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

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

To: 2023-2025 Wildfire Mitigation Plans docket (#2023-2025-WMPs)

Date: December 5, 2022

Re: **Proposed Final 2023-2025 Maturity Model**

Enclosed is the Office of Energy Infrastructure Safety's (Energy Safety's) Proposed Final 2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model (Maturity Model). Included are a clean version and a redlined version that shows changes from the September 19, 2022, draft.

Changes to the document from the prior draft were made in response to stakeholder comments, including: written public comments, verbal comments received during the public workshop held October 17, 2022,[1] and informal feedback.

The Proposed Final Maturity Model is part of a suite of Wildfire Mitigation Plan Guideline documents being considered for adoption at Energy Safety's WMP Guidelines Adoption Meeting on December 6, 2022.[2]

Sincerely,

Lucy C Morgans

Lucy Morgans
Program Manager, Electric Safety Policy Division
Office of Energy Infrastructure Safety

[1] October 17 ,2022, Draft 2023-2025 WMP Guidelines Public Workshop: https://energysafety.ca.gov/events-and-meetings/events/draft-2023-2025-wmp-guidelines-public-workshop/ (accessed December 1, 2022).
[2] December 6, 2022, Public Adoption Meeting for 2023-2025 WMP Guidelines: https://energysafety.ca.gov/events-and-meetings/events/public-adoption-meeting-for-energy-safetys-2023-2025-wildfire-mitigation-plan-guidelines/ (accessed December 1, 2022)

OFFICE OF ENERGY INFRASTRUCTURE SAFETY

2023-2025 ELECTRICAL COPORATION WILDFIRE MITIGATION MATURITY MODEL

PROPOSED FINAL

December 5, 2022

2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model

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1 Introduction

The 2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model (Maturity Model) is a quantitative method to assess electrical corporation wildfire risk mitigation capabilities and examine how electrical corporations propose to continuously improve in key areas of their Wildfire Mitigation Plan (WMP). The model is designed to guide electrical corporations to achieve year-over-year improvements in the design, implementation, and maintenance of an effective wildfire mitigation program by assessing and monitoring the maturities of a range of wildfire mitigation capabilities that define an electrical corporation's WMP.

In addition to assessing an electrical corporation's capabilities for reducing electrical corporation-related wildfire risk, the Maturity Model also examines the relative maturity of each electrical corporation's wildfire mitigation program and encourages continuous improvement through the sharing of lessons learned and best practices across the industry. Thus, the four main objectives of the Maturity Model are:

1. Provide a simple, quantitative tool to measure an electrical corporation's maturity in mitigating wildfire and Public Safety Power Shutoff (PSPS) risk
2. Drive year-over-year continuous improvement
3. Identify and share best practices
4. Provide high-level information to key stakeholders

Given that the state of the art in electrical corporation-related wildfire risk management knowledge, science, engineering, and best practices evolves over time, the requirements that must be met to reach each maturity level are intended to change with time. Thus, maintaining a given maturity level, in theory, would require improved outcomes over time. Conversely, maintaining a static capability would result in a decreasing level of maturity over time. The 2023-2025 Maturity Model is the first significant update since the first WMP Guidelines cycle and reflects many of these changes.

The Maturity Model consists of 37 individual capabilities describing the ability of electrical corporations to mitigate wildfire and PSPS risk within their service territory. Maturity levels range from 0 (below minimum requirements) to 4 (beyond best practice). The level of each capability is evaluated with respect to 20 possible sub-capabilities, with unique scoring philosophies for each level. Each capability is organized into one of 7 key categories which are used to calculate category maturity levels. In addition, the Maturity Model establishes additional cross-category metrics to assess maturity. These include cross-category themes which are important across the entire program, and risk metrics which quantify the ability of the electrical corporation to mitigate specific risk drivers.

To assess the maturity level of an electrical corporation's wildfire mitigation program, the electrical corporation must perform the following steps:

1. Each electrical corporation responds to each question in the Electrical Corporation Wildfire Mitigation Maturity Survey (Maturity Survey) based on its current and forecasted response.
2. The electrical corporation self-assesses its maturity level across each capability, category, cross-category theme, and risk metric using the results of the survey and the scoring criteria described herein.
3. The electrical corporation presents their maturity level in each section of the WMP and discusses how their planned mitigation activities will increase maturity in the specific area. Note that activities undertaken which are not related to maturity may also be described and used to recommend inclusion in the 2026 Maturity Model update.

The following sections describe the Maturity Model in additional detail.

