD, the utilities, and other

stakeholders should work together to develop WMP guidelines that meet everyone's information needs. The goals should be:

a) To differentiate the content of comprehensive three-year WMP submissions from the annual update submissions;

b) To ensure that WMPs provide pertinent and specific information; and

c) To ensure that WMPs are accessible and well-organized.

In Appendix D of these comments, Cal Advocates offers a straw proposal as a starting point for discussion.

1. The WSD and stakeholders should collaborate to develop a shortened WMP template for annual update submissions.

Currently, the WMP templates are the same for comprehensive three-year plans and for annual update submissions. The WSD should aim to create a shortened template for annual updates. This will make the WMP process less onerous for all stakeholders and avoid redundant review of the same information every year.

Some topics should be addressed in full detail in the annual updates. This includes cross-cutting issues such as resource allocation, the utility's approach to quality assurance, and how the utility is performing relative to the previous year's commitments. These topics are fundamental to the entire plan.

Other chapters should be presented in shortened form in the annual updates. In particular, the chapters on each mitigation initiative should focus on the changes since the utility's previous approved submission, rather than presenting a top-to-bottom description of the program. If a program has not significantly changed, the narrative in the annual update can be brief and stakeholders can refer to the most recent approved WMP.

Other chapters can be omitted entirely from annual updates. The WSD should identify chapters that are either unlikely to change substantially from year to year or are not as central to the overall strategy and execution of the WMP. For example, trends affecting wildfire risk is an important topic, but it is unlikely to dramatically change each year. In fact, it may be better to address this issue less frequently, because more new data will be available. Rather than making slight adjustments each year, it would be more informative to approach this topic with fresh eyes once every three years.

The annual updates should place particular focus on the utility's implementation progress.[162] In the annual updates, each utility should discuss its performance in the past year compared to expectations. The utility should identify and explain any meaningful changes in the scope, scale, or timeline of an initiative. Additionally, the utility should address how such deviations from the previous year's plan have influenced its planning for the upcoming years.

2. Stakeholders can collaborate to reorganize and clarify the WMP templates.

The current WMP templates are thorough and detailed. However, in some cases, closely linked topics are spread across multiple sections when it would be preferable to consolidate the discussion. For example, risk analysis is addressed in several sections of the WMP. The template should be revised to include a stand-alone chapter on risk analysis and modeling. The same is true of trends affecting wildfire risk.

By contrast, other topics are currently addressed in a broad, cross-cutting manner, but should be discussed in the sections on specific mitigation initiatives. Examples include emerging technologies, how the utility is addressing previously identified deficiencies, and the utility's plan for quality assurance and quality control. These issues should be addressed in each chapter, because the responses will differ for each mitigation initiative.

WMP Section 7 (Mitigation Initiatives) is currently lengthy, comprising numerous sub-sections and sub-sub-sections. This chapter should be split into separate chapters for each mitigation program area (e.g., system hardening, asset inspections, and vegetation management). Each mitigation program chapter should include:

- Key program metrics;
- Program commitments and vision for improvement; and
- A section on each initiative within the program area (first the mature initiatives, then the pilot or emerging technology initiatives).

For each initiative, the narrative should address the following issues:

a) Description of the initiative, including the risk factors it addresses;

b) Key metrics for evaluating the success of the initiative;

c) Output targets, timeline and budget, including how these have changed from the previous year;

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[162] See *Comments of the Public Advocates Office on the Wildfire Safety Division's August 2020 Workshops and Staff Proposals*, August 26, 2020, pp. 6-7.

d) How the initiative is guided by risk analysis and modeling;

e) Discussion of recent or expected implementation challenges;

f) Staffing and contracting requirements for the initiative;

g) Progress on remedying deficiencies previously identified by the WSD (currently in section 4.6); and

h) Quality control and quality assurance plan for the initiative, including how the utility will gauge the quality of work provided by contractors, if applicable.

E. Future WMP guidelines should require utilities to submit detailed workplans and data on mitigation work completed.

Currently, the WMP submissions tend to describe in general terms how programs will be implemented – for example, stating that a program is "risk informed." Such statements do not demonstrate that a utility is efficiently, expeditiously reducing risk. For the current year, the WSD should require the utilities to submit detailed workplans (see Section V.A above).

For future years, the WMP guidelines should require utilities to submit geographically granular data on mitigation work completed, risk levels, and planned mitigation work. Each utility should submit a spreadsheet listing each circuit or circuit-segment in its system (depending on how the utility currently performs risk analysis). For each circuit-segment, this spreadsheet should include basic attributes such as mileage, the risk score, the amount of wildfire mitigation work completed in previous years (disaggregated by HFTD tier as well as circuit-segment), and the amount of wildfire mitigation work planned for the year of submission (disaggregated by HFTD tier as well as circuit-segment).[163]

Such detailed workplans will be extremely useful for evaluating whether the utility has developed a feasible and effective plan to reduce wildfire risk. While a narrative may spend dozens of pages discussing how the utility's programs are informed by risk, a detailed workplan will reveal whether the utility has in fact prioritized its projects according to risk.

The WSD should convene a working group in summer 2021 to further develop these granular data requirements for future WMP submissions. One issue to be resolved is how to report outputs for system hardening projects that span multiple years (i.e., should the work be reported in the year when the project is started or finished?).

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[163] The data on completed and planned mitigation work should include each type of vegetation management, each type of system hardening, and any inspection types that are performed on a minority of circuit-miles each year.

F. The WSD should convene a workshop to standardize the criteria used for reporting inspection findings.

All the large utilities reported the number of findings that they identified as a result of inspections in HFTDs. However, Cal Advocates has found discrepancies when comparing each utility's reported number of findings. These discrepancies, when taken as a whole, make it impossible to directly compare the performance of the different utilities to each other, despite the use of a common template. Table I below is a comparison of the percentage of Level 3 (low potential impact to safety or reliability) findings[164] reported for each utility based on their respective WMP Table 1 submissions.

