State of California – A Natural Resources Agency
Gavin Newsom, Governor

OFFICE OF ENERGY INFRASTRUCTURE SAFETY
715 P Street, 20th Floor | Sacramento, CA 95814
916.902.6000 | *www.energysafety.ca.gov*

Caroline Thomas Jacobs, Director

August 30, 2022

To: 2022 Wildfire Mitigation Plans docket (#2022-WMPs)
Subject: Decision on HWT's 2022 Wildfire Mitigation Plan Update

Dear Wildfire Mitigation Plan stakeholders,

Enclosed is the Office of Energy Infrastructure Safety's (Energy Safety's) final Decision on Horizon West Transmission's (HWT's) 2022 Wildfire Mitigation Plan (WMP) Update.

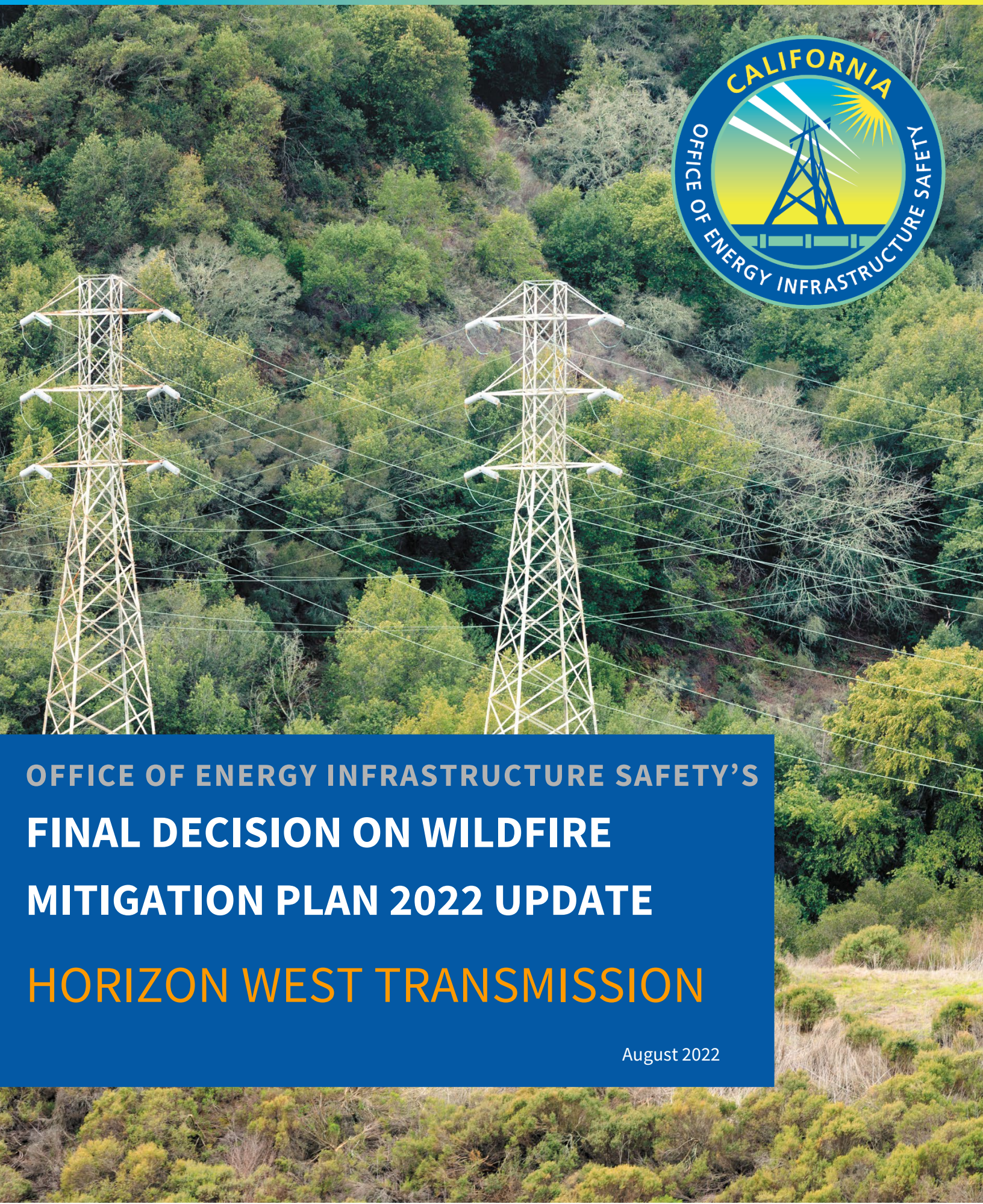
On July 28, 2022, Energy Safety published a draft of this Decision on its website and served it to Energy Safety's 2022 Wildfire Mitigation Plans service list for public review and comment.

Comments on the draft Decision were due on August 11, 2022, and reply comments were due on August 22, 2022. Energy Safety did not receive any comments on the HWT draft Decision.

This Decision documents Energy Safety's approval of HWT's 2022 WMP Update.

Sincerely,

Lucy C. Morgans
Program Manager | Electrical Infrastructure Directorate
Office of Energy Infrastructure Safety



OFFICE OF ENERGY INFRASTRUCTURE SAFETY'S

FINAL DECISION ON WILDFIRE MITIGATION PLAN 2022 UPDATE

HORIZON WEST TRANSMISSION

August 2022

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Executive Summary

The Office of Energy Infrastructure Safety (Energy Safety) was formed in July 2021 to ensure electrical utilities take effective actions to reduce utility-related wildfire risk. Energy Safety strives to deliver near-term results while promoting a long-term utility vision to reduce wildfire and build cultures of safety.

The California Legislature enacted several measures requiring electrical corporations to reduce risk of utility-caused catastrophic wildfires. Key legislative measures include Assembly Bills 1054 and 111, Public Utilities Code sections 326(b) and 8389, Senate Bills 901 and 1028, and Government Code section 15475 (see Section 1.1, Legal Authority).

Pursuant to Public Utilities Code section 8386.3(a), this Decision serves as Energy Safety's assessment and approval of Horizon West Transmission's (HWT's) Wildfire Mitigation Plan 2022 Update (2022 Update) submitted on May 6, 2022.

Energy Safety's Decision considers and, where appropriate, incorporates comments from the public and other stakeholders.

This Executive Summary includes a high-level summary of Energy Safety's assessment of HWT's maturity model, progress, and areas in the current plan Energy Safety determined warrant continued improvement. Energy Safety's comprehensive evaluation is included as Section 4. As a result of this evaluation, Energy Safety found no areas for continued improvement for HWT in response to its 2022 Update.

Maturity Model Evaluation

Energy Safety introduced a maturity model (the Utility Wildfire Mitigation Maturity Model) in 2020, providing a method to assess utility wildfire risk reduction capabilities and examine the relative maturity of individual wildfire mitigation programs. In February 2020, the utilities completed a survey that established a baseline for maturity as well as their anticipated progress over the three-year plan period. In 2021 and 2022, the utilities again completed the survey, enabling Energy Safety to monitor progress and ascertain potential improvements to maturity based on self-reported progress to date.

Energy Safety makes the following key findings regarding HWT's maturity progress in 2022 and over the three-year plan cycle. Detailed explanations of utility maturity are contained in each section of the evaluation.

- HWT has enhanced its climate scenario modeling by adding historical data of incidents and near misses, instead of only independent expert assessment, and increasing the granularity of its modeling to an asset-based level.
- HWT increased its confidence intervals for its wildfire risk assessments from greater than 60 percent or no interval to greater than 80 percent.
- HWT has increased the automation of its ignition risk estimation process from no automation to being partially automated.
- While HWT's overall maturity in the grid design and hardening category has remained the same from 2021 to 2022, it has increased in its maturity for some capabilities.

Areas of Significant Progress

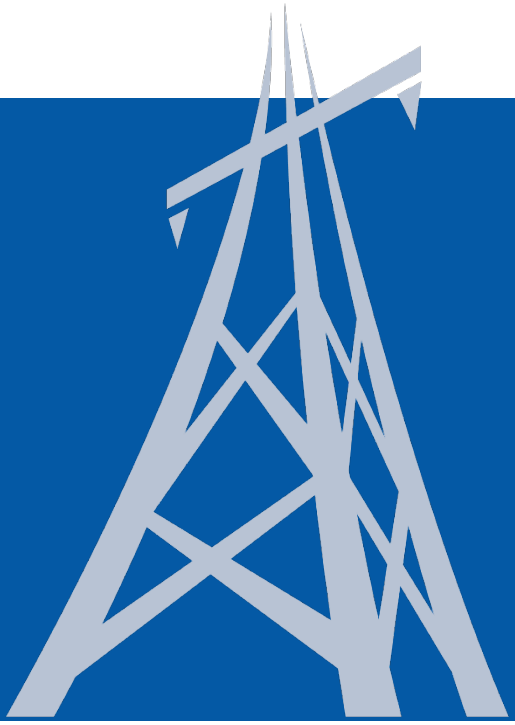
HWT has made significant progress over the past year and/or has matured in its mitigation strategies for future years in the following areas:

- HWT's maturity level has increased over the current WMP cycle, and it is on track to attain its projected growth in the situational awareness and forecasting category by 2023.

Areas for Continued Improvement

Energy Safety evaluated 2022 Updates with a particular focus on how each utility is driving down the risk of utility-related ignitions. The evaluation included assessing the utility's progress implementing wildfire mitigation initiatives, evaluating the feasibility of its strategies, and measuring year-to-year trends. As a result of this evaluation, Energy Safety identified areas where the utilities should continue to improve its wildfire mitigation capabilities in future plans.

With respect to HWT's 2022 Update, Section 4 contains Energy Safety's detailed assessment. Energy Safety did not find any areas for continued improvement in its evaluation of HWT's 2022 Update.



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1. Introduction and Background

Horizon West Transmission (HWT), an independent transmission operator (ITO), submitted a comprehensive Wildfire Mitigation Plan (WMP or Plan) in 2020 covering a three-year term from 2020 through the end of 2022 (the current WMP cycle). HWT submits annual updates to that Plan for Office of Energy Infrastructure Safety (Energy Safety) approval or denial. This Decision represents Energy Safety's assessment of HWT's 2022 WMP Update (2022 Update), which HWT submitted on May 6, 2022, in response to Energy Safety's Final 2022 WMP Update Guidelines[1] (Guidelines).

Energy Safety approves HWT's 2022 Update.

1.1 Legal Authority

In 2018, following the devastating wildfires in 2016 and 2017, the California Legislature passed several bills increasing regulatory supervision of the electrical corporations' efforts to reduce utility-related wildfires. Assembly Bill (AB) 1054 (Statutes of [Stats.] 2019, Chapter [Ch.] 79) created Energy Safety (initially formed as the Wildfire Safety Division [WSD] at the California Public Utilities Commission [CPUC]) and tasked it with reviewing annual WMPs submitted by electrical corporations.

The main regulatory vehicle for Energy Safety to evaluate electrical corporations' wildfire risk reduction efforts is the WMP, which was first introduced in Senate Bill (SB) 1028 (Stats. 2016, Ch. 598) and further defined in subsequent legislation. Investor-owned electrical corporations[2] are required to submit WMPs assessing their level of wildfire risk and providing plans for wildfire risk reduction. The CPUC evaluated the utilities' first WMPs under the SB 901 (Stats. 2018, Ch. 626) framework in 2019.[3]

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[1] Final 2022 Wildfire Mitigation Plan Update Guidelines (accessed January 26, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true,

[2] In this document "utility" should be understood to mean "electrical corporation."

[3] See Rulemaking 18-10-007.

On July 1, 2021, all functions of the CPUC's WSD were transferred to Energy Safety.[4] Energy Safety "is the successor to […] and is vested with, all of the duties, powers, and responsibilities of the Wildfire Safety Division,"[5] including, but not limited to, jurisdiction for evaluating and approving or denying utilities' WMPs and evaluating compliance with the WMPs. Energy Safety must ensure utility wildfire mitigation efforts sufficiently address utility wildfire risk. To support its efforts, Energy Safety developed a long-term strategic roadmap, Reducing Utility-Related Wildfire Risk (2020).[6] This strategic roadmap underpins Energy Safety's evaluation of the WMPs.

1.1.1 Cost Recovery

Statute requires electrical corporations to seek cost recovery and prove all expenditures are just and reasonable at a future time in their general rate cases (GRCs) or an appropriate application.[7] Nothing in this Decision should be construed as approval of WMP-related costs.[8]

1.2 Multi-Year Plan Process

In February 2020, the utilities[9] submitted their three-year 2020–2022 WMPs. In 2020, Energy Safety conducted its evaluation and either approved, conditionally approved, or denied the Plans. In the case of conditional approval, Energy Safety identified areas for further improvement in the Plans, assigning these areas different severity levels, and required the utilities to address issues through various mechanisms depending on the designation of severity, Class A, B, or C.

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[4] Public Utilities Code § 326(b).

[5] Gov. Code § 15475.

[6] Energy Safety's strategic roadmap Reducing Utility-Related Wildfire Risk (2020) (accessed January 26, 2022): https://energysafety.ca.gov/who-we-are/strategic-roadmap/.

[7] Public Utilities Code § 8386.4(b).

[8] Energy Safety's approval does not relieve the electrical corporation of any and all otherwise applicable permitting, ratemaking, or other legal and regulatory obligations.

[9] Utilities that submitted a WMP in 2020: Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas & Electric Company (SDG&E), PacifiCorp, Bear Valley Electric Service, Inc. (BVES), Liberty Utilities, Trans Bay Cable, LLC, and Horizon West Transmission, LLC.

In 2021, the utilities submitted updates to their 2020 WMPs. Energy Safety evaluated the utilities' WMP Updates and either approved or denied the Plans. If Energy Safety identified a critical issue in a utility's Plan, Energy Safety issued a Revision Notice requiring the utility to remedy the issue prior to completion of Energy Safety's evaluation. (See Section 1.3.2 for more information on Revision Notices.) Upon receipt of the utility's response to the Revision Notice, Energy Safety determined if the response was sufficient to warrant approval of the WMP or insufficient such that denial of the WMP was warranted. Energy Safety did not issue a Revision Notice to HWT for its WMP 2022 Update.

Plan year 2022 is the final year in the first three-year plan cycle. Therefore, Energy Safety's evaluation of HWT's 2022 Update focuses heavily on the progress the utility made over the three-year plan cycle and whether the utility matured in its understanding of its own wildfire ignition risks and appropriate mitigations to decrease those risks.

1.3 2022 Evaluation Process

Energy Safety issued WMP Update Guidelines (Guidelines) on December 15, 2021. The Guidelines streamline the reporting and evaluation and incorporate the requirements of SB 533 (Stats. 2021, Ch. 244). Pursuant to the adopted Guidelines, HWT submitted its 2022 Update on May 6, 2022.

Energy Safety begins evaluating WMPs and Updates by reviewing the submittal for completeness. Energy Safety determines whether the submittal addresses the statutory requirements contained in Public Utilities Code section 8386(c) and the Guidelines. Energy Safety does not conduct a substantive evaluation at that time. If the WMP or Update is not complete, Energy Safety may reject the plan and require the utility to resubmit.

Once Energy Safety determines the WMP or Update is complete, Energy Safety begins its assessment using the criteria listed in Section 1.3.1. The prior year's WMPs or Updates are included in the review to gauge progress and trends.

At any time during the evaluation, Energy Safety may issue a Revision Notice for reasons listed in Section 1.3.2. The utility must respond to the Revision Notice and revise and resubmit the relevant sections of its WMP or Update.

1.3.1 Energy Safety Evaluation Criteria

Energy Safety evaluated 2022 Updates according to the following factors:

- *Completeness:* The utility comprehensively responds to the statutory requirements contained in Public Utilities Code section 8386(c) and Energy Safety's Guidelines.
- *Technical and programmatic feasibility and effectiveness:* The proposed initiatives are technically feasible and effective in addressing the risks that exist in the utility's service territory. The proposed initiatives are programmatically feasible for the specific utility given its maturity and progress to date.
- *Resource use efficiency:* The proposed initiatives are an efficient use of utility resources and focus on achieving the greatest risk reduction at the lowest cost.
- *Demonstrated year-over-year progress:* The utility demonstrates sufficient progress on objectives and program targets reported in its 2021 Update.
- *Forward-looking growth:* The utility demonstrates a clear action plan to continue reducing utility-related ignitions and the scale, scope, and frequency of Public Safety Power Shutoff (PSPS) events.[10] In addition, the utility focuses sufficiently on long-term strategies to build the overall maturity of its wildfire mitigation capabilities while reducing reliance on shorter-term strategies such as PSPS and augmented vegetation management.
- *Progress metrics:* The utility tracks the degree to which its wildfire mitigation activity has changed the conditions of its wildfire risk exposure in terms of drivers of ignition probability.
- *Outcome metrics:* The utility uses outcome metrics to measure its performance and outcomes in its service territory in terms of both leading and lagging indicators of wildfire risk, PSPS risk, and other direct and indirect consequences of wildfire and PSPS, including the potential unintended consequences of wildfire mitigation work.
- *Program targets:* The utility uses targets to track its progress toward specific objectives for its wildfire mitigation activities.[11] Program targets track the utility's pace of activity completion as laid out in the WMP but do not track the efficacy of its

[10] A Public Safety Power Shutoff (PSPS) event, also called a de-energization event, is when a utility proactively and temporarily cuts power to electric lines that may fail in certain weather conditions, in specific areas, to reduce electric facility-caused fire risk.

