



**Public Advocates Office**  
California Public Utilities Commission  
505 Van Ness Avenue  
San Francisco, California 94102  
Tel: 415-703-1584  
[www.publicadvocates.cpuc.ca.gov](http://www.publicadvocates.cpuc.ca.gov)

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Caroline Thomas Jacobs, Director  
Wildfire Safety Division  
California Public Utilities Commission  
505 Van Ness Avenue  
San Francisco, CA 94102  
[Wildfiresafetydivision@cpuc.ca.gov](mailto:Wildfiresafetydivision@cpuc.ca.gov)

**Subject: Comments of the Public Advocates Office on the Wildfire Safety Division's August 2020 Workshops and Staff Proposals**

## I. INTRODUCTION

The Public Advocates Office at the California Public Utilities Commission (Cal Advocates) submits these comments on the topics addressed in the workshops hosted by the Wildfire Safety Division (WSD) in August 2020.

On August 5, 2020, the WSD issued three Staff Proposals, relating to the wildfire mitigation plan (WMP) requirements,<sup>1</sup> safety culture assessment process,<sup>2</sup> and data reporting requirements.<sup>3</sup> On August 11 and 12, 2020, the WSD hosted workshops to discuss these Staff Proposals and related topics.

In these comments, Cal Advocates makes the following recommendations:

- The WSD should develop a multi-pronged approach to measure the effectiveness of wildfire mitigation initiatives.
- The WSD should require WMP update submissions to highlight changes from the previous submission.
- The WSD should require utilities to report changes in cost forecasts and actual costs.
- The WSD should require utilities to provide more explanation of their choices of mitigation strategies.

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<sup>1</sup> *Wildfire Safety Division Staff Proposal on Changes to Wildfire Mitigation Plan Requirements and Metrics Tables*, August 11, 2020 (Staff Proposal on WMP Requirements).

<sup>2</sup> *Wildfire Safety Division (WSD) Geographic Information System (GIS) Data Reporting Requirements and Schema for California Electrical Corporations*, August 5, 2020 (Staff Proposal on Data Reporting).

<sup>3</sup> *Wildfire Safety Division Draft Recommendations for Developing a Safety Culture Assessment Process*, August 12, 2020 (Staff Proposal on Safety Culture Assessments).

- The WSD should require utilities to provide more granular risk-spending efficiency calculations.
- The WSD should provide clear definitions for data and metrics.
- The WSD should work with stakeholders to continue developing the System Hardening for Electric Utility Resilience (SHEUR) proposal.
- Different safety-culture remedies are appropriate for PG&E in light of its safety record.
- The utilities should designate the CEO as the accountable officer for safety.
- The WSD should implement the proposed data reporting schema, which will substantially improve the WMPs.

Cal Advocates also provided recommendations pertinent to future WMP requirements in its comments on the 2020 WMPs.<sup>4</sup> We urge the WSD to adopt those recommendations.

## **II. STAFF PROPOSAL ON WMP REQUIREMENTS**

### **A. The WSD should develop a multi-pronged approach to measure the effectiveness of wildfire mitigation initiatives.**

It is crucial to find accurate ways to measure the effectiveness of wildfire mitigation efforts, so that regulators, utilities,<sup>5</sup> and the public can know whether ratepayer-funded safety investments are paying off. However, measuring effectiveness is challenging, because the major outcomes – the results that matter to the public – are subject to random variability (especially, weather variability affecting the likelihood of wildfire ignition and spread). Cal Advocates recommends using multiple strategies to measure effectiveness.

#### **1. Major outcome metrics: high-consequence safety failures.**

As a starting point, the WSD must track major outcomes – that is, the high-consequence safety failures that are most impactful to the public. Major outcomes include the number of catastrophic wildfires, the number of fatalities from utility-related wildfires, the number of structures burned in utility-related wildfires, and the number of customer-hours of de-energization.<sup>6</sup>

In the near term, though, the WSD and stakeholders cannot rely on these major outcome metrics to evaluate effectiveness. Utility-related catastrophic wildfires are strongly influenced by weather variability, weather trends, and other random factors. These outcome metrics are driven by small numbers of events: a reduction from two catastrophic utility-caused wildfires in one year to zero the following year does not imply that the utility has dramatically improved the safety of its system.

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<sup>4</sup> *Comments of the Public Advocates Office on the 2020 Wildfire Mitigation Plans*, April 7, 2020.

<sup>5</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 term “utilities” as well as the phrase “electrical corporations” to refer to the entities that must comply with the wildfire safety provisions of the Public Utilities Code discussed in these comments.

<sup>6</sup> The 2020 WMP guidelines appropriately required utilities to report metrics both in absolute terms and normalized by red-flag warning days and circuit-miles. Both versions of the data are useful.

Year-to-year changes in these major outcomes are influenced by a utility's management practices, but also by many other factors.

At this point, annual data on these major outcomes is not a clear, sole indicator of whether a utility's wildfire safety initiatives are working. It will take several years, or perhaps decades, of data on major outcomes to draw reliable conclusions on whether each utility has succeeded in reducing its wildfire risks.

## 2. Minor outcome metrics: low-consequence safety failures

A second approach is to focus on minor outcomes, such as ignitions,<sup>7</sup> near misses,<sup>8</sup> and vegetation contacts. These outcome metrics track safety failures on the electric system that have relatively low consequences in themselves, but that indicate the potential for more consequential failures to occur. Minor outcomes indicate where utility infrastructure is prone to fail, where maintenance has not been properly performed, or where utility inspections are failing to identify problems with infrastructure. Over the near term and medium term,<sup>9</sup> data on minor outcomes is likely to provide a good indication of whether wildfire mitigation efforts are working.

The 2021 WMP guidelines should require utilities to report on a variety of minor outcome metrics, to capture the full range of potential utility safety failures. Additional metrics should include the following:

- Infrastructure damage observed after de-energization events, reported on an annual basis.
- Wire-to-wire contact events.
- Overloaded overhead circuits in high fire threat district (HFTD) areas, provided in circuit-mile-hours.<sup>10</sup>
- Number of times the system deactivated a conductor expressed as a percentage of the total number of times the system detected a contact (both monthly and annual figures).<sup>11</sup>

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<sup>7</sup> By "ignition," Cal Advocates means a reportable ignition event as defined in D.14-02-015, Appendix C, p. C-3.

<sup>8</sup> Near misses are a broad category of events, which would likely benefit from disaggregation into several more precise metrics.

<sup>9</sup> For the purpose of these comments, Cal Advocates uses "near term" to mean within three years and "medium term" to mean the period from three to ten years in the future.

