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

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Caroline Thomas Jacobs, Director

To: Wildfire Mitigation Plans Guidelines docket (#WMPs-Guidelines)

Date: February 24, 2025

Re: **Final WMP Guidelines**

On February 21, 2025, the Office of Energy Infrastructure Safety (Energy Safety) held a public meeting for the adoption of the Wildfire Mitigation Plan (WMP) Guidelines. The following chapters, appendices, and attachment were adopted at that meeting:

- Chapter 1 - Introduction
- Chapter 2 – Process and Evaluation
- Chapter 3 – Base WMP Technical Requirements
- Chapter 4 – Petition to Amend
- Chapter 5 – Independent Transmission Owner Modified Requirements
- Appendix A- Definitions
- Appendix B – Supporting Documentation for Risk Methodology and Assessment
- Appendix C – Additional Maps
- Appendix D – Areas for Continued Improvement
- Appendix E – Referenced Regulations, Codes, and Standards
- Attachment 1 – Data Request Log

Enclosed is the final version of the WMP Guidelines adopted on February 21, 2025.

Sincerely,

/s/ Suzie Rose

Suzie Rose
Program Manager, Electrical Safety Policy Division
Office of Energy Infrastructure Safety

OFFICE OF ENERGY INFRASTRUCTURE SAFETY

WILDFIRE MITIGATION PLAN GUIDELINES

February 2025

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I. INTRODUCTION

This document establishes guidelines[1] outlining the requirements for Wildfire Mitigation Plans (WMPs).[2] These guidelines ("WMP Guidelines" or "Guidelines") are effective upon adoption and beginning with 2026-2028 Base WMP and related submissions.[3]

The Guidelines do not address data requirements. The electrical corporations must reference the applicable Data Guidelines for those requirements. Additionally, process requirements, including but not limited to data requests, errata, docket access, extension requests, naming convention, confidentiality, accessibility, schedule, and public and stakeholder comments, are set forth in the Energy Safety Policy Division Process Guidelines.

1. Authority

Energy Safety has authority under Government Code section 15475.6 to "adopt guidelines setting forth the requirements, format, timing, and any other matters required to exercise its powers, perform its duties, and meet its responsibilities described in Sections 326, 326.1, and 326.2 and Chapter 6 (commencing with Section 8385) of Division 4.1 of the Public Utilities Code…"

Pursuant to Public Utilities Code section 8386(b), each electrical corporation must annually prepare and submit a WMP to the Office of Energy Infrastructure Safety (Energy Safety) for review and approval. The Base WMP must cover at least a three-year period and must satisfy requirements set forth by Energy Safety. At its discretion, Energy Safety may allow the annual submissions to be updates to the last approved Base WMP, provided that each electrical corporation submits a Base WMP at least once every three years.

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[1] Gov. Code, § 15475.6.

[2] Unless otherwise specified, "WMP" refers to both Base WMP and WMP Update submissions.

[3] With the exception of Chapter IV, Petition to Amend, which shall be effective upon the adoption of these guidelines.

2. Purpose and Scope

Energy Safety's WMP Guidelines set forth requirements for each electrical corporation to prepare and submit its WMP, including the Electrical Corporation Wildfire Mitigation Maturity Survey (Maturity Survey). [4] The Guidelines address wildfire risk methodology and assessment; risk-informed wildfire strategy development; Public Safety Power Shutoffs (PSPS); grid design, operations and maintenance; vegetation management; situational awareness; emergency preparedness, collaboration, and public awareness; enterprise systems; and lessons learned.

The Guidelines apply to each electrical corporation in the State of California.

3. The Three-Year WMP Process

Each electrical corporation must annually prepare and submit a WMP to Energy Safety for review and approval. Energy Safety may require the electrical corporation to submit a Base WMP or a WMP Update, as defined below.

3.1 Base WMPs

Each electrical corporation must submit a comprehensive Base WMP every three years. Each Base WMP will cover a three-year period designated by Energy Safety.

3.2 WMP Updates

The electrical corporation with an approved Base WMP for a three-year period must submit a WMP Update for the second and third year of that three-year period. Unless the electrical corporation is directed otherwise, in the second and third year it may only provide reportable updates in the areas specified by Energy Safety.

[4] See Electrical Corporation Wildfire Mitigation Maturity Model and Survey Guidelines.

4. Maturity Survey

To measure the electrical corporation's current and projected maturity over each three-year period, the electrical corporation must complete an electronic Maturity Survey pursuant to the survey instructions and submit a complete set of survey responses by the designated deadline. [5]

[5] See Energy Safety Policy Division Process Guidelines for additional information regarding submission schedules.

II. PROCESS AND EVALUATION

1. WMP Submission Information

Each electrical corporation must submit its WMP, and all documents referenced in the WMP to the appropriate year's WMP docket in accordance with the schedule established by Energy Safety.

1.1 Single Point of Contact

Each electrical corporation must annually provide the name and contact information [6] for its single point of contact for all data requests and WMP matters to Energy Safety at safetypolicy@energysafety.ca.gov no later than the date of its pre-submission. [7]

1.2 Document Postings

Each electrical corporation must post its WMP, all documents cited and referenced in its WMP, and any subsequent versions of the WMP and documents on a WMP-specific website. Each electrical corporation must include the website address of its WMP-specific website in the cover letter of its WMP submission.

[6] The electrical corporation may not redact titles, credentials, and components of main contact person or people for Data Requests.

[7] Beginning with the submission of the WMP if there is no pre-submission completeness check.

2. General Instructions

The following sections provide general WMP instructions for each electrical corporation.

2.1 Qualitatative/Quantitative and Tabulated Responses

Each electrical corporation must provide quantitative information to support its narratives and its qualitative descriptions. The electrical corporation must use the example tables provided in these Guidelines as templates for reporting the information required by the instructions in each section. Table numbers must match the format given in the relevant chapter or section of these Guidelines and any extra table provided needs to fit within that format (e.g., 7-1.1). Any cells populated in example tables are examples provided by Energy Safety. The electrical corporation must ensure that quantitative and tabulated responses provided in its WMP match information provided in in the electrical corporation's data submission pursuant to the applicable Energy Safety Data Guidelines.

2.1.1 Table Data in Excel File

Each electrical corporation must submit an Excel file (.xlsx) matching the information in each table within its WMP. Each Excel file submitted to Energy Safety must comply with the formatting requirements below.

1. Each individual table must be in a separate sheet of the Excel file.
2. If there are more than 200 tables, the electrical corporation must submit more than one Excel file.
3. The title of each sheet must correspond to the table number in the WMP submission
4. Each sheet must include identical information to that provided in the WMP submission and the title of the table.
5. Each table must have identical column labels as the table in the WMP submission.

2.1.2 WMP Data Submission

Each electrical corporation must submit WMP-related data (targets, projected expenditures, performance metric projections, etc.) in an annual data submission, in accordance with the applicable Energy Safety Data Guidelines.

2.2 Mapping Requirements

Where the Guidelines require the electrical corporation to produce a map or series of maps, the electrical corporation must provide one representative map within the main body of its WMP. Where the electrical corporation needs to provide additional maps for clarity (e.g., the scale is insufficiently large to show useful detail), the electrical corporation must host applicable geospatial layers on a publicly accessible web application and refer to the specific web address in appropriate places throughout its WMP. Additionally, the electrical corporation must host these layers until at least the submission of its subsequent Base WMP or as otherwise directed by Energy Safety. The electrical corporation may not modify these publicly available layers without notifying Energy Safety.

2.3 Relevant Regulations, Codes, Standards, and Guideline Instructions

The electrical corporation must cite relevant regulations, codes, and standards (both external and internal standards) throughout its WMP. Any reference(s) to specific statutory or WMP Guideline language and instruction included in the electrical corporation's WMP must be placed in the footnotes or endnotes and not in the body of WMP section text.

2.4 Foundational Documents

The electrical corporation must cite documents that are foundational to its WMP throughout the WMP (e.g., an emergency preparedness plan).

2.5 Glossary

The electrical corporation must attach a glossary to its WMP that lists terms and definitions used in its WMP that are not already defined in Appendix A of these Guidelines. The glossary must also cite the terms and definitions from Appendix A.

2.6 Best Practices

In meeting the requirements of these guidelines, electrical corporations must apply or demonstrate technically sound practices. Energy Safety may provide guidance or best practices documents or white papers to electrical corporations for reference. These materials are provided to assist electrical corporations in meeting guidelines and statutory requirements and to minimize the risk of catastrophic wildfire posed by electrical

corporations' electrical lines and equipment. Guidance and best practices documents and whitepapers provided by Energy Safety are not substitutes for the relevant statutory, regulatory, or guidelines requirements. Rather, information in these publications is intended to assist electrical corporations with developing appropriate approaches to minimize wildfire risk in each electrical corporation's service area as part of its WMP. These guidance or best practices materials are not all-inclusive, and do not preclude electrical corporations from employing other technically sound practices.

3. Collaboration

The electrical corporation must attend and participate in workshops, working groups, scoping meetings, joint studies and any other collaborations as directed by Energy Safety, to inform future WMP submissions or future iterations of guidelines or rulemaking. As related to or as a result of these collaborations, Energy Safety may direct the electrical corporation to assess or consider action items as part of the electrical corporation's WMP. Action items may include, but are not limited to, development, usage, or attendance of the following:

- Reports
- Whitepapers
- Additional meetings
- Studies
- Best Practices

4. Evaluation of WMPs

4.1 Evaluation Process

This section sets forth the steps of the WMP evaluation process.

4.1.1 Pre-Submission Check

Energy Safety may in its discretion require and assess each electrical corporation's WMP for satisfaction of the statutory and guidelines requirements in a pre-submission check. Energy Safety will review whether the WMP provides information required pursuant to Public Utilities Code section 8386(c) and the applicable guidelines.

The pre-submission check is a precursor to, and separate from, the statutory WMP review process.[8] The pre-submission check is not a substantive review of WMP content. A substantive review occurs during the WMP evaluation process.

4.1.1.1 Pre-Submission Check Process

The pre-submission check consists of four steps:

1. Each electrical corporation must provide its WMP pre-submission to Energy Safety. The electrical corporation may include the optional pre-submission checklist provided by Energy Safety with its WMP pre-submission.
2. Energy Safety confirms the electrical corporation provided a narrative for each section and sub-section in the WMP. If the WMP contains a blank section, an inapplicable cross reference, or lacks required detail, Energy Safety marks this element incomplete.
3. Energy Safety confirms required tables are filled out in the WMP, including tables submitted as an Excel file with the WMP. Energy Safety marks this element incomplete if any required fields are blank.
4. Energy Safety informs the electrical corporation of its findings.
    a. If the electrical corporation's WMP satisfies the pre-submission check, the electrical corporation must submit its WMP as-is, with no changes for its WMP Submission.

[8] See Pub. Util. Code, § 8389.3(a).

b. If the electrical corporation's WMP does not satisfy the pre-submission check, Energy Safety will notify the electrical corporation as to the missing or incomplete information (e.g., incomplete, not fully referenced, or lacks the required detail). At the time of the WMP submission, the electrical corporation must add the missing information to its WMP as directed by Energy Safety, with no additional changes.

Energy Safety will not accept public comments on the pre-submission check determination.

4.1.2 WMP Submissions

The electrical corporation must submit its WMP for evaluation according to the schedules and requirements set forth by Energy Safety. [9] Energy Safety may reject an incomplete WMP submission and direct the electrical corporation to resubmit. [10] The statutory evaluation period commences upon the submission or resubmission of the WMP, whichever is later. [11]

4.1.3 Revision Notice

Energy Safety may direct the electrical corporation to modify its WMP by issuing a Revision Notice. [12] The electrical corporation must address all required revisions, and any associated remedies set forth in a Revision Notice by the designated deadline. Required revisions may include correcting inaccurate information and/or resolving critical issues.

4.1.3.1 Correcting Inaccurate Information

Corrections may include, but are not limited to, changes to errors that would materially impact Energy Safety's evaluation of the WMP or changes that would improve clarity.

4.1.3.2 Critical Issues

A critical issue is an area of significant concern that may lead to the denial of a WMP if the associated remedies are not satisfactorily addressed by the electrical corporation.

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[9] See Energy Safety Policy Division Process Guidelines for additional information regarding submission schedules.

[10] Pub. Util. Code, § 8386.3(a).

[11] See Energy Safety Policy Division Process Guidelines for additional information regarding submission schedules.

[12] Pub. Util. Code, § 8386.3(a).

For each identified critical issue, the Revision Notice will set forth a corresponding remedy that the electrical corporation must address. Examples of critical issues include, but are not limited to, the following:

- The electrical corporation failed to address the areas for continued improvement detailed in a prior year's decision
- The electrical corporation did not provide sufficient[13] information for evaluation
- The electrical corporation provides a significant shift in its wildfire mitigation strategy without sufficient substantiation
- The electrical corporation's submission does not meet Energy Safety's evaluation criteria as set forth in Chapter II, Section 4.2
- The electrical corporation did not provide sufficient information for an element of the WMP

4.1.3.3 Revision Notice Process

The Revision Notice process is set forth as follows:

1. Energy Safety determines the electrical corporation's WMP contains required revisions.
2. Energy Safety issues a Revision Notice to the electrical corporation. The Revision Notice will contain a list of required revisions the electrical corporation must address in its Revision Notice Response and applicable schedule or updates to existing schedule. Energy Safety may reject any updates or errata to Revision Notice Responses after the due date as untimely.
3. The electrical corporation must resubmit its entire WMP or sections therein (in a redline copy) in accordance with the applicable schedule and as directed by the Revision Notice and provide written responses for each required revision delineated in the Revision Notice (in a separate Revision Notice Response document).

[13] Different from the pre-submission check, in the case of revision notices, information is present but lacks sufficient detail or information necessary for Energy Safety to conduct its evaluation.

4.1.4 Decision

Upon completion of its review, Energy Safety determines whether each electrical corporation's WMP should be either:

- **Approved:** Energy Safety may issue a decision approving a WMP if the WMP meets statutory and guideline requirements. An approval may include a requirement that the electrical corporation demonstrate continued growth in its subsequent WMP, i.e., an area for continued improvement. Areas for continued improvement identified during an evaluation **must** be addressed in the timeline directed by Energy Safety in the decision. Failure to show maturation in these areas may result in a Revision Notice or denial.

OR

- **Denied:** Energy Safety may issue a decision denying a WMP if the WMP does not meets the statutory and guidelines requirements. Where a WMP is denied, the electrical corporation does not have an approved WMP for purpose of Public Utilities Code sections 8385 et seq., Government Code section 15475.2, and applicable regulations.

Prior to the issuance of a decision, Energy Safety's draft decision will be posted on the appropriate year's WMP docket for public comment.

4.2 WMP Evaluation Criteria

4.2.1 Evaluation Criteria

Energy Safety evaluates WMPs according to the following criteria:

- **Completeness**: The electrical corporation 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 mitigation activities (activities) are technically feasible and effective in addressing the risks that exist in the electrical corporation's service territory. The proposed activities are programmatically feasible for the specific electrical corporation given its maturity and progress to date.
- **Resource use efficiency**: The proposed activities are an efficient use of electrical corporation resources and focus on achieving the greatest risk reduction with the most efficient use of funds and workforce resources.

- **Continued progress**: The electrical corporation's plan demonstrates maturation from its previous wildfire mitigation plans, as well as continued improvement in areas identified in Energy Safety's prior WMP Decisions. .
- **Forward-looking growth**: The electrical corporation demonstrates a clear action plan to continue reducing utility-related ignitions and the duration, scope, and frequency of Public Safety Power Shutoff (PSPS) and outage events. In addition, the electrical corporation focuses on long-term strategies to build the overall maturity of its wildfire mitigation while reducing reliance on shorter-term strategies.
- **Performance metrics**: The electrical corporation provides performance metrics that demonstrate the extent to which its WMP is driving performance 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. The performance metrics quantify consequences resulting from the implementation of the WMP and measure improvement to programs specified in the WMP.
- **Targets**: The electrical corporation uses targets to set commitments for specific activities in its WMP. Targets must align with the electrical corporation's activities in its WMP, support the reduction of utility-related ignitions and outages, and reflect an increase in the maturity of the electrical corporation's wildfire mitigation capabilities. Targets track the electrical corporation's pace of activity completion as laid out in the WMP but do not track the efficacy of its activities. The primary use of these targets is to track the electrical corporation's completion of the activities in its approved WMP.

4.2.2 Evaluation Inputs

To assess a WMP, Energy Safety may rely upon the following:

- The electrical corporation's WMP submissions, including errata and Revision Notice Response,
- Input from the California Department of Forestry and Fire Protection (CAL FIRE),
- Public and stakeholder comments,
- The electrical corporation's response to the Maturity Survey,
- The electrical corporation's data submissions,
- The electrical corporation's responses to data requests, and

- Any other information Energy Safety may require for the evaluation of the electrical corporation's WMP submissions.

5. Data Request Log

Each electrical corporation must post a WMP Data Request Log on its website. The WMP Data Request Log must be posted and maintained beginning with pre-submission of the WMP [14] and ending upon issuance of the decision on the electrical corporation's WMP. Each electrical corporation must also submit to Energy Safety a Data Request Log weekly for the same time period. The requirements for each Data Request Log are set forth as follows.

1. Each electrical corporation must update on its website its WMP Data Request Log and post all data requests and responses issued to-date each Thursday by 5:00 p.m. Pacific Time.
2. Each electrical corporation must submit to Energy Safety its WMP Data Request Log each Thursday by 5:00 p.m. Pacific time to the appropriate year's WMP Data Requests docket (e.g., #2026-2028-WMP-DRs).
3. The website or portion of webpage pertaining to data requests must be titled "YEAR Wildfire Mitigation Plan Data Requests."
4. The Data Request Log must be in the form of a searchable digital table that contains all data requests, responses for each data request received, and links to relevant documents.
5. The Data Request Log must indicate:
    a. The attachment number of any additional attachments related to the data request,
    b. The relevant sections of the WMP, and
    c. A thematic category and subcategory of the data request.

See Attachment 1 for the Data Request Log template.

After the issuance of a decision on the electrical corporation's WMP and before the next pre-submission of the WMP, [15] the electrical corporation must submit to Energy Safety a Data Request Log and update its website by Thursday, 5:00p.m. Pacific time only if the electrical corporation received a data request in the week prior.

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[14] Beginning with the submission of the WMP if there is no pre-submission check.

[15] Before the submission of the next WMP if there is no pre-submission check.

III. BASE WMP TECHNICAL REQUIREMENTS

1. Executive Summary

In the opening section of the Base WMP, the electrical corporation must provide an executive summary that is no longer than ten pages. The electrical corporation must summarize the primary goal, plan objectives, and framework for the development of the Base WMP for the three-year cycle. The electrical corporation may use a combination of brief narratives and bulleted lists.

2. Responsible Persons

The electrical corporation must list those responsible for executing the Base WMP, [16] including:

- Executive-level owner with overall responsibility.
- Program owners with responsibility for each of the main components of the plan.
- As applicable, general ownership for questions related to or activities described in the Base WMP.

Electrical corporations may not redact titles, credentials, and components of responsible person(s). This information must be publicly available.

[16] Pub. Util. Code § 8386(c)(1).

3. Overview of Base WMP

3.1 Primary Goal

Each electrical corporation must state the primary goal of its Base WMP. The primary goal must be consistent with California Public Utilities Code section 8386(a). [17]

3.2 Plan Objectives

In this section, the electrical corporation must summarize its plan objectives over the three-year WMP cycle. [18] Plan objectives are determined by the portfolio of activities proposed in the Base WMP.

Plan objectives must address the electrical corporation's most highly prioritized categories of wildfire risk drivers, as listed in Section 3.4.

Electrical corporations must tie plan objectives to targets (both quantitative and qualitative) and performance metrics.

3.3 Utility Mitigation Activity Tracking IDs

Each electrical corporation must use "Utility Mitigation Activity Tracking IDs" (Tracking IDs) throughout its WMP. Each electrical corporation must implement a tracking system using Tracking IDs, as specified in the applicable Energy Safety Data Guidelines, to tie targets, narratives, initiatives, and activities together throughout its WMP. The electrical corporation must use consistent Tracking IDs in its WMP submission and data submissions. Each Tracking ID must remain consistent across the three-year WMP.

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[17] "Each electrical corporation shall construct, maintain, and operate its electrical lines and equipment in a manner that will minimize the risk of catastrophic wildfire posed by those electrical lines and equipment." (Pub. Util. Code § 8386(a).)

[18] Pub. Util. Code § 8386(c)(2).

3.4 Prioritized List of Wildfire Risks and Risk Drivers

The electrical corporation must provide a list that identifies and prioritizes all wildfire risks, and drivers for those risks, throughout its service territory. [19] The electrical corporation must use the format outlined in Table 3-1 below. Additionally, the list must include, at a minimum, the specific risks and risk drivers provided in Table 3-1. The electrical corporation must also add to its list any wildfire risks and risk drivers applicable to its service territory not already provided in the below table. Prioritization within Table 3-1 must be listed from highest priority to lowest priority.

The electrical corporation must also note topographical or climatological risk factors associated with each risk and risk driver. [20] Topographical and climatological risk factors may include, but are not limited to, elevation, slope, aspect, heat, aridity, humidity, wind, airborne salinity, precipitation (snow, rain, hail, etc.), and lightning. The electrical corporation must include how it determined these topographical and climatological risk factors via narrative (i.e. evaluating short-term/current conditions, long-term/future conditions).

Additionally, the electrical corporation must describe in a narrative accompanying Table 3-1 its basis for prioritizing these risks and risk drivers (e.g., "priority is assigned based on frequency, location with regard to the High Fire Threat District (HFTD), and the expected consequence pertaining to the location"). This must also include a description of the timeframes used to evaluate the risks and risk drivers.

Table 3-1. List of Risks and Risk Drivers to Prioritize

Priority	Risk	Risk Driver	x% of ignitions in HFTD	Topographical and Climatological Risk Factors
	Contact from object	Animal contact		

[19] Pub. Util. Code § 8386(c)(12).

[20] Pub. Util. Code § 8386(c)(12)(B).

Priority	Risk	Risk Driver	x% of ignitions in HFTD	Topographical and Climatological Risk Factors
	Contact from object	Ballon contact		
	Contact from object	Land vehicle contact		
	Contact from object	Aircraft vehicle contact		
	Contact from object	Third-party contact		
	Contact from object	Other contact from object		
	Contact from object	Unknown		
	Vegetation contact	Fall-in (branch failure)		
	Vegetation contact	Fall-in (trunk failure)		
	Vegetation contact	Fall-in (root failure)		
	Vegetation contact	Blow-in		
	Vegetation contact	Grow-in		
	Equipment / facility failure or damage	Anchor/guy		

Priority	Risk	Risk Driver	x% of ignitions in HFTD	Topographical and Climatological Risk Factors
	Equipment / facility failure or damage	Capacitor bank		
	Equipment / facility failure or damage	Conductor		
	Equipment / facility failure or damage	Connector device		
	Equipment / facility failure or damage	Cross arm		
	Equipment / facility failure or damage	Fuse		
	Equipment / facility failure or damage	Cutout		
	Equipment / facility failure or damage	Insulator and bushing		
	Equipment / facility failure or damage	Lightning arrestor		

Priority	Risk	Risk Driver	x% of ignitions in HFTD	Topographical and Climatological Risk Factors
	Equipment / facility failure or damage	Pole		
	Equipment / facility failure or damage	Recloser		
	Equipment / facility failure or damage	Relay		
	Equipment / facility failure or damage	Sectionalizer		
	Equipment / facility failure or damage	Splice		
	Equipment / facility failure or damage	Switch		
	Equipment / facility failure or damage	Tap		
	Equipment / facility failure or damage	Tie wire		

Priority	Risk	Risk Driver	x% of ignitions in HFTD	Topographical and Climatological Risk Factors
	Equipment / facility failure or damage	Transformer		
	Equipment / facility failure or damage	Voltage regulator / booster		
	Equipment / facility failure or damage	Unknown		
	Equipment / facility failure or damage	Other		
	Wire-to-wire contact	Wire-to-wire contact		
	Contamination	Contamination		
	Protective device operation	Protective device operation		
	Vandalism/ theft	Vandalism / theft		
	Lightning	Lightning		
	Unknown	Unknown		
	Dig-in	Dig-in		

3.5 Performance Metrics

In this section, the electrical corporation must list the performance metrics, beyond those required by Energy Safety [21], that the electrical corporation uses to evaluate the effectiveness of the plan in reducing wildfire and outage program risk. [22]

For each of these self-identified performance metrics, the electrical corporation must provide the following information in tabular form:

- Associated WMP section (self-identified performance metrics can apply to the entire WMP; e.g. number of ignitions, number of acres burned, etc.)
- The assumptions that underlie the use of the metric

Metrics listed in this section (including each metric's name and values) must match those reported in the applicable quarterly data submissions.

Table 3-2 provides an example of the minimum acceptable level of information and the required format.

Table 3-2. Example of Self-Identified Performance Metrics Table

Performance Metric	**Assumption that underlies the use of the metric**	**Section associated with the Performance Metric (state "WMP" if the metric applies to entire plan)**

3.6 Projected Expenditures

The electrical corporation must summarize its projected expenditures in thousands of U.S. dollars per year for the activities set forth in its three-year WMP cycle in both tabular and

[21] The performance metrics identified by Energy Safety are included in the applicable Energy Safety Data Guidelines.

[22] Pub. Util. Code §§ 8386(c)(4), (5).

graph form. For tabular form, the electrical corporation must follow the provided format in Table 3-3.

Energy Safety's WMP evaluation, resulting in either approval or denial, is not an approval of, or agreement with, costs listed in the WMP.

Table 3-3. Example of Summary of Projected WMP Expenditures

Year of WMP Cycle	**Spend (thousands $USD)**
[Year 1]	Projected =
[Year 2]	Projected =
[Year 3]	Projected =

3.7 Climate Change

In this section, the electrical corporation must describe how it has considered dynamic climate change risks in writing its WMP. [23] This description must include reference to the electrical corporation's most recent climate vulnerability assessment addressing new or exacerbated risks related to wildfire. This section is limited to two pages.

[23] Pub. Util. Code § 8386(c)(3).

4. Overview of the Service Territory

In this section of the WMP, the electrical corporation must provide a high-level overview of its service territory and key characteristics of its electrical infrastructure. [24] This information must provide Energy Safety with an understanding of the physical and technical scope of the electrical corporation's WMP. Sections 4.1-4.3 below provide detailed instructions.

4.1 Service Territory

The electrical corporation must provide a high-level description of its service territory, addressing the following components: [25]

- Area served (in square miles)
- Number of customers served
- Overview of electrical infrastructure

Table 4-1 provides the required format for presenting the high-level service territory components.

The electrical corporation must also provide one geospatial representative map that shows its service territory (polygons) and the above required components. The electrical corporation must host this map and any geospatial layers on a publicly accessible web application as required by Chapter II.

Table 4-1. Example of High-Level Service Territory Components

Characteristic	HFTD Tier 2	HFTD Tier 3	Non-HFTD	Total
Area served (sq. mi.)				
Number of customers served				
Overhead transmission lines (circuit miles)				

[24] Pub. Util. Code §§ 8386(c)(3), (8).

[25] Annual information included in this section must align with the applicable data submissions.

Characteristic	HFTD Tier 2	HFTD Tier 3	Non-HFTD	Total
Overhead distribution lines (circuit miles)				
Underground transmission lines (circuit miles)				
Underground distribution lines (circuit miles)				

4.2 Catastrophic Wildfire History

The electrical corporation must provide a brief narrative summarizing its wildfire history for the past 20 years as recorded by the electrical corporation, CAL FIRE, or other authoritative government sources. For this section, wildfire history must be limited to electrical corporation ignited catastrophic fires (i.e., fires that caused at least one death, damaged over 500 structures, or burned over 5,000 acres). This includes catastrophic wildfire ignitions reported to the CPUC that may be attributable to facilities or equipment owned by the electrical corporation [26] and where the cause of the ignition is still under investigation by the CPUC, CAL FIRE, and/or other authoritative government sources. The electrical corporation must clearly denote those ignitions as still under investigation. In addition, the electrical corporation must provide catastrophic wildfire statistics in the tabular form provided below, including the following key metrics:

- Ignition date
- Fire name
- Official cause (if known)
- Size (acres)
- Number of fatalities
- Number of structures damaged

[26] CPUC emergency reporting instructions: https://www.cpuc.ca.gov/regulatory-services/safety/emergency-reporting.

- Estimated financial loss (U.S. dollars)
- Any lesson(s) learned

Table 4-2 provides the required format and the content for the tabulated historical catastrophic utility-related wildfire statistics.[27] The electrical corporation must cite to an authoritative government source (e.g., CPUC, CAL FIRE, U.S. Forest Service, or local fire authority) for all data provided to the extent this information is available.

Table 4-2. Example of Catastrophic Electrical Corporation Wildfires

Ignition Date	Fire Name	Official Cause	Fire Size (acres)	No. of Fatalities	No. of Structures Destroyed and Damaged	Financial Loss (US$)	Lesson(s) Learned
--	--	--	--	--	--	--	--

4.3 Frequently Deenergized Circuits

The electrical corporation must populate Table 4-3 and provide a map showing its frequently deenergized circuits.[28] Frequently deenergized circuits are circuits which have had three or more PSPS events per calendar year. The table and map must include frequently deenergized circuits from the previous six calendar years (i.e., circuits that have had three or more PSPS events in at least one of the six previous calendar years).

The table must contain the following; however, relevant information for an entry can be added as applicable:

- Circuit ID Number
- Name of Circuit
- Dates of Outages

[27] Annual information included in this section must align with the applicable data submission.

[28] Pub. Util. Code, § 8386(c)(8).

- Number of Customers Hours of PSPS per Outage
- Measures Taken, or Planned to Be Taken, to Reduce the Need for and Impact of Future PSPS of Circuit
- Estimated Annual Decline in PSPS Events and PSPS Impact on Customers

The map must show the following:

- All circuits listed in Table 4-3, colored or weighted by frequency of PSPS
- HFTD Tiers 2 and 3 contour overlay

Examples of the minimum acceptable level of information and the required format are provided in Table 4-3. If this table is longer than two pages, once populated, the electrical corporation must append the table as an appendix to the WMP.

Table 4-3. Example of Frequently Deenergized Circuits

Entry #	Circuit ID	Name of Circuit	Dates of Outages	Number of Customers Hours of PSPS per Outage	Measures Taken, or Planned to Be Taken, to Reduce the Need for and Impact of Future PSPS of Circuit	Estimated Annual Decline in PSPS Events and PSPS Impact on Customers
1	157	Panama	Dec 2–4, 2022 Dec 7–9, 2022 Dec 23–24, 2022	12,400 3,600 2,000	• 34.26 miles of overhead hardening completed in 2024; 33 miles in scope for 2026 • Eight SCADA (supervisory control and data acquisition) sectionalizing devices added or replaced by 2027	1,200 fewer customer hours of PSPS per year
2	1215	Costa	Jan 28–29, 2024, Oct 27, 2024 Nov 12–14, 2024 Dec 2–4, 2024	4,800 800 2,200 1,800	• 0.78 miles of overhead hardening completed in 2024 • Backup resiliency programs that have benefited 18 customers, completed 2024	800 fewer customer hours of PSPS per year

5. Risk Methodology and Assessment

In this section of the WMP, the electrical corporation must provide an overview of its risk methodology, key input data and assumptions, risk analysis, and risk presentation (i.e., the results of its assessment). [29] This section must provide the information necessary to understand the foundation for the electrical corporation's wildfire mitigation strategy. Sections 5.1–5.7 below provide detailed instructions.

The electrical corporation does not need to perform each calculation and analysis indicated in Sections 5.2, 5.3, and 5.6. However, if the electrical corporation does not perform a certain calculation or analysis, it must describe why it does not do so, its current alternative to the calculation or analysis (if applicable), and any plans to incorporate those calculations or analyses into its risk methodology and assessment in the future.

5.1 Methodology

In this section, the electrical corporation must present an overview of its risk calculation approach. This includes a concise narrative explaining key elements of the approach, one or more graphics showing the calculation process, and definitions of different risks and risk components.

5.1.1 Overview

The electrical corporation must provide a brief narrative describing its methodology for quantifying its overall utility risk, wildfire risk, and outage program risk (as described in Section 5.2.1 and defined in Appendix A). This methodology will help inform the development of its wildfire mitigation strategy (see Section 6). The electrical corporation must describe the methodology and underlying intent of this risk assessment in no more than five pages, inclusive of all narratives, bullet point lists, and any graphics. The electrical corporation must indicate and describe any industry-recognized standards, best practices, or research used in its methodology.

[29] Pub. Util. Code §§ 8386(c)(3), (8), (12)-(13), (17)-(18).

5.2 Risk Analysis Framework

In this section of the WMP, the electrical corporation must provide a high-level overview of its risk analysis framework. This includes a summary of key modeling assumptions, input data, and modeling tools used.

At a minimum, the electrical corporation must evaluate the impact of the following factors on the quantification of risk:

- **Equipment / Assets** (e.g., type, age, inspection, maintenance procedures, etc.)
- **Topography** (e.g., elevation, slope, aspect, etc.)
- **Weather** (at a minimum this must include statistically extreme conditions based on weather history and seasonal weather)
- **Vegetation** (e.g., type/class/species/fuel model, canopy height/base height/cover, growth rates, moisture content, inspection, clearance procedures, etc.)
- **Climate change** (e.g., long-term changes in seasonal weather; statistical extreme weather; impact of change on vegetation species, growth, moisture, etc.) at a minimum, this must include adaptations of historical weather data to current and forecasting future climate
- **Social vulnerability** (e.g., access and functional needs populations (AFN), socioeconomic factors, etc.)
- **Physical vulnerability** (e.g., people, structures, critical facilities/infrastructure, etc.)
- **Access capacities** (e.g., limited access/egress, etc.)

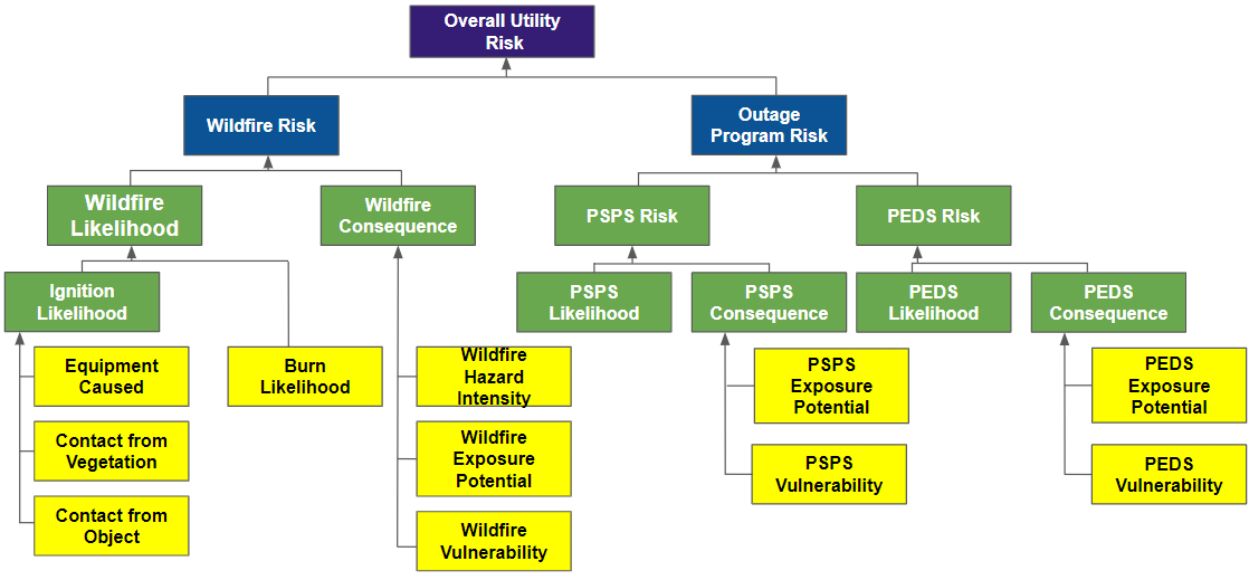
5.2.1 Risk and Risk Component Identification

In this section, the electrical corporation must provide a brief narrative and one or more simple graphics describing the framework that defines its overall utility risk. At a minimum, the electrical corporation must define its overall utility risk as the comprehensive risk due to both wildfire risk and reliability risk across its service territory. This includes several likelihood and consequence risk components that are aggregated based on the framework shown in Figure 5-1 below. The following paragraphs define each risk component.