Table I
Percentage of all inspection findings that are Level 3

	2015	2016	2017	2018	2019	2020
PG&E	97.1%	97.3%	91.9%	93.1%	95.3%	92.9%
SCE[165]	41.5%	46.5%	43.1%	34.5%	55.6%	41.2%
SDG&E	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: PG&E, SCE, and SDG&E's WMPs, Non-spatial Table 1.

SCE's tracking of inspection findings is the simplest because it assigns priority levels that align with General Order 95 (Levels 1, 2, and 3).[166, 167] PG&E internally categorizes findings as Priorities A, B, E, and F. These priorities do not necessarily line up with Levels 1, 2, and 3 in General Order 95.[168] When reporting findings for WMP Table 1, PG&E reports all Priority B

[164] Pursuant to General Order 95, Rule 18B, Level 3 findings have "low potential impact to safety or reliability." Electric utilities are generally required to take corrective action within five years.

[165] SCE's Table 1 data for 2019 may include an error. A large number of Level 2 findings in 2019 were incorrectly entered as Level 3 when SCE completed Table 1. This would explain why SCE reports a larger percentage of Level 3 findings in 2019 than any other year.

[166] General Order 95, Rule 18B.

[167] SCE Response to CalAdvocates-SCE-2021WMP-09, Question 5, attachment "Mod1_Intro_New_ESI_Training_ODI_PPT," p. 12.

[168] Per General Order 95 Rule 18, Level 1 means an immediate risk of high potential impact to safety or reliability. Level 2 means any other risk of at least moderate potential impact to safety or reliability. Level

and E findings as Level 2.[169] Conversely, SDG&E does not treat any findings as Level 3. Instead, SDG&E internally categorizes findings as Level 1 (same as GO 95) and Level 2. However, SDG&E's policy is to resolve all findings within 12 months. As a result, SDG&E treats conditions that might otherwise be equivalent to GO 95's Level 3 as Level 2. Given the discrepancies in the reported data, Cal Advocates cannot use the figures from WMP Table 1 of the large utilities' WMP non-spatial tables to compare the number of minor findings across the utilities.

Similarly, data in WMP Table 1 on findings from detailed inspections is not comparable across the utilities because the utilities are reporting fundamentally different kinds of information. Table J below shows a comparison of critical (Level 1) findings for detailed inspections of distribution lines reported by the large utilities in their respective WMP Table 1 submissions.[170]

Table J
Level 1 findings from detailed inspections

	2015	2016	2017	2018	2019	2020
PG&E	3	6	1,067	239	352	1,868
SCE	2,163	3,146	3,114	2,834	4,144	2,680
SDG&E	242	100	50	45	24	14

Utility practices make this data incomparable. PG&E reports the number of electric corrective tags, which may combine several conditions identified at a location or structure. For example, if a guy wire, a cross arm and a fuse need to be replaced at the same pole, PG&E will report all of those issues as one combined finding in Table 1.[171] However, SCE reports each individual condition identified as a finding in Table 1. Therefore, the number of findings in

3 means any risk of low potential impact to safety or reliability.

[169] PG&E's 2021 WMP, p. 262.

[170] SCE numbers updated per CalAdvocates-SCE-2021WMP-09, Question 8.

[171] Additionally, PG&E's numbers are very low for 2015 and 2016 due to differences in how it recorded findings before inspection forms were digitized.

PG&E's Table 1 report will be far lower than what SCE would report for the same number of assets that require corrective action.

SDG&E's data differs in another way. SDG&E only includes finding from a single detailed ground inspection program, which inspects all distribution poles within the HFTD on a five-year cycle as required for compliance,[172] whereas PG&E reports on its enhanced ground inspections[173] and SCE includes four types of detailed inspections (including ground-based and aerial).[174] Again, these differences in reporting criteria makes it impossible to make like-for-like comparison across the utilities.

The differences mentioned above prevent any attempt to use the aggregated data in WMP Table 1 template to compare utility performance. A key component in applying a common template across all the utilities is the expectation that each utility is applying an identical set of criteria to the findings that need correction in their respective systems. If a common process or criteria is not used to fill out the WSD's templates, then stakeholders have no means to deduce which parts of California's electrical grid are in greatest need of remedial action or which utility's inspection methods are most effective.

Cal Advocates recommends that the WSD host a technical working group to bring all the utilities into alignment when reporting numbers of inspection findings.

G. The WSD should require utilities to disaggregate the costs of individual initiatives.

The large IOUs aggregate and report their costs differently, making it difficult to make meaningful comparisons across the large IOUs. The WSD should remedy this problem for future WMP submissions.

For example, PG&E combines the costs of several system hardening initiatives into one entry:

- "Updates to grid topology to minimize risk of ignition in HFTDs, System Hardening, Distribution" (program 7.3.3.17.1) aggregates the costs and the RSEs associated with covered conductor, undergrounding, and remote grids, rather than separating these into individual initiatives.[175]

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[172] SDG&E's response to data request CalAdvocates-SDGE-2021WMP-05, question 11, March 4, 2021.

[173] PG&E's response to data request CalAdvocates-PGE-2021WMP-12, question 4, March 10, 2021.

[174] SCE's 2021 WMP, Table 1, line 1.b.

[175] PG&E's 2021 WMP, pp. 548-563 and Table 12.

- All of PG&E's detailed transmission inspections (section 7.3.4.2), including ground, aerial, and climbing inspections, are similarly combined under one program.[176]

Combining costs in this manner makes it impossible to compare the costs and RSEs of aerial transmission inspections across utilities. This comparison would be useful to inform decisions about whether PG&E should perform more climbing inspections of transmission towers or should expand its aerial inspections to the distribution system (discussed in our comments on PG&E's WMP). Similarly, it would be useful to compare costs and RSEs of covered conductor installation across utilities; major cost differences are an issue we discuss elsewhere in these comments. The lack of comparable data also makes it impossible to determine the cost-effectiveness of various inspection or system hardening methods.