<sup>10</sup> Overloaded circuits are important because overloading a wire raises its temperature beyond the safe thermal limit. Overloading a wire can cause it to sag (increasing the risk of contact with objects) and gradually causes a loss of wire strength. This metric is defined as the number hours when an overhead circuit in an HFTD area operates in excess of 105 percent of its rated load capacity, multiplied by the number of miles affected and the number of hours when this occurs.

<sup>11</sup> This indicates how well the utility system resists failure, even when a conductor comes in contact with an object.

### 3. Inspection data

A third way to measure effectiveness is to track how often a utility inspects its infrastructure and how many problems it detects. Tracking inspections is essential both because inspections can prevent safety failures and because failure to perform inspections can conceal problems. Skimping on inspections can temporarily make outcome metrics look better – for example, a utility might fail to identify some near miss events.

The 2021 WMP guidelines should require utilities to report a variety of inspection metrics (each on an annual or more frequent basis), including:

- Frequency of asset inspections in HFTD areas.
- Results of quality-control audits of inspection programs.
- Results of independent thirty-party assessments of the quality and appropriateness of inspection programs.
- Number of high-priority maintenance tags identified in HFTD areas by month and the number of such tags that remain unaddressed at the end of each month.
- Percentage of high-priority maintenance tags in HFTD areas that are promptly remediated.
- The average number of days between inspections and the completion of corrective actions.
- Infrared inspections completed during peak demand hours in HFTD areas.<sup>12</sup>

### 4. Modeled risk scores

A fourth approach to measuring effectiveness is to use risk scores generated by wildfire risk models (modeled risk scores). A model risk score is a quantitative estimate of the wildfire risk facing the utility. If the model is accurate and reliable, these risk scores can provide useful information. One advantage of modeled risk scores is that they should respond quickly to changes in infrastructure or management practices, whereas outcome metrics may take years to manifest progress. Modeled risk scores are an inherently forward-looking metric because risk is the expectation of future outcomes.

The WSD should require each utility to provide semi-annual benchmark risk scores and should track changes in modeled risk scores over time. Observing trends in modeled risk scores offers another way for the WSD and stakeholders to measure progress, alongside tracking outcome metrics. However, Cal Advocates does not recommend relying on modeled risk scores in isolation; they should be part of a multi-pronged evaluation strategy.

For this strategy to work, three requirements must be in place. First, the models and underlying data must be accurate and reliable. Second, the WSD should establish a regular schedule for utilities to generate and report benchmark modeled risk scores. And third, the WSD must require utilities to use

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<sup>12</sup> Peak hours offer the best window for infrared inspections to detect stress on the system from heavy load. This metric is defined as the number of miles of infrared inspections of HFTD distribution infrastructure completed during peak demand hours, divided by total HFTD circuit-miles of distribution infrastructure.

a consistent modeling method to generate comparisons over time. We discuss each of these issues below.

*First*, modeled risk scores are only as good as the risk models themselves. Therefore, the WSD should subject electric utilities' wildfire risk models to careful scrutiny, expert review, and public comment. Both Cal Advocates<sup>13</sup> and the Wildfire Safety Advisory Board (WSAB)<sup>14</sup> have stressed the need to test and demonstrate the validity of wildfire risk models. Demonstrating the validity of risk models provides the necessary foundation to use modeled risk scores to draw conclusions about the effectiveness of wildfire mitigation programs.

Unfortunately, it is not yet feasible to rely on modeled risk scores to measure effectiveness, because utility risk models are not mature. However, the WSD should push utilities to improve and validate their wildfire risk models so that benchmark risk scores will yield useful information.

*Second*, the WSD should establish a regular schedule for reporting benchmark risk scores. Twice a year,<sup>15</sup> the utility should generate modeled risk scores for system-wide wildfire risk<sup>16</sup> at a point in time, based on infrastructure conditions and vegetation management status at that time.

*Third*, utilities should use a consistent risk modeling methodology to allow comparisons over time.<sup>17</sup> Comparability over time is key, because the purpose of regularly updating benchmark risk scores is to observe trends. Therefore, the only thing that should change in the semi-annual benchmark risk scores is the inclusion of more recent data.

A key obstacle to this strategy is that risk models evolve. Consequently, changes in modeled risk scores may reflect changes in the model, rather than a real-world change in risk levels. To address this problem, the WSD should direct utilities to generate retrospective risk scores using the current model. This would mean using the most up-to-date risk modeling methods, but back-dating the input dataset to a specified date. As an example, suppose that a utility's wildfire risk model currently uses data on ignitions, vegetation contacts, infrastructure conditions, and other variables<sup>18</sup> to estimate risk, and the utility has a twenty-year dataset, covering 2000 through 2019. To generate a modeled risk score for January 1, 2018, the utility would exclude data on ignitions and vegetation contacts

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<sup>13</sup> *Comments of the Public Advocates Office on the 2020 Wildfire Mitigation Plans*, April 7, 2020, pp. 56-59; *Comments of the Public Advocates Office on the Wildfire Safety Division's Proposed Strategic Roadmap*, June 30, 2020, pp. 2-4.

<sup>14</sup> California Wildfire Safety Advisory Board, *Recommendations on the 2021 Wildfire Mitigation Plan Guidelines, Performance Metrics, and Safety Culture*, adopted June 23, 2020 (WSAB Recommendations for 2021), Recommendation 3.1, p. 26.

<sup>15</sup> Cal Advocates suggests generating modeled risk scores for January 1<sup>st</sup> and July 1<sup>st</sup> of each year.

<sup>16</sup> Cal Advocates recommends requiring each utility to submit an estimate of aggregate wildfire risk across its system. However, the WSD could also request modeled risk scores at a more granular scale, such as for each circuit or for each tier of High Fire Threat District.

<sup>17</sup> For now, the focus should be on each utility's use of a consistent risk methodology over time. Eventually, the use of similar methodologies by all utilities would allow comparison across utilities.

<sup>18</sup> As examples, variables used in a wildfire risk model might include weather, ignitions, faults, vegetation contacts, the configuration of circuits, infrastructure age and condition, type of vegetation, and the date of most recent vegetation management.

occurring in 2018 and 2019, and it would use the infrastructure conditions that existed on January 1, 2018. With this approach, the WSD can obtain comparable modeled risk scores over time.

Provided that the wildfire risk models are based on sound modeling techniques and the best available evidence, trends in modeled risk scores can provide another way of measuring progress. Modeled risk scores should gradually decline as utilities complete system hardening projects, improve vegetation management practices, improve asset inspections, and complete other mitigation measures. While modeled risk scores should not be used in isolation, they can supplement the evidence from major and minor outcome metrics.

Relying on multiple approaches, such as the four described above, will help the WSD and other stakeholders reach firmer conclusions about the effectiveness of wildfire mitigation programs.