2 Maturity Model Development

The first electrical corporation Maturity Model was developed in 2020 and was integrated as part of the 2020-2022 Wildfire Mitigation Plan (WMP) Guidelines. Per Resolution WSD-002, Attachment 2, the Maturity Model is re-examined by Energy Safety every three years to identity any new additions, modifications and/or deletions to help improve and advance the model for the next three-year WMP cycle.

The 2023-2025 Maturity Model is the first significant update since the first WMP Guidelines cycle. The following subsections provide an overview of lessons learned from the 2020–2022 Maturity Model, objectives of the redesign, and a summary of key changes.

2.1 Lessons Learned from the 2020–2022 Maturity Model

The original Maturity Model used in 2020-2022 was a first step towards quantitative assessment of electrical corporation capabilities in wildfire risk mitigation. There were several lessons learned during its use over the three-year cycle which were considered in the development of the update for 2023-2025. The critical lessons learned are summarized in Table-1.

Table C-1. Summary of lessons learned from 2020-2022 Maturity Model.

Transparency The technical bases of capabilities and how they relate to risk reduction could be clearer. Transparency in how maturity levels are scored could help electrical corporations focus their improvements to reduce wildfire and PSPS risk.
Comprehensiveness The electrical corporations are making progress in areas which were not captured in the 2020-2022 Maturity Model. Addressing these gaps is important to measure the progress electrical corporations are making. The scoring approach used in 2020-2022 did not provide specific guidance on what the electrical corporations needed to improve to achieve higher maturity levels.
Standardization Improving clarity in survey questions could improve consistency in question interpretation and responses across electrical corporations. Establishing guidance on the usage of the Maturity Model in the WMP could improve consistency in electrical corporation submissions.

2.2 Objectives of Redesign for 2023-2025

The lessons learned from the 2020-2022 Maturity Model were used to establish 4 core objectives for the redesign for the 2023-2025 Maturity Model. These objectives are described in Table-2.

Table 2. Summary of objectives of redesign for 2023-2025.

Objective	Detailed Description
1. Establish link between increased maturity and reduced risk	• Integrate maturity capabilities with updated risk assessment framework in WMP Guidelines • Identify technical basis for each capability and how it links to overall electrical corporation risk • Evaluate existing capabilities in each subject matter area and identify gaps to be addressed with additional capabilities
2. Improve standardization in use of maturity model among electrical corporations	• Standardize metrics used in assessment and reporting of outcomes and maturity • Integrate maturity self-assessment in the WMP Guidelines • Enhance feedback between mitigation initiatives and continuous improvement in WMP/Maturity Model
3. Improve quantitative assessment of maturity	• Identify data/metrics linked to improved maturity, including related activities (e.g., frequency of inspections) and outcomes (e.g., findings from inspections) • Identify comprehensive maturity levels/metrics to support evaluation of electrical corporation maturity • Coordinate data/metrics improvements related to maturity with the data collected in the quarterly data reports (QDR)
4. Increase transparency in maturity assessment	• Establish transparent criteria for determining maturity levels • Develop metrics to provide insights into electrical corporation progress beyond existing capability and category maturity levels • Redesign maturity levels and survey questions to facilitate third-party and compliance review

2.3 Summary of Key Changes

The objectives discussed in Section 2.2 were accomplished through 6 key changes to design and implementation of the Maturity Model. These key changes are summarized in Table-3.

Table 3. Summary of key changes in the 2023-2025 Maturity Model.

Description	Related Obj.
1. Reorganized the Maturity Model • Restructured into 7 categories and 37 capabilities (see Section 3.1) • Merged existing “grid design and system hardening” and “asset management and inspections” categories into “grid design, inspections, and maintenance” category (Category C) • Merged and split existing capabilities to create more distinct individual capabilities • Replaced “resource allocation methodology” and “data governance” categories with cross category theme maturity levels (see number 3)	**1, 2**
2. Identified links between capabilities and risk outcomes • Linked each maturity capability to related risks and risk components (see Section 3.4) • Linked each maturity capability to related outcome metrics (see Section 3.5) • Enabled determination of maturity levels for risks and risk components (see number 4)	**1, 3**
3. Expanded capability scoring and increased transparency in level determination • Expanded list of sub-capabilities from 4 to 19 (see Table-5 for details) • Improved granularity in the maturity of each capability based on the different sub-capabilities (see Section 5) • Enabled determination of maturity levels for cross-category themes based on sub-capability maturity levels	**2, 3, 4**
4. Introduced cross-category maturity levels • Established maturity levels for cross-category themes (see Section 3.3) • Established maturity levels for risks and risk components (see Section 4.4)	**2, 3, 4**
5. Increased transparency in maturity level determination • Documented the approach to determine maturity levels (see Section 4) • Required the electrical corporations to identify their maturity levels and discuss in their WMP	**4**
6. Linked maturity assessment to electrical corporation WMP • Added maturity assessment reporting requirements in WMP for the electrical corporation to describe how it expects the initiatives to advance its maturity • Provided space for electrical corporations to describe efforts undertaken in each capability that are expanding the state of the art and are not captured in the existing maturity level definitions, for potential inclusion in the 2026 update	**2**