Moreover, it is unclear what many costs in PG&E's WMP represent. For example, PG&E's transmission hardening program (section 7.3.3.17.2) suggests that transmission inspection, maintenance, and sectionalizing devices are all included of this section.[177] However, the programs of transmission inspection,[178] maintenance,[179] and sectionalizing devices[180] each have their own sections and Table 12 cost lines, which implies that these costs are not included in the cost for the transmission hardening program.[181] Therefore, a program being mentioned or explained in detail in a specific section of the WMP does not seem to imply that program is included in the Table 12 costs associated with that section.

In addition, PG&E's crossarm maintenance section does not correspond to "a formal program."[182] PG&E suggests that the work and costs for this program are recorded as parts of other programs. This apparently means that informal programs, like crossarm maintenance, may have inaccurate cost information due to the costs possibly being attributed to other programs.

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[176] PG&E's 2021 WMP, pp. 588-591 and Table 12.

[177] PG&E's 2021 WMP, pp. 564-568.

[178] PG&E's 2021 WMP, section 7.3.4, pp. 582-622.

[179] PG&E's 2021 WMP, p. 533.

[180] PG&E's 2021 WMP, p. 492.

[181] The sum of costs for capital expenses and operating expenses in Table 12 are the same as PG&E's response to Data Request CalAdvocates-PGE-2021WMP-05, Question 2, February 26, 2021. This suggests that Table 12 costs are mutually exclusive.

[182] PG&E's 2021 WMP, p. 481.

Formal programs, like distribution or transmission maintenance, may likewise have inaccurate costs due to the costs of informal programs being removed from them.

The practice of aggregating costs under one program, unclear explanations of exactly what each entry in Table 12 represents, and the removal or inclusion of "informal" programs all complicate a meaningful analysis of PG&E's costs, and make cross-utility comparisons difficult, if not impossible.

The WSD should require all large IOUs to disaggregate combined costs into granular cost estimates wherever possible. Cal Advocates recommends that, for future WMP templates,[183] the WSD define specific program names and scopes in order to facilitate comparison across utilities. For example, a line item for "transmission inspections" could be disaggregated into patrol, detailed ground, detailed aerial, detailed climbing, and other inspections. The narrative sections in the WMP should also clearly correlate to the data tables, such that it is clear which programs or activities a single entry in Table 12 is associated with.

The revised WMP requirements should additionally clarify whether inspection programs include the costs of remediating equipment problems identified during inspections. As an example, SDG&E includes the cost of all repairs related to findings from its drone inspections program under that program.[184] Over half of the operating expenses and over 80 percent of the capital expenditures that SDG&E attributes to the drone inspection program are for repairs, not the cost of inspections themselves.[185] This results in the appearance that drone inspections are vastly more expensive than they actually are, which in turn makes it difficult to judge the relative value of various types of inspections. In fact, with this method of accounting, the more useful an inspection program is, the more it appears to cost. Therefore, the WSD should direct the utilities to identify the costs of performing inspections separately from the costs of repairs related to inspection programs.

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[183] See Cal Advocates' Straw Proposal for WMP Templates (Proposed Non-Spatial Table 13).

[184] SDG&E's responses to Data Request CalAdvocates-SDG&E-2021WMP-04, Question 7, March 4, 2021.

[185] SDG&E reports that $27.7 million of 52 million in 2020 operating expenses are attributable to repairs, and that $12.9 million out of $15.9 million capital expenses were likewise for repairs. SDG&E's responses to Data Request CalAdvocates-SDG&E-2021WMP-04, Question 7, March 4, 2021.

H. The WSD should require additional explanation of significant year-to-year changes in cost forecasts.

Accurate forecasts of future expenditures are vital to the development and implementation of utility WMPs, as they are used to help to inform decision-making through calculation of RSEs. Forecast expenditures can reasonably be expected to change over time as lessons are learned, plans are modified, and programs are expanded, competed, or phased out; however, those changes in forecast should be presented transparently and explained in context of the overall WMP. The WSD should require that future WMP update filings provide an explanation where forecast costs have substantially changed and should consider adopting a percentage threshold for this requirement.

The changes to forecast expenditures from the 2020 WMP occur across utilities, both in terms of individual initiatives and overall WMP spending. As discussed previously, several of SDG&E's forecast costs have increased substantially in its 2021 WMP Update as compared to the 2020 WMP forecasts. SCE has also increased its forecasted costs in some larger programs. Finally, PG&E's forecast of total WMP expenditures for 2021 has increased by more than 50 percent from the forecast provided in 2020.[186]

While there may be legitimate reasons to revise forecasts year over year, the WSD should require that the origin of the new forecast and reason for the change be transparent. Cal Advocates has previously recommended that "update filings should include not only the updated forecasts, but information on the change in forecasts between filings. This inclusion will further highlight the change between the 2020 filings and the 2021 updates."[187]

The WSD should engage stakeholders to develop an appropriate percentage standard threshold for what constitutes a "substantial change." As a starting point, Cal Advocates recommends setting a trigger where forecast costs for an individual program have changed more than 25 percent or $1 million. For each program, the higher threshold would apply, which would allow stakeholders to identify and focus on the most impactful changes. Likewise, the WSD

[186] In its 2020 WMP, PG&E forecast spending $3.19 billion in 2021. In its 2021 WMP update, PG&E forecasts spending $4.96 billion in 2021. See PG&E's responses to data request CalAdvocates-PGE-2021WMP-05, question 2, February 26, 2021; also PG&E's 2021 WMP, Table 12.

[187] *Comments of the Public Advocates Office on the Wildfire Safety Division's August 2020 Workshops and Staff Proposals*, August 26, 2020, p. 7.

should require additional scrutiny where forecast costs for the overall WMP have changed more than 15 percent.