While the overall utility risk framework and associated risk components identified in Section 5.2 are the minimum requirements for determining overall utility risk, the electrical corporation may elect to include additional risk components as needed to better define risk for its service territory. Where the electrical corporation identifies additional terms as part of its risk framework, it must define those terms. The electrical corporation must include a

schematic demonstrating its adopted risk framework (similar to Figure 5-1), including any components beyond minimum requirements.

Figure 5-1. Composition of Overall Utility Risk



As shown in Figure 5-1, overall utility risk is broken down into two individual hazard risks:

- **Wildfire risk:** The total expected annualized impacts from ignitions at a specific location. This considers the likelihood that an ignition will occur, the likelihood the ignition will transition into a wildfire, and the potential consequences—considering hazard intensity, exposure potential, and vulnerability—the wildfire will have for each community it reaches.
- **Outage program risk:** The measure of reliability impacts from wildfire mitigation related outages at a given location.

There are a minimum of nine intermediate risk components:

- **Wildfire likelihood:** The total anticipated annualized number of fires reaching each spatial location resulting from utility-related ignitions at each location in the electrical corporation service territory. This considers the ignition likelihood and the likelihood that an ignition will transition into a wildfire based on the probabilistic weather conditions in the area.
- **Ignition likelihood:** The total anticipated annualized number of ignitions resulting from electrical corporation-owned assets at each location in the electrical corporation's service territory. This considers probabilistic weather conditions, type and age of equipment, and potential contact of vegetation and other objects with electrical

corporation assets. This includes the use of any method used to reduce the likelihood of ignition. For example, the use of protective equipment and device settings (PEDS) to reduce the likelihood of an ignition upon an initiating event.

- **Wildfire consequence:** The total anticipated adverse effects from a wildfire on each community it reaches. This considers the wildfire hazard intensity, the wildfire exposure potential, and the inherent wildfire vulnerabilities of communities at risk (see definitions in the following list).
- **PSPS risk**: The total expected annualized impacts from PSPS at a specific location. This considers two factors: (1) the likelihood a PSPS will be required due to environmental conditions exceeding design conditions, and (2) the potential consequences of the PSPS for each affected community, considering exposure potential and vulnerability.
- **PSPS likelihood**: The likelihood of an electrical corporation requiring a PSPS given a probabilistic set of environmental conditions.
- **PSPS consequence:** The total anticipated adverse effects from a PSPS for a community. This considers the PSPS exposure potential and inherent PSPS vulnerabilities of communities at risk (see definitions in the following list).
- **PEDS outage risk:** The total expected annualized impacts from PEDS enablement at a specific location.
- **PEDS outage likelihood:** The likelihood of an outage occurring while increased sensitivity settings on a protective device are enabled at a specific location given a probabilistic set of environmental conditions.
- **PEDS outage consequence:** The total anticipated adverse effects from an outage occurring while increased sensitivity settings on a protective device are enabled at a specific location, including reliability and associated safety impacts.

There are a minimum of eleven fundamental risk components:

- **Equipment caused ignition likelihood:** The likelihood that electrical corporation-owned equipment will cause an ignition either through normal operation (such as arcing) or through failure.
- **Contact from vegetation ignition likelihood:** The likelihood that vegetation will contact electrical corporation-owned equipment and result in an ignition.
- **Contact from object ignition likelihood:** The likelihood that a non-vegetative object (such as a balloon or vehicle) will contact electrical corporation-owned equipment and result in an ignition.
- **Burn likelihood:** The likelihood that a wildfire with an ignition point will burn at a specific location within the service territory based on a probabilistic set of weather profiles, vegetation, and topography.

- **Wildfire hazard intensity:** The potential intensity of a wildfire at a specific location within the service territory given a probabilistic set of weather profiles, vegetation, and topography.
- **Wildfire exposure potential:** The potential physical, social, or economic impact of wildfire on people, property, critical infrastructure, livelihoods, health, environmental services, local economies, cultural/historical resources, and other high-value assets. These may include direct or indirect impacts, as well as short- and long-term impacts.
- **Wildfire vulnerability:** The susceptibility of people or a community to adverse effects of a wildfire, including all characteristics that influence their capacity to anticipate, cope with, resist, and recover from the adverse effects of a wildfire (e.g., AFN customers, Social Vulnerability Index, age of structures, firefighting capacities).
- **PSPS exposure potential:** The potential physical, social, or economic impact of a PSPS event on people, property, critical infrastructure, livelihoods, health, local economies, and other high-value assets.
- **Vulnerability of community to PSPS (PSPS vulnerability):** The susceptibility of people or a community to adverse effects of a PSPS event, including all characteristics that influence their capacity to anticipate, cope with, resist, and recover from the adverse effects of a PSPS event (e.g., high AFN population, poor energy resiliency, low socioeconomics).
- **PEDS outage exposure potential:** The potential physical, social, or economic impact of an outage occurring when PEDS are enabled on people, property, critical infrastructure, livelihoods, health, local economies, and other high-value assets.
- **PEDS outage vulnerability:** The susceptibility of people or a community to adverse effects of an outage occurring when PEDS are enabled, including all characteristics that influence their capacity to anticipate, cope with, resist, and recover from the related adverse effects (e.g., high AFN population, poor energy resiliency, low socioeconomics).

The electrical corporation must adopt these definitions for this section of the WMP. If the electrical corporation considers additional intermediate and fundamental risk components, it must define those components in this section as well.

5.2.2 Risk and Risk Components Calculation

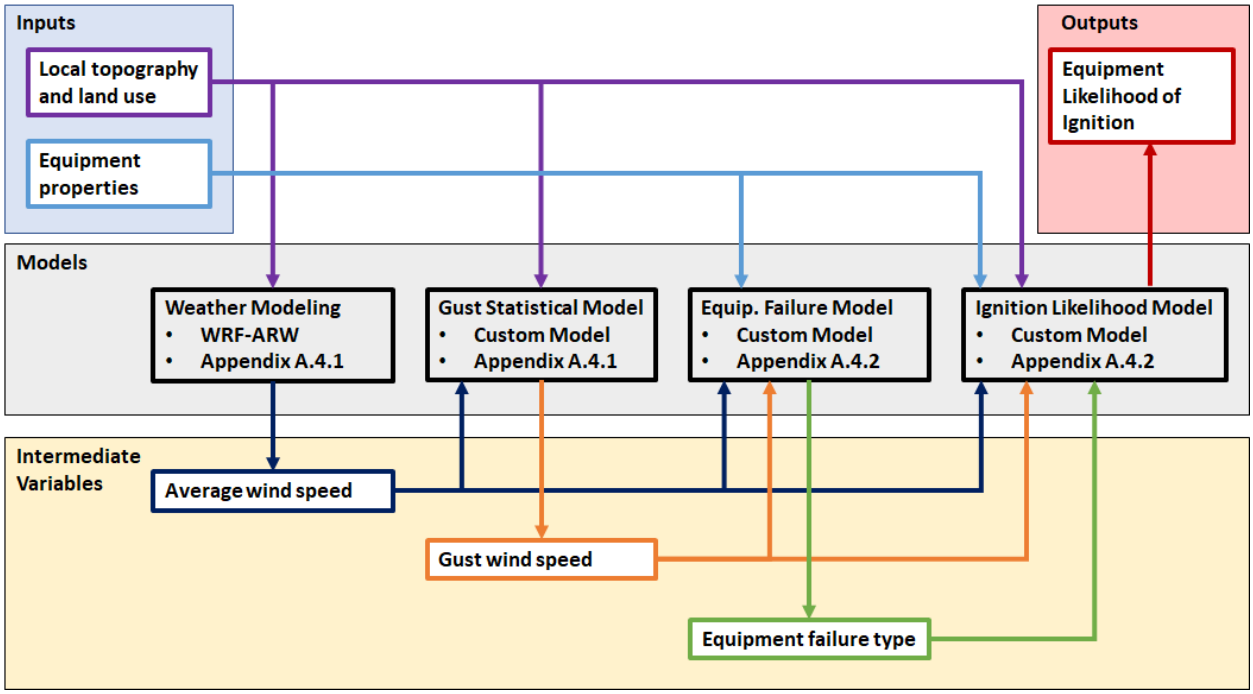
The electrical corporation must calculate each risk and risk component defined in Section 5.2.1. Additional requirements for these calculations are located in Appendix B “Calculation of Risk and Risk Components.” These are the minimum requirements and are intended to establish the baseline evaluation and reporting of all electrical corporations.

If the electrical corporation includes additional risk components in its calculation, it must report each of those components in its WMP in a similar format. The electrical corporation

must list all risk model components it identifies as uncertain and disclose if this uncertainty is assessed using probability distributions, expected values, or percentiles. The electrical corporation must describe how probability distributions are stored and how coherence is maintained. For each uncertain component that is not assessed using probability distributions, the electrical corporation must explain why probability distributions are not used and justify its elected assessment method.

The electrical corporation must provide schematics illustrating the calculation of each risk and risk component as necessary to demonstrate the logical flow from input data to outputs, including separate items for any intermediate calculations. Figure 5-2 provides an example of a calculation schematic for the equipment likelihood of ignition.

Figure 5-2. Example of a Calculation Schematic



The electrical corporation must summarize any differences between its calculation of these risk components and the requirements of these Guidelines. These differences may include any of the following:

- **Additional input parameters** beyond the minimum requirements for a specific risk component
- **Calculations of additional outputs** beyond the minimum requirements for a specific risk component

- **Calculations of additional risk components** defined by the electrical corporation in Section 5.2.1

The process used to combine risk components must be summarized for each relevant risk component. This process must align with the requirements in the most recent CPUC decision governing Risk Assessment and Mitigation Phase (RAMP) filings. [30] If the electrical corporation uses scaling factors (such as multi-attribute value functions [MAVFs] or representative cost), it must present a table with all relevant information needed to understand this procedure (including each scaling factor used, the value of the scaling factor, how it is utilized, an explanation of its purpose, and a justification for the value chosen). The electrical corporation must organize this discussion into the following two subsections focusing on likelihood and consequence.

5.2.2.1 Likelihood of Risk Event

The electrical corporation must discuss how it calculates the likelihood that its equipment (through normal operations or failure) will result in a wildfire and the likelihood of issuing an outage event. The risk components discussed in this section must include at least the following:

- Ignition likelihood
  - Equipment caused likelihood of ignition
  - Contact from vegetation likelihood of ignition
  - Contact from object likelihood of ignition
- Burn likelihood
- PSPS likelihood
- PEDS outage likelihood

5.2.2.2 Consequence of Risk Event

The electrical corporation must discuss how it calculates the consequences of a fire originating from its equipment and the consequence of implementing an outage event. The risk components discussed in this section must include at least the following:

- Wildfire consequence

[30] Pub. Util. Code § 8386(c)(13).

- Wildfire hazard intensity
- Wildfire exposure potential
- Wildfire vulnerability
- PSPS consequence
- PSPS exposure potential
- PSPS vulnerability
- PEDS outage consequence
- PEDS outage exposure potential
- PEDS outage vulnerability

5.2.2.3 Risk

The electrical corporation must discuss how it calculates each risk, and the resulting overall utility risk defined in Section 5.2.1. The discussion in this section must include at least the following:

- Overall utility risk
- Wildfire risk
- Outage program risk
- PSPS risk
- PEDS outage reliability risk

5.2.3 Key Assumptions and Limitations

Because the individual elements of risk assessment are interdependent, the interfaces between the various risk models and activities must be internally consistent. In this section of the WMP, the electrical corporation must discuss key assumptions, limitations, and data standards for the individual elements of its risk assessment. [31] This must include the following:

[31] Pub. Util. Code § 8386(c)(4).

- **Key modeling assumptions** made specific to each model to represent the physical world and to simplify calculations
- **Data standards**, which must be consistently defined (e.g., weather model predictions at a 30-ft [10-m] height must be converted to the correct height for fire behavior predictions, such as mid-flame wind speeds)
- **Consistency of assumptions and limitations** in each interconnected model, which must be traced from start to finish, with any discrepancies between models discussed
- **Stability of assumptions in the program**, including historical and projected changes
- **Monetization of attributes**, if utilized, including (if applicable) the selected value of statistical life, dollar value of injury prevention, and dollar value of reliability risk

More developed activities (programs) regularly monitor and evaluate the scope and validity of modeling assumptions. Monitoring and evaluation categories may include:

- **Adaptation of weather history** to current and forecasted climate conditions
- **Availability of suppression resources** including type, number of resources, and ease of access to incident location
- **Height of wind driving fire spread** including any wind adjustment factor calculations
- **General equipment failure rates** based on historical trends for equipment type, equipment age, overdue maintenance, and any wind speed functional dependences
- **General vegetation contact rates** based on historical trends for vegetation species, vegetation height, and environmental factors such as wind speed functional dependences
- **Height of electrical equipment** in the service territory
- **Stability of the atmosphere** and resulting calculation of near-surface winds
- **Vegetative fuels** including models that account for fuel management activities by other land managers (e.g., thinning, prescribed burns)
- **Combination of risk components and weighting of attributes** and resulting impacts
- **Wind load capacity for electrical equipment** in the service territory
- **Number, extent, and type of community assets at risk** in the service territory
- **Proxies for estimating impact on customers and communities** in the service territory

- **Extent, distribution, and characteristics of vulnerable populations** in the service territory

The electrical corporation must document each assumption in Table 5-1. The electrical corporation must summarize assumptions made within models in accordance with the model documentation requirements in Appendix B.

Table 5-1. Example of Risk Modeling Assumptions and Limitations

Assumption	Justification	Limitation	Applicable Models
Height of conductors in rural and highly rural areas is assumed to be 28 feet	General Order 95 (GO 95) [32] requires 34 feet or 30 feet over railroads or thoroughfares for 35-kV lines. The sag in the lines in our service territory generally varies from 3 to 10 feet. The average height of conductors is thus: 34 feet – 6 feet = 28 feet	Statute mandates minimum clearance, but the height could be higher. Since wind speed generally increases with height, this could lead to use of non-conservative wind speeds in design.	Each likelihood-of-ignition model

[32] General Order 95 (338730245.pdf (ca.gov), accessed Sept. 14, 2024).

5.3 Risk Scenarios

In this section of the WMP, the electrical corporation must provide a high-level overview of the scenarios to be used in its risk analysis in Section 5.2. These must include at least the following:

- **Design basis scenarios** that will inform the electrical corporation's long-term wildfire activities and planning
- **Extreme-event scenarios** that may inform the electrical corporation's decisions to provide added safety margin and robustness

The risk scenarios described in Sections 5.3.1 and 5.3.2 below are the minimum scenarios the electrical corporation must assess in its wildfire risk and outage program risk analysis. The electrical corporation must also describe and justify any additional scenarios it evaluates.

Each scenario must consider:

- **Local relevance:** Heterogeneous conditions (e.g., assets, equipment, topography, vegetation, weather) that vary over the landscape of the electrical corporation's service territory at a level sufficiently granular to permit understanding of the risk at a specific location or for a specific circuit segment. For example, statistical wind loads must be calculated based on wind gusts considering the impact of nearby topographic and environmental features, such as hills, canyons, and valleys.
- **Statistical relevance:** Percentiles used in risk scenario selection must consider the statistical history of occurrence and must be designed to describe a reasonable return interval / probability of occurrence. For example, designing to a wind load with a 10,000-year return interval may not be desirable as most conductors in the service territory would be expected to fail (i.e., the scenario does not help discern which areas are at elevated risk).

5.3.1 Design Basis Scenarios

Fundamental to any risk assessment is the selection of one or more relevant design basis scenarios (design scenarios) that inform long-term activities and planning. In this section, the electrical corporation must identify the design scenarios it has prioritized from a comprehensive set of possible scenarios. The design scenarios identified must be based on the unique wildfire risk and reliability risk characteristics of the electrical corporation's service territory and achieve the primary goal and stated plan objectives of its WMP. The

design scenarios must represent statistically relevant weather and vegetative conditions throughout the service territory. The following design scenarios, comprised of various design conditions, are provided for reference and may be used by the electrical corporation to categorize the unique design scenarios employed in its risk analysis.

For wind loading on electrical equipment, the electrical corporation must evaluate statistically relevant design conditions. Statistically relevant wind loads may be calculated based on locally relevant 3-second wind gusts over a 30-year wind speed history during fire season in its service territory. Four wind loading conditions that electrical corporations may consider in developing its design scenarios are:

- **Wind Load Condition 1: Baseline:** The baseline wind load condition the electrical corporation uses in design, construction, and maintenance relative to GO 95, Rule 31.1.
- **Wind Load Condition 2: Very High:** 95th-percentile wind gusts based on maximum daily values over the 30-year history. This corresponds to a probability of exceedance of 5 percent on an annual basis (i.e., 20-year return interval) and is intended to capture annual high winds observed in the region (e.g., Santa Ana winds).
- **Wind Load Condition 3: Extreme:** Wind gusts with a probability of exceedance of 5 percent over the three-year WMP cycle (i.e., 60-year return interval).
- **Wind Load Condition 4: Credible Worst Case:** Wind gusts with a probability of exceedance of 1 percent over the three-year WMP cycle (i.e., 300-year return interval).

The electrical corporation must describe which wind load design condition(s) it uses for its modeling purposes, and how each condition is evaluated for use in risk modeling. The four conditions above are provided for reference. An alternative approach to statistical wind loads may be used if supported by engineering analysis. If the electrical corporation utilizes a design condition not listed above, it must describe what that condition is (including the timeframe for historical data used), the return interval evaluated, and how the electrical corporation determined to use that condition for risk modeling. For any condition used, the electrical corporation must describe how it is using discrete historical data to determine extremes that may not have been captured within the data when evaluating various return intervals.

The data and/or models the electrical corporation uses to establish locally relevant wind gusts for these design conditions must be documented in accordance with the weather analysis requirements described in Appendix B.

For weather conditions used in calculating fire behavior, the electrical corporation must evaluate probabilistic fire spread scenarios based on statistically relevant history of fire

weather. This approach must consider a range of wind speeds, directions, and fuel moistures that are representative of historic conditions. In addition, the electrical corporation must discuss how this weather history is adapted to align with current and forecasted climate conditions. At a minimum, the electrical corporation must consider the following two conditions:

- **Weather Condition 1: Anticipated Conditions:** The statistical weather analysis is limited to fire seasons expected to be the most relevant to the next three years of the WMP cycle.
- **Weather Condition 2: Long-Term Conditions:** The statistical weather analysis is representative of fire seasons covering the full historical record and adapted to forecasted climate conditions.

One possible approach to the statistical weather analysis for fire behavior is Monte-Carlo simulation of synthetic fire seasons in accordance with approaches presented by the United States Forest Service.[33, 34] However, the electrical corporation must justify the selection of locally relevant data for use in this approach (i.e., Remote Automated Weather Systems data or historic weather reanalysis must be locally relevant).

The electrical corporation must state how it defines "fire weather" and "fire season" for the calculations of these probabilistic scenarios. If the electrical corporation utilizes a design condition not listed above, it must describe what that condition is, including the timeframe for historical data used, and how the electrical corporation determined using that condition. The data and/or models the electrical corporation uses to establish locally relevant weather data for these designs must be documented in accordance with the weather analysis requirements described in Appendix B.

For vegetative conditions not including short-term moisture content, the electrical corporation must evaluate the current and forecasted vegetative type and coverage. Three suggested vegetation conditions to consider include:

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[33] M. A. Finney, I. C. Grenfell, C. W. McHugh, R. C. Seli, D. Trethewey, R. D. Stratton, and S. Brittain, 2011, "A Method for Ensemble Wildland Fire Simulation," *Environmental Modeling & Assessment* 16(2):153–167.

[34] M. A. Finney, C. W. McHugh, I. C. Grenfell, K. L. Riley, and K. C. Short, 2011, "A Simulation of Probabilistic Wildfire Risk Components for the Continental United States," *Stochastic Environmental Research and Risk Assessment* 25:973–1000.

- **Vegetation Condition 1: Existing Fuel Load:** The wildfire hazard evaluated with the existing fuel load within the service territory, including existing burn scars and fuel treatments that reduce the near-term fire hazard.
- **Vegetation Condition 2: Short-Term Forecasted Fuel Load:** The wildfire hazard evaluated considering the changes in expected fuel load over the three-year WMP cycle, including regrowth of previously burned and treated areas.
- **Vegetation Condition 3: Long-Term Extreme Fuel Load:** The wildfire hazard evaluated considering the long-term potential changes in fuels throughout the service territory. This includes regrowth of previously burned and treated areas and changes in predominant fuel types.

The electrical corporation must describe which vegetation condition(s) it uses for its modeling purposes, and how the electrical corporation evaluated each condition for use in risk modeling. If the electrical corporation chooses a design condition not listed above, it must describe what that condition is, including the timeframe for historical data used, and how the electrical corporation determined the condition(s).

The data and/or models the electrical corporation uses to establish locally relevant fuel loads for these designs must be documented in accordance with the vegetation requirements described in Appendix B.

The electrical corporation must provide a brief narrative on the design scenarios used in its risk analysis. In addition, the electrical corporation must provide a table summarizing the following information:

- **Scenario ID:** Identification of each design basis scenario included within its risk modeling (e.g., Scenario 1, Scenario 2)
- **Design Scenario:** The components of each scenario used, as described above or by the electrical corporation (e.g., Weather Condition 1, Vegetation Condition 1)
- **Purpose:** How the output of the scenario is used within risk modeling, if applicable

Table 5-2 provides an example.

Table 5-2. Example of Summary of Design Scenarios

Scenario ID	Design Scenario	Purpose
WL1	Wind Load 1	Ignition likelihood calculation
WL2	Wind Load 2	Ignition likelihood calculation

Scenario ID	Design Scenario	Purpose
WL3	Wind Load 3	Ignition likelihood calculation
WL4	Wind Load 4	Ignition likelihood calculation
WV4	Weather Condition 1 Vegetation Condition 1	Year 1 fire behavior calculation
WV5	Weather Condition 1 Vegetation Condition 2	Year 2-3 fire behavior calculation
WV6	Weather Condition 2 Vegetation Condition 3	Long-term fire behavior calculation

5.3.2 Extreme-Event/High Uncertainty Scenarios

In this section, the electrical corporation must identify extreme-event/high-uncertainty scenarios that it considers in its risk analysis. These generally include the following types of scenarios:

- Longer-term scenarios with higher uncertainty (e.g., climate change impacts, population migrations, extended drought)
- Multi-hazard scenarios (e.g., ignition from another source during a PSPS)
- High-consequence but low-likelihood ("Black Swan") events (e.g., acts of terrorism, 10,000-year weather)

While the primary risk analysis is intended to be based on the design scenarios discussed in Section 5.3.1, the potential for high consequences from extreme events may provide additional insight into the mitigation prioritization described in Section 6.

The electrical corporation must provide a brief narrative on the extreme-event scenarios used in its risk analysis. The electrical corporation must describe these scenarios, their purpose in the analysis, and identify the modeling method used (e.g. power law distribution). In addition, the electrical corporation must provide a table summarizing the following information:

- Identification of each extreme-event risk scenario (e.g., Scenario 1, Scenario 2)

- Components of each scenario (e.g., Weather Condition 1, Vegetation Condition 1)
- Purpose of the scenario

Table 5-3 provides an example of the minimum acceptable level of information.

Table 5-3. Example of Summary of Extreme-Event Scenarios

Scenario ID	Extreme-Event Scenario	Purpose
ES1	Climate Change 1 Weather Condition 2 Vegetation Condition 3	Impact of climate change on long-term fire behavior calculation

5.4 Summary of Risk Models

In this section, the electrical corporation must summarize the calculation approach for each risk and risk component identified in Section 5.2.1. This documentation is intended to provide a quick summary of the models used. The electrical corporation must provide the following information:

- **Identification (ID)**: Unique shorthand identifier for the risk or risk component.
- **Risk component:** Unique full identifier for the risk or risk component.
- **Design scenario(s)**: Reference to design scenarios evaluated with the model to calculate the risk or risk component. These must be defined in Section 5.3.
- **Key inputs**: List of key inputs used to evaluate the risk or risk component. These can be in summary form (e.g., the electrical corporation may list “equipment properties” rather than listing out equipment age, maintenance history, etc.).
- **Sources of data inputs**: List of sources for each input parameter. These must include data sources (such as LANDFIRE) and modeling results (such as wind predictions) as relevant to the calculation of the risk or risk component. If the inputs come from multiple sources, each source should be on a new line.
- **Key output results**: List of outputs calculated for the risk or risk component.
- **Units**: List of the units associated with the key outputs.

Table 5-4 provides a template for the required information. The electrical corporation must provide a summary of each model in Appendix B.

Table 5-4. Example of Summary of Risk Models

ID	Risk Component	Design Scenario(s)	Key Inputs	Source of Inputs (Data and/or Models)	Key Outputs	Units
R1	Overall utility risk	WL1, WL2, WL3 WV1, WV2, WV3	Wildfire risk Reliability risk	See related models	Risk at a specific location, as granular as possible (i.e. circuit segment, pole)	(-)/year
R2	Wildfire risk	WL1, WL2, WL3 WV1, WV2, WV3	Ignition likelihood Ignition consequence	See related models	Wildfire risk at a specific location	(-)/year
R3	Outage program risk	WL1, WL2, WL3 WV1, WV2, WV3	PSPS risk PEDS risk	See related models	Outage program risk at a specific location	(-)/year
R4	PSPS risk	WL1, WL2, WL3 WV1, WV2, WV3	PSPS likelihood PSPS consequence	See related models	PSPS risk at a specific location	(-)/year
R5	PEDS risk	WL1, WL2, WL3 WV1, WV2, WV3	PEDS likelihood PEDS consequence	See related models	PEDS outage risk at a specific location	(-)/year
IRC1	Wildfire likelihood	WV1, WV2, WV3	Burn likelihood Ignition likelihood	See related models	Likelihood of a wildfire occurring given an ignition at a specific location	(-)/ignition
IRC2	Wildfire consequence	WV1, WV2, WV3	Wildfire hazard intensity Wildfire exposure potential Wildfire vulnerability	See related models	Adverse effects at a specific location per wildfire	(-)/burned location
IRC3	Ignition likelihood	WL1, WL2, WL3 WV1, WV2, WV3	Equipment caused likelihood of ignition Contact by vegetation likelihood of ignition Contact by object likelihood of ignition	See related models	Number of ignitions at a specific location	Ignitions/year
IRC4	PSPS consequence	WL1, WL2, WL3	PSPS exposure potential Vulnerability of community to PSPS	See related models	Adverse effects at a specific location per PSPS	(-)/deenergized location

ID	Risk Component	Design Scenario(s)	Key Inputs	Source of Inputs (Data and/or Models)	Key Outputs	Units
IRC5	PEDS consequence	WL1, WL2, WL3	PEDS exposure potential Vulnerability of community to PEDS	See related models	Adverse effects at a specific location per PEDS outage	(-)/outage location
FRC1	Equipment caused likelihood of ignition	WL1, WL2, WL3 WV1, WV2, WV3	Wind gust velocity Vegetation moisture	Weather model	Likelihood of equipment, including failure, causing an ignition	Ignitions/year
FRC1	Equipment caused likelihood of ignition	WL1, WL2, WL3 WV1, WV2, WV3	Equipment parameters Presence of mitigation	Asset database	Likelihood of equipment, including failure, causing an ignition	Ignitions/year
FRC1	Equipment caused likelihood of ignition	WL1, WL2, WL3 WV1, WV2, WV3	Current status Operating conditions	Data from inspections, work order history, and real-time monitoring systems	Likelihood of equipment, including failure, causing an ignition	Ignitions/year
FRC2	Contact from vegetation likelihood of ignition	WL1, WL2, WL3 WV1, WV2, WV3	Wind gust velocity Vegetation moisture	Weather model	Likelihood of vegetation contact causing an ignition	Ignitions/year
FRC2	Contact from vegetation likelihood of ignition	WL1, WL2, WL3 WV1, WV2, WV3	Vegetation parameters	Vegetation database	Likelihood of vegetation contact causing an ignition	Ignitions/year
FRC2	Contact from vegetation likelihood of ignition	WL1, WL2, WL3 WV1, WV2, WV3	Current status	Data from inspections and vegetation treatment	Likelihood of vegetation contact causing an ignition	Ignitions/year
FRC3	Contact from object likelihood of ignition	WL1, WL2, WL3 WV1, WV2, WV3	Wind gust velocity Vegetation moisture	Weather model	Likelihood of non-vegetation object contact causing an ignition	Ignitions/year
FRC3	Contact from object likelihood of ignition	WL1, WL2, WL3 WV1, WV2, WV3	Historic risk events	Data from previous risk events	Likelihood of non-vegetation object contact causing an ignition	Ignitions/year

ID	Risk Component	Design Scenario(s)	Key Inputs	Source of Inputs (Data and/or Models)	Key Outputs	Units
FRC4	Burn likelihood	WV1, WV2, WV3	Topography	LANDFIRE	Likelihood of a fire reaching a location from a nearby but unknown ignition point	Occurrences/year
FRC4	Burn likelihood	WV1, WV2, WV3	Statistical profile of sustained wind speeds	Weather model	Likelihood of a fire reaching a location from a nearby but unknown ignition point	Occurrences/year
FRC4	Burn likelihood	WV1, WV2, WV3	Vegetation	LANDFIRE, adapted based on LiDAR (light detection and ranging) data	Likelihood of a fire reaching a location from a nearby but unknown ignition point	Occurrences/year
FRC5	Wildfire hazard intensity	WV1, WV2, WV3	Topography	LANDFIRE	Intensity of a fire at a specific location	HRR (heat release rate)/event Flame length/ event
FRC5	Wildfire hazard intensity	WV1, WV2, WV3	Sustained wind speeds	Weather model	Intensity of a fire at a specific location	HRR/event Flame length/ event
FRC5	Wildfire hazard intensity	WV1, WV2, WV3	Vegetation	LANDFIRE, adapted based on LiDAR data	Intensity of a fire at a specific location	HRR/event Flame length/ event
FRC6	Wildfire exposure potential		Topography	LANDFIRE	Structures, people, and critical infrastructure at a specific location	Quantity/location
FRC6	Wildfire exposure potential		Land use	Remote sensing	Structures, people, and critical infrastructure at a specific location	Quantity/location
FRC6	Wildfire exposure potential		Population information	Census	Structures, people, and critical infrastructure at a specific location	Quantity/location
FRC7	Wildfire vulnerability		Vulnerable populations (access and functional needs population [AFN], limited English proficiency [LEP], elderly)	Census and surveys	Structures, people, and critical infrastructure at a specific location	Quantity/location

ID	Risk Component	Design Scenario(s)	Key Inputs	Source of Inputs (Data and/or Models)	Key Outputs	Units
FRC7	Wildfire vulnerability		Land use	Remote sensing	Structures, people, and critical infrastructure at a specific location	Quantity/location
FRC7	Wildfire vulnerability		Critical infrastructure	Local municipalities	Structures, people, and critical infrastructure at a specific location	Quantity/location
FRC8	PSPS likelihood	WL1, WL2, WL3 WV1, WV2, WV3	Wind gust velocity Vegetation moisture	Weather model	Likelihood of PSPS at a specific location per year	Quantity/year
FRC8	PSPS likelihood	WL1, WL2, WL3 WV1, WV2, WV3	Equipment parameters Presence of mitigation	Asset database	Likelihood of PSPS at a specific location per year	Quantity/year
FRC8	PSPS likelihood	WL1, WL2, WL3 WV1, WV2, WV3	Current status Operating conditions	Data from inspections, work order history, and real-time monitoring systems	Likelihood of PSPS at a specific location per year	Quantity/year
FRC9	Vulnerability of community to PSPS		Vulnerable populations (AFN, LEP, elderly)	Census and surveys	Structures, people, and critical infrastructure at a specific location	Quantity/location
FRC9	Vulnerability of community to PSPS		Land use	Remote sensing	Structures, people, and critical infrastructure at a specific location	Quantity/location
FRC9	Vulnerability of community to PSPS		Critical infrastructure	Local municipalities	Structures, people, and critical infrastructure at a specific location	Quantity/location
FRC10	PEDS likelihood	WL1, WL2, WL3 WV1, WV2, WV3	Wind gust velocity Vegetation moisture	Weather model	Likelihood of PEDS outage at a specific location per year	Quantity/year
FRC10	PEDS likelihood	WL1, WL2, WL3 WV1, WV2, WV3	Equipment parameters Presence of mitigation	Asset database	Likelihood of PEDS outage at a specific location per year	Quantity/year

ID	Risk Component	Design Scenario(s)	Key Inputs	Source of Inputs (Data and/or Models)	Key Outputs	Units
FRC10	PEDS likelihood	WL1, WL2, WL3 WV1, WV2, WV3	Current status Operating conditions	Data from inspections, work order history, and real-time monitoring systems	Likelihood of PEDS outage at a specific location per year	Quantity/year
FRC11	Vulnerability of community to PEDS		Vulnerable populations (AFN, LEP, elderly)	Census and surveys	Structures, people, and critical infrastructure at a specific location	Quantity/location
FRC11	Vulnerability of community to PEDS		Land use	Remote sensing	Structures, people, and critical infrastructure at a specific location	Quantity/location
FRC11	Vulnerability of community to PEDS		Critical infrastructure	Local municipalities	Structures, people, and critical infrastructure at a specific location	Quantity/location

5.5 Risk Analysis Results and Presentation

In this section of the WMP, the electrical corporation must present a high-level overview of the risks calculated using the approaches discussed in Section 5.2 for the scenarios discussed in Section 5.3.

The risk presentation must include the following:

- Summary of electrical corporation-identified high fire risk areas in the service territory
- Geospatial map of the top risk areas within the High Fire Risk Area (HFRA) (i.e., areas that the electrical corporation has deemed at high risk from wildfire independent of HFTD designation)
- Narrative discussion of proposed updates to the HFTD
- Tabular summary of top risk-contributing circuits across the service territory
- Tabular summary of key metrics across the service territory

The following subsections expand on the requirements for each of these.

5.5.1 Top Risk Areas within the HFRA

In this section, the electrical corporation must identify top risk areas within its self-identified HFRA, compare these areas to the CPUC's current HFTD, and discuss how it plans to submit its proposed changes to the CPUC for review. [35]

5.5.1.1 Geospatial Maps of Top-Risk Areas within the HFRA

The electrical corporation must evaluate the outputs from its risk modeling to identify top risk areas within its HFRA (independent of where they fall with respect to the HFTD). The electrical corporation must provide geospatial maps of these areas in accordance with the mapping requirements in the WMP Process Guidelines and Appendix C.

The maps must fulfill the following requirements:

- **Risk levels:** Levels must be selected to show the five distinct levels, with the values based on the following:

[35] Pub. Util. Code § 8386(c)(17).

- Top five percent of overall utility risk values in the HFRA
- Top five to ten percent of overall utility risk values in the HFRA
- Top ten to 15 percent of overall utility risk values in the HFRA
- Top 15 to 20 percent of overall utility risk values in the HFRA
- Bottom 80 percent of overall utility risk values in the HFRA

- **Colormap:** The colormap of the risk levels must meet accessibility requirements (recommended colormap is Viridis).
- **County lines:** The map must include county lines as a geospatial reference.
- **HFTD tiers:** The map must show a comparison with existing HFTD Tiers 2 and 3 regions.

5.5.1.2 Proposed Updates to the HFTD

In this section, the electrical corporation must discuss the differences between the electrical corporation-identified top-risk areas within the HFRA and the existing CPUC-approved HFTD. [36] The HFRA must be comprised of areas identified by the electrical corporations that its risk analysis indicates are at a higher risk than indicated in the current HFTD. Any proposed changes to the HFTD must be mapped in accordance with the requirements in the previous sub-section.

This discussion at a minimum must include:

- A discussion of how the electrical corporation analyzed additional areas in HFRA compared to HFTD
- What criteria electrical corporations used to incorporate additional areas into the HFRA
- Associated mitigation changes expected, as applicable
- A description of the electrical corporation's process for submitting proposed changes to the HFTD to the CPUC, if such changes are desired

5.5.2 Top Risk-Contributing Circuits/Segments/Spans

The electrical corporation must provide a summary table showing the highest-risk circuits, segments, or spans [37] within its service territory. The table should include the following information about each circuit:

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[36] Pub. Util. Code § 8386(c)(17).

[37] For the section, the electrical corporation may use either circuits, segments, or spans, whichever is more appropriate considering the granularity of its risk model(s).