[11] Objectives are unique to each utility and reflect the 1-, 3-, and 10-year projections of progress toward the WMP goal.

activities. The primary use of these program targets is to track utility progress with its WMP.

To assess HWT's 2022 Update, Energy Safety relied on:

- HWT's WMP and Update submissions
- Input from the California Department of Forestry and Fire Protection (CAL FIRE)
- Public and stakeholder comments
- HWT's response to the Utility Wildfire Mitigation Maturity Survey (Maturity Survey)
- HWT's data submissions
- HWT's responses to data requests

Energy Safety's assessment of HWT's 2022 Update is summarized in Section 4.

1.3.2 Revision Notices

Public Utilities Code section 8386.3(a) states, "Before approval, the division may require modifications of the plan." Energy Safety effectuates this provision by issuing a Revision Notice. The purpose of a Revision Notice is to hold utilities accountable for:

- Submitting a sufficiently detailed 2022 Update
- Addressing issues or improvement requests from the previous year
- Providing adequate data and information to justify proposed mitigation strategies

Examples of when Energy Safety may choose to issue a Revision Notice include, but are not limited to, the following:

- The utility failed to implement the remedies detailed in the prior year's Decision[12]
- The utility did not provide sufficient information for evaluation
- The utility made a significant shift in its wildfire mitigation strategy without sufficient substantiation
- The utility's submission does not meet evaluation criteria listed in Section 1.3.1

[12] Also called an Action Statement (2020, 2021).

- An element of the WMP that is critical to life-safety or property is unsatisfactory

Energy Safety did not issue a Revision Notice to HWT for its 2022 Update.

1.3.3 Final Decision

Upon completion of its review, Energy Safety determines whether each utility's 2022 Update will be:

- Approved (approval may include a requirement that the utility demonstrate continued growth in its 2023 WMP), or
- Denied (the utility does not have an approved 2022 Update and must reapply for approval in 2023).

Energy Safety's approval of a WMP or WMP Update does not mean that the utility has reached the highest levels of maturity or has reduced its ignition risk to zero. Rather, approval means the utility has satisfied the evaluation criteria and substantiated its mitigation strategy such that implementation of the plan is appropriate. When Energy Safety approves a WMP or WMP Update, it does so with an eye toward continued improvement. When appropriate, Energy Safety lists areas where the utility must continue to mature in its capabilities, known as Areas for Continued Improvement.

2. Energy Safety Decision on HWT's 2022 Update

Pursuant to Public Utilities Code section 8386.3(a), this Decision is the totality of Energy Safety's review of HWT's 2022 Update. HWT's 2022 Update is approved.

3. Public and Stakeholder Comments

Energy Safety invited stakeholders, including members of the public, to provide comments on the utilities' 2022 Updates. WMP comments were due on June 20, 2022, and reply comments were due on June 27, 2022. Comments received on the 2022 Updates can be viewed in the 2022 Wildfire Mitigation Plan Updates (2022-WMPs) docket log.[13]

The California Department of Fish and Wildlife (CDFW) submitted comments on HWT's 2022 Update. Energy Safety evaluated CDFW's comments and concurred with its recommendation that HWT should consult CDFW and other responsible agencies as early as possible to complete required environmental documents and discretionary reviews when implementing wildfire mitigation activities.

[13] 2022 Wildfire Mitigation Plan Updates (2022-WMPs) docket log: https://efiling.energysafety.ca.gov/Lists/DocketLog.aspx?docketnumber=2022-WMPs (accessed April 14, 2022).

4. Energy Safety's Assessment of HWT's 2022 Update

The following sections present Energy Safety's comprehensive evaluation of HWT's 2022 Update, including Energy Safety's assessment of progress over the past year and throughout the current WMP cycle. Energy Safety looks at HWT's past and current WMP and Update submissions to assess year-over-year trends and track Energy Safety's past requirements as well as the utility's own projections. In addition to comparing HWT's initiatives from year to year, Energy Safety also assesses any new programs, plans, or technologies HWT is proposing in its 2022 Update. The sections below assess past progress, encourage growth through new initiatives or approaches, and identify areas for continued improvement following up on 2021 requirements.

4.1 Introductory Sections of the WMP

The introductory sections of the Guidelines[14] require the utility to report basic information regarding persons responsible for executing the plan and adherence to statutory requirements. Section 1 requires contact information (telephone and email) for the executive with overall responsibility and the specific program owners. In addition, Section 1 requires inclusion of the name and relevant background and credentials for all experts consulted in preparation of the 2022 Update. Contact information and names may be submitted in a redacted file.

Section 2 requires the utility to specify the location of the information required by Public Utilities Code section 8386(c). Each utility must affirm that the WMP Update addresses each statutory requirement AND cite the section and page number(s) where each statutory requirement is addressed.

HWT provides the required information in Section 1 and 2 of its 2022 Update, including all information required by Public Utilities Code section 8386(c).

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[14] Final 2022 Wildfire Mitigation Plan Update Guidelines, Attachment 2.1 and 2.2 pp. 25–35 (accessed February 15, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

4.2 Actuals and Planned Spending for Mitigation Plan

The actuals and planned spending section of the Guidelines[15] requires utilities to report a summary of WMP expenditures, actual and planned, for the current WMP cycle. This summary must include an estimated annual increase in costs to the ratepayer due to utility-related ignitions and wildfire mitigation activities. The Guidelines require that ratepayer impact calculations be clearly shown to demonstrate how the utility derived each value.[16]

HWT provides all required information regarding expenditures.

HWT reports no expenditures in the following initiative categories for the current WMP cycle:

- Vegetation Management and Inspections
- Data Governance
- Resource Allocation Methodology
- Emergency Planning and Preparedness
- Stakeholder Cooperation and Community Engagement

HWT reports expenditures in the following categories for the current WMP cycle (with the total for the cycle in thousands USD):

- Situational Awareness and Forecasting ($1,520)
- Grid Design and System Hardening ($25,021)
- Asset Management and Inspections ($173)
- Grid Operations and Operating Protocols, Including PSPS ($144)

See Table 4.2-1 below for a comparison of the WMP actual and planned expenditures of the two independent transmission operators (ITOs).

[15] Final 2022 Wildfire Mitigation Plan Update Guidelines, Attachment 2.3 pp. 37–40 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[16] Nothing in the request for such information should be construed as approval of any such expenditure, which is left to the CPUC pursuant to Public Utilities Code section 8386.4(b).

Table 4.2-1: Actual and Planned WMP Expenditures - ITOs
(in thousands of USD, 2020-2022)

Utility	2020 Actual	2021 Actual	2022 Planned	Total WMP Cycle as Reported in 2022
Trans Bay Cable	$ 11,300	$ 5,800	$ 610	$ 17,710
Horizon West Transmission	$ 4,632	$ 20,536	$ 1,890	$ 27,058

4.3 Lessons Learned and Risk Trends

The lessons learned and risk trends section of the Guidelines[17] requires utilities to report how their plans have evolved since 2021 based on lessons learned, current risk trends, and research conducted. This section also requires utilities to report on potential future learnings through proposed and ongoing research.

The utility must describe how it assesses wildfire risk in terms of ignition probability and estimated wildfire consequence using, at a minimum, CPUC-adopted risk assessment requirements (for large electrical corporations) from the General Rate Case (GRC) Risk-Based Decision-Making Framework Proceeding (formerly the Safety Model and Assessment Proceeding [S-MAP]) and the Risk Assessment Mitigation Phase (RAMP) Proceeding. The utility may additionally include other assessments of wildfire risk. The utility must:

- Describe how it monitors and accounts for the contributions of weather and fuel to ignition probability and wildfire consequence.
- Identify any areas where the CPUC's high fire threat district (HFTD) should be modified.

[17] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.4 pp. 41–50 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

- Identify any areas classified by the utility as "high fire threat" that differ from the CPUC's HFTD and explain why these areas are so classified.
- Rank trends anticipated to have the greatest impact on ignition probability and wildfire consequence.

HWT provides all required information on lessons learned, current risk trends, and research conducted.

In July 2021, the Road Fire occurred within four miles of HWT's Suncrest Facility and burned approximately 86 acres. The wildfire risk conditions of the area where the Suncrest Facility is located are extreme, and San Diego County has a recent history of fast-spreading wildfires. Therefore, HWT implemented additional wildfire hardening measures at the Suncrest Facility in 2020 and 2021 to enhance situational awareness and reduce wildfire risk at the asset. These measures included installation of a high-definition camera, a weather station, transformer oil gas monitoring, and a perimeter wall around the site.

4.4 Inputs to the Plan and Directional Vision for the WMP

The inputs and directional vision section of the Guidelines[18] requires the utility to rank and discuss trends it anticipates may have the greatest impact on ignition probability and wildfire consequence within the utility's service territory over the next 10 years. First, utilities must set forth objectives over the following timeframes: before the upcoming wildfire season, before the next annual update, within the next 3 years, and within the next 10 years. Second, utilities must report the current and planned qualifications of their workforce to meet these objectives.

4.4.1 Goal, Objectives, and Program Targets

The goal of the WMP is to ensure the utilities are sufficiently planning to reduce the number of ignitions caused by utility actions or equipment and minimize the societal consequences

[18] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.5 pp. 52–57 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

(with specific consideration of the impact on access and functional needs populations and marginalized communities) of both wildfires and PSPS events.

This subsection of the Guidelines[19] requires utilities to provide their objectives, which are unique to each utility and reflect their 1-, 3-, and 10-year projections of progress toward the abovementioned goal. The Guidelines also require utilities to report their unique program targets, which are quantifiable measurements of activities identified in WMPs and Updates to show the utility's progress toward reaching its objectives.

HWT's program targets are focused on successful implementation of prioritized wildfire mitigation measures, which is HWT's overall strategy for its WMP. HWT's approach to determining how to manage wildfire risk is informed by industry best practices and collaboration with other organizations with experience in managing similar wildfire risk. In addition, as a transmission-only utility with one operational facility that was recently energized, HWT is continually developing its strategies, particularly as it gains operational experience.

4.4.2 Workforce Planning

This subsection of the Guidelines[20] requires utilities to report their worker qualifications and training practices regarding utility-related ignitions and PSPS mitigation for workers in mitigation-related roles including:

- Vegetation inspections
- Vegetation management projects
- Asset inspections
- Grid hardening
- Risk event inspection

[19] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.5.1-2.5.3 pp. 53–54 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[20] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.5.4 pp. 56–57 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

HWT provides all required information regarding worker qualifications and training practices within each listed role.

All HWT maintenance work, including asset inspections, is carried out by HWT operations personnel and qualified contractors who, by reason of training, experience, and instruction, are qualified to perform the task. Operations personnel maintain and operate the HWT facilities in accordance with good utility practice, sound engineering judgment, the guidelines outlined in applicable North American Electric Reliability Corporation (NERC) reliability standards, laws, and regulations.

HWT operations personnel are trained on all relevant HWT procedures, including regular monthly asset inspections (Wildfire Mitigation Condition Assessment Procedure), vegetation inspections (Wildlife and Vegetation Procedure), and the emergency response plan.

4.5 Metrics and Underlying Data

The metrics and underlying data section of the Guidelines[21] requires utilities to report metrics and program targets as follows:

- *Progress metrics* that track how much utility wildfire mitigation activity has changed the conditions of a utility's wildfire risk exposure in terms of drivers of ignition probability.
- *Outcome metrics* that measure the performance of a utility and its service territory in terms of both leading and lagging indicators of wildfire risk, PSPS risk, and other direct and indirect consequences of wildfire and PSPS, including the potential unintended consequences of wildfire mitigation work.
- *Program targets* that track the utility's pace of completing proposed wildfire mitigation activities to show progress toward a utility's specific objectives.[22] Program targets do not track the efficacy of wildfire mitigation activities. The primary use of these program targets in 2022 is to assess the progress the utility made over the three-

[21] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.6 pp. 58–69 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[22] Objectives are unique to each utility and reflect the 1-, 3-, and 10-year projections of progress toward the WMP goal.

year plan cycle and whether the utility matured in its understanding of its own wildfire ignition risks and appropriate mitigations to decrease those risks.

This section also requires utilities to provide several GIS files detailing spatial information about their service territory and performance, including recent weather patterns, location of recent ignitions, area and duration of PSPS events, location of lines and assets, geographic and population characteristics, and location of planned initiatives.

See Section 4.6.7, Data Governance, for a detailed review of the utility's progress and areas for continued improvement in this topic area.

HWT maintains a centralized, secure repository for all wildfire-related data for its one operational transmission asset, the Suncrest Facility, including all procedures and relevant documents. Since its 2021 Update, there have been no changes to HWT's data governance practices.

4.6 Mitigation Initiatives and Maturity Evaluation

The mitigation initiatives and maturity evaluation section of the Guidelines[23] requires the utility to describe in its WMP Update each mitigation initiative it will undertake to reduce the risk of catastrophic wildfire. The Guidelines require the utility to self-report its current wildfire

[23] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7 pp. 70–77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

risk mitigation capabilities and plans for improvement in those capabilities.[24,25] The utility's self-reported capability level is referred to in this Decision as "maturity" and measured by Energy Safety's Utility Wildfire Mitigation Maturity Model (Maturity Model). Maturity levels range from zero to four, with four being the most mature. The utility reports on its maturity levels and mitigation initiatives using the same 10 categories, allowing Energy Safety to evaluate a utility's reported and projected maturity in wildfire mitigation in the context of its corresponding current and planned initiatives. The 10 maturity and mitigation initiative categories are listed below, with further details in Appendix D:

- Risk assessment and mapping
- Situational awareness and forecasting
- Grid design and system hardening
- Asset management and inspections
- Vegetation management and inspections
- Grid operations and operating protocols
- Data governance
- Resource allocation methodology
- Emergency planning and preparedness
- Stakeholder cooperation and community engagement

[24] The 2020 WMP Guidelines introduced the Utility Wildfire Mitigation Maturity Assessment as one of the four "key elements of the 2020 WMP submission and review process" (accessed April 29, 2022): https://energysafety.ca.gov/wp-content/uploads/docs/misc/docket/322133494.pdf.
The 2022 WMP Guidelines further define the assessment process in Attachment 4: 2022 Maturity Model (accessed April 29, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true. From that document (p. 3): "Energy Safety requires each utility to complete an annual Maturity Survey to report on its current capabilities and plans for improvement in those capabilities."

[25] Utilities that submitted a WMP were required to complete a survey (the Maturity Survey) in which they answered specific questions that assessed their existing and future wildfire mitigation practices across 52 capabilities at the time of submission and at the end of the three-year plan horizon. The 52 capabilities are mapped to the same 10 categories identified for mitigation initiatives. The most recent survey for each utility, including SDG&E, can be found on the Energy Safety website here: https://energysafety.ca.gov/what-we-do/electrical-infrastructure-safety/wildfire-mitigation-and-safety/wildfire-mitigation-plans/2022-wmp/ (accessed February 15, 2022).

Below, Energy Safety evaluates HWT's initiatives across the 10 categories in terms of the utility's Maturity Survey responses. Energy Safety discusses the utility's maturity progress for each category within the relevant wildfire mitigation initiative section.

4.6.1 Risk Assessment and Mapping

The risk assessment and mapping section of the Guidelines[26] requires the utility to discuss the risk assessment and mapping initiatives implemented to minimize the risk of utility-related ignitions. Utilities must describe initiatives related to equipment maps and modeling of overall wildfire risk, ignition probability, wildfire consequence, risk reduction impact, match-drop simulations,[27] and climate/weather-driven risks.

The parameters of risk assessment (discussed here) and resource allocation (discussed later in Section 4.6.8) to reduce wildfire risk derive from the CPUC's Risk-Based Decision-Making Framework (formerly S-MAP) and RAMP proceedings.[28]

The utility's risk modeling should ultimately inform the utility of the highest risk areas in order to inform its decision-making processes, along with the risk-spend efficiency (RSE) analyses discussed in Section 4.6.8.