Where these thresholds are met, utilities should report as much in their plan updates and explain the factors that drive the modification of their cost forecasts year over year. This will ensure that changes to cost forecasts in future WMP are addressed transparently within the context of the overall WMP.

I. The WSD should hold a technical working group to develop a unified approach to developing rate and bill impact estimates for the WMPs.

Section 3 of the WMPs addresses the costs of both utility-ignited wildfires and wildfire mitigation activities. The impact on customers is a serious concern and should be calculated in a manner that is transparent and consistent across utilities. However, these calculations are inherently complex and require utilities to make assumptions both in terms of inputs to be used and in how calculations are performed. The resulting metrics in Table 3-3 of each utility's 2021 WMP Update are inconsistently calculated and difficult to compare across utilities.

In its November 2, 2020 comments on Resolution WSD-011, Cal Advocates expressed concern with the implementation of these metrics and recommended that the WSD "convene a working group to develop a common methodology for calculating bill impacts, involving utility rate design experts, stakeholders, and the [Commission's] Energy Division."[188] Cal Advocates stated at the time that "without additional detail [on requirements for how metrics are calculated] or the development of a consensus methodology, utilities are unlikely to provide data that is useful or comparable."[189]

PG&E, SCE, and SDG&E each make varying assumptions in calculating these outcome metrics. PG&E provides the most thorough documentation of how these calculations were performed, outlining the assumptions it made to develop an estimate of the revenue requirements associated with the costs of both utility-ignited wildfires and wildfire mitigation activities; and

[188] *Comments of the Public Advocates Office on the Wildfire Safety Division's August 2020 Workshops and Staff Proposals*, August 26, 2020, p. 7.

[189] *Comments of the Public Advocates Office on the Wildfire Safety Division's August 2020 Workshops and Staff Proposals*, August 26, 2020, p. 7.

explaining the assumptions used to convert those revenue requirements into estimated bill impacts.[190]

The calculation of estimated revenue requirements is an illustrative example of the differing approaches to the calculation of these output metrics taken by the utilities. For the calculation of total increases in costs to electric ratepayers due to wildfire mitigation activities, PG&E's revenue requirement estimate includes both costs currently in rates and costs that have not yet been approved for recovery.[191] In contrast, SCE's estimated revenue requirement only includes costs that are currently in rates, and excludes any costs that have not yet been approved for recovery.[192] SCE's estimate of revenue requirement therefore obscures the probable extent of actual future bill impacts by excluding substantial portions of WMP-related costs from the calculation.

Cal Advocates recommends that these methodological differences be addressed in a technical working group, where utility and intervenor parties can develop a shared understanding of the intent behind the metrics and a common approach to their calculation. In addition to WMP stakeholders, the technical working group should include subject matter experts from the Commission's Energy Division and Cal Advocates who have substantial experience in performing similar estimation of forecast future rate and bill impacts. Prior to the next WMP update, the WSD should convene such a technical working group to address the standardization of calculations for the metrics in Table 3-3.

J. The WSD should modify the non-spatial data tables.

The non-spatial data tables are a rich source of information about the safety issues each utility faces and the mitigation programs it is undertaking. However, the WSD should make several changes to the non-spatial data tables to make them easier to use.

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[190] See PG&E 2021 WMP Update, pp. 40-44.

[191] PG&E's estimate of costs not currently in rates includes costs currently proposed in applications but not included in rates (using the proposed cost recovery periods from each application), and costs for which PG&E has not yet filed for recovery (using "assumptions around the recovery periods based on the expected timing of the applications") PG&E 2021 WMP Update, p. 44.

[192] SCE's revenue requirement estimate "[does] not include wildfire mitigation activity costs that are either still under review, that will be reviewed by the Commission for later cost recovery or are otherwise not currently included in customer rates." SCE 2021 WMP Update, p. 32.

1. The WSD should restructure the non-spatial tables to improve usability.

Several of the non-spatial tables should be restructured with more rows and fewer columns. For example, Table 7.2 (ignition causes) currently includes a separate column for each HFTD tier in each year. Instead, the table should include one column for each year and multiple rows for the different HFTD tiers. This would make it easier to sort and manipulate the data.

Additionally, in several non-spatial tables, the metric names include more than one piece of information. Each piece of information should be reported in a separate column, to facilitate sorting. For example, in Table 7.2, the first line is "Veg. contact – Distribution." The table should have separate columns for the risk driver (i.e., vegetation contact) and the circuit type (transmission or distribution). In Table 1 on inspections, the metric "Level 1 findings in HFTD for patrol inspections - Distribution lines" contains four pieces of information: level (severity) of finding, whether it was in an HFTD or non-HFTD area, the type of inspection, and whether it was a distribution or transmission circuit. These should be reported in four different columns.

In many of the columns, the utilities have left most cells in the left-hand columns blank. This inhibits readability and prevents the user from sorting the data.

Every table should include a "Utility" column. In each utility's submission, every cell should be identical. However, this simple change would enable the user to easily merge tables and compare utilities.

Additionally, the WSD should split Table 12 (program data) into two tables. Currently, Table 12 is large and cumbersome, because it includes both quantitative data and descriptive information. One table should include exclusively quantitative data about each program, including actual and forecast spending, actual and forecast program outputs, and risk-spend efficiency estimates. The other table should include the descriptive information, such as the risk factors that the program addresses, the relevant compliance requirements, and related proceedings.

2. The WSD should remove outcome metric forecasts from all WMP tables.

The WSD requires utilities to track outcome metrics, such as numbers of ignitions, outages, and de-energization events for past years, which is vital to analyzing the effectiveness of utility wildfire mitigation efforts. However, forecasting outcome metrics for future years is inherently speculative and provides little value in the WMP.