- **Circuit, Segment, or Span ID:** Unique identifier for the circuit, segment, or span.
- **Overall utility risk scores:** Numerical value for each risk.
- **Top risk contributors:** The risk components that lead to the high risk on the circuit.

The electrical corporation must rank its circuits, segments, or spans by circuit-mile-weighted overall utility risk score and identify each circuit, segment, or span that significantly contributes to risk. A circuit/segment/span significantly contributes to risk if it:

1. Individually contributes more than one percent of the total overall utility risk; or
2. Is in the top five percent of highest risk circuits/segments/spans when all circuits/segments/spans are ranked individually from highest to lowest risk.

The electrical corporation must include each circuit, segment, or span that significantly contributes to risk in Table 5-5. [38] If this table is longer than two pages once populated, the electrical corporation must append the table.

[38] This table is a summary of information provided in the applicable data submission. As such, information included in this table must align with the data submission.

Table 5-5. Example of Summary of Top-Risk Circuits, Segments, or Spans

Risk Ranking	Circuit, Segment, or Span ID	Overall Utility Risk Score	Wildfire Risk Score	Outage Program Risk Score	Top Risk Contributors	Total Miles	Version of Risk Model Used
1	ID001						
2	ID002						

5.6 Quality Assurance and Quality Control

The electrical corporation must document the procedures it uses to confirm that the data collected and processed for its risk assessment are accurate and comprehensive. [39] This includes but is not limited to model, sensor, inspection, and risk event data used as part of the electrical corporation's WMP program. In this section of the WMP, the electrical corporation must describe the following:

- **Independent review:** Role of independent third-party review in the data and model quality assurance (QA).
- **Model controls, design, and review:** Overview of the quality controls (QCs) in place on electrical corporation risk models and sub-models.

5.6.1 Independent Review

The electrical corporation must report on its procedures for independent review of data collected (e.g., through sensors or inspections) and generated (e.g., through risk models and software) to support decision making. In this section of the WMP, the electrical corporation must provide the following:

- **Independent reviews:** The electrical corporation's procedures for conducting independent reviews of data collection and risk models.
- **Additional review triggers:** The electrical corporation's internal procedures to identify when a third-party review is required beyond the routinely scheduled reviews.
- **Results, recommendations, and disposition:** The results and recommendations from the electrical corporation's most recent independent review of its data collection and risk models. This includes the electrical corporation's disposition of each comment.
- **Routine review schedule:** The electrical corporation's routine review schedule.

5.6.2 Model Controls, Design, and Review

An electrical corporation's risk modeling approaches are complex, with several layers of interaction between models and sub-models. If these models are designed as a single unit, it can be difficult to evaluate the propagation of small changes in assumptions or inputs

[39] Pub. Util. Code § 8386(c)(22).

through the models. The requirements in this section are designed to facilitate the review of models by the stakeholders and Energy Safety, and to allow for more comprehensive retrospective analysis of failures in the system.

The electrical corporations must report on its risk modeling software's model controls, design, and review in the following areas:

- **Modularization:** The electrical corporation must report on the degree to which its software architecture is sufficiently modular to track and control changes and enhancements over time. At a minimum, the electrical corporation must report if it has separate modules to evaluate each of the following:
  - Weather analysis
  - Fire behavior analysis
  - Seasonal vegetation analysis
  - Equipment failure
  - Exposure and vulnerability analysis
- **Reanalysis:** The electrical corporation must describe its capability to provide the results of its risk model based on the operational version of the software (including code and data) on a specific historic day.
- **Version control:** The electrical corporation must report on how it conforms to industry standard practices in version controlling its risk model and sub-models. At a minimum, the electrical corporation must report on:
  - Models and software version controls aligned with industry standard programs, procedures, and protocols
  - Version control of model input data, including geospatial data layers
  - Procedures for updating technical, verification, and validation documentation

5.7 Risk Assessment Improvement Plan

A key objective of the WMP review process is to drive year-over-year continuous improvement. In this section, the electrical corporation must provide a high-level overview of its plan to improve both programmatic and technical aspects of its risk assessment in at least four key areas:

- **Risk assessment methodology:** Wildfire and PSPS risk assessment methodology and its documentation, including both quantitative and qualitative approaches.
- **Design basis:** Justification of design basis scenarios used to evaluate the risk and its documentation.
- **Risk presentation:** Presentation of risk to stakeholders, including dashboards and statistical assessments.
- **Risk event tracking:** Tracking and reconstruction of risk events and integration of lessons learned.

The overview must consist of the following information, in tabulated format:

- **Key area:** One of the four key areas identified above.
- **Title of proposed improvement:** Brief heading or subject of the improvement.
- **Type of improvement:** Technical or programmatic.
- **Anticipated benefit:** Summary of anticipated benefit and any other impacts of the proposed improvement.
- **Timeframe and key milestones:** Total timeframe for undertaking the proposed improvement and any key milestones.

Table 5-6 provides an example of the minimum acceptable level of information.

In addition, the electrical corporation must provide a concise narrative of its proposed improvement plan (maximum of five pages per improvement) summarizing:

- **Problem statement:** Description of the current state of the problem to be addressed.
- **Planned improvement:** Discussion of the planned improvement, including any new/novel strategies to be developed and the timeline for their completion.
- **Anticipated benefit:** Detailed description of the anticipated benefit and any other impacts of the proposed improvement.
- **Region prioritization (where relevant):** Reference to risk-informed analysis (e.g., local validation of weather forecasts in the HFTD) demonstrating that high-risk areas are being prioritized for continued improvement.
- **Supporting documentation (as necessary).**

Table 5-6. Example of Utility Risk Assessment Improvement Plan

Key Risk Assessment Area	Proposed Improvement	Type of Improvement	Expected Value Add	Timeframe and Key Milestones
RA-1, risk assessment methodology	RA-1-A. Increase validation of local wind gusts in statistical weather modeling in the HFTD.		Improved likelihood-of-ignition calculations.	Pilot system, 2026–2027 Integrate system throughout HFTD, 2026–2028
RA-1, risk assessment methodology	RA-1-B. Develop verification and validation documentation for ignition models.		Improved quantitative understanding of the accuracy of the sub-models. This will help identify where our model has the highest areas of uncertainty that need to be addressed in future activities.	Conduct initial development, 2026 Expand validation basis, 2026–2028
RA-2, design basis				
RA-3, risk presentation				
RA-4, risk event tracking				

6. Wildfire Mitigation Strategy

In this section, the electrical corporation must provide a high-level overview of the risk evaluation processes that inform its selection of a portfolio of activities, as well as its overall wildfire mitigation strategy. [40] The electrical corporation's processes and strategy must be designed to achieve maximum feasible risk reduction [41] and meet the goal(s) and plan objectives stated in Sections 3.1–3.2. Sections 6.1 and 6.2 below provide detailed instructions.

6.1 Risk Evaluation

6.1.1 Approach

In this section, the electrical corporation must provide a brief narrative of its risk evaluation approach, based on the risk analysis outcomes presented in Section 5. This narrative helps inform the development of a wildfire mitigation strategy that meets the goal(s) and plan objectives stated in Sections 3.1–3.2. The electrical corporation must indicate and describe in the narrative whether its risk evaluation approach meets or uses any industry-recognized standards (e.g., ISO 31000), best practices, and/or research.

The electrical corporation must describe the risk evaluation approach in a maximum of two pages, inclusive of all narratives, bullet point lists, and any graphics.

6.1.2 Risk-Informed Prioritization

In making decisions involving risk mitigation, the electrical corporation must identify and evaluate where it can make investments and take actions to reduce its overall utility risk. The electrical corporation must develop a prioritization list based on overall utility risk.

In this section, the electrical corporation must:

- Describe how it selects circuit segments of its service territory at risk from wildfire for potential activities, including, at a minimum, the following:

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[40] Pub. Util. Code §§ 8386(c)(3), (12)-(14).

[41] "Maximum feasible" means, in accordance with Public Utilities Code section 326(a)(2), "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."

  - Geographic scale used in prioritization (i.e., regional, circuit, circuit segment, span, asset)
  - Statistical approach used to select prioritized areas (e.g., circuit segments in top 20 percent for risk, circuit segments in top 20 percent for consequences)
  - Feasibility constraints (e.g., limitations on data resolution, jurisdictional considerations, accessibility)
- Present a list that identifies, describes, and prioritizes circuit segments of its service territory at risk from wildfire for potential activities based solely on overall utility risk, including the associated risk drivers. Associated risk drivers must be ranked in order of most impactful to risk.

Examples of the minimum acceptable level of information and the required format are provided in Table 6-1.

Table 6-1. Example of List of Prioritized Areas in an Electrical Corporations Service Territory Based on Overall Utility Risk

Priority	Circuit Segment and/or Span ID	Length (miles)	Overall Utility Risk	Wildfire Risk	Outage Program Risk	Percent of Overall Utility Risk	Associated Risk Drivers
1	ID001	6.8	34.065	32.451	1.614	1.4%	Transformer failure Vegetation contact
2	ID002	7.3	26.193	22.331	3.862	0.8%	Conductor failure Pole failure Animal contact

6.1.3 Activity Selection Process

After the electrical corporation creates a list of top-risk contributing circuits/segments/spans (Section 5.5.2) and prioritized circuit segments based on overall utility risk (Section 6.1.2), the electrical corporation must then identify potential mitigation strategies. It must also evaluate the benefits and drawbacks of each strategy at different scales of application (e.g., circuit, circuit segment, system-wide). In this section of the WMP, the electrical corporation must provide the basis for its decisions regarding which activities to pursue.

The electrical corporation must consider appropriate activities depending on the local conditions, physical setting, and the risk components that create the high-risk conditions. There may be a wide variety of potential activities, such as:

- Engineering changes to grid design
- Discretionary inspection and/or maintenance of existing assets
- Vegetation clearances beyond minimum regulatory requirements
- Alternative operational policies, practices, and procedures
- Improved emergency planning and coordination

The electrical corporation must also evaluate mitigating risk through a portfolio of combined multiple activities.

The electrical corporation is expected to use its procedures discussed in Section 5 to:

- Develop potential activity approaches to address each risk
- Characterize the potential activities to provide internal decision makers with information required to support decision making (e.g., costs, material availability), including an assessment of uncertainties
- Document the results of the evaluation

The electrical corporation must develop a proposed schedule for implementing each activity and proposed metrics to monitor implementation and effectiveness of the activities. The following subsections provide specific requirements.[42]

[42] Annual information included in this section must align with the applicable data submission.

6.1.3.1 Identifying and Evaluating Activities

The electrical corporation must describe how it identifies and evaluates options for mitigating wildfire and outage program risk at various analytical scales, consistent with the CPUC guidelines associated with the Risk-Based Decision-Making Framework (RDF) established in the RDF Proceeding.[43] The electrical corporation must present the risk mitigation identification procedure it plans on using during the course of the three years filed in the Base WMP. If the electrical corporation is required to submit a RAMP filing to the CPUC, the risk mitigation procedure provided must be consistent with either its most recent RAMP filing or its upcoming RAMP filing. The electrical corporation must describe the following:

- The procedures for identifying and evaluating activities (comparable to Risk-Based Decision-Making Framework, row 26[44]), including the use of risk buy-down estimates (e.g., risk-spend efficiency, benefit-cost ratio) and evaluating the benefits and drawbacks of activities
- To the extent possible, multiple potential locally relevant activities that address local wildfire risk drivers (see Risk-Based Decision-Making Framework, rows 11 and 14)[45]
- The approach the electrical corporation uses to characterize uncertainties and how the electrical corporation's evaluation and decision-making process incorporates these uncertainties (see Risk-Based Decision-Making Framework, rows 26 and 30)[46]

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[43] The CPUC initially adopted its Risk-Based Decision-Making Framework in D.18-12-014 (see RDF, step 2, rows 15–25), https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M250/K281/250281848.pdf. The CPUC updated its Risk-Based Decision-Making Framework in December 2022 in D.22-12-027, https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M500/K014/500014668.PDF and June 2024 in D.24-05-064 https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M533/K099/533099839.PDF. These Decisions changed the risk evaluation framework from Multi-Attribute Value Function (MAVF) to Cost-Benefit Analysis (CBA). The RDF builds on the requirements established in the Safety Model Assessment Proceeding (S-MAP, A.15-05-002) and the Risk-Based Decision-Making proceeding (R.13-11-006).

[44] Risk-Based Decision-Making Framework, Appendix A to D.24-05-064, California Public Utilities Commission, June 2024 at A-17: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M533/K206/533206241.PDF.

[45] Risk-Based Decision-Making Framework, Appendix A to D.24-05-064, California Public Utilities Commission, June 2024 at A-10 to A-15: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M533/K206/533206241.PDF.

[46] Risk-Based Decision-Making Framework, Appendix A to D.24-05-064, California Public Utilities Commission, June 2024 at A-17 and A-20: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M533/K206/533206241.PDF.

- Two or more potential initiative or activity portfolios for each risk driver included in the list of prioritized circuit segments (Table 6-1 in Section 6.1.2), including the following information:
  - The initiatives and activities
  - Expected risk reduction and impact on individual risk components
    - Where mitigations can be feasibly deployed in combination, the electrical corporation must compare these portfolios of activities (e.g., covered conductor, vegetation management, asset inspections, and protective device and equipment settings versus undergrounding, secondary hardening, and asset inspections).
  - Estimated implementation costs
    - Where activities can be feasibly deployed in combination, the utility must compare these portfolios of activities (e.g., covered conductor, vegetation management, and protective device and equipment settings versus undergrounding and secondary hardening).
  - Relevant uncertainties and associated potential impacts, including solutions on how to reduce the potential impacts
  - Implementation schedule
- How the electrical corporation uses multi-attribute value functions (MAVFs), cost-benefit analysis (CBA), and/or other specific risk factors (as identified in relevant CPUC Decisions) in evaluating different activity alternatives.
  - This must include how the electrical corporation considers cost efficiencies when evaluating activities, including overlap with planned or projected upgrades due to future grid needs (e.g., load capacity, peak demand, system flexibility).[47]

[47] These considerations must be in alignment with the CPUC's Decision Adopting Improvements to Distribution Planning and Project Execution Process, Distribution Resource Planning Data Portals, and Integration Capacity Analysis Maps, D.24-10-030 and with the CPUC's Rulemaking to Modernize the Electric Grid for a High Distributed Energy Resources Future, R.21-06-017.

- How the electrical corporation defines different aspects of risk considerations, including: Risk Scaling, Risk Tolerance, Uncertainty, and Tail Risk in its risk mitigation strategies. [48]
    - Must break out each by safety and reliability (PSPS and PEDS), as applicable
    - Must include a discussion of how each aspect impacts mitigation selection and prioritization

6.1.3.2 Activity Prioritization

The electrical corporation must seek to implement the best integrated portfolio of activities using its project prioritization framework to meet its plan objectives, optimize its resources, and maximize risk reduction. Objectives may be based on quantified risk assessment results (see Section 5), or other values prioritized by the electrical corporation or broader stakeholder groups (e.g., Tribal interests, environmental protection, public perception, resilience, cost). The electrical corporation must do the following:

- Evaluate its potential activities. This evaluation will yield a prioritized list of activities. The objective is for the electrical corporation to identify the preferable activities for specific geographical areas. (Comparable to Risk Based Decision-making Framework, rows 12 and 29). [49]
- Identify the best activities for all geographical areas at a location-specific level to create a portfolio of projects expected to provide maximal benefits within known limitations and constraints. (Comparable to Risk Based Decision-making Framework, rows 12 and 26). [50] Explain when subject matter expertise is used as a part of activity selection, including the process used by subject matter experts (SMEs) to provide their judgement.

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[48] D.24-05-064 at 35-48, 54-57, and 97-99. See also California Public Utility Commission, Assigned Commissioner's Phase 4 Scoping Memo and Ruling, September 13, 2024, at 3.

[49] Risk-Based Decision-Making Framework, Appendix A to D.24-05-064, California Public Utilities Commission, June 2024 at A-12 and A-21: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M533/K206/533206241.PDF.

[50] Risk-Based Decision-Making Framework, Appendix A to D.24-05-064, California Public Utilities Commission, June 2024 at A-12 and A-21: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M533/K206/533206241.PDF.

- Explain how the electrical corporation is optimizing its resources to maximize risk reduction. Describe how the proposed activities are an efficient use of electrical corporation resources and focus on achieving the greatest risk reduction with the most efficient use of funds and workforce resources.
- Discuss the interrelationships between different activities, in terms of how activities influence and impact implementation and respective effectiveness for risk reduction, and how the electrical corporation evaluates trade-offs between activities.
- Describe how grid needs, including future projected needs, (e.g., load capacity, peak demand, system flexibility)[51] influence activity prioritization.

The electrical corporation must describe how it prioritizes activities to reduce both wildfire and PSPS risk. This discussion must include the following:

- A high-level schematic showing the procedures and evaluation criteria used to evaluate potential activities. At a minimum, the schematic must demonstrate the roles of quantitative risk assessment, resource allocation, evaluation of other plan objectives (e.g., cost, timing) identified by the electrical corporation, and SME judgment. Where specific local factors, which vary across the service territory, are considered in the decision-making process (e.g., the primary risk driver in a region is legacy equipment), they must be indicated in the schematic. The electrical corporation must explain why those local conditions are part of the decision process (i.e., there should not be simply one box in the schematic that is labeled "local conditions," which is then connected to the rest of the process).
- Summary description (no more than five pages) of the procedures and evaluation criteria for prioritizing activities, including the three minimum requirements listed above in this section.

[51] These considerations should be in alignment with the CPUC's Decision Adopting Improvements to Distribution Planning and Project Execution Process, Distribution Resource Planning Data Portals, and Integration Capacity Analysis Maps, D.24-10-030 and with the CPUC's Rulemaking to Modernize the Electric Grid for a High Distributed Energy Resources Future, R.21-06-017.

6.1.3.3 Activity Scheduling

The electrical corporation must report on its schedule for implementing its portfolio of activities. The electrical corporation must describe its preliminary schedules for each activity and its iterative processes for modifying activities (Section 6.1.3.1).

Activities may require several years to implement. For example, relocating transmission or distribution capabilities from overhead to underground may require substantial time and resources. Since activities are undertaken in high-risk regions, the electrical corporation may need interim activities to mitigate risk while working to implement long-term strategies. Some examples of interim activities include more frequent inspections, fire detection and monitoring activities, and PSPS usage. If the electrical corporation's activities require more than one year to implement,[52] the electrical corporation must evaluate the need for interim activities, as discussed in Section 6.2.2.

In its WMP submission, the electrical corporation must provide a summary description of the procedures it uses in developing and deploying activities. This discussion must include the following:

- How the electrical corporation schedules activities
- How the electrical corporation incorporates the amount of time it takes to implement the activities when determining initiative effectiveness and prioritization. This must include evaluations of cumulative risk exposure while the initiative is being implemented, as well as interim activities.
- How the electrical corporation evaluates whether an interim activity is needed and, if so, how an interim activity is selected (see Section 6.2.2)
- How the electrical corporation monitors its progress toward its targets within known limitations and constraints. This should include descriptions of mechanisms for detecting when an activity is off track and for bringing it back on track.
- How the electrical corporation measures the effectiveness of activities (e.g., tracking the number of PEDS deenergizations that had the potential to ignite a wildfire due to

[52] Meaning that it will take the electrical corporation more than one year to electrify or implement a given activity from the time it determines it will utilize that activity in a given location.

observed damage/contact prior to re-energization). The mitigation category sections of these Guidelines (Sections 8–12) include specific requirements for each activity.

6.1.3.4 Key Stakeholders for Decision Making

In this section, the electrical corporation must identify all key stakeholder groups that are part of the decision-making process for developing and prioritizing activities. Table 6-2 provides an example of the required information and format. At a minimum, the electrical corporation must do the following:

- Identify each key stakeholder group (e.g., electrical corporation executive leadership, the public, state/county/Tribal Nation public safety partners)
- Identify the decision-making role of each stakeholder group (e.g., decision maker, consulted, informed)
- Identify method of engagement (e.g., meeting, workshop, written comments)
- Identify engagement methods that describe how it communicates decisions to key stakeholders
- Identify what type of activity (i.e. system hardening, vegetation management) the stakeholder is engaged with
- Identify the level of engagement (i.e. local, tribal, federal) for activities for any projects that are within stakeholder jurisdictions

Table 6-2. Example of Stakeholder Roles and Responsibilities in the Decision-Making Process

Stakeholder	**Stakeholder Point of Contact**	**Electrical Corporation Point of Contact**	**Stakeholder Role**	**Engagement Methods**	**Activity**	**Level of Engagement for Activity**
County	Director of Emergency Management	Director of Transmission / Distribution Northeast Region	• County provides electrical corporation with information on infrastructure improvement • Electrical corporation provides information on wildfire mitigations within county	• Monthly phone conversations • Quarterly public meetings	• System Hardening (covered conductor installation, undergrounding)	• Local

6.2 Wildfire Mitigation Strategy

Each electrical corporation must provide an overview of its proposed wildfire mitigation strategies based on the evaluation process identified in Section 6.1. [53]

6.2.1 Anticipated Risk Reduction

In this section, the electrical corporation must present an overview of the expected risk reduction of its wildfire activities.

The electrical corporation must provide:

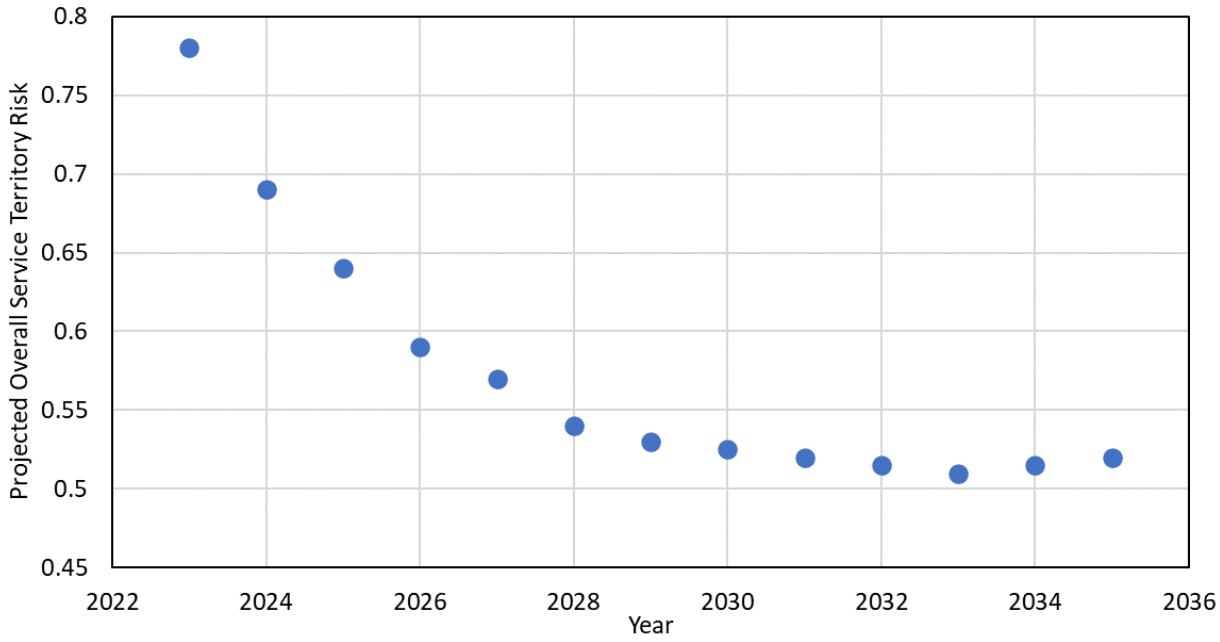
- Projected overall risk reduction
- Projected risk reduction on highest-risk circuits over the three-year WMP cycle

6.2.1.1 Projected Overall Risk Reduction

In this section, the electrical corporation must provide a figure showing the projected overall utility risk in its service territory as a function of time, assuming the electrical corporation meets the planned timeline for implementing the activities. The figure is expected to cover at least ten years. If the electrical corporation proposes risk reduction strategies for a duration longer than ten years, this figure must show that corresponding time frame. Figure 6-1 is an example of a graph showing the long-term projected changes in overall risk.

[53] Pub. Util. Code § 8386(c)(3).

Figure 6-1. Example of Projected Overall Service Territory Risk



6.2.1.2 Risk Impact of Activities

The electrical corporation must calculate the overall expected effectiveness for risk reduction of each of its activities. The overall expected effectiveness is the expected percentage for the average amount of risk reduced by the activity. This must be calculated for overall utility risk, being a summation for wildfire risk and outage program risk, as well as wildfire risk and outage program risk respectively.

The electrical corporation must provide the cost benefit score, [54] broken out by overall utility risk, wildfire risk, and outage program risk. The score should be calculated for the activity overall based on overall average activity effectiveness and average unit costs.

The electrical corporation must calculate the expected % HFTD/HFRA[55] covered for each of its initiative activity targets over the WMP cycle. The expected % HFTD/HFRA covered is the percentage of HFTD and HFRA being worked on by the given activity from the first year of the

[54] "Cost benefit score" in this instance is the calculation performed by the electrical corporation to determine the cost effectiveness in comparison to risk reduction as it aligns with the current CPUC decision.

[55] If an electrical corporation has identified areas outside of the HFTD to include within the HFRA, then this includes both areas. Otherwise, this would only include HFTD.

Base plan to the last year of the Base plan. This could include the number of circuit miles or the number of assets. For example:

> For covered conductor installations, the expected installations from Jan. 1, 2026, through Dec. 31, 2028 = 600 circuit miles
>
> The total number of miles within the HFTD and HFRA = 4,250 circuit miles
>
> The expected % HFTD/HFRA covered for the covered conductor installations activity from 2026 to 2028 is:

$$\frac{\text{units of activity}}{\text{units within HFTD/HFRA}} \times 100$$

$$\frac{600}{4{,}250} \times 100 = 14.12\%$$

The electrical corporation must calculate the expected % risk reduction of each of its activity targets over the WMP cycle. The expected % risk reduction is the expected percentage risk reduction for the last day for Base WMP implementation compared to the first day for Base WMP implementation. For example:

> For protective devices and sensitivity settings, the total risk on Jan. 1, 2026 = 2.59×10^{-1}
>
> After meeting its planned activity targets for protective devices and sensitivity settings, the total risk on Dec. 31, 2028 = 1.29×10^{-1}
>
> The expected x% risk reduction for the protective devices and sensitivity settings activity in 2026 is:

$$\frac{\text{risk before} - \text{risk after}}{\text{risk before}} \times 100$$

$$\frac{2.59 \times 10^{-1} - 1.29 \times 10^{-1}}{2.59 \times 10^{-1}} \times 100 = 50\%$$

The electrical corporation must discuss how it determined the total risk after implementation (the “risk after” component above). For instance, this could include estimating based on subject matter expertise, calculating based on historical observed reduction of ignitions, or using established understandings of effectiveness based on industry usage.

The expected % risk reduction numbers must be reported for each planned activity, when required, in the specific mitigation category sections of Sections 8–12 (see example tables in

these Sections). Table 6-3 provides an example of a summary of reporting on the expected % risk reduction of activities.

The electrical corporation must also provide a step-by-step calculation showing how it derived the values provided below, similar to the examples shown above.

Table 6-3. Example of Risk Impact of Activities.[56]

Activity	**Activity Section #**	**Activity Effectiveness – Overall Risk**	**Activity Effectiveness – Wildfire Risk**	**Activity Effectiveness – Outage Program Risk**	**Cost-Benefit Score - Overall Risk**	**Cost-Benefit Score – Wildfire Risk**	**Cost-Benefit Score – Outage Program Risk**	**% HFTD Covered**	**% HFTD/HFRA Covered**[57]	**Expected % Risk Reduction**[58]	**Model(s) Used to Calculate Risk Impact**
Covered Conductor Installation	8.2	70%	75%	65%	6.238	6.748	5.978	14.12%	1.3%	9.1%	WRRM
Undergrounding	8.2	95%	92%	98%	7.452	7.236	7.944	2.75%	0.23%	2.61%	WRRM

[56] This should be the Risk Spend Efficiency (RSE) or Cost Benefit Ratio (CBR), as appropriate.

[57] HFTD/HFRA meaning the combination of all HFTD and HFRA.

[58] This is the expected risk reduction from the first year of the Base plan to the last year of the Base plan based on implementation of the activity.

6.2.1.3 Projected Risk Reduction on Highest-Risk Circuits Over the Three-Year WMP Cycle

The objective of the service territory risk reduction summary is to provide an integrated view of wildfire risk reduction across the electrical corporation's service territory. The electrical corporation must provide the following information:

- Tabular summary of numeric risk reduction for each high-risk circuit within the top 20 percent of overall utility risk, showing risk levels before and after the implementation of activities. This must include the same circuits, segments, or span IDs presented in Section 5.5.2. The table must include the following information for each circuit:
  - **Circuit, Segment, or Span ID:** Unique identifier for the circuit, segment, or span.
    - If there are multiple activities per ID, each must be listed separately, using an extender to provide a unique identifier.
  - **Overall Utility Risk:** Numerical value for the overall utility risk before and after each activity.
  - **Activities by Implementation Year:** activities the electrical corporation plans to apply to the circuit in each year of the WMP cycle.

Table 6-4 provides an example and required format of a summary of risk reduction for top-risk circuits.

Table 6-4. Example of Summary of Risk Reduction for Top-Risk Circuits

Circuit, Segment, or Span ID	**Initial Overall Utility Risk**	**[Year 1] Activities**	**[Year 1] Overall Utility Risk**	**[Year 2] Activities**	**[Year 2] Overall Utility Risk**	**[Year 3] Activities**	**[Year 3] Overall Utility Risk**
ID001	1.1x10E-3	Undergrounding	0	-	0	-	0
ID002	9.5x10E-2	Undergrounding	0	-	0	-	0
ID003	9.2x10E-2	Protective devices and sensitivity settings	4.6x10E-2	-	4.7x10E-2	Undergrounding	0
ID004	8.7x10E-2	Protective devices and sensitivity settings	4.3x10E-2	-	4.7x10E-2	Undergrounding	0
ID005	8.0x10E-2	Protective devices and sensitivity settings	4.0x10E-2	Covered conductor installation	2.0x10E-2	-	2.0x10E-2
ID006	7.5x10E-2	Vegetation management	3.5x10E-2	-	3.5x10E-2	-	3.5x10E-2

6.2.2 Interim Activities

For each activity that will require more than one year to implement, [59] the electrical corporation must evaluate the need for interim activities that will reduce risk until the primary or permanent activity is in place. In this section of its WMP, the electrical corporation must provide a description of the following:

- The electrical corporation's procedures for evaluating the need for interim risk reduction. If an electrical corporation determines that interim activities are not necessary for a given activity, it must explain why and how it is monitoring wildfire and PSPS risk while working to implement the activity
- The electrical corporation's procedures for determining which interim activities to implement
- The electrical corporation's characterization of each interim activity and evaluation of its specific capabilities to reduce risks, including:
    - Potential consequences of risk event(s) addressed by the improvement/activity
    - Frequency of occurrence of the risk event(s) addressed by the improvement/activity
- The electrical corporation's procedures for evaluating and implementing any changes in initiative effectiveness and prioritization based on time for implementation and use of interim activities, including:
    - The cumulative risk exposure of its activity portfolio, accounting for the time value of risk as part of activity comparisons

Each interim activity planned by the electrical corporation for implementation on high-risk circuits must be listed as an activity in Sections 8–12. In addition, the electrical corporation must discuss interim activities in the relevant mitigation initiative (initiative) sections of the WMP and include the activities in the related target tables.

[59] See Section 6.1.3.3. A length of one year was selected given the need to reduce wildfire risk in areas identified as high risk during active fire seasons that would otherwise be unaddressed while the primary activity is being implemented.

7. Public Safety Power Shutoff

In this section, [60] the electrical corporation must provide an overview narrative of planned initiative actions to reduce the impacts of PSPS events. [61] Impacts include:

- Duration
- Frequency
- Scope – number of customers

The narrative must summarize how the electrical corporation will reduce the need for, and impact of, future PSPS implementation on circuits that have been frequently deenergized, as listed in Table 4-3 in Section 4.3.

Furthermore, the narrative should describe any lessons learned for PSPS events occurring since the electrical corporation's last WMP submission and overall impacts to mitigation methodology in terms of reducing PSPS events in the future.

[60] Annual information included in the following section must align with the applicable data submission.

[61] Pub. Util. Code, § 8386(c)(8).

8. Grid Design, Operations, and Maintenance

Each electrical corporation's WMP must include plans for grid design, operations, and maintenance programmatic areas. [62]

8.1 Targets

In this section, the electrical corporation must provide qualitative and quantitative targets for each year of the three-year WMP cycle. [63] The electrical corporation must provide at least one qualitative or quantitative target for the following initiatives:

- Grid Design and System Hardening (Section 8.2)
- Asset Inspections (Section 8.3)
- Equipment Maintenance and Repair (Section 8.4)
- Work Orders (Section 8.6)
- Grid Operations and Procedures (Section 8.7)
- Workforce Planning (Section 8.8)

Quantitative targets are required for Quality Assurance (QA) and Quality Control (QC). See Section 8.5, for detailed quantitative target requirements for QA and QC. Reporting of QA and QC quantitative targets is only required in section 8.5.

8.1.1 Qualitative Targets

The electrical corporation must provide qualitative targets for its three-year plan for implementing and improving its grid design, operations, and maintenance, [64] including the following:

[62] Pub. Util. Code §§ 8386(c)(3), (10), (14).

[63] All end of year targets in all sections of the WMP must follow the calendar year.

[64] Annual information included in this section must align with the applicable data submission.

- Identification of which initiative(s) and activity/activities in the WMP the electrical corporation is implementing to achieve the stated target, including Tracking IDs and the Tracking ID(s) used in past WMPs ("Previous Tracking ID"), if applicable
- A target completion date
- Reference(s) to the WMP section(s) or appendix, including page numbers, where the details of the target(s) are documented and substantiated
- This information must be provided in Table 8-1 below

8.1.2 Quantitative Targets

The electrical corporation must list all quantitative targets it will use to track progress on its grid design, operations, and maintenance in its three-year plan, broken out by each year of the WMP cycle. Electrical corporations will show progress toward completing quantitative targets in subsequent reports, including data submissions and WMP Updates. [65] For each target, the electrical corporation must provide the following:

- Identification of which initiative(s) and activity/activities in the WMP the electrical corporation is implementing to achieve the stated target, including Tracking IDs and the Tracking ID(s) used in past WMPs ("Previous Tracking ID"), if applicable
- Projected targets and totals for each of the three years of the WMP cycle and relevant units for the targets
- The percentage of each activity planned to be performed within HFTD and HFRA (if applicable)
- The expected % risk reduction for each of the three years of the WMP cycle [66]

The electrical corporation's quantitative targets must provide enough detail to effectively inform efforts to improve the performance of the electrical corporation's grid design, operations, and maintenance initiatives. Each activity must have distinct, trackable targets associated with the activity, even if the electrical corporation tracks targets internally with activities combined. Only inspection-related activities are required to have quarterly targets,

[65] Annual information included in this section must align with applicable data submission.

[66] The expected % risk reduction is the expected percentage risk reduction per year, as described in Section 6.2.1.2.

with all other activities only requiring end of year total targets. At its discretion, the electrical corporation may provide further granularity as available.

Table 8-1 below provides examples of the minimum acceptable level of information.

Table 8-1.Example of Grid Design, Operation, and Maintenance Targets by year [67]

Initiative	**Quantitative or Qualitative Target**	**Activity (Tracking ID #)**	**Previous Tracking ID (if applicable)**	**Target Unit**	**[Year 1] Target / Status**	**% Planned in HFTD for [Year 1]**	**% Planned in HFRA for [Year 1]**	**% Risk Reduction for [Year 1]**	**[Year 2] Target / Status**	**% Planned in HFTD for [Year 2]**	**% Planned in HFRA in [Year 2]**	**% Risk Reduction for [Year 2]**	**[Year 3] Target / Status**	**% Planned in HFTD for [Year 3]**	**% HFRA planned in [Year 3]**	**% Risk Reduction for [Year 3]**	**Three-Year Total**	**Section; Page Number**
Grid Design and System Hardening	Quantitative	Install covered conductor (GH-4)	GH-4	Circuit Miles	175	87%	93%	3.75%	150	92%	96%	2.85%	200	95%	11%	3.57%	525	8.2; p. x
Grid Design and System Hardening	Quantitative	Install underground lines (GH-2)	GH-2	Circuit Miles	34	92%	96%	4.23%	44	90%	91%	4.87%	50	89%	94%	5.70%	128	8.2; x
Asset Inspection	Quantitative	Detailed distribution inspections (AI-5)	AI-5	Inspections	6,700	90%	94%	0.2%	6,800	91%	93%	0.2%	6,750	90%	92%	0.4%	20,250	8.3; p. x
Asset Inspection	Qualitative	Update asset inspection protocols (AI-1)	AI-2; AI-6	n/a	Not started		n/a	n/a	Started; March 2027	n/a	n/a	n/a	Completed; February 2028	n/a	n/a	n/a	n/a	8.3; p. x

[67] Example calculations for % HFRA covered and % risk reduction provided in Section 6.2.1.2.