4.6.1.1 Maturity Assessment

According to its responses to the 2022 Maturity Survey, HWT's maturity in risk assessment and mapping has increased steadily throughout the current WMP cycle. HWT currently does not project growth for 2023 (Figure 4.6.1-1). HWT progressed from 2021 to 2022 in the following areas:

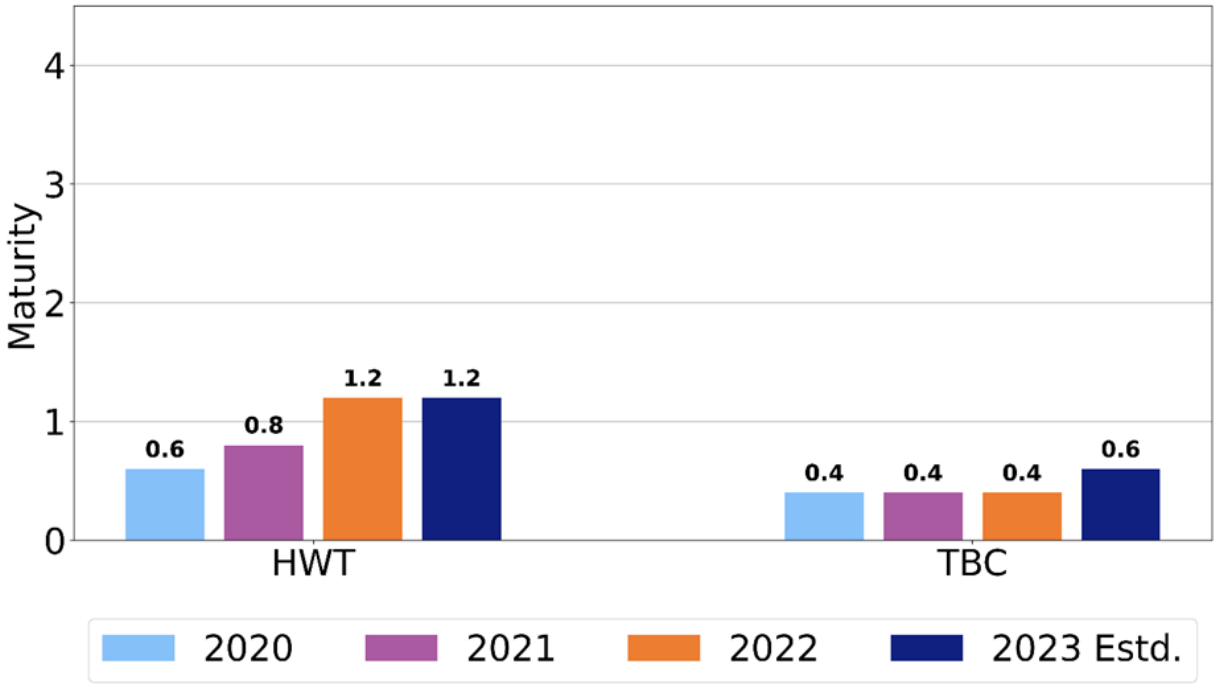
[26] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 p. 74 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[27] Simulations of the potential wildfire consequences of ignitions that occur along electric lines and equipment effectively showing the potential consequences if an ignition or "match was dropped" at a specific point in a utility's territory.

[28] The risk-based decision-making framework was adopted in the CPUC's D. 18-12-014 and refined in D. 21-11-009. An open CPUC proceeding R. 20-07-013 is addressing further developments to the risk-based decision-making framework. See the docket for this proceeding here: https://apps.cpuc.ca.gov/apex/f?p=401:56:0::NO:RP,57,RIR:P5_PROCEEDING_SELECT:R2007013 (accessed February 16, 2022).

- HWT made many updates to its climate scenario modeling. These include supporting the model using historical data of incidents and near misses, instead of only through independent expert assessment. HWT also responded that it is now modeling climate scenarios at an asset-based level, with the tool being partially automated (less than 50 percent). [29]
- HWT's confidence intervals for its wildfire risk assessments increased from greater than 60 percent or no interval to greater than 80 percent. [30]
- HWT's ignition risk estimation process is now partially (less than 50 percent) automated, instead of not automated. [31]

Figure 4.6.1-1: Independent Transmission Operator (ITO) Maturity Levels for Risk Assessment and Mapping (2020-2022 Actual, 2023 Estimated)



[29] HWT's 2022 Utility Wildfire Mitigation Maturity Survey, responses to A.I.a, A.I.b, A.I.c, A.I.d, and A.I.e.

[30] HWT's 2022 Utility Wildfire Mitigation Maturity Survey, response to A.II.e.

[31] HWT's 2022 Utility Wildfire Mitigation Maturity Survey, response to A.III.e.

4.6.1.2 HWT Progress

HWT currently conducts a Failure Modes and Effects Analysis (FMEA) to analyze risk throughout its system, including wildfire risk. HWT updates FMEA procedures annually to include its 2022 WMP initiatives as well as new technologies. HWT has satisfactorily documented its risk assessment and mapping practices. HWT has made the following progress thus far in the current WMP cycle:

- In 2020, HWT engaged a third party to do a wildfire mitigation assessment of its facilities. This assessment indicated that undergrounding the transmission line would greatly reduce wildfire risk. In response to this recommendation HWT undergrounded 115 feet of transmission line, as discussed in Section 4.6.3, "Grid Design and System Hardening."
- HWT continues to not have historical ignition data, with no reportable ignitions or risk events since energization in 2020.
- In 2021, HWT developed a fire risk index. This allows HWT to perform risk scenario analysis of climate and weather through a seven-day outlook, including tracking fires and their spread. Also, since HWT began operations in 2020, it now has historical data to use for assessing weather scenarios.[32]
- Due to installation of a weather station at HWT's Suncrest facility, HWT is able to analyze weather scenarios at a more granular level.[33]

4.6.1.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for HWT under the risk assessment and modeling section of its 2022 Updates.

4.6.2 Situational Awareness and Forecasting

A strong weather monitoring and situational awareness system is an essential ignition risk reduction strategy: it mobilizes a utility's response to potentially dangerous fire weather

[32] Data Request OEIS-HWT-22-003, Question 1.

[33] Data Request OEIS-HWT-22-003, Question 1.

conditions and informs its decisions on PSPS implementation, grid design, and system hardening. It is also one of the least expensive risk reduction strategies.

The situational awareness and forecasting section of the Guidelines[34] requires the utility to discuss its use of cameras, weather stations, weather forecasting and modeling tools, grid monitoring sensors, fault indicators, and equipment monitoring. Situational awareness requires the utility to be aware of actual ignitions in real time and to understand the likelihood of utility ignitions based on grid and asset conditions, wind, fuel conditions, temperature, and other factors.

The Guidelines refer to key situational awareness measures, including:

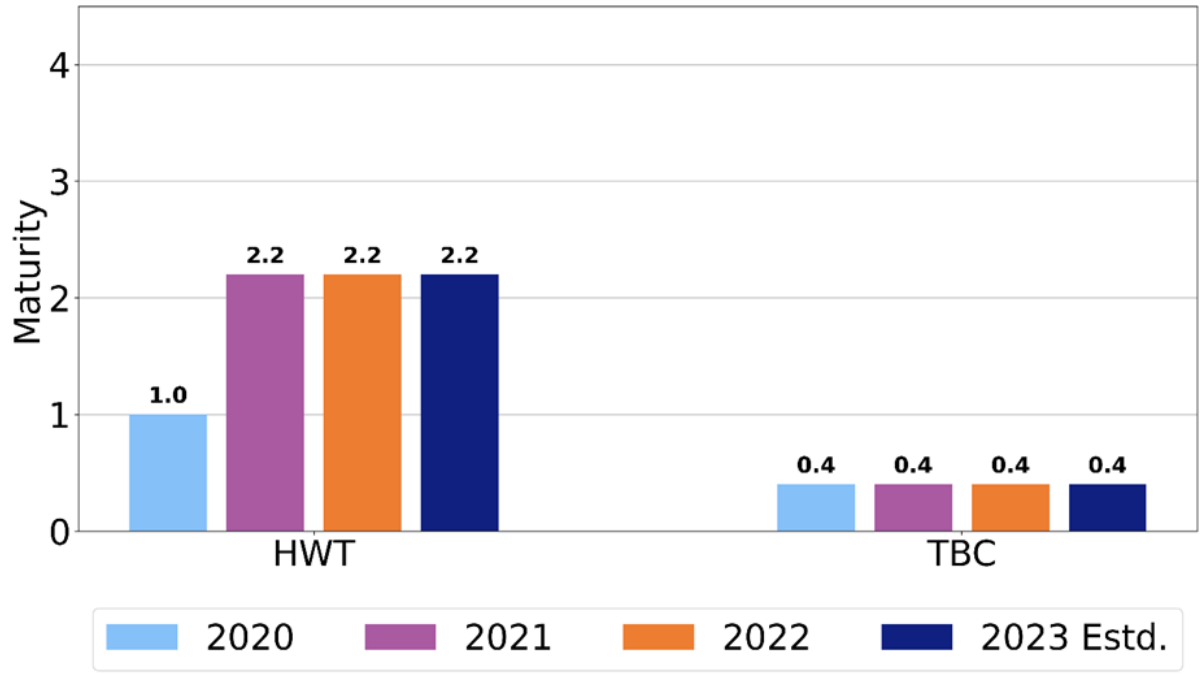
- Installation of advanced weather monitoring and weather stations that collect data on weather conditions so as to develop weather forecasts and predict where ignition and wildfire spread are likely
- Installation of high-definition cameras throughout a utility's service territory, with the ability to control the camera's direction and magnification remotely
- Use of continuous-monitoring sensors that can provide near-real-time information on grid conditions
- Use of a fire risk or fire potential index that takes numerous data points in given weather conditions and predicts the likelihood of wildfire
- Use of personnel to physically monitor areas of electric lines and equipment in elevated fire risk conditions

4.6.2.1 Maturity Assessment

HWT is a transmission-only independent transmission operator (ITO) with no end-use customers. HWT has approximately one mile of undergrounded 230-kV transmission line that interconnects with its Suncrest substation. HWT's maturity level has increased over the current WMP cycle, and it is on track to attain its projected growth in the situational awareness and forecasting category by 2023 (Figure 4.6.2-1).

[34] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 p. 74 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

Figure 4.6.2-1: ITO Maturity Levels for Situational Awareness and Forecasting (2020-2022 Actual, 2023 Estimated)



4.6.2.2 HWT Progress

HWT has made the following progress thus far in the current WMP cycle:

In 2020, HWT installed a weather station, a camera, and oil gas monitoring equipment for its transformers at its one operational asset, the Suncrest Facility. HWT reports this should improve the health of transformers and provide insight into potential failures.

In 2021, HWT completed the development of its Fire Potential Index (FPI), which is used in conjunction with SDG&E's FPI to increase awareness of fire threat and to help inform operational decisions.

HWT began installing a cable monitoring system for its underground cable in 2021. HWT plans to attain final implementation and functionality of the system prior to submission of its 2023 WMP. HWT reports this should increase situational awareness for its 230-kV underground cable and allow for monitoring of vibrations, temperature, and abnormal electrical discharge at the cable terminations. This may prevent cable failure, faults, or damage.

4.6.2.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for HWT under the situational awareness and forecasting section of its 2022 Updates.

4.6.3 Grid Design and System Hardening

The grid design and system hardening section of the Guidelines[35] examines how the utility is designing its system to reduce ignition risk and what it is doing to strengthen its distribution, transmission, and substation infrastructure to prevent utility-related ignitions resulting in catastrophic wildfires. This section also requires discussion of routine and non-routine maintenance programs, including whether the utility replaces or upgrades infrastructure proactively rather than running facilities to failure. Programs in this category, which are often the most expensive aspects of a WMP, include initiatives such as the installation of covered conductors to replace bare overhead wires, undergrounding of distribution or transmission lines, and pole replacement programs. The utility is required, at a minimum, to discuss grid design and system hardening in each of the following areas:

- Capacitor maintenance and replacement
- Circuit breaker maintenance and installation to de-energize lines upon detecting a fault
- Covered conductor installation
- Covered conductor maintenance
- Crossarm maintenance, repair, and replacement
- Distribution pole replacement and reinforcement, including with composite poles
- Expulsion fuse replacement
- Grid topology improvements to mitigate or reduce PSPS events
- Installation of system automation equipment
- Maintenance, repair, and replacement of connectors, including hotline clamps
- Mitigation of impact on customers and other residents affected during PSPS events
- Other corrective action
- Pole loading infrastructure hardening and replacement program based on pole loading assessment program

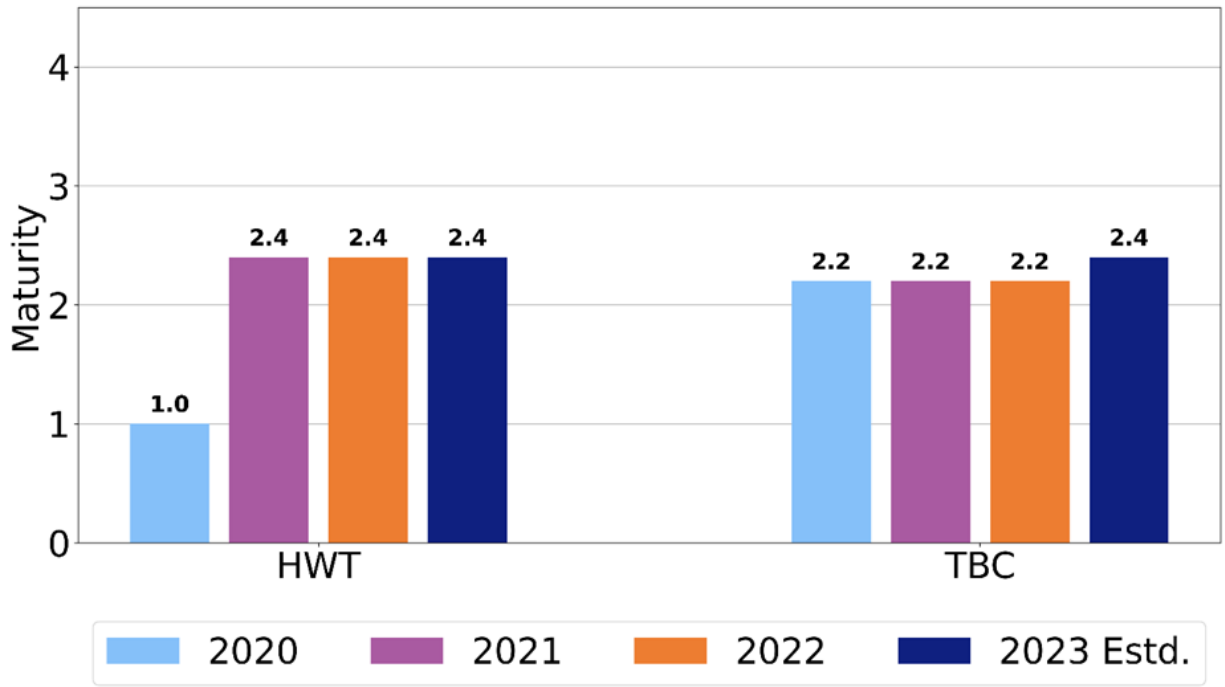
[35] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 pp. 74–75 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

- Transformer maintenance and replacement
- Transmission tower maintenance and replacement
- Undergrounding of electric lines and equipment
- Updates to grid topology to minimize risk of ignition in the HFTD
- Other areas if an initiative cannot feasibly be classified within those listed above

4.6.3.1 Maturity Assessment

According to its responses to the 2022 Maturity Survey, HWT's maturity levels increased for some capabilities within the grid design and hardening category. However, its average maturity level in this category remained stagnant from 2021 to 2022, and it does not currently project progress (Figure 4.6.3-1).

Figure 4.6.3-1: ITO Maturity Levels for Grid Design and System Hardening (2020-2022 Actual, 2023 Estimated)



4.6.3.2 HWT Progress

While HWT's grid design and system hardening approach has primarily not changed since the 2021 Update, HWT has made progress in 2021 by hardening one of its transformers. The hardening measures included installing seismic pads, blast walls, and flame-suppressing stone within containment pits. HWT plans on hardening its one remaining transformer in 2022.

4.6.3.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for HWT under the grid design and system hardening section of its 2022 Update.

4.6.3.4 Additional Observation

In addition to the points noted above, Energy Safety has the following observation:

Energy Safety's 2021 WMP Action Statement required HWT to explain why it undergrounded 115 feet of transmission line installed in the previous year. HWT responded that Senate Bill (SB) 901 passed after design and permitting of the initial installation was largely completed, so it only undergrounded the final 115 feet of line.[36] With a commitment to energize by February 2020, HWT did not have time to redesign the initial installation. Both the Failure Modes and Effects Analysis (FMEA) and a third-party assessment concluded that undergrounding the line would minimize wildfire risk. HWT completed undergrounding of the 115 feet of transmission line in August 2021.

4.6.4 Asset Management and Inspections

The asset management and inspections section of the Guidelines[37] requires the utility to discuss power line and infrastructure inspections for distribution and transmission assets within the HFTD, including infrared, light detection and ranging (LiDAR), substation, patrol, and detailed inspections designed to minimize the risk of its facilities or equipment causing wildfires. The utility must describe its protocols relating to maintenance of any electric lines or equipment that could, directly or indirectly, relate to wildfire ignition. The utility must also describe how it ensures inspections are done properly through a program of quality control.

[36] SB 901 requires utilities to minimize wildfire risk, submit wildfire mitigation plans, and implement associated wildfire mitigation measures. See HWT's response to the 2021 Action Statement request for an explanation of its undergrounding of 115 feet of line on pages 45-46 of its 2022 Update.