3 Overview of the Maturity Model

The Maturity Model is organized into seven (7) categories that define key components of an electrical corporation's wildfire mitigation program. Each category consists of a set of capabilities (e.g., 3-6) that characterize in more detail, the specific methods, plans and activities the electrical corporation must achieve as part of that category. Each capability is defined by several sub-capabilities (e.g., automation, comprehensiveness) with associated maturity levels (Levels 0 to 4) that quantitively and qualitatively describe the maturity of the electrical corporation's wildfire risk mitigation activities. The maturity levels range from being below statutory minimums up to leading industry best practices.

The 2023-2025 Maturity Model consists of two methods for assessing an electrical corporation's maturity level for its WMP, as follows:

1. **Maturity Levels for Capabilities, Categories, and Overall WMP**
    - **Capability Maturity** –The maturity level of a specific capability is determined from the minimum maturity level achieved across all the component sub-capabilities.
    - **Capability Average** – The capability average is determined from the average of all component sub-capabilities. The capability average is an additional tool to electrical corporations' wildfire mitigation program.
    - **Category Maturity** – The maturity level of a single category is determined from the average of all the capability maturity levels within that category.
    - **Overall WMP Maturity** – The maturity levels across all categories are then further averaged to develop a single maturity level for the entire WMP.
2. **Cross-Category Maturity Levels**
    - **Cross-Category Theme Maturity** – In addition to assessing maturity levels at the capability and category levels, the maturity model also incorporates cross-category maturity assessments to capture key functional characteristics of an electrical corporation's WMP that are cross-cutting themes (e.g., risk prioritization). These themes provide additional information on underlying functional features of the electrical corporation's WMPs that may not readily be defined by a single capability or category.
    - **Capability Risk Scoring** – Capabilities are also aggregated into the risk components that they contribute to, allowing for additional high-level performance information on the electrical corporation's WMP. The following sections provide a more detailed description of these aspects of the Maturity Model.

3.1 Capabilities and Categories

The Maturity Model is organized into thirty-seven (37) capabilities aggregated into seven (7) categories. This organizational structure is provided in Table-4. Independent capabilities aggregate to independent categories that comprehensively address all aspects of their defined scope. More detailed summary information about each capability is provided in Section 3.5, and a detailed description of the maturity requirements for each capability is provided in Section 5.

Table 4. Maturity Model capability and category organization.

Category	I. Capability	II. Capability	III. Capability	IV. Capability	V. Capability	VI. Capability
A. Risk assessment and mitigation strategy	1. Statistical weather, climate, and wildfire modeling	2. Calculation of wildfire and PSPS hazard and exposure to societal values	3. Calculation of community vulnerability to wildfire and PSPS	4. Calculation of risk and risk components	5. Risk event tracking and integration of lessons learned	6. Risk-informed wildfire mitigation strategy
B. Situational awareness and forecasting	7. Ignition likelihood estimation	8. Weather forecasting ability	9. Wildfire spread forecasting	10. Data collection for near-real-time conditions	11. Wildfire detection and alarm systems	12. Centralized monitoring of real-time conditions
C. Grid design, inspections, and maintenance	13. Asset inventory and condition database	14. Asset inspections	15. Asset maintenance and repair	16. Grid design and resiliency	17. Asset and grid personnel training and quality	
D. Vegetation management and inspections	18. Vegetation inventory and condition database	19. Vegetation inspections	20. Vegetation treatment	21. Vegetation personnel training and quality		
E. Grid operations and protocols	22. Protective equipment and device settings	23. Incorporation of ignition risk factors in grid control	24. PSPS operating model	25. Protocols for PSPS re-energization	26. Ignition prevention and suppression	
F. Emergency preparedness	27. Wildfire- and PSPS-emergency & disaster preparedness plan	28. Collaboration and coordination with public safety partners	29. Public emergency communication strategy	30. Preparedness and planning for service restoration	31. Customer support in wildfire and PSPS emergencies	32. Learning after wildfires and PSPS events
G. Community outreach and engagement	33. Public outreach