8.2 Grid Design and System Hardening

In this section the electrical corporation must discuss how it is designing its system to reduce overall utility risk and what it is doing to strengthen its distribution, transmission, and substation infrastructure to reduce the risk of utility-related ignitions resulting in catastrophic wildfires. [68]

The electrical corporation is required to discuss grid design and system hardening for each of the following individual activities:

1. Covered conductor installation
2. Undergrounding of electric lines and/or equipment
3. Distribution pole replacements and reinforcements
4. Transmission pole/tower replacements and reinforcements
5. Traditional overhead hardening
6. Emerging grid hardening technology installations and pilots
7. Microgrids
8. Installation of system automation equipment
9. Line removal (in the HFTD)
10. Other grid topology improvements to minimize risk of ignitions
11. Other grid topology improvements to mitigate or reduce PSPS events
12. Other technologies and systems not listed above
13. Status updates on additional technologies being piloted

In Sections 8.2.1–8.2.13, the electrical corporation must provide a narrative that supports the qualitative targets identified in Section 8.1.1 including the following information for each grid design and system hardening activity:

- **Tracking ID**

[68] Pub. Util. Code §§ 8386(c)(3), (6), (14)-(15).

- **Overview of the activity:** A brief description of the activity including reference to related objectives and targets. Additionally, the overview must identify whether the activity is a program, project, pilot, or study.
- **Impact of the activity on wildfire risk**
    - The expected percent wildfire risk reduction/effectiveness, with level of granularity included, (e.g., service territory, HFTD, circuit segment, etc.) for the activity, including an explanation of the calculation, a list of assumptions, and justifications for each assumption. A risk reduction/effectiveness of 100% means no risk remains after the electrical corporation completes the activity.
    - A trend analysis showing how implementation of the activity has reduced risk over time for each relevant risk and/or risk driver (e.g. vegetation contact for covered conductor installation).
    - A discussion of how the activity impacts the likelihood and consequence of ignitions.
- **Impact of the activity on outage program risk**
    - The expected percent reliability risk reduction/effectiveness for the activity, including an explanation of the calculation, a list of assumptions, and justifications for each assumption. A risk reduction/effectiveness of 100% means no risk remains after the electrical corporation completes the activity.
    - A discussion of how the electrical corporation considers and evaluates the hardened status of upstream circuits/segments/spans to determine the impact of the activity on reliability risk.
    - A discussion of how the activity impacts the likelihood and consequence of outage program events, including whether an area would still be subject to PSPS events after the electrical corporation completes the activity.
    - A discussion of how the activity impacts overall reliability, including how trends are being observed. This must include evaluation of number of outages occurring, the duration for those outages, and the number of customers affected during those outages.
- **Updates to the activity:**
    - A list of the changes the electrical corporation made to the activity since its last WMP submission.

- Justification for each of the changes, including references to lessons learned.
- A list of planned future improvements and/or updates to the activity, including a timeline for implementation.
- As applicable, a discussion of the status of any undergrounding work plans and progress, as required by Public Utilities Code section 8388.5(f)(2).
- As applicable, a discussion of any evaluations related to scoping grid hardening projects to account for future grid needs (e.g., load capacity, peak demand, system flexibility).[69]

- **Compatible activities:**
  - A list of all activities that can be feasibly deployed in combination and which of these activities the electrical corporation is deploying in combination with the activity to increase risk reduction effectiveness, including the section number and a link to the corresponding WMP section. This must be consistent with the evaluations performed in Section 6.1.3.1.

If the electrical corporation does not undertake one or more of the 13 activities listed above, the electrical corporation must provide a brief narrative for each activity, explaining why it does not undertake that activity.

8.3 Asset Inspections

In this section, the electrical corporation must provide an overview of its procedures for inspecting its assets.[70]

The electrical corporation must first summarize details regarding its asset inspections in Table 8-2. The table must include the following:

- **Type of inspection**: i.e., distribution, transmission, or substation.

[69] These considerations must be in alignment with the CPUC's Decision Adopting Improvements to Distribution Planning and Project Execution Process, Distribution Resource Planning Data Portals, and Integration Capacity Analysis Maps, D.24-10-030 and with the CPUC's Rulemaking to Modernize the Electric Grid for a High Distributed Energy Resources Future, R.21-06-017.

[70] Pub. Util. Code § 8386(c)(10).

- **Inspection program name:** Identify various inspection programs within the electrical corporation.
- **Frequency or trigger**: Identify the frequency or triggers, such as inputs from the risk model. Indicate differences in frequency or trigger by HTFD Tier, if applicable.
- **Method of inspection**: Identify the methods used to perform the inspection (e.g., patrol, detailed, aerial, climbing, and LiDAR).
- **Governing standards and operating procedures**: Identify the initiative construction standards and the electrical corporation's procedures for addressing them, and other internal protocols for work described.
- **Quarterly targets**: Provide the cumulative quarterly targets for each year of the WMP cycle.[71]
- **% of HFRA and HFTD covered annually by inspection type:** Determine the percentage of either circuit mileage or number of assets covered annually by the inspection type within the HFRA and HFTD.
- **Find rate**: Identify the find rate of level 1, 2, and 3 conditions over the three calendar years prior to the Base WMP submission. The find rate must be expressed as the percentage of inspections resulting in findings and identify the inspection unit.
- **Clarifying information:** Provide electrical corporation-specific risk informed triggers used for asset inspections and electrical corporation-specific definitions of the different methods of inspection.

[71] Guidelines for WMP Update will provide additional instructions on future quarterly rolling target reporting.

Table 8-2. Example of Asset Inspection Frequency, Method, and Criteria

Type	Inspection Activity (Program)	Frequency or Trigger (Note 1)	Method of Inspection (Note 2)	Governing Standards & Operating Procedures	Cumulative Quarterly Target Year 1, Q1	Cumulative Quarterly Target Year 1, Q2	Cumulative Quarterly Target Year 1, Q3	Cumulative Quarterly Target Year 1, Q4	Cumulative Quarterly Target Year 2, Q1	Cumulative Quarterly Target Year 2, Q2	Cumulative Quarterly Target Year 2, Q3	Cumulative Quarterly Target Year 2, Q4	Cumulative Quarterly Target Year 3, Q1	Cumulative Quarterly Target Year 3, Q2	Cumulative Quarterly Target Year 3, Q3	Cumulative Quarterly Target Year 3, Q4	% of HFRA and HFTD Covered Annually by Inspection Type	Condition Find Rate Level 1	Condition Find Rate Level 2	Condition Find Rate Level 3
Transmission	Patrol	1 year	Ground	GO 165	400	800	900	900	400	800	900	900	400	800	900	900	100	7% (Mile)	15% (Mile)	3% (Mile)
Distribution	Detailed	3 years	Ground	GO 165	1500	3000	4500	5000	1500	3000	4500	5000	1500	3000	4500	5000	33	3% (Asset)	15% (Asset)	12% (Asset)

The electrical corporation must then provide a narrative overview of each asset inspection activity (program) identified in the above table; Section 8.3.1 provides instructions for the overviews. The sections should be numbered Section 8.3.1 to Section 8.3.n (i.e., each asset inspection activity [program] is detailed in its own section). The electrical corporation must include inspection activities (programs) it is discontinuing or has discontinued since the last WMP submission; in these cases, the electrical corporation must explain why the activity (program) is being discontinued or has been discontinued. The electrical corporation must also include inspection activities (programs) being piloted; for pilot inspection activities (programs), the electrical corporations must include a discussion of how it measures the effectiveness of the pilot and how it determines next steps for the pilot (e.g. to expand, discontinue, or move to permanent activity [program]).

8.3.1 [Asset Inspection Activity (Program) Name]

8.3.1.1 Overview

In this section, the electrical corporation must provide an overview of the individual asset inspection activity (program), including inspection criteria and the various inspection methods used for each inspection activity (program).

Include relevant visuals and graphics depicting the workflow and decision-making process the electrical corporation uses for the inspection activity (program)(see the example in Figure 8-1).

8.3.1.2 Frequency or Trigger

In this section, the electrical corporation must identify the frequency (including how frequency may differ by HFTD Tier or other risk designation[s]) or triggers used in the inspection activity (program), such as inputs from the risk model.

If the inspection activity (program) is schedule-based, the electrical corporation must explain how it uses risk prioritization in the scheduling of the inspection activity (program) to target high-risk areas. If the electrical corporation does not use risk prioritization in the scheduling of the inspection activity (program), it must explain why.

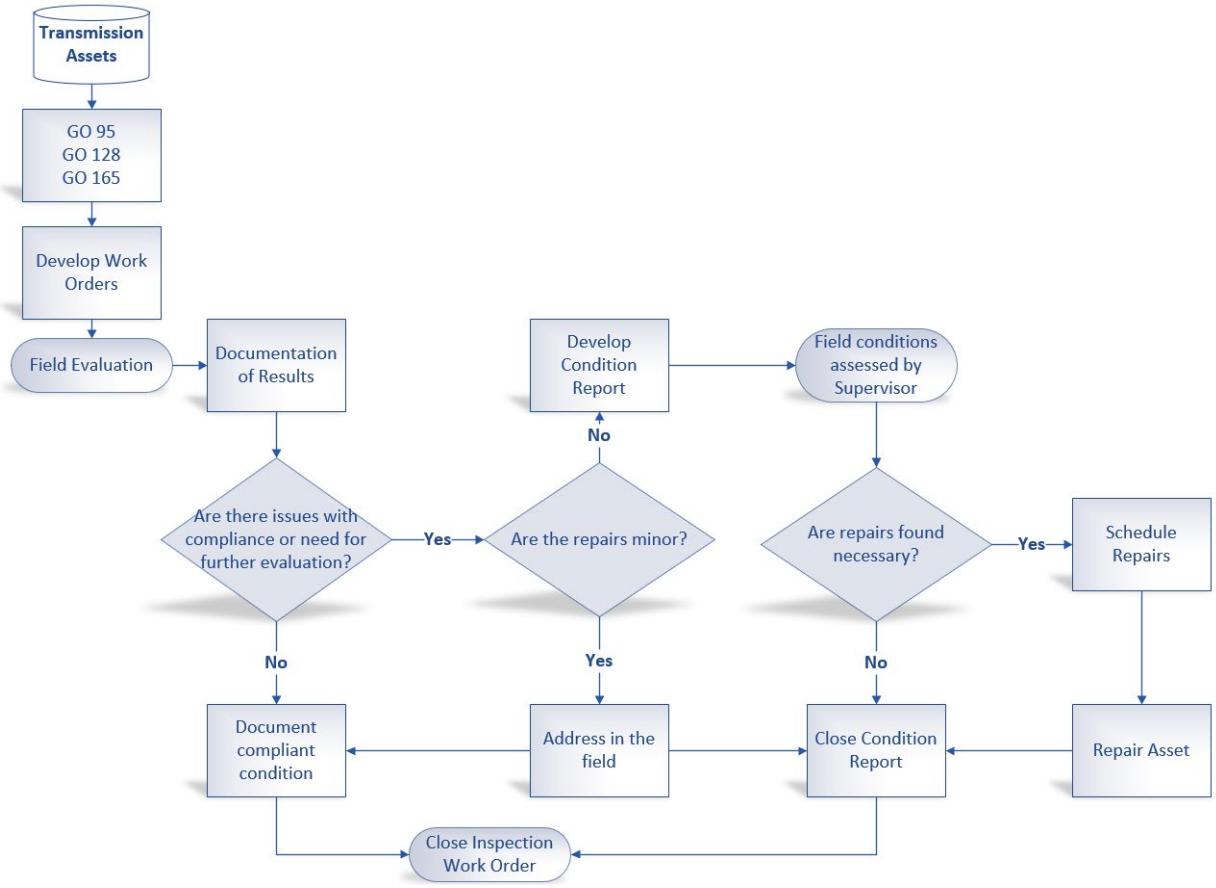
8.3.1.3 Accomplishments, Roadblocks, and Updates

In this section, the electrical corporation must discuss:

- How the electrical corporation measures success for the inspection activity (program) (excluding routine inspections)

- Roadblocks the electrical corporation has encountered while implementing the inspection activity (program) and how the electrical corporation has addressed the roadblocks
- Changes/updates to the inspection activity (program) since the last WMP submission, including known future plans (beyond the current year) and new/novel strategies the electrical corporation may implement in the next five years, including references to and strategies from pilot projects and research

Figure 8-1. Example of Asset Management and Inspections Workflow



8.4 Equipment Maintenance and Repair

In this section, in addition to the information described above regarding distribution, transmission, and substation inspections, the electrical corporation must provide a brief

narrative of maintenance activity (programs). [72] As a narrative, the electrical corporation must include its strategy for maintenance, such as whether the electrical corporation replaces or upgrades facilities/equipment proactively (for example, an electrical corporation may monitor dissolved gases in its transformers to detect potential transformer failures to alert engineering and maintenance personnel or component lifecycle management) or if it runs its facilities/equipment to failure. The narrative must include, at minimum, the following types of equipment:

1. Capacitors
2. Circuit breakers
3. Connectors, including hotline clamps
4. Conductor, including covered conductor
5. Fuses, including expulsion fuses
6. Distribution pole
7. Lightning arrestors
8. Reclosers
9. Splices
10. Transmission poles/towers
11. Transformers
12. Non-exempt [73] equipment
13. Pre-GO 95 legacy equipment
14. Other equipment not listed

For equipment types 12–14 above, the electrical corporation must include sub-categories for each relevant equipment type. For each equipment type, the electrical corporation must include sections for the following information:

[72] Pub. Util. Code §§ 8386(c)(3), (10).

[73] "Non-exempt" in this instance pertaining to equipment that must comply with clearances specified within Public Resource Code (PRC) § 4292 and PRC § 4293.

- **Condition monitoring:** a description of how the electrical corporation monitors the condition of the equipment (e.g., human visual inspection, automated visual inspection, human sensor readings, automated sensor readings).
- **Maintenance strategy:** identification and brief description of the maintenance strategy (e.g. reactive, preventative, predictive, reliability-centered).
- **Replacement/repair condition:** a description of how equipment is identified for repair or replacement (e.g., time interval, inspection finding, sensor reading, predictive maintenance, data analytics, machine learning).
- **Timeframe for remediation:** a list of possible conditions and findings, including the priority level and associated timeframes for remediation of each.
- **Failure rate:** the number of total failures attributed to the given equipment type in the HFTD and HFRA [74] during the three calendar years prior to the base WMP submission, broken out by distribution, transmission, and substation. The failure rate must include the likelihood of failure based on the ratio of number of failures to the number of total assets in-field within the HFTD/HFRA for the equipment type.
- **Ignition rate:** the total number of CPUC-reportable ignitions attributed to the equipment type in the HFTD and HFRA during the ten calendar years prior to the base WMP submission, broken out by distribution, transmission, and substation. The ignition rate must include evaluation of the likelihood that an equipment failure will propagate into an ignition based on the ratio of the number of failures to the number of ignitions attributed to the equipment type.
- **Failure and ignition causes:** A narrative describing root cause analyses performed for failures and associated CPUC ignitions within the HFTD and HFRA, including any lessons learned and solutions implemented to decrease ignition rates.

[74] Equipment that falls in both the HFTD and HFRA should not be counted twice. The number of failures should include all equipment that is in the HFTD Tier 2 and 3 and all equipment that is in the utility defined HFRA beyond the HFTD.

8.5 Quality Assurance and Quality Control

8.5.1 Overview, Objectives, and Targets

In this section, the electrical corporation must provide an overview of each of its QA and QC activities for grid design, asset inspections and maintenance. [75] This overview must include the following for each program:

- Initiative/activity being audited (each initiative/activity name must correspond to an initiative/activity described in Sections 8.2–8.4)
- Tracking ID from Table 8-1 or 8-2
- Quality program type (QA or QC)
- Objective of each QA and QC program

Table 8-3 provides an example of the required level of detail. At a minimum, Table 8-3 must include the following types of activities: new construction, corrective repair work, asset inspections (as described in Section 8.3), and any additional asset maintenance.

Table 8-3. Example of Grid Design, Asset Inspections, and Maintenance QA and QC Program Objectives

Initiative/Activity Being Audited	Tracking ID	Quality Program Type	Objective of the Quality Program
Covered Conductor Installation	GH-04	QA	Ensure that new construction meets applicable standards.
Detailed Distribution Inspections	AI-09	QC	Ensure inspections are following electrical corporation procedures for inspections.
Detailed Distribution Inspection Finding Remediation	AI-16	QA	Test personnel knowledge of applicable standards to use during maintenance activities.

[75] Pub. Util. Code §§ 8386(c)(10), (22).

The electrical corporation must also provide the following tabular information for each QA and QC program:

- Initiative/activity being audited (each initiative/activity name must correspond to an initiative/activity described in Sections 8.2–8.4)
- Type of audit (e.g. desktop or field)
- Population [76]/sample unit
- Population size for each audited initiative/activity for each year of the three-year WMP cycle
- Sample size for each audited initiative/activity for each year of the three-year WMP cycle
- Percent of sample in the HFTD for each audited initiative/activity for each year of the three-year WMP cycle
- Confidence level and Margin of Error (MOE)
- Target pass rate for each audited initiative/activity for each year of the three-year WMP cycle

Table 8-4 provides an example of the appropriate level of detail and required format. At a minimum, Table 8-4 must include the following types of activities: new construction, corrective repair work, asset inspections (as described in Section 8.3), and any additional asset maintenance.

[76] In this section, a population may be the number of circuit miles inspected, the number of assets inspected, etc.

Table 8-4. Example of Grid Design, Asset Inspections, and Maintenance QA and QC Activity Targets

Initiative/ Activity Being Audited	**Type of Audit**	**Population/ Sample Unit**	**[Year 1]: Population Size**	**[Year 1]: Sample Size**	**[Year 2]: Population Size**	**[Year 2]: Sample Size**	**[Year 3]: Population Size**	**[Year 3]: Sample Size**	**Percent of Sample in the HFTD**	**Confidence level / MOE**	**[Year 1]: Pass Rate Target**	**[Year 2]: Pass Rate Target**	**[Year 3]: Pass Rate Target**
Detailed Distribution Inspections - Ground	Field	Asset Inspection	5,000	1,347	5,000	1,347	5,000	1,347	75%	99%/3%	95%	97%	99%
Covered Conductor Installation	Field	Circuit miles	100	10	100	10	100	10	95%	95%/2%	95%	97%	99%
Detailed Distribution Inspections - Drone	Desktop	Asset Inspection	500	135	500	135	500	135	90%	99%/3%	95%	97%	99%

8.5.2 QA and QC Procedures

In this section, the electrical corporation must list the applicable procedure(s), including the version(s) and effective date(s), used for each grid design, operation, and maintenance QA and QC program listed in Table 8-3.

8.5.3 Sampling Plan

In this section, the electrical corporation must describe how it determines the sample for each QA and QC program listed in Table 8-4. This must include how HFTD tier or other risk designations affect the sampling plan, and how the electrical corporation ensures samples are representative of the population.

8.5.4 Pass Rate Calculation

In this section, the electrical corporation must describe how it calculates pass rates. This description must include:

- The sample unit that generates the pass rate for each QA and QC program (e.g., for detailed distribution inspections, the sample unit that generates the pass rate may be a single inspection that passes or fails a QC audit).
- The pass and failure criteria for each initiative/activity listed in table 8-3, including a discussion of any weighted contributions to the pass rate.

8.5.5 Other Metrics

In this section, the electrical corporation must list metrics used by the electrical corporation to evaluate the effectiveness of its QA and QC programs and procedures (e.g. audit pass rates, outage rate within six months of inspection attributed to equipment condition or failure, new construction rework rate).

8.5.6 Documentation of Findings

In this section, the electrical corporation must describe how it documents its QA and QC findings and incorporates lessons learned from those findings into corrective actions, trainings, and procedures. This must include a description of how the electrical corporation accounts for and documents the following when improving its inspections and maintenance QA and QC processes:

- The number of inspections reviewed

- The number of new issues identified
- The number of repairs with a shortened deadline
- The number of repairs with a longer deadline
- The number of recommended repairs cancelled

8.5.7 Changes to QA and QC Since Last WMP and Planned Improvements

In this section, the electrical corporation must describe:

- A list of changes the electrical corporation made to its QA and QC procedure(s) since its last WMP submission
- Justification for each of the changes including references to lessons learned as applicable
- A list of planned future improvements and/or updates to QA and QC procedure(s) including a timeline for implementation

8.6 Work Orders

In this section, the electrical corporation must provide an overview of the procedures it uses to manage its open work orders resulting from inspections that prescribe asset management activities. [77] This overview must include a brief narrative that provides:

- Reference to procedures documenting the work order process. The electrical corporation must provide a summary of these procedures or provide a copy in the supporting documents location on its website.
- A description of the plan for correcting any past due work orders (i.e., open work orders that have passed remediation deadlines), if applicable including the estimated date past due work orders in HFTD will be completed.
- A description of how work orders are prioritized based on risk.
- A description of procedures the electrical corporation uses for monitoring and/or reinspecting open work orders.

[77] Pub. Util. Code §§ 8386(c)(10), (14).

- A discussion of how past trends of open work orders have informed the electrical corporation's current procedures and prioritization for addressing work orders. This must include analysis of the following:
  - Types of findings within the backlog
  - Equipment types for the findings within the backlog
  - Reinspection frequency for findings
  - Outcomes of reinspection, including changes to prioritization or expected due dates
  - Prioritization level within the backlog [78]

In addition, each electrical corporation must provide an aging report for work orders past due [79] (Table 8-5 and Table 8-6 provide examples).

Table 8-5. Example of Number of Past Due Asset Work Orders Categorized by Age

HTFD Area	**0-30 Days**	**31-90 Days**	**91-180 Days**	**181+ Days**
Non-HFTD				
HFTD Tier 2				
HFTD Tier 3				

[78] ECs must include the associated GO 95 Rule 18 level. If the EC uses a different prioritization level system, this must be included in addition to the GO 95 levels, with an explanation as to why the EC is using a different system.

[79] A past due work order is any work order that remains open beyond the shorter of two timeframes: the one required by the electrical corporation, or the one required by GO 95.

Table 8-6. Example of Number of Past Due Asset Work Orders Categorized by Age for Priority Levels [80]

Priority Level	0-30 Days	31-90 Days	91-180 Days	181+ Days
Priority 1				
Priority 2				
Priority 3				

8.7 Grid Operations and Procedures

8.7.1 Equipment Settings to Reduce Wildfire Risk

In this section, the electrical corporation must discuss the ways in which it operates its system to reduce wildfire risk. [81] The equipment settings discussion must include the following:

- PEDS
- Automatic recloser settings
- Settings of other emerging technologies (e.g., rapid earth fault current limiters)

For each of the above, the electrical corporation must provide a narrative that includes the following, as applicable:

- Settings used to reduce wildfire risk.
- Analysis of reliability/safety impacts for settings the electrical corporation uses. This must include the following:
    - Analysis of the most impacted circuits, including how the electrical corporation determined which circuits were most impacted
    - The total number of outages that have occurred on the most impacted circuits when settings were enabled

[80] Priority levels as defined by GO 95 Rule 18.

[81] Pub. Util. Code §§ 8386(c)(3), (6), (14).

- The cumulative customer-minutes associated with outages on the most impacted circuits
- How the electrical corporation has worked to alleviate future reliability/safety impacts along the most impacted circuits
- Deenergization protocols must consider impact on critical first responders, health and communication infrastructure, and medical baseline customers [82]

- The impacts via tabular data for the top ten most impacted circuits/circuit segments from the previous three years, as shown in Table 8-7 below

Table 8-7. Top Ten Impacted Circuits from Changes to PEDS in the Past Three Years

Circuit/Circuit Segment ID	**Circuit/Circuit Segment Name**	**Circuit/Circuit Segment Length (overhead circuit miles)**	**Number of Outages in Past Three Years**	**Cumulative Outage Duration**	**Cumulative Number of Customers Impacted by Outages**
ID 001					
ID 002					

- Criteria for when the electrical corporation enables the settings
- Operational procedures for when the settings are enabled, including monitoring for re-energization
- The number of circuit miles capable of these settings, including the percentage of circuit miles in the HFTD and HFRA covered by these settings
- The percentage of time settings were enabled for the past three years based on the amount of times enablement criteria thresholds were met and led to activation, and the associated number of circuit miles encompassed by activation at that time

[82] Pub. Util. Code §§ 8386(c)(6)(A),(B),(C)

- An estimate of the effectiveness of the settings for reducing wildfire risk, including the calculation used for determining the effectiveness, a list of assumptions, and justification for these assumptions. The estimate must also include the number of ignitions that still occurred while sensitivity settings were enabled.

8.7.2 Grid Response Procedures and Notifications

The electrical corporation must provide a narrative on operational procedures it uses to respond to faults, ignitions, or other issues detected on its grid that may result in a wildfire including how the electrical corporation:

- Locates the issues
- Prioritizes the issues, including how operational models inform potential prioritization based on risk
- Notifies relevant personnel and suppression resources to respond to issues
- Minimizes/optimizes response times to issues

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

The electrical corporation must provide a narrative on the following:

- The electrical corporation's procedures that designate what type of work the electrical corporation allows (or does not allow) personnel to perform during operating conditions of different levels of wildfire risk, including:
  - What the electrical corporation allows (or does not allow) during each level of risk
  - How the electrical corporation defines each level of wildfire risk
  - How the electrical corporation trains its personnel on those procedures
  - How it notifies personnel when conditions change, warranting implementation of those procedures
- The electrical corporation's procedures for deployment of firefighting staff and equipment (e.g., fire suppression engines, hoses, water tenders, etc.) to worksites for site-specific fire prevention and ignition mitigation during on-site work

8.8 Workforce Planning

In this section, the electrical corporation must provide an overview of personnel, including qualifications, and training practices, related to workers in roles associated with asset inspections, grid hardening, and risk event inspection. [83]

[83] Pub. Util. Code §§ 8386(c)(16), (19).

9. Vegetation Management and Inspections

Each electrical corporation's WMP must include plans for vegetation management. [84]

9.1 Targets

In this section, the electrical corporation must provide qualitative and quantitative targets for vegetation management and inspections for each year of the three-year WMP cycle. [85] The electrical corporation must provide at least one qualitative or quantitative target for the following initiatives:

- Wood and Slash Management (Section 9.5)
- Defensible Space (Section 9.6)
- Integrated Vegetation Management (Section 9.7)
- Workforce Planning (Section 9.13)

Quantitative targets are required for vegetation management inspections and pole clearing; see Section 9.1.2, below, for detailed requirements.

Quantitative targets are required for QA and QC. See Section 9.11.1 for detailed quantitative target requirements for QA and QC. Reporting of QA and QC quantitative targets is only required in section 9.11.

9.1.1 Qualitative Targets

The electrical corporation must provide qualitative targets for implementing and improving its vegetation management and inspections, [86] including the following:

[84] Pub. Util. Code §§ 8386(c)(3), (9).

[85] All end of year targets in all sections of the WMP must follow the calendar year.

[86] Annual information included in this section must align with the applicable data submission.

- Identification of which initiative(s) and activity/activities in the WMP the electrical corporation is implementing to achieve the stated target, including Tracking IDs and the Tracking ID(s) used in past WMPs ("Previous Tracking ID"), if applicable
- A completion date for when the electrical corporation will achieve the qualitative target
- Reference(s) to the WMP section(s) or appendix, including page numbers, where the details of the target(s) are documented and substantiated

This information must be provided in Table 9-1 below.

9.1.2 Quantitative Targets

The electrical corporation must provide quantitative targets it will use to track progress on its vegetation management and inspections for the three years of the Base WMP. [87] Every inspection activity (program) described in Section 9.2 must have at least one quantitative target. Targets for inspection activities (programs) of overhead electrical assets must use circuit miles as the unit. Pole clearing performed in compliance with Public Resources Code section 4292 must have a quantitative target. The electrical corporation may define additional pole clearing targets (e.g., pole clearing performing in the Local Responsibility Area). For each quantitative target, the electrical corporation must provide the following:

- Identification of which initiative(s) and activity/activities) in the WMP the electrical corporation is implementing to achieve the stated target, including Tracking IDs and the Tracking ID(s) used in past WMPs ("Previous Tracking ID"), if applicable
- Projected targets and totals for each of the three years of the WMP cycle, e.g., [Year 1] end of year total, [Year 2] total, and [Year 3] total, three-year total and the associated units for the targets
- For inspections and pole clearing targets in Table 9-2, cumulative quarterly targets for each year of the WMP cycle, [88] and the percentage of total overhead circuit miles in the HFTD covered by the [Year 1] target (e.g., 100 circuit miles of patrol inspections in [Year 1] divided by 300 overhead circuit miles in the HFTD equals 33 percent coverage)

[87] Annual information included in this section must align with the applicable data submission.

[88] Guidelines for WMP Update will provide additional instructions on future quarterly rolling target reporting.

- The expected % risk reduction for each of the three years of the WMP cycle [89]
- The timeline in which clearance and removal work prescribed by the inspection activity (program) will be completed (inspections and pole clearing only).

Table 9-1 and Table 9-2 provide examples of the minimum acceptable level of information and required template.

[89] The expected % risk reduction is the expected percentage risk reduction per year, as described in Section 6.2.1.2.

Table 9-1. Example of Vegetation Management Targets by Year (Non-inspection Targets)

Initiative	Quantitative or Qualitative	Activity (Tracking ID)	Previous Tracking ID, if applicable	Target Unit	[Year 1] Target / Status	% Risk Reduction for [Year 1]	[Year 2] Target / Status	% Risk Reduction for [Year 2]	[Year 3] Target / Status	% Risk Reduction for [Year 3]	Three-Year Total	Section; Page Number
Pruning and Removal	Qualitative	Complete effective enhanced clearances study (VM-08)	VM-02	n/a	Not started	n/a	Started; April 2027	n/a	Completed; June 2028	n/a	n/a	9.x; p. x
Integrated Vegetation Management	Quantitative	Remove invasive species (VM-12)	VM-12	acres treated	400	1%	400	1%	400	1%	1,200	9.7; p. x

Table 9-2. Example of Vegetation Inspections and Pole Clearing Targets by Year

Activity (Program)	Tracking ID	Previous Tracking ID, if applicable	Target Unit	Cumulative (Cml.) Quarterly Target Year 1, Q1	Cml. Quarterly Target Year 1, Q2	Cml. Quarterly Target Year 1, Q3	Cml. Quarterly Target Year 1, Q4	Cml. Quarterly Target Year 2, Q1	Cml. Quarterly Target Year 2, Q2	Cml. Quarterly Target Year 2, Q3	Cml. Quarterly Target Year 2, Q4	Cml. Quarterly Target Year 3, Q1	Cml. Quarterly Target Year 3, Q2	Cml. Quarterly Target Year 3, Q3	Cml. Quarterly Target Year 3, Q4	% HFTD Covered in [Year 1]	% Risk Reduction for [Year 1]	% Risk Reduction for [Year 2]	% Risk Reduction for [Year 3]	Three-Year Total	Activity Timeline Target	Section; Page Number
Patrol insp.	VM-04	VM-03	Circuit miles insp.	130	200	380	400	100	200	370	400	100	200	300	400	50%	3%	6%	8%	1,200	90 days	9.x; p. x
Inspecting poles for clearing	VM-08	VM-10	Poles insp.	1500	3000	4500	5000	1600	3300	4500	5200	1600	3500	4800	5400	40%	4%	7%	9%	15,600	150 days	9.x; p. x

9.2 Vegetation Management Inspections

In this section, the electrical corporation must provide an overview of its vegetation management inspection activities (programs) for overhead electrical assets. This section must not include pole clearing activities or defensible space activities around substations; see Section 9.4 for pole clearing and Section 9.6 for defensible space activities around substations.

The electrical corporation must first summarize details regarding its vegetation management inspections for overhead electrical assets in Table 9-3. The table must include the following:

- **Type of inspection**: distribution or transmission
- **Inspection program name:** Identify various inspection activities (programs) within the electrical corporation (e.g., routine, enhanced vegetation, off-cycle)
- **Area inspected:** Identify the area that the inspection activity (program) covers (e.g., territory-wide, HFTD only, Areas of Concern, etc.)
- **Frequency**: Identify the frequency of the inspection (e.g., annual, quarterly, three-year cycle)

Table 9-3. Example of Vegetation Management Inspection Frequency, Method, and Criteria

Type	Inspection Activity (Program)	Area Inspected	Frequency
Distribution	Routine Patrol	Territory	Annual in HFTD Three-year cycle in Non-HFTD
Distribution	Hazard Tree	HFTD	Three-year cycle

The electrical corporation must then provide a narrative overview of each vegetation inspection activity (program) identified in Table 9-3. Section 9.2.1. provides instructions for the overviews. The sections must be numbered Section 9.2.1 to Section 9.2.n (i.e., each vegetation inspection activity [program] is detailed in its own section) with the name of the inspection activity (program) as the section title. The electrical corporation must include inspection activities (programs) it is discontinuing, has discontinued since the last WMP

submission, or has consolidated into another activity (program), and explain why it is discontinuing or has discontinued the activity (program).

9.2.1 [Vegetation Management Inspection Activity (Program) Name]

9.2.1.1 Overview and Area Inspected

In this section, the electrical corporation must provide an overview of the inspection (activity) program. This overview must describe where the electrical corporation performs the inspection activities (programs) (e.g., territory-wide, HFTD only, Areas of Concern, etc.)

9.2.1.2 Procedures

In this section, the electrical corporation must list the procedures, including the version(s) and effective date(s), for the inspection activity (program).

9.2.1.3 Clearance

In this section, the electrical corporation must describe how clearances are determined and prescribed through this inspection activity (program) (e.g., GO 95 Table 1, GO 95 Appendix E, ANSI A-300, etc.). As applicable, the electrical corporation must describe how it differently prescribes clearances for high-risk species of vegetation.

9.2.1.4 Fall-in Mitigation

In this section, the electrical corporation must describe how it identifies fall-in risks, such as hazard trees, during the inspection (e.g., Level 1, Level 2, etc.). As applicable, the electrical corporation must of describe how it differently prescribes removal of high-risk species of vegetation.

9.2.1.5 Scheduling

In this section, the electrical corporation must describe how the inspection activity (program) is scheduled. This must include the frequency (e.g., annual, quarterly, three-year cycle) and/or triggers (e.g., severe weather events, risk model outputs) of the inspection program. It must also identify how the frequency and/or trigger might differ by HFTD tier or other risk designation.

If the inspection activity (program) is based on a fixed frequency (e.g., annual, three-year cycle), the electrical corporation must explain how it uses risk prioritization in the scheduling of the inspection activity (program) to target high-risk areas). If the electrical corporation

does not use risk prioritization in the scheduling of the inspection activity (program), it must explain why.

9.2.1.6 Updates

In this section, the electrical corporation must discuss changes/updates to the inspection activity (program) since its last WMP submission, including known future plans (beyond the current year) and new/novel strategies the electrical corporation may implement in the next five years (e.g., references to and strategies from pilot projects and research). The electrical corporation must include lessons learned as applicable.

9.3 Pruning and Removal

9.3.1 Overview

In this section, the electrical corporation must provide an overview of the subsequent pruning, removal, and other vegetation management activities that are performed as a result of inspections.

9.3.2 Procedures

In this section, the electrical corporation must list the procedures, including the version(s) and effective date(s), for subsequent pruning, removal, and other vegetation management activities that are performed as a result of inspections.

9.3.3 Scheduling

In this section, the electrical corporation must describe how subsequent pruning, removal, and other vegetation management activities that are performed as a result of inspections are scheduled. This must include the timeline(s) in which clearance and removal work prescribed by an inspection activity (program) will be completed and how the timeline differs by HFTD tier or other risk designation.

9.3.4 Updates

In this section, the electrical corporation must discuss changes/updates to pruning and removal activities since the last WMP submission, including known future plans (beyond the current year) and new/novel strategies the electrical corporation may implement in the next five years (e.g., references to and strategies from pilot projects and research). The electrical corporation must include lessons learned as applicable.