**B. The WSD should require WMP update submissions to highlight changes from the previous submission.**

The WSD has directed that “all electrical corporations shall file an update to their 2020 WMPs in 2021,” rather than a full comprehensive plan filing.<sup>19</sup> Public Utilities Code (PU Code) Section 8386(b) allows WSD, at its discretion, to “allow the annual [WMP] submissions to be updates to the last approved comprehensive wildfire mitigation plan; provided, that each electrical corporation shall submit a comprehensive wildfire mitigation plan at least once every three years.”<sup>20</sup> However, the statute does not spell out how the comprehensive plan will differ from the plan updates.

The WSD should provide guidance on the content to be included in the update filings and how it should differ from the content of comprehensive filings. Cal Advocates recommends that the update filings focus on significant changes to the WMP since the most recent comprehensive filing was approved, as well as a comparison of each and every work item the utility planned to do in the previous calendar year versus what work the utility actually completed. The updates should highlight and explain what is different from the previous year’s submission, including any quantitative changes (i.e., budgets and output forecasts) and qualitative changes (i.e., change of strategy).

The update filings should include summary tables, such as the example below, which compare forecast plan *outputs* from the 2020 comprehensive WMP filings with both actual 2020 outputs and modified forecast outputs from the 2021 plan updates. Similar tables should be developed to focus on *spending* – comparing 2020 forecast spending by initiative with 2020 actuals and modified 2021 forecasts.

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<sup>19</sup> Resolution WSD-002, p. 35.

<sup>20</sup> Public Utilities Code Section 8386(b).

2020 WMP vs. 2021 Update: Changes in Output Targets				
		2020	2021	2022
Covered conductor miles, in Tier 3 HFTD	2020 WMP forecast	200	250	300
	Actuals	205		
	2021 Update forecast		220	300
Vegetation management miles, in Tier 3 HFTD	2020 WMP forecast	2,000	2,000	2,000
	Actuals	1,800		
	2021 Update forecast		2,500	2,500

In narrative sections of the plans, the update filings should provide information on what is new or different, rather than including narrative sections copied verbatim from the prior plan. Where plans *have not* significantly changed, the utility should refer to the prior filing. Where plans *have* changed significantly, the update should describe the change, including the reason the change is being made and any supporting material that the utility relied on in making the alteration.

A 10 percent change is a reasonable threshold for significant change in a quantitative measure, although it would be useful to discuss this question in a stakeholder workshop. Utilities should note any meaningful change in qualitative aspects. Where there is a question as to whether a change is significant enough to warrant inclusion, the utilities should err towards including the change in the update.

Finally, the 2021 update filings should incorporate the information that utilities have submitted in their 2020 remedial compliance plans, and as part of their quarterly update filings. For example, all future WMPs and updates should include detailed information about how utilities are leveraging risk models to target the highest risk portions of the grid, as required by condition Guidance-03.<sup>21</sup>

**C. The WSD should require utilities to report changes in cost forecasts and actual costs.**

The WSD Staff Proposal on WMP requirements proposes to add a new section on “Actuals and Planned Spending for Mitigation Plan” to the 2021 WMP requirements.<sup>22</sup> Cal Advocates supports this addition, which will offer additional granularity to both the overall state of wildfire mitigation expenditures and the forecast and actual spending by program category.

As noted above, the update filings should include not only the updated forecasts, but information on the change in forecasts between filings. This inclusion will further highlight the change between the 2020 filings and the 2021 updates.

<sup>21</sup> Resolution WSD-002, *Guidance Resolution on 2020 Wildfire Mitigation Plans Pursuant to Public Utilities Code Section 8386 (Resolution WSD-002), Deficiency (Guidance-3, Class A): Lack of risk modeling to inform decision-making*, pp. 21-22.

<sup>22</sup> Staff Proposal on WMP Requirements, p. 7.

**D. The WSD should require utilities to provide more explanation of their choices of mitigation strategies.**

The WSD acknowledges that going forward, most data provided by the utilities is expected to be submitted on a quarterly basis, with the WMP annual updates providing much of the narrative to explain changes in the data.<sup>23</sup> Cal Advocates agrees with the WSD that more robust explanations than those provided in the 2020 WMPs are needed for insight into the utilities' decision-making processes.

The WSD can address this need by incorporating several of the requirements of Resolution WSD-002 into the 2021 WMP guidelines. The 2021 WMP guidelines should require explanations as to (1) why a specific mitigation strategy is chosen and (2) how is it prioritized. For example, while the 2020 WMPs proposed spending multiple billions of dollars in the categories of vegetation management and system hardening, it is not clear how particular programs were prioritized or how specific projects are selected within programs. Conditions Guidance-2, Guidance-5, and Guidance-6 in Resolution WSD-002 address this concern.<sup>24</sup>

The WMP requirement that utilities assign a risk spend efficiency (RSE) score to each mitigation measure was an attempt to prioritize programs, but many utilities combined multiple initiatives into a single broad category, rendering this metric practically useless.<sup>25</sup> The RSE scores provided by electric utilities in the 2020 WMPs offer no insight into how the utilities arrived at the portfolio of programs and projects included in the WMPs. Resolution WSD-002 Condition Guidance-1 addresses this concern<sup>26</sup> and should be incorporated within the 2021 WMP guidelines.

In addition, the linkage between wildfire risk and wildfire mitigation programs needs to be established and explained. While explanations about the changes in data from the prior year are helpful, regulators and stakeholders need to understand the basis for utility decisions, given the significant impact of these decisions on the health and safety of Californians, as well as on utility rates. The WSD should require a detailed narrative on risk-based decision-making as part of the 2021 WMP guidelines. The WSD should incorporate the requirements of Condition Guidance-3,<sup>27</sup> and should draw upon the positive features of the remedial compliance plans submitted by SCE and PacifiCorp.<sup>28</sup> Among other things, the WSD should direct utilities to identify the assumptions, data sources, analytical methods, level of granularity, and uses of each wildfire risk model.<sup>29</sup> The WSD

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<sup>23</sup> Staff Proposal on WMP Requirements, p. 11.

<sup>24</sup> Resolution WSD-002, pp. A2, A5, and A6.

<sup>25</sup> Resolution WSD-002, pp. 20 and A1: "2020 WMP submissions contain sparse and sporadic detail regarding the RSE of WMP initiatives... Not having quantifiable information on how those initiatives reduce utility ignition risk relative to their cost severely limits the WSD's ability to evaluate the efficacy of such initiatives."

<sup>26</sup> Resolution WSD-002, p. A1.

<sup>27</sup> Resolution WSD-002, p. A3.

<sup>28</sup> *Comments of the Public Advocates Office on San Diego Gas & Electric Company's 2020 Wildfire Mitigation Plan Remedial Compliance Plan*, August 10, 2020, pp. 7-8.