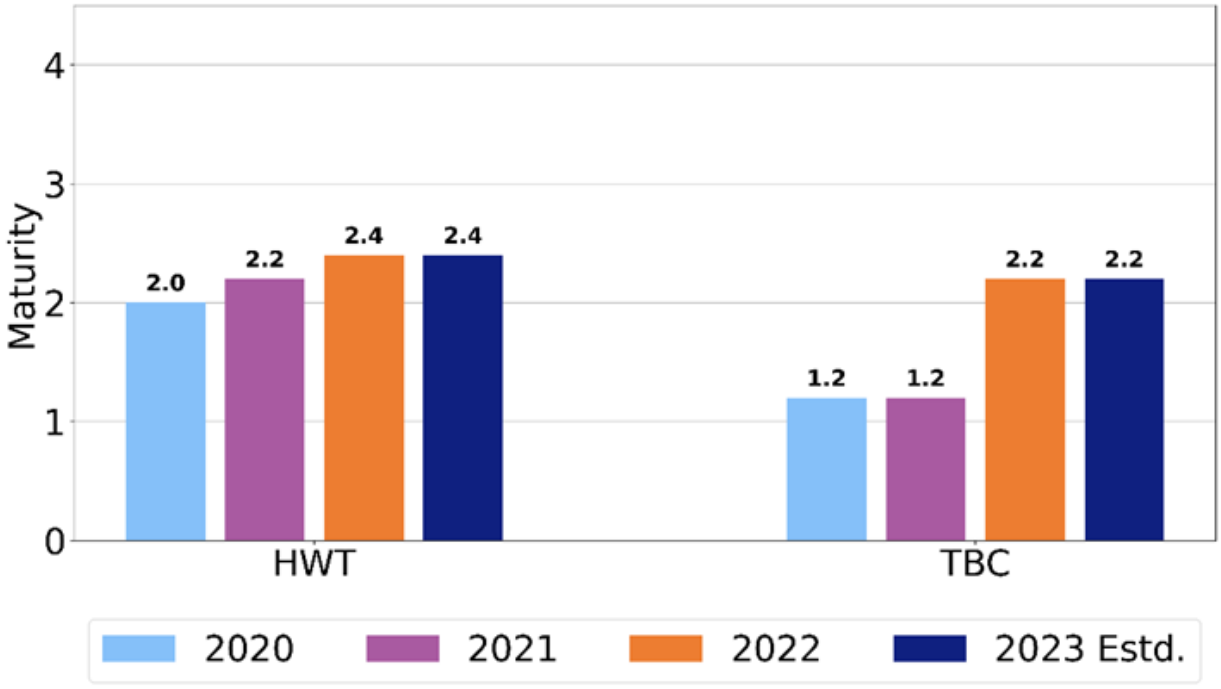
[37] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 p. 75 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

4.6.4.1 Maturity Assessment

Throughout the current WMP cycle, HWT has steadily increased in maturity in asset management and inspections. This includes an increase from 2021 to 2022 (Figure 4.6.4-1). The increase is due to changes in the following responses:

- HWT performs patrol and detailed inspections more frequently than regulations require. However, the actual frequency of those inspections has not changed. This means HWT's interpretation of the question has changed.[38]
- HWT has implemented continuous monitoring sensors to augment its inspections.[39] As part of this effort, HWT installed transformer oil gas monitors in 2020 and a cable monitoring system in 2021.

Figure 4.6.4-1: ITO Maturity Levels for Asset Management and Inspections (2020-2022 Actual, 2023 Estimated)



[38] HWT's 2022 Utility Wildfire Mitigation Maturity Survey, responses to D.II.a and D.II.d.

[39] HWT's 2022 Utility Wildfire Mitigation Maturity Survey, responses to D.II.c, D.II.f, D.II.i, and D.IV.b.

4.6.4.2 HWT Progress

While HWT's asset management and inspections approach has not changed since the 2021 Update, HWT has made progress in the following areas:

- Energy Safety's 2021 WMP Action Statement required HWT to provide more information on why it performs more frequent monthly inspections than required by General Order (GO) 165. HWT responded that given its limited footprint, such inspections add little to no incremental cost. HWT stated that it will re-evaluate the frequency of inspections, without providing a timeline.
- The 2021 WMP Action Statement required HWT to provide more details on the inspections performed in advance of Red Flag Warning (RFW) conditions. HWT clarified that these inspections have the same scope and procedures as its regular monthly inspections.

4.6.4.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for HWT under the asset management and inspections section of its 2022 Update.

4.6.5 Vegetation Management and Inspections

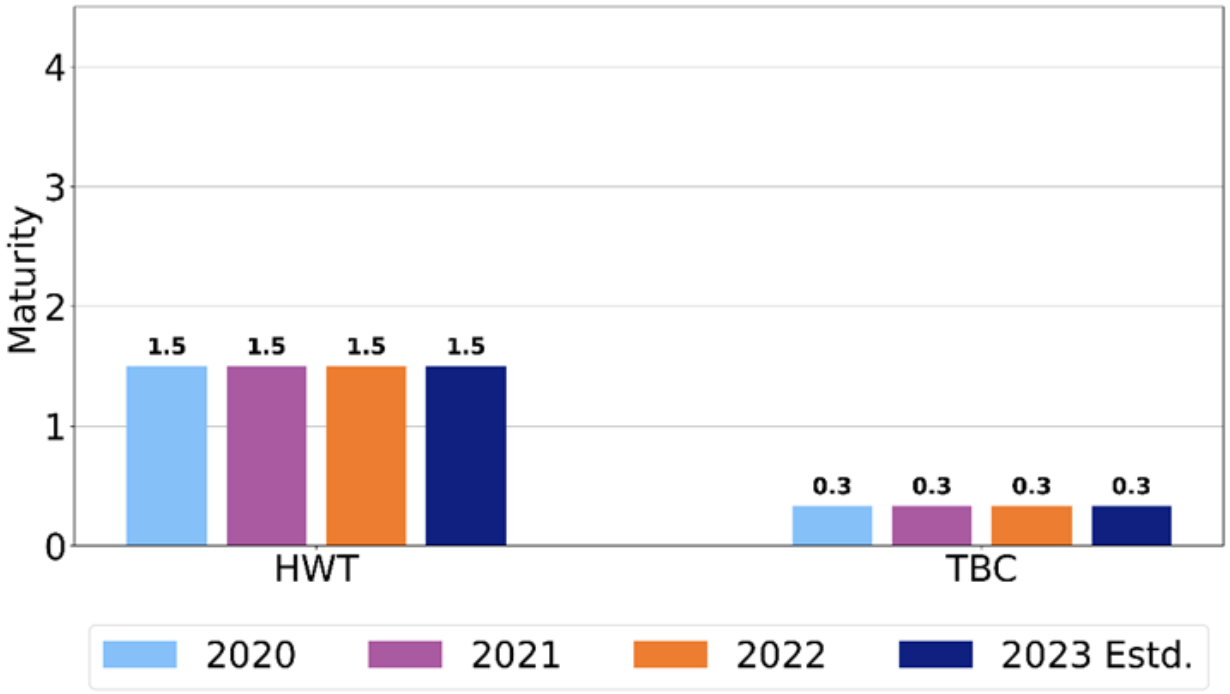
The vegetation management and inspections section of the Guidelines[40] requires utilities to discuss vegetation management inspections. The discussion must include inspections that go beyond existing regulation, as well as remote sensing inspections, and patrol inspections of vegetation around distribution and transmission lines and equipment. Utilities must also discuss quality control of those inspections and limitations on the availability of workers. In addition, they must discuss collaborative efforts with local land managers, including efforts to maximize benefit from fuel treatment activities and fire break creation as well as the collaborative development of methods for identifying "at-risk" vegetation, determining trim clearances beyond minimum regulations, and identifying and mitigating impacts from tree trimming and removal (e.g., erosion, flooding).

[40] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 pp 75–76 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

4.6.5.1 Maturity Assessment

HWT's maturity level in vegetation management and inspections has remained the same (1.5) since 2020 (Figure 4.6.5-1).

Figure 4.6.5-1: ITO Maturity Levels for Vegetation Management and Inspections (2020–2022, 2023 Estimated)



4.6.5.2 HWT Progress

The objectives of HWT's vegetation management program are to minimize the likelihood of an ignition spreading off-site from HWT facilities and to protect its equipment from wildfire encroachment. In Q3 2021, HWT undergrounded 115 feet of overhead transmission line, thereby limiting the possibility for vegetation contact with its static var compensator 230-kV facility. Furthermore, the facility is enclosed by a 10-foot-tall concrete perimeter wall.[41] HWT reports that it removes all vegetation from within this wall and creates defensible space outside the wall.[42]

Considering the recent undergrounding of HWT's overhead line and the fact that its substation facility rarely has an opportunity to come into contact with vegetation, it may not

[41] HWT's 2022 Update, p. 43.

[42] HWT's 2022 Update, p. 78.

be prudent for HWT to increase its maturity level for vegetation management and inspections. Such an increase may not reduce risk further.

Energy Safety finds that HWT has sufficiently and satisfactorily documented its vegetation management practices and protocols.

4.6.5.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for HWT under the vegetation management and inspections section of its 2022 Update.

4.6.5.4 Additional Observation

In addition to the points noted above, Energy Safety has the following observation:

As HWT expands the number of facilities it owns and operates, Energy Safety expects HWT's vegetation management plan to expand as well, ensuring that its vegetation management plan for each facility considers place-specific risk factors such as topography, climate, and vegetation types.

4.6.6 Grid Operations and Operating Protocols, Including PSPS

The grid operations and operating protocols section of the Guidelines[43] requires discussion of ways the utility operates its system to reduce wildfire risk. For example, disabling the reclosing function of automatic reclosers[44] during periods of high fire danger (e.g., Red Flag Warning conditions) can reduce utility ignition potential by minimizing the energy released and the duration of the release when there is a fault. This section also requires discussion of work procedures in conditions of elevated fire risk and protocols to reduce the frequency and scope of de-energization, including PSPS events (e.g., through sectionalization). Further, this

[43] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 p. 76 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[44] A recloser is a switching device that is designed to detect and interrupt momentary fault conditions. The device can reclose automatically and reopen if a fault condition is still detected. However, if a recloser closes a circuit that poses the risk of ignition, wildfire may be the result. For that reason, reclosers are disabled in certain high fire risk conditions. During overcurrent situations, circuit breakers trip a switch that shuts off power to the electrical line.

section requires the utility to report whether it has stationed and/or on-call ignition prevention and suppression resources and services.

4.6.6.1 Maturity Assessment

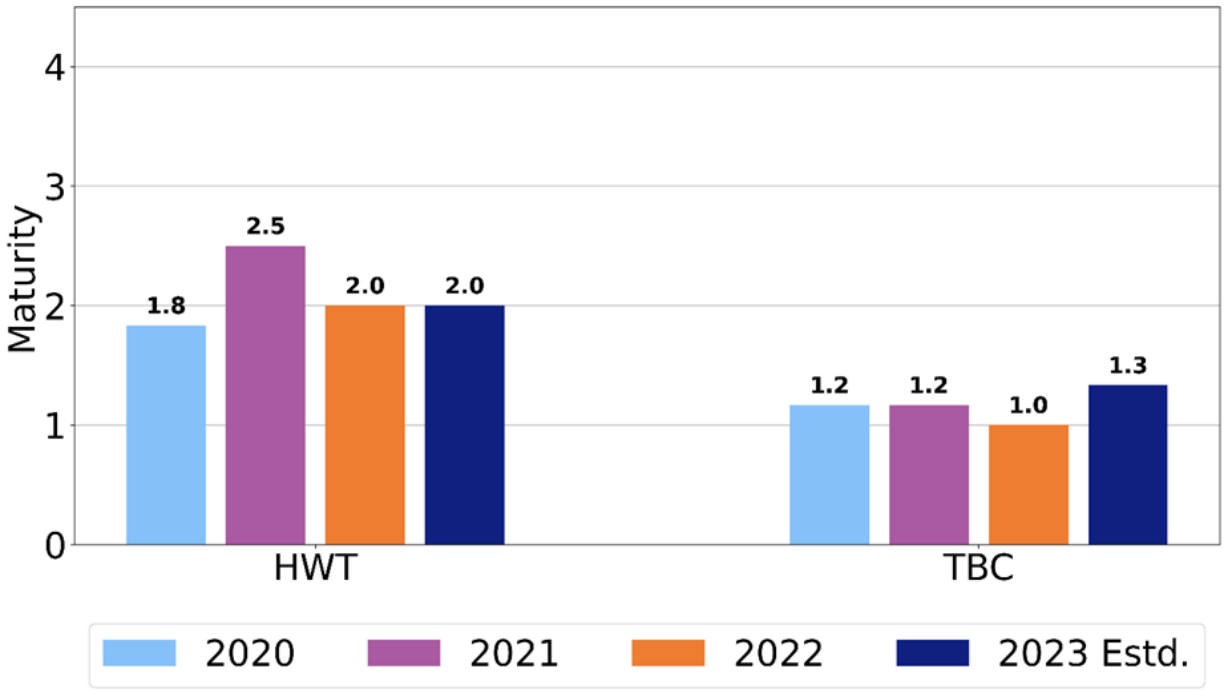
HWT's maturity in the grid operations and operating protocols category has remained largely the same across the current WMP cycle according to its responses to the 2022 Maturity Survey (Figure 4.6.6-1). Between 2020 and 2022, HWT's average maturity level only increased by 0.2 (Figure 4.6.6-1). While HWT progressed from 2020 to 2021, it decreased in average maturity for this category from 2021 to 2022 according to its responses to the 2022 Maturity Survey. This is partially due to HWT's response to question F.IV.b "Which of the following does the utility take into account when making PSPS decisions?" where, in 2021, HWT responded that it takes into account both (i) "SME opinion" and (ii) "A partially automated system which recommends circuits for which PSPS should be activated and is validated by SMEs," whereas in 2022 HWT responded (i) "SME opinion" only. HWT's slight maturity decrease from 2021 to 2022 is also due to its response to question F.V.d "What level of understanding of the probability of ignitions after PSPS events does the utility have across the grid?" where in 2021 HWT responded for the start of 2023 (iii) "Utility has accurate quantitative understanding of ignition risk following re-energization, by asset, validated by historical data and near misses," whereas in 2022 HWT responded for the start of 2023 (ii) "Some probability estimates exist."

Energy Safety sent HWT a data request on July 20, 2022, to clarify this decrease in maturity.[45] HWT responded by stating that given its single-circuit system within SDG&E's service area and its lack of retail and distribution customers, HWT anticipates that it would seldom, if ever, need to issue a PSPS, and only as a last resort. Further, HWT stated that SDG&E would be the main driver of a PSPS in HWT's service area. Based on these circumstances, HWT stated that it selected the response that best fits its current operations. With regard to its understanding of ignition probability after PSPS events, HWT stated that its proprietary fire risk index (Firecaster) was not completed until Q4 2021 and, as such, 2022 will be the first year HWT can use Firecaster to support its understanding of ignition risk. HWT also states that it "would not be in a position to confirm a fully mature and accurate qualitative understanding of ignition

[45] Data Request OEIS-HWT-22-004.

risk following re-energization at the start of the 2023 calendar year."[46] HWT therefore downgraded its response to survey question F.V.d.

Figure 4.6.6-1: ITO Maturity Levels for Grid Operations (2020-2022 Actual, 2023 Estimated)



4.6.6.2 HWT Progress

Since 2021, HWT has not made any changes to its grid operations and protocols. However, by continuing the following practices since 2021 and through this WMP cycle, HWT has demonstrated sufficient grid operations and operating protocols as these relate to wildfire risk and fire suppression. HWT maintains an Emergency Operations Plan and Emergency Action Plan in the event a fire-related emergency occurs. HWT also engages with a private fire brigade to provide suppression support if an on-site ignition occurs. The fire brigade is present during any construction activities, in case these activities result in ignitions. HWT also has a Class B foam trailer on-site to respond to any transformer failures.

[46] HWT's response to Data Request OEIS-HWT-22-004, p. 2.

Since HWT does not have any distribution-level infrastructure, HWT does not use any automatic reclosers. Therefore, it does not have any applicable changes to sensitivity settings for protective devices.

4.6.6.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for HWT under the grid operations and operating protocols section of its 2022 Update.

4.6.7 Data Governance

The data governance section of the Guidelines[47] requires the utility to report information on its initiatives to create a centralized wildfire-related data repository, conduct collaborative research on utility ignition and wildfire, document and share wildfire-related data and algorithms, and track and analyze near-miss data.