For example, in developing the forecast rate of future ignitions, SDG&E uses a rate of ignitions which declines year over year but is consistent across all quarters within a year.[193] The assumption that ignitions will be constant across seasons is unrealistic, as actual ignitions show a consistent seasonal variation. PG&E also makes dubious approximations of future ignitions.[194] In a similar vein, PG&E forecasts three PSPS events per year in 2021 and 2022, after having nine in 2019 and six in 2020.[195] However, PG&E's narrative predicts no change in frequency of PSPS over the next 10 years.[196]

These outcome forecasts are highly speculative, opaque in their reasoning, and ultimately provide little to no analytical value. The WSD should remove these outcome metric forecasts from the WMP data tables.

3. The WSD should modify WMP Table 1 to align with how utilities currently track inspections.

WMP Table 1, which reports the outcomes of utility inspection programs, is highly useful. However, Cal Advocates recommends a few improvements to better align with how the utilities actually track and quantify inspection work.

The 2021 WMP guidelines for Table 1 require that for each inspection type, the utilities report the number of findings by inspection type and level, and the number of circuit miles inspected.[197] For vegetation clearance findings, the utilities are required to report the number of spans inspected and the number of spans found to be non-compliant.[198]

However, current utility practice does not track these programs by circuit mile or span. PG&E, SCE, and SDG&E each track asset inspection programs by pole or structure rather than

[193] SDG&E assumes a rate of 7.114 ignitions per quarter in 2021, and 6.9062 ignitions per quarter in 2022. See SDG&E 2021 Attachment B, Table 2.

[194] PG&E's 2021 WMP, Attachment 1 – All Data Tables Required by 2021 WMP Guidelines sheet Table 2.

[195] PG&E's 2021 WMP, Attachment 1 – All Data Tables Required by 2021 WMP Guidelines sheet Table 11.

[196] PG&E's 2021 WMP, p. 865.

[197] Resolution WSD-011, Attachment 2.1, p. 16.

[198] Resolution WSD-011, Attachment 2.1, p. 16.

by mileage,[199] and vegetation management inspections by trees rather than by number of spans.[200] In this case, the reporting requirements should align with utility practices.

Converting into circuit miles or spans inspected requires utilities to manipulate the data, which introduces error and complicates the analysis without adding clarity. In order to complete the current template, each utility has discretion to determine an average span length, or similar metric, that is unique to its service territory in order to convert its recorded figures into an approximate value in Table 1. While average span lengths and average number of trees per circuit mile may be similar across utilities, this methodology requires an additional step by intervenors to verify the extent to which the reported figures are comparable.

Using the same units that the utilities track (assets and hazard trees) produces a straightforward reporting of facts, which can be cleanly compared across utilities, rather than a calculation subject to utility staff judgement. (It appears that all three large utilities are recording inspections in the same manner.) It eases the reporting burden on the utilities and is more accurate in conveying program results over time than the current figures which are converted to circuit mile or span.

Additionally, Table 1 asks utilities to report asset inspection data (miles inspections completed and number of inspection findings) by category: patrol, detailed, and other. These categories obscure the original data. Since multiple types of inspections are aggregated, it is impossible to tell which types of inspections are revealing critical safety problems. Moreover, the utilities do not all use the categories in the same way. For example, PG&E and SCE both reported intrusive pole inspections in the "other" category, but SDG&E omitted intrusive pole inspections from Table 1. SDG&E reported detailed ground inspections that are supplemental (more frequent than compliance requirements) as "other" inspections, while PG&E and SCE both categorized this type of inspection as "detailed."

The WSD should ask utilities to provide a separate line of data for each type of inspection performed, rather than aggregating data in categories. This would provide the clearest and most accurate data and would facilitate apples-to-apples comparisons across utilities.

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[199] See, e.g., PG&E 2021 WMP Update, p. 262; SCE 2021 WMP Update, non-spatial data Table 1; SDG&E 2021 WMP Update, p. 231.

[200] See, PG&E 2021 WMP Update, p. 629; SCE 2021 WMP Update, non-spatial data Table 1; SCE 2021 WMP Update, non-spatial data Table 1.

4. The WSD should structure WMP Table 12 to enable year-to-year comparisons of program performance.

WMP Table 12 currently includes program-specific data on spending and program outputs. For each program, this non-spatial table includes actual spending for 2020, forecast spending for 2021 and 2022, actual program outputs for 2020, and forecast program outputs for 2021 and 2022.

Table 12 should be modified to include all spending and output forecasts that were included in the previous year's WMP submission.[201] This information will allow the reader to easily see how the utility's forecasts are changing and how actual performance compares to forecasts.

As discussed previously in section V.H, it is informative to view how programs are performing relative to expectations. For example, if the utility's output forecasts have decreased substantially relative to the forecasts submitted a year ago, that may indicate that the program is performing poorly. If a program persistently underperforms relative to forecasts, it may indicate that a utility's forecasting is unrealistic, that the forecasting methodology is flawed, or that the utility suffers from weaknesses in the execution of its wildfire mitigation plan.

The utilities can easily include previous years' forecasts in WMP Table 12. By contrast, it is burdensome for members of the public to find the relevant document from the previous year and match up programs, especially when program names and numbers change frequently.[202]

To incorporate the previous forecasts discussed above while making Table 12 user-friendly, Table 12 should be structured with multiple rows for each program. Each row would indicate a program entry from a specific year's WMP submission. This format allows the user to filter and sort the spreadsheet as needed.[203] Table K below provides an example (completed as it would appear in 2022, with three years of program data submissions). Due to space constraints,

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[201] See *Comments of the Public Advocates Office on the Wildfire Safety Division's August 2020 Workshops and Staff Proposals*, August 26, 2020, pp. 6-7.

[202] If a program's scope has changed since the previous year, with the result that forecasts are not directly comparable, the utility should make a note of this and explain it in the WMP narrative.