<sup>29</sup> See Remedial Compliance Plans submitted by PacifiCorp and SCE on July 27, 2020; *Comments of the Public Advocates Office on San Diego Gas & Electric Company's 2020 Wildfire Mitigation Plan Remedial Compliance Plan*, August 10, 2020, pp. 7-8.



should direct each utility to describe in detail how it applies risk-based decision-making to each WMP initiative.<sup>30</sup>

Cal Advocates also recommends that the utilities specifically articulate utility resource constraints for executing wildfire mitigation programs. While the WMPs contain sections to identify workforce and other resource constraints, the 2020 WMPs lacked specificity in addressing execution risks to carrying out wildfire mitigation programs. An example of execution risk is that unrelated natural disasters – such as the current proliferation of lightning-caused wildfires across Northern California – can divert skilled personnel from planned mitigation work to addressing emergency needs, while also preventing the implementation of mitigation measures in the affected area. Other sources of execution risk include inclement weather in winter and spring, and pandemic conditions.

The utilities are not sufficiently transparent in their WMPs about how resource and operational constraints affect their decision-making. Key constraints can include, but are not limited to, labor supply, deployment timing, technology maturity, and supplies of materials. In the 2020 WMPs, several utilities acknowledged that resource constraints impede the execution of the plans.<sup>31</sup> However, the utilities did not provide insight into the implications of resource shortages or how the utility will address the problem. For example, if a utility is unable to hire enough vegetation management crews, how many miles of vegetation management forecast in the WMP will not occur?

Broad statements by the utilities about evolving labor markets impacting programs are insufficient. The WSD should also require more information about which mitigation programs feasibly can be scaled-up and which cannot. Requiring more complete and transparent descriptions of the utilities' decision-making processes will allow the WSD to better evaluate the effectiveness and cost-effectiveness of the proposed strategies in addressing wildfire risk.

Utilities' consideration of key constraints should be presented in substantial detail in their WMPs, while demonstrating the effort to reduce wildfire risk as much as possible. For example, utilities could present and quantify their key constraints in the form of graphics, numerical figures, statistical plots, or project management Gantt charts to demonstrate the critical pathway to completing the mitigation measures proposed. Cal Advocates provided recommendations on this topic in its comments on the 2020 WMPs.<sup>32</sup> The WSD should also incorporate Condition Guidance-11 into the 2021 WMP guidelines.<sup>33</sup>

The 2020 WMPs provided considerable detail about what strategies electric utilities are using to reduce wildfire risks but provided much less information about why the utilities had chosen specific strategies or whether those strategies are the best available. For the 2021 WMP guidelines, the WSD should require utilities to submit WMPs that explain both *what* the utility will do and *why*.

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<sup>30</sup> SCE's Remedial Compliance Plan, July 27, 2020; *Comments of the Public Advocates Office on San Diego Gas & Electric Company's 2020 Wildfire Mitigation Plan Remedial Compliance Plan*, August 10, 2020, pp. 7-8.

<sup>31</sup> See PG&E's 2020 WMP, Section 5.1.C, p. 5-8; Liberty's 2020 WMP, pp. 36 and 108; and *Comments of the Public Advocates Office on the 2020 Wildfire Mitigation Plans*, April 7, 2020, p. 55 (regarding Bear Valley's difficulty finding reasonably priced contractors for infrastructure work).

<sup>32</sup> *Comments of the Public Advocates Office on the 2020 Wildfire Mitigation Plans*, April 7, 2020, pp. 51-56.

<sup>33</sup> Resolution WSD-002, pp. A11.

**E. The WSD should require utilities to provide more granular risk-spending efficiency calculations.**

The Risk Spend Efficiencies (RSE) provided by the utilities in the 2020 WMP filings were inadequate across the board, and the WSD states that most WMPs “fall far short in this area.”<sup>34</sup> Deficiencies 1-3 in Resolution WSD-002 each deal with aspects of the WMP risk showing and the RSE calculation. To resolve these deficiencies, the WSD required utilities to provide additional risk information through the remedial compliance plans and the quarterly reports. The WSD should require that this additional risk data be included in the WMP updates for 2021, along with more granular RSE data.

The RSE calculations included in most of the utilities’ 2020 WMP are insufficiently granular to achieve the primary purpose of the RSE, which is to assist the utilities in “choosing mitigation measures that present the greatest utility-caused wildfire risk reduction at the least cost.”<sup>35</sup> WSD-002 states that “2020 WMP submissions contain sparse and sporadic detail regarding the RSE of WMP initiatives.”<sup>36</sup> Most WMPs included RSE data at the program level, which is not useful in considering the value of potential mitigations.

The utilities should be using RSE data to help determine which mitigations to choose for implementation. Doing so requires granularity both on the mitigations chosen for implementation through the WMP and alternative mitigations that are not chosen. The RSE of undergrounding a specific circuit in the Tier 3 HFTD will differ from the RSE of alternative mitigations such as installing covered conductor or implementing extended vegetation clearances. The utilities’ RSE showings should be sufficiently granular to demonstrate these differences and to inform decision-making on a project basis.

At minimum, the RSE data should be disaggregated from the program level in various geographical areas to provide more useful analysis. For example, RSE calculations that are disaggregated by tiers of HFTD will allow comparison of the relative effectiveness of a mitigation across the tiers. Some mitigations that are not efficient to implement in the Tier 2 HFTDs may nonetheless be efficient to implement in the Tier 3 HFTDs due to the greater risk of wildfire ignition and spread.

For “control” or “fundamental” programs, utilities should estimate a marginal benefit and marginal RSE. This would allow better consideration of both risks and costs. A marginal RSE score would allow the WSD and other stakeholders to analyze, for example, how much risk reduction could be achieved if a utility increased or decreased work on a specific program by 5 percent?

**F. The WSD should provide clear definitions for data and metrics.**

**1. Collecting accurate data on injuries will be challenging.**

The Staff Proposal on WMP requirements asks utilities to report injuries in utility-ignited wildfires.<sup>37</sup> An accurate count of injuries would be valuable. However, Cal Advocates observes that counting

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<sup>34</sup> Resolution WSD-002, p. 19.

<sup>35</sup> Resolution WSD-002, p. 19.

<sup>36</sup> Resolution WSD-002, p. 20.

<sup>37</sup> Staff Proposal on WMP Requirements, Section 6: Metrics and Underlying Data, p. 14.

fatalities from utility-caused wildfires has proven difficult and contentious. Identifying all injuries will be far more difficult and subjective. Therefore, the WSD should establish a clear process for defining<sup>38</sup> and counting injuries, specify the level of significant injuries that must be reported, the process to identify injuries, and require utilities to identify the sources of information they used.