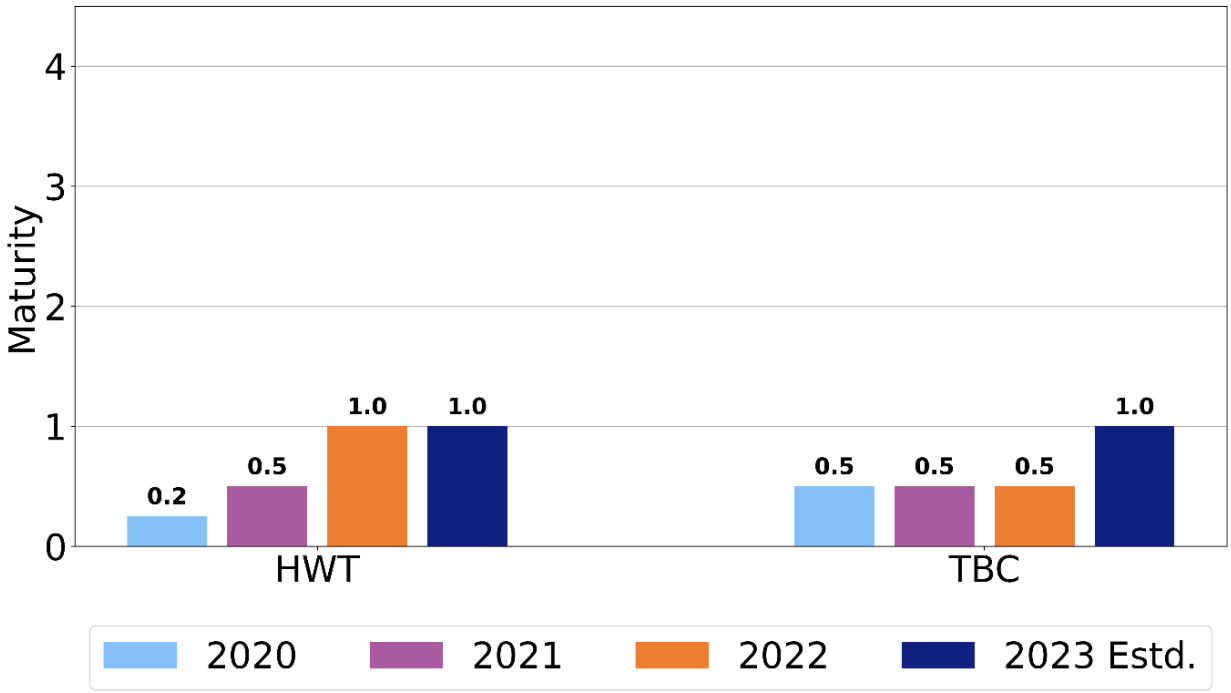
4.6.7.1 Maturity Assessment

According to its responses to the 2022 Maturity Survey, HWT has increased its maturity levels over the WMP cycle for three of the four data governance categories (Figure 4.6.7-1). HWT's overall maturity level in data governance is still relatively low. HWT forecast modest increases in only a few individual capabilities in response to last year's Maturity Survey. In response to this year's survey, it reported attaining some, but not all, of those forecast increases.

HWT's maturity in data governance is limited by inability to ingest and share data using real-time application programming interface (API) protocols, lack of a single document cataloguing all fire-related data and processes, lack of a system for sharing real-time data, and inability to simulate wildfire potential.

[47] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 pp. 76–77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

Figure 4.6.7-1: ITO Maturity Levels for Data Governance (2020-2022 Actual, 2023 Estimated)



4.6.7.2 HWT Progress

HWT has made the following progress thus far in the current WMP cycle.

HWT continues to maintain a central repository of wildfire-related data, which does not use "asset management platforms or solutions." HWT's 2022 Update states that the other initiatives under data governance are not applicable. This is consistent with previous updates.

4.6.7.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for HWT under the data governance section of its 2022 Update.

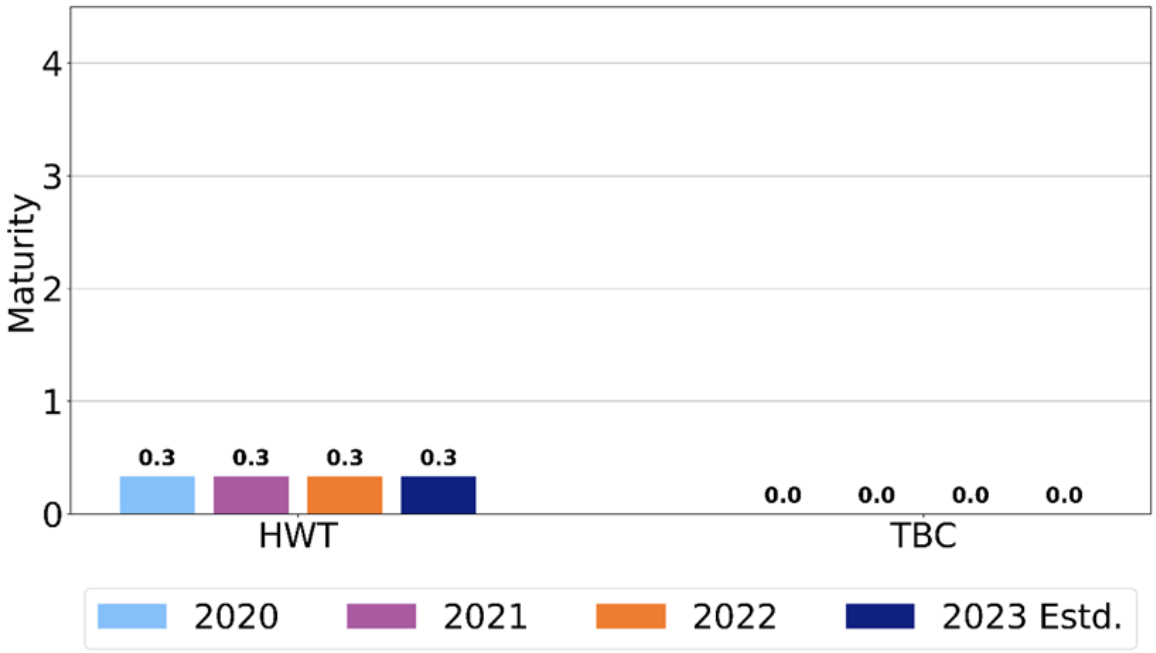
4.6.8 Resource Allocation Methodology

The resource allocation methodology section of the Guidelines[48] requires the utility to describe its methodology for prioritizing programs by cost effectiveness. Utilities must discuss their risk reduction scenario analysis and provide a risk-spend efficiency (RSE) analysis for each aspect of the plan.

4.6.8.1 Maturity Assessment

HWT has had a flat maturity level of 0.3 in the resource allocation methodology category throughout the current WMP cycle. There has been no change in maturity in any corresponding capability (Figure 4.6.8-1 below). This is appropriate given HWT's limited risk related to wildfires. As a point of comparison, Trans Bay Cable, which also has one asset and minimal wildfire risk, has maintained a maturity level of zero throughout the current WMP cycle.

Figure 4.6.8-1: ITO Maturity Levels for Resource Allocation Methodology (2020-2022 Actual, 2023 Estimated)



[48] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 p. 77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

4.6.8.2 HWT Progress

The objectives of HWT's resource allocation strategy are focused on preventing and detecting wildfire ignition risks and enabling prompt emergency response at HWT facilities. There have been no changes to HWT's resource allocation methodology since the 2021 Update.[49] Due to a limited footprint, HWT has a small, dedicated operations team in the field monitoring the asset. Since HWT's risk is limited to its one asset, having dedicated, consistent coverage is sufficient. Energy Safety finds that HWT has satisfactorily documented its resource allocation methodology practices. HWT must address any changes in its resource allocation practices or capabilities in its 2023 WMP.

4.6.8.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for HWT under the resource allocation methodology section of its 2022 Update.

4.6.9 Emergency Planning and Preparedness

The emergency planning and preparedness section of the Guidelines[50] requires the utility to provide a general description of its overall emergency preparedness and response plan, including a discussion of how the plan is consistent with legal requirements for customer support before, during, and after a wildfire. This discussion must cover support for low-income customers, billing adjustments, deposit waivers, extended payment plans, suspension of disconnection and nonpayment fees, and repairs. The utility is also required to describe emergency communications before, during, and after a wildfire in languages deemed prevalent in its territory (Decision 19-05-036, supplemented by Decision 20-03-004),[51] and other languages required by the CPUC.

This section of the Guidelines also requires discussion of the utility's plans for coordination with first responders and other public safety organizations; plans to prepare for and restore

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[49] HWT's 2022 Update p.67.

[50] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 p. 77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

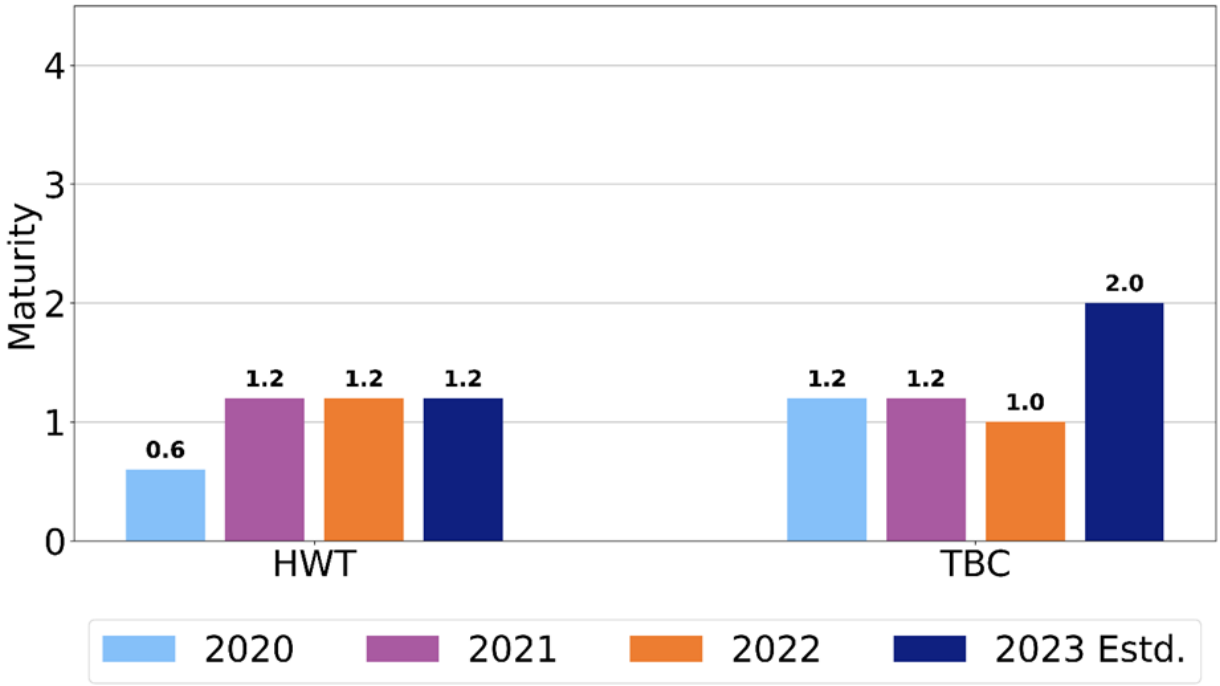
[51] A language is prevalent if it is spoken by 1,000 or more persons in the utility's territory or if it is spoken by 5 percent or more of the population within a "public safety answering point" in the utility territory. See California Government Code section 53112 for more information.

service, including workforce mobilization and prepositioning of equipment and employees; and a showing that the utility has an adequately sized and trained workforce to promptly restore service after a major event.

4.6.9.1 Maturity Assessment

Throughout the current WMP cycle, HWT has matured in the emergency planning and preparedness category. It progressed from 2020 to 2021 but remained at the same level from 2021 to 2022 according to its responses to the 2022 Maturity Survey (Figure 4.6.9-1). Despite this progress, HWT remains at a low maturity level of 1.2. Its peer, Trans Bay Cable, has a comparable level of 1 in this category.

Figure 4.6.9-1: ITO Maturity Levels for Emergency Planning (2020-2022 Actual, 2023 Estimated)



4.6.9.2 HWT Progress

Since its 2021 Update, there have been no changes in HWT's emergency planning and preparedness practices. However, HWT continues to demonstrate that these practices are sufficient. HWT has only one operating asset, the Suncrest Facility. HWT implements an Emergency Operations Plan for this facility, including PSPS protocols. Following proximate wildfire events and wildfire season in general, HWT conducts after action reviews (AARs) to implement lessons learned. Following the Valley and Road Fires in 2020 and 2021,

respectively, which were both within four miles of HWT's Suncrest Facility, HWT performed an AAR and implemented lessons learned. Changes included more proactively inspecting assets when RFWs are issued; enhancing its wildfire modeling capabilities and real-time wildfire tracking; adding more cameras at the Suncrest Facility for increased situational awareness; and adding annual wildfire simulation to its wildfire mitigation procedures.

4.6.9.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for HWT under the emergency planning and preparedness section of its 2022 Update.

4.6.10 Stakeholder Cooperation and Community Engagement

The stakeholder cooperation and community engagement section in the Guidelines[52] requires the utility to report on the extent to which it will engage the communities it serves. This engagement includes cooperating and sharing best practices with community members, agencies outside California, fire suppression agencies, the U.S. Forest Service, and others engaged in vegetation management or fuel reduction.

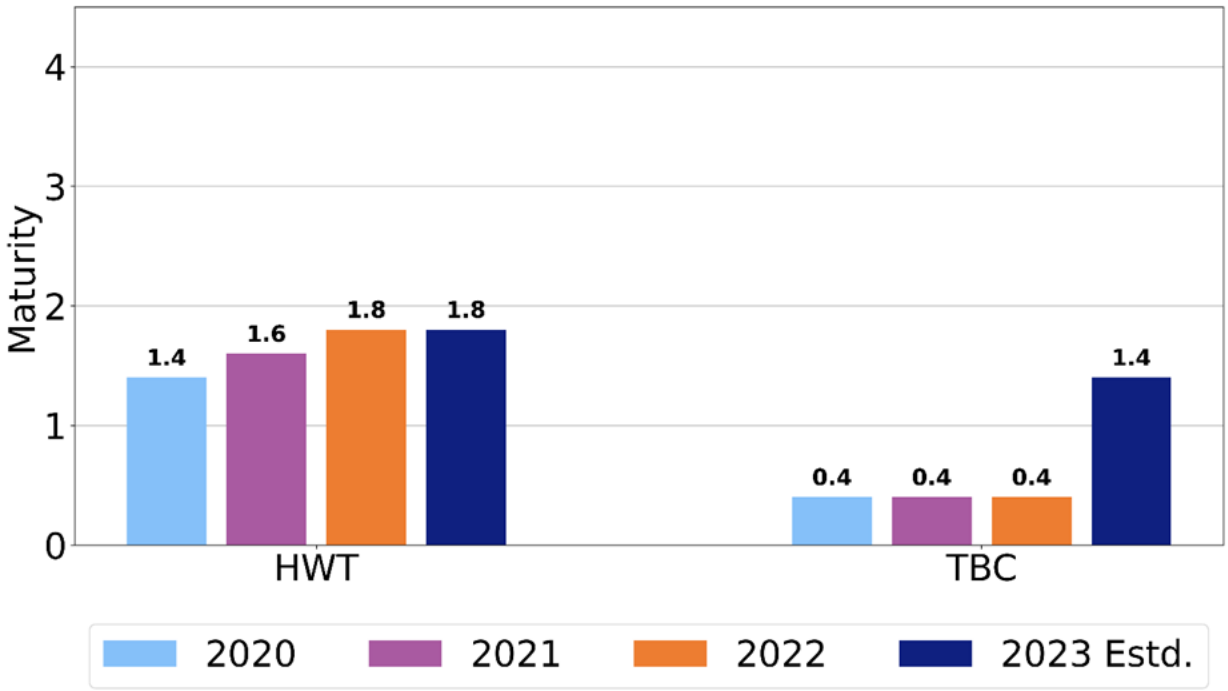
4.6.10.1 Maturity Assessment

Throughout the current WMP cycle, HWT has gradually matured in the stakeholder cooperation and community engagement category. This includes progressing from 2021 to 2022 according to its responses to the 2022 Maturity Survey (Figure 4.6.10-1). The improvement is primarily due to HWT improving its best practice sharing and benchmarking activities.[53] HWT is at a higher maturity level (1.8) in this category than its peer, Trans Bay Cable (0.4).

[52] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.7.3 p. 77 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[53] HWT 2022 Utility Wildfire Mitigation Survey, Questions J.I.c and J.I.e.

Figure 4.6.10-1: ITO Maturity Levels for Stakeholder Cooperation (2020-2022 Actual, 2023 Estimated)



4.6.10.2 HWT Progress

Since its 2021 Update, there have been no changes in HWT's stakeholder cooperation and community engagement practices. However, HWT continues to demonstrate that these practices are sufficient. HWT is a transmission-only ITO and does not serve end-use customers. However, HWT has developed a protocol for communicating and coordinating with stakeholders, including the California Independent System Operator (CAISO) and interconnecting transmission owners.

4.6.10.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for HWT under the stakeholder cooperation and community engagement section of its 2022 Update.

4.7 Public Safety Power Shutoff (PSPS), Including Directional Vision for PSPS

In recent years, utilities have increasingly used Public Safety Power Shutoffs to mitigate wildfire risk. PSPS events introduce substantial risk to the public and impose a significant burden on public services that must activate during these events. Energy Safety supports the

use of PSPS only as a last resort and expects the utilities to present clear plans for reducing the scale, scope, and frequency of PSPS events.

In 2021, Energy Safety separated the reporting of PSPS from the reporting of mitigations and progress metrics to reflect the definition of PSPS as a last resort rather than a mitigation option (pursuant to CPUC Guidance Resolution WSD-002 and CPUC PSPS decisions 19-05-036 and 20-03-004).[54] This section of the Guidelines[55] requires utilities to report their current and projected progress in PSPS mitigation, including lessons learned from the prior year, de-energization and re-energization protocols, PSPS outcome metrics, plans to reduce future PSPS impacts, and community engagement. The Guidelines specifically require utilities to address Senate Bill 533[56] requirements to identify circuits that have frequently been de-energized and provide measures for how utilities will reduce the need for, and impact of, future de-energization of those circuits.

HWT is a transmission-only ITO with no distribution or end-use customers. Further, it indicates it is substantially hardened against wildfires. Additionally, based on the limited scale and scope of its facilities, HWT expects it will rarely, if ever, need to implement a PSPS. Nonetheless, HWT has developed the PSPS protocol described in its 2022 Update to be prepared in the event a PSPS of HWT's facilities becomes necessary to protect the public. HWT had no circuits de-energized pursuant to a PSPS event in 2021. HWT reports no significant changes to its PSPS vision or implementation from its approved 2021 Update.

