



April 11, 2022

**Via Electronic Mail**

Caroline Thomas Jacobs, Director  
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**Subject: Comments of the Public Advocate's Office on 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](mailto:Nathaniel.Skinner@cpuc.ca.gov)) or Henry Burton ([Henry.Burton@cpuc.ca.gov](mailto: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.

Sincerely,

/s/ ***Carolyn Chen***

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## I. INTRODUCTION

Pursuant to the Office of Energy Infrastructure Safety’s (Energy Safety) *Final 2022 Wildfire Mitigation Plan (WMP) Update Guidelines* (2022 WMP Guidelines),<sup>1</sup> the Public Advocate’s Office at the California Public Utilities Commission<sup>2</sup> (Cal Advocates) submits these comments on the 2022 Wildfire Mitigation Plan (WMP) Updates submitted by large investor-owned utilities (IOUs or utilities).<sup>3</sup> 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, San Diego Gas & Electric Company (SDG&E) submitted its 2022 WMP Update on February 11, 2022. Southern California Edison Company (SCE) submitted its 2022 WMP Update on February 18, 2022. Pacific Gas and Electric Company (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 the WMPs of PG&E, SCE and SDG&E, in that order. We provide comments applicable to all utilities in a separate document, also filed today.

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<sup>1</sup> 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.

<sup>2</sup> Hereinafter, the California Public Utilities Commission will be referred to as “the CPUC” in these comments.

<sup>3</sup> 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.

## II. TABLE OF RECOMMENDATIONS

Item	Utility	Recommendation	Section of these Comments
1	PG&E	Energy Safety should require PG&E to disaggregate its system hardening progress by the primary project motivator: wildfire risk, fire & emergency rebuild, and PSPS mitigation.	III.A.1
2	PG&E	Energy Safety should require PG&E to begin reporting on system hardening in these three categories in its quarterly data reports, beginning with the 2nd quarter of 2022.	III.A.1
3	PG&E	In its 2023 WMP, PG&E should create separate initiatives for the three system hardening categories (wildfire risk, fire & emergency rebuild, and PSPS mitigation), each with separate mileage targets and cost forecasts.	III.A.1
4	PG&E	Energy Safety should require PG&E to file detailed quarterly data reporting on its initiative to underground 10,000 miles, beginning in the 2 <sup>nd</sup> quarter of 2022. These reports should include actual progress toward mileage targets, project timelines, project cost estimates, updates on research and cost reductions, design specifications, and construction plans.	III.A.2
5	PG&E	Energy Safety should ensure that PG&E is fully and promptly reporting on its undergrounding projects in the quarterly data reports.	III.A.2
6	PG&E	PG&E should limit its undergrounding efforts to the riskiest 10 percent of its HFTD circuit-segments to maximize the benefit to Californians and PG&E's customers.	III.A.6
7	PG&E	Energy Safety should require PG&E to revise its 2022 WMP. Energy Safety should require PG&E to perform at least 80 percent of its undergrounding mileage each year in the riskiest 10 percent of its HFTD circuit-segments.	III.A.6

Item	Utility	Recommendation	Section of these Comments
8	PG&E	The preceding requirement should continue until PG&E has hardened at least 80 percent of its riskiest miles, has reduced the cost of undergrounding to \$2.5 million per mile or less, and has demonstrated that it can execute undergrounding projects in less than two years.	III.A.6
9	PG&E	Energy Safety should, prior to the 2023 WMP filings, develop criteria that would trigger a reevaluation of PG&E’s undergrounding initiative.	III.A.7
10	PG&E	Energy Safety should state that PG&E’s undergrounding program is only approved contingent on the utility consistently meeting specific success metrics and minimum performance criteria. If PG&E fails to meet such criteria, it must immediately pause its undergrounding program and submit a corrective action plan.	III.A.7
11	PG&E	Prior to the filing of the 2023 WMPs, Energy Safety should schedule a workshop and comments to develop metrics and performance criteria for PG&E’s undergrounding plan.	III.A.7
12	PG&E	Energy Safety should issue final metrics and criteria for PG&E’s undergrounding plan by October 1, 2022.	III.A.7
13	PG&E	Energy Safety should require PG&E to report on its performance on those metrics as part of each subsequent quarterly data report, starting with the report for the third quarter of 2022.	III.A.7
14	PG&E	Energy Safety should require PG&E to revise its 2022 WMP to address its poor asset inspection quality.	III.B.1
15	PG&E	PG&E should investigate the root causes of its high inspection failure rate and implement immediate improvements to its asset inspection programs.	III.B.1

<b>Item</b>	<b>Utility</b>	<b>Recommendation</b>	<b>Section of these Comments</b>
16	PG&E	PG&E should report on its efforts to improve inspection quality in its 2023 WMP.	III.B.1
17	PG&E	Energy Safety should require PG&E to file a revision to its 2022 WMP, outlining a plan to remediate the existing maintenance notifications in its HFTD.	III.B.2
18	PG&E	PG&E should target the resolution of all overdue maintenance in its HFTD by the end of 2022.	III.B.2
19	PG&E	In its revised 2022 WMP, PG&E should describe a plan to ensure that no priority A or B notification will become overdue unless it does not present an ignition risk.	III.B.2
20	PG&E	Energy Safety should require PG&E to report on open maintenance notifications in its quarterly reports, beginning in quarter 2 of 2022 and continuing indefinitely.	III.B.2
21	All utilities	Energy Safety should require quarterly reporting on open maintenance notifications of all IOUs, not just PG&E.	III.B.2
22	PG&E	Energy Safety should require PG&E to justify its significantly reduced vegetation management cost forecasts in its 2023 WMP.	III.C.1
23	SCE	Energy Safety should require SCE to immediately develop a plan for resolving its overdue maintenance backlog in a timely, risk-informed manner.	IV.A.1
24	SCE	SCE should remediate the most hazardous conditions ahead of the peak fire season this year, and the remainder as quickly as is operationally feasible, preferably by the end of 2022.	IV.A.1

Item	Utility	Recommendation	Section of these Comments
25	SCE	In its quarterly data report for the 2nd quarter of 2022, SCE should submit a method of sorting tags by hazard level, an updated listing of open maintenance tags, and a timeline for remediating the open tags.	IV.A.1
26	SCE	Energy Safety should direct SCE to report on its progress toward resolving overdue maintenance as part of each subsequent quarterly data report.	IV.A.1
27	SCE	Energy Safety should require SCE to submit a plan in its 2023 WMP to prevent the recurrence of an overdue maintenance tag backlog.	IV.A.1
28	SCE	Energy Safety should require SCE to identify C-Hooks during transmission inspections outside of the HFTD. SCE should submit a plan in its 2023 WMP.	IV.A.2
29	SCE	Energy Safety should require SCE to provide a plan to ensure consistent quality of work in its Hazard Tree Mitigation Program.	IV.B.1
30	SCE	SCE must explain the rate of non-compliance in the HTMP program and take steps to improve it in 2022.	IV.B.1
31	SCE	SCE should present a plan in its 2023 WMP to improve the HTMP compliance rate over the next three-year WMP cycle.	IV.B.1
32	SCE	Energy Safety should require SCE to clearly state in future WMPs how in-house and contract labor are used in vegetation management programs, along with SCE's reasoning for these staffing choices.	IV.B.2



Item	Utility	Recommendation	Section of these Comments
33	SCE	In its 2023 WMP, SCE should explain why its vegetation management quality control program is entirely staffed by contractors and whether the staffing approach chosen in 2019 remains appropriate.	IV.B.2
34	SCE	SCE should study and report on the potential benefits and drawbacks of bringing vegetation QC programs in house.	IV.B.2
35	SDG&E	Energy Safety should direct SDG&E to submit supplemental information that explains the large differences in its undergrounding cost forecasts, within 30 days of Energy Safety’s draft action statement on SDG&E’s 2022 WMP.	V.A.1
36	SDG&E	In each annual WMP filing, Energy Safety should require SDG&E to explain any substantial changes in the cost of initiatives	V.A.1
37	SDG&E	Energy Safety should require SDG&E to provide greater detail about undergrounding projects at shallower depths. SDG&E should submit a workplan of undergrounding projects that identifies the trenching depth and timeline.	V.A.2
38	SDG&E	SDG&E should report data on completed undergrounding projects as part of each quarterly data report, starting with the 2 <sup>nd</sup> quarter of 2022.	V.A.2
39	SDG&E	In its 2023 WMP submission, SDG&E should submit an undergrounding workplan that identifies trench depths and separates costs for undergrounding projects by depth level.	V.A.2
40	SDG&E	SDG&E should address how supply constraints will affect its 2022 timelines and targets for covered conductor installation.	V.A.3

Item	Utility	Recommendation	Section of these Comments
41	SDG&E	Energy Safety should direct SDG&E to submit a detailed workplan, within 30 days of Energy Safety’s action statement on SDG&E’s 2022 WMP Update, that demonstrates that SDG&E’s covered conductor goal is feasible.	V.A.3
42	SDG&E	Energy Safety should require SDG&E to provide greater detail on its maintenance of non-communicative remote-controlled switches	V.B.1
43	SDG&E	Energy Safety should require SDG&E to continue reporting on its asset management practices for SCADA switches in its 2022 quarterly reports.	V.B.1

**III. PG&E**

**A. Grid Design and System Hardening**

**1. Energy Safety should require PG&E to disaggregate its system hardening progress by the primary project motivator in its 2023 WMP.**

PG&E’s distribution system hardening program includes four categories of projects, which serve different purposes and have other substantive differences. PG&E states that its system hardening program “focuses on the mitigation of potential catastrophic wildfire risk caused by distribution overhead assets.”<sup>4</sup> To this end, PG&E’s management has targeted four categories for hardening:<sup>5</sup>

1. The top 20 percent of circuit-segments as defined by PG&E’s wildfire risk model;<sup>6</sup>
2. Fire and Major Emergency rebuild within High Fire Threat Districts (HFTD);

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<sup>4</sup> PG&E’s 2022 WMP, p. 537.

<sup>5</sup> PG&E’s 2022 WMP, p. 537.

<sup>6</sup> Circuit-segments (which PG&E also calls “circuit protection zones”) are ranked according to the 2021 Wildfire Distribution Risk Model (WDRM) v2 for System Hardening.

3. PSPS mitigation projects; and
4. Locations identified by PG&E's Public Safety Specialist team as presenting elevated wildfire risk.

These four project categories address different needs, and grouping them obscures key differences in work planning. PG&E should organize its system hardening program into three separate programs based on their purpose. (Cal Advocates recommends three programs, not four, because the first and fourth categories above are both aimed at mitigating wildfire risk in especially high-risk locations and so can reasonably be grouped.) Given that each program serves a different purpose, each should have its own planning methods, cost reporting, cost forecasts, and annual mileage targets.

PG&E's four project types (listed above) have important differences. The risk reduction, cost, and execution timeline of system hardening activities are not consistent across the four categories. System hardening work in the top 20 percent of circuit segments reduces a significant amount of PG&E's modeled risk per mile, as PG&E's estimated equipment risk is heavily concentrated in the top 20 percent of its HFTD circuit segments.<sup>7</sup>

In contrast, system hardening in fire rebuild locations reduces significantly less risk in the near term, as the reduced fuel load due to recent burning will be less likely to support a catastrophic wildfire.<sup>8</sup> System hardening in fire rebuild locations may be appropriate for pragmatic reasons of efficiency,<sup>2</sup> but the wildfire risk in the near term is likely to be relatively low.

Fire rebuild projects are also quite different from system hardening projects on high-risk miles. In addition to the difference in risk addressed, system hardening projects in fire rebuild

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<sup>7</sup> PG&E's equipment risk ranking of circuit segments, provided in response to data request CalAdvocates-PGE-2021WMP-19, contains 3635 segments. The top 20 percent comprises 727 segments. The cumulative total risk in the top 727 segments accounts for **73 percent of the total equipment risk** of all HFTD circuit-segments.

<sup>8</sup> While a wildfire may still start in such areas, the recent wildfire will have reduced fuel loads and therefore reduced the probability of a wildfire growing into a high-intensity, difficult-to-contain crown fire. See, for example, <https://www.nps.gov/articles/wildland-fire-spread-and-suppression.htm>

<sup>2</sup> Since PG&E has to build new electric infrastructure in these locations, it is efficient to build to a hardened construction standard. In this situation, the cost of hardening is the incremental cost of hardened relative to traditional electric infrastructure, rather than the full cost of a system hardening project.

Additionally, projects may be completed faster in wildfire rebuild areas. For example, planning and permitting may be expedited given the need to restore electric service.

areas can be completed for nearly \$2 million per mile less<sup>10</sup> and in nearly half the time<sup>11</sup> compared to system hardening projects in non-rebuild areas. Combining both such project types under one initiative obscures these important cost and time disparities between the project types.

Similarly, system hardening for the purpose of PSPS mitigation addresses a very different risk than system hardening performed in the top 20 percent of circuit-segments. Because PG&E has chosen to combine its presentation of these miles, despite the significant programmatic differences in these miles, it is difficult to determine to what extent PG&E is prioritizing wildfire risk, fire rebuild projects, and PSPS mitigation.

In order to improve transparency into PG&E's system hardening decisions and its progress in reducing risk, PG&E should separate its system hardening program into three different programs as discussed below (replacing PG&E's one program that comprises four project types).<sup>12</sup> PG&E should set targets, track miles, and report costs separately for each program. This will provide more accurate accounting of costs and timelines, which in turn will allow Energy Safety and stakeholders to assess the feasibility of PG&E's future goals.

System hardening projects should be categorized by the primary motivation:

1. Wildfire risk, including the top 20 percent of circuit segments and locations identified by the Public Safety Specialist team as presenting elevated wildfire risk,
2. Fire and Major Emergency rebuild within HFTD, and
3. PSPS mitigation projects.