9.4 Pole Clearing

9.4.1 Overview

In this section, the electrical corporation must provide an overview of pole clearing, including:

- Pole clearing performed in compliance with Public Resources Code section 4292
- Pole clearing outside the requirements of Public Resources Code section 4292 (e.g., pole clearing performed outside of the State Responsibility Area)

9.4.2 Procedures

In this section, the electrical corporation must list applicable electrical corporation procedure(s), including the version(s) and effective date(s), used to execute pole clearing.

9.4.3 Scheduling

In this section, the electrical corporation must describe how pole clearing is scheduled. This must include how the schedule is affected by HFTD tier or other risk designation.

9.4.4 Updates

In this section, the electrical corporation must describe changes to pole clearing since the last WMP submission and a brief explanation as to why those changes were made. Discuss any planned improvements or updates to pole clearing and the timeline for implementation.

9.5 Wood and Slash Management

9.5.1 Overview

In this section, the electrical corporation must provide an overview of how it manages all downed wood and slash generated from vegetation management activities.

9.5.2 Procedures

In this section, the electrical corporation must list applicable electrical corporation procedure(s), including the version(s) and effective date(s), used to manage wood and slash.

9.5.3 Scheduling

In this section, the electrical corporation must describe how wood and slash management is scheduled. This must include how the schedule is affected by HFTD tier or other risk designation.

9.5.4 Updates

In this section, the electrical corporation must describe changes to wood and slash management since the last WMP submission and a brief explanation as to why those changes were made. Discuss any planned improvements or updates to wood and slash management and the timeline for implementation.

9.6 Defensible Space

9.6.1 Overview

In this section, the electrical corporation must provide an overview of its action taken to reduce wildfire risk to substations, generation facilities, and other electrical facilities in accordance with Public Resources Code section 4291, other defensible space codes and regulations, or in exceedance of these requirements.

9.6.2 Procedures

In this section, the electrical corporation must list applicable electrical corporation procedure(s), including the version(s) and effective date(s), used to create and maintain defensible space.

9.6.3 Scheduling

In this section, the electrical corporation must describe how creation and maintenance of defensible space are scheduled. This must include how the schedule is affected by HFTD tier or other risk designation.

9.6.4 Updates

In this section, the electrical corporation must describe changes to how it creates or maintains defensible space since the last WMP submission and a brief explanation as to why those changes were made. Discuss any planned improvements or updates to defensible space and the timeline for implementation.

9.7 Integrated Vegetation Management

9.7.1 Overview

In this section, the electrical corporation must provide an overview of its actions taken for activities not covered in previous sections and performed in accordance with Integrated Vegetation Management principles. This may include, but is not limited to, the following activities: the strategic use of herbicides, growth regulators, or other chemical controls; tree-replacement activities (programs); promotion of native shrubs; prescribed fire; or other fuel treatment activities.

9.7.2 Procedures

In this section, the electrical corporation must list applicable electrical corporation procedure(s), including the version(s) and effective date(s), used for integrated vegetation management.

9.7.3 Scheduling

In this section, the electrical corporation must describe how integrated vegetation management activities are scheduled. This must include how the schedule is affected by HFTD tier or other risk designation.

9.7.4 Updates

In this section, the electrical corporation must describe changes to its integrated vegetation management activities since the last WMP submission and a brief explanation as to why those changes were made. Discuss any planned improvements or updates to integrated vegetation management and the timeline for implementation.

9.8 Partnerships

In this section, the electrical corporation must provide information on its partnerships with other entities in vegetation management. This may include partnerships with government agencies, non-profit organizations, or coalitions, such as Regional Forest and Fire Capacity Program grantees and local forest collaboratives.[90] For this section, “partnership” is defined

[90] Regional Forest and Fire Capacity Program (https://www.conservation.ca.gov/dlrp/grant-programs/Pages/Regional-Forest-and-Fire-Capacity-Program.aspx)

as the combining of resources, expertise, and efforts to accomplish agreed upon objectives related to wildfire risk reduction achieved through vegetation management. The electrical corporation must provide the following summary information in table format for current partnerships and future partnerships the electrical corporation plans to enter during the three years of the WMP cycle:

- Names of all agencies, organizations, or coalitions in the partnership.
- Vegetation management activities performed pursuant to or under the partnership (e.g., thinning, prescribed fire, mastication, invasive plant removal, woody debris management, etc.).
- The objective of the activities performed pursuant to or under the partnership .
- Electrical corporation's role in the coordination or partnership (e.g., funding, labor, landowner, etc.).
- Anticipated accomplishments of partnership projects during the three years of the WMP cycle, including work done by the electrical corporation and work done by the partnering agency/organization (e.g. number of acres treated, number of trees planted, number of personnel trained, etc.).

Table 9-4 provides an example of the appropriate level of detail and the required format.

Table 9-4. Example of Partnerships in Vegetation Management

Partnering Agency/ Organization	**Activities**	**Objectives**	**Electrical Corporation Role**	**Anticipated Accomplishments**
North State Coalition	Thinning and prescribed fire along critical egress corridors, which also carry high-risk electrical lines.	Reduce fuel loading and fire intensity.	Funding and labor from electrical corporation teams with wildland firefighter training for broadcast burn.	2027: Thin and masticate 800 acres 2028: Broadcast burn 200 acres in masticated area

The electrical corporation must also provide a narrative overview of, in order: 1) each current and future vegetation management partnership identified in Table 9-3 and 2) vegetation management partnerships it is discontinuing or has discontinued since the last WMP submission and explain why it is discontinuing or has discontinued the vegetation management partnership. Section 9.8.1. provides instructions for the overviews. The sections must be numbered Section 9.8.1 to Section 9.8.n (i.e., each vegetation management partnership is detailed in its own section) with the names of the partnering agencies or organizations as the section title.

9.8.1 [Vegetation Management Partnership Name (name of partnering agency/organization)]

9.8.1.1 Overview

In this section, the electrical corporation must provide an overview of the vegetation management partnership including status of the partnership (current, future, or discontinued) and a description of the type of work accomplished through this partnership. This overview must describe where the work accomplished through this partnership takes place (e.g., territory-wide, HFTD only, a specific county, etc.). If available, provide a link to any website associated with the partnership.

9.8.1.2 Partnership History

In this section, the electrical corporation must provide a history of the vegetation management partnership including how long the electrical corporation has been working with the partnering agency/organization, the number of projects completed or in-progress, the scope of completed and in-progress projects (e.g., acres treated, trees planted, etc.), and the electrical corporation's quantitative contribution to the project (e.g. dollars contributed, number of workers provided, number of hours of consultation).

9.8.1.3 Future Projects

In this section, the electrical corporation must provide a description of projects with the partnering agency/organization that are currently planned for the three years of the WMP cycle, have not yet begun, and are fully funded. This description must include the scope of future projects (e.g., acres treated, trees planted, etc.), projected completion years, and the electrical corporation's quantitative contribution to the project (e.g. dollars contributed, number of workers provided, number of hours of consultation).

9.9 Activities Based on Weather Conditions

9.9.1 Overview

In this section, the electrical corporation must provide an overview of planning and execution of operational changes to address wildfire risk associated with weather conditions such as pruning or removal, executed based on and in advance of a Red Flag Warning or other forecasted weather conditions that indicates an elevated fire threat in terms of ignition likelihood and wildfire potential.

9.9.2 Procedures

In this section, the electrical corporation must list applicable electrical corporation procedure(s), including the version(s) and effective date(s), used for activities based on weather conditions.

9.9.3 Scheduling

In this section, the electrical corporation must describe how activities based on weather conditions are scheduled (or triggered). This must include how the schedule is affected by HFTD tier or other risk designation.

9.9.4 Updates

In this section, the electrical corporation must describe changes to its activities based on weather conditions since the last WMP submission and a brief explanation as to why those changes were made. Discuss any planned improvements or updates to activities based on weather conditions and the timeline for implementation.

9.10 Post-Fire Service Restoration

9.10.1 Overview

In this section, the electrical corporation must provide an overview of vegetation management activities during post-fire service restoration.

9.10.2 Procedures

In this section, the electrical corporation must list applicable electrical corporation procedure(s), including the version(s) and effective date(s), used for post-fire service restoration vegetation management.

9.10.3 Scheduling

In this section, the electrical corporation must describe how post-fire service restoration vegetation management are scheduled (or triggered). This must include how the schedule is affected by HFTD tier or other risk designation.

9.10.4 Updates

In this section, the electrical corporation must describe changes to post-fire service restoration vegetation management since the last WMP submission and a brief explanation as to why those changes were made. Discuss any planned improvements or updates to post-fire service restoration and the timeline for implementation.

9.11 Quality Assurance and Quality Control

9.11.1 Overview, Objectives, and Targets

In this section, the electrical corporation must provide an overview of each of its QA and QC programs for vegetation management. This overview must include the following for each program:

- Initiative/activity being audited (each initiative/activity name must correspond to an initiative/activity described in Sections 9.2 through 9.9)
- Tracking ID from Table 9-1 or 9-2
- Quality program type (QA or QC)
- Objective of the quality program.

Table 9-5 provides an example of the appropriate level of detail and the required format

Table 9-5. Example of Vegetation Management QA and QC Program Objectives

Initiative/Activity Being Audited	Tracking ID	Quality Program Type	Objective of the Quality Program
Inspections – Patrol	VM-04	QA	To ensure contractor pre-inspectors are following electrical corporation procedures for patrol inspections.
Pruning and Removal	VM-06	QC	To identify trees that were missed by tree crews and that require trimming or removal before the next scheduled inspection.
Pole Clearing	VM-08	QA	To test personnel knowledge of procedure before independent field work commences.
Defensible Space	VM-10	QC	To ensure contractors achieved defensible space around assigned structures according to procedure and remedy any non-conformance.

The electrical corporation must also provide the following tabular information for each QA and QC program:

- Initiative/activity being audited (each initiative/activity name must correspond to an initiative/activity described in Sections 9.2 through 9.9)
- Population/sample unit
- Population [91] size for each audited initiative/activity for each year of the three-year WMP cycle
- Sample size for each audited initiative/activity for each year of the three-year WMP cycle

[91] In this section, a population may be the number of circuit miles inspected, the number of poles cleared, trees prescribed work, etc.

- Percent of sample in the HFTD for each audited initiative/activity for each year of the three-year WMP cycle
- Confidence level and MOE
- Target pass rate for each audited initiative/activity for each year of the three-year WMP cycle

Table 9-6 provides an example of the appropriate level of detail and the required format.

Table 9-6. Example of Vegetation Management QA and QC Activity Targets

Initiative/ Activity Being Audited	**Population /Sample Unit**	**[Year 1]: Population Size**	**[Year 1]: Sample Size**	**[Year 1]: % of Sample in HFTD**	**[Year 2]: Population Size**	**[Year 2]: Sample Size**	**[Year 2]: % of Sample in HFTD**	**[Year 3]: Population Size**	**[Year 3]: Sample Size**	**[Year 3]: % of Sample in HFTD**	**Confidence level / MOE**	**[Year 1]: Pass Rate Target**	**[Year 2]: Pass Rate Target**	**[Year 3]: Pass Rate Target**
Inspection - Patrol	Span	5,000	1,347	25%	5,000	1347	25%	5,000	1,347	25%	99%/3%	95%	97%	99%
Pruning and Removal	Circuit Mile	20,000	3,435	40%	20,000	3,435	40%	20,000	3,435	40%	99%/2%	95%	95%	95%
Pole Clearing	Pole	4,000	1,262	100%	4,000	1,262	100%	4,000	1,262	100%	99%/3%	95%	97%	99%
Defensible Space	Substation	12	12	100%	12	12	100%	12	12	100%	100%/0%	100%	100%	100%

9.11.2 QA/QC Procedures

In this section, the electrical corporation must list the applicable procedure(s), including the version(s) and effective date(s), used for each vegetation management QA and QC program listed in Table 9-5.

9.11.3 Sample Sizes

In this section, the electrical corporation must describe how it determines the sample for each QA and QC program listed in Table 9-5. This must include how HFTD tier or other risk designations affect the sampling plan, and how the electrical corporation ensures samples are representative of the population.

9.11.4 Pass Rate Calculation

In this section, the electrical corporation must describe how it calculates pass rates. This description must include:

- The sample unit that generates the pass rate for each QA and QC program (e.g., for pole clearing, the sample unit that generates the pass rate may be a single pole that passes or fails a QC audit).
- The pass and failure criteria for each program listed in Table 9-5. List each criterion and discuss any weighted contributions to the pass rate.

9.11.5 Other Metrics

In this section, the electrical corporation must list and describe the metrics used by the electrical corporation, other than pass rate, to evaluate the effectiveness of its vegetation management and inspections activities (programs) and procedures (e.g., find rate, rework rate, outage rate within 6 months of inspection attributed to vegetation contact, etc.).

9.11.6 Documentation of Findings

In this section, the electrical corporation must describe how it documents its QA and QC findings and incorporates lessons learned from those findings into corrective actions, trainings, and procedures.

9.11.7 Changes to QA/QC Since Last WMP and Planned Improvements

In this section, the electrical corporation must describe:

- A list of changes the electrical corporation made to its QA and QC procedure(s) since its last WMP submission.
- Justification for each of the changes including references to lessons learned as applicable.
- A list of planned future improvements and/or updates to QA and QC procedure(s) including a timeline for implementation.

9.12 Work Orders

In this section, the electrical corporation must provide an overview of how it manages its work orders resulting from vegetation management inspections that prescribe vegetation management activities. This overview must include the following under these headers:

9.12.1 Priority Assignment

In this section, the electrical corporation must describe how work orders are assigned priority, including the activity timeline for each priority level/group.

9.12.2 Backlog Elimination

In this section, the electrical corporation must describe the plan for eliminating work order backlogs (i.e., open work orders that have passed activity timelines), if applicable.

9.12.3 Trends

In this section, the electrical corporation must describe trends with respect to open work orders and:

- An aging report for work orders past due (i.e., work orders that were not completed within the electrical corporation's assigned activity timelines per priority level/group described in Section 9.11.1) (Table 9-7and Table 9-8 provides the required format).

Table 9-7. Example of Number of Past Due Vegetation Management Work Orders Categorized by Age and HFTD Tier

HTFD Area	0-30 Days	31-90 Days	91-180 Days	181+ Days
Non-HFTD				
HFTD Tier 2				
HFTD Tier 3				

Table 9-8. Example of Number of Past Due Vegetation Management Work Orders Categorized by Age and Priority Levels [92]

Priority Level	0-30 Days	31-90 Days	91-180 Days	181+ Days
Priority 1				
Priority 2				
Priority 3				

9.13 Workforce Planning

In this section, the electrical corporation must provide an overview of vegetation management and inspections personnel.

The electrical corporation must:

- List all worker titles relevant to vegetation management and inspections including, but not limited to, titles related to inspecting, auditing, and tree crews
- List and describe minimum qualifications for each worker title with an emphasis on qualifications relevant to vegetation management
    - The electrical corporation must note if workers with title hold any certifications, such as being an International Society of Arboriculture Certified Arborist or a California-licensed Registered Professional Forester

Table 9-9 provides the required format and an example of the required information.

[92] The electrical corporation must use the priority levels it defines in section 9.11.1.

Table 9-9. Example of Vegetation Management Qualifications and Training

Worker Title	**Minimum Qualifications for Target Role**	**Applicable Certifications**	**# of Electrical Corporation Employees with Min Quals**	**# of Electrical Corporation Employees with Special Certifications**	**# of Contracted Employees with Min Quals**	**# of Contractor Employees with Applicable Certifications**	**Total # of Employees**	**Reference to Electrical Corporation Training / Qualification Programs**
Pre-Inspector	• One year of arboriculture experience or degree in relevant field	• Certified Arborist • Registered Professional Forester	1,000	• Certified Arborist -500 • Registered Professional Forester - 100	600	• Certified Arborist - 450 • Registered Professional Forester - 50	1,600	Pre-inspector training course (VMI-001)

9.13.1 Recruitment

In this section, the electrical corporation must describe how it recruits vegetation management and inspections personnel, including any relevant partnerships with colleges or universities.

9.13.2 Training and Retention

In this section, the electrical corporation must describe how it trains its vegetation management and inspection personnel, including any requirements for continued/refresher education and programs to improve worker qualifications.

10. Situational Awareness and Forecasting

Each electrical corporation's WMP must include plans for situational awareness. [93]

10.1 Targets

In this section, the electrical corporation must provide qualitative and quantitative targets for each year of the three-year WMP cycle. The electrical corporation must provide at least one qualitative and quantitative target for the following initiatives:

- Environmental Monitoring Systems (Section 10.2)
- Grid Monitoring Systems (Section 10.3)
- Ignition Detection Systems (Section 10.4)
- Weather Forecasting (Section 10.5)
- Weather Station Maintenance and Calibration (Section 10.5.5)

10.1.1 Qualitative Targets

The electrical corporation must provide qualitative targets for its three-year plan for implementing and improving its situational awareness and forecasting, [94] including the following:

- Identification of which initiative(s) and activity/activities in the WMP the electrical corporation is implementing to achieve the stated target, including Tracking IDs and the Tracking ID(s) used in past WMPs ("Previous Tracking ID"), if applicable
- A completion date for when the electrical corporation will achieve the target
- Reference(s) to the WMP section(s) or appendix, including page numbers, where the details of the target(s) are documented and substantiated

[93] Pub. Util. Code §§ 8386(c)(2)-(5).

[94] Annual information included in this section must align with the applicable data submission.

Required format and examples of the minimum required information are provided in Table 10-1 below.

10.1.2 Quantitative Targets

The electrical corporation must list all quantitative targets it will use to track progress on its situational awareness and forecasting in its three-year plan, broken out by each year of the WMP cycle. Electrical corporations must show progress toward completing quantitative targets in subsequent reports, including data submissions and WMP Updates. [95] For each target, the electrical corporation must provide the following:

- Identification of which initiative(s) and activity/activities in the WMP the electrical corporation is implementing to achieve the stated target, including Tracking IDs and the Tracking ID(s) used in past WMPs ("Previous Tracking ID"), if applicable
- Projected targets and totals for each of the three years of the WMP cycle, e.g., [Year 1] end of year total, [Year 2] total, and [Year 3] total, three-year total and the associated units for the targets
- The expected % risk reduction [96] for each of the three years of the WMP cycle.

The electrical corporation's targets must provide enough detail to effectively inform efforts to improve the performance of the electrical corporation's situational awareness and forecasting initiatives.

Table 10-1 provides the required format and an example of the minimum acceptable level of information.

[95] Annual information included in this section must align with the applicable data submission.

[96] The expected % risk reduction is the expected percentage risk reduction per year, as described in Section 6.2.1.2.

Table 10-1. Example of Situational Awareness Targets by Year

Initiative	**Quantitative or Qualitative Target**	**Activity (Tracking ID #)**	**Previous Tracking ID, if applicable**	**Target Unit**	**[Year 1] End of Year Total / Completion Date**	**% Risk Reduction for [Year 1]**	**[Year 2] Total / Status**	**% Risk Reduction for [Year 2]**	**[Year 3] Total / Status**	**% Risk Reduction for [Year 3]**	**Three-Year Total**	**Section; Page number**
Grid Monitoring Systems	Quantitative	Install Thermal Cameras (SA-04)	SA-02	Thermal cameras installed	5	0.5%	10	1%	25	2.5%	40	10.3; p. X
Ignition Detection Systems	Qualitative	Automate ignition detection using third-party software (SA-03)	SA-03	n/a	In progress; October 2026	n/a	Completed; March 2027	n/a	Completed; March 2027	n/a	n/a	10.4; p. x

10.2 Environmental Monitoring Systems

The electrical corporation must describe its systems and procedures for monitoring environmental conditions within its service territory. These observations should inform the electrical corporation's near-real-time risk assessment and weather forecast validation. The electrical corporation must document the following:

- Existing systems, technologies, and procedures
- How the need for additional systems is evaluated
- Implementation schedule for any planned additional systems
- How the efficacy of systems for reducing risk are monitored

The electrical corporation must reference the Tracking ID where appropriate.

10.2.1 Existing Systems, Technologies, and Procedures

The electrical corporation must report on the environmental monitoring systems and related technologies and procedures currently in use, highlighting any improvements made since the last WMP submission. The electrical corporation must discuss systems, technologies, and procedures related to the reporting of the following:

- Current weather conditions:
  - Air temperature
  - Relative humidity
  - Wind velocity (speed and direction)
- Fuel characteristics:
  - Seasonal trends in fuel moisture

Each system must be summarized in Table 10-2. The electrical corporation must provide the following additional information for each system in the accompanying narrative:

- Generalized location of the system / locations measured by the system (e.g., HTFD, entire service territory)
- Integration with the broader electrical corporation's system
- How measurements from the system are verified
- Frequency of maintenance

- For intermittent systems (e.g., aerial imagery, line patrols), what triggers collection. This should include flow charts and equations as appropriate.
- For calculated quantities, how raw measurements are converted into calculated quantities. This should include flow charts and equations as appropriate.

Table 10-2. Example of Environmental Monitoring Systems

System	Measurement/ Observation	Frequency	Purpose and Integration
Weather stations	Steady wind velocity Gust wind velocity Air temperature Relative humidity	3,600 observations / hour	Improve weather forecasts through data assimilation Validate model
Remote sensing fuel moistures	Percentiles	Once a day	Calculate fuel moisture content

10.2.2 Evaluation and Selection of New Systems

The electrical corporation must describe how it evaluates the need for additional environmental monitoring systems. This description must include:

- How the electrical corporation evaluates the impact of new systems on reducing risk (e.g., expected quantitative improvement in weather forecasting)
- How the electrical corporation evaluates the efficacy of new technologies

These descriptions must include flow charts as appropriate.

10.2.3 Planned Improvements

The electrical corporation must describe its planned improvements for its environmental monitoring systems. [97] This must include any plans for the following:

[97] Annual information included in this section must align with the applicable data submission.

- Expansion of existing systems
- Establishment of new systems

10.2.4 Evaluating Activities

The electrical corporation must describe its procedures for the ongoing evaluation of the efficacy of its environmental monitoring activity (program).

10.3 Grid Monitoring Systems

The electrical corporation must describe its systems and procedures used to monitor the operational conditions of its equipment. [98] These observations should inform the electrical corporation's near-real-time risk assessment. The electrical corporation must document:

- Existing systems, technologies, and procedures
- Procedure used to evaluate the need for additional systems
- Implementation schedule for any planned additional systems
- How the efficacy of systems for reducing risk are monitored

The electrical corporation must reference the Tracking ID where appropriate.

10.3.1 Existing Systems, Technologies, and Procedures

The electrical corporation must report on the grid system monitoring systems and related technologies and procedures currently in use, highlighting any improvements made since the last WMP submission. At a minimum, the electrical corporation must discuss systems, technologies, and procedures related to the detection of:

- Faults (e.g., fault anticipators, rapid earth fault current limiters, etc.)
- Failures
- Recloser operations

Each system must be summarized in Table 10-3 below. The electrical corporation must provide the following information for each system in the accompanying narrative:

- Location of the system / locations measured by the system

[98] Pub. Util. Code §§ 8386(c)(3), (6), (22).

- Integration with the broader electrical corporation's system
- How measurements from the system are verified
- For intermittent systems (e.g., aerial imagery, line patrols), description of what triggers collection. This must include flow charts and equations where appropriate.
- For calculated quantities, how raw measurements are converted to calculated quantities. This must include flow charts and equations where appropriate.

Table 10-3. Example of Grid Operation Monitoring Systems

System	Measurement/ Observation	Frequency	Purpose and Integration
Line sensors	• Electrical current • Electrical voltage • Waveform harmonics	• 3,600 observations / hour	• Early fault detection • Distribution fault anticipator (DFA)

10.3.2 Evaluation and Selection of New Systems

The electrical corporation must describe how it evaluates the need for additional grid operation monitoring systems. This description must include:

- How the electrical corporation evaluates the impact of new systems on reducing risk (e.g., expected reduction in ignitions from failures, expected reduction in failures)
- How the electrical corporation evaluates the efficacy of new technologies

These descriptions must include flow charts where appropriate.

10.3.3 Planned Improvements

The electrical corporation must describe its planned improvements in its grid operation monitoring systems. This must include any plans for the following:

- Expansion of existing systems
- Establishment of new systems

10.3.4 Evaluating Activities

The electrical corporation must describe its procedures for the ongoing evaluation of the efficacy of its grid operation monitoring activity (program).

10.4 Ignition Detection Systems

The electrical corporation must describe its systems, technologies, and procedures used to detect ignitions within its service territory and gauge ignition size and growth rates. [99]

The electrical corporation must document the following:

- Existing ignition detection sensors and systems
- Evaluation and selection of new ignition detection systems
- Planned integration of new ignition detection technologies
- Identify any systems, technologies, and procedures for routine sharing of the following:
  - Evaluation of strengths and limitations of new technology
  - Case studies/ lessons learned regarding new ignition detection systems and new ignition detection technologies
  - Lessons learned
- Monitoring of initiative improvements

The electrical corporation must reference the Tracking ID where appropriate.

10.4.1 Existing Ignition Detection Sensors and Systems

The electrical corporation must report on the sensors and systems, technologies, and procedures for ignition detection that are currently in use, highlighting any improvements made since the last WMP submission. At a minimum, the electrical corporation must document the deployment of each of the following:

- Early fire detection including, for example:
  - Satellite infrared imagery
  - High-definition video

[99] Pub. Util. Code § 8386(c)(3).

  - Infrared cameras
- Fire growth potential software

The electrical corporation must summarize each system in Table 10-4 below. It must provide the following additional information for each system in an accompanying narrative:

- General location of detection sensors (e.g., HFTD or entire service territory)
- Resiliency of sensor communication pathways
- Integration of sensor data into machine learning or AI software
- Role of sensor data in risk response
- False positives filtering
- Time between detection and confirmation
- Security measures for network-based sensors

Table 10-4. Example of Fire Detection Systems Currently Deployed

Detection System	**Capabilities**	**Companion Technologies**	**Contribution to Fire Detection and Confirmation**
Video cameras	Real-time viewing of remote area to detect smoke and wildfires	Used with satellite imagery to verify fire detection	Video cameras allow fast and accurate detection or confirmation of wildfires and can help operators assess the scope of resource response needed.

10.4.2 Evaluation and Selection of New Detection Systems

The electrical corporation must describe how it evaluates the need for additional ignition detection technologies. This description must include:

- How the electrical corporation evaluates the impact on new detection technologies on reducing and improving detection and response times
- How the electrical corporation evaluates the efficacy of new technologies

- The electrical corporation's budgeting process for new detection system purchases

10.4.3 Planned Integration of New Ignition Detection Technologies

The electrical corporation must provide an implementation schedule for new ignition detection and alarm system technologies. This must include any plans for the following:

- Integration of new systems into existing physical infrastructure
- Integration of new systems into existing data analysis
- Increases in budgets and staffing to support new systems

10.4.4 Evaluating Activities

The electrical corporation must describe its procedures for the ongoing evaluation of the efficacy of its fire detection systems.

10.5 Weather Forecasting

The electrical corporation must describe its systems and procedures used to forecast weather within its service territory. [100] These forecasts must inform the electrical corporation's near-real-time-risk assessment and PSPS decision-making processes. The electrical corporation must document the following:

- Its existing modeling approach
- The known limitations of its existing approach
- Implementation schedule for any planned changes to the system
- How the efficacy of systems for reducing risk are monitored

The electrical corporation must reference the Tracking ID where appropriate.

10.5.1 Existing Modeling Approach

At a minimum, the electrical corporation must discuss the following components of weather forecasting:

[100] Pub. Util. Code § 8386(c)(3).

- **Data assimilation** from environmental monitoring systems within the electrical corporation service territory
- **Ensemble forecasting** with control forecast and perturbations
- **Model inputs**, including, for example:
  - Land cover / land use type
  - Local topography
- **Model outputs**, including, for example:
  - Air temperature
  - Barometric pressure
  - Relative humidity
  - Wind velocity (speed and direction)
  - Solar radiation
  - Rainfall duration and amount
- **Separate modules** (e.g., local weather analysis and local vegetation analysis)
- **Subject matter expert (SME) assessment of forecasts**
- **Spatial granularity of forecasts**, including:
  - Horizontal resolution
  - Vertical resolution
- **Time horizon** of the weather forecast throughout the service territory

The electrical corporation must highlight improvements made to the electrical corporation's weather forecasting since the last WMP submission.

The electrical corporation must also provide documentation of its modeling approach pertaining to its weather forecasting system in accordance with the requirements in Appendix B.

10.5.2 Known Limitations of Existing Approach

The electrical corporation must describe any known limitations of its existing modeling approach resulting from assumptions, data availability, and computational resources. It must discuss the impact of these limitations on the modeling outputs.

10.5.3 Planned Improvements

The electrical corporation must describe its planned improvements in its weather forecasting systems. This must include any plans for the following:

- Increase in model validation
- Increase in spatial granularity
- Decrease in limitations by removal of assumptions
- Increase in input data quality
- Increase in related frequency

10.5.4 Evaluating Activities

The electrical corporation must describe its procedures for the ongoing evaluation of the efficacy of its weather forecasting activity (program).

10.5.5 Weather Station Maintenance and Calibration

In this section, the electrical corporation must provide a narrative describing maintenance and calibration and risk impacts due to weather station inoperability. The narrative should be no more than one page and include the following:

- Acceptable percentage of weather station outages as defined by the electric corporation
- Justification for how reduced coverage does/does not impact risk to PSPS decision making and any methods to reduce those impacts
- Any limitations to conducting annual maintenance and calibrations (such as staffing, training, terrain, access, etc.)
    - This must include the number of incomplete maintenance or calibration events for weather stations in the last calendar year
- A description of what efforts are in place to ensure acceptable levels of weather station coverage throughout the electric corporation's service territory

10.6 Fire Potential Index

The electrical corporation must describe its process for calculating its fire potential index (FPI) or a similar a landscape-scale index used as a proxy for assessing real-time risk of a

wildfire under current and forecasted weather conditions. [101] The electrical corporation's description must include the following:

- Its existing calculation approach and how its FPI is used in its operations
- The known limitations of its existing approach
- Implementation schedule for any planned changes to the system
- The electrical corporation must reference the Tracking ID where appropriate

10.6.1 Existing Calculation Approach and Use

The electrical corporation must describe:

- How it calculates its own FPI or if uses an external source, such as the United States Geological Survey [102]
- Assumptions in calculations and justification for each assumption
- How it uses its or an FPI in its operations

Additionally, if the electrical corporation calculates its own FPI, it must provide tabular information regarding the features of its FPI. Table 10-5 provides a template for the required information.

[101] Pub. Util. Code § 8386(c)(3).

[102] United States Geological Survey Fire Danger Map and Data Products Web Page (accessed Oct. 27, 2022): https://firedanger.cr.usgs.gov/viewer/index.html.

Table 10-5. Example of Fire Potential Features

Feature Group	Feature	Altitude	Description	Source	Update Cadence	Spatial Granularity	Temporal Granularity
Weather	Temperature	Surface	Temperature at the surface in Fahrenheit	Weather model	6x per day	1 km	Hourly
Fuel Moisture	Dead Fuel Moisture	Surface	Fuel moisture content	Weather model & third-party dataset	Daily	2 km	Daily

10.6.2 Known Limitations of Existing Approach

The electrical corporation must describe any known limitations of current FPI calculation. Specifically, list of any changes implemented since its last WMP submission, including justification of for changes and lessons learned, where applicable.

10.6.3 Planned Improvements

The electrical corporation must describe its planned improvements for its FPI, including a description of the improvement, reason for the change, and the planned schedule for implementation.

11. Emergency Preparedness, Collaboration, and Community Outreach

Each electrical corporation must develop and adopt an emergency preparedness plan in compliance with the standards established by the CPUC pursuant to Public Utilities Code section 768.6(a).[103]

11.1 Targets

In this section, each electrical corporation must provide qualitative targets for emergency preparedness, collaboration, and community outreach

The electrical corporation must provide at least one qualitative target for the following initiatives:

- Emergency Preparedness and Recovery Plan (Section 11.2)
- External Collaboration and Coordination (Section 11.3)
- Public Communication, Outreach, and Education (Section 11.4)
- Customer Support in Wildfire and PSPS Emergencies (Section 11.5)

11.1.1 Qualitative Targets

The electrical corporation must provide qualitative targets for its three-year plan for implementing and improving its emergency preparedness, collaboration, and community outreach, [104] including the following:

- Identification of which initiative(s) and activity/activities in the WMP the electrical corporation is implementing to achieve the stated target, including Tracking IDs and the Tracking ID(s) used in past WMPs ("Previous Tracking ID"), if applicable
- A completion date for when the electrical corporation will achieve the target

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[103] Pub. Util. Code § 8386(c)(19).

[104] Annual information included in this section must align with the applicable data submission.

- Reference(s) to the WMP section(s) or appendix, including page numbers, where the details of the target(s) are documented and substantiated

This information must be provided in Table 11-1 for the three-year cycle. Examples of the required format and minimum acceptable level of information are provided below.

Table 11-1. Example of Emergency Preparedness and Community Outreach Targets by Year

Initiative	**Activity (Tracking ID #)**	**Previous Tracking ID, if applicable**	**[Year 1] End of Year Total / Completion Date**	**[Year 2] Status**	**[Year 3] Status**	**Section; Page number**
Emergency Preparedness and Recovery Plan	Update workforce training for emergency Response (EP-1)	EP-04	Not started	Started; September 2027	Completed, January 2028	11.2; p. x
Public Outreach, Communication, and Engagement	Assess and resolve any customer issues identified through mobile application within 1 week (EP-3)	CO-03	Started; March 2026	Completed; May 2027	Completed, May 2027	11.4; p. x

11.2 Emergency Preparedness and Recovery Plan

In this section, the electrical corporation must provide an overview of how it has evaluated, developed, and integrated wildfire- and PSPS-specific emergency preparedness strategies, practices, policies, and procedures into its overall emergency plan based on the minimum standards described in GO 166. [105] The electrical corporation must provide the title of and link to its latest emergency preparedness report, the date of the report, and an indication of whether the plan complies with CPUC R. 15-06-009, D. 21-05-019, and GO 166. The overview must be no more than two paragraphs.

In addition, the electrical corporation must provide a list of any other relevant electrical corporation documents that govern its wildfire and PSPS emergency preparedness planning for response and recovery efforts. This must be a bullet point list with document title, version (if applicable), and date. For example:

- Electrical Corporation's Emergency Response Plan (ECERP), Third Edition, dated January 1, 2021

The electrical corporation must reference the Tracking ID where appropriate.

11.2.1 Overview of Wildfire and PSPS Emergency Preparedness and Service Restoration

In this section, the electrical corporation must provide an overview of its wildfire- and PSPS-specific emergency preparedness and service restoration plan. [106] The overview must describe the following:

- Overview of protocols, policies, and procedures for responding to and recovering from a wildfire or PSPS event (e.g., means and methods for assessing conditions, decision-making framework, prioritizations). This must include:
    - An operational flow diagram illustrating key components of its wildfire- and PSPS-specific emergency response procedures from the moment of activation to response, recovery, and restoration of service
    - Separate overviews and operational flow diagrams for wildfires and PSPS events

[105] Pub. Util. Code §§ 8386(c)(7), (11), (16), (19), (20).

[106] Pub. Util. Code § 8386(c)(16), (19), (20).

- Key personnel, qualifications, and training that show the electrical corporation has trained the workforce to promptly restore service after wildfire or PSPS event, accounting for workers pursuant to mutual aid agreement or contracts. This must include:
    - The key roles and responsibilities, personnel resource planning (internal and external staffing needs), personnel qualifications, and required training programs
    - A brief narrative describing its process for planning to meet its internal and external staffing needs for emergency preparedness planning, preparedness, response, and recovery related to wildfire and PSPS
    - The name of each training program, a brief narrative of the purpose and scope of each training program, the frequency of each training program, and how the electrical corporation tracks who has completed the training program
- Each Memorandum of Agreement (MOA) the electrical corporation has with state, city, county, and tribal agencies within its service territory on wildfire and/or PSPS emergency preparedness, response, and recovery activities. The electrical corporation must provide a brief summary of the MOA, including the agreed role(s) and responsibilities of the external agency before, during, and after a wildfire or PSPS emergency
    - Coordination and collaboration with public safety partners (e.g., emergency planning, interoperable communications)
    - Notification of and communication to customers before, during and after a wildfire or PSPS event
    - Improvements/updates made since the last Base WMP submission

The overview must be no more than six pages. The electrical corporation may refer to its emergency preparedness plan to provide more detail. Where the electrical corporation has already reported the requested information in another section of the WMP, it must provide a cross-reference with a hyperlink to that section.