4.7.1 Maturity Assessment

The Maturity Model does not include a distinct PSPS category. PSPS questions in the Maturity Survey are found under capabilities in various maturity categories. There were minor changes

[54] When calculating RSE for PSPS, electrical corporations generally assume 100 percent wildfire risk mitigation and very low implementation costs because societal costs and impact are not included. When calculated this way, PSPS will always rise to the top as a wildfire mitigation tool, but it will always fail to account for its true costs to customers. Therefore, electrical corporations shall not rely on RSE calculations as a tool to justify the use of PSPS.

[55] 2022 Wildfire Mitigation Plan Guidelines Template, Attachment 2.8 pp. 78–83 (accessed March 6, 2022): https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=51912&shareable=true.

[56] Senate Bill No. 533, Chapter 244, An act to amend Section 8386 of the Public Utilities Code, relating to electricity: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202120220SB533 (accessed April 11, 2022).

in HWT's maturity level based on answers to questions about protocols for PSPS initiation and re-energization between 2021 and 2022. Energy Safety finds this logical and sufficient. See also additional discussion in Section 4.6.6.1, "Grid Operations and Operating Protocols, Including PSPS, Maturity Assessment."

HWT is a transmission-only ITO that does not serve end-use customers and only has control over implementing PSPS on its system, which does not impact customers with potential de-energization.

4.7.2 HWT Progress

HWT does not serve end-use customers or have a traditional service territory and does not expect to need to implement a PSPS. Therefore, HWT does not have key program targets related to PSPS that it intends to track over time. HWT does not anticipate engaging with vulnerable communities regarding PSPS. HWT's Emergency Operations Plan includes a protocol for engaging with other critical stakeholders (e.g., CAISO, SDG&E, local fire agencies) regarding a potential PSPS event. HWT reports that it expects that the interconnecting transmission owner, SDG&E, would be the main driver of PSPS impacting HWT's service territory. If SDG&E calls for a PSPS of its interconnected or nearby facilities, HWT will use that decision as input to inform the consideration for a PSPS of the HWT facilities.[57] If SDG&E's PSPS results in the de-energization of HWT's facilities, HWT's system would pose minimal fire risk to the public.

Energy Safety finds that HWT has satisfactorily documented its PSPS practices and capabilities.

4.7.3 Areas for Continued Improvement

Energy Safety has no areas for continued improvement for HWT under the PSPS section of its 2022 Update.

[57] HWT's 2022 Update p.87.

5. Next Steps

HWT is expected to continue to mature over the coming year.

5.1 Change Orders

If HWT seeks to modify (reduce, increase, or end) WMP mitigation measures in response to data and results on electrical corporation ignition risk reduction impacts, HWT must submit a Change Order Request. At a high level, the objective of the change order process is to ensure the electrical corporation continues to follow the most effective and efficient approach to mitigating its wildfire risk. This could change as new information becomes available and as the electrical corporation gains experience and measures the outcomes of its initiatives. The Change Order Request must include significant shifts in the WMP starting from the date the WMP was submitted to Energy Safety for review.

The change order process is not the appropriate forum for the utility to change underlying assumptions, nor should the utility submit a change order that negates the strategic direction of its WMP. While Energy Safety promotes continued growth in response to new information, a utility should not make significant changes to its mitigation strategy over the course of the plan year.

The change order process provides a mechanism for the electrical corporation to make adjustments based on new information and experience. The goal of this process is to ensure that utilities make significant changes to their WMPs only if the utilities demonstrate these changes to be improvements per WMP approval criteria (i.e., completeness, technical feasibility, effectiveness, and resource use efficiency). Another goal of the change order process is to maximize Energy Safety's visibility and ability to respond to changes to the approved plan as efficiently and in as streamlined a way as possible. Finally, a change order allows the utility to explain whether a change is intentional or inadvertent.

Energy Safety has released its draft Change Order Guidelines for 2022.[58]

[58] Download the Draft 2022 Change Order Guidelines: https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=52638&shareable=true (accessed July 19, 2022).

6. Consultation with the Office of the State Fire Marshal

The Office of the State Fire Marshal is a CAL FIRE program. Public Utilities Code section 8386.3(a) requires Energy Safety to consult with the Office of the State Fire Marshal in reviewing electrical corporations' WMPs and WMP Updates. Energy Safety and CAL FIRE have a memorandum of understanding in place to facilitate this consultation.[59] The Office of the State Fire Marshal participated in all aspects of the evaluation, but this Decision does not purport to speak for the Office of the State Fire Marshal or CAL FIRE.

[59] Required by Public Utilities Code § 8386.5.

7. List of HWT Areas for Continued Improvement and Required Progress

Energy Safety evaluated 2022 Updates with a particular focus on how each utility is driving down the risk of utility-related ignitions. The evaluation included assessing the utility's progress implementing wildfire mitigation initiatives, evaluating the feasibility of its strategies, and measuring year-to-year trends. As a result of this evaluation, Energy Safety found no areas for continued improvement for HWT in response to its 2022 Update.

8. Conclusion

HWT's 2022 Update is approved.

Catastrophic wildfires remain a serious threat to the health and safety of Californians. Electrical corporations, including HWT, must continue to make progress toward reducing utility-related ignition risk. Energy Safety expects HWT to effectively implement its wildfire mitigation activities to reduce the risk of utility-related ignitions and the potential catastrophic consequences if an ignition occurs. HWT must meet the commitments in its 2022 Update to ensure it meaningfully reduces utility-related ignition within its service territory.

Melissa Semcer
Deputy Director| Electrical Infrastructure Directorate
Office of Energy Infrastructure Safety

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715 P Street, 20th Floor
Sacramento, CA 95814
916.902.6000

APPENDICES

Appendices

Appendix A. Status of 2021 WMP Issues

Energy Safety's 2021 Update Action Statement for each utility contained a set of "issues" and associated "remedies." Each issue was categorized into one of three groups:

- *Critical issues* were those for which Energy Safety issued a Revision Notice to the utility with required remedies. The utility submitted a revised Update addressing the critical issues, and Energy Safety re-evaluated the Update with the utility's revisions. Upon that review, issues may have been downgraded to either "key areas for improvement" or "additional issues," or were fully resolved.
- *Key areas for improvement* were areas Energy Safety identified as significant to reducing utility-related wildfire risk. Energy Safety provided remedies that utilities were required to address over the course of the year. Utilities were required to report on progress in these key areas in a progress report submitted to Energy Safety on November 1, 2021.
- *Additional issues* were those Energy Safety identified as areas for continued improvement to increase the maturity of the utility's wildfire mitigation capabilities. Energy Safety provided remedies that utilities were required to address over the course of the year. Utilities were required to report on progress in the 2022 Update.

Issues identified in 2021 either have been resolved or are incorporated in the 2022 areas for continued improvement.

Energy Safety did not identify key areas for improvement for HWT in 2021. Energy Safety listed issues and associated remedies in some evaluation sections. These are presented in Table A-1 below. The status column indicates whether each has been fully remedied. If not, the column notes where to find more information in this Decision.

Table A-1. HWT 2021 Key Issues Status

Issue #	Title	Status
Under Grid Design and System Hardening p. 18	Issue: HWT is undergrounding 115 ft of OH line that was constructed last year without providing a clear justification using a cost-benefit analysis. It is not clear why the newly constructed OH has been deemed at high enough wildfire risk that it needs to be undergrounded. Remedy: HWT must provide analysis, including both risk reduction and cost-benefit, for the need to underground HWT's overhead transmission facilities in order to demonstrate reasonableness.	HWT sufficiently addressed the required remedy.
Under Asset Management and Inspections p. 19	Issue: HWT's current inspection frequency is much higher than General Order 165 requirements, and while being thorough, it is not clear that such frequent inspections are necessary. Remedy: HWT must demonstrate the need for monthly inspections	HWT sufficiently addressed the required remedy.

Issue #	Title	Status
	on its transmission line, including conducting a cost-benefit analysis.	
Under Asset Management and Inspections p. 19	Issue: While HWT states that additional inspections are performed ahead of extreme weather events, HWT does not provide details on the scope of inspection performed. Remedy: HWT must provide HWT's scope and procedures for additional inspections performed as a result RFW conditions.	HWT sufficiently addressed the required remedy.

Table A-1. HWT 2021 Key Issues Status

Issue #	Title	Status
Under Grid Design and System Hardening p. 18	Issue: HWT is undergrounding 115 ft of OH line that was constructed last year without providing a clear justification using a cost-benefit analysis. It is not clear why the newly constructed OH has been deemed at high enough wildfire risk that it needs to be undergrounded. Remedy: HWT must provide analysis, including both risk reduction and cost-benefit, for the need to underground HWT's overhead transmission facilities in order to demonstrate reasonableness.	HWT sufficiently addressed the required remedy.

Appendix B. Energy Safety Data Request Responses

The following are Energy Safety data requests and HWT's responses referenced in the Decision above.

All 2022 data requests received and responded to by HWT are available on its 2022 Update web page: https://www.horizonwesttransmission.com/wildfire.html.

Regarding: HWT's responses to the 2022 Wildfire Mitigation Maturity Survey

Data Request: OEIS-HWT-22-003 (Question 1)

Request date: July 11, 2022

Request:

Q01. Regarding HWT's responses to the 2022 Wildfire Mitigation Maturity Survey, HWT increased its responses regarding risk mapping in the following areas since last year's filing:

a. A.I.a, moving from weather scenarios being categorized by level of risk-to-risk scenarios can be reliably estimated
b. A.I.b, moving from independent expert assessment to supported by historical data of incidents and near misses for weather scenarios
c. A.I.c, moving from less granular to asset-based weather scenario modeling
d. A.I.d, moving from not automated to partially automated for weather scenario modeling
e. A.I.e, moving to include weather measured at the circuit level for weather scenario modeling
f. A.II.e, increasing to >80% confidence interval for wildfire risk assessment
g. A.III.d, moving from not automated to partially automated for the ignition risk estimation process

However, in the 2022 WMP, HWT discusses no changes in its risk assessment and mapping section since last year's filing. For each of the above, describe the changes

that led to the increases in maturity. If applicable, include the page number within the WMP where the change is discussed.

Response date: July 14, 2022

Response:

Q01. Regarding HWT's responses to the 2022 Wildfire Mitigation Maturity Survey, HWT increased its responses regarding risk mapping in the following areas since last year's filing:
a. A.I.a, moving from weather scenarios being categorized by level of risk-to-risk scenarios can be reliably estimated
In 2021, HWT completed development of a proprietary fire risk index, called Firecaster which is designed to provide a seven day outlook for the potential for wildfires to occur, track confirmed fires and possible fires, and predict the spread of tracked fires. Firecaster is used in conjunction with a third-party wildfire tracker to increase awareness of fire threat and potential for wildfire propagation based on environmental conditions to inform operational decisions. HWT also utilizes corporate weather tracking capabilities to monitor for red flag warning and high wind warning days which could negatively impact operations. Additional capabilities for Firecaster are under development (See HWT 2022 WMP at pgs. 32, 35 and 69).

b. A.I.b, moving from independent expert assessment to supported by historical data of incidents and near misses for weather scenarios
HWT began commercial operations in Q1 of 2020. As a result HWT only had independent expert assessment to utilize as a basis to assess weather scenarios. Since that time period HWT has operated through 2 wildfire seasons and observed two wildfires which were in close proximity to HWT's Suncrest station, in addition to two years' worth of monitoring other fires in the area, high wind days and red flag days. As such, HWT now has historical data to supplement independent expert assessment of weather scenarios (See HWT 2022 WMP pgs. 28-32)

c. A.I.c, moving from less granular to asset-based weather scenario modeling
HWT began commercial operations in Q1 of 2020. As a result it did not have operational experience to have granular weather scenario modeling. However, in the past two years, HWT has gained experience from two wildfire seasons in addition to completion of camera installations and development of a proprietary fire risk index, called Firecaster which is designed to provide a seven day outlook for the potential for wildfires to occur, track confirmed fires and possible fires, and predict the spread of tracked fires. Firecaster is used

in conjunction with a third-party wildfire tracker to increase awareness of fire threat and potential for wildfire propagation based on environmental conditions to inform operational decisions. HWT also utilizes corporate weather tracking capabilities to monitor for red flag warning and high wind warning days which could negatively impact operations. Lastly, HWT also added a weather station at the Suncrest facility, which allows HWT to be much more granular and collect data at asset level. These increased capabilities allow HWT to now model weather scenarios at the asset level (See HWT 2022 WMP at pgs. 32, 35 and 69).

d. A.I.d, moving from not automated to partially automated for weather scenario modeling
See response to request " a." above. The Firecaster fire risk index is designed to provide a seven day outlook for the potential for wildfires to occur, track confirmed fires and possible fires, and predict the spread of tracked fires. (See HWT 2022 WMP pg. 32) HWT also utilizing a third-party wildfire tracker to increase awareness of fire threat and potential for wildfire propagation based on environmental conditions to inform operational decisions (See HWT 2022 WMP pg. 35).

e. A.I.e, moving to include weather measured at the circuit level for weather scenario modeling
See response to request "c." above. As a result of HWT's limited footprint and scale, the addition of HWT's Firecaster risk index and access to third-party wildfire tracking data allows HWT to measure weather at the asset and circuit level for weather scenarios. Lastly, HWT also added a weather station at the Suncrest facility, which allows HWT to be much more granular and collect data at asset and circuit level.

f. A.II.e, increasing to >80% confidence interval for wildfire risk assessment
See response to request "c." above. As operational experience, which now includes two wildfire seasons, and the addition of HWT's Firecaster risk index, installation of site cameras and utilization of third-party wildfire tracking data, HWT has improved its ability to monitor and assess wildfire risk. As described in HWT's 2022 WMP pages 28-35, HWT utilized the aforementioned capabilities to respond to the Valley and Road Fires which occurred in close proximity to the Suncrest Facility. HWT has used its experience with the wildfires, particularly the Valley Fire, to inform its annual simulation of responding to a wildfire, rigor of site assessments during wildfire season, and efficacy of its wildfire risk assessment through the annual failure, modes and effects analysis.

g. A.III.d, moving from not automated to partially automated for the ignition risk estimation process

HWT deems the ignition risk estimation process as partially automated as HWT regularly monitors for the contribution of weather to ignition probability and estimated wildfire consequence by leveraging SDG&E's Fire Potential Index (FPI) for its Suncrest Facility. SDG&E's FPI is uses a combination of weather parameters (wind speed, humidity, temperature), vegetation and fuel conditions, and other factors to judge current fire risk and to create a forecast indicative of fire risk. HWT site personnel receives alerts from this system, in addition to information now delivered via HWT's own proprietary fire risk index, Firecaster (See HWT 2022 WMP pg. 35).

However, in the 2022 WMP, HWT discusses no changes in its risk assessment and mapping section since last year's filing. For each of the above, describe the changes that led to the increases in maturity. If applicable, include the page number within the WMP where the change is discussed.

Regarding: HWT's responses to the 2022 Wildfire Mitigation Maturity Survey

Data Request: OEIS-HWT-22-004 (Question 1)

Request date: July 20, 2022

Request:

Q01. Regarding HWT's responses to the 2022 Wildfire Mitigation Maturity Survey, HWT's responses indicate decreased maturity and/or decreased projected maturity regarding grid operations and operating protocols on the following questions since last year's Maturity Survey:

a. For question F.IV.b "Which of the following does the utility take into account when making PSPS decisions?" in 2021 HWT responded both for the current year (2021) and for the start of 2023 both (i) "SME opinion" and (ii) "A partially automated system which recommends circuits for which PSPS should be activated and is validated by SMEs," whereas in 2022 HWT responded for both the current year (2022) and for the start of 2023 just (i) "SME opinion."
b. For question F.V.d "What level of understanding of the probability of ignitions after PSPS events does the utility have across the grid?" in 2021 HWT responded for the current year (2021) (ii) "Some probability estimates exist" and for the start of 2023 (iii) "Utility has accurate quantitative understanding of ignition risk following re-energization, by asset, validated by historical data and near misses," whereas in 2022

HWT responded for both the current year (2022) and for the start of 2023 just (ii) "Some probability estimates exist."
These decreases in maturity and projected maturity from 2021 to 2022 are not reflected in HWT's 2022 Update. HWT discusses no changes to its grid operations and protocols since last year's WMP Update submission.[60] For each of the above instances of decreased maturity and decreased projected maturity, describe the changes that led to the decreases. If applicable, include the page number in HWT's 2022 Update where the change is discussed.