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<sup>10</sup> In response to data request CalAdvocates-PGE-2022WMP-17, question 10, PG&E provided a list of 172 undergrounding projects completed since January 1, 2020. For clarity, Cal Advocates filtered out all entries with incomplete data, or a mix of overhead and underground miles in the same project. This left a total of 157 fire rebuild projects and 2 base system hardening projects.

Cal Advocates calculated the per-mile costs for each project. Cal Advocates limited this analysis to include only the electric costs (some projects had non-electric costs attributable to other utilities sharing the trench). Across the 157 fire rebuild projects, the average per-mile cost was \$2.8 million. Across the 2 base system hardening projects, the average per-mile cost was \$4.8 million.

<sup>11</sup> This is based on the same data and analytical method described in the previous footnote (PG&E's response to data request CalAdvocates-PGE-2022WMP-17, question 10). Cal Advocates calculated the construction time for each project. Across the 157 fire rebuild projects, the average construction time was 105 days. Across the 2 base system hardening projects, the average construction time was 196 days.

<sup>12</sup> PG&E's fourth category is similar to the first, in that both are aimed at mitigating wildfire risk in especially high-risk locations. Therefore, the first and fourth categories can reasonably be grouped.

Categorizing projects in this way will provide insight into how much wildfire risk reduction PG&E is achieving with its system hardening projects. It's worth noting that PG&E already tracks its Butte County Rebuild project separately in its WMP; this change would bring the rest of its system hardening program into similar alignment.

When Energy Safety issues its action statement on PG&E's 2022 WMP, it should require PG&E to begin reporting system hardening progress in these categories in its quarterly data reports, beginning with the 2<sup>nd</sup> quarter of 2022. This could be achieved by separately reporting the costs and mileage in Table 12 of the quarterly data reports.

Then, beginning in its 2023 WMP, Energy Safety should require PG&E to create and track separate formal initiatives for the three system hardening categories listed above, each with separate mileage targets and cost forecasts. PG&E's inclusion of each of these initiatives as a separate line in Table 12 will provide greater insight into PG&E's goals, prioritization of system hardening work, and costs for system hardening.

**2. Energy Safety should require PG&E to file quarterly data reporting on its initiative to underground 10,000 miles, beginning in the 2<sup>nd</sup> quarter of 2022.**

In 2021, PG&E initiated a major increase in its system hardening efforts by announcing a plan to underground 10,000 miles of distribution circuits in HFTD areas at an overall cost of \$15 to \$20 billion, over about ten years.<sup>13</sup> <sup>14</sup>

In its 2022 WMP, PG&E states that, by the end of 2026, PG&E will have completed 3,645 circuit-miles of undergrounding.<sup>15</sup> PG&E expects "the unit cost of underground will decline over time through new standards for design and construction, bundling work in large

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<sup>13</sup> See PG&E press release, July 21, 2021, [https://www.pge.com/en\\_US/about-pge/media-newsroom/news-details.page?pageID=d2d2b20a-42da-4e8f-82a9-736e9c1f7265&ts=1648569272023](https://www.pge.com/en_US/about-pge/media-newsroom/news-details.page?pageID=d2d2b20a-42da-4e8f-82a9-736e9c1f7265&ts=1648569272023); *PG&E Aims to Curb Wildfire Risk by Burying Many Power Lines*, The New York Times, July 21, 2021, available at <https://www.nytimes.com/2021/07/21/business/energy-environment/pge-underground-powerlines-wildfires.html> ("Ms. Poppe said the utility hoped to get the per-mile expense down sufficiently to put the overall cost at \$15 billion to \$20 billion.").

<sup>14</sup> PG&E forecasts completing approximately 3,645 miles out of the 10,000 miles by 2026. In 2026, PG&E plans to complete 1,200 miles. Assuming a similar pace beyond 2026, the earliest the 10,000 miles would be completed is 2032.

<sup>15</sup> The 3,645 circuit-miles by 2026 includes 70 miles in 2021, 175 miles in 2022, 400 miles in 2023, 800 miles in 2024, 1,000 miles in 2025, and 1,200 miles in 2026.

packages, reducing project cycle times, and deploying new and innovative tools, equipment, and technology.”<sup>16</sup> PG&E hopes to reduce costs to an average of \$2.5 million per mile by 2026.<sup>17</sup>

PG&E has not, however, provided evidence to demonstrate that it will be able to meet these aggressive targets. In the two years since January 1, 2020, PG&E has completed approximately 128 miles of undergrounding,<sup>18</sup> of which 97 percent were in fire rebuild areas.<sup>19</sup> For the small number of non-rebuild projects completed during that time, the average cost was \$4.8 million per mile.<sup>20</sup>

In 2022, PG&E plans to complete 175 miles of undergrounding at a per-mile cost of \$3.75 million.<sup>21</sup> Given the current cost of undergrounding outside of rebuild locations, PG&E would need to implement significant improvements to its technology and processes in 2022 even to achieve its target of \$3.75 million per mile. Alternatively, PG&E would need to rely heavily on rebuild mileage, which can be performed more cheaply, but does less to mitigate near-term fire risk, as discussed earlier in these comments.

In the long term, PG&E is targeting a per-mile cost of \$2.5 million by 2026 but has not provided evidence that this is an achievable goal outside of fire rebuild projects. For PG&E to complete its goal of undergrounding 10,000 miles, it cannot rely on the reduced costs of fire

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<sup>16</sup> PG&E’s 2022 WMP, p. 535.

<sup>17</sup> PG&E’s 2022 WMP, pp. 528, 535.

<sup>18</sup> In response to data request CalAdvocates-PGE-2022WMP-17, question 10, PG&E provided a list of 172 undergrounding projects that undergrounded a total of approximately 128 circuit miles, completed since January 1, 2020.

<sup>19</sup> In response to data request CalAdvocates-PGE-2022WMP-17, question 10, PG&E provided a list of 172 undergrounding projects that undergrounded a total of approximately 128 circuit miles, completed since January 1, 2020. The projects labeled as “Fire Rebuild” sum to approximately 124 miles.

<sup>20</sup> In response to data request CalAdvocates-PGE-2022WMP-17, question 10, PG&E provided a list of 172 undergrounding projects completed since January 1, 2020. For clarity, Cal Advocates filtered out all entries with incomplete data, or a mix of overhead and underground miles in the same project. This left a total of 157 fire rebuild projects and 2 base system hardening projects.

Cal Advocates calculated the per-mile costs for each project. Cal Advocates limited this analysis to include only the electric costs (some projects had non-electric costs attributable to other utilities sharing the trench). Across the 157 fire rebuild projects, the average per-mile cost was \$2.8 million. Across the 2 base system hardening projects, the average per-mile cost was \$4.8 million.

<sup>21</sup> PG&E’s 2022 WMP, pp. 528, 535.

rebuild projects.<sup>22</sup> At its present costs for undergrounding, PG&E's plan would cost upwards of \$40 billion,<sup>23</sup> far more than its goal of \$15 to \$20 billion.

Moreover, PG&E is planning to implement undergrounding at a scale and pace unprecedented in California,<sup>24</sup> with limited evidence to demonstrate it can do so cost-effectively or at the pace it has proposed. Thus, such a project requires substantial transparency and accountability to demonstrate that PG&E can accomplish this feat effectively without unreasonably burdening ratepayers. To this end, PG&E needs to provide progress updates to Energy Safety and stakeholders more frequently than in the annual WMPs.

Energy Safety should require PG&E to submit additional reporting with its quarterly reports regarding its undergrounding efforts, beginning with the quarterly data report for the 2<sup>nd</sup> quarter of 2022. This quarterly reporting should include:

- PG&E's progress toward its annual mileage targets,
- Project timelines for each current project,
- The initial cost estimate (at the time of project launch) for each current project,
- An up-to-date cost estimates for each current project,
- Updates detailing its research and progress toward reducing costs, and
- Construction documents such as as-builts or design plans, contractor payment applications, and design specifications that PG&E is following.

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<sup>22</sup> By definition, fire rebuild projects occur where there recently has been a wildfire. While budgeting for some amount of wildfire rebuilding is necessary, it is not reasonable to rely on wildfires to dictate where system hardening occurs. A proactive strategy for risk management must include careful planning and permitting to perform projects in places with extreme wildfire risk.

<sup>23</sup> Per PG&E's response to data request CalAdvocates-PGE-2022WMP-04, Question 10, PG&E spent \$164.9 million in 2021 to underground 40.0 miles, for an average of \$4.12 million per mile.

<sup>24</sup> Per PG&E's response to data request CalAdvocates-PGE-2022WMP-03, Question 1, PG&E has undergrounded 1,726 miles across its entire service territory between 2018 and 2021, a pace of 431 miles per year. Only 239 of these miles were completed within HFTD.

Per SCE's response to data request CalAdvocates-SCE-2022WMP-03, question 1, SCE has installed a total of 5.8 miles of underground conductor between 2020 and 2021.

Per SDG&E's response to data request CalAdvocates-SDGE-2022WMP-03, question 1, SDG&E has installed a total of 57.9 miles of underground conductor between 2018 and 2021.

These documents will paint a clear picture for Energy Safety, the CPUC, and stakeholders of how PG&E completes an undergrounding project from start to finish, by providing costs for materials and labor, timeframes of completion, and methods of construction.

Energy Safety should also ensure that PG&E is fully reporting the extent of planned projects as part of the quarterly data reports. As we highlighted in comments on the quarterly data report for quarter 4 of 2022, PG&E is failing to report the extent of planned projects in an accurate and timely manner.<sup>25</sup> Thus, it is not possible to use the quarterly data to track the progress and rollout of undergrounding projects as they are currently reported by PG&E.

This increased transparency will enable Energy Safety and stakeholders to more effectively evaluate the progress PG&E is making toward its goals, and will provide transparency in the event that PG&E fails to meet its ambitious targets.

### **3. PG&E’s extensive undergrounding plan is speculative and may not be feasible at the pace it has proposed.**

PG&E’s 2022 WMP sets aggressive goals for its plan to underground 10,000 miles. By 2026, PG&E hopes to underground 1,200 miles annually, at a cost of \$2.5 million per mile.<sup>26</sup> PG&E has provided no evidence that it will be able to achieve these goals, and a failure to do so would lead to high costs and a slower reduction of wildfire risk than PG&E has proposed.

In PG&E’s 2022 WMP, PG&E provided an outline of its undergrounding process, which typically takes approximately 31 months from start to finish.<sup>27</sup> In 2021, undergrounding cost approximately \$4.1 million per mile.<sup>28</sup> Despite mitigating more risks than other system hardening methods,<sup>29</sup> these long lead times and high costs give undergrounding a relatively low risk spend efficiency (RSE).<sup>30</sup>

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<sup>25</sup> Comments of the Public Advocates Office on Pacific Gas and Electric Company’s Quarter Four (Q4) Quarterly Data Report, Docket #2021-SCs. February 15, 2022.

<sup>26</sup> PG&E’s 2022 WMP, pp. 528, 535.

<sup>27</sup> PG&E’s 2022 WMP, p. 533.

<sup>28</sup> Per PG&E’s response to data request CalAdvocates-PGE-2022WMP-04, Question 10, PG&E spent \$164.9 million in 2021 to underground 40.0 miles, for an average of \$4.12 million per mile. This includes all underground not completed as part of the Butte County rebuild.

<sup>29</sup> See, for example, Table PG&E-REMEDY-21-09-13 on p. 4.6-Atch1-51 of attachment “2022-02-25\_PGE\_2022\_WMP-Update\_R0\_Section 4.6\_Atch01.pdf” to PG&E’s 2022 WMP.

<sup>30</sup> Per attachment 2022-02-25\_PGE\_2022\_WMP-Update\_R0\_Section 7.3.a\_Atch04.xlsx to PG&E’s 2022 WMP, tab “RSE Results,” undergrounding has an RSE of approximately 4.4, while overhead hardening



PG&E aims to accelerate the pace of undergrounding to as many as 1,200 miles annually, while reducing costs to \$2.5 million per mile by 2026.<sup>31</sup> However, PG&E has not presented evidence that it will be able to achieve either of these goals. From 2018 to 2021, PG&E installed less than 60 miles per year of underground conductor in the HFTD, with a maximum of 109 miles in 2021.<sup>32</sup> There is no evidence to suggest that PG&E can underground over a thousand miles per year *within the HFTD* by 2026. In addition, PG&E’s forecasted cost reductions rely heavily on the development of unspecified new technologies and speculation that PG&E can leverage economies of scale, neither of which have yet been proven in California.

If PG&E cannot accelerate its pace of undergrounding substantially, while simultaneously reducing the cost year over year – and it has provided no persuasive evidence that it will be able to achieve either goal – then considerable ratepayer funds and utility staffing resources will be poured into a wildfire mitigation measure that is slow to implement and has a low risk-spend efficiency. The probable result of this initiative will be that PG&E spends more while eliminating less risk than it could by implementing and improving upon speedier and more proven methods, such as covered conductor, fast recloser settings, and enhanced vegetation management.

Until PG&E has shown it can meet its aggressive targets, it should narrowly focus its undergrounding efforts on the highest-risk parts of its system in order to maximize the benefit to Californians.

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has an RSE of approximately 7.56.

<sup>31</sup> Per page 528 of PG&E’s 2022 WMP, PG&E plans to underground a total of 3,645 miles by the end of 2026. 1,200 of those miles are to be installed in 2026; see also PG&E’s 2022 WMP, p. 535.

<sup>32</sup> Most of PG&E’s underground conductor installation is outside of the densely forested HFTD and not intended for wildfire mitigation purposes. Per PG&E’s response to data request CalAdvocates-PGE-2022WMP-03, question 1, PG&E installed 398 underground miles in 2018 (364 of which were outside the HFTD), 406 miles in 2019 (371 outside HFTD), 432 miles in 2020 (372 outside HFTD), and 490 miles in 2021 (381 outside HFTD). The total mileage in the HFTD is 238 miles for 2018-2021.