[203] Showing all rows for a particular activity would enable easy comparisons of how both the utility's actual performance is evolving over time and how well the actual performance corresponds to the utility's forecasts. On the other hand, the user could focus on the current year's submission by filtering out rows that show data from previous submissions.

this sample shows only a few columns. However, the actual WMP Table 12 should include similar columns for all years: outputs, operating expenses, and capital expenditures.

Table K
Sample Table of Quantitative Program Data Structured to Allow Year-to-Year Comparisons

Initiative activity	WMP Submission	Forecast or Actual	2020 Initiative #	2021 Initiative #	2021 Initiative #	2020 output	2021 output	2022 output	2020 capital expend. ($ M)	2020 operating expenses ($ M)
Covered conductor installation	2020	Forecast	5.3.3.4.	7.3.3.3	18.2	200	250	300	$108.0	$12.0
Covered conductor installation	2021	Forecast	5.3.3.4.	7.3.3.3	18.2	200	500	600	$108.0	$12.0
Covered conductor installation	2022	Forecast	5.3.3.4.	7.3.3.3	18.2	200	500	200	$108.0	$12.0
Covered conductor installation	All	Actual	5.3.3.4.	7.3.3.3	18.2	180	190		$161.5	$14.1

K. The WSD should require utilities to discuss how they have addressed the root cause of recent catastrophic fires caused by their equipment.

In the past three years, utility-related fires have resulted in significant property destruction, injury, and death. Notable among these were the 2018 Camp Fire, the 2018 Woolsey Fire, the 2019 Kincade Fire, and the 2020 Zogg Fire.[204]

The large IOUs submitted lengthy 2021 WMPs totaling over 2,000 pages and describing their efforts in system hardening, vegetation management, asset inspections, and other programs designed to mitigate the risk of future catastrophic wildfires. However, these plans do not specifically address recent catastrophic fires that have affected communities. In order to raise the public's confidence that the utilities are meaningfully trying to prevent a recurrence of past tragedies, the WMPs should specifically address the root causes of recent fires, and list detailed

[204] CAL FIRE, *News Release: CAL FIRE Investigators Determine Cause of the Zogg Fire,* March 22, 2021: "After a meticulous and thorough investigation, CAL FIRE has determined that the Zogg Fire was caused by a pine tree contacting electrical distribution lines owned and operated by Pacific Gas and Electric (PG&E) located north of the community of Igo." https://www.fire.ca.gov/media/u2kh4nyd/zogg-fire-press-release.pdf

actions that the utilities have taken to prevent those causes from igniting another catastrophic fire.

The WSD should require IOUs to include in future WMPs a section discussing the root causes of recent catastrophic fires where a determination has been made by California Department of Forestry and Fire Protection (Cal Fire) or another investigatory agency that it was caused by utility equipment. In each case, the utility should describe the specific actions the utility plans to take to address these causes systemwide to prevent a recurrence. This section should only be required in the 3-year comprehensive plans, as it takes time for investigating agencies to determine whether a utility's equipment is the cause of a fire.

L. The WSD should direct utilities to submit ignition reports with future quarterly data submissions.

The Commission established reporting requirements for emergencies in Resolution E-4184 and established criteria to define reportable ignitions in D.14-02-015.[205], [206] When a reportable event occurs, the utility is required to report the incident to the Safety Enforcement Division (SED) immediately and then submit a more detailed report to SED within 20 days. The "twenty-day reports" provide useful and current information about utility-related ignition incidents.

The utilities should submit these twenty-day reports to the WSD and the WMP stakeholders. Allowing the WSD and stakeholders to review this information would serve the public interest by facilitating understanding of the current or emerging risks that affect each utility's infrastructure. The WSD should require electric utilities to include recent twenty-day reports in their future quarterly data submissions to the WSD. Each quarterly data report should include all twenty-day reports on ignitions occurring during that quarter. The first such submission should include all twenty-day reports on ignitions in 2020.

Utilities may need to redact customer names, addresses, and other personal information to protect confidential information. However, the utility should provide precise GPS coordinates for each ignition incident, if this information is not already included in the report. Additionally, for each incident, the utility should state whether it has received questions or requests for

[205] Resolution E-4184, pp. 13 and 17.

[206] D.14-02-015, *Decision Adopting Regulations to Reduce the Fire Hazards Associated with Overhead Electrical Utility Facilities and Aerial Communications Facilities*, p. C-2 to C-3.

information from any firefighting or law enforcement authority related to the possibility that its facilities ignited a fire, and if so, state which authority or authorities have requested information.

M. The WSD should use an advice letter process for WMP change orders.

In 2020, the WSD directed utilities to submit "change orders" on fixed schedules to "make adjustments" to WMPs when there is "demonstrable quantitative and qualitative justification for doing so."[207] The WSD provided criteria and guidelines for change orders.[208]

The change order process should be streamlined. The WSD should use an advice letter process for change orders, following the rules and procedures set out in the Commission's General Order 96-B. Advice letters must comply with prior statutory guidance and Commission orders, but utilities may submit advice letters at any time. General Order 96-B also provides timeframes for public input and a straightforward process for review and approval.

The WSD should direct utilities to submit change orders when needed, rather than on a fixed schedule. This will tend to space out change orders and avoid the burden that arises when utilities submit multiple substantial documents simultaneously. The WSD should permit the utilities to submit change orders any time after the Commission ratifies the approval of a WMP, except within the two months before the next WMP submission (at which point, any changes can be included in the next WMP submission). A utility should submit a change order as soon as it determines that a programmatic change is necessary.

The WSD can also set criteria for determining the appropriate advice letter tier for a change order. Most change orders should be treated as tier 2, including changes that meet any of the following triggers:

(a) Substantive changes in how an initiative is designed or how work is prioritized;

(b) Substantive changes in the goals of an initiative;

(c) More than a 15 percent deviation in a given initiative's outputs from the WMP forecast;

(d) More than a 15 percent deviation in expected spending on a particular initiative, relative to the WMP forecast;

(e) More than a three-month shift in the implementation timeline,

[207] Resolution WSD-001, pp. 32-33.