In addition, the electrical corporation must provide a table with a list of current gaps and limitations in evaluating, developing, and integrating wildfire- and PSPS-specific preparedness and planning features into its overall emergency preparedness and recovery plan(s). Where gaps or limitations exist, the electrical corporation must provide a remedial

action plan and the timeline for resolving the gaps or limitations. Table 11-2 provides the required format and an example of the minimum level of content and detail required.

Table 11-2. Example of Key Gaps and Limitations in Integrating Wildfire- and PSPS-Specific Strategies into Emergency Plan

Gap or Limitation Subject	**Brief Description of Gap or Limitation**	**Remedial Action Plan**
Limited feedback on wildfire-specific components of emergency plan	Limited coordination with local-level public safety partners in the review and development of the wildfire-specific emergency preparedness plan	**Strategy:** Establish a community advisory panel in collaboration with local government and non-governmental organizations. **Target timeline:** Develop a process for establishing a community advisory panel, including policies and procedures, by the end of 2023. Convene the advisory panel to review and provide feedback on the emergency preparedness plan for 50% of communities by end of 2027.

11.2.2 Planning and Allocation of Resources

The electrical corporation must briefly describe its methods for planning appropriate resources (e.g., equipment, specialized workers), and allocating those resources to assure the safety of the public during service restoration. [107]

In addition, the electrical corporation must provide an overview of its plans for contingency measures regarding the resources required to respond to an increased number of reports concerning unsafe conditions and expedite a response to a wildfire- or PSPS-related power outage.

This must include a brief narrative on how the electrical corporation:

- Uses weather reports to pre-position manpower and equipment before anticipated severe weather that could result in an outage
- Sets priorities
- Facilitates internal and external communications
- Restores service

The narrative for this section must be no more than two pages.

11.3 External Collaboration and Coordination

11.3.1 Communication Strategy with Public Safety Partners

The electrical corporation must describe at a high level its communication strategy to inform external public safety partners and other interconnected electrical corporation partners of wildfire, PSPS, and re-energization events as required by GO 166 and Public Utilities Code section 768.6. [108] This must include a brief description of the policies, practices, and procedures the electrical corporation adopts to establish appropriate communication protocols with public safety partners for both wildfire- and PSPS-specific incidents to ensure timely, accurate, and complete communications. The electrical corporation must refer to its emergency preparedness plan as needed to provide more detail. The narrative must be no more than two pages.

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[107] Pub. Util. Code § 8386(c)(16), (20).

[108] Pub. Util. Code § 8386(c)(19).

As each public safety partner will have its own unique communication protocols, procedures, and systems, the electrical corporation must coordinate with each entity individually. The electrical corporation must summarize the following information in tabulated format:

- All relevant public safety partner groups (e.g., fire, law enforcement, OES, municipal governments, Energy Safety, CPUC, other electrical corporations) at every level of administration (state, county, city, or Tribal Nation) as needed
- Key protocols for ensuring the necessary level of voice and data communications (e.g., interoperability channels, methods for information exchange, format for each data typology, communication capabilities, data management systems, backup systems, common alerting protocols, messaging), and associated references in the emergency plan for more details
- Frequency of prearranged communication review and updates

In a separate table, the electrical corporation must list the current gaps and limitations in its public safety partner communication strategy coordination. Where gaps or limitations exist, the electrical corporation must indicate the remedial action plan and the timeline for resolving the gaps or limitations. For all requested information, the electrical corporation must indicate a form of verification that can be provided upon request for compliance assurance.

Table 11-3 and Table 11-4 provide the required format and examples of the minimum level of content and detail required.

Table 11-3. Example of High-Level Communication Protocols, Procedures, and Systems with Public Safety Partners

Public Safety Partner Group	**Name of Entity**	**Key Protocols**	**Frequency of Prearranged Communication Review and Update**
Fire	Local County Fire Department	• Communication capabilities (e.g., staffing, resources, technologies) • Methods for information exchange • Format for each data typology • Data management strategy • Backup systems • Common alerting protocols • Messaging • Refer to Sections x, y, and z in electrical corporation's Emergency Preparedness Plan and to the MOA entitled "xxxxx," dated MM/DD/YYYY.	Annually (April)

Table 11-4. Example of Key Gaps and Limitations in Communication Coordination with Public Safety Partners

Gap or Limitation Subject	**Brief Description of Gap or Limitation**	**Remedial Action Plan**
Limited feedback on wildfire and PSPS emergency plan	Less than 10% of the state and local government stakeholders have been able to provide feedback and collaborate on review, development, and/or improvement of the emergency preparedness plan.	**Strategy:** Convene a 1.5-day workshop with relevant state and local agencies to review the key elements of the electrical corporation's wildfire- and PSPS-specific emergency preparedness plan. Solicit verbal and written comments from the stakeholders. Assign a government liaison to conduct follow-up meetings to obtain and discuss any comments, proposed modifications, additions, etc. **Target timeline**: Develop workshop scoping plan by June 2026 and convene workshop by end of 2026 Aim to host workshops with 50% of government stakeholders by end of 2027.
Uncertainty of emergency communications being received by government agencies	More than 50% of the partner government agencies have independent and different communication systems and associated protocols. Consistency and timing of notification and receipt notification is not standardized.	**Strategy:** Create an integrated, multi-channel communication system that provides for immediate notification of an event through text, email, or broadcast with secondary communication to confirm receipt. Assess current notification systems and communications protocols at the electrical corporation's monitoring center and create priority communication matrices that support the most resilient channels for sending emergency alert messages. Create a survey to be sent to all responding stakeholders to collect information on their communications capabilities and preferences. Align the electrical corporation's capabilities with each responding stakeholder and then create operating standards for dispatchers and responders to follow. **Target timeline**: Complete assessment of current systems and protocols by end of first quarter 2026 Create survey to be sent to all responding stakeholders by end of second quarter 2023. Complete alignment and testing by end of first quarter 2024.

11.3.2 Collaboration on Local and Regional Wildfire Mitigation Planning

In this section, the electrical corporation must provide a high-level overview of its plans, activities (programs), and/or policies for collaborating with communities on local and regional wildfire mitigation planning (e.g., wildfire safety elements in general plans, community wildfire protection plans, local multi-hazard mitigation plans) within its service territory. [109] The narrative must be no more than one page.

In addition, the electrical corporation must provide the following information in tabular form, providing no more than one page of tabulated information in the main body of the WMP and the full table in an appendix as needed.

- List of county, city, regional entities/task forces, and non-governmental organizations (e.g., nonprofits, fire safe councils) within the service territory with which the electrical corporation has collaborated or intends to collaborate on local wildfire mitigation planning efforts (i.e., non-wildfire emergency planning activities)
    - For each entity, the local or regional wildfire mitigation planning program/plan/document, level of collaboration (e.g., meeting attendance, verbal or written comments, data sharing, risk assessment), and date the electrical corporation provided its last feedback. Table 11-5 provides an example of the minimum acceptable level of information. The electrical corporation must reference the Tracking ID where appropriate.
    - In a separate table, the electrical corporation must provide a list of current gaps and limitations in its collaboration efforts with local and regional partners on local wildfire planning efforts. Where gaps or limitations exist, the electrical corporation must indicate proposed means and methods to increase collaborative efforts. Table 11-6 provides an example of the minimum acceptable level of information.

[109] Pub. Util. Code § 8386(c)(19).

Table 11-5. Example of Collaboration in Local and Regional Wildfire Mitigation Planning

Name of County, City, or Tribal Agency or Civil Society Organization (e.g., nongovernmental organization, fire safe council)	**Program, Plan, or Document**	**Last Version of Collaboration**	**Level of Collaboration**
Local County Resource Management Agency	Local County General Plan, Safety Element, Wildfires	2022 version (06/2021)	Attended a virtual meeting on 02/02/2022 at 1 p.m. PDT Provided verbal comments and input
Local Fire Safe Council	Structural hardening grant program	2021/2022	Financier
Local County Resource Conservation District	Chipper program	Planned for 12/2023	Financier
Regional Forest and Fire Capacity Program (RFFCP) Grantee	Regional Priority Plan	Planned for 6/2026	Align of proposed WMP activities with priority fuel breaks and community infrastructure as descried in the Regional Priority Plan.

Table 11-6. Example of Key Gaps and Limitations in Collaborating on Local and Regional Wildfire Mitigation Planning

Subject of Gap or Limitation	**Brief Description of Gap or Limitation**	**Strategy for Improvement**
Low collaboration requests	Less than 5% of local government and civil society stakeholder groups seek collaboration activities.	**Strategy:** Create web content notifying the public, local government, and civil society organizations of the electrical corporation's resources to provide support on local wildfire mitigation planning efforts. Assign a local wildfire planning liaison to be available as needed for local planning efforts. **Target timeline**: Develop and post web content by May 2023 and hire two local wildfire planning liaisons by March 2023.

11.3.3 Collaboration with Tribal Governments

In this section, the electrical corporation must provide a high-level overview of its plans, activities (programs), and/or policies for collaborating on local wildfire mitigation planning with tribal governments served by the electrical corporation and on whose lands its infrastructure is located. [110] The narrative must be no more than one page.

In addition, the electrical corporation must provide the following information in tabular form, with no more than one page of tabulated information in the main body of the Base WMP and the full table in an appendix as needed.

- List of tribal governments served by the electrical corporation and on whose lands its infrastructure is located with which the electrical corporation has collaborated or intends to collaborate on local wildfire mitigation planning efforts (i.e., non-wildfire emergency planning activities).
    - For each entity, the local wildfire mitigation planning program/plan/document, level of collaboration (e.g., meeting attendance, verbal or written comments), and date the electrical corporation provided its last feedback. Table 11-7 provides the required format and an example of the minimum acceptable level of information. The electrical corporation must reference the Tracking ID where appropriate.
    - In a separate table, the electrical corporation must provide a list of current gaps and limitations in its collaboration efforts with local partners on local wildfire planning efforts. Where gaps or limitations exist, the electrical corporation must indicate proposed means and methods to increase collaborative efforts. Table 11-8 provides the required format and an example of the minimum acceptable level of information.

[110] Pub. Util. Code § 8386(c)(19).

Table 11-7. Example of Collaboration with Tribal Agencies

Name of County, City, or Tribal Agency or Civil Society Organization (e.g., nongovernmental organization, fire safe council)	**Program, Plan, or Document**	**Last Version of Collaboration**	**Level of Collaboration**
Tribal Government	Tribal Government Wildfire Safety Plan	2022 version (06/2021)	Attended a virtual meeting on 02/02/2022 at 1 p.m. PDT Provided verbal comments and input

Table 11-8. Example of Key Gaps and Limitations in Collaborating with Tribal Agencies

Subject of Gap or Limitation	**Brief Description of Gap or Limitation**	**Strategy for Improvement**
Low collaboration requests	Less than 5% of tribal agencies seek collaboration activities.	**Strategy:** Create web content notifying the tribal agencies of the electrical corporation's resources to provide support on local wildfire mitigation planning efforts. Assign a local wildfire planning liaison to be available as needed for local planning efforts. **Target timeline**: Develop and post web content by May 2023 and hire two local wildfire planning liaisons by March 2023.

11.4 Public Communication, Outreach, and Education Awareness

The electrical corporation must describe at a high level its comprehensive communication strategy to inform essential customers and other stakeholder groups of wildfires, outages due to wildfires, and PSPS and service restoration, as required by Public Utilities Code section 768.6. [111] This should include a discussion of the policies, practices, and procedures the electrical corporation adopts to establish appropriate communication protocols to ensure timely, accurate, and complete communications. The electrical corporation may refer to its Public Utilities Code section 768.6 emergency preparedness plan to provide more detail. The narrative must be no more than one page.

In the following sections, the electrical corporation must provide an overview of the following components of an effective and comprehensive communication strategy:

- Protocols for emergency communications
- Messaging
- Outreach and education awareness program(s) for wildfires, PSPS events, and PEDS; service restoration before, during, and after incidents; and vegetation management
- Current gaps and limitations

The electrical corporation must reference the Tracking ID where appropriate.

11.4.1 Protocols for Emergency Communications

The electrical corporation must identify the relevant stakeholder groups and target communities in its service territory and describe the protocols, practices, and procedures used to provide notification of wildfires, outages due to wildfires and PSPS, and service restoration before, during, and after each incident type. [112] Stakeholder groups and target communities include, but are not limited to, the general public; priority essential services [113]; AFN populations and other vulnerable or marginalized populations; populations with limited

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[111] Pub. Util. Code § 8386(c)(7), (19).

[112] Pub. Util. Code § 8386(c)(7).

[113] Priority essential services include but are not limited to public safety offices, critical first responders, health care facilities and operators, and telecommunications infrastructure and operators.

English proficiency; Tribal Nations; and people in remote areas. The narrative must include a brief discussion of the decision-making process and use of best practices to ensure timely, accurate, and complete communications. The narrative must be no more than one page.

In addition, the electrical corporation must summarize the interests or concerns each stakeholder group/target community may have before, during, or after a wildfire or PSPS event to help inform outreach and education awareness needs. Table 11-9 provides the required format for this summary.

Table 11-9. Example of Protocols for Emergency Communication to Stakeholder Groups

Stakeholder Group/Target Community	Event Type	Method(s) for Communicating	Means to Verify Message Receipt	Interests or Concerns Before, During, and After Wildfire and PSPS events
General public	Wildfire			
General public	Wildfire-related outage			
General public	PSPS-related outage			
General public	Restoration of service			
Priority essential services	Wildfire			
Priority essential services	Wildfire-related outage			
Priority essential services	PSPS-related outage			
Priority essential services	Restoration of service			
AFN populations				
Populations with limited English proficiency				
Tribal Nations				
People in remote areas				

11.4.2 Messaging

In this section, the electrical corporation must describe its procedures for developing effective messaging to reach the largest percentage of stakeholders in its service territory before, during, and after a wildfire, an outage due to wildfire, or a PSPS event. [114]

In addition, the electrical corporation must provide an overview of the development of the following aspects of its communication messaging strategy:

- Features to maximize accessibility of the messaging (e.g., font size, color contrast analyzer)
- Alert and notification schedules
- Translation of notifications
- Messaging tone and language
- Key components and order of messaging content (e.g., hazard, location, time)

The narrative must be no more than one page.

11.4.3 Outreach and Education Awareness Activities

In tabulated format, the electrical corporation must provide a list the various outreach and education awareness activities (programs) (i.e., campaigns, informal education, grant programs, participatory learning) that the electrical corporation implements before, during, and after wildfire, vegetation management, and PSPS events to target communities, including efforts to engage with partners in developing and exercising these activities (programs). [115] Table 11-10 provides the require format and an example of the minimum acceptable level of information. In addition, the electrical corporation must describe how it implements its overall program, including staff and volunteer needs, other resource needs, method for implementation (e.g., industry best practice, latest research in methods for risk communication, social marketing), long-term monitoring and evaluation of each program's success, need for improvement, etc. The narrative for this section is limited to two to three pages.

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[114] Pub. Util. Code § 8386(c)(7), (19).

[115] Pub. Util. Code § 8386(c)(19).

Table 11-10. Example of a List of Target Communities

Target Community	Interests or Concerns Before, During, and After Wildfire and PSPS events
Populations with limited English proficiency	Limited access to understand electrical corporation wildfire hazards and risks, specific actions that can be taken to reduce risk, and awareness of emergency services, resources, etc.
People in remote areas	[Electrical corporation to add description here]
Elderly	[Electrical corporation to add description here]
People with limited technology	[Electrical corporation to add description here]

11.4.4 Engagement with Access and Functional Needs Populations

The electrical corporation must provide an overview of its process for understanding, evaluating, designing, and implementing wildfire and outage program risk initiative strategies, policies, and procedures specific to AFN customers across its territory. [116] The electrical corporation must provide its AFN plan as an attachment and may it to provide more detail. The electrical corporation must also report on the following:

- Summary of key AFN demographics, distribution, and percentage of total customer base.
- Evaluation of the specific challenges and needs during a wildfire or PSPS event of the electrical corporation's AFN customer base.
- Plans to address specific needs of the AFN customer base throughout the service territory specific to the unique threats that wildfires and PSPS events may pose for those populations before, during, and after the incidents. This should include high-level strategies, policies, programs, and procedures for outreach, engagement in the development and implementation of the AFN-specific risk initiative strategies, and ongoing feedback practices.

[116] Pub. Util. Code § 8386(c)(7), (19).

The electrical corporation must reference the Tracking ID where appropriate.

11.4.5 Engagement with Tribal Nations

The electrical corporation must provide an overview of its process for understanding, evaluating, designing, and implementing wildfire and outage program risk initiative strategies, policies, and procedures specific for collaboration with to Tribal Nations served by the electrical corporation and on whose lands its infrastructure is located. [117] The electrical corporation must also report on the following:

- Summary of key tribal demographics
- Ongoing consultation and collaborative efforts performed by the electrical corporation with Tribal Nations
- Evaluation of the specific challenges and needs during a wildfire or PSPS event of the electrical corporation's Tribal Nation customer base
- Plans to address specific needs of the tribal customers throughout the service territory specific to the unique threats that wildfires and PSPS events may pose for those populations before, during, and after the incidents. This should include high-level strategies, policies, programs, and procedures for outreach, engagement in the development and implementation of the tribal-specific risk initiative strategies, and ongoing feedback practices

The electrical corporation must reference the Tracking ID where appropriate.

11.4.6 Current Gaps and Limitations

In tabulated format, the electrical corporation must provide a list of current gaps and limitations in its public communication strategy, including any notification failures identified in the most recent PSPS post-season report. Where gaps or limitations exist, the electrical corporation must indicate the remedial action plan and the timeline for resolving the gaps or limitations. For all requested information, the electrical corporation should indicate a form of verification that can be provided upon request for compliance assurance. Table 11-11 provides an example of the minimum level of content and detail required.

[117] Pub. Util. Code § 8386(c)(19).

Table 11-11. Example of Key Gaps and Limitations in Public Emergency Communication Strategy

Gap or Limitation Subject	Brief Description of Gap or Limitation	Remedial Action Plan
Limited feedback on wildfire and PSPS emergency plan	Less than 10% of the state and local government stakeholders have been able to provide feedback and collaborate on review, development, and/or improvement of the emergency preparedness plan.	**Strategy:** Convene a 1.5-day workshop with relevant state and local agencies to review the key elements of the electrical corporation's wildfire- and PSPS-specific emergency preparedness plan. Solicit verbal and written comments from the stakeholders. Assign a government liaison to conduct follow-up meetings to obtain and discuss any comments, proposed modifications, additions, etc. **Target timeline**: Develop workshop scoping plan by June 2023 and convene workshop by end of 2023. Aim to host workshops with 50% of government stakeholders by end of 2025.

11.5 Customer Support in Wildfire and PSPS Emergencies

In this section, the electrical corporation must provide an overview of its activities (programs), systems, and protocols to support residential and non-residential customers during and after wildfire emergencies and PSPS events. [118] The overview for each emergency service must be no more than one page. The overview must cover the following customer emergency services:

- Outage reporting
- Support for low-income customers
- Billing adjustments
- Deposit waivers
- Extended payment plans
- Suspension of disconnection and nonpayment fees
- Repair processing and timing
- List and description of community assistance locations and services
- Medical Baseline support services
- Access to electrical corporation representatives

The electrical corporation must reference the Tracking ID where appropriate.

[118] Pub. Util. Code, § 8386(c)(21).

12. Enterprise Systems

In this section, the electrical corporation must provide an overview of inputs to, operation of, and support for various enterprise systems it uses for vegetation management, asset management and inspection, grid monitoring, ignition detection, weather forecasting, and risk assessment initiatives. [119] Enterprise systems encompass structures and methods that allow the electrical corporation and its employees and/or contractors to accept, store, retrieve, and update data for the production, management, and scheduling of related work.

12.1 Targets

In this section, the electrical corporation must provide qualitative targets for each year of the three-year WMP cycle. The electrical corporation must provide at least one qualitative target for each initiative as related to implementation and improvement of its enterprise systems.

12.1.1 Qualitative Targets

The electrical corporation must provide at least one qualitative target for each relevant initiative (vegetation management, asset management and inspection, grid monitoring, ignition detection, weather forecasting, and risk assessment) in its three-year plan for implementing and improving its enterprise systems, including the following:

- Identification of which initiative(s) and activity/activities in the WMP the electrical corporation is implementing to achieve the stated target, including Tracking IDs and the previous tracking ID used in past WMPs, if applicable
- A target completion date
- Reference(s) to the WMP section(s) or appendix, including page numbers, where the details of the target(s) are documented and substantiated

[119] Pub. Util. Code § 8386(c)(10), (14), (18).

Table 12-1. Example of Enterprise Systems Targets

Initiative	**Activity (Tracking ID #)**	**Previous Tracking ID (if applicable)**	**[Year 1] End of Year Total / Completion Date**	**[Year 2] Total / Status**	**[Year 3] Total / Status**	**Section; Page Number**
Vegetation Management Enterprise System	Migrate all historical vegetation data to centralized database (ES-2)	VM-02	Not started	Started; June 2027	Completed; January 2028	12.2; p. x

12.2 Summary of Enterprise Systems

Electrical corporations must provide a summary narrative of no more than three pages that discusses how its enterprise systems contain, account, or allow for the following:

- Any database(s) the electrical corporation used for data storage
- Internal procedures for updating the enterprise system, including database(s), any planned updates, and the ability to migrate data across systems and ensure accuracy if necessary
- The electrical corporation's asset identification process
- The electrical corporation's process for integrating 100 percent asset identification or its justification if not currently in place
- Processes to ensure data integrity (accuracy, completeness, and quality of data), accessibility (ability of the electrical corporation to access data across formats and locations), and retention (any policies the electrical corporation for how long it stores data and how it disposes of data after any retention period)
- Any QA/QC or auditing of its system
- Overview of any data governance plan that the electrical corporation has in place. Highlighting any data stewardship practices
- How current WMP initiatives and activities are being tracked and monitored in enterprise systems
- Employee and/or contractor ability to access and interact with the data and systems for tracking work order status and scheduling
- How the electrical corporation's work order and asset management systems feed into risk analysis and alternative or interim activity selection
- Any changes to the electrical corporation's enterprise systems since the last Base WMP submission and a brief explanation as to why those changes were made. Include any planned improvements or updates to the enterprise systems and the timeline for implementation

13. Lessons Learned

An electrical corporation must use lessons learned to drive continual improvement in its WMP. [120] Electrical corporations must include lessons learned due to ongoing monitoring and evaluation initiatives, collaboration with other electrical corporations and industry experts, PSPS or outage events, and feedback from Energy Safety and other regulators.

13.1 Description and Summary of Lessons Learned

In this section, the electric corporation must provide a brief narrative describing the key lessons learned tied to feedback from government agencies and stakeholders, collaboration efforts with other electrical corporations, areas for continued improvement, PSPS or outage events, and outcomes from previous WMP cycles.

The narrative must also include lessons learned from prior catastrophic wildfires ignited by the electrical corporation's facilities or equipment and findings from Energy Safety compliance audits and reports.

For each lesson learned, the electrical corporation must identify the following in Table 13-1:

- The year of the Base WMP cycle the lesson learned was identified
- Category and specific source of lesson learned
- Brief description of the lesson learned that informed improvement to the WMP
- Brief description of the proposed improvement to the WMP and which initiative(s) or activity/activities the electrical corporation intends to add or modify
- If applicable, a brief description of how the lesson learned ties to implementation of a corrective action program
- Estimated timeline for implementing the proposed improvement
- If applicable, reference to the documentation that describes and substantiates the need for improvement, including:
    - Where relevant, a hyperlinked section and page number in the appendix of the WMP

[120] Pub. Util. Code §§ 8386(a) & (c)(5), (22).

- Where relevant, the title of the report, date of report, and link to the electrical corporation web page where the report can be downloaded
- If any lessons learned were derived from quantifiable data, visual/graphical representations of these lessons learned in the supporting documentation

Table 13-1 provides the required format and an example of the minimum acceptable level of information.

Table 13-1. Example of Lessons Learned

ID #	Year of Lesson Learned	Subject	Category and Source of Lesson Learned	Description of Lesson Learned	Proposed WMP Improvement	Timeline for Implementation	Reference
1	2022	Collaboration with other electrical corporations	Risk modeling working group	Wildfire risk models need to establish standard weather and vegetative coverage scenarios, as well as extreme-event conditions, for design purposes and long-term contingency planning.	Continue ongoing engagement in wildfire risk modeling working group. Commission research at leading research and academic institutes to help inform standard key assumptions as the basis for long-term design of capital improvements and wildfire risk initiative activities as well as contingency planning for unexpected, extreme events and/or potential changes to environmental settings and other assumptions due to climate change.	Ongoing Concept design by 12/2022 Detailed design by 2025 Draft report by 2026 Final report by 2027	Weblink to wildfire risk modeling working group and summary report Weblink to electrical corporation's proposed research
2	2023	Data Governance	2022 Annual Report on Compliance	Improve information management for vegetation management activities	Digitized work order and inspection field forms for both employees and contractors and connected field forms to system database.	Operationalized by 12/2023	Title of covered conductor analysis report, dated MM/DD/YYYY; title of risk model analysis report, dated MM/DD/YYYY
3	2024	Completed Initiative/activity	Relevant WMP initiative	[To be provided by the electrical corporation]	[To be provided by the electrical corporation]	[To be provided by the electrical corporation]	[To be provided by the electrical corporation]

13.2 Working Group Meetings

The electrical corporation must identify any Energy Safety-required working group meetings attended or planning to attend in the WMP submission year and provide any lessons learned that applied to its WMPs. The electrical corporation must include interactions and collaborations related to the electrical corporation's WMP submission such as identifying new technology, industry best practices, and shared lessons learned from the WMP process.

13.3 Discontinued Activities

The electrical corporation must provide all activities from previous WMP submissions that it is no longer implementing ("Discontinued Activities"), [121] the rationale for discontinuation, the applicable lessons learned, and a list of the new or existing activities that mitigate risk in place of the discontinued activity ("Replacement Activities"), including cross-references to the page numbers within the WMP where each replacement activity is discussed.

Table 13-2 provides the required format for this information.

Table 13-2. Lessons Learned from Discontinued Activities

Discontinued Activity (Tracking ID)	**Rationale for Discontinuation**	**Lessons Learned**	**Replacement Activities (include page # where discussed)**

[121] Discontinued activities do not include activities that the electrical corporation has completed. An activity that has been completed is not a discontinued activity.

IV. PETITION TO AMEND

The electrical corporation may submit to Energy Safety a petition to amend its approved WMP to align the WMP with a California Public Utilities Commission decision in a general rate case (GRC) proceeding.

A petition to amend must meet the following requirements:

- The petition requests to amend an approved Base WMP covering the year(s) for which the electrical corporation is submitting the petition to amend
- The electrical corporation submitted the petition within 45 days of the relevant GRC decision or any CPUC order modifying that decision
- The petition includes all required components listed in Chapter IV, Section 1 of these Guidelines
- The petition does not include amendments unrelated to the GRC decision on which the petition is based
- The petition does not include any non-substantive amendments such as corrections to typographical errors

If a petition to amend does not meet the above requirements, Energy Safety may reject the petition without consideration of the substance of the petition and direct the electrical corporation to resubmit.

1. Required Components

The electrical corporation must include the following components in its petition:

- Format:
  - Each amendment must be listed separately (e.g., initiative, risk models, risk framework, objectives, etc.).
  - Each amendment must be shown in redline of the relevant language and tables in the approved WMP
  - GRC Decision Reference:
    - Decision number of the GRC decision on which the petition is based, and date of issuance

- For each amendment, the page number(s) of the GRC decision where the decision is in conflict with the approved WMP, and ordering paragraph text. Introduction:
  - A summary of the reason that the approved WMP needs amending
  - A list of the requested changes clearly summarizing the approved values and the proposed values for each requested change
  - For each requested amendment to an initiative
  - The title and initiative tracking ID of the corresponding initiative(s)
  - Excerpt of the relevant WMP passage(s) and/or table showing the requested amendment in redline
  - If an amendment is for an initiative, the planned expenditure for the amendment according to the approved WMP
- Explanation as to the necessity of each amendment, including at a minimum,
  - Effect of the GRC decision on the original information provided in the approved WMP and explanation as to why the GRC decision resulted in the requested amendment, including reasons for any cross-initiative issues;
  - Analysis as to how the amendment comports with the GRC decision;
  - Impact of the amendment on the approved WMP and description of the expected outcome from the amendment within the current WMP cycle, including any change to wildfire risk and outage program risk; and
  - Any planned interim mitigation if the amendment results in a delay in the implementation or progress on an initiative.

2. Evaluation of a Petition

In the evaluation of a petition, Energy Safety may consider the following:

- Whether the petition meets the requirements set forth in Chapter IV, Section 1 of these Guidelines
- Whether the electrical corporation provided sufficient information for Energy Safety to evaluate a petition
- Whether the electrical corporation has shown good cause for the amendments requested in or any delay in the submission of the petition

3. Decision

Upon and as directed by Energy Safety's approval or approval in part of a Petition to Amend, the electrical corporation must amend the relevant years' WMP and data submissions to reflect the amendments approved by Energy Safety and file the amended documents to the relevant docket.

V. ITO MODIFIED REQUIREMENTS

This chapter modifies the reporting requirements presented in Chapter III "Base WMP Technical Requirements" for Independent Transmission Owners (ITOs).

1. Statutory and WMP Requirements

All California electrical corporations, including all ITOs, must meet statutory requirements provided in Public Utilities Code section 8386(c).[122] The modified reporting requirements for ITOs described in Section 2 of this chapter do not discharge ITOs from any obligation required pursuant to Public Utilities Code section 8386(c). A WMP missing information required by Public Utilities Code section 8386(c) is incomplete pursuant to Chapter II "Process and Evaluation" in the WMP Guidelines.

Where Table 1 in Section 2 of this chapter modifies the reporting requirements and where the ITO does not have the information required by Chapter III of the WMP Guidelines, the ITO must clearly describe in the relevant section of its WMP why it cannot provide such information (for example, the ITO does not have end-use customers).

2. ITO Modified Reporting Requirements

Table 1 below presents Energy Safety's modified reporting requirements for ITOs. Table 1 references section numbers and descriptions from Chapter III "WMP Technical Requirements". The ITO must comply with reporting requirements described in Chapter III for any section that is not included in Table 1.

[122] Public Utilities Code § 8386(c) (https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PUC&sectionNum=8386.#:~:text=(c), accessed Mar. 14, 2024).

Table 3: ITO Modified Reporting Requirements for the WMP

Section/Subsection of Chapter III "WMP Technical Requirements"	Description	Energy Safety's Findings	Reporting Requirement Modification
4.1 Service Territory	"The electrical corporation must provide a high-level description of its service territory…"	ITOs do not have service territories. However, they have electrical assets.	The reporting requirements associated with Section 4.1 do not apply to ITOs.
5.Risk Methodology and Assessment	"In this section of the WMP, the electrical corporation must provide an overview of its risk methodology, key input data and assumptions, risk analysis, and risk presentation…"	ITOs have significantly less infrastructure than the large investor-owned utilities (IOUs) and small and multi-jurisdictional utilities (SMJUs) and do not have service territories or end-use customers.	The ITO must comply with the requirements of Public Utilities Code sections 8386(c)(3), (8), (12), (13), (17), and (18).[123] However, the level of detail required by Section 5 regarding risk modeling is not required for ITOs. Instead, the ITO must describe its methods for determining risk with the following minimum requirements for each subsection.

[123] Pub. Util. Code § 8386(c) "…(3) A description of the preventive strategies and programs to be adopted by the electrical corporation to minimize the risk of its electrical lines and equipment causing catastrophic wildfires, including consideration of dynamic climate change risks.
…
(8) Identification of circuits that have frequently been deenergized pursuant to a deenergization event to mitigate the risk of wildfire and the measures taken, or planned to be taken, by the electrical corporation to reduce the need for, and impact of, future deenergization of those circuits, including, but not limited to, the estimated annual decline in circuit deenergization and deenergization impact on customers, and replacing, hardening, or undergrounding any portion of the circuit or of upstream transmission or distribution lines.
…

Section/Subsection of Chapter III "WMP Technical Requirements"	Description	Energy Safety's Findings	Reporting Requirement Modification
5.1 Methodology	"In this section, the electrical corporation must present an overview of its risk calculation approach. This includes a concise narrative explaining key elements of the approach, one or more graphics showing the calculation process, and definitions of different risks and risk components."		The ITO must describe its risk methodology, including risk model components if applicable, using Table 5-1 as a template. No additional summary is required in Appendix B.
5.2 Risk Analysis Framework	"In this section of the WMP, the electrical corporation must provide a high-level overview of its risk analysis framework. This includes a summary of key modeling assumptions, input data, and modeling tools used."		If using risk modeling, the ITO must list all modeling assumptions, input data and sources, and any modeling tools used. The ITO may provide a schematic similar to Figures 5-1 and 5-2 if needed. No additional summary is required in Appendix B of the WMP Guidelines.

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(12) A list that identifies, describes, and prioritizes all wildfire risks, and drivers for those risks, throughout the electrical corporation's service territory, including all relevant wildfire risk and risk mitigation information that is part of the commission's Safety Model Assessment Proceeding (A.15-05-002, et al.) and the Risk Assessment Mitigation Phase filings.
(13) A description of how the plan accounts for the wildfire risk identified in the electrical corporation's Risk Assessment Mitigation Phase filing.
…
(17) Identification of any geographic area in the electrical corporation's service territory that is a higher wildfire threat than is currently identified in a commission fire threat map, and where the commission should consider expanding the high fire threat district based on new information or changes in the environment.
(18) A methodology for identifying and presenting enterprisewide safety risk and wildfire-related risk that is consistent with the methodology used by other electrical corporations unless the commission determines otherwise…"

Section/Subsection of Chapter III "WMP Technical Requirements"	Description	Energy Safety's Findings	Reporting Requirement Modification
5.3 Risk Scenarios	"In this section of the WMP, the electrical corporation must provide a high-level overview of the scenarios to be used in its risk analysis in Section 5.2…"		If using risk modeling, the ITO must describe the different vegetation, weather, or other type scenarios that were used in the modeling presented in Section 5.1 and/or Section 5.2. Table 5-2 serves as a template. Section 5.3 does not apply if the ITO did not model more than one scenario.
5.5 Risk Analysis Results and Presentation	"In this section of the WMP, the electrical corporation must present a high-level overview of the risks calculated using the approaches discussed in Section 5.2 for the scenarios discussed in Section 5.3."		The ITO must identify a list of the highest risk-contributing asset(s) along its system based on risk analysis. The ITO must also report on if its risk analysis triggers proposed changes across its system to the California Public Utilities Commission's (CPUC's) current High Fire Threat Districts (HFTDs).
5.6 Quality Assurance and Control	"The electrical corporation must document the procedures it uses to confirm that the data collected and processed for its risk assessment are accurate and comprehensive. This includes but is not limited to model, sensor, inspection, and risk event data used as part of the electrical corporation's WMP program."		The ITO must report on: • The procedures for independent review of the data and model(s) used • The quality controls in place for the data and model(s).

Section/Subsection of Chapter III "WMP Technical Requirements"	Description	Energy Safety's Findings	Reporting Requirement Modification
5.7 Risk Assessment Improvement Plan	"In this section, the electrical corporation must provide a high-level overview of its plan to improve both programmatic and technical aspects of its risk assessment in at least four key areas. . ."		The ITO must identify any improvements to programmatic and technical aspects of its wildfire risk assessment. Improvements should be categorized under one of the four key areas listed in Section 5.7. Table 5-6 serves as a template.
6. Wildfire Mitigation Strategy Development	"In this section of the WMP, the electrical corporation must provide a high-level overview of the risk evaluation processes that inform its selection of a portfolio of initiative activities, as well as its overall wildfire mitigation strategy."	ITOs have significantly less infrastructure than the large IOUs and SMJUs and do not have service territories.	The ITO must comply with Public Utilities Code section 8386(c)(3), (12), (13) and (14).[124] The ITO does not have to use modeling to develop its wildfire mitigation strategy. However, the ITO must describe its wildfire mitigation strategy, including the process it uses to select mitigations, and any interim mitigation initiatives as indicated in Section 6.2.2. Tables 6-3 and 6-4 serve as templates. The reporting requirements in Section 6.2.1.3 do not apply to ITOs.