Response date: July 25, 2022

Response:

Q01. Regarding HWT's responses to the 2022 Wildfire Mitigation Maturity Survey, HWT's responses indicate decreased maturity and/or decreased projected maturity regarding grid operations and operating protocols on the following questions since last year's Maturity Survey:

a. For question F.IV.b "Which of the following does the utility take into account when making PSPS decisions?" in 2021 HWT responded both for the current year (2021) and for the start of 2023 both (i) "SME opinion" and (ii) "A partially automated system which recommends circuits for which PSPS should be activated and is validated by SMEs," whereas in 2022 HWT responded for both the current year (2022) and for the start of 2023 just (i) "SME opinion." **HWT's Suncrest facility is a reactive static var compensator facility with an approximate one mile underground single-circuit transmission line, that collectively provides dynamic reactive power support to San Diego Gas & Electric Company's (SDG&E) Suncrest Substation. It is a single line transmission system with no retail or distribution customers. As such, it is only a single circuit so should there be an issue there is one circuit to de-energize. Additionally, HWT stated that the Interconnecting Transmission Owner (SDG&E) would be the main driver of a PSPS in HWT's service area (See HWT 2022 WMP pgs. 84-85). The survey question does not contemplate operations like HWT's, a single-circuit system**

[60] Horizon West Transmission's 2022 WMP Update, p. 67.

within the service area of a larger utility, and therefore HWT selected the response that best fits its operations. In the event of a potential PSPS initiated by SDG&E, HWT would be notified and would comply/cooperate. As noted in its 2022 WMP, given the lack of retail customers or a distribution system, and the facility's substantially fire-hardened system design, HWT reasonably anticipates that it would seldom, if ever, need to issue a PSPS (See HWT 2022 WMP pgs. 84- 86). Moreover, it would only issue a PSPS as a last resort measure (See HWT 2022 WMP pg. 87). However, HWT could also deenergize the system if its SME(s) determined it was necessary based on HWT's own situational awareness resources and PSPS protocol.

b. For question F.V.d "What level of understanding of the probability of ignitions after PSPS events does the utility have across the grid?" in 2021 HWT responded for the current year (2021) (ii) "Some probability estimates exist" and for the start of 2023 (iii) "Utility has accurate quantitative understanding of ignition risk following re-energization, by asset, validated by historical data and near misses," whereas in 2022 HWT responded for both the current year (2022) and for the start of 2023 just (ii) "Some probability estimates exist."
HWT began commercial operations in Q1 of 2020. As a result, it did not have prior operational experience to validate its understanding of ignition risk following re-energization. HWT has gained experience from the past two wildfire seasons, however its proprietary fire risk index (Firecaster) was not completed until Q4 2021, after the 2021 wildfire season (See HWT 2022 WMP pg. 71). As such, 2022 will be the first year when HWT can utilize Firecaster in conjunction with other situational awareness resources to influence its understanding of ignition risk combined with the benefit of some historical data. Additionally, HWT endeavors to develop increased functionality of its fire-risk index during 2022, with the goal of achieving increased maturity of its ignition risk understanding and assessment capabilities (See HWT 2022 WMP pg. 32). While this allows for increased maturity of HWT's understanding of ignition risk, HWT would not be in a position to confirm a fully mature and accurate qualitative understanding of ignition risk following re-energization at the start of the 2023 calendar year. Therefore, HWT revised its response to survey question F.V.d. As mentioned in the previous response, HWT is a single circuit – we are confident that we would be able to inspect our limited facilities and if no issues were found, reenergize without issue. However, we have not had the opportunity to validate this with historical data and near misses.

These decreases in maturity and projected maturity from 2021 to 2022 are not reflected in HWT's 2022 Update. HWT discusses no changes to its grid operations and protocols since last year's WMP Update submission. For each of the above instances of decreased maturity and decreased

projected maturity, describe the changes that led to the decreases. If applicable, include the page number in HWT's 2022 Update where the change is discussed.

Appendix C. Comments on the Draft Decision

Energy Safety did not receive any stakeholder comments on the Draft Decision.

Appendix D. The Ten Maturity and Mitigation Initiative Categories

The following table presents the ten categories of questions on the Maturity Survey, and, where relevant, the version of the category name used in the 2022 WMP Guidelines or Decisions. All mitigation programs and initiatives should fit into one or more of the following categories. Some examples of activities or data products that fit under each category are listed.

Maturity and Mitigation Categories	Examples of Activities
1. Risk mapping and simulation; Per WMP Guidelines/this Decision document: Risk assessment and mapping	Risk and ignition probability mapping; match drop simulations; consequence mapping
2. Situational awareness and forecasting	Weather monitoring; weather station installation; fault indicator technology implementation; fire potential index
3. Grid design and system hardening	Capacitor maintenance and replacement; covered conductor installation and maintenance; expulsion fuse replacement; pole loading infrastructure hardening and replacement
4. Asset management and inspections	Infrared, LiDAR, or drone inspections and routine or detailed patrol inspections of distribution/transmission electric lines and equipment; intrusive pole inspections; pole loading assessments; quality assurance and quality control of inspections
5. Vegetation management and inspections	Fuel management and reduction of "slash"; LiDAR or drone inspections and routine or detailed patrol inspections of vegetation

	around distribution/transmission electric lines and equipment; inventory, remediation, or removal of hazardous vegetation; quality assurance and quality control of vegetation management inspections
6. Grid operations and protocols; Per this Decision document: Grid operations and operating protocols, including PSPS	Automatic recloser operations; protocols for re-energization after PSPS; mitigation of PSPS impacts; work procedures and training in conditions of elevated fire risk
7. Data governance	Centralized data repository; ignition/wildfire collaborative research; documentation/disclosure of wildfire-related data and algorithms; risk event data tracking and analysis
8. Resource allocation methodology	Method of allocation of resources; method of calculating the risk-spend efficiency of initiatives (not including PSPS, which is not considered a mitigation initiative within WMPs); risk reduction scenario development and analysis
9. Emergency planning and preparedness	Ensuring the utility has an adequate and trained workforce for service restoration; community outreach, public awareness, and communications efforts; customer support during emergencies
10. Stakeholder cooperation and community engagement	Cooperation with suppression agencies; community engagement efforts; sharing best practices and cooperating with agencies outside California; coordinating fuel management with the U.S Forest Service

Appendix E. Definition of Initiatives by Category

Category A. Risk Mapping and Simulation / Risk Assessment and Mapping

Category A. Risk Mapping and Simulation / Risk Assessment and Mapping Initiative Activity	Definition
A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment	Development and use of tools and processes to develop and update risk map and simulations and to estimate risk reduction potential of initiatives for a given portion of the grid (or more granularly, e.g., circuit, span, or asset). May include verification efforts, independent assessment by experts, and updates.
Climate-driven risk map and modeling based on various relevant weather scenarios	Development and use of tools and processes to estimate incremental risk of foreseeable climate scenarios, such as drought, across a given portion of the grid (or more granularly, e.g., circuit, span, or asset). May include verification efforts, independent assessment by experts, and updates.
Ignition probability mapping showing the probability of ignition along the electric lines and equipment	Development and use of tools and processes to assess the risk of ignition across regions of the grid (or more granularly, e.g., circuits, spans, or assets).
Initiative mapping and estimation of wildfire and PSPS risk-reduction impact	Development of a tool to estimate the risk reduction efficacy (for both wildfire and

Category A. Risk Mapping and Simulation / Risk Assessment and Mapping Initiative Activity	Definition
	PSPS risk) and risk-spend efficiency of various initiatives.
Match drop simulations showing the potential wildfire consequence of ignitions that occur along the electric lines and equipment	Development and use of tools and processes to assess the impact of potential ignition and risk to communities (e.g., in terms of potential fatalities, structures burned, monetary damages, area burned, impact on air quality and greenhouse gas, or GHG, reduction goals, etc.).

Category B. Situational Awareness and Forecasting

Category B. Situational Awareness and Forecasting Initiative Activity	Definition
Advanced weather monitoring and weather stations	Purchase, installation, maintenance, and operation of weather stations. Collection, recording, and analysis of weather data from weather stations and from external sources.
Continuous monitoring sensors	Installation, maintenance, and monitoring of sensors and sensorized equipment used to monitor the condition of electric lines and equipment.
Fault indicators for detecting faults on electric lines and equipment	Installation and maintenance of fault indicators.

Category B. Situational Awareness and Forecasting Initiative Activity	Definition
Forecast of a fire risk index, fire potential index, or similar	Index that uses a combination of weather parameters (such as wind speed, humidity, and temperature), vegetation and/or fuel conditions, and other factors to judge current fire risk and to create a forecast indicative of fire risk. A sufficiently granular index shall inform operational decision-making.
Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions	Personnel position within utility service territory to monitor system conditions and weather on site. Field observations shall inform operational decisions.
Weather forecasting and estimating impacts on electric lines and equipment	Development methodology for forecast of weather conditions relevant to utility operations, forecasting weather conditions and conducting analysis to incorporate into utility decision-making, learning and updates to reduce false positives and false negatives of forecast PSPS conditions.

Category C. Grid Design and System Hardening

Category C. Grid Design and System Hardening Initiative Activity	Definition
Capacitor maintenance and replacement program	Remediation, adjustments, or installations of new equipment to improve or replace existing capacitor equipment.

Category C. Grid Design and System Hardening Initiative Activity	Definition
Circuit breaker maintenance and installation to de-energize lines upon detecting a fault	Remediation, adjustments, or installations of new equipment to improve or replace existing fast switching circuit breaker equipment to improve the ability to protect electrical circuits from damage caused by overload of electricity or short circuit.
Covered conductor installation	Installation of covered or insulated conductors to replace standard bare or unprotected conductors (defined in accordance with GO 95 as supply conductors, including but not limited to lead wires, not enclosed in a grounded metal pole or not covered by: a "suitable protective covering" (in accordance with Rule 22.8), grounded metal conduit, or grounded metal sheath or shield). In accordance with GO 95, conductor is defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency

Category C. Grid Design and System Hardening Initiative Activity	Definition
	(12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D.
Covered conductor maintenance	Remediation and adjustments to installed covered or insulated conductors. In accordance with GO 95, conductor is defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency (12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D.
Crossarm maintenance, repair, and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing crossarms, defined as horizontal support attached to poles or structures

Category C. Grid Design and System Hardening Initiative Activity	Definition
	generally at right angles to the conductor supported in accordance with GO 95.
Distribution pole replacement and reinforcement, including with composite poles	Remediation, adjustments, or installations of new equipment to improve or replace existing distribution poles (i.e., those supporting lines under 65kV), including with equipment such as composite poles manufactured with materials reduce ignition probability by increasing pole lifespan and resilience against failure from object contact and other events.
Expulsion fuse replacement	Installations of new and CAL FIRE-approved power fuses to replace existing expulsion fuse equipment.
Grid topology improvements to mitigate or reduce PSPS events	Plan to support and actions taken to mitigate or reduce PSPS events in terms of geographic scope and number of customers affected, such as installation and operation of electrical equipment to sectionalize or island portions of the grid, microgrids, or local generation.
Installation of system automation equipment	Installation of electric equipment that increases the ability of the utility to automate system operation and monitoring, including equipment that can be adjusted remotely such as automatic reclosers (switching devices designed to detect and interrupt momentary faults that can reclose

Category C. Grid Design and System Hardening Initiative Activity	Definition
	automatically and detect if a fault remains, remaining open if so).
Maintenance, repair, and replacement of connectors, including hotline clamps	Remediation, adjustments, or installations of new equipment to improve or replace existing connector equipment, such as hotline clamps.
Mitigation of impact on customers and other residents affected during PSPS event	Actions taken to improve access to electricity for customers and other residents during PSPS events, such as installation and operation of local generation equipment (at the community, household, or other level).
Other corrective action	Other maintenance, repair, or replacement of utility equipment and structures so that they function properly and safely, including remediation activities (such as insulator washing) of other electric equipment deficiencies that may increase ignition probability due to potential equipment failure or other drivers.
Pole loading infrastructure hardening and replacement program based on pole loading assessment program	Actions taken to remediate, adjust, or install replacement equipment for poles that the utility has identified as failing to meet safety factor requirements in accordance with GO 95 or additional utility standards in the utility's pole loading assessment program.

Category C. Grid Design and System Hardening Initiative Activity	Definition
Transformers maintenance and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing transformer equipment.
Transmission tower maintenance and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing transmission towers (e.g., structures such as lattice steel towers or tubular steel poles that support lines at or above 65kV).
Undergrounding of electric lines and/or equipment	Actions taken to convert overhead electric lines and/or equipment to underground electric lines and/or equipment (i.e., located underground and in accordance with GO 128).
Updates to grid topology to minimize risk of ignition in the HFTD	Changes in the plan, installation, construction, removal, and/or undergrounding to minimize the risk of ignition due to the design, location, or configuration of utility electric equipment in the HFTD.

Category D. Asset Management and Inspections

Category D. Asset Management and Inspections Initiative Activity	Definition
Detailed inspections of distribution electric lines and equipment	In accordance with GO 165, careful visual inspections of overhead electric distribution lines and equipment where individual

Category D. Asset Management and Inspections Initiative Activity	Definition
	pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.
Detailed inspections of transmission electric lines and equipment	Careful visual inspections of overhead electric transmission lines and equipment where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.
Improvement of inspections	Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors.
Infrared inspections of distribution electric lines and equipment	Inspections of overhead electric distribution lines, equipment, and right-of-way using infrared (heat-sensing) technology and cameras that can identify "hot spots," or conditions that indicate deterioration or potential equipment failures, of electrical equipment.
Infrared inspections of transmission electric lines and equipment	Inspections of overhead electric transmission lines, equipment, and right-of-way using infrared (heat-sensing)

Category D. Asset Management and Inspections Initiative Activity	Definition
	technology and cameras that can identify "hot spots," or conditions that indicate deterioration or potential equipment failures, of electrical equipment.
Intrusive pole inspections	In accordance with GO 165, intrusive inspections involve movement of soil, taking samples for analysis, and/or using more sophisticated diagnostic tools beyond visual inspections or instrument reading.
LiDAR inspections of distribution electric lines and equipment	Inspections of overhead electric distribution lines, equipment, and right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
LiDAR inspections of transmission electric lines and equipment	Inspections of overhead electric transmission lines, equipment, and right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations	Inspections of overhead electric distribution lines, equipment, and right-of-way that exceed or otherwise go beyond those mandated by rules and regulations, including GO 165, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems

Category D. Asset Management and Inspections Initiative Activity	Definition
	identified, or other aspects of inspection or records kept.
Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations	Inspections of overhead electric transmission lines, equipment, and right-of-way that exceed or otherwise go beyond those mandated by rules and regulations, including GO 165, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
Patrol inspections of distribution electric lines and equipment	In accordance with GO 165, simple visual inspections of overhead electric distribution lines and equipment that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.
Patrol inspections of transmission electric lines and equipment	Simple visual inspections of overhead electric transmission lines and equipment that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.
Pole loading assessment program to determine safety factor	Calculations to determine whether a pole meets pole loading safety factor requirements of GO 95, including planning and information collection needed to support said calculations. Calculations shall

Category D. Asset Management and Inspections Initiative Activity	Definition
	consider many factors including the size, location, and type of pole; types of attachments; length of conductors attached; and number and design of supporting guys, per D.15-11-021.
Quality assurance / quality control of inspections	Establishment and function of audit process to manage and confirm work completed by employees or subcontractors, including packaging QA/QC information for input to decision-making and related integrated workforce management processes.
Substation inspections	In accordance with GO 175, inspection of substations performed by qualified persons and according to the frequency established by the utility, including record-keeping.

Category E. Vegetation Management and Inspections

Category E. Vegetation Management and Inspections Initiative Activity	Definition
Additional efforts to manage community and environmental impacts	Plan and execution of strategy to mitigate negative impacts from utility vegetation management to local communities and the environment, such as coordination with communities to plan and execute vegetation management work or promotion of fire-resistant planting practices

Category E. Vegetation Management and Inspections Initiative Activity	Definition
Detailed inspections of vegetation around distribution electric lines and equipment	Careful visual inspections of vegetation around the right-of-way, where individual trees are carefully examined, visually, and the condition of each rated and recorded.
Detailed inspections of vegetation around transmission electric lines and equipment	Careful visual inspections of vegetation around the right-of-way, where individual trees are carefully examined, visually, and the condition of each rated and recorded.
Emergency response vegetation management due to red flag warning or other urgent conditions	Plan and execution of vegetation management activities, such as trimming or removal, executed based upon and in advance of forecast weather conditions that indicate high fire threat in terms of ignition probability and wildfire consequence.
Fuel management and reduction of "slash" from vegetation management activities	Plan and execution of fuel management activities that reduce the availability of fuel in proximity to potential sources of ignition, including both reduction or adjustment of live fuel (in terms of species or otherwise) and of dead fuel, including "slash" from vegetation management activities that produce vegetation material such as branch trimmings and felled trees.
Improvement of inspections	Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors.