**2. The WSD should define which costs are included in the “increases in electric costs due to wildfires.”**

The Staff Proposal on WMP Requirements asks utilities to report the increase in electric costs to ratepayers due to wildfires.<sup>39</sup> Cal Advocates appreciates the inclusion of this table, which can provide important information. However, the WSD should provide a specific definition of which wildfire costs are included in this table, so that the cost data is meaningful.

“Wildfire costs” could include many disparate types of costs, including the following:

- Costs of damages to utility facilities (and associated rebuilding) that the utility *has* received approval to recover from ratepayers,
- Costs of damages to utility facilities (and associated rebuilding) that are tracked in memorandum accounts (e.g., the Catastrophic Event Memorandum Account or Wildfire Expense Memorandum Account), which the utility *has not* yet obtained approval to recover from ratepayers,
- Third-party tort claims and insurance subrogation claims for wildfire damages, that the utility *has* received approval to recover from ratepayers,
- Third-party tort claims and insurance subrogation claims for wildfire damages, that the utility *has not* yet obtained approval to recover from ratepayers,
- Litigation costs related to third-party claims,
- Liability insurance costs,
- Costs that are paid by a utility and subsequently reimbursed by the state Wildfire Fund.

Cal Advocates recommends disaggregating the wildfire cost data into several categories, such as the ones listed above. At minimum, the table should separate costs that are currently included in utility rates from costs that are not currently in rates but may be recovered in the future. Costs recorded in memorandum accounts should be included because they may affect ratepayers in upcoming years.

Unless the WSD provides specific guidance for this table, the data may not be meaningful or comparable.

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<sup>38</sup> One possibility is to adapt the U.S. Occupational Safety and Health Administration’s definition of a recordable injury or illness. Although intended for workplace injuries, this definition could be adapted to other purposes. This definition includes “any work-related injury or illness that results in loss of consciousness, days away from work, restricted work, or transfer to another job; any work-related injury or illness requiring medical treatment beyond first aid; any work-related diagnosed case of cancer, chronic irreversible diseases, fractured or cracked bones or teeth, and punctured eardrums,” as well as work-related fatalities. See <https://www.osha.gov/recordkeeping/>

<sup>39</sup> Staff Proposal on WMP Requirements, p. 9.

**3. The WSD should revise the wildfire costs table to improve clarity and transparency about the impacts of wildfires on ratepayers.**

The Staff Proposal on WMP Requirements asks utilities to report increases in electric costs due to wildfires and due to wildfire mitigation activities.<sup>40</sup> This information is valuable, but the table requires clarification.

First, it is unclear whether utilities are required to report costs in the year that they are incurred or the year they are recovered from ratepayers. For example, a wildfire that occurred in 2015 could result in costs incurred 2015 and 2016. Different types of costs are recovered from ratepayers on different schedules, so this fire could affect electric rates for several years afterwards. A similar situation exists for wildfire mitigation costs: mitigation costs are often recorded in memorandum accounts, with recovery sought in subsequent years.

The two different interpretations of this table could lead to vastly different results. To address this problem, Cal Advocates recommends including two versions of the wildfire costs table: one based on the calendar year costs are incurred, and one based on revenue requirement by calendar year.<sup>41</sup>

Second, the WSD should clarify that utilities should report comprehensive totals of wildfire mitigation costs. The costs of wildfire mitigation activities are currently spread across multiple proceedings and filings, including General Rate Case cost forecasts, separate applications for authorization of mitigation spending<sup>42</sup> or cost recovery,<sup>43</sup> and WMP submissions.

Third, Cal Advocates recommends separating capital costs from operations and maintenance costs (expenses), because these types of costs are recovered over different time periods. This distinction should be applied to both costs due to wildfires and costs due to wildfire mitigation. Making this distinction will improve transparency about the current and future burden on ratepayers.

Fourth, the wildfire costs table should extend back to 2015, at minimum. The Butte Fire in 2015 was a significant event that should be included within the scope of the table. The WSD should also request forecasts for 2021 and 2022.

Therefore, the WSD should include tables similar to the two examples below in the 2021 WMP guidelines.

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<sup>40</sup> Staff Proposal on WMP Requirements, p. 9.

<sup>41</sup> Costs incurred in a single year are often recovered over many years. For example, a capital expenditure in 2020 may be recovered over the next 30 years. For a \$1 million capital project implemented in 2020, the cost incurred is \$1 million in 2020; the revenue requirement is a much smaller amount every year from 2021 to 2050.

<sup>42</sup> See, for example, SCE's Application for Approval of Its Grid Safety and Resiliency Program, A.18-09-002.

<sup>43</sup> See, for example, SDG&E's Application for Recovery of Under-collection Recorded in the Tree Trimming Balancing Account, A.20-07-003.

Wildfire-related Costs to Ratepayers Based on <b>Costs Incurred</b> by Calendar Year									
Metric		2015	2016	2017	2018	2019	2020	2021*	2022*
Increase in electric costs due to wildfires (annual total)	Capital expenditures								
	Expenses								
Increase in electric costs due to wildfire mitigation activities (annual total)	Capital expenditures								
	Expenses								
* 2021 and 2022 forecasts should be based on the assumption that no additional utility-caused wildfires occur after December 31, 2020.									

Wildfire-related Costs to Ratepayers Based on <b>Revenue Requirement</b> by Calendar Year									
Metric		2015	2016	2017	2018	2019	2020	2021*	2022*
Increase in electric costs due to wildfires (annual total)	Revenue requirement for capital								
	Revenue requirement for expenses								
Increase in electric costs due to wildfire mitigation activities (annual total)	Revenue requirement for capital								
	Revenue requirement for expenses								
* 2021 and 2022 forecasts should be based on the assumption that no additional utility-caused wildfires occur after December 31, 2020.									

**4. The WSD should clearly define types of outages.**

The WSD should require clear and separate reporting on the various types of outages that customers experience. First, the WSD should define whether the term “planned outage” includes utility voluntary de-energization outages (also known as Power Safety Power Shutoffs or PSPS events). The terms “unplanned outage” and “planned outage” are broad and leave room for interpretation. As a result, it is unclear whether de-energization events are separate from these categories or a subset of one category.

Second, the WSD should include a table that clearly illustrates the extent and causes of outages that customers experience. The best way to do this is to create a side-by-side comparison of all types of outages (unplanned, planned excluding de-energization events, and de-energization). Cal Advocates recommends including a table similar to the following example in the 2021 WMP guidelines, including data on at least the five most recent years.