[208] Resolution WSD-001, pp. 32-34.

(f) Any new activities, where the new activity constitutes less than one percent of expected WMP spending for the year; or

(g) Termination of a WMP activity.

Small changes in a WMP activity that do not meet any of the triggers above should be treated as tier 1 advice letters.

The WSD should strongly discourage utilities from implementing major changes to a WMP through the change order process. This would include any of the following triggers:

a) Changes to overall wildfire mitigation strategy, risk modeling practices, resource allocation approach, or data governance;

b) Changes to specific initiatives that are not consistent with the overarching goals and strategy described in the most recent approved WMP;

c) More than a 40 percent deviation in a given initiative's outputs from the WMP forecast;

d) More than a 40 percent deviation in expected spending on a particular initiative, relative to the WMP forecast; or

e) New activities that constitute more than one percent of expected WMP spending for the year.

Major changes should require a higher burden of justification, including an explanation of why the change cannot wait for the next annual WMP submission. Any change order that meets one or more of the criteria above should be clearly labeled as a "major change order" and should identify which of the major change triggers it implicates.

Establishing these guidelines will ensure that utilities are accountable to their plans. Utilities should be held responsible to implement their approved wildfire mitigation plans, except when there are good reasons to make adjustments. These guidelines will also make the change order process more transparent and straightforward for all parties.

X. Appendix C: Proposed Calendars for WMP Submissions

A. Calendar A: WMP submissions in February for a WMP Planning Year of July 1 to June 30

Date	Utility Filing	Intervenor Filing	WSD Action	Comment/ WSD Response
February 1	**WMP**			Intervenors: 60 days WSD: 90 days
February 10	Q4 data			Integrated into WMP review
April 1		**Comments on WMPs & Q4 data**		
May 1			**Approval/denial of WMPs; Identification of deficiencies**	Utility response in 45 days
May 15	Q1 data			Intervenors: 30 days
June 15		Comments Q1 data		
June 15	Responses to WMP deficiencies			Intervenors: 30 days WSD: 50 days
July 15		Comments on responses to deficiencies		
August 5			Determinations re: responses to deficiencies	
August 15	Q2 data			Intervenors: 30 days
September 1	Annual compliance report			Intervenors: 45 days
September 15		Comments Q2 data		
October 15		Comments on compliance report		
November 15	Q3 data			Intervenors: 30 days
December 15		Comments Q3 data		

B. Calendar B: WMP submissions in August for a WMP Planning Year of January 1 to December 31

Date	Utility Filing	Intervenor Filing	WSD Action	Comment/ WSD Response
August 1	**WMP**			Intervenors: 60 days WSD: 90 days
August 10	Q2 data			Integrated into WMP review
October 1		**Comments on WMPs & Q2 data**		
November 1			**Approval/denial of WMPs; Identification of deficiencies**	Utility response in 45 days
November 15	Q3 data			Intervenors: 30 days
December 15		Comments Q3 data		
December 15	Responses to WMP deficiencies			Intervenors: 35 days WSD: 50 days
January 20		Comments on responses to deficiencies		
February 5			Determinations re: responses to deficiencies	
February 15	Q4 data			Intervenors: 30 days
March 1	Annual compliance report			Intervenors: 45 days
March 15		Comments Q4 data		
April 15		Comments on compliance report		
May 15	Q1 data			Intervenors: 30 days
June 15		Comments Q1 data		

XI. Appendix D: Straw Proposal for WMP Guidelines

Key for annual update submissions:

Green = the section should be complete in annual updates
Yellow = in annual updates, the section should explain changes from previous approved WMP submission
Red = the section can be omitted from annual updates

Wildfire Mitigation Plan Overview

Volume	Chapter #	Topic	Description	Current section numbers	Approx. length in full 3-year plans	Approx. length in annual updates
A: Overview	2	Executive Summary		0	15	10
	3	Persons responsible		1	5	5
	4	Adherence to Statutory Requirements		2	5	5
	5	Overview of WMP strategy and objectives	What is the utility's overall strategy for wildfire risk reduction? What specific objectives does the utility expect to achieve over the next 1, 3, and 10 years?	5.1 to 5.3	25	
	6	Costs and bill impacts	The methodology for estimating rate & bill impacts requires further development in workshops.	3	10	10
B: Foundations	7	Lessons from recent experience	Describe lessons and how the utility is adapting, based on (a) recent wildfires, (b) large PSPS events, (c) other safety lapses, and (d) successes and challenges in the implementation of WMP initiatives	4.1	15	5
	8	Current research proposals and findings	Description of research proposals, research projects currently underway, and findings, as currently specified in Section 4.4.	4.4	15	5
	9	Trends affecting wildfire risk	Combine several sections that relate to trends affecting wildfire risk, including cimate trends and drivers of ignition probability.	4.2, 4.3, 6.5, 6.6, 6.7	25	
	10	Risk analysis and modeling	A detailed description of each risk modeling product used to guide WMP initiatives, including data sources, modeling methods, validation methods, and validation results	4.3, 4.5 and 7.3.1	60	30
	11	RSE analytical methods	Detailed description of the methods the utility uses to estimate RSE scores for each program. If methods differ by program area, describe each method used.	???	20	
	12	Performance metrics		6.1 to 6.4	10	
C: Cross-cutting Issues	13	Resource Allocation Methodology	Explanation of how the utility makes decisions about allocating resources (including money, personnel, and management attention) among wildfire mitigation initiatives	7.3.8	7	7
	14	Addressing resource constraints	Explanation of how the utility is building resource constraints and operational constraints into its WMP. How does the WMP account for limited resources and foreseeable obstacles?	5.4, 7.1.C	18	18
	15	Implementation success	Detail performance relative to the prior year's commitments. See Table PG&E-7.2-1 at pages 353-363 of PG&E's WMP. Every utility should provide a similar table.	7.2	15	15
	16	Quality assurance strategy	Describe the utility's overall approach to ensuring consistency and quality of program delivery, including audit findings & quality control problems identified in the previous year.	7.2	15	15
	17	Data Governance		7.3.7	15	
D: Mitigation Program Details	18	Situational Awareness & Forecasting	See details below on how each mitigation chapter should be organized. Some topics (such as progress on deficiencies) that are currently presented at an overarching level should instead be addressed in the section on each initiative.	7.3.2	40	10
	19	Grid Design & System Hardening		7.3.3	60	15
	20	Grid Operations & Protocols		7.3.6	20	5
	21	Asset Management & Inspections		7.3.4	40	10
	22	Vegetation Management & Inspections		7.3.5	40	10
	23	Emergency Planning & Preparedness		7.3.9	25	5
	24	Stakeholder Cooperation & Community Engagement		7.3.10	25	5
	25	Public Safety Power Shutoffs		8	50	10
Appendices	26	Definitions				
	27	Glossary of acronyms and abbreviations				
	28	Confidentiality Declarations				
				Total:	**575**	**195**