These numbers do not match those reported in PG&E’s WMP for its distribution system hardening initiative. Per PG&E’s response to data request CalAdvocates-PGE-2022WMP-10, question 7, “Please note, however, that this data includes ALL underground circuit-miles installed in 2021, including new assets installed underground as part of new business jobs, replacement of old underground circuits with new underground assets, and/or other projects that may not have related to the removal of existing overhead assets.”

#### 4. PG&E has not justified the scale of its undergrounding plan.

While PG&E discusses at length the purported benefits of undergrounding,<sup>33</sup> it does not explain why it chose 10,000 miles out of its 25,462 miles of HFTD distribution system as its long-term target.<sup>34</sup>

When considering the appropriate scale of a system hardening plan, it is crucial to bear in mind that wildfire risk is not spread evenly across PG&E's system. Instead, the wildfire risk is highly concentrated in a relatively small number of circuit segments. Even within the HFTD, some circuit segments pose a much greater risk than others.

For example, PG&E plans to underground 3,645 miles by the end of 2026.<sup>35</sup> If PG&E focused exclusively on the riskiest 3,645 miles of its HFTD, PG&E could eliminate over 40 percent of its *entire* equipment-related wildfire risk.<sup>36</sup> Yet 89 percent of these high-risk miles have not yet been hardened.<sup>37</sup> (To put this in perspective, SCE hardened nearly twice as many miles within its riskiest circuits *in 2021 alone* as PG&E ever has.<sup>38</sup>)

In short, if PG&E were to focus its undergrounding efforts solely in the highest-risk locations, it would be able to mitigate over 40 percent of its risk in the early years of its undergrounding program. It is unclear that the rest of the undergrounding proposal will reduce

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<sup>33</sup> PG&E's 2022 WMP, pp. 523-535.

<sup>34</sup> PG&E has approximately 25,462 miles of distribution lines in HFTD. PG&E's 2022 WMP, p. 63.

<sup>35</sup> PG&E's 2022 WMP, p. 528. The 3,645 miles includes undergrounding done in 2021.

<sup>36</sup> According to PG&E's 2021 risk models, the riskiest segments (which total 3,647 miles) constitute 42.5 percent of the total equipment risk in the HFTD.

Explanation: PG&E's equipment risk ranking of circuit segments contains 3,635 segments. Ranked by risk, the top 341 segments comprise 3,647 overhead HFTD miles, which is nearly equal to PG&E's undergrounding mileage target by 2026. Those 341 segments account for 42.5 percent of the total equipment risk.

Source: PG&E's response to data request CalAdvocates-PGE-2021WMP-19.

<sup>37</sup> As of February 2022, 3,235 miles out of 3,647 in the riskiest 341 segments are unhardened. PG&E's response to data request CalAdvocates-PGE-2022WMP-19, question 2. PG&E notes that "This data has not been fully audited and is a snapshot of our data."

<sup>38</sup> As noted in the previous footnote, PG&E has hardened 412 miles in the riskiest 341 circuit-segments.

SCE hardened 795 miles within the riskiest 10 percent of its HFTD circuits in 2021. Per SCE's response to data request CalAdvocates-SCE-2022WMP-03, question 1, SCE has 2,258 circuits with assigned risk scores. In the riskiest 10 percent (the top 226 circuits), SCE installed 792 miles of covered conductor in 2021.

enough wildfire risk to be worth the additional cost (especially compared to other system hardening methods which are more cost-effective and quicker to deploy). Outside of extremely high-risk locations, undergrounding is unlikely to constitute the most efficient use of ratepayer funds.

PG&E has not stated an intent to focus its undergrounding narrowly on the highest-risk portions of its system, however. PG&E's 2022 system hardening workplan shows that only about 40 percent of the planned 2022 undergrounding (71 out of 175 miles) will be located in the riskiest circuit-segments.<sup>39</sup> This demonstrates that PG&E may not be targeting its undergrounding to the highest-risk circuit-segments.

Meanwhile, PG&E plans to perform 342 miles of other types of system hardening on these high-risk circuit-segments,<sup>40</sup> which demonstrates that PG&E is able to mitigate the highest-risk circuit-segments using other system hardening methods which are typically faster to execute and cost less.

PG&E's plan has little justification for the scope of the 10,000 mile undergrounding project, and little evidence to support its projected cost decreases over time. Furthermore, it is not clear that this currently low-RSE effort will even target the highest-risk portions of its system.

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<sup>39</sup> Attachment "2022-02-25\_PGE\_2022\_WMP-Update\_R0\_Section 4.6\_Remedies 21-14\_Atch01\_CONF\_R1.xlsx" to PG&E's 2022 WMP includes system hardening work disaggregated by year and circuit segment for 2020 through 2024. The sum of the column headed "2022 Forecast Miles" is 646.5 miles. Note, while this document is marked confidential, the specific data referenced in PG&E's confidentiality notice are not used in our analysis or these comments.

Attachment "2022-02-25\_PGE\_2022\_WMP-Update\_R0\_Section 4.6\_Remedies 21-14\_Atch01\_CONF\_R1.xlsx" to PG&E's 2022 WMP includes system hardening work disaggregated by year and circuit segment for 2020 through 2024. Filtering column G to only show circuit segments with planned underground miles, and filtering column W to include only the circuit segments ranked 1-341, the sum of the column headed "2022 Forecast Miles" is 71.4 miles. Note, while this document is marked confidential, the specific data referenced in PG&E's confidentiality notice are not used in our analysis or these comments.

<sup>40</sup> PG&E's 2022 system hardening workplan includes 646.5 miles (including overhead and underground hardening). Of those, 413.0 miles are located within the top 341 circuit segments by risk. Only 71.4 miles of that is undergrounding on the riskiest circuit segments.

**5. PG&E’s undergrounding plan would substantially raise rates.**

PG&E’s rates are already rising at a staggering pace. Purely due to wildfire mitigation activities, the average *monthly* bill increased by \$11.63 in 2021, and is projected to rise another \$6.13 in 2022.<sup>41</sup>

Over the 2023-2025 WMP cycle, PG&E plans to more than quadruple its annual spending on undergrounding to \$2.75 billion.<sup>42</sup> In other words, the projected cost for undergrounding alone in 2025 is nearly *half* as much as PG&E’s total spending on its entire 2022 WMP.<sup>43</sup> If the costs of PG&E’s undergrounding initiative are approved in PG&E’s general rate cases, its undergrounding plan will only exacerbate the upward trend of bills, especially if PG&E cannot reduce future undergrounding costs as rapidly as it has projected.

**6. Energy Safety should require PG&E to focus its near-term undergrounding efforts on the riskiest 10 percent of its circuit-segments until it meets certain criteria.**

In the previous sections, Cal Advocates describes several major concerns about PG&E’s extensive undergrounding proposal.

- Undergrounding is a costly and slow method of mitigating wildfire risk.
- PG&E has not demonstrated that its undergrounding plan is feasible. Instead, PG&E relies on speculative claims about the future speed and cost of projects.
- PG&E has not justified the scope of its undergrounding plan.
- Despite the low risk-spend efficiency of undergrounding, PG&E has not indicated that its undergrounding efforts will be focused on the highest-risk portions of its distribution grid in the HFTD.
- If implemented, PG&E’s plan is likely to substantially increase electric bills for all customers, including low-income customers.

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<sup>41</sup> PG&E’s 2022 WMP, p. 42.

<sup>42</sup> Attachment “2022-02-25\_PGE\_2022\_WMP-Update\_R0\_Section 7.3.a\_Atch04.xlsx” to PG&E’s 2022 WMP includes RSE calculations for system hardening efforts. Tab “08W\_Cost\_Units” lists a forecast per-mile cost of \$3.75 million for undergrounding in 2022, and \$2.75 million in 2025. Multiplying these by the mileage targets listed on p. 528 of PG&E’s 2022 WMP, PG&E’s projected 2022 undergrounding costs are approximately 175 miles \* \$3.75 million per mile = \$656 million. PG&E’s projected 2025 undergrounding costs are approximately 1,000 miles \* \$2.75 million per mile = \$2,750 million.

<sup>43</sup> Per p. 39 of PG&E’s 2022 WMP, PG&E projects spending \$5,964 million to execute its 2022 WMP.

Given these difficulties with PG&E's undergrounding plan, Energy Safety should establish guardrails to ensure that PG&E remains intensively focused on reducing wildfire risk.

Until PG&E is able to demonstrate that it can effectively implement undergrounding at an increased pace and scale, and at a decreased cost, it should limit its undergrounding to the highest risk segments in order to maximize the benefit to Californians and PG&E's customers. Otherwise, there is a substantial risk of wasting resources on projects that do not yield public benefits commensurate with their costs, particularly as PG&E's 2022 WMP demonstrates that PG&E is performing much of this work on less risky parts of its system.

Energy Safety should require PG&E to revise its 2022 WMP and tightly focus its undergrounding initiative on reducing wildfire risk. Energy Safety should require PG&E to perform at least 80 percent of its undergrounding mileage each year in the riskiest 10 percent of its HFTD circuit-segments.<sup>44</sup> Focusing on the riskiest 10 percent is appropriate because these circuit-segments carry a disproportionate share of all risk in the HFTD. These high-risk circuit-segments constitute nearly half of the total wildfire risk on distribution circuits. In other words, they are about five times as risky as the average HFTD circuit segment.<sup>45</sup>

Requiring PG&E to concentrate on extremely risky locations is prudent. It will facilitate the prompt mitigation of the maximum wildfire risk in the riskiest portions of PG&E's system. This will also allow PG&E to complete a portion of its project while providing data on how it is improving the per-mile cost and construction time. Such a focus would provide the most feasible benefit to the public, even if PG&E is unable to meet its stated goals to increase the pace and reduce the cost of undergrounding.

Finally, this requirement should be carried through forthcoming years until PG&E has met certain criteria:

- PG&E has hardened (through undergrounding or other means) at least 80 percent of the miles in the riskiest 10 percent of its HFTD circuit-

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<sup>44</sup> Specifically, the riskiest 10 percent of circuit protection zones, when these are ranked by equipment risk score in the most current version of PG&E's Wildfire Distribution Risk Model.

<sup>45</sup> PG&E's equipment risk ranking of circuit segments, provided in response to data request CalAdvocates-PGE-2021WMP-19, contains 3635 segments. There are a total of 24,765 risk units in those segments, for an average per-segment risk of 6.8 risk units. The top 10 percent (about 364 segments) contains 11,287 risk units, for an average per-segment risk of 31 risk units.

The top 341 segments comprise 3,647 overhead HFTD miles.

segments. To date, PG&E has hardened about 15 percent of these miles.<sup>46</sup>

- PG&E has demonstrated that it can consistently perform undergrounding for \$2.5 million per mile or less. In 2021, PG&E spent an average of \$4.1 million per mile.
- PG&E has demonstrated that it can consistently execute undergrounding projects in an average of less than 24 months. PG&E currently has an average of 31 months.

These are all reasonable requirements to set. The first is a response to the distribution of wildfire risk on PG&E's system. The second is a goal PG&E has set for itself. The third would align the execution time for underground projects closer to that of overhead system hardening.<sup>47</sup> Once PG&E meets these criteria, Energy Safety, the Commission, and stakeholders can consider whether it is reasonable to expand the undergrounding program to other parts of PG&E's system in and near the HFTD.

Until PG&E has demonstrated that its ambitious plan is feasible and cost-effective, Energy Safety should require PG&E to limit its undergrounding to the highest-risk portions of its system to maximize the public benefit.

**7. Energy Safety should, prior to the 2023 WMP filings, develop criteria that would trigger a re-evaluation of PG&E's undergrounding initiative.**

PG&E's plan to underground 10,000 miles of distribution line is extraordinarily ambitious and relies on unproven assumptions. Cal Advocates has numerous concerns, discussed in detail earlier in these comments:

- The scale of the project may be much larger than is necessary to effectively mitigate wildfire risk, as PG&E's wildfire risk is highly concentrated in a relatively small number of circuit segments.

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<sup>46</sup> The 15 percent figure is approximate, because the data PG&E provided is incomplete. The data shows that the riskiest 364 circuit-segments (the top 10 percent) comprise a total of 3,622 miles (including both underground and overhead miles), of which 555 miles have been hardened to date. However, the data shows that the sum of hardened and non-hardened miles on these segments is 4,133 miles.

Data is drawn from PG&E's response to data request CalAdvocates-PGE-2021WMP-19, question 2. PG&E notes that "This data has not been fully audited and is a snapshot of our data."

<sup>47</sup> Per PG&E's 2022 WMP, p. 436, the typical duration for overhead system hardening projects is approximately 20 months. A performance target of 24 months would give a 20 percent additional buffer for undergrounding.

- PG&E projects significant cost decreases year over year from 2022 through 2026. These forecasted cost reductions rely heavily on the development of unspecified new technologies and speculative promises of leveraging economies of scale.
- PG&E’s cost forecast for undergrounding work in 2022 is not supported by the evidence of recent actual costs.
- While PG&E has stated a target of \$15 to \$20 billion for the full 10,000 miles, the actual cost may be much higher if projected cost reductions do not materialize.
- Alternatives to undergrounding, such as covered conductor and fast recloser settings, would be less costly and quicker to implement.

If PG&E is able to implement its undergrounding plan at its proposed pace and costs, it *may* be a prudent long-term wildfire mitigation measure. However, given the year-over-year cost increases of PG&E’s WMPs,<sup>48</sup> it is very possible that PG&E will fail to meet its targets, thus increasing the overall cost of the program, the overall implementation time, or both. Failing to meet its cost goals would substantially increase the burden to ratepayers, while failing to achieve the proposed pace of work would result in significantly less risk reduction each year than forecast, allowing hazards to persist in high-risk areas.