Annual Outage Data					
		Unplanned	Planned outages excluding de-energization	De-energization events	Total
2020	Total customer-hours				
	Number of customer accounts as of October 1				
	Hours per customer				

**5. The WSD should revise the proposed metrics on de-energization events.**

The WSD’s focus on improving information related to de-energization events and ensuring that the utilities accurately report on lessons learned is important. However, the Staff Proposal on WMP Requirements relies on a flawed counting method to measure the impact of de-energization events.<sup>44</sup> When calculating the percentage of customers affected by de-energization events, the Staff Proposal would have utilities count the same customer multiple times in some cases. This counting method does not accurately represent the impact of de-energization events on customers. As a simple example, suppose a utility has ten customers and two separate de-energization events, with both events affecting the same five customers. According to WSD’s counting method, 100 percent of the customers have been affected. This approach skews the data and renders it confusing. The WSD should instead require the utilities to simply report the raw numbers of customers affected. Readers of the WMP can calculate the percentages.

Additionally, utilities have historically counted a meter as a customer, and not the number of people served by that meter. To elucidate the impact of de-energization on customers, the WSD should ask for both the number of accounts (i.e., meters) affected and the number of individuals affected.

Cal Advocates recommends that the WSD require utilities to report the following data, for each calendar year, in the PSPS section of the WMP:

- Number of unique *customer accounts* affected by de-energization events;

<sup>44</sup> Staff Proposal on WMP Requirements, p. 19.

- Estimated number of unique *individuals* affected by de-energization events (i.e., separately counting individuals in a household and customers behind a master meter);<sup>45</sup>
- Number of *customer-account* shutoffs (counting each account as many times as it is shut off);
- Estimated number of unique *individual* shutoffs (counting each individual as many times as it is shut off); and
- Total number of *customer accounts* the utility serves (as of October 1<sup>st</sup> of any given year).
- Estimated number of *individuals* the utility serves (as of October 1<sup>st</sup> of any given year).

With this data, the WSD and stakeholders accurately understand the impact of de-energization events on utility ratepayers.

**6. The WSD should invite additional comments on de-energization metrics.**

The WSD should create an additional opportunity for public comments focused on annual de-energization metrics, and should provide notice to the service list of the de-energization rulemaking (R.18-12-005). There are numerous stakeholders engaged in de-energization proceedings who may have valuable contributions on this topic. Currently, utilities report detailed information about each de-energization event in the de-energization rulemaking but do not report metrics on an annual basis.

Cal Advocates suggests that the WMP guidelines require utilities to report on the following additional annual de-energization metrics:

- Number of customer accounts of public safety partners / priority-notification entities who were given less than two-day notice in advance of the PSPS event;
- Number of customer accounts of all customers other than public safety partners / priority-notification entities who were given less than one-day notice in advance of the PSPS event;
- Number of customer accounts prevented from being de-energized as a result of sectionalization.

**III. SYSTEM HARDENING FOR ELECTRIC UTILITY RESILIENCE (SHEUR) STANDARD**

**A. The SHEUR proposal is useful because it would provide a standard for measuring the efficient use of resources.**

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<sup>45</sup> The WSD should require utilities to explain their method of estimating individual customers behind a household meter or a master meter. Preferably, utilities should use census-block data on population (or residents per household) to estimate the population in the de-energized area.

The WSAB has recommended developing a System Hardening for Electric Utility Resilience (SHEUR) standard.<sup>46</sup> The proposed SHEUR standard “would set an acceptable level of risk, and the utilities would be required to establish a risk reduction plan to meet the threshold using the suite of available wildfire mitigation tools in combination.”<sup>47</sup> WSAB Member John Mader presented this proposal at the August 11, 2020 workshop.<sup>48</sup>

The SHEUR proposal has promise. This proposed approach to wildfire mitigation is useful for two main reasons. First, it would allow the Commission to require utilities to prioritize projects according to risk. With a SHEUR standard in place, the Commission could require utilities to allocate limited resources to the projects that yield the greatest benefits, in terms of improved safety and reductions in de-energization as measured by an objective standard. Electric utilities have indicated that limited staffing, equipment, and other resource constraints are key factors that hinder their ability to reduce wildfire risk.<sup>49</sup> The SHEUR proposal would ensure that utilities place the most beneficial projects at the front of the queue, resulting in more rapid improvements in safety and reliability for customers.

The second important feature of the SHEUR proposal is that, if adopted by the Commission, it would provide insight into utility decision-making. The SHEUR proposal would require utilities to analyze and prioritize individual projects, not just programs. With this approach, regulators and stakeholders can transparently see whether a utility’s decision-making is guided by evidence and the best interests of customers.

Project-level analysis is crucial because program-level results depend on which projects are selected for implementation first. Suppose a utility has identified 100 potential system hardening projects, but only has the capacity to implement 10 per year. The 10 projects the utility selects in the first year will substantially affect the program’s success, not only in the first year but over the entire decade. If the utility selects the most effective projects first, customers will receive the benefits of those projects for all 10 years. Additionally, the benefits of some projects may depend on performing system hardening farther upstream on the circuit, in which case a failure to prioritize would nullify the project’s potential benefits to customers.

### **B. The SHEUR proposal merits further development.**

The SHEUR proposal is a promising concept that requires further technical and policy development before it can be implemented. Cal Advocates recommends that the WSD, the WSAB, and the Commission work with stakeholders to continue developing the SHEUR proposal. Rulemaking (R.) 20-07-013, the new rulemaking on risk-based decision-making, is an appropriate venue to consider

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<sup>46</sup> WSAB Recommendations for 2021, Recommendation 4.1, pp. 36-38.

<sup>47</sup> WSAB Recommendations for 2021, p. 37.

<sup>48</sup> Mr. Mader’s presentation is available at <http://cpuc.ca.gov/wsab>

<sup>49</sup> For example, PG&E states that “limited resources are a significant, but far from the only, execution risk facing WMP implementation” and identifies resource limitations as an issue in “a few key areas, including Vegetation Management.” (See PG&E’s 2020 WMP, Section 5.1.C, p. 5-8.) Liberty Utilities states that it “is concerned about limited resources over the next three to five years,” and identifies personnel shortages as a particular concern. (See Liberty’s 2020 WMP, pp. 36 and 108.) Bear Valley Electric Service has identified challenges procuring reasonably priced contractors for infrastructure work due to high demand among all California utilities for skilled personnel. (See *Comments of the Public Advocates Office on the 2020 Wildfire Mitigation Plans*, April 7, 2020, p. 55.)



this proposal. The Order Instituting Rulemaking identifies risk tolerance standards as an issue within the scope of R.20-07-013,<sup>50</sup> and therefore the SHEUR proposal could fit within the scope.

The first step is to develop a complete technical proposal. Technical issues include developing a detailed methodology to:

- Quantify wildfire risks on each circuit and segment,
- Identify all feasible system hardening options for wildfire risk mitigation on each circuit and segment,
- Quantify the risk-reduction benefits of various system hardening options, and
- Quantify risks in varying weather conditions.