Outline for Mitigation Program Chapters (e.g. System Hardening)	
Sub-section	**Description**
Key Program Metrics	
Program Commitments and Vision for Improvement (currently in Section 7.1)	
Mature initiatives	
A sub-section for each mature initiative: -- Mature Initiative 1 -- Mature Initiative 2 -- Mature Initiative 3 -- etc.	For each initiative, the narrative should address: (a) description of the initiative, including the risk factors it addresses; (b) key metrics for evaluating the success of the initiative; (c) program output targets, timeline and budget, including how these have changed from the previous year; (d) how the initiative is guided by risk analysis/modeling; (e) discussion of recent or expected implementation challenges; (f) staffing and contracting needs for the initiative; (g) progress on remedying deficiencies previously identified by WSD (currently in section 4.6); and (h) quality assurance plan for the initiative
Pilot or Emerging Technology Initiatives	
A sub-section for each emerging initiative: -- Emerging Initiative 1 -- Emerging Initiative 2 -- Emerging Initiative 3 -- etc.	For each initiative, the narrative should address: (a) description of the initiative, including the risk factors it addresses; (b) key metrics for evaluating the success of the initiative; (c) program output targets, timeline and budget, including how these have changed from the previous year; (d) how the initiative is guided by risk analysis/modeling; (e) discussion of recent or expected implementation challenges; (f) staffing and contracting needs for the initiative; (g) progress on remedying deficiencies previously identified by WSD (currently in section 4.6); and (h) quality assurance plan for the initiative

Non-Spatial Data Tables				
Table #	**Subject**	**Description / Recommended Changes**	**Current Table #**	**Include in Annual Updates**
1	Inspection findings: distribution, transmission, and vegetation	The utilities should include separate lines for each type of inspection they perform, rather than aggregating them into categories. The table should encompass all inspection types. Output data should be reported in its raw form (i.e., number of inspections performed) rather than converted to circuit-miles based on approximations. Restructure the table to make it sortable. Every cell should be completed. The metric names currently contain several types of information (e.g., level of finding, type of inspection, distribution/transmission, HFTD/Non-HFTD). Each piece of information should be provided in a separate column, to facilitate reability and sortability. There should be a "Utility" column, which will enable merging the tables to compare utilities.	Table 1	Yes
2	Adverse outcomes		Table 2	Yes
3	Additional Metrics		Table 3	Yes
4	Fatalities		Table 4	Yes
5	Serious Injuries	Add data on OSHA-recordable as well as OSHA-reportable injuries	Table 5	Yes
6	Weather patterns		Table 6	Yes
7	Outage data, by cause	Data on outages by cause and year. Move the ignition data from Table 7.1 to a separate table.	Table 7.1	Yes
8	Ignition data by cause and HFTD tier	Combine ignition data from Tables 7.1 and 7.2. Restructure the Excel sheet with a row for each combination of year and HFTD tier, which will allow filtering and sorting by HFTD tier. Eliminate forecast outcomes for future years.	Tables 7.1 and 7.2	Yes
9	Features of service territory (circuit miles, customers, etc)	Restructure the table to allow for filtering. Eliminate forecast outcomes for future years.	Table 8	No
10	Planned equipment additions and removals	Restructure the table to allow for filtering. Eliminate forecast outcomes for future years.	Table 9	No
11	Planned infrastructure upgrades by location	Restructure the table to allow for filtering. Eliminate forecast outcomes for future years.	Table 10	No
12	PSPS metrics	Eliminate forecast outcomes for future years	Table 11	Yes
13	Quantitative program data	Actuals and forecasts for spending, program outputs, and RSE estimates. This data should disaggregate activities as much as possible; for example, utilities should not combine costs for various types of inspections into one "inspection" program. This table should exclusively contain numerical entries, to facilitate sorting and filtering. Any comments, notes, and narrative should be provided in the next table.	Table 12	Yes
14	Qualitative program data: compliance info	For each program, information on targeted risk drivers, compliance requirements, related proceedings, memo accounts, and other notes	Table 12	Yes
15	Detailed circuit data and program outputs	Data on each circuit or circuit-segment, provided at the same level of granularity that the utility performs risk analysis. Circuit attributes including overhead and underground mileage in each HFTD tier, current risk score(s) from the utility's risk model, and risk ranking. Data on mitigations completed since 2018, at the circuit or circuit-segment level (similar to Cal Advocates' data request 01).	new	Yes
16	Detailed program workplans	Detailed list of projects to be completed in the coming year, at the circuit-segment level, for programs that touch a minority of HFTD circuit-miles (e.g. system hardening and vegetation management programs)	new	Yes