If PG&E is unable to meet its self-imposed targets, the goalposts may be moved year over year in each subsequent WMP filing, prolonging an already enormous capital project.<sup>49</sup> In order to avoid this scenario, Energy Safety should develop and adopt concrete performance standards PG&E must meet. If PG&E fails to meet these at any point in its undergrounding plan, Energy Safety should order PG&E to pause its undergrounding efforts and submit a corrective action plan to correct its course. This will allow Energy Safety a trigger point to potentially

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<sup>48</sup> In PG&E’s 2020 WMP, its projected WMP costs for 2020-2022 were \$9.7 billion (per data request CalAdvocates-PGE-2021WMP-05, question 2).

In PG&E’s 2021 WMP, its projected WMP costs for 2020-2022 were \$14.8 billion (per PG&E’s Revised 2021 WMP, p. 37).

In PG&E’s 2022 WMP, its projected WMP costs for 2020-2022 are \$15.2 billion (per PG&E’s 2022 WMP, p. 39).

<sup>49</sup> PG&E’s Q4 2021 earnings presentation (slide 9) states that by 2026 it plans to increase its capital expenditures from \$35 billion in 2017-2021 to \$53 billion in 2022-2026. This is a 51 percent increase in four years, which PG&E views as a benefit to its shareholders. Although not specifically broken out in the presentation, PG&E has attributed a lot of this growth to “undergrounding and other potential growth opportunities” with “even more opportunity ahead.”

<https://www.pgecorp.com/news/pdf/2021Q4EarningsSlides.pdf>

require PG&E to rethink, scale back or alter its undergrounding initiative. A trigger for reassessment is necessary given the extensive uncertainties in the plans PG&E has provided to date.

While Energy Safety has not set such stringent controls on other wildfire mitigation activities, no other mitigation activity proposes spending between \$15 and \$40 billion on a highly ambitious capital program.

Energy Safety should, in its action statement on PG&E's 2022 WMP, state unequivocally that PG&E's undergrounding program is only approved contingent on the utility consistently meeting specific success metrics and minimum performance criteria in its quarterly reports. If PG&E fails to meet such criteria, it must immediately pause its undergrounding program and submit a corrective action plan. Energy Safety should permit stakeholder comments 30 days after any such corrective action plan, followed by an action statement to be issued by Energy Safety.

Prior to the filing of the 2023 WMPs, Energy Safety should schedule a workshop to develop these metrics and criteria, with an opportunity for public comments and reply comments following the workshop. The workshop should be open to participation by utilities and stakeholders. Energy Safety should issue its final metrics and criteria by October 1, 2022, which will provide time for PG&E to take these criteria into consideration during the development of its next comprehensive WMP submission.

Lastly, once Energy Safety adopts success metrics and minimum performance criteria for PG&E's undergrounding plan, it should require PG&E to report on its performance on those metrics as part of each subsequent quarterly data report (starting with the report for the third quarter of 2022).

## **B. Asset Management and Inspections**

### **1. Energy Safety should require PG&E to revise its 2022 WMP to address its poor asset inspection quality.**

In 2021, PG&E's Quality Control (QC) reviews of asset inspections resulted in an alarming rate of failed reviews.<sup>50</sup> Table 1 shows that at least 13 percent of distribution

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<sup>50</sup> Per PG&E's response to data request CalAdvocates-PGE-2022WMP-08, Question 4, a "failed review" is one in which "the inspection record review indicates a compelling abnormal condition was mis-identified by the inspector, resulting in an incorrectly updated EC/LC [Electric Corrective/Line Corrective] notification, or failure to create an EC/LC notification."



inspections failed upon PG&E’s quality control inspections, while at least 8.5 percent of transmission detailed ground inspections (and possibly as much as 33 percent) failed QC.

Table A PG&E Asset Inspection Quality Control <sup>51</sup>				
	Desktop QC <sup>52</sup>		Field QC <sup>53</sup>	
	Inspections checked	Percent failed review	Inspections checked	Percent failed review
Distribution Detailed Inspections	46,280	13%	20,121	20%
Transmission Detailed Ground Inspections	8,093	33%	1,294	8.5%

Detailed asset inspections are a critical wildfire mitigation activity as they can identify impending equipment failures and allow the utility to pre-emptively remediate an issue prior to an ignition. However, inspections are only an effective wildfire mitigation if they are performed properly.

PG&E’s failure rate in QC implies that its asset inspections are not identifying a large number of problems. In its HFTD, PG&E performed 480,749 distribution detailed inspections and 26,826 transmission detailed ground inspections in 2021.<sup>54</sup> If each failed review represents even a single unidentified issue, PG&E’s inspectors may have missed anywhere from 64,778 to 105,002 issues in the HFTD in 2021.<sup>55</sup>

<sup>51</sup> PG&E’s response to data request CalAdvocates-PGE-2022WMP-12, Questions 2-10.

<sup>52</sup> Per PG&E’s 2022 WMP, p. 621, the Desktop QC process “included a review of checklist results and associated photos to ensure compliance with program/guidance documents and overall quality of inspections.”

<sup>53</sup> Per PG&E’s 2022 WMP, p. 623, the Field QC process “is performed in the field, at the location of the asset,” and “will be within one week of the date of the original inspection, which is the subject of the QC review.”

<sup>54</sup> PG&E’s 2022 WMP, pp. 270-271.

<sup>55</sup> Assuming the best-case failure percentages,  $0.13 \times 480,749 + 0.085 \times 26,826 = 64,778$  issues in HFTD missed. Assuming the worst-case failure percentages,  $0.20 \times 480,749 + 0.33 \times 26,826 = 105,002$  issues in HFTD missed.

Even minor issues, left unaddressed, can present an ignition risk, as noted by the Federal Monitor<sup>56</sup> in its November 2021 report.<sup>57</sup> Per its report, PG&E’s internal Asset Failure Analysis Team causally connected an ignition on June 16, 2021 to maintenance notification, which was 16 months overdue, that PG&E had identified as “low priority.”<sup>58</sup> In this case, the asset in question was last inspected on June 13, 2021.<sup>59</sup> The inspection report found no “damage or compelling abnormal conditions to report,”<sup>60</sup> despite the existence of the overdue maintenance tag for a “rotten, secondary crossarm.”<sup>61</sup> Three days after this inspection, the crossarm failed and caused an ignition. This incident highlights the severity of failures present in PG&E’s asset inspection program: an inspector identified no damage despite multiple prior inspections and an open overdue maintenance tag identifying the rotten crossarm.

PG&E’s asset inspection programs have suffered numerous failures in the past two years. In Cal Advocates’ comments on PG&E’s 2021 WMP, we identified numerous issues with PG&E’s management of contract inspectors, and with its failure to appropriately prioritize inspections to high-risk assets.<sup>62</sup> In addition, PG&E’s self-reports in 2021 identified missed

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<sup>56</sup> In 2016, PG&E was found guilty by a federal jury, of six felony violations related to the 2010 San Bruno explosion. *U.S. v. Pacific Gas and Electric Company*, N.D. Cal. Case No. 3:14-cr-00175, Doc. No. 1524-1, hereinafter Federal Monitor Report of November 19, 2021, Kirkland & Ellis LLP. The guilty verdict resulted in the imposition of a federal monitor and creation of the Federal Monitorship in 2017 to monitor PG&E’s Gas Operations and Compliance and Ethics program, and efforts to become a safer utility. *Id.* at 1. In late 2018 and early 2019, the Court expanded the scope of the Federal Monitorship to include an assessment of PG&E’s wildfire mitigation efforts. *Id.* at 1-2.

<sup>57</sup> Federal Monitor Report of November 19, 2021, Kirkland & Ellis LLP, p. 36.

<sup>58</sup> Federal Monitor Report of November 19, 2021, Kirkland & Ellis LLP, p. 36. The maintenance notification had been originally opened in August of 2019, with a due date in February of 2020.

<sup>59</sup> PG&E’s response to data request CalAdvocates-PGE-2022WMP-06, question 3.

<sup>60</sup> PG&E’s response to data request CalAdvocates-PGE-2022WMP-06, question 3, attachment “WMP-Discovery2022\_DR\_CalAdvocates\_006-Q03Supp01Atch04\_Redacted.pdf.”

<sup>61</sup> PG&E’s response to data request CalAdvocates-PGE-2022WMP-06, question 1, attachment “WMP-Discovery2022\_DR\_CalAdvocates\_006-Q01Supp01Atch01\_Redacted.pdf.”

<sup>62</sup> See *Comments of the Public Advocates Office on the 2021 Wildfire Mitigation Plan Update of Pacific Gas and Electric Company*, March 29, 2021, pp. 8-10.

inspections<sup>63</sup> and intrusive pole inspections that failed to accurately identify internal issues within poles due to the past use of cellon gas as a treatment method.<sup>64, 65</sup>

It is crucial that PG&E investigate the root causes of its high inspection failure rate (PG&E's 2022 WMP does not describe any such investigations) and implement immediate improvements to its asset inspection programs. The remedies may include:

- Identifying common inspection failures and then updating procedures and forms to specifically require inspectors to examine those common issues.
- Overhauling initial and refresher training for inspectors, with meaningful failure criteria.<sup>66</sup>
- Immediately removing inspectors from inspection duty when their failure rate exceeds a given threshold and requiring retraining.
- Performing quality reviews or reinspection of all recent inspections performed by inspectors who exceed a given failure threshold.
- In the near term, increasing the number of inspections that are subject to QC review.

Energy Safety should require PG&E to submit a revision to its 2022 WMP, detailing near-term and long-term improvements to its asset inspection programs, with the goal of substantially reducing the inspection failure rate in 2022. These improvements must be specific and quantifiable, and should be rolled out as soon as possible, throughout 2022.

PG&E should additionally report on its efforts to improve inspection quality in its 2023 WMP.

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<sup>63</sup> See PG&E's letter to the Wildfire Safety Division, titled *Voluntary Self-Identified Notification: GO 165 and WMP Enhanced Inspections*, May 7, 2021.

<sup>64</sup> See PG&E's letter to the Safety and Enforcement Division, titled *Safety Issue Notification: Cellon-Treated Wood Poles*, May 7, 2021.

<sup>65</sup> PPL Electric Utilities identified Cellon wood pole failure in 2010 and "high probability for excessive internal decay" and by 2016 had replaced over 2/3 of its Cellon wood poles.

<https://www.pjm.com/-/media/committees-groups/task-forces/trpstf/20160523/20160523-item-03-education-module-3-ppl-asset-management.ashx>

<sup>66</sup> For example, in our comments on PG&E's Revised 2021 WMP, Cal Advocates raised concerns with PG&E's vegetation management training, which allowed individuals to re-take knowledge checks as many times as needed in order to pass, with no tracking of pass/fail rates or number of attempts. See *Comments of the Public Advocates Office on Pacific Gas and Electric's (PG&E) June 3, 2021 Revision of its 2021 Wildfire Mitigation Plan Update*, June 10, 2021, pp. 22-23

**2. Energy Safety should require PG&E to aggressively target resolution of its maintenance backlog by the end of 2022.**

As Energy Safety noted in its Final Action Statement on PG&E’s 2021 WMP, “PG&E experienced increased corrective notifications for both distribution and transmission facilities.”<sup>67</sup> As of February 1, 2022, PG&E had 218,626 open maintenance notifications on its assets in HFTD.<sup>68, 69</sup> This equates to 7.7 maintenance tags for every mile of overhead distribution circuits and 3.6 tags for every mile of transmission circuits in the HFTD.<sup>70</sup> Of those tags, more than half were overdue, many for over a year.<sup>71</sup>

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<sup>67</sup> Resolution WSD-021, Appendix A, p. 67.

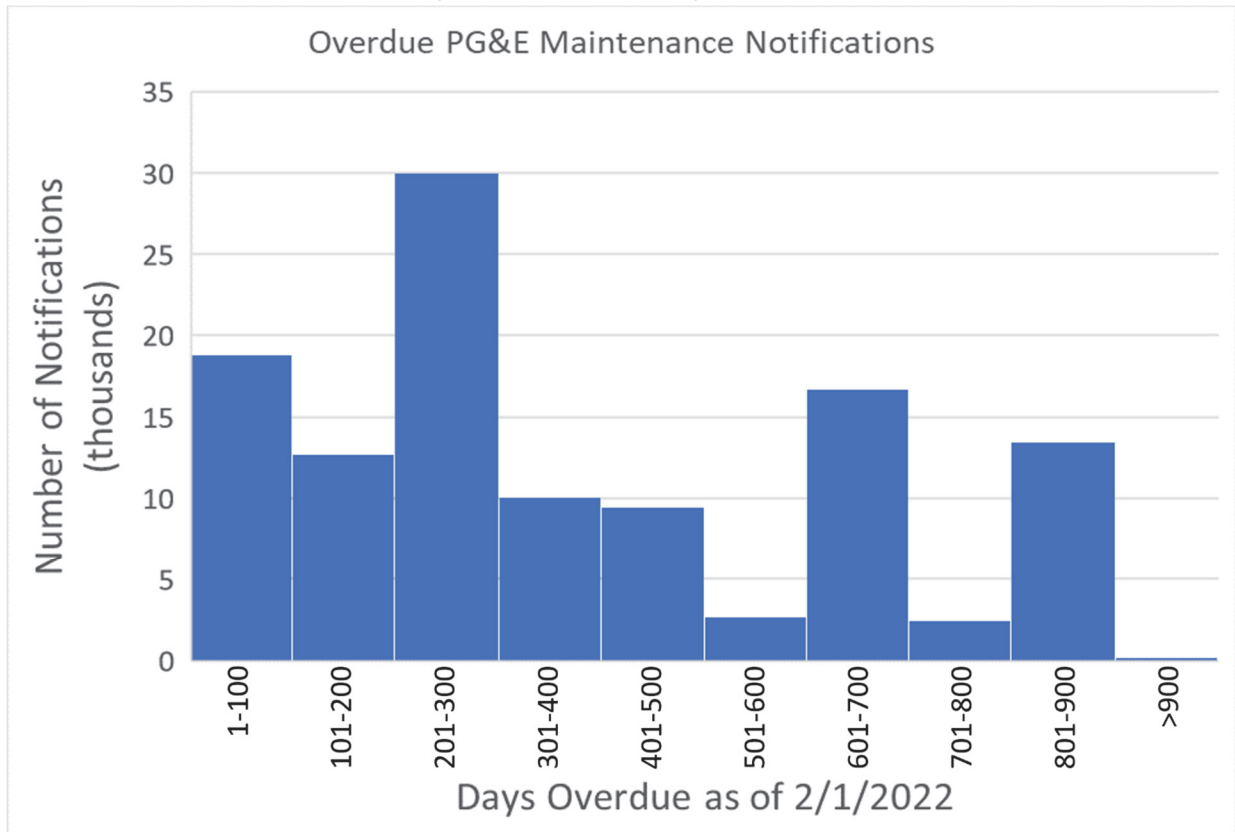
<sup>68</sup> All data on numbers of open maintenance notifications in this section are as of February 1, 2022.