Since the technical issues are complex, Cal Advocates recommends the WSD or WSAB oversee the hiring of a consultant to address these issues. The amount of analysis required to develop a full SHEUR methodology makes it infeasible to accomplish this solely through stakeholder comments or testimony. Cal Advocates recommends asking a consultant to develop a detailed, technical proposal for a SHEUR standard. The consultant's report should include alternatives where there are multiple options to accomplish similar goals.

The consultant's study will provide a basis for informed stakeholder input. The Commission should issue the consultant's report as a staff white paper in R.20-07-013 and should solicit input from parties on both technical and policy issues.

Policy issues follow from the development of a detailed and uniform methodology for quantifying risks. Once a methodology is available, the Commission and stakeholders can address the policy implications of the SHEUR proposal. Policy questions will include:

- Should the Commission set a risk tolerance threshold or simply require utilities to prioritize projects according to risk-reduction benefits?
- How would utilities demonstrate that they have prioritized wildfire mitigation projects according to the SHEUR method? Should the WSD or the Commission implement incentives or penalties to induce utilities to prioritize projects according to the SHEUR method?
- If the Commission sets a SHEUR threshold, what level of risk is acceptable? At what risk levels (i.e., in what weather conditions) should a utility de-energize its system?
- How would a SHEUR threshold be implemented and enforced?
- What are the policy implications of adopting a SHEUR threshold?
  - Would it affect judgments about the reasonableness of de-energization events?
  - Would it affect judgments about whether a utility is at fault for igniting a wildfire (i.e., whether the utility has operated its system prudently)?

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<sup>50</sup> R.20-07-013, *Order Instituting Rulemaking to Further Develop a Risk-based Decision-making Framework for Electric and Gas Utilities*, July 16, 2020, pp. 29-33 and 37.

- Would it affect whether costs resulting from a wildfire are eligible for reimbursement from the Wildfire Fund?
- Would a utility be penalized for failing to follow the SHEUR threshold?

The Commission should consider these policy questions in R.20-07-013, with input from the WSD, the WSAB, and all stakeholders.

#### **IV. STAFF PROPOSAL ON SAFETY CULTURE ASSESSMENT PROCESS**

##### **A. Remedies appropriate for PG&E may not be applicable for all utilities.**

The WSD developed its *Draft Recommendations for Developing a Safety Culture Assessment Process* in response to the requirements of Public Utilities Code Section 8389 (d)(4) and (e)(2), which require an annual safety culture assessment in order for electrical corporations to achieve safety certification. The WSD's presentation on the proposed process for assessing the safety culture of utilities referred to some of the requirements imposed on PG&E as part of the Commission's Decision 20-05-053, which approved PG&E's plan of reorganization from bankruptcy. D.20-05-053 noted that PG&E's safety record since at least 2008 had "ranged from dismal to abysmal."<sup>51</sup> Thus, the structural remedies that D.20-05-053 imposed on PG&E may not be necessary or appropriate for utilities whose conduct has not reflected the same disregard for safety as PG&E.

##### **B. A strong safety culture should permeate an organization from top to bottom, but utilities should designate the Chief Executive Officer (CEO) as the accountable officer.**

A strong safety culture should permeate a company from the bottom to the top, with leadership from the CEO. The WSD should require utilities to designate the CEO as the accountable officer for safety.

Specifically, Cal Advocates recommends that the WSD adopt a safety management system requirement similar to the Canadian model. The Canada Energy Regulator (CER) requires operators to designate an accountable officer (which is typically the CEO). The role is defined as someone "who has the authority over the company's human and financial resources required to establish, implement and maintain its management system and protection programs, and to ensure that the company meets its obligations for safety, security and protection of the environment."<sup>52</sup> <sup>53</sup>

The WSD should also require that each utility designate its CEO to lead the safety culture of the organization. Alcoa Corporation provides an example of the influence that a CEO may have on

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<sup>51</sup> D.20-05-053, p. 17.

<sup>52</sup> Canadian Energy Regulator Act Onshore Pipeline Regulations (OPR), Section 6.2. See, <https://www.cer-rec.gc.ca/bts/ctrq/gnnb/nshrppln/cmpnysbmssnrqrmnt-eng.html>

<sup>53</sup> Companies have 30 days to notify the CER of the name of its accountable officer after the appointment is made, and the accountable officer must also submit a signed statement accepting the responsibilities of the position. See section 6.2 of the Canadian Energy Regulator Act Onshore Pipeline Regulations. See, <https://www.cer-rec.gc.ca/bts/ctrq/gnnb/nshrppln/cmpnysbmssnrqrmnt-eng.html>

safety culture.<sup>54</sup> The WSD should require that utilities make experience in instituting a strong safety culture a foremost requirement in selection of the CEO.

However, building and maintaining a strong safety culture is an organization-wide responsibility that cannot be assigned to a single person. For this reason, Cal Advocates disagrees that it is necessary to appoint a Chief Safety Officer whose sole responsibility is safety. The title “Chief Safety Officer” is problematic because it implies that safety is not the CEO’s responsibility. While an executive focused on safety can help formulate and instigate the creation of an effective safety culture, safety culture must be the responsibility of more than one individual.

The proposed role of “Chief Safety Officer” would also combine disparate functions that do not fit together. Some aspects of safety relate to the utility’s delivery of electricity, such as installing covered conductor to reduce the risk of wildfires. Other aspects of safety relate to how the employees and contractors of the utility perform their duties, including following procedures designed to protect their safety and the safety of the customers they serve.

## V. STAFF PROPOSAL ON DATA REPORTING REQUIREMENTS

### A. The proposed data reporting schema will substantially improve the WMPs.

The WSD developed its Staff Proposal on Data Reporting<sup>55</sup> in response to shortfalls in the data submissions in the 2020 WMPs.<sup>56</sup> Although the utilities submitted large amounts of GIS and other data, “the 2020 WMP process has highlighted the need for additional refinement and improvement across all electrical corporation data submissions to ensure compatibility, completeness and usefulness.”<sup>57</sup> To address that issue, the WSD developed the Staff Proposal on Data Reporting in collaboration with sister agencies and is implementing a platform to manage spatial data.<sup>58</sup>

Cal Advocates supports the Staff Proposal on Data Reporting as a much needed step to standardize the format and type of data submitted by the utilities, thereby enhancing the usefulness of the data. Eventually, the standardized data will allow the WSD to analyze past wildfires and engage in predictive analytics to decrease the risk of future wildfires.<sup>59</sup> Cal Advocates supports the WSD’s recommendation to implement the new data submission requirements on a phased based, in

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<sup>54</sup> During the tenure of Paul O’Neill as CEO of Alcoa, injuries decreased while market value and net income increased. This video provides more information: [https://www.youtube.com/watch?v=tC2ucDs\\_XJY](https://www.youtube.com/watch?v=tC2ucDs_XJY)

<sup>55</sup> *Draft Wildfire Safety Division (WSD) Geographic Information System (GIS) Data Reporting Requirements and Schema for California Electrical Corporations*, August 5, 2020, available at [https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About\\_Us/Organization/Divisions/WSD/WSD%20GIS%20Data%20Reporting%20Standards\\_DRAFT\\_20200805.pdf](https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/About_Us/Organization/Divisions/WSD/WSD%20GIS%20Data%20Reporting%20Standards_DRAFT_20200805.pdf)

<sup>56</sup> *GIS Data Reporting Standards*, slide 7, presented by Mr. Tomassian at the August 12, 2020 WSD Workshop.