Category E. Vegetation Management and Inspections Initiative Activity	Definition
LiDAR inspections of vegetation around distribution electric lines and equipment	Inspections of right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
LiDAR inspections of vegetation around transmission electric lines and equipment	Inspections of right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
Other discretionary inspections of vegetation around distribution electric lines and equipment	Inspections of rights-of-way and adjacent vegetation that may be hazardous, which exceeds or otherwise go beyond those mandated by rules and regulations, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
Other discretionary inspections of vegetation around transmission electric lines and equipment	Inspections of rights-of-way and adjacent vegetation that may be hazardous, which exceeds or otherwise go beyond those mandated by rules and regulations, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
Patrol inspections of vegetation around distribution electric lines and equipment	Visual inspections of vegetation along rights-of-way that is designed to identify

Category E. Vegetation Management and Inspections Initiative Activity	Definition
	obvious hazards. Patrol inspections may be carried out in the course of other company business.
Patrol inspections of vegetation around transmission electric lines and equipment	Visual inspections of vegetation along rights-of-way that is designed to identify obvious hazards. Patrol inspections may be carried out in the course of other company business.
Quality assurance / quality control of vegetation inspections	Establishment and function of audit process to manage and confirm work completed by employees or subcontractors, including packaging QA/QC information for input to decision-making and related integrated workforce management processes.
Recruiting and training of vegetation management personnel	Programs to ensure that the utility is able to identify and hire qualified vegetation management personnel and to ensure that both full-time employees and contractors tasked with vegetation management responsibilities are adequately trained to perform vegetation management work, according to the utility's wildfire mitigation plan, in addition to rules and regulations for safety.
Remediation of at-risk species	Actions taken to reduce the ignition probability and wildfire consequence attributable to at-risk vegetation species,

Category E. Vegetation Management and Inspections Initiative Activity	Definition
	such as trimming, removal, and replacement.
Removal and remediation of trees with strike potential to electric lines and equipment	Actions taken to remove or otherwise remediate trees that could potentially strike electrical equipment, if adverse events such as failure at the ground-level of the tree or branch breakout within the canopy of the tree, occur.
Substation inspection	Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping.
Substation vegetation management	Based on location and risk to substation equipment only, actions taken to reduce the ignition probability and wildfire consequence attributable to contact from vegetation to substation equipment.
Vegetation inventory system	Inputs, operation, and support for centralized inventory of vegetation clearances updated based upon inspection results, including (1) inventory of species, (2) forecasting of growth, (3) forecasting of when growth threatens minimum right-of-way clearances ("grow-in" risk) or creates fall-in/fly-in risk.

Category E. Vegetation Management and Inspections Initiative Activity	Definition
Vegetation management to achieve clearances around electric lines and equipment	Actions taken to ensure that vegetation does not encroach upon the minimum clearances set forth in Table 1 of GO 95, measured between line conductors and vegetation, such as trimming adjacent or overhanging tree limbs.

Category F. Grid Operations and Operating Protocols

Category F. Grid Operations and Operating Protocols Initiative Activity	Definition
Automatic recloser operations	Designing and executing protocols to deactivate automatic reclosers based on local conditions for ignition probability and wildfire consequence.
Crew-accompanying ignition prevention and suppression resources and services	Those firefighting staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, and water) that are deployed with construction crews and other electric workers to provide site-specific fire prevention and ignition mitigation during on-site work
Personnel work procedures and training in conditions of elevated fire risk	Work activity guidelines that designate what type of work can be performed during operating conditions of different levels of wildfire risk. Training for personnel on these guidelines and the procedures they prescribe, from normal operating

Category F. Grid Operations and Operating Protocols Initiative Activity	Definition
	procedures to increased mitigation measures to constraints on work performed.
Protocols for PSPS re-energization	Designing and executing procedures that accelerate the restoration of electric service in areas that were de-energized, while maintaining safety and reliability standards.
PSPS events and mitigation of PSPS impacts	Designing, executing, and improving upon protocols to conduct PSPS events, including development of advanced methodologies to determine when to use PSPS, and to mitigate the impact of PSPS events on affected customers and local residents.
Stationed and on-call ignition prevention and suppression resources and services	Firefighting staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, firefighting foam, chemical extinguishing agent, and water) stationed at utility facilities and/or standing by to respond to calls for fire suppression assistance.

Category G. Data Governance

Category G. Data Governance Initiative Activity	Definition
Centralized repository for data	Designing, maintaining, hosting, and upgrading a platform that supports storage, processing, and utilization of all utility

Category G. Data Governance Initiative Activity	Definition
	proprietary data and data compiled by the utility from other sources.
Collaborative research on utility ignition and/or wildfire	Developing and executing research work on utility ignition and/or wildfire topics in collaboration with other non-utility partners, such as academic institutions and research groups, to include data-sharing and funding as applicable.
Documentation and disclosure of wildfire-related data and algorithms	Design and execution of processes to document and disclose wildfire-related data and algorithms to accord with rules and regulations, including use of scenarios for forecasting and stress testing.
Tracking and analysis of near miss data	Tools and procedures to monitor, record, and conduct analysis of data on near miss events.

Category H. Resource Allocation Methodology

Category H. Resource Allocation Methodology Initiative Activity	Definition
Allocation methodology development and application	Development of prioritization methodology for human and financial resources, including application of said methodology to utility decision-making.
Risk reduction scenario development and analysis	Development of modeling capabilities for different risk reduction scenarios based on wildfire mitigation initiative

Category H. Resource Allocation Methodology Initiative Activity	Definition
	implementation; analysis and application to utility decision-making.
Risk spend efficiency analysis	Tools, procedures, and expertise to support analysis of wildfire mitigation initiative risk-spend efficiency, in terms of MAVF and/ or MARS methodologies.

Category I. Emergency Planning and Preparedness

Category I. Emergency Planning and Preparedness Initiative Activity	Definition
Adequate and trained workforce for service restoration	Actions taken to identify, hire, retain, and train qualified workforce to conduct service restoration in response to emergencies, including short-term contracting strategy and implementation.
Community outreach, public awareness, and communications efforts	Actions to identify and contact key community stakeholders; increase public awareness of emergency planning and preparedness information; and design, translate, distribute, and evaluate effectiveness of communications taken before, during, and after a wildfire, including Access and Functional Needs populations and Limited English Proficiency populations in particular.
Customer support in emergencies	Resources dedicated to customer support during emergencies, such as website pages

Category I. Emergency Planning and Preparedness Initiative Activity	Definition
	and other digital resources, dedicated phone lines, etc.
Disaster and emergency preparedness plan	Development of plan to deploy resources according to prioritization methodology for disaster and emergency preparedness of utility and within utility service territory (such as considerations for critical facilities and infrastructure), including strategy for collaboration with Public Safety Partners and communities.
Preparedness and planning for service restoration	Development of plans to prepare the utility to restore service after emergencies, such as developing employee and staff trainings, and to conduct inspections and remediation necessary to re-energize lines and restore service to customers.
Protocols in place to learn from wildfire events	Tools and procedures to monitor effectiveness of strategy and actions taken to prepare for emergencies and of strategy and actions taken during and after emergencies, including based on an accounting of the outcomes of wildfire events.

Category J. Stakeholder Cooperation and Community Engagement

Category J. Stakeholder Cooperation and Community Engagement Initiative Activity	Definition
Community engagement	Strategy and actions taken to identify and contact key community stakeholders; increase public awareness and support of utility wildfire mitigation activity; and design, translate, distribute, and evaluate effectiveness of related communications. Includes specific strategies and actions taken to address concerns and serve needs of Access and Functional Needs populations and Limited English Proficiency populations in particular.
Cooperation and best practice sharing with agencies outside CA	Strategy and actions taken to engage with agencies outside of California to exchange best practices both for utility wildfire mitigation and for stakeholder cooperation to mitigate and respond to wildfires.
Cooperation with suppression agencies	Coordination with CAL FIRE, federal fire authorities, county fire authorities, and local fire authorities to support planning and operations, including support of aerial and ground firefighting in real-time, including information-sharing, dispatch of resources, and dedicated staff.
Forest service and fuel reduction cooperation and joint roadmap	Strategy and actions taken to engage with local, state, and federal entities responsible for or participating in forest management and fuel reduction activities; and design

Category J. Stakeholder Cooperation and Community Engagement Initiative Activity	Definition
	utility cooperation strategy and joint stakeholder roadmap (plan for coordinating stakeholder efforts for forest management and fuel reduction activities).

Appendix F. Glossary of Terms

Term	Definition
AB	Assembly bill
AFN	Access and functional needs
ALJ	Administrative law judge
BVES	Bear Valley Electric Service
CAISO	California Independent System Operator
Cal Advocates	Public Advocate's Office
CAL FIRE	California Department of Forestry and Fire Protection
CBO	Community-based organization
CEJA	California Environmental Justice Alliance
CNRA	California Natural Resources Agency
CPUC	California Public Utilities Commission
D.	Decision
DFA	Distribution fault anticipation
DR	Data request
EBMUD	East Bay Municipal Utility District
EFD	Early fault detection
EPIC	Electric Program Investment Charge

Term	Definition
EPUC	Energy Producers and Users Coalition
EVM	Enhanced vegetation management
FERC	Federal Energy Regulatory Commission
FGDC	Federal Geographic Data Committee
FIRIS	Fire Integrated Real Time Intelligence System
FMEA	Failure Modes and Effects Analysis
FPI	Fire Potential Index
GIS	Geographic information systems
GO	General order
GPI	Green Power Institute
GRC	General rate case
HFRA	High fire risk area
HFTD	High fire threat district
HWT or Horizon West	Horizon West Transmission
I.	Investigation
ICS	Incident command system or structure
IOU	Investor-owned utility

Term	Definition
ISA	International Society of Arboriculture
ITO	Independent transmission operator
IVM	Integrated vegetation management
IVR	Interactive voice response
JIS	Joint information system
kV	Kilovolt
Liberty	Liberty Utilities / CalPeco Electric
LiDAR	Light detection and ranging
LTE	Long-term evolution
Maturity Model	Utility Wildfire Mitigation Maturity Model
Maturity Survey	Utility Wildfire Mitigation Maturity Survey
MARS	Multi-attribute risk score
MAVF	Multi-attribute value function
MBL	Medical Baseline
MGRA	Mussey Grade Road Alliance
MMAA	Mountain Mutual Aid Association
NERC	North American Electric Reliability Corporation
NFDRS	National Fire Danger Rating System
OCFA	Orange County Fire Authority

Term	Definition
OEIS or Energy Safety	Office of Energy Infrastructure Safety
OP	Ordering paragraph
OPD	Open phase detection
OPW	Outage-producing winds
PG&E	Pacific Gas and Electric Company
PLP	Pole Loading Assessment Program
PMO (PacifiCorp)	Project Management Office
PMO (SCE)	Public Safety Program Management Office
PMU	Phasor measurement unit
PoF	Probability of failure
PoI	Probability of ignition
PRC	Public Resources Code
PSPS	Public Safety Power Shutoff
Pub. Util. Code or PU Code	Public Utilities Code
QA	Quality Assurance
QC	Quality Control
R.	Rulemaking
RAMP	Risk Assessment and Management Phase
RAR	Remote automatic reclosers

Term	Definition
RBDM	Risk-based decision making
RCP	Remedial compliance plan
RCRC	Rural County Representatives of California
REFCL	Rapid earth fault current limiter
RFW	Red Flag Warning
RSE	Risk-spend efficiency
SAWTI	Santa Ana Wildfire Threat Index
SB	Senate bill
SCADA	Supervisory control and data acquisition
SCE	Southern California Edison Company
SDG&E	San Diego Gas & Electric Company
S-MAP	Safety Model Assessment Proceeding, now the Risk-Based Decision-Making Framework Proceeding
SMJU	Small and multijurisdictional utility
SUI	Wildland-urban interface
TAT	Tree Assessment Tool
TBC	Trans Bay Cable
TURN	The Utility Reform Network
USFS	United States Forest Service

Term	Definition
VM	Vegetation management
VRI	Vegetation Risk Index
WMP	Wildfire Mitigation Plan
WRRM	Wildfire Risk Reduction Model
WSAB	Wildfire Safety Advisory Board
WSD	Wildfire Safety Division
WSIP	Wildfire Safety Inspection Program

Appendix G. Numerical Maturity Summary

Please reference the 2022 Guidelines for the Maturity Rubric and for necessary context to interpret the levels shown below. All levels are based solely on the Maturity Rubric and on HWT's responses to the 2022 Utility Wildfire Mitigation Maturity Survey.

Summary maturity table: HWT

*Years correspond to maturity as of January 1st of the reported year.

Legend: Maturity Levels

0	1	2	3	4

Category	Capability 1	Capability 2	Capability 3	Capability 4	Capability 5	Capability 6
A. Risk Assessment and Mapping	1. Climate scenario modeling	2. Ignition risk estimation	3. Estimation of wildfire consequences for communities	4. Estimation of wildfire and PSPS risk-reduction impact	5. Risk maps and simulation algorithms	
	2020: 0 2021: 0 2022: 2 2023: 2	2020: 1 2021: 1 2022: 1 2023: 1	2020: 0 2021: 0 2022: 0 2023: 0	2020: 2 2021: 2 2022: 2 2023: 2	2020: 0 2021: 1 2022: 1 2023: 1	
B. Situational Awareness and Forecasting	6. Weather variables collected	7. Weather data resolution	8. Weather forecasting ability	9. External sources used in weather forecasting	10. Wildfire detection processes and capabilities	
	2020: 1 2021: 2 2022: 2 2023: 2	2020: 1 2021: 3 2022: 3 2023: 3	2020: 0 2021: 2 2022: 2 2023: 2	2020: 1 2021: 2 2022: 2 2023: 2	2020: 2 2021: 2 2022: 2 2023: 2	
C. Grid design and system hardening	11. Approach to prioritizing initiatives across territory	12. Grid design for minimizing ignition risk	13. Grid design for resiliency and minimizing PSPS	14. Risk-based grid hardening and cost efficiency	15. Grid design and asset innovation	
	2020: 2 2021: 4 2022: 4 2023: 4	2020: 1 2021: 3 2022: 3 2023: 3	2020: 0 2021: 0 2022: 0 2023: 0	2020: 1 2021: 4 2022: 4 2023: 4	2020: 1 2021: 1 2022: 1 2023: 1	
D. Asset management and inspections	16. Asset inventory and condition assessments	17. Asset inspection cycle	18. Asset inspection effectiveness	19. Asset maintenance and repair	20. QA/QC for asset management	
	2020: 1 2021: 2 2022: 2 2023: 2	2020: 1 2021: 1 2022: 2 2023: 2	2020: 2 2021: 2 2022: 2 2023: 2	2020: 4 2021: 4 2022: 4 2023: 4	2020: 2 2021: 2 2022: 2 2023: 2	
E. Vegetation management and inspections	21. Vegetation inventory and condition assessments	22. Vegetation inspection cycle	23. Vegetation inspection effectiveness	24. Vegetation grow-in mitigation	25. Vegetation fall-in mitigation	26. QA/QC for vegetation management
	2020: 0 2021: 0 2022: 0 2023: 0	2020: 2 2021: 2 2022: 2 2023: 2	2020: 3 2021: 3 2022: 3 2023: 3	2020: 1 2021: 1 2022: 1 2023: 1	2020: 0 2021: 0 2022: 0 2023: 0	2020: 3 2021: 3 2022: 3 2023: 3
F. Grid operations and protocols	27. Protective equipment and device settings	28. Incorporating ignition risk factors in grid control	29. PSPS op. model and consequence mitigation	30. Protocols for PSPS initiation	31. Protocols for PSPS re-energization	32. Ignition prevention and suppression
	2020: 0 2021: 0 2022: 0 2023: 0	2020: 4 2021: 4 2022: 4 2023: 4	2020: 2 2021: 2 2022: 2 2023: 2	2020: 2 2021: 4 2022: 1 2023: 1	2020: 1 2021: 3 2022: 3 2023: 3	2020: 2 2021: 2 2022: 2 2023: 2
G. Data governance	33. Data collection and curation	34. Data transparency and analytics	35. Near-miss tracking	36. Data sharing with research community		
	2020: 0 2021: 0 2022: 2 2023: 2	2020: 0 2021: 0 2022: 0 2023: 0	2020: 0 2021: 1 2022: 1 2023: 1	2020: 1 2021: 1 2022: 1 2023: 1		
H. Resource allocation methodology	37. Scenario analysis across different risk levels	38. Presentation of relative risk spend efficiency for portfolio of initiatives	39. Process for determining risk spend efficiency of vegetation management	40. Process for determining risk spend efficiency of system hardening	41. Portfolio-wide initiative allocation methodology	42. Portfolio-wide innovation in new wildfire initiatives
	2020: 1 2021: 1 2022: 1 2023: 1	2020: 0 2021: 0 2022: 0 2023: 0	2020: 0 2021: 0 2022: 0 2023: 0	2020: 0 2021: 0 2022: 0 2023: 0	2020: 0 2021: 0 2022: 0 2023: 0	2020: 1 2021: 1 2022: 1 2023: 1
I. Emergency planning and preparedness	43. Wildfire plan integrated with overall disaster/ emergency plan	44. Plan to restore service after wildfire related outage	45. Emergency community engagement during and after wildfire	46. Protocols in place to learn from wildfire events	47. Processes for continuous improvement after wildfire and PSPS	
	2020: 0 2021: 1 2022: 1 2023: 1	2020: 1 2021: 1 2022: 1 2023: 1	2020: 0 2021: 0 2022: 0 2023: 0	2020: 2 2021: 4 2022: 4 2023: 4	2020: 0 2021: 0 2022: 0 2023: 0	
J. Stakeholder cooperation and community engagement	48. Cooperation and best practice sharing with other utilities	49. Engagement with communities on utility wildfire mitigation initiatives	50. Engagement with LEP and AFN populations	51. Collaboration with emergency response agencies	52. Collaboration on wildfire mitigation planning with stakeholders	
	2020: 1 2021: 1 2022: 2 2023: 2	2020: 3 2021: 3 2022: 3 2023: 3	2020: 0 2021: 0 2022: 0 2023: 0	2020: 2 2021: 2 2022: 2 2023: 2	2020: 1 2021: 2 2022: 2 2023: 2	