<sup>69</sup> Per PG&E’s responses to data request CalAdvocates-PGE-2022WMP-09, questions 1-3, as of 2/1/2022 PG&E had 196,178 open maintenance notifications on its distribution system in HFTD, 20,933 on its transmission system in HFTD, and 1,515 on substations in HFTD.

<sup>70</sup> Per PG&E’s 2022 WMP, p. 63, PG&E has 25,462 miles of overhead distribution circuits in the HFTD and 5,866 miles of overhead transmission circuits in the HFTD.

<sup>71</sup> Per PG&E’s responses to data request CalAdvocates-PGE-2022WMP-09, questions 1-3, as of February 1, 2022, 111,502 of the open notifications on distribution had due dates prior to 2/1/2022, while 4,879 notifications on transmission and 149 notifications on substations had due dates prior to 2/1/2022.

Chart 1  
**Histogram Showing PG&E’s Overdue Maintenance Tags in the HFTD,  
 by Number of Days Late<sup>72</sup>**



While a significant majority of the open notifications were low priority,<sup>73</sup> it is nonetheless troubling that at least one of these overdue tags was originally opened on February 5, 2013, making it more than nine years old. As the Federal Monitor pointed out in its November 2021 report, even minor issues, left unaddressed, can present an ignition risk.<sup>74</sup> Per its report, PG&E’s internal Asset Failure Analysis Team causally connected an ignition in June 2021 to a low

<sup>72</sup> This histogram excludes Priority A notifications, which sometimes do not have specified due dates because they should be repaired or made safe immediately. The data is drawn from PG&E’s responses to data request CalAdvocates-PGE-2022WMP-09, questions 1-3, and is accurate as of February 1, 2022.

<sup>73</sup> Per PG&E’s responses to data request CalAdvocates-PGE-2022WMP-09, questions 1-3, 186,403 of the distribution notifications, 20,896 of the transmission notifications, and 1,490 of the substation notifications were prioritized as “E” or “F.” Per PG&E’s response to Issue 5.4.B in attachment “2022-02-25\_PGE\_2022\_WMP-Update\_R0\_Section 4.6\_Atch02.pdf” to PG&E’s 2022 WMP, priority E tags need to be addressed within 12 months, and priority F tags need to be addressed within five years.

<sup>74</sup> Federal Monitor Report of November 19, 2021, Kirkland & Ellis LLP, p. 36.

priority, but overdue, maintenance notification that had originally been opened in August 2019 with a due date in February 2020.<sup>75</sup> In addition to the June 2021 ignition, PG&E’s Asset Failure Analysis Team connected at least ten other equipment-caused ignitions with pre-existing maintenance tags in 2021.<sup>76</sup>

While PG&E monitors overdue maintenance by performing a Field Safety Reassessment for notifications that cannot be completed by the due date,<sup>77</sup> this is clearly not sufficient. As noted earlier in these comments, PG&E’s asset inspections are inadequate, with as many as one-third of inspections failing to pass quality control review. Reinspecting overdue maintenance through a process that has a high chance of failing to catch equipment issues will inevitably let issues slip through the cracks, leading to ignitions such as those that occurred at least 11 times in 2021. Furthermore, inadequate asset inspections can – and have – led to maintenance notifications being canceled in error without having been remediated.<sup>78</sup>

Furthermore, as the Federal Monitor noted, Field Safety Reassessments “divert resources away from enhanced inspections and execution of electric remediation work, and would, for the most part, be altogether unnecessary if PG&E were to address its asset repair tags in a timely way.”<sup>79</sup> It is unreasonable for PG&E to allow necessary maintenance to persist for up to nine

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<sup>75</sup> Federal Monitor Report of November 19, 2021, Kirkland & Ellis LLP, p. 36.

<sup>76</sup> “In 2021, the AFA [Asset Failure Analysis] 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. One of these ignitions was the June 2021 ignition identified in the Federal Monitor’s report. The reports from the Asset Failure Analysis Team for the other ten ignitions were requested by Cal Advocates, and PG&E has agreed to provide them once the reports have been finalized.

<sup>77</sup> Attachment “2022-02-25\_PGE\_2022\_WMP-Update\_R0\_Section 4.6\_Atch02.pdf” to PG&E’s 2022 WMP, p. 4.6-Atch2-13.

<sup>78</sup> In October of 2020, a priority B tag was opened as a result of an infrared inspection. It was inappropriately downgraded to a priority E tag in November of 2020, and was inappropriately closed in March of 2021. This issue led to an ignition in July of 2021. PG&E’s response to data request CalAdvocates-PGE-2022WMP-08, question 5, supplement 2, attachment 3. (The attachment to PG&E’s data request response is confidential, but the information included here is not confidential.)

In March of 2019, a priority E tag was opened for a damaged pole. It was canceled in February of 2021 with no work performed. This contributed to an ignition in July of 2021. PG&E’s response to data request CalAdvocates-PGE-2022WMP-08, question 5, supplement 3, attachment 1. (The attachment to PG&E’s data request response is confidential, but the information included here is not confidential.)

At least two other overdue maintenance notifications were “canceled in error” and reopened several years later. PG&E’s response to data request CalAdvocates-PGE-2022WMP-15, question 13.

<sup>79</sup> Federal Monitor Report of November 19, 2021, Kirkland & Ellis LLP, p. 37.

years unaddressed, and for ratepayers to fund re-inspections that would not be necessary if PG&E were to adhere to its own due dates.

In addition to the numerous low priority notifications, PG&E had 785 overdue priority B corrective notifications, which are supposed to be addressed within three months of identification,<sup>80</sup> on its distribution system in HFTD.<sup>81</sup> However, PG&E's current workplan would not remediate the last of these 785 notifications until the end of quarter 3 of 2022.<sup>82</sup> By that point, these maintenance problems will be more than eight months overdue.

Because of PG&E's failure so far to adequately address the staggering number of open maintenance notifications in its HFTD, immediate resolution is infeasible. PG&E has implemented a risk-based prioritization to address the large amount of existing and overdue maintenance in its HFTD, which is a step in the right direction.<sup>83</sup> Nevertheless, the current situation is unsustainable and presents real – and recently experienced – ignition risk.

Energy Safety should require PG&E to file a revision to its 2022 WMP, outlining its plan to remediate the existing maintenance notifications in its HFTD. In this revision, PG&E should state quantifiable goals and identify necessary actions to support those goals, such as hiring or assigning resources to achieve timely remediation of overdue maintenance. PG&E should target remediation of all overdue maintenance in its HFTD by the end of 2022. Alternatively, if this goal is infeasible, PG&E should be required to provide a sworn statement by an executive of the company that the maintenance notifications remaining at the end of 2022 will not present an ignition or public safety risk.

Furthermore, in its revised 2022 WMP, PG&E must outline the changes to its inspection and maintenance processes such that no priority A or B notification will be allowed to become overdue unless it can be definitively shown to not present an ignition risk.

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<sup>80</sup> Per PG&E's response to Issue 5.4.B in attachment "2022-02-25\_PGE\_2022\_WMP-Update\_R0\_Section 4.6\_Atch02.pdf" to PG&E's 2022 WMP, priority B tags need to be addressed within three months. Priority B corrective notifications represent higher-priority issues that should be remediated within three months. Priority A corrective notifications represent highest-priority issues that require immediate action.

<sup>81</sup> Per PG&E's responses to data request CalAdvocates-PGE-2022WMP-09, question 1, as of 2/1/2022 PG&E had 785 open priority "B" maintenance notifications on its distribution system in HFTD.

<sup>82</sup> PG&E's response to data request CalAdvocates-PGE-2022WMP-15, question 12.

<sup>83</sup> PG&E's response to data request CalAdvocates-PGE-2022WMP-15, question 13.

In order to track PG&E's progress, Energy Safety should require PG&E to report the number of open maintenance notifications in its quarterly reports, beginning in quarter 2 of 2022 and continuing indefinitely. PG&E should report the total number of open notifications and the number that are overdue, disaggregated by priority level and HFTD tier.

Energy Safety should consider requiring this additional quarterly reporting of all IOUs, not just PG&E. This information provides valuable insight into the condition of each utility's assets and the utility's ability to resolve operational challenges. Requiring regular reporting would create accountability for consistent and timely resolution of known problems.

### **C. Vegetation Management and Inspections**

#### **1. Energy Safety should require PG&E to justify its significantly reduced vegetation management cost forecasts in its 2023 WMP.**

Beginning in September 2021, PG&E began to transition the maintenance of previously completed Enhanced Vegetation Management (EVM) work into its Routine VM<sup>84</sup> program.<sup>85</sup> Beginning in 2023, PG&E expects that many aspects of the EVM program will be fully moved into the Routine VM program, including strike tree evaluation and hazard tree mitigation.<sup>86</sup>

Through its EVM program in 2021, PG&E evaluated potential strike trees using its Tree Assessment Tool, and selectively removed trees at risk of falling on PG&E's lines.<sup>87</sup> This work was performed on approximately 1,983 miles of HFTD distribution lines in 2021.<sup>88</sup>

Under the combined VM programs in 2023, PG&E will assess potential strike trees on its Routine VM patrols in the entire HFTD each year, across approximately 25,000 HFTD distribution miles.<sup>89</sup> In theory, this should result in significantly more potential strike trees remediated under the combined program than has been the case prior to 2023 under the lower scope of the separate EVM program.<sup>90</sup>

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<sup>84</sup> "VM" refers to vegetation management.

<sup>85</sup> PG&E's 2022 WMP, p. 637.

<sup>86</sup> PG&E's response to data request CalAdvocates-PGE-2022WMP-16, question 11.

<sup>87</sup> PG&E's Revised 2021 WMP, pp. 735-740.

<sup>88</sup> PG&E's Revised 2021 WMP, pp. 637.

<sup>89</sup> PG&E's response to data request CalAdvocates-PGE-2022WMP-18, question 1.

<sup>90</sup> PG&E's response to data request CalAdvocates-PGE-2022WMP-18, question 2.



However, despite this potentially significant increase in hazard tree remediation, PG&E projects spending approximately \$400 million less in 2023 compared to 2022 or 2021.<sup>21</sup> PG&E attributes this decrease in part to unspecified “efficiencies.”<sup>22</sup> While it is likely true that there will be cost benefits that result from combining vegetation management patrols, the \$400 million decrease represents a 30 percent decrease in VM spending from 2022 to 2023. Such a large decrease appears unrealistic considering that some 17,000 distribution miles will be assessed for potential strike trees for the first time in 2023.<sup>23</sup>

Furthermore, PG&E has stated that the strike tree assessments in 2023 as part of the Routine VM program may not utilize PG&E’s Tree Assessment Tool which has been developed over the prior years of EVM.<sup>24</sup> As such, it is unclear whether the strike tree assessments to be performed in 2023 will be of the same quality and consistency as those performed in 2021 or 2022.

Hazardous trees are a critical source of wildfire risk. In 2020 and 2021, Cal Fire determined that several catastrophic wildfires were started when trees fell on PG&E’s equipment. This includes the 2020 Zogg Fire which caused four fatalities<sup>25</sup> and the 2021 Dixie Fire which burned nearly one million acres, becoming the largest single-origin fire in California

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<sup>21</sup> Per PG&E’s response to data request CalAdvocates-PGE-2022WMP-15, question 16, PG&E’s total VM costs in 2021 were \$1,379 million. PG&E’s projected total VM costs in 2022 are \$1,371 million. PG&E’s projected total VM costs in 2023 are \$959 million, which is \$420 million less than it spent in 2021 and \$412 million less than it projects spending in 2022.

<sup>22</sup> “PG&E reduced its forecast to reflect its commitment to reducing the costs of its VM programs through efficiencies,” PG&E’s response to data request CalAdvocates-PGE-2022WMP-18, question 2.

<sup>23</sup> Per PG&E’s 2022 WMP, p. 63, PG&E has approximately 25,462 miles of distribution lines in HFTD. Per p. 277, between 2019 and 2021, PG&E completed a total of 6,359 miles of EVM, with another 1,800 planned in 2022.

<sup>24</sup> “While an updated Tree Assessment Tool (TAT) will be available, how and if it will be used as part or Routine VM patrols has yet to be determined.” PG&E’s response to data request CalAdvocates-PGE-2022WMP-18, question 1.

<sup>25</sup> “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.” CAL FIRE News Release, March 22, 2021.

history.<sup>26</sup> In 2015, a gray pine tree fell on PG&E’s power line and ignited the Butte Fire, which caused two fatalities and one injury, and burned nearly a thousand structures.<sup>27</sup>

Given this recent history, identifying and removing hazardous trees is essential. While vegetation management alone cannot mitigate all tree strike risk, the assessment of potential strike trees allows PG&E to potentially remove trees similar to those which started recent fatal wildfires. The one-third reduction in vegetation management expenditures in 2023, therefore, is concerning.

Energy Safety should require PG&E to explain in its 2023 WMP how its reduced vegetation management budget will still allow PG&E to effectively mitigate tree strike risk in its HFTD. This should rely on quantifiable and realistic projections, rather than vague assumptions of cost “efficiencies.”

#### **IV. SCE**

##### **A. Asset Management and Inspections**

##### **1. Energy Safety should direct SCE to immediately fix its overdue maintenance and develop a plan for resolving future overdue maintenance.**

SCE has a large amount of overdue but unresolved maintenance in HFTD areas.<sup>28</sup> As of February 1, 2022, SCE had a total of 35,431 open distribution maintenance tags and 4,776 open transmission maintenance tags within the HFTD.<sup>29</sup> SCE identifies two levels of priority for maintenance tags: Priority 1 tags must be remediated or made safe within 72 hours, while Priority 2 tags are considered lower risk and, therefore, must be resolved within six months in HFTD Tier 3, or 12 months within HFTD Tier 2. While relatively few of its open maintenance tags are classified as high priority, the backlog is nevertheless substantial. This equates to 3.7

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<sup>26</sup> “CAL FIRE has determined that the Dixie Fire was caused by a tree contacting electrical distribution lines owned and operated by Pacific Gas and Electric (PG&E) located west of Cresta Dam. ” CAL FIRE News Release, January 4, 2021.

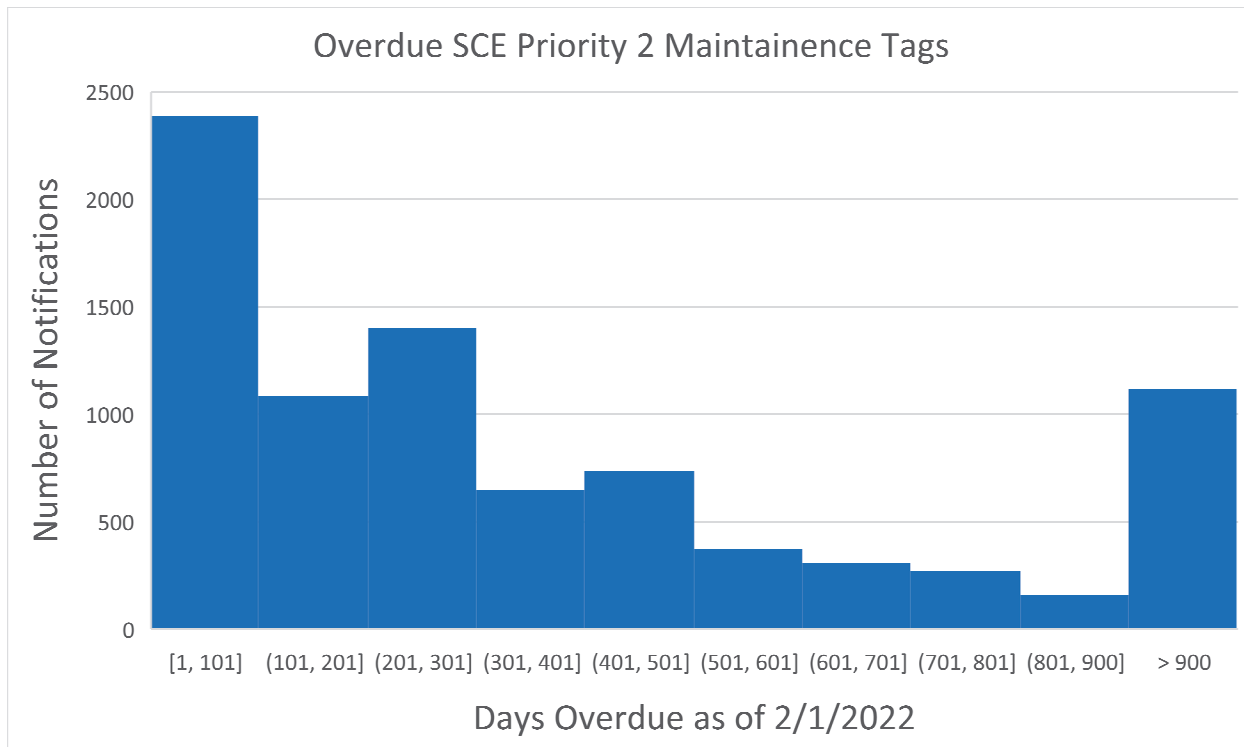
<sup>27</sup> CAL FIRE Investigation Report, Case Number 15CAAUEU024918, Butte Incident of September 9, 2015, pp. 4-5 and 16-17.

<sup>28</sup> All data on numbers of open maintenance notifications in this section are as of February 1, 2022.

<sup>29</sup> SCE’s supplemental response to DR CalAdvocates-SCE-2022WMP-05, questions 1 and 2, March 3, 2022.

maintenance tags for every mile of overhead distribution circuits and 1.1 tags for every mile of transmission circuits in the HFTD.<sup>100</sup>

Chart 2  
**Histogram Showing SCE’s Overdue Maintenance Tags in HFTD,  
 by Number of Days Late<sup>101</sup>**



Energy Safety should require SCE to promptly submit a plan to eliminate its overdue maintenance tags, starting with the most hazardous conditions. SCE should provide documentation of this plan in its next quarterly report, and provide updates in subsequent quarterly reports. SCE should also be required provide a plan in its 2023 WMP to prevent the future recurrence of an overdue maintenance tag backlog.

<sup>100</sup> SCE has 9,571 miles of overhead distribution circuits in the HFTD and 4,318 miles of overhead transmission circuits in the HFTD. This is drawn from SCE’s 2022 WMP, Table 8.

<sup>101</sup> This histogram excludes Priority 1 notifications, which often do not have specified due dates because they should be repaired or made safe immediately. It includes distribution and transmission maintenance tags. The data is drawn from SCE’s supplemental response to data request CalAdvocates-SCE-2022WMP-05, question 1 (submitted March 3, 2022), and is accurate as of February 1, 2022.

SCE identified 143 open Priority 1 distribution maintenance tags within the HFTD. SCE did not provide a due date associated with these tags, but indicated that as top priority issues, these tags should be immediately remediated or made safe.<sup>102</sup>

Table B Overdue Distribution Maintenance Tags <sup>103</sup>			
	Priority 1	Priority 2	Total Tags
HFTD Tier 2	49	1,623	1,672
HFTD Tier 3	94	3,550	3,644
HFTD Total	143	5,173	5,316

On distribution assets, SCE identified over 35,000 open Priority 2 maintenance tags within HFTD areas. Each of these includes a notification due date, and a total of over 5,100 tags (about one in six) were past this due date.<sup>104</sup>

Table C Priority 2 Distribution Maintenance Tags <sup>105</sup>			
	Overdue	Total	Percent of Total Overdue
HFTD Tier 2	1,623	19,547	8%
HFTD Tier 3	3,550	15,741	23%
HFTD Total	5,173	35,288	15%

<sup>102</sup> SCE's response to DR CalAdvocates-SCE-2022WMP-07, question 10, March 14, 2022

<sup>103</sup> SCE's supplemental response to DR CalAdvocates-SCE-2022WMP-05, questions 1 and 2, March 3, 2022.

<sup>104</sup> SCE's supplemental response to DR CalAdvocates-SCE-2022WMP-05, question 1, March 3, 2022.

<sup>105</sup> SCE's supplemental response to DR CalAdvocates-SCE-2022WMP-05, question 1, March 3, 2022.

On transmission assets, SCE identified no open Priority 1 tags, but reported nearly 4,800 open Priority 2 tags in HFTD areas.<sup>106</sup> Of these, about *two thirds* were past the due date identified by SCE.

Table D Priority 2 Transmission Maintenance Tags <sup>107</sup>			
	Overdue	Total	Percent of Total Overdue
HFTD Tier 2	1,406	2,453	57%
HFTD Tier 3	1,881	2,323	81%
HFTD Total	3,287	4,776	69%

Notably, some of SCE’s maintenance tags are severely overdue. For example, SCE has 282 Priority 2 tags on assets in the HFTD that have a due date in 2016 or earlier, meaning that these tags are more than *five years* overdue for remediation.<sup>108</sup> The oldest tag, with a due date in March 2012, is now ten years overdue.<sup>109</sup>

While SCE does appear to resolve many open distribution maintenance tags in a timely fashion, its backlog remains substantial. The transmission backlog is smaller overall, however it is concerning that nearly two-thirds of these tags are past due.

Unresolved maintenance can lead to serious safety hazards. SCE identified 99 CPUC-reportable ignitions in 2021 linked to assets that had pending maintenance tags.<sup>110</sup> SCE reported no structures burned or injuries associated with these ignitions, and most burned less than a quarter of an acre. However, SCE identified two significant wildfires linked to these assets with pending maintenance tags.<sup>111</sup>

<sup>106</sup> SCE’s supplemental response to DR CalAdvocates-SCE-2022WMP-05, question 2, March 3, 2022.

<sup>107</sup> SCE’s supplemental response to DR CalAdvocates-SCE-2022WMP-05, question 2, March 3, 2022.

<sup>108</sup> This includes 274 distribution tags and 8 transmission tags. SCE’s supplemental response to DR CalAdvocates-SCE-2022WMP-05, Q1 and Q2, March 3, 2022.

<sup>109</sup> SCE’s supplemental response to DR CalAdvocates-SCE-2022WMP-05, questions 1 and 2, March 3, 2022.

<sup>110</sup> SCE’s response to DR CalAdvocates-SCE-2022WMP-07, question 9, March 15, 2022.

<sup>111</sup> One fire was between 10 and 99 acres, and one was between 300 and 999 acres. No structures were burned and no injuries or fatalities were associated with these ignitions.

Of these 99 ignitions, nine are particularly concerning because SCE identified the cause as “equipment/facility failure” and there was an open Priority 1 or 2 tag at the time. This means that these ignitions were potentially preventable with timely maintenance.<sup>112</sup>

Given the scale of SCE’s backlog and the potential consequences of a preventable ignition, Energy Safety should require SCE to develop a plan for resolving this backlog in a timely, risk-informed manner. SCE should remediate the most hazardous conditions ahead of the peak fire season this year, and the remainder as quickly as is operationally feasible, preferably by the end of 2022.

First, Energy Safety should direct SCE to develop a method of sorting tags by hazard level, taking into consideration the priority level of the tag, how overdue it is, how likely the identified maintenance condition is to threaten public safety, and the estimated wildfire consequence at the location. SCE should be required to provide documentation of this methodology and an updated listing of open maintenance tags with its quarterly data report for the 2<sup>nd</sup> quarter of 2022 (which is due on August 1, 2022). SCE should also detail its plan and timeline for remediating the open tags.

Second, once SCE has developed this risk-informed plan for resolving overdue maintenance, Energy Safety should direct SCE to report on its progress as part of each subsequent quarterly data report.

Third, Energy Safety should require SCE to develop a plan to prevent the future recurrence of an overdue maintenance tag backlog within the HFTD and present this plan as part of its 2023 WMP.

**2. Energy Safety should require SCE to identify C-Hooks during transmission inspections outside of the HFTD.**

C-Hooks are outdated equipment and are known to present an unacceptably high risk of failure. In fact, a failed C-Hook was determined to have contributed to the ignition of the Camp Fire in 2018.<sup>113</sup> Accordingly, in comments on SCE’s 2021 WMP, Cal Advocates recommended

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<sup>112</sup> SCE’s response to DR CalAdvocates-SCE-2022WMP-07, question 9, March 15, 2022.

<sup>113</sup> “A Summary of the Camp Fire Investigation.” Butte County District Attorney, p. 2. Available at <https://www.buttecounty.net/Portals/30/CFReport/PGE-THE-CAMP-FIRE-PUBLIC-REPORT.pdf>

Per pp. 2-3 of this report, a C-hook supporting an energized line had worn through, allowing the line to contact the tower structure.

that SCE be required to “carry out inspections of its entire service territory to identify all C-hooks, starting with HFTD zones and proceeding to lower-risk areas.”<sup>114</sup> Energy Safety partially implemented this recommendation, ordering SCE to perform inspections of its HFTD territory to identify all C-hooks in HFTD zones, and to develop a plan for determining the condition of each of its existing C-hooks, or demonstrate that it has an existing plan that addresses C-hook replacements.<sup>115</sup>

In its 2022 WMP Update, SCE indicates that it began inspecting for C-hooks through its existing aerial inspection program in the HFTD in 2019 and provided a timeline for remediation of known C-hooks.<sup>116</sup> However, SCE does not have an inventory of C-hooks outside of the HFTD, and has not taken efforts to inventory them.<sup>117</sup>

Even outside of the HFTD, transmission line failure due to an aging C-hook would have substantial possibility of causing adverse safety outcomes. SCE should expand the steps it has undertaken to identify and remediate C-hooks within the HFTD to the rest of its territory. SCE can accomplish this by leveraging existing inspection programs on transmission assets to identify any remaining C-hooks outside the HFTD.

Energy Safety should direct SCE to include in its 2023 WMP a plan for identifying and remediating all C-hooks on its system.

## **B. Vegetation Management and Inspections**

### **1. Energy Safety should require SCE to provide a plan in its next WMP to ensure consistent quality of work in its Hazard Tree Mitigation Program.**

SCE’s Hazard Tree Mitigation Program (HTMP) is an enhanced vegetation management program which removes or remediates live trees that represent a significant fall-in or blow-in risk.<sup>118</sup> The program appears to have a significant level of Quality Control (QC) non-compliance, which may indicate inconsistency in how inspections are performed.

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<sup>114</sup> *Comments of the Public Advocates Office on the 2021 Wildfire Mitigation Plan Updates of the Large Investor-Owned Utilities*, March 29, 2021, p. 12.

<sup>115</sup> Energy Safety Final Action Statement on 2021 Wildfire Mitigation Plan Update – Southern California Edison, August 18, 2021, pp. 63-64.

<sup>116</sup> SCE’s 2022 WMP, pp. 333-334

<sup>117</sup> SCE’s response to DR CalAdvocates-SCE-2022WMP-10, question 4, March 24, 2022.

<sup>118</sup> SCE’s 2022 WMP, p. 425.

According to SCE’s WMP, the HTMP program applies a two-level assessment to determine which trees may represent a risk to SCE equipment and may require mitigation. SCE first performs a visual assessment of trees to determine whether they have the potential to strike SCE equipment. Trees identified in this initial assessment are then evaluated using SCE’s standardized Tree Risk Calculator. The Tree Risk Calculator provides a risk score for each tree on a scale between zero and one hundred; trees over a threshold of 50 are considered for remediation.<sup>119</sup> In 2021, SCE completed approximately 131,000 of these individual HTMP tree assessments.<sup>120</sup> SCE performed remediation on 3,390 trees.<sup>121</sup>

Table E Hazard Tree Mitigation Program: Program Outputs in 2021 <sup>122</sup>	
Total Trees Assessed	Total Trees Remediated
131,000	3,390

SCE’s vegetation management QC program reviews all trees that received remediation, and a statistical sample of trees which were scored as not requiring remediation.<sup>123</sup> In 2021, SCE performed QC review on 13,000 total HTMP trees. Of these, 12,000 had initially been assigned risk scores between 35-49.<sup>124</sup>

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<sup>119</sup> SCE’s 2022 WMP, p. 425.

<sup>120</sup> SCE’s 2022 WMP, pp. 425-427.

<sup>121</sup> SCE’s response to DR CalAdvocates-SCE-2022WMP-13, question 4, April 6, 2022.

<sup>122</sup> SCE’s supplemental response to DR CalAdvocates-SCE-2022WMP-05, questions 1 and 2, March 3, 2022.

<sup>123</sup> SCE states that this sample is selected to achieve “a minimum rate of 99% / 2% CL/CI for subject trees assigned a risk score of 35-49,” just below SCE’s threshold for remediation. SCE 2022 WMP, p. 419.

<sup>124</sup> SCE’s 2022 WMP, pp. 419-420.



<p style="text-align: center;">Table F  <b>Hazard Tree Mitigation Program:  Quality Control Results for 2021<sup>125</sup></b></p>			
Trees Reviewed by QC (“Typical” Score between 35-49)	Trees with underestimated risk scores (QC review indicated likely need for remediation)	Trees requiring remediation after QC review	Extrapolation: Missed trees requiring remediation <sup>126</sup>
12,000	2,700	350	3,821

Of these 12,000 trees just below the remediation threshold which were re-inspected by QC, approximately 2,700 (nearly a quarter)<sup>127</sup> were subsequently assigned risk scores above SCE’s 50 point threshold for remediation.<sup>128</sup> In response to discovery, SCE explains that when a QC re-inspection calculates a score above 50 or 55,<sup>129</sup> the tree is “returned to the contractor’s supervisory or lead assessor for a re-assessment.”<sup>130</sup> SCE states that only where this third assessment agrees with the QC inspector are trees assigned for remediation, and that this was the case with only about 350 trees.<sup>131</sup> These 350 missed trees represent over 10 percent of SCE’s total HTMP remediations in 2021.<sup>132</sup> It is concerning that a tenth of the remediations in this program would not have happened without quality control re-inspections.

<sup>125</sup> SCE’s supplemental response to DR CalAdvocates-SCE-2022WMP-05, questions 1 and 2, March 3, 2022.

<sup>126</sup> In QC, 2.9 percent of trees (350 of 12,000) were referred for remediation. If this 2.9 percent rate held for all 131,000 trees that received an assessment on the Tree Risk Calculator, then it implies that the Hazard Tree Mitigation Program missed 3,821 trees that required remediation.

<sup>127</sup> Assuming that SCE’s sample is statistically valid, extrapolating from the QC sample (2,700 / 12,000 = 22.5%) to the entire population of 131,000 HTMP trees would suggest that about 29,500 of these trees have similarly under-estimated risk scores (131,000 \* 22.5% = 29,475).

<sup>128</sup> SCE’s 2022 WMP, p. 419.

<sup>129</sup> SCE reports that this threshold set at 50 for most of 2021 but was updated to 55 in late 2021. See DR CalAdvocates-SCE-2022WMP-07, Q5, March 15, 2022.

<sup>130</sup> SCE’s response to DR CalAdvocates-SCE-2022WMP-07, question 5, March 15, 2022.

<sup>131</sup> SCE’s response to DR CalAdvocates-SCE-2022WMP-07, question 5, March 15, 2022.

<sup>132</sup> Percentage of remediations: 350 / 3390 = 0.103. SCE’s response to DR CalAdvocates-SCE-2022WMP-07, question 5, March 15, 2022; and SCE’s response to DR CalAdvocates-SCE-2022WMP-13, question 4, April 6, 2022.

This 2.7 percent non-conformance rate,<sup>133</sup> while lower than the nearly one quarter of trees with underestimated risk scores, is problematic. Extrapolated to the whole HTMP tree population, the non-conformance rate suggests that a total of about 3,800 trees needed remediation but received an initial, erroneously low risk score that excluded them from remediation work.

This rate of non-compliance is concerning, and suggests a lack of consistency in SCE's HTMP inspections that could present an important safety risk. While SCE has not specifically tracked whether flawed vegetation management inspections led to safety incidents, it has identified two ignitions in 2021 that could have been linked to HTMP trees.<sup>134</sup> SCE states that in both cases, it "does not have sufficient information" to determine if trees assessed by the HTMP were involved in these ignitions.

SCE also identified 25 unique circuits in SCE's HFTD areas that had experienced a tree-caused circuit interruption in 2021 and had been assessed by the HTMP program prior to the events.<sup>135</sup> However, SCE was unable to cross reference these interruptions to specific HTMP trees because of differing data formats.<sup>136</sup>

SCE's inability to connect ignition and outage events to individual trees makes it difficult to assess the effectiveness of SCE's enhanced vegetation management programs as described in its WMP. However, SCE also indicates that it is working to consolidate its various vegetation management tools into an integrated vegetation management platform, which will allow cross referencing between its various vegetation management databases.<sup>137</sup> This is a positive development that will allow SCE, Energy Safety, and stakeholder parties to better understand the efficacy of SCE's vegetation management programs.

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<sup>133</sup> SCE reports 350 trees re-assessed by QC and assigned for remediation out of 13,000 total trees re-assessed by QC,  $350/13,000=0.027$ . DR CalAdvocates-SCE-2022WMP-07, question 5, March 15, 2022.

<sup>134</sup> Cal Advocates requested data on any ignitions or other safety incidents in 2021 which occurred on circuits which had previously assessed by HTMP inspectors. SCE reports that in 2021, there were two CPUC-reportable ignitions related to "Contact from Object (CFO) – Tree" on circuits that had been previously inspected by SCE's HTMP in 2020 or 2021. See SCE's response to DR CalAdvocates-SCE-2022WMP-07, Q6, March 15, 2022.

<sup>135</sup> SCE's response to DR CalAdvocates-SCE-2022WMP-07, question 7, March 15, 2022.

<sup>136</sup> SCE states that the database documenting these interruptions "is separate from, and tree identification is not linked, to the HTMP database." SCE's response to DR CalAdvocates-SCE-2022WMP-07, question 6, March 15, 2022.

<sup>137</sup> SCE's response to DR CalAdvocates-SCE-2022WMP-12, question 1, April 6, 2022.

SCE should explain the rate of non-compliance in the HTMP program as part of the 2022 WMP. Energy Safety should require SCE to detail in its 2023 WMP the steps it is taking in 2022 to reduce the non-compliance rate and to document the quantitative progress achieved. SCE should also present a plan in its 2023 WMP to further reduce this non-compliance rate over the next three-year WMP cycle, including quantitative targets.

**2. Energy Safety should require SCE to clearly state in future WMPs how in-house and contract labor are used in vegetation management programs.**

SCE's WMP does not make clear which vegetation management programs are primarily staffed by SCE employees, and which employ contract labor. For future WMP filings, Energy Safety should require a showing from SCE clearly laying out which vegetation management programs use contractors versus in-house staff, along with SCE's reasoning for current staffing decisions. While Cal Advocates was able to gather much of this information through discovery and discussions with SCE staff, including this information in the WMP would improve the thoroughness of SCE's vegetation management program descriptions and clarify how these programs operate.

In-house and contract labor each have strengths and weaknesses, and SCE and other utilities have legitimate reasons to employ contract labor in some circumstances. Contract labor is flexible and able to adapt to changes in utility needs. In-house labor provides SCE with increased control over work consistency and staff training. In-house labor is also more accountable to utility management, to whom it reports directly rather than through an intermediary organization. Some programs will lend themselves to one or another. Providing clarity in the WMP regarding SCE's reasoning for current staffing choices will enable Energy Safety and other stakeholders to better understand which type of labor is most appropriate to each individual program.

SCE has not identified any specific safety failures relating to the employment of contract labor in any WMP program. However, SCE has identified at least one incident where use of contract labor caused data quality issues. In discussing QC inspections related to SCE's Dead and Dying Tree Program (DDTP),<sup>138</sup> SCE's WMP states that while all the tree remediations performed through the program were inspected to ensure work completion, 220 of those

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<sup>138</sup> SCE's response to DR CalAdvocates-SCE-2022WMP-11, question 1, March 28, 2022.

remediations did not pass QC inspections,<sup>139</sup> “most of which were due to lack of site debris clean up.”<sup>140</sup> The remaining 87 entries were blank and did not provide a reason for non-compliance.

SCE explains as follows:

The 87 blank entries were wholly attributed to verifications being performed... by SCE’s DDTP contractor’s QC staff and not through SCE’s formal QC program... Since SCE took over the QC program for DDTP,<sup>141</sup> SCE no longer has these same data quality issues.<sup>142</sup>

In this instance, it appears that SCE identified a problem with QC inspections for this program and took appropriate action to correct the issue. However, the issue is illustrative of the need for SCE to better describe how various programs are staffed and the implications of staffing decisions on WMP program accountability and quality.

In addition, SCE should explain why its formal vegetation management quality control program is entirely staffed by contractors.<sup>143</sup> SCE indicated that this decision was made because when the QC program was created in 2019, it wanted to implement the program quickly and did not have sufficient in-house arborist expertise available to do so.<sup>144</sup> SCE’s reasoning in 2019 appears to have been sound, however it is helpful to understand that reasoning as context for SCE’s WMP. Prior to its 2023 WMP submission, SCE should reevaluate whether the staffing approach chosen in 2019 remains the best approach for the future.

For these reasons, Energy Safety should require SCE to clearly denote in next year’s WMP the vegetation management programs that utilize contract or in-house labor, in what proportions that labor is employed, and the reasoning behind SCE’s staffing decisions. With

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<sup>139</sup> SCE’s 2022 WMP incorrectly indicates that 133 DDTP trees did not pass inspection; however, SCE provided this corrected figure of 220 trees through discovery. SCE’s response to DR CalAdvocates-SCE-2022WMP-11, Q1, March 28, 2022.

<sup>140</sup> SCE’s 2022 WMP, p. 420.

<sup>141</sup> SCE elaborated in response to Cal Advocates’ data request that DDTP QC was internal to the DDTP contractors, and “lacked independent review.” SCE stated that the DDTP contractors were not recording their work to the standards required by SCE. As a result SCE moved QC for this program to the same contractor who performs QC for other vegetation management programs (HTMP and line clearing). SCE states that this program “is managed by SCE, has more rigor, formality, and is an independent review of work performed.” See SCE’s response to DR CalAdvocates-SCE-2022WMP-12, question 2, April 6, 2022.

<sup>142</sup> SCE’s response to DR CalAdvocates-SCE-2022WMP-11, question 1, March 28, 2022.

<sup>143</sup> WMP Workshop, March 10, 2022; meeting between Cal Advocates and SCE, March 15, 2022.

<sup>144</sup> Meeting between Cal Advocates and SCE, March 15, 2022.

regard to the vegetation management QC program, SCE should study and report on whether the current structure of the QC program is providing sufficient oversight, and on the potential benefits or drawbacks of bringing vegetation QC programs in-house.

**V. SDG&E**

**A. Grid Design and System Hardening**

**1. Energy Safety should require SDG&E to explain significant differences in cost forecasts of undergrounding from 2021 to 2022.**

Cal Advocates is concerned that the cost forecasts for SDG&E’s undergrounding system hardening program, in SDG&E’s 2022 WMP Update vary substantially – by a 40 percent decrease – from the forecasts provided in SDG&E’s 2021 WMP.<sup>145</sup> Cal Advocates raised this same concern in regards to SDG&E’s 2021 WMP Update in comparison to its 2020 WMP.<sup>146</sup> This remains an issue in 2022, with SDG&E providing no explanation of why the undergrounding costs per mile differ so much from year to year. Energy Safety should require SDG&E to provide a clear and detailed explanation for the substantial inconsistencies between SDG&E’s cost forecasts per mile in the 2021 and 2022 WMPs.

Table G SDG&E’s Undergrounding Costs Cost per mile, from 2020 to 2022 WMPs <sup>147</sup>			
	2020	2021	2022
Forecast unit costs (from same year’s WMP)	\$3.1 million	\$4.8 million	\$2.9 million
Actual unit costs	\$2.5 million	\$2.7 million	n/a

Costs are a relevant consideration when evaluating the efficiency and efficacy of the wildfire mitigations proposed by the utilities. Accurate cost forecasts are vital to the calculation

<sup>145</sup> For example, SDG&E’s 2022 cost forecast of \$2.9 million per mile of undergrounding is a 40 percent decrease from its prior WMP, when SDG&E projected a 2021 cost per mile of \$4.8 million.

<sup>146</sup> *Comments of the Public Advocates Office on the 2021 Wildfire Mitigation Plans of the Large Investor-Owned Utilities*, March 29, 2021, pp. 24-25.

<sup>147</sup> 2020 forecast unit costs from SDG&E 2020 WMP, Appendix A, Table 23; 2020 actual unit costs from SDG&E 2021 WMP Update non-spatial data filing, Table 12; 2021 forecast unit costs from SDG&E 2021 WMP Update non-spatial data filing, Table 12; 2021 actual unit costs from 2022 WMP Update non-

of risk-spend efficiency (RSE). Cost forecasts that vary substantially year over year could result in changes to RSE estimates, which influence SDG&E's selection of risk mitigations. Drastic changes in the forecasted costs could be due to multiple factors such as changes in program scope, changes in the cost of labor or materials, cost differences linked to the geographical location of the project, or changes in forecasting methodologies. Understanding the reasons for these changes is necessary to ensure that the utilities' plans are realistic and achievable. Significant changes to costs can affect work planning and the feasibility of programs, and ultimately affect the utility's ability to promptly mitigate risks.

While Energy Safety is not responsible for approving the costs associated with SDG&E's WMP, it would be valuable for Energy Safety and all stakeholders to gain an understanding as to why these forecasted costs per mile for undergrounding decreased so drastically from one year to the next. Additionally, it is important to ensure that the forecasted costs, and the methods used to determine those forecasts, are transparent to all interested stakeholders. As currently presented in the WMP, there is little transparency regarding the reasons for the revisions to the forecasted costs of undergrounding per mile.

Undergrounding projects are conducted in the areas of highest wildfire risk, typically in rural areas of the service territory, and undergrounding is the most expensive system hardening wildfire mitigation measures that SDG&E employs per mile.<sup>148</sup> SDG&E's 2022 WMP Table 12 forecasts shows that SDG&E is focused on installing more circuit miles of underground hardening than covered conductor: undergrounding constitutes 32 percent of the system hardening SDG&E has planned in 2022.<sup>149</sup> While a decrease in forecast costs for underground hardening is good news, SDG&E does not explain the reasons or consequences of the substantial revision of the cost per mile for undergrounding in 2022 compared to 2021.

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spatial data filing, Table 12; 2022 forecast unit costs from 2022 WMP Update non-spatial data filing, Table 12.

<sup>148</sup> SDG&E's 2022 WMP, p. 10, Table 9-4: Comparison of Estimated Direct Capital Costs.

<sup>149</sup> SDG&E's 2022 WMP, Attachment B, Table 12. In 2022, SDG&E plans 70.5 miles of undergrounding, 60 miles of covered conductor, and 222 total miles of system hardening in 2022. 70.5 miles of undergrounding divided by 222 total miles equals 32 percent.

For undergrounding miles, see Table 12 and add the following: Line 43 Cell AT + Line 46 Cell AT.

For covered conductor miles, see Line 27 Cell AT.

For total system hardening miles, add the following: Line 27 Cell AT + Line 43 Cell AT + Line 44 Cell AT + Line 45 Cell AT + Line 46 Cell AT.

Energy Safety should require SDG&E to explain any substantial changes in the cost of initiatives in each annual WMP filing. Specifically, Energy Safety should direct SDG&E to submit supplemental information that explains the large changes in its undergrounding program cost forecasts, within 30 days of Energy Safety’s draft action statement on SDG&E’s 2022 WMP. SDG&E should detail why its cost forecasts have changed by more than 40 percent since last year’s WMP submission.

**2. Energy Safety should require SDG&E to report all undergrounding completed at shallower depths.**

SDG&E plans to complete approximately 71 circuit-miles of undergrounding in 2022.<sup>150</sup> SDG&E acknowledges that undergrounding “is the most expensive major hardening alternative on a per mile basis,” and is therefore “strategically deployed.”<sup>151</sup> SDG&E aims to improve the cost-effectiveness of undergrounding by using shallower trenches, which allows for a reduction in construction effort and cost.<sup>152, 153</sup>

It is promising that SDG&E is developing more efficient techniques to mitigate wildfire risk. However, the utility does not provide any details throughout its WMP Update on which of the undergrounding projects in 2022 will utilize shallower depths. Furthermore, SDG&E’s WMP lacks an explanation of how SDG&E will choose whether to use the shallower or traditional trench depths for each undergrounding project in 2022.<sup>154</sup>

Energy Safety should require SDG&E to provide greater detail about undergrounding projects at shallower depths. This will allow Energy Safety and other stakeholders to assess whether this approach is cost-effective and can be implemented more quickly than the traditional approach. SDG&E should submit a workplan of undergrounding projects that identifies the trenching depth. As part of this workplan SDG&E should include the start date and completion date of each project and identify the specific circuit-segments affected.

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<sup>150</sup> SDG&E’s 2022 WMP, Attachment B, Table 12 SDG&E plans 70.5 miles of undergrounding in 2022.

<sup>151</sup> SDG&E’s 2022 WMP, p. 230.

<sup>152</sup> SDG&E’s 2022 WMP, p. 20: “Undergrounding can be implemented effectively at shallower depths, resulting in improved cost effectiveness.”

<sup>153</sup> SDG&E’s 2022 WMP, p. 391: “Decreasing trench depth from 30 inches to 24 inches of trench cover. This new design standard allows for a reduction in construction effort and cost, especially in difficult rocky terrain.”

<sup>154</sup> SDG&E’s response to data request CalAdvocates-SDGE-2021WMP-11, question 6a, March 25, 2022.

SDG&E should also report similar information on completed projects as part of each quarterly data report, as well as the start-to-finish cost of the project. Providing this information on a quarterly basis starting with the second quarter of 2022 will allow Energy Safety to analyze the success of these projects. Additionally, this information could contribute to developing and sharing best practices for system hardening. In Cal Advocates' comments on cross-cutting issues in the large IOUs' WMPs, we recommend convening a working group to examine the merits of various system hardening techniques, starting with undergrounding.<sup>155</sup>

In its 2023 WMP submission, SDG&E should also submit a detailed undergrounding workplan that identifies the depth chosen for each project and explains why it was chosen. Lastly, SDG&E's 2023 WMP should report costs separately for undergrounding projects at different depth levels. This information will enable stakeholders to analyze the costs-effectiveness of different approaches to system hardening.

**3. SDG&E should provide greater clarity on how it will achieve its target of 60 miles of covered conductor installation in 2022.**

SDG&E is expanding its use of covered conductor installation as a wildfire mitigation initiative in 2022. SDG&E has set a target of installing 60 of covered conductor miles in 2022.<sup>156</sup> However, in the previous two years combined it has only completed 21 miles of covered conductor installation, which calls into question its ability to complete an increased amount in 2022.<sup>157, 158</sup>

While SDG&E has indicated that it can increase its rate of covered conductor installations in 2022 to meet its target of 60 miles based on "experience and available resources that were used to design and build the 120 miles of overhead facilities in 2021" and "reallocating

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<sup>155</sup> *Comments of the Public Advocate's Office on General Issues in the 2022 Wildfire Mitigation Plan Updates of the Large Investor-Owned Utilities*, April 11, 2022, section III.A.

<sup>156</sup> SDG&E's 2022 WMP, p. 215 and Attachment B, Table 12.

<sup>157</sup> SDG&E's 2022 WMP, Attachment B, Table 12. See Table 12 and add the following: Line 27 Cell AF + Line 27 Cell AM.

<sup>158</sup> SDG&E's response to CalAdvocates-SDGE-2022WMP-06, question 7a, February 24, 2022:

SDG&E believes it can increase its rate of covered conductor installation based on (1) on our experience with overhead projects since 2013, and (2) reallocation of some resources from traditional hardening to covered conductor.



resources from traditional hardening efforts,”<sup>159</sup> this answer does not demonstrate that SDG&E has considered the likelihood of supply constraints. In 2021, SDG&E “experienced significant material supply chain issues, especially for covered conductor materials,” and “competition with other utilities for the same material” which then impacted SDG&E’s project schedules and costs.<sup>160</sup> Additionally, due to the COVID-19 pandemic SDG&E “anticipate[s] that during 2022 lead times will be longer than historically experienced.”<sup>161</sup> SDG&E should describe how these factors affect its 2022 timelines and targets, since these potential obstacles will still be relevant throughout 2022.

Energy Safety should direct SDG&E to submit a detailed workplan that demonstrates in greater detail that the covered conductor goal is feasible. SDG&E should also explain how it plans to optimize and reallocate its resources to complete its covered conductor installation goal. Lastly, as part of this workplan, Energy Safety should require SDG&E to detail how it has addressed supply constraints and other foreseeable challenges, which are the most likely barriers to SDG&E completing its covered conductor installation goals for 2022. SDG&E should submit this workplan within 30 days of Energy Safety’s action statement on SDG&E’s 2022 WMP Update.

## **B. Asset Management and Inspections**

### **1. Energy Safety should require SDG&E to provide greater detail on its maintenance of non-communicative remote-controlled switches.**

In comments on SDG&E’s 2021 WMP, Cal Advocates expressed concerns about the utility’s lack of reporting on non-communicative Supervisory Control and Data Acquisition (SCADA) switches and recommended that this area be improved.<sup>162</sup> Non-communicative

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<sup>159</sup> See SDG&E’s response to CalAdvocates-SDGE-2022WMP-06, question 7b, February 24, 2022; see also SDG&E’s response to CalAdvocates-SDGE-2022WMP-06, question 7a, February 24, 2022:

Because the engineering, design, permitting, environmental, land and construction processes for covered conductor and traditional hardening are the same, SDG&E use traditional hardening schedules to estimate covered conductor installation for 2022. The only appreciable difference with covered conductor installations as compared to bare conductor is the covered conductor material and hardware.

<sup>160</sup> SDG&E’s 2022 WMP, p. 390.

<sup>161</sup> SDG&E’s 2022 WMP, p. 390.

<sup>162</sup> *Comments of the Public Advocates Office on the 2021 Wildfire Mitigation Plans of the Large Investor-Owned Utilities*, March 29, 2021, pp. 25-26.

SCADA switches during a Public Safety Power Shutoff (PSPS) event cause customers to be de-energized without notice.

To date, SDG&E has still not adequately addressed this issue in its 2022 WMP. Overall, SDG&E's 2022 WMP does not explain in detail SDG&E's plans for identifying non-communicative SCADA switches, its approach to ensuring SCADA switches remain operational, or its procedures for testing SCADA switches in the HFTD. While SDG&E provides an update on SCADA switches in Attachment D, Part 8, of its WMP, this section lacks enough detail to show that the utility has sufficiently addressed this issue.<sup>163</sup> These statements largely reiterate (in some cases verbatim) information provided to Cal Advocates in response to a March 2021 data request.<sup>164</sup>

SDG&E has not provided key implementation details for remediating non-communicative SCADA switches. SDG&E provides only minimal information on the steps it takes to identify non-functional SCADA devices prior to potential de-energization events in the

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<sup>163</sup> For example, SDG&E states that:

SDG&E has internal operating procedures that call for testing SCADA switches in the fire area annually. SDG&E's maintenance procedure provides the guidelines for uniform inspection and maintenance performed at least every six years, and battery replacements every three years on all line SCADA devices.

SDG&E also states that:

SDG&E has taken additional steps to improve the inspections and testing of SCADA switches to minimize customer impacts of devices being inoperable during PSPS events. SDG&E instituted new processes during the 2020 PSPS season that included identifying bypassed devices and devices out of communication within the HFTD. In 2021 SDG&E has identified 33 such devices and has repaired 30 to date, restoring their remote functionality.

SDG&E's 2022 WMP, Attachment D: SDGE-21-08, Non-Communicative Remote-Controlled Switches, p. 22.

<sup>164</sup> SDG&E's response to CalAdvocates-SDGE-2021WMP-04, question 11, March 4, 2021:

SDG&E has instituted a process to minimize customer impacts of devices being inoperable. The process includes identifying devices out of communication and identifying bypassed SCADA switches prior to the start of an event. ...

While SDG&E's 2021 WMP does not explicitly mention SDG&E's plans for testing SCADA switches, internal operating procedures call for testing SCADA switches in the fire area annually.

affected area.<sup>165</sup> For example, SDG&E states that it “instituted new processes during the 2020 PSPS season” but fails to detail the steps.<sup>166</sup>

Similarly, SDG&E states that “In 2021 SDG&E has identified 33 such devices and has repaired 30 to date, restoring their remote functionality.”<sup>167</sup> While SDG&E reports that it repaired most of the devices, it fails to provide detail on the length of time that it took to restore remote functionality of the 30 devices repaired. Also, SDG&E did not provide any schedule for when it plans to restore the remote functionality of the remaining three devices, or if any SCADA switches began malfunctioning in 2021. SDG&E fails to state when it will remedy the remaining SCADA switches.

Energy Safety should require SDG&E to continue reporting on SCADA switches in its 2022 quarterly data reports. SDG&E’s quarterly reports should detail:

- How frequently SDG&E inspects or tests existing SCADA switches to ensure that they are fully functional.
- How SDG&E identifies non-communicative SCADA switches.
- How many SCADA switches in SDG&E’s system are non-communicative or otherwise malfunctioning, and a timeline of when SDG&E plans to fix them.
- SDG&E’s step-by-step process for testing newly installed SCADA switches prior to and after installation.
- If any non-communicative or otherwise malfunctioning SCADA switches resulted in customer de-energization without notice, or impaired SDG&E’s ability to remotely and timely de-energize a circuit-segment.

Requiring more specific reporting on this issue will ensure that SDG&E is taking precautions to ensure that its customers are not de-energized without notice simply because SDG&E failed to remediate a known problem.

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<sup>165</sup> SDG&E’s 2022 WMP, Attachment D: SDGE-21-08, Non-Communicative Remote-Controlled Switches, p. 22.

<sup>166</sup> SDG&E’s 2022 WMP, Attachment D: SDGE-21-08, Non-Communicative Remote-Controlled Switches, p. 22.

<sup>167</sup> SDG&E’s 2022 WMP, Attachment D: SDGE-21-08, Non-Communicative Remote-Controlled Switches, p. 22.

**VI. CONCLUSION**

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

Respectfully submitted,

/s/ ***Carolyn Chen***

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