[124] Pub. Util. Code § 8386(c) "… (14) A description of the actions the electrical corporation will take to ensure its system will achieve the highest level of safety, reliability, and resiliency, and to ensure that its system is prepared for a major event, including hardening and modernizing its infrastructure with improved engineering, system design, standards, equipment, and facilities, such as undergrounding, insulating of distribution wires, and replacing poles."

Section/Subsection of Chapter III "WMP Technical Requirements"	Description	Energy Safety's Findings	Reporting Requirement Modification
7. Public Safety Power Shutoff	"In this section, the electrical corporation must provide an overview narrative of planned initiative actions to reduce the impacts of PSPS events. Impacts include: • Duration • Frequency • Scope – number of customers"	ITOs do not have end-use customers.	The ITO must comply with Public Utilities Code section 8386(c)(8) in regard to wildfire emergencies and Public Safety Power Shutoff (PSPS) events. Beyond that, the reporting requirements associated with Section 7 do not apply to ITOs.
10.5 Weather Forecasting	"The electrical corporation must describe its systems and procedures used to forecast weather within its service territory."	ITOs have significantly less infrastructure than the large IOUs and SMJUs and do not have service territories.	The ITO must comply with Public Utilities Code section 8386(c)(3). The ITO's weather forecasting systems, processes, and procedures do not have to be informed by modeling. However, the ITO must describe its approach to forecasting the weather and data sources.
10.6 Fire Potential Index	"The electrical corporation must describe its process for calculating its fire potential index (FPI) or a similar landscape-scale index used as a proxy for assessing real-time risk of a wildfire under current and forecasted weather conditions."	ITOs have significantly less infrastructure than the large IOUs and SMJUs and do not have service territories.	The ITO must comply with Public Utilities Code section 8386(c)(3). The ITO must state the data source used or how it determines FPI.

Section/Subsection of Chapter III "WMP Technical Requirements"	Description	Energy Safety's Findings	Reporting Requirement Modification
11.4 Public Communication, Outreach and Education Awareness	"The electrical corporation must describe at a high level its comprehensive communication strategy to inform essential customers and other stakeholder groups of wildfires, outages due to wildfires, and PSPS and service restoration, as required by Public Utilities Code section 768.6."	ITOs do not have end-use customers.	The ITO must comply with Public Utilities Code section 8386(c)(7) and (19)(B).[125] Beyond that, the reporting requirements associated with Section 11.4 do not apply to ITOs.
11.4.4 Engagement with Access and Functional Needs Populations	"The electrical corporation must provide an overview of its process for understanding, evaluating, designing, and implementing wildfire and outage program risk initiative strategies, policies, and procedures specific to AFN customers across its territory."	ITOs do not have end-use customers.	The ITO must comply with Public Utilities Code section 8386(c)(19)(B). Beyond that, the reporting requirements associated with Section 11.4.4 do not apply to ITOs.

[125]Pub. Util. Code § 8386(c) "… (7) A description of the electrical corporation's appropriate and feasible procedures for notifying a customer who may be impacted by the deenergizing of electrical lines, including procedures for those customers receiving medical baseline allowances as described in paragraph (6). The procedures shall direct notification to all public safety offices, critical first responders, health care facilities, and operators of telecommunications infrastructure with premises within the footprint of potential deenergization for a given event. The procedures shall comply with any orders of the commission regarding notifications of deenergization events.
…
(19)(B) Plans for community outreach and public awareness before, during, and after a wildfire, including language notification in English, Spanish, and the top three primary languages used in the state other than English or Spanish, as determined by the commission based on the United States Census data."

Section/Subsection of Chapter III "WMP Technical Requirements"	Description	Energy Safety's Findings	Reporting Requirement Modification
11.5 Customer Support in Wildfire and PSPS Emergencies	"In this section of the WMP, the electrical corporation must provide an overview of its programs, systems, and protocols to support residential and non-residential customers during and after wildfire emergencies and PSPS events."	ITOs do not have end-use customers.	The ITO must comply with Public Utilities Code section 8386(c)(21) in regard to wildfire emergencies and PSPS events.[126] Beyond that, the reporting requirements associated with Section 11.5 do not apply to ITOs.

[126] Pub. Util. Code § 8386(c) "… (21) Protocols for compliance with requirements adopted by the commission regarding activities to support customers during and after a wildfire, outage reporting, support for low-income customers, billing adjustments, deposit waivers, extended payment plans, suspension of disconnection and nonpayment fees, repair processing and timing, access to electrical corporation representatives, and emergency communications."

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Attachment 1: Data Request Log Template

Count	Party Name	DR Set #	Data Request	Question No.	Question ID	Question	Responses	Requestor	Date Rec'd	Final Due Date	Date Sent	Links	Number of Atchs	NDA required	WMP Section	Category	Subcategory

DRAFT WILDFIRE MITIGATION PLAN GUIDELINES

APPENDICES

Appendix A: Definitions

Unless otherwise expressly stated, the following words and terms, for the purposes of these Guidelines, have the meanings shown in this chapter.

Terms Defined in Other Codes

Where terms are not defined in these Guidelines and are defined in the Government Code, Public Utilities Code, or Public Resources Code, such terms have the meanings ascribed to them in those codes.

Terms Not Defined

Where terms are not defined through the methods authorized by this section, such terms have ordinarily accepted meanings such as the context implies.

Definition of Terms

Term	Definition
Access and functional needs population (AFN)	Individuals, including, but not limited to, those who have developmental or intellectual disabilities, physical disabilities, chronic conditions, or injuries; who have limited English proficiency or are non-English speaking; who are older adults, children, or people living in institutionalized settings; or who are low income, homeless, or transportation disadvantaged, including, but not limited to, those who are dependent on public transit or are pregnant. (Gov. Code, § 8593.3(f)(1).)
Asset (utility)	Electric lines, equipment, or supporting hardware.
Benchmarking	A comparison between one electrical corporation's protocols, technologies used, or mitigations implemented, and other electrical corporations' similar endeavors.
Burn likelihood	The likelihood that a wildfire with an ignition point will burn at a specific location within the service territory based on a probabilistic set of weather profiles, vegetation, and topography.

Term	Definition
Catastrophic wildfire	A fire that caused at least one death, damaged over 500 structures, or burned over 5,000 acres.
Circuit miles	The total length in miles of separate transmission and/or distribution circuits, regardless of the number of conductors used per circuit (i.e., different phases).
Circuit segment	A specific portion of an electrical circuit that can be separated or disconnected from the rest of the system without affecting the operation of other parts of the network. This isolation is typically achieved using switches, circuit breakers, or other control mechanisms.
Consequence	The adverse effects from an event, considering the hazard intensity, community exposure, and local vulnerability.
Contact from object ignition likelihood	The likelihood that a non-vegetative object (such as a balloon or vehicle) will contact utility-owned equipment and result in an ignition.
Contact from vegetation likelihood of ignition	The likelihood that vegetation will contact utility-owned equipment and result in an ignition.
Contractor	Any individual in the temporary and/or indirect employ of the electrical corporation whose limited hours and/or time-bound term of employment are not considered “full-time” for tax and/or any other purposes.
Critical facilities and infrastructure	Facilities and infrastructure that are essential to public safety and that require additional assistance and advance planning to ensure resiliency during PSPS events. These include the following: Emergency services sector: Police stations Fire stations

Term	Definition
	Emergency operations centers Public safety answering points (e.g., 9-1-1 emergency services) Government facilities sector: Schools Jails and prisons Health care and public health sector: Public health departments Medical facilities, including hospitals, skilled nursing facilities, nursing homes, blood banks, health care facilities, dialysis centers, and hospice facilities (excluding doctors' offices and other non-essential medical facilities) Energy sector: Public and private utility facilities vital to maintaining or restoring normal service, including, but not limited to, interconnected publicly owned electrical corporations and electric cooperatives Water and wastewater systems sector: Facilities associated with provision of drinking water or processing of wastewater, including facilities that pump, divert, transport, store, treat, and deliver water or wastewater Communications sector: Communication carrier infrastructure, including selective routers, central offices, head ends, cellular switches, remote terminals, and cellular sites Chemical sector: Facilities associated with manufacturing, maintaining, or distributing hazardous materials and chemicals (including Category N-Customers as defined in D.01-06-085)

Term	Definition
	Transportation sector: Facilities associated with transportation for civilian and military purposes: automotive, rail, aviation, maritime, or major public transportation (D.19-05-042 and D.20-05-051)
Customer hours	Total number of customers, multiplied by average number of hours (e.g., of power outage).
Dead fuel moisture	The moisture content of dead organic fuels, expressed as a percentage of the oven dry weight of the sample, that is controlled entirely by exposure to environmental conditions.
Detailed inspection	In accordance with General Order (GO) 165, an inspection where individual pieces of equipment and structures are carefully examined, visually and through routine diagnostic testing, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each is rated and recorded.
Disaster	A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability, and capacity, leading to one or more of the following: human, material, economic, and environmental losses and impacts. The effect of the disaster can be immediate and localized but is often widespread and could last a long time. The effect may test or exceed the capacity of a community or society to cope using its own resources. Therefore, it may require assistance from external sources, which could include neighboring jurisdictions or those at the national or international levels. (United Nations Office for Disaster Risk Reduction [UNDRR].)

Term	Definition
Discussion-based exercise	Exercise used to familiarize participants with current plans, policies, agreements, and procedures or to develop new plans, policies, agreements, and procedures. Often includes seminars, workshops, tabletop exercises, and games.
Electrical corporation	Every corporation or person owning, controlling, operating, or managing any electric plant for compensation within California, except where the producer generates electricity on or distributes it through private property solely for its own use or the use of its tenants and not for sale or transmission to others.
Emergency	Any incident, whether natural, technological, or human caused, that requires responsive action to protect life or property but does not result in serious disruption of the functioning of a community or society. (FEMA/UNDRR.)
Enhanced inspection	Inspection whose frequency and thoroughness exceed the requirements of a detailed inspection, particularly if driven by risk calculations.
Equipment caused ignition likelihood	The likelihood that utility-owned equipment will cause an ignition through either normal operation (such as arcing) or failure.
Exercise	An instrument to train for, assess, practice, and improve performance in prevention, protection, response, and recovery capabilities in a risk-free environment. (FEMA.)
Exposure	The presence of people, infrastructure, livelihoods, environmental services and resources, and other high-value assets in places that could be adversely affected by a hazard.
Fire hazard index	A numerical rating for specific fuel types, indicating the relative probability of fires starting and spreading, and the probable

Term	Definition
	degree of resistance to control; similar to burning index, but without effects of wind speed.[127]
Fire potential index (FPI)	Landscape scale index used as a proxy for assessing real-time risk of a wildfire under current and forecasted weather conditions.
Fire season	The time of year when wildfires are most likely for a given geographic region due to historical weather conditions, vegetative characteristics, and impacts of climate change. Each electrical corporation defines the fire season(s) across its service territory based on a recognized fire agency definition for the specific region(s) in California.
Fireline intensity	The rate of heat release per unit time per unit length of fire front. Numerically, it is the product of the heat yield, the quantity of fuel consumed in the fire front, and the rate of spread.[128]
Frequency	The anticipated number of occurrences of an event or hazard over time.
Frequent PSPS events	Three or more PSPS events per calendar year per line circuit.
Fuel continuity	The degree or extent of continuous or uninterrupted distribution of fuel particles in a fuel bed thus affecting a fire's ability to sustain combustion and spread. This applies to aerial fuels as well as surface fuels.[129]
Fuel density	Mass of fuel (vegetation) per area that could combust in a wildfire.

[127] National Wildfire Coordinating Group: https://www.nwcg.gov/node/393188 (accessed May 9, 2024).

[128] National Wildfire Coordinating Group: https://www.nwcg.gov/node/447140 (accessed May 9, 2024).

[129] National Wildfire Coordinating Group: https://www.nwcg.gov/node/444281 (accessed May 9, 2024).

Term	Definition
Fuel management	Act or practice of controlling flammability and reducing resistance to control of wildland fuels through mechanical, chemical, biological, or manual means, or by fire, in support of land management objectives.[130]
Fuel moisture content	Amount of moisture in a given mass of fuel (vegetation), measured as a percentage of its dry weight.
Full-time employee (FTE)	Any individual in the ongoing and/or direct employ of the electrical corporation whose hours and/or term of employment are considered "full-time" for tax and/or any other purposes.
GO 95 nonconformance	Condition of a utility asset that does not meet standards established by GO 95.
Grid hardening	Actions (such as equipment upgrades, maintenance, and planning for more resilient infrastructure) taken in response to the risk of undesirable events (such as outages) or undesirable conditions of the electrical system to reduce or mitigate those events and conditions, informed by an assessment of the relevant risk drivers or factors.
Grid topology	General design of an electric grid, whether looped or radial, with consequences for reliability and ability to support PSPS (e.g., ability to deliver electricity from an additional source).
Hazard	A condition, situation, or behavior that presents the potential for harm or damage to people, property, the environment, or other valued resources.

[130] National Wildfire Coordinating Group: https://www.nwcg.gov/node/386549 (accessed May 9, 2024).

Term	Definition
Hazard tree	A tree that is, or has portions that are, dead, dying, rotten, diseased, or otherwise has a structural defect that may fail in whole or in part and damage utility facilities should it fail
High Fire Threat District (HFTD)	Areas of the state designated by the CPUC as having elevated wildfire risk, where each utility must take additional action (per GO 95, GO 165, and GO 166) to mitigate wildfire risk. (D.17-01-009.)
High Fire Risk Area (HFRA)	Areas that the electrical corporation has deemed at high risk from wildfire, independent of HFTD designation.
Highly rural region	Area with a population of less than seven persons per square mile, as determined by the United States Bureau of the Census. For purposes of the WMP, "area" must be defined as a census tract.
High-risk species	Species of vegetation that (1) have a higher risk of either coming into contact with powerlines or causing an outage or ignition, or (2) are easily ignitable and within close proximity to potential arcing, sparks, and/or other utility equipment thermal failures. The status of species as "high-risk" must be a function of species-specific characteristics, including growth rate; failure rates of limbs, trunk, and/or roots (as compared to other species); height at maturity; flammability; and vulnerability to disease or insects.
High wind warning (HWW)	Level of wind risk from weather conditions, as declared by the National Weather Service (NWS). For historical NWS data, refer to the Iowa State University archive of NWS watches/warnings.[131]
HWW overhead (OH) circuit mile day	Sum of OH circuit miles of utility grid subject to a HWW each day within a given time period, calculated as the number of OH circuit miles under a HWW multiplied by the number of days those miles are under said HWW. For example, if 100 OH circuit miles are under a HWW for one day, and 10 of those miles are under the

[131] https://mesonet.agron.iastate.edu/request/gis/watchwarn.phtml.

Term	Definition
	HWW for an additional day, then the total HWW OH circuit mile days would be 110.
Ignition likelihood	The total anticipated annualized number of ignitions resulting from electrical corporation-owned assets at each location in the electrical corporation's service territory. This considers probabilistic weather conditions, type and age of equipment, and potential contact of vegetation and other objects with electrical corporation assets. This should include the use of any method used to reduce the likelihood of ignition. For example, the use of protective equipment and device settings (PEDS) to reduce the likelihood of an ignition upon an initiating event.
Incident command system (ICS)	A standardized on-scene emergency management concept specifically designed to allow its user(s) to adopt an integrated organizational structure equal to the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries.
Initiative activity	See mitigation activity.
Initiative construction standards	The standard specifications, special provisions, standards of practice, standard material and construction specifications, construction protocols, and construction methods that an electrical corporation applies to activities undertaken by the electrical corporation pursuant to a WMP initiative in a given compliance period.
Level 1 finding	In accordance with GO 95, an immediate safety and/or reliability risk with high probability for significant impact.
Level 2 finding	In accordance with GO 95, a variable safety and/or reliability risk (non-immediate and with high to low probability for significant impact).

Term	Definition
Level 3 finding	In accordance with GO 95, an acceptable safety and/or reliability risk.
Limited English proficiency (LEP) population	Population with limited English working proficiency based on the International Language Roundtable scale.
Line miles	The number of miles of transmission and/or distribution conductors, including the length of each phase and parallel conductor segment.
Live fuel moisture content	Moisture content within living vegetation, which can retain water longer than dead fuel.
Locally relevant	In disaster risk management, generally understood as the cope at which disaster risk strategies and initiatives are considered the most effective at achieving desired outcomes. This tends to be the level closest to impacting residents and communities, reducing existing risks, and building capacity, knowledge, and normative support. Locally relevant scales, conditions, and perspectives depend on the context of application.
Match-drop simulation	Wildfire simulation method forecasting propagation and consequence/impact based on an arbitrary ignition.
Memorandum of Agreement (MOA)	A document of agreement between two or more agencies establishing reciprocal assistance to be provided upon request (and if available from the supplying agency) and laying out the guidelines under which this assistance will operate. It can also be a cooperative document in which parties agree to work together on an agreed-upon project or meet an agreed objective.
Mitigation	Undertakings to reduce the loss of life and property from natural and/or human-caused disasters by avoiding or lessening the impact of a disaster and providing value to the public by creating

Term	Definition
	safer communities. Encompasses mitigation categories, mitigation initiatives, and mitigation activities within the WMP.
Mitigation activity	A measure that contributes to or accomplishes a mitigation initiative designed to reduce the consequences and/or probability of wildfire or outage event. For example, covered conductor installation is a mitigation activity under the mitigation initiative of Grid Design and System Hardening.
Mitigation category	The highest subset in the WMP mitigation hierarchy. There are five Mitigation Categories in total: Grid Design, Operations, and Maintenance; Vegetation Management and Inspections; Situational Awareness and Forecasting; Emergency Preparedness; and Enterprise Systems. Contains mitigation initiatives and any subsequent mitigation activities.
Mitigation initiative	Efforts within a mitigation category either proposed or in process, designed to reduce the consequences and/or probability of wildfire or outage event. For example, Asset Inspection is a mitigation initiative under the mitigation category of Grid Design, Operations, and Maintenance.
Model uncertainty	The amount by which a calculated value might differ from the true value when the input parameters are known (i.e., limitation of the model itself based on assumptions).[132]

[132] Adapted from SFPE, 2010, "Substantiating a Fire Model for a Given Application," *Society of Fire Protection Engineers Engineering Guides*.

Term	Definition
Mutual aid	Voluntary aid and assistance by the provision of services and facilities, including but not limited to electrical corporations, communication, and transportation. Mutual aid is intended to provide adequate resources, facilities, and other support to an electrical corporation whenever its own resources prove inadequate to cope with a given situation.
National Incident Management System (NIMS)	A systematic, proactive approach to guide all levels of government, nongovernment organizations, and the private sector to work together to prevent, protect against, mitigate, respond to, and recover from the effects of incidents. NIMS provides stakeholders across the whole community with the shared vocabulary, systems, and processes to successfully deliver the capabilities described in the National Preparedness System. NIMS provides a consistent foundation for dealing with all incidents, ranging from daily occurrences to incidents requiring a coordinated federal response.
Operations-based exercise	Type of exercise that validates plans, policies, agreements, and procedures; clarifies roles and responsibilities; and identifies resource gaps in an operational environment. Often includes drills, functional exercises (FEs), and full-scale exercises (FSEs).
Outage program risk	The measure of reliability impacts from wildfire mitigation related outages at a given location.
Overall utility risk	The comprehensive risk due to both wildfire and PSPS incidents across a utility's territory; the aggregate potential of adverse impacts to people, property, critical infrastructure, or other valued assets in society.
Overall utility risk, PSPS risk	See Outage program risk.

Term	Definition
Parameter uncertainty	The amount by which a calculated value might differ from the true value based on unknown input parameters. (Adapted from Society of Fire Protection Engineers [SFPE] guidance.)
Patrol inspection	In accordance with GO 165, a simple visual inspection of applicable utility equipment and structures designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.
Performance metric	A quantifiable measurement that is used by an electrical corporation to indicate the extent to which its WMP is driving performance outcomes.
Population density	Population density is calculated using the American Community Survey (ACS) one-year estimate for the corresponding year or, for years with no such ACS estimate available, the estimate for the immediately preceding year.
Preparedness	A continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action in an effort to ensure effective coordination during incident response. Within the NIMS, preparedness focuses on planning, procedures and protocols, training and exercises, personnel qualification and certification, and equipment certification.
Priority essential services	Critical first responders, public safety partners, critical facilities and infrastructure, operators of telecommunications infrastructure, and water electrical corporations/agencies.
Property	Private and public property, buildings and structures, infrastructure, and other items of value that may be destroyed by wildfire, including both third-party property and utility assets.

Term	Definition
Protective equipment and device settings (PEDS)	The electrical corporation's procedures for adjusting the sensitivity of grid elements to reduce wildfire risk, other than automatic reclosers (such as circuit breakers, switches, etc.). For example, PG&E's "Enhanced Powerline Safety Settings" (EPSS).
PEDS outage consequence	The total anticipated adverse effects from an outage occurring while increased sensitivity settings on a protective device are enabled at a specific location, including reliability and associated safety impacts.
PEDS outage exposure potential	The potential physical, social, or economic impact of an outage occurring when PEDS are enabled on people, property, critical infrastructure, livelihoods, health, local economies, and other high-value assets.
PEDS outage likelihood	The likelihood of an outage occurring while increased sensitivity settings on a protective device are enabled at a specific location given a probabilistic set of environmental conditions.
PEDS outage risk	The total expected annualized impacts from PEDS enablement at a specific location.
PEDS outage vulnerability	The susceptibility of people or a community to adverse effects of an outage occurring when PEDS are enabled, including all characteristics that influence their capacity to anticipate, cope with, resist, and recover from the related adverse effects (e.g., high AFN population, poor energy resiliency, low socioeconomics).
PSPS consequence	The total anticipated adverse effects of a PSPS for a community. This considers the PSPS exposure potential and inherent PSPS vulnerabilities of communities at risk.

Term	Definition
PSPS event	The period from notification of the first public safety partner of a planned public safety PSPS to re-energization of the final customer.
PSPS exposure potential	The potential physical, social, or economic impact of a PSPS event on people, property, critical infrastructure, livelihoods, health, local economies, and other high-value assets.
PSPS likelihood	The likelihood of an electrical corporation requiring a PSPS given a probabilistic set of environmental conditions.
PSPS risk	The total expected annualized impacts from PSPS at a specific location. This considers two factors: (1) the likelihood a PSPS will be required due to environmental conditions exceeding design conditions, and (2) the potential consequences of the PSPS for each affected community, considering exposure potential and vulnerability.
PSPS vulnerability	The susceptibility of people or a community to adverse effects of a PSPS event, including all characteristics that influence their capacity to anticipate, cope with, resist, and recover from the adverse effects of a PSPS event (e.g., high AFN population, poor energy resiliency, low socioeconomics).
Public safety partners	First/emergency responders at the local, state, and federal levels; water, wastewater, and communication service providers; community choice aggregators (CCAs); affected publicly owned electrical corporations/electrical cooperatives; tribal governments; Energy Safety; the Commission; the California Office of Emergency Services; and CAL FIRE.
Qualitative target	Specific, measurable, achievable, realistic, and timely outcomes for the overall WMP strategy, or mitigation initiatives and activities that a utility can implement to satisfy the primary goals and subgoals of the WMP program.

Term	Definition
Quantitative target	A forward-looking, quantifiable measurement of work to which an electrical corporation commits to in its WMP. Electrical corporations will show progress toward completing targets in subsequent reports, including data submissions and WMP Updates.
RFW OH circuit mile day	Sum of OH circuit miles of utility grid subject to RFW each day within a given time period, calculated as the number of OH circuit miles under RFW multiplied by the number of days those miles are under said RFW. For example, if 100 OH circuit miles are under RFW for one day, and 10 of those miles are under RFW for an additional day, then the total RFW OH circuit mile days would be 110.
Risk	A measure of the anticipated adverse effects from a hazard considering the consequences and frequency of the hazard occurring.[133]
Risk component	A part of an electric corporation's risk analysis framework used to determine overall utility risk.
Risk evaluation	The process of comparing the results of a risk analysis with risk criteria to determine whether the risk and/or its magnitude is acceptable or tolerable. (ISO 31000:2009.)

[133] Adapted from D. Coppola, 2020, "Risk and Vulnerability," *Introduction to International Disaster Management*, 4th ed.

Term	Definition
Risk event	An event with probability of ignition, such as wire down, contact with objects, line slap, event with evidence of heat generation, or other event that causes sparking or has the potential to cause ignition. The following all qualify as risk events: • Ignitions • Outages not caused by vegetation • Outages caused by vegetation • Wire-down events • Faults • Other events with potential to cause ignition
Risk management	Systematic application of management policies, procedures, and practices to the tasks of communication, consultation, establishment of context, and identification, analysis, evaluation, treatment, monitoring, and review of risk. (ISO 31000.)
Rule	Section of Public Utilities Code requiring a particular activity or establishing a particular threshold.
Rural region	In accordance with GO 165, area with a population of less than 1,000 persons per square mile, as determined by the U.S. Bureau of the Census. For purposes of the WMP, "area" must be defined as a census tract.
Seminar	An informal discussion, designed to orient participants to new or updated plans, policies, or procedures (e.g., to review a new external communications standard operating procedure).
Sensitivity analysis	Process used to determine the relationships between the uncertainty in the independent variables ("input") used in an analysis and the uncertainty in the resultant dependent variables ("output"). (SFPE guidance.)

Term	Definition
Situational Awareness	An on-going process of gathering information by observation and by communication with others. This information is integrated to create an individual's perception of a given situation.[134]
Slash	Branches or limbs less than four inches in diameter, and bark and split products debris left on the ground as a result of utility vegetation management.[135]
Span	The space between adjacent supporting poles or structures on a circuit consisting of electric lines and equipment. "Span level" refers to asset-scale granularity.
Tabletop exercise (TTX)	A discussion-based exercise intended to stimulate discussion of various issues regarding a hypothetical situation. Tabletop exercises can be used to assess plans, policies, and procedures or to assess types of systems needed to guide the prevention of response to, or recovery from a defined incident.
Trees with strike potential	Trees that could either, in whole or in part, “fall in” to a power line or have portions detach and “fly in” to contact a power line in high-wind conditions.
Uncertainty	The amount by which an observed or calculated value might differ from the true value. For an observed value, the difference is “experimental uncertainty”; for a calculated value, it is “model” or “parameter uncertainty.” (Adapted from SFPE guidance.)
Urban region	In accordance with GO 165, area with a population of more than 1,000 persons per square mile, as determined by the U.S. Bureau of the Census. For purposes of the WMP, “area” must be defined as a census tract.

[134] https://www.nwcg.gov/node/439827 (assessed May 13, 2024).

[135] California Public Resources Code section 4525.7.

Term	Definition
Utility-related ignition	An event that meets the criteria for a reportable event subject to fire-related reporting requirements.[136]
Validation	Process of determining the degree to which a calculation method accurately represents the real world from the perspective of the intended uses of the calculation method without modifying input parameters based on observations in a specific scenario. (Adapted from ASTM E 1355.)
Vegetation management (VM)	The assessment, intervention, and management of vegetation, including pruning and removal of trees and other vegetation around electrical infrastructure for safety, reliability, and risk reduction.
Verification	Process to ensure that a model is working as designed, that is, that the equations are being properly solved. Verification is essentially a check of the mathematics. (SFPE guidance.)
Vulnerability	The propensity or predisposition of a community to be adversely affected by a hazard, including the characteristics of a person, group, or service and their situation that influences their capacity to anticipate, cope with, resist, and recover from the adverse effects of a hazard.
Wildfire consequence	The total anticipated adverse effects from a wildfire on a community that is reached. This considers the wildfire hazard intensity, the wildfire exposure potential, and the inherent wildfire vulnerabilities of communities at risk.

[136] CPUC Decision 14-02-015, Appendix C, page C-3: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M087/K892/87892306.PDF.

Term	Definition
Wildfire exposure potential	The potential physical, social, or economic impact of wildfire on people, property, critical infrastructure, livelihoods, health, environmental services, local economies, cultural/historical resources, and other high-value assets. This may include direct or indirect impacts, as well as short- and long-term impacts.
Wildfire hazard intensity	The potential intensity of a wildfire at a specific location within the service territory given a probabilistic set of weather profiles, vegetation, and topography.
Wildfire likelihood	The total anticipated annualized number of fires reaching each spatial location resulting from utility-related ignitions at each location in the electrical corporation service territory. This considers the ignition likelihood and the likelihood that an ignition will transition into a wildfire based on the probabilistic weather conditions in the area.
Wildfire mitigation strategy	Overview of the key mitigation initiatives at enterprise level and component level across the electrical corporation's service territory, including interim strategies where long-term mitigation initiatives have long implementation timelines. This includes a description of the enterprise-level monitoring and evaluation strategy for assessing overall effectiveness of the WMP.
Wildfire risk	The total expected annualized impacts from ignitions at a specific location. This considers the likelihood that an ignition will occur, the likelihood the ignition will transition into a wildfire, and the potential consequences—considering hazard intensity, exposure potential, and vulnerability—the wildfire will have for each community it reaches.

Term	Definition
Wildfire spread likelihood	The likelihood that a fire with a nearby but unknown ignition point will transition into a wildfire and will spread to a location in the service territory based on a probabilistic set of weather profiles, vegetation, and topography.
Wildfire vulnerability	The susceptibility of people or a community to adverse effects of a wildfire, including all characteristics that influence their capacity to anticipate, cope with, resist, and recover from the adverse effects of a wildfire (e.g., AFN customers, Social Vulnerability Index, age of structures, firefighting capacities).
Wildland-urban interface (WUI)	The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetation fuels (National Wildfire Coordinating Group).
Wire down	Instance where an electric transmission or distribution conductor is broken and falls from its intended position to rest on the ground or a foreign object.
Work order	A prescription for asset or vegetation management activities resulting from asset or vegetation management inspection findings.
Workshop	Discussion that resembles a seminar but is employed to build specific products, such as a draft plan or policy (e.g., a multi-year training and exercise plan).

Definitions of Initiatives by Category

Category	Section #	Initiative	Definition
Risk Methodology and Assessment	5	Risk Methodology and Assessment	Development and use of tools and processes to assess the risk of wildfire and PSPS across an electrical corporation's service territory.
Wildfire Mitigation Strategy	6	Wildfire Mitigation Strategy Development	Development and use of processes for deciding on a portfolio of mitigation initiatives to achieve maximum feasible risk reduction and that meet the goals of the WMP.
Grid Design, Operations, and Maintenance	8.2	Grid Design and System Hardening	Strengthening of distribution, transmission, and substation infrastructure to reduce the risk of utility-related ignitions resulting in catastrophic wildfires.
Grid Design, Operations, and Maintenance	8.3	Asset Inspections	Inspections of overhead electric transmission lines, equipment, and right-of-way.
Grid Design, Operations, and Maintenance	8.4	Equipment Maintenance and Repair	Remediation, adjustments, or installations of new equipment to improve or replace existing connector equipment, such as hotline clamps.
Grid Design, Operations, and Maintenance	8.5	Quality Assurance and Quality Control	Establishment and function of audit process to manage and confirm work completed by employees or contractors, including packaging QA/QC information for input to

Category	Section #	Initiative	Definition
			decision-making and related integrated workforce management processes.
Grid Design, Operations, and Maintenance	8.6	Work Orders	Actions taken to manage the electrical corporation's open work orders resulting from inspections that prescribe asset management activities.
Grid Design, Operations, and Maintenance	8.7	Grid Operations and Procedures	Operations and procedures to reduce across the electrical corporation's system to reduce wildfire risk.
Grid Design, Operations, and Maintenance	8.8	Workforce Planning	Programs to ensure that the electrical corporation has qualified asset personnel and to ensure that both employees and contractors tasked with asset management responsibilities are adequately trained to perform relevant work.
Vegetation Management and Inspections	9.2	Vegetation Management Inspections	Inspections of vegetation around and adjacent to electrical facilities and equipment that may be hazardous by growing, blowing, or falling into electrical facilities or equipment.
Vegetation Management and Inspections	9.3	Pruning and Removal	Pruning, removal, and other vegetation management activities that are performed as a result of inspections.

Category	Section #	Initiative	Definition
Vegetation Management and Inspections	9.4	Pole Clearing	Plan and execution of vegetation removal around poles per Public Resources Code section 4292 and outside the requirements of Public Resources Code section 4292 (e.g., pole clearing performed outside of the State Responsibility Area).
Vegetation Management and Inspections	9.5	Wood and Slash Management	Actions taken to manage all downed wood and "slash" generated from vegetation management activities.
Vegetation Management and Inspections	9.6	Defensible Space	Actions taken to reduce ignition probability and wildfire consequence due to contact with substation equipment.
Vegetation Management and Inspections	9.7	Integrated Vegetation Management	Actions taken in accordance with Integrated Vegetation Management principles that are not covered by another initiative.
Vegetation Management and Inspections	9.8	Partnerships	Collaboration of of resources, expertise, and efforts to accomplish agreed upon objectives related to wildfire risk reduction achieved through vegetation management.
Vegetation Management and Inspections	9.9	Activities Based on Weather Conditions	Actions taken in accordance with weather condition forecasts that indicate an elevated fire threat in terms of ignition probability and wildfire potential.

Category	Section #	Initiative	Definition
Vegetation Management and Inspections	9.10	Post-Fire Service Restoration	Actions taken during post-fire restoration to restore power while active fire suppression is ongoing and actions that occur following active fire suppression during the post-fire suppression repair and rehabilitation phases of fire protection operations.
Vegetation Management and Inspections	9.11	Quality Assurance and Quality Control	Establishment and function of audit process to manage and confirm work completed by employees or contractors, including packaging QA/QC information for input to decision-making and related integrated workforce management processes.
Vegetation Management and Inspections	9.12	Work Orders	Actions taken to manage the electrical corporation's open work orders resulting from inspections that prescribe vegetation management activities.
Vegetation Management and Inspections	9.13	Workforce Planning	Programs to ensure that the electrical corporation has qualified personnel and to ensure that both employees and contractors tasked with vegetation management responsibilities are adequately trained to perform relevant work.

Category	Section #	Initiative	Definition
Situational Awareness and Forecasting	10.2	Environmental Monitoring Systems	Development and deployment of systems which measure environmental characteristics, such as fuel moisture, air temperature, and velocity.
Situational Awareness and Forecasting	10.3	Grid Monitoring Systems	Development and deployment of systems that checks the operational conditions of electrical facilities and equipment and detects such things as faults, failures, and recloser operations.
Situational Awareness and Forecasting	10.4	Ignition Detection Systems	Development and deployment of systems which discover or identify the presence or existence of an ignition, such as cameras.
Situational Awareness and Forecasting	10.5	Weather Forecasting	Development methodology for forecast of weather conditions relevant to electrical corporation 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.
Situational Awareness and Forecasting	10.6	Fire Potential Index	Calculation and application of a landscape scale index used as a proxy for assessing real-time risk of a wildfire under current and forecasted weather conditions.

Category	Section #	Initiative	Definition
Emergency Preparedness, Collaboration and Public Awareness	11.2	Emergency Preparedness and Recovery Plan	Development and integration of wildfire- and PSPS-specific emergency strategies, practices, policies, and procedures into the electrical corporation's overall emergency plan based on the minimum standards described in GO 166.
Emergency Preparedness, Collaboration and Public Awareness	11.3	External Collaboration and Coordination	• Actions taken to coordinate wildfire and PSPS emergency preparedness with relevant public safety partners including the state, cities, counties, and tribes. • Development and integration of plans, programs, and/or policies for collaborating with communities on local wildfire mitigation planning, such as wildfire safety elements in general plans, community wildfire protection plans, and local multi-hazard mitigation plans.
Emergency Preparedness, Collaboration and Public Awareness	11.4	Public Communication, Outreach, and Education Awareness	• Development and integration of a comprehensive communication strategy to inform essential customers and other stakeholder groups of wildfires, outages due to wildfires, and PSPS and service

Category	Section #	Initiative	Definition
			restoration, as required by Public Utilities Code section 768.6. • Development and deployment of public outreach and education awareness program(s) for wildfires; outages due to wildfires, PSPS events, and protective equipment and device settings; service restoration before, during, and after the incidents and vegetation management. • Actions taken understand, evaluate, design, and implement wildfire and PSPS risk mitigation strategies, policies, and procedures specific to access and functional needs customers.
Emergency Preparedness, Collaboration and Public Awareness	11.5	Customer Support in Wildfire and PSPS Emergencies	Development and deployment of programs, systems, and protocols to support residential and non-residential customers in wildfire emergencies and PSPS events.
Enterprise Systems	12	Enterprise Systems Development	Structures and methods that allow the electrical corporation and its employees and/or contractors to accept, store, retrieve, and update data for the production, management, and scheduling of related work.