<sup>57</sup> *Resolution WSD-002, Guidance Resolution on 2020 Wildfire Mitigation Plans Pursuant to Public Utilities Code Section 8386*, June 19, 2020 (WSD-002), p. 29.

<sup>58</sup> *GIS Data Reporting Standards*, slide 7. The platform for managing spatial data is ArcGIS Enterprise.

<sup>59</sup> *GIS Data Reporting Standards*, slide 5.

recognition of the fact that utilities may not be currently collecting all the data required in the Staff Proposal.<sup>60</sup>

Cal Advocates requests two additions to the draft data schema. The first request is to add a customer type attribute to the PSPS Event Customer Meter Feature Class. The second request is to add a new Customer Lookup Table that would enable Customer Types for each asset feature classes to be counted. The new schemas for each table are provided in Appendix A.

The depth, breadth, and format of the data as described in the Staff Proposal appear likely to meet the data requirements of Cal Advocates. Cal Advocates understands, based on its participation in the data schema development working group, that the WSD will work to make the WMP data accessible to Cal Advocates and other stakeholders. This will be important to promote transparency and to enable informed stakeholder engagement on wildfire risk issues.

## VI. CONCLUSION

The Public Advocates Office respectfully requests that the Wildfire Safety Division adopt the recommendations discussed herein, as well as the recommendations for future WMP requirements that Cal Advocates provided in its comments on the 2020 WMPs.<sup>61</sup>

Sincerely,

*/s/ Nathaniel W. Skinner*

Nathaniel W. Skinner, PhD  
Program Manager, Safety Branch

Public Advocates Office  
California Public Utilities Commission  
(415) 703-1393  
Email: [Nathaniel.Skinner@cpuc.ca.gov](mailto:Nathaniel.Skinner@cpuc.ca.gov)

Cc: Melissa Semcer, Wildfire Safety Division,  
[wildfiresafetydivision@cpuc.ca.gov](mailto:wildfiresafetydivision@cpuc.ca.gov)  
Service List of R.18-10-007

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<sup>60</sup> *GIS Data Reporting Standards*, slide 8.

<sup>61</sup> *Comments of the Public Advocates Office on the 2020 Wildfire Mitigation Plans*, April 7, 2020.

**APPENDIX A – ADDITIONAL DATA ATTRIBUTES, FEATURES AND TABLES**

**PSPS Event Customer Meter (Feature Class)**

This layer includes points for the customer meters assigned to customers who experience a PSPS event. Its geometry will always be a subset of the “Customer Meters” feature class.

<b>Field Name</b>	<b>Field Description</b>	<b>Field Type</b>
PspseventmeterID	An underscore delimited concatenation of "EventID"+"_"+"AssetID." Primary key for the PSPS Event Customer Meter Point.	Text
EventID	A unique standardized identification name of the unique PSPS event associated with a customer meter. Foreign key enabling connection to the “PSPS Event Log” table.	Text
AssetID	Unique ID for a specific meter. It should be a traceable stable ID within the utility’s operations/processes. Foreign key to the Meter table.	Text
UtilityID	Standardized identification name of the utility (“Utility,” etc.).	Text
<b><u>Cust Type</u></b>	<p><b><u>Type of customer being served by the meter (as requested under Decision 12-04-024)</u></b></p> <p><b><u>Possible Values:</u></b></p> <ul style="list-style-type: none"> <li>• <b><u>Residential Customer</u></b></li> <li>• <b><u>Medical Baseline Customer</u></b></li> <li>• <b><u>Commercial Industrial Customer</u></b></li> <li>• <b><u>Federal State or local agency</u></b></li> <li>• <b><u>Other Customer</u></b></li> </ul>	<b><u>Text</u></b>
HFTDClass	<p>The CPUC high-fire threat district (HFTD) area the customer meter intersects. Possible values:</p> <ul style="list-style-type: none"> <li>• Tier 3</li> <li>• Tier 2</li> <li>• Zone 1</li> <li>• Non-HFTD</li> </ul>	Text
County	County in which asset is located.	Text

**New Table: Customer Lookup Table (Related Table)**

This table provides linkage between the customer accounts and the specific asset feature classes. Use of this table will allow counts of customers and customer types associated with each asset class.

Field Name	Field Description	Field Type
CustomerID	An underscore delimited concatenation of Primary key for the Customer Look up table. It should be a unique standardized ID for each customer account.	Text
MeterID	Unique ID for a specific meter. It should be a traceable stable ID within the utility's operations/processes. Foreign key to the Meter table.	Text
TransformerID	Unique ID for a specific transformer with which the customer account is associated. It should be a traceable stable ID within the utility's operations/processes. Foreign key to the Transformer table.	Text
CircuitID	Unique ID for a specific circuit with which the customer account is associated. It should be ID of circuit associated with asset. This will be a unique standardized identification name of the circuit. Foreign key to the Circuit table.	Text
SubstationID	ID of substation associated with asset. Foreign key to the Substation table	Text
Cust_Type	Type of customer being served asset (as requested under Decision 12-04-024) Possible Values: <ul style="list-style-type: none"> <li>• Residential Customer</li> <li>• Medical Baseline Customer</li> <li>• Access and Functional Needs Customer</li> <li>• Electricity-Dependent Medical Customer (but not Medical Baseline or Access and Functional Needs)</li> <li>• Commercial Industrial Customer</li> <li>• Federal State or local agency</li> <li>• Other Customer</li> </ul>	Text
PubSafePart	Flag indicating Public Safety Partner account	Boolean
HFTDClass	The CPUC high-fire threat district (HFTD) area the customer meter intersects. Possible values: <ul style="list-style-type: none"> <li>• Tier 3</li> <li>• Tier 2</li> <li>• Zone 1</li> <li>• Non-HFTD</li> </ul>	Text
County	County in which asset is located.	Text
RecStartDate	Date record was added to Customer Lookup Table	Date
RecEndDate	Date record was superseded due to change in in Customer ID	Date