Definitions of Activities by Initiative

Initiative	Section #	Activity	Definition
Grid Design and System Hardening	8.2.1	Covered conductor installation	Installation of covered or insulated conductors to replace standard bare or unprotected conductors (defined in accordance with GO 95 as supply conductors, including but not limited to lead wires, not enclosed in a grounded metal pole or not covered by: a "suitable protective covering" (in accordance with Rule 22.8), grounded metal conduit, or grounded metal sheath or shield). In accordance with GO 95, conductor is defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency (12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D.

Initiative	Section #	Activity	Definition
Grid Design and System Hardening	8.2.2	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).
Grid Design and System Hardening	8.2.3	Distribution pole replacements and reinforcements	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.
Grid Design and System Hardening	8.2.4	Transmission pole/tower replacements and reinforcements	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).
Grid Design and System Hardening	8.2.5	Traditional overhead hardening	Maintenance, repair, and replacement of capacitors, circuit breakers, cross-arms, transformers, fuses, and connectors (e.g., hot line clamps) with the intention of minimizing the risk of ignition.
Grid Design and System Hardening	8.2.6	Emerging grid hardening technology installations and pilots	Development, deployment, and piloting of novel grid hardening technology.
Grid Design and System Hardening	8.2.7	Microgrids	Development and deployment of microgrids that may reduce the risk of ignition, risk from PSPS, and wildfire consequence. “Microgrid” is

Initiative	Section #	Activity	Definition
			defined by Public Utilities Code section 8370(d).
Grid Design and System Hardening	8.2.8	Installation of system automation equipment	Installation of electric equipment that increases the ability of the electrical corporation to automate system operation and monitoring, including equipment that can be adjusted remotely such as automatic reclosers (switching devices designed to detect and interrupt momentary faults that can reclose automatically and detect if a fault remains, remaining open if so).
Grid Design and System Hardening	8.2.9	Line removals (in HFTD)	Removal of overhead lines to minimize the risk of ignition due to the design, location, or configuration of electric equipment in HFTDs.
Grid Design and System Hardening	8.2.10	Other grid topology improvements to minimize risk of ignitions	Actions taken to minimize the risk of ignition due to the design, location, or configuration of electric equipment in HFTDs not covered by another initiative.
Grid Design and System Hardening	8.2.11	Other grid topology improvements to mitigate or reduce PSPS events	Actions taken to mitigate or reduce PSPS events in terms of geographic scope and number of customers affected not covered by another initiative.
Grid Design and System Hardening	8.2.12	Other technologies and systems not listed above	Other grid design and system hardening actions which the electrical corporation takes to reduce its ignition and PSPS risk not otherwise covered by other initiatives in this section.
Grid Operations and Procedures	8.7.1	Equipment Settings to Reduce Wildfire Risk	The electrical corporation's procedures for adjusting the sensitivity of grid elements to reduce wildfire risk.

Initiative	Section #	Activity	Definition
Grid Operations and Procedures	8.7.2	Grid Response Procedures and Notifications	The electrical corporation's procedures it uses to respond to faults, ignitions, or other issues detected on its grid that may result in a wildfire.
Grid Operations and Procedures	8.7.3	Personnel Work Procedures and Training in Conditions of Elevated Fire Risk	Work activity guidelines that designate what type of work can be performed during operating conditions of different levels of wildfire risk. Training for personnel on these guidelines and the procedures they prescribe, from normal operating procedures to increased mitigation measures to constraints on work performed.

Appendix B: Supporting Documentation for Risk Methodology and Assessment

Note: As part of its WMP, the electrical corporation is required to provide the "Summary Documentation" as defined by this appendix. For all other requirements in this appendix, the electrical corporation must be readily able to provide the defined documentation in response to a data request by Energy Safety or designated stakeholders.

The risk modeling and assessment in the main body of these Guidelines and electrical corporation's WMP are focused on providing a streamlined overview of the electrical corporation risk framework and key findings from the assessment necessary to understand the wildfire mitigation strategy presented in Chapter III, Section 6.

The focus of this appendix is to provide additional information pertaining to the risk modeling approach used by the electrical corporation. This includes the following:

- Additional detail on model calculations supporting the calculation of risk and risk components
- Additional detail on the calculation of risk and risk components
- More detailed presentation of the risk findings

The following sections establish the reporting requirements for the approaches used by the electrical corporation to calculate each risk and risk component. These have been synthesized and adapted from guidance documents on model quality assurance developed by many agencies, with a focus on guidance related to machine learning, artificial intelligence, and fire science and engineering. These guidance documents include those from the Institute of Electrical and Electronics Engineers (IEEE), [137] the Society of Fire Protection

[137] IEEE, 2022, "P2841/D2: Draft Framework and Process for Deep Learning Evaluation."

Engineers (SFPE), [138] the American Society for Testing and Materials (ASTM International), [139] the U.S. Nuclear Regulatory Commission (NRC), [140] the Electric Power Research Institute (EPRI),[52] the National Institute of Standards and Technology (NIST), [141] and the International Organization for Standardization (ISO). [142]

Model Inventory

The electrical corporation must provide a model inventory listing all models and associated inputs and outputs used in the development of the WMP. The model inventory should follow the below format:

Model Name	Model Description	Inputs	Outputs

[138] SFPE, 2010, "Substantiating a Fire Model for a Given Application," Engineering Guides.

[139] ASTM, 2005, "ASTM E1472: Standard Guide for Documenting Computer Software for Fire Models," ASTM International.

ASTM, 2005, "ASTM E1895: Standard Guide for Determining Uses and Limitations of Deterministic Fire Models," ASTM International.

ASTM, 2005, "ASTM E1355: Standard Guide for Evaluating the Predictive Capability of Deterministic Fire Models," ASTM International.

[140] U.S. NRC, EPRI, Jensen Hughes, NIST, 2016, "NUREG-1824: Verification and Validation of Selected Fire Models for Nuclear Power Plant Applications. Supplement 1."

U.S. NRC, EPRI, Hughes Associates, Inc., NIST, California Polytechnic State University, Westinghouse Electric Company, University of Maryland, Science Applications International Corporation, ERIN Engineering, 2012, "NUREG-1934: Nuclear Power Plant Fire Modeling Application Guide."

[141] NIST, 1981, "NBS SP 500-73: Computer Model Documentation Guide."

[142] ISO, 2013, "ISO/TR 16730:2013: Fire Safety Engineering: Assessment, Verification and Validation of Calculation Methods."

ISO, 2021, "ISO/IEC TR 24027:2021: Information Technology: Artificial Intelligence (AI) – Bias in AI Systems and AI Aided Decision Making."

ISO, 2021, "ISO/IEC TR 24029:2021: Artificial Intelligence (AI): Assessment of the Robustness of Neural Networks."

Summary Documentation

The electrical corporation must provide high-level information on the calculation of each risk and risk component used in its risk analysis. The summary documentation must include each of the following:

- **High-level bow tie schematic** showing the inputs, outputs, and interaction between risk components in the format shown in Figure B-1. An example is provided below.
- **High-level calculation procedure schematic** in the format shown in Figure B-2. This schematic must show the logical flow from input data to outputs, including separate items for any intermediate calculations in models or sub-models and any input from subject matter experts.
- **High-level narrative describing the calculation procedure** in a concise executive summary. This narrative must include the following:
  - Purpose of the calculation/model.
  - Assumptions and limitations.
  - Description of the calculation procedure shown in the bow tie and high-level schematics.
  - Description of how outputs will be characterized and presented (e.g., visualization) to decision makers.
  - Concise description and timeline of planned changes to the calculation procedure over the triennial WMP cycle.

Figure B-1. Example Bow Tie Schematic

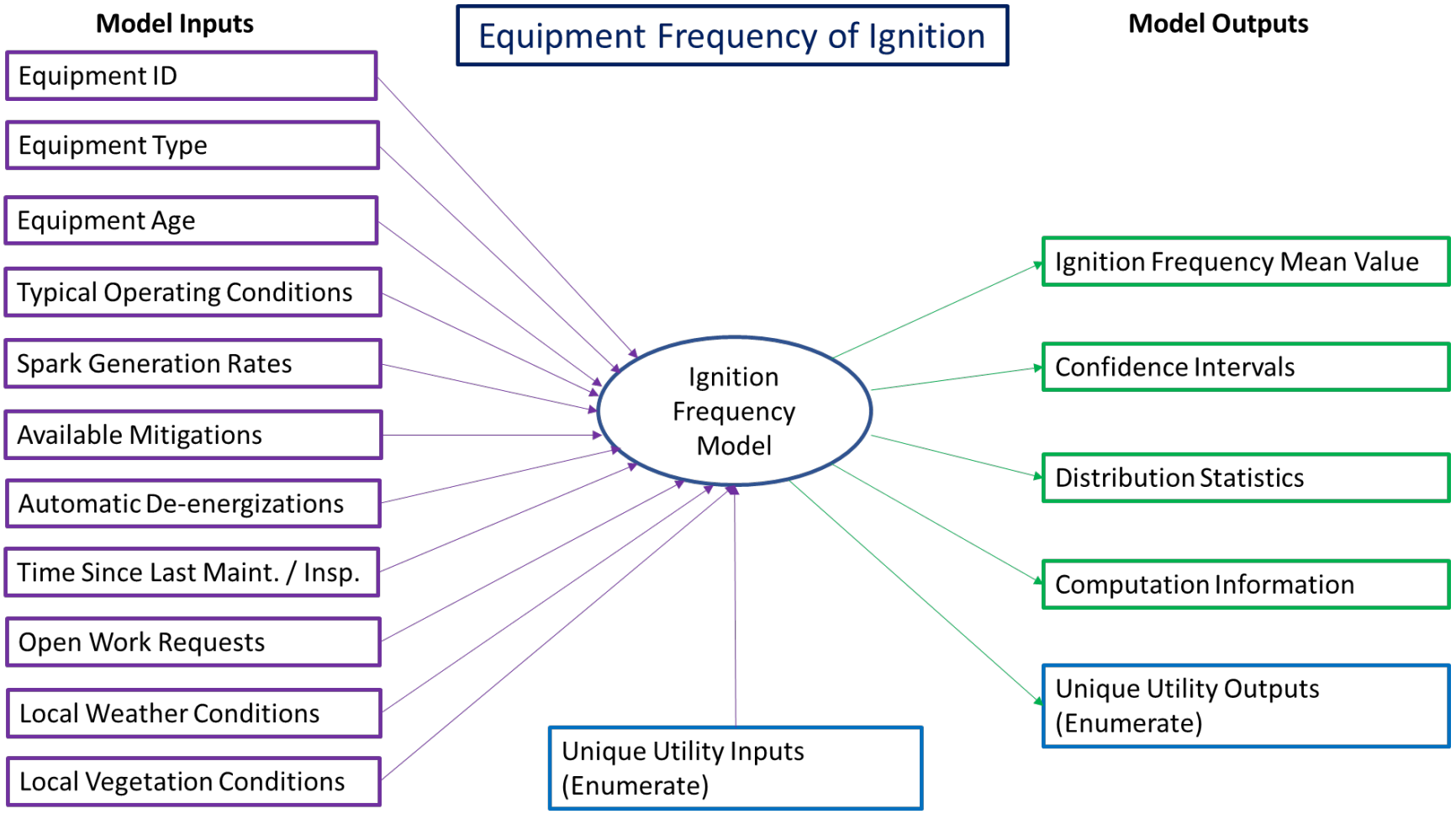
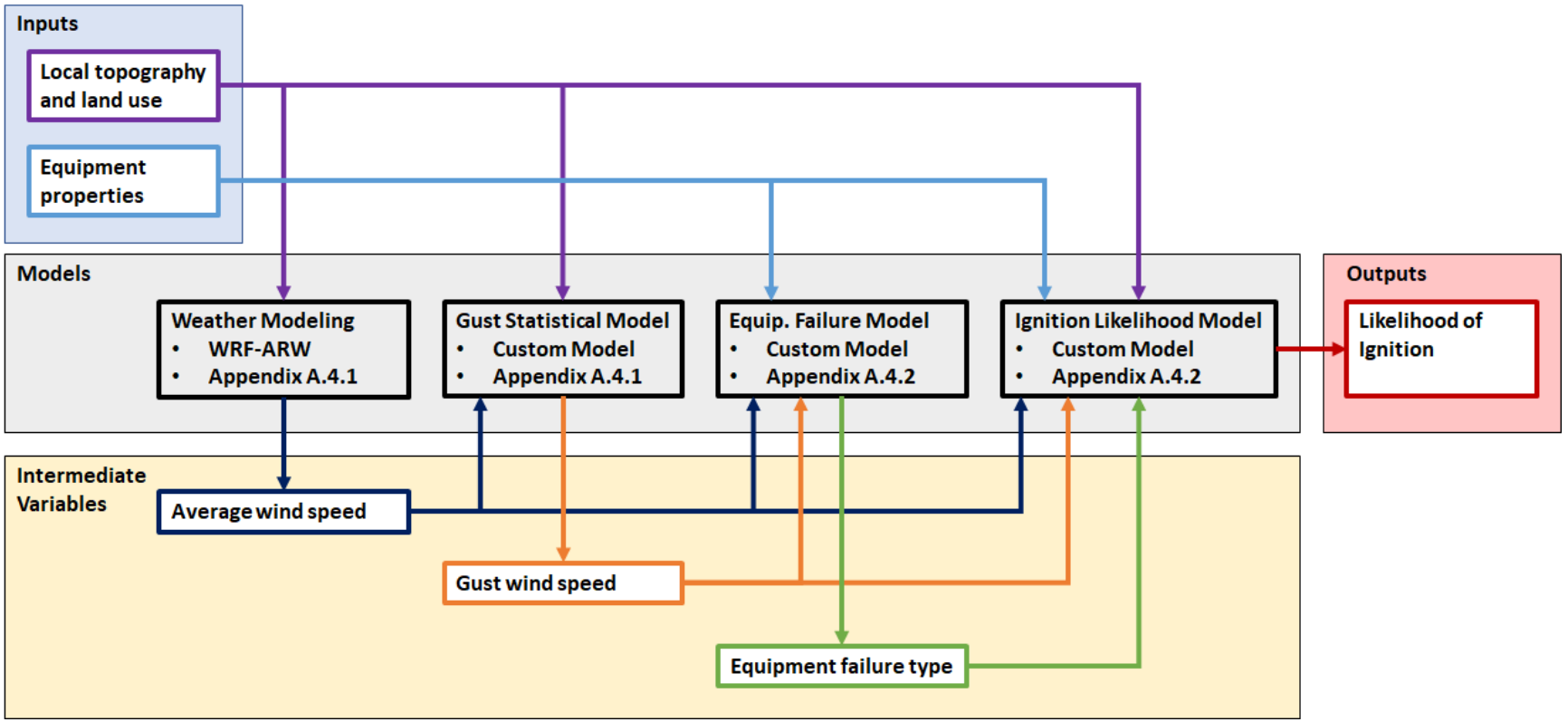


Figure B-2. Example Calculation Schematic



Detailed Model Documentation

The electrical corporation must be able to provide, if requested by Energy Safety or designated stakeholders, detailed documentation for each model and sub-model discussed in the summary documentation. The electrical corporation should not provide this information as part of its WMP submission. At a minimum, this documentation to be made available on request must include each of the following:

- **Purpose of the model / problem identification:**
  - Define the objectives/goals of the model.
  - Summarize and define the relevant outcomes to be predicted by the model.
  - Define the circumstances in which the model is to be used.
  - Time horizon (i.e., real time, annual planning, or both)
  - Spatial scales (i.e., service territory, region, local)
  - Deterministic (specific forecasts) or probabilistic (statistical)
- **Model version:**
  - Provide the name and version number of the software, including major and minor release number. Provide version control (git) commit level if available.
  - Document any utility-specific changes to the model and provide the reason for the change(s).
- **Theoretical foundation:**
  - Describe the theoretical basis of the model and the governing equations or physical laws on which the model is based
  - Identify assumptions made in the model, their impact in the governing equations, and resulting limitations
- **Mathematical foundation:**
  - Describe numerical techniques and computational algorithms used to solve/approximate the governing equations
  - Describe the precision of the results and any reliance on specific computing hardware or facilities

- Discuss model convergence criteria, studies, and resulting grid resolution required to meet the criteria
- Identify any additional limitations in the model based on the numerical techniques and implementation

- **External dependencies:**
  - Describe external programs or software libraries used by the software
  - Describe data used by the software, including utility-collected and external sources. This should include the following:
    - Characteristics of the data (field definitions/schema, uncertainties, acquisition frequency).
    - Scope and granularity (or resolution) of data in time and location (i.e., date range, spatial granularity for each data element).
    - Sources of data, frequency of data updates, and verification of data quality. Explain in detail measurement approaches and procedures.
    - Any processes used to modify the data (such as adjusting vegetative fuel models for wildfire spread based on prior history and vegetation growth).
- **Model substantiation:**
  - Identify existing data that can be used to validate model performance
  - All models need to be verified and validated for the specific application in which they are to be used in accordance with the guidance provided in Section “Model Substantiation,” below
- **Sensitivity:**
  - Describe the efforts to evaluate the impact of model and input parameter uncertainty on the model predicted outcomes
  - Describe the efforts to evaluate the propagation of uncertainty into downstream models
- **Use of machine learning:**
  - Data collection methods, including:
    - What data is collected, what data is used to train the model, and methods for data collection

        - What data transformations are performed during preprocessing
        - How data was partitioned for training, testing, and validation, including percentage of data used for each
    - Model evaluation, including:
        - Documentation of validation methods
        - Results of any validation being performed
        - Timing for validation, including collection of new data and updating model training

One approach to fulfill these requirements is to provide the following documents to demonstrate the substantiation of each model:

- **Technical documentation** according to ASTM E 1472 – Standard Guide for Documenting Computer Software for Fire Models. Include a listing of assumptions and known limitations of the model according to ASTM E 1895 – Standard Guide for Determining Uses and Limitations of Deterministic Fire Models.
- **Verification and validation documentation** according to the SFPE's Guidelines for Substantiating a Fire Model for a Given Application or ASTM E 1355 – Standard Guide for Evaluating the Predicting Capability of Deterministic Fire Models.
- In lieu of providing customized documentation, the electrical corporation may provide a copy of documentation generated by a commercial provider of a model or an open-source project if all the following conditions are met:
    - The specific version documentation of the model and any underlying data in use by the electrical corporation are the same.
    - Any custom modifications to the model by the electrical corporation have been integrated into the model documentation and are available in the same format as the model (i.e., custom modules to an open-source project must be open source and integrated into the project).
    - The electrical corporation lists and justifies the options used within the model for its application, including all non-default features or assumptions.

Model Substantiation

Model substantiation is the process used to ensure that a model is correct and suitable to an application. The following relevant terms are defined in Appendix A "Definitions:"

- **Calibration**
- **Model uncertainty**
- **Parameter uncertainty**
- **Sensitivity**
- **Uncertainty**
- **Validation**
- **Verification**

For each model, the electrical corporation must provide documentation and associated results for each relevant component for the following model substantiation studies:

- **Validation data** – Identify existing data that can be used to validate model performance.
- **Model verification** – Describe efforts to verify that the model is working as designed and that the equations are being properly solved. Verification is often conducted through independent review of source code and use of unit and integration test suites by the software developer. If the end user of a model is not the same as the model developers, the SFPE guidance includes an additional step on user training and certification to the verification process. The verification study of each model must include each of the following:
    - Verification of the basic functionality of the model through simple test cases.
    - Verification of consistency of input parameters. For example, wind speed varies substantially as a function of height and space. Individual wildfire models may assume wind speed is specified at a fixed height (such as 20 feet, 32 feet, or mid-flame height). Specifying the wind speed at the wrong height may result in incorrect model predictions.
    - Independent review, which may consist of one of the following:

- Independent third-party review of software implementation and data integration where the third-party is neither an employee nor a subcontractor of the electrical corporation or software supplier.
- Software verification suite, including software source code and automated verification code, provided by the electrical corporation to Energy Safety. See the Fire Dynamics Suite (FDS) developed by NIST for an example. [143]

- **Model validation** – Models are validated by comparing model predictions to observations from historic events or experiments. It is important to note that validation does not mean that a model's predictions are perfect. Rather, the predictions are good enough for the intended use case. The validation study and uncertainty assessment of each model must do each of the following:
  - Document the efforts undertaken by the electrical corporation to quantify the uncertainty in the model when input parameters are known (i.e., open calculation). This should include a discussion of relevant experiments/datasets used to benchmark performance as well as a statistical summary of performance. See the FDS validation suite developed by NIST. [144]
  - Document the efforts undertaken by the electrical corporation to quantify the variability in input parameters in practice. This should include a discussion of the input data currently used in the model, the process used to update these data, the sensitivity of model predictions to this variability, and the degree to which this variability is within the validation range presented for the software model.
  - Document the type of model validation based on the characterizations defined in ASTM E 1355 (i.e., blind calculation, specified calculation, open calculation).
  - Open calculations consist of modeling efforts where the expected model output and input parameters are based on post-event knowledge. This is a reasonable approach for risk assessment where there is time to gather and

[143] Fire Dynamics Simulator, FDS Verification Process - https://github.com/firemodels/fds/wiki/FDS-Verification-Process.

[144] Fire Dynamics Simulator, FDS Validation Process - https://github.com/firemodels/fds/wiki/FDS-Validation-Process.

process these data. However, the accuracy of a model in open calculation may not directly translate to accuracy in other calculation classes.

  - The predictive power of the model to generate forecasts of ongoing events is best captured through blind validation due to the impact of uncertainties in model inputs. For example, in forecasting the spread of a wildfire, there is high uncertainty in vegetation and weather conditions. The focus of blind validation is to understand how accurate the forecasts are when the inputs include uncertainty.

- **Model calibration** – Calibration in the context of wildfire risk assessment is focused on modifying model inputs and model parameters to achieve better agreement for a specific scenario. Calibration is an important process to develop validation scenarios as well as to support real-time decision making. In general, calibration approaches limit the propagation of error by correcting to new data but have limited effectiveness in improving the quality of the forecast. However, calibrating the model to each individual scenario does not provide confidence in the predictive capability of the model for new scenarios. For each model that uses real-time calibration, the following must be documented:
  - Data sources used in calibrating the model
  - Model parameters that are modified during calibration and the process used to modify parameters
  - Uncertainty as a function of lead time (i.e., forecast time) with and without calibration
  - The degree to which a model predicted value might differ from the true value, including systematic bias and statistical variance (i.e., model uncertainty assessment). This should be presented in an open calculation.

Additional Models Supporting Risk Calculation

The electrical corporation does not need to provide this information as part of its WMP submission. However, if requested by Energy Safety or designated stakeholders, the following information regarding additional models that support risk calculation must be provided.

Weather Analysis

If requested, the electrical corporation must describe how it evaluates weather history within its service territory to determine realistic design scenarios. Energy Safety considers the following to be key elements in the calculation of the weather history:

- Inclusion of at least the following **model outputs:**
  - Air temperature
  - Barometric pressure
  - Fuel moisture
  - Relative humidity
  - Wind velocity (speed and direction)
- Evaluation of the **sensitivity** of downstream models to uncertainty in weather modeling
- Use of **separate modules** for local weather analysis and local vegetation analysis
- Use of **spatial granularity** of forecasts that at a minimum include:
  - Horizontal resolution ≤4 km
  - Vertical resolution sufficient to evaluate average conditions at environmental monitoring system locations
- Use of at least a 30-year **time horizon** of the weather analysis throughout the service territory
- Calculation of the **uncertainty** of the input parameters and model assumptions, limitations, and parameterizations on the model results

Fuel Conditions

If requested, the electrical corporation must describe how it monitors and accounts for the contribution of fuel conditions to wildfire risk in its decision-making processes. The electrical corporation must track, calculate, and report the following:

- Measurement and calculation methods used for assessing fuel conditions (e.g., live and dead fuel moisture, fuel density)
- Methodology used for projecting future fuel conditions

- Calculation of any proprietary fuel condition indices (or other measures tracked)
- Thresholds used to delineate fuel conditions (e.g., mild, moderate, high, extreme), including any factors used to modify thresholds (e.g., fuel type, topography)

Calculation of Risk and Risk Components

This section identifies the key components of a wildfire risk analysis that the electrical corporation must quantify. The electrical corporation must be readily able to provide, if requested by Energy Safety or designated stakeholders, the information described in the following subsections: Likelihood, Consequence, Outage Program Consequence, and Risk.

Likelihood

The following subsections describe likelihood risk components. Each subsection includes elements which Energy Safety considers key to the calculation of the relevant risk component; these elements are intended to establish baseline evaluation and reporting for all electrical corporations. If the electrical corporation defines other key factors as important, it should report them in a similar format.

These risk components may be combinations of other fundamental risk components. The process the electrical corporation uses to combine these risk components must be documented in section 5.2.2 of its WMP. If the electrical corporation approach uses a MAVF, the electrical corporation must be able to provide justification of each parameter (e.g., limits, scaling functions, and weights) used.

Ignition Likelihood

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the likelihood of an ignition throughout its service territory. Energy Safety considers the following elements key to the calculation:

- Equipment likelihood of ignition
- Contact by vegetation likelihood of ignition
- Contact by object likelihood of ignition

Equipment Likelihood of Ignition

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the equipment likelihood of

ignition throughout its service territory by equipment type. The types of equipment it may include:

- Arrestors
- Capacitors / Capacitor banks
- Circuit breakers
- Conductors
- Connection points (conductors, insulators, splices, hotline clamps, and other connectors)
- Crossarms
- Fuses
- Poles
- Splices
- Switches
- Transformers
- Tie wires

Energy Safety considers the following elements key to the calculation:

- Typical operating conditions
- Equipment-specific failure rates
- Spark generation rates from normal operation
- Age of equipment
- Presence of mitigation (i.e., covered conductors, vibration dampers)
- Protective equipment and device settings
- Time since most recent asset inspection
- Open work requests
- Local weather conditions
- Local surface vegetation conditions

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine ignition likelihood from events and include basis data used, such as past ignition events, number of risk events, description of events, and the statistical tools used as part of the analysis.

Contact from Vegetation Likelihood of Ignition

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the contact from vegetation likelihood of ignition throughout its service territory. This may include:

- Contact from vegetation grow-in
- Contact from vegetation fall-in
- Contact from vegetation blow-in

Energy Safety considers the following elements key to the calculation:

- Type of contact (i.e., grow-in, fall-in, blow-in)
- Local vegetation with contact potential (i.e., type/class/species, canopy height/base height/cover, health, mortality, and growth rates)
- Protective equipment and device settings
- Time since most recent vegetation inspection
- Local weather conditions
- Local surface/surrounding vegetation (i.e., type/class/species, fuel model, canopy height/base height/cover, growth rates, health, and moisture content)

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine ignition likelihood from events and include basis data used, such as past ignition events, number of risk events, and description of events, and the statistical tools used as part of the analysis.

Contact from Object Likelihood of Ignition

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the contact from object likelihood of ignition throughout its service territory. This may include:

- Vehicle contact (pole strike)

- Balloon contact
- Animal contact
- Unknown contact

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine ignition likelihood from events, including data used, such as past ignition events, number of risk events, and description of events, and the statistical tools used as part of the analysis.

Burn Likelihood

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the likelihood wildfire will burn individual locations within its service territory. Energy Safety considers the following elements key to the calculation:

- Local topography (i.e., elevation, slope, aspect)
- Local weather (i.e., statistical extreme conditions based on a 30-year average and seasonal weather)
- Local vegetation (i.e., type/class/species, fuel model, canopy height/base height/cover, growth rates, health, and moisture content)
- Climate change impact on fuel aridity (i.e., impact in seasonal extreme moisture content)

PSPS Likelihood

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to evaluate the annual likelihood of its issuing a PSPS for a circuit segment within its service territory. Energy Safety considers the following elements key to the calculation:

- Weather (i.e., statistical extreme conditions based on a 30-year average and seasonal weather)
- Wildfire risk

PEDS Likelihood

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to evaluate the annual likelihood of outages

occurring while PEDS are enabled for a circuit segment within its service territory. Energy Safety considers the following elements key to the calculation:

- Weather (i.e., statistical extreme conditions based on a 30-year average and seasonal weather)
- Wildfire risk

Consequence

The following subsections describes consequence risk components. Each subsection includes elements which Energy Safety considers key to the calculation of the relevant risk component; these elements are intended to establish baseline evaluation and reporting for all electrical corporations. If the electrical corporation identifies other key factors as important, it should report them in the WMP in a similar format.

These risk components may be the combination of other fundamental risk components. The process the electrical corporation uses to combine these risk components must be documented in section 5.2.2 of its WMP. If the electrical corporation approach uses a MAVF, the electrical corporation must provide a table in this section along with discussion and justification of each parameter (e.g., limits, scaling functions, and weights) used.

Wildfire Consequence

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the consequence of a wildfire at each location throughout its service territory. Energy Safety considers the following elements key to the calculation:

- Wildfire hazard intensity
- Wildfire exposure potential
- Wildfire vulnerability

Wildfire Hazard Intensity

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the intensity of a wildfire at a location it reaches within the community. Energy Safety considers the following elements key to the calculation:

- Local topography (i.e., elevation, slope, aspect)

- Local weather (i.e., statistical extreme conditions based on a 30-year average and seasonal weather)
- Local vegetation (i.e., type/class/species, fuel model, canopy height/base height/cover, growth rates, health, and moisture content)
- Local fire behavior (e.g., heat release rate, flame length)

Wildfire Exposure Potential

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the exposure potential of a wildfire that reaches a community. Energy Safety considers the following elements key to the calculation:

- Population density
- Residential, community, and critical infrastructure
- Environmental resources
- Social or cultural assets
- Economic factors (businesses and individual livelihoods)

Wildfire Vulnerability

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the vulnerability/resilience of a community to a wildfire that reaches the community. Energy Safety considers the following elements key to the calculation:

- Vulnerable populations (AFN, LEP, elderly)
- Legacy building codes
- Community collaborative wildfire preparedness initiatives (e.g., Firewise USA)
- Availability of ingress and egress
- Fire suppression effectiveness

PSPS Consequence

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the consequence of a PSPS at

each location throughout its service territory. The calculation must include a combination of at least the following:

- PSPS exposure potential
- Vulnerability of community to PSPS

PSPS Exposure Potential

The electrical corporation must be able to outline the methodology used to determine the exposure potential of a PSPS at an affected location within the community. Energy Safety considers the following elements key to the calculation:

- Population density
- Residential, community, and critical infrastructure
- Social or cultural assets
- Economic factors (businesses and individual livelihoods)

Vulnerability of a Community to PSPS

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the vulnerability/resilience of a community to a PSPS that affects the community. Energy Safety considers the following elements key to the calculation:

- Vulnerable populations (e.g., AFN, LEP, elderly)
- Presence of critical infrastructure
- Presence of redundant systems (e.g., secondary power systems)

PEDS Consequence

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the consequence of an outage due to enablement of PEDS at each location throughout its service territory. The calculation must include a combination of at least the following:

- PEDS exposure potential
- Vulnerability of community to PEDS

PEDS Exposure Potential

The electrical corporation must be able to outline the methodology used to determine the exposure potential of an outage during PEDS enablement at an affected location within the community. Energy Safety considers the following elements key to the calculation:

- Population density
- Residential, community, and critical infrastructure
- Social or cultural assets
- Economic factors (businesses and individual livelihoods)

Vulnerability of a Community to PEDS

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the vulnerability/resilience of a community to an outage during PEDS enablement that affects the community. Energy Safety considers the following elements key to the calculation:

- Vulnerable populations (e.g., AFN, LEP, elderly)
- Presence of critical infrastructure
- Presence of redundant systems (e.g., secondary power systems)

Risk

The following subsections describe wildfire risk, outage program risk, and overall utility risk. Each subsection includes elements which Energy Safety considers key to the calculation of these risk; these elements are intended to establish baseline evaluation and reporting for all electrical corporations. If the electrical corporation identifies other key factors as important, it should report them in the WMP in a similar format.

These risks are combinations of other risk components. The process the electrical corporation uses to combine these risk components must be documented in section 5.2.2 of its WMP. If the electrical corporation approach uses a MAVF, the electrical corporation must provide a table in this section along with discussion and justification of each parameter (e.g., limits, scaling functions, and weights) used.

Wildfire Risk

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the wildfire risk throughout its service territory. Energy Safety considers the following elements key to the calculation:

- Wildfire likelihood (ignition LoRE)
- Wildfire consequence (ignition CoRE)

The calculation of wildfire risk should be in alignment with the most recent CPUC decision governing RAMP filings. In the 2024 RDF decision, [145] this is the direct multiplication of the ignition LoRE and ignition CoRE (see RDF, step 3, row 13).

PSPS Risk

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the PSPS risk throughout its service territory. Energy Safety considers the following elements key to the calculation:

- PSPS likelihood (PSPS LoRE)
- PSPS consequence (PSPS CoRE)

The calculation of PSPS risk should be in alignment with the most recent CPUC decision governing RAMP filings. In the 2024 RDF Decision, [146] this is the direct multiplication of the PSPS LoRE and PSPS CoRE (see RDF, step 3, row 13).

PEDS Risk

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the PEDS risk throughout its service territory. Energy Safety considers the following elements key to the calculation:

- PEDS likelihood (PEDS LoRE)
- PEDS consequence (PEDS CoRE)

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[145] Risk-Based Decision-Making Framework, Appendix A to D.24-05-064, California Public Utilities Commission, June 2024 at A-12: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M533/K206/533206241.PDF.

[146] Risk-Based Decision-Making Framework, Appendix A to D.24-05-064, California Public Utilities Commission, June 2024 at A-12: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M533/K206/533206241.PDF.

As applicable, the calculation of PEDS risk should be in alignment with the most recent CPUC decision governing RAMP filings.

Outage Program Risk

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the outage program risk throughout its service territory. Energy Safety considers the following elements key to the calculation:

- PSPS risk
- PEDS risk

As applicable, the calculation of outage program risk should be in alignment with the most recent CPUC decision governing RAMP filings.

Overall Utility Risk

The electrical corporation must be readily able to outline, if requested by Energy Safety or designated stakeholders, the methodology used to determine the overall utility risk throughout its service territory. Energy Safety considers the following elements key to the calculation:

- Wildfire risk
- Outage program risk

The calculation of overall risk should be in alignment with the most recent CPUC decision governing RAMP filings. The 2024 RDF Decision does not explicitly cover the combination of ignition risk and outage program risk to determine overall utility risk. The electrical corporation must choose an alternative approach to combine these risks applying the results of the R. 20-07-013 proceeding and describe the process in its WMP submission (e.g., Cost Benefit Ratios [CBR]; approved 2024 RAMP methodology).

Appendix C: Additional Maps

In this appendix, the electrical corporation must provide a (one) representative map within the main body of its WMP. Where electrical corporations need to provide additional maps for clarity (e.g., the scale is insufficiently large to show useful detail), the electrical corporation must host applicable and up-to-date geospatial layers on a publicly accessible web application and refer to the specific web address in appropriate places throughout its WMP. Additionally, the electrical corporation must host these layers until at least the submission of its subsequent WMP or otherwise directed by Energy Safety. The electrical corporation may not modify these publicly available layers without notifying Energy Safety.

Below is a list of the Base WMP Guidelines sections which require additional maps:

Section Number	Section Title
4.1	Service Territory
4.3	Frequently Deenergized Circuits
5.5.1.1	Geospatial Maps of Top Risk Areas within the HFRA

Appendix D: Areas for Continued Improvement

In this appendix, the electrical corporation must provide responses to its areas for continued improvement as identified in the Decisions on the previous Base WMP and WMP Update in the following format:[147]

Code and Title:

Description:

Required Progress:

Section and Page Number of Any Improvements:

[Electrical Corporation] Response:

[147] If a previous Energy Safety WMP Decision (Base or Update) stated no further reporting is required on this area for continued improvement, the EC is not expected to include that specific area for continued improvement in Appendix D or the WMP.

Appendix E: Referenced Regulations, Codes, and Standards

In this appendix, the electrical corporation must provide in tabulated format a list of referenced codes, regulations, and standards. An example follows.

Name of Regulation, Code, or Standard	**Brief Description**
Public Utilities Code section 768.6	Statute related to emergency and disaster preparedness plans
General Order 166	Standards for Operation, Reliability, and Safety During Emergencies and Disasters
California Standardized Emergency Management Systems (SEMS)	
National Incident Management System (NIMS)	
Government Code section 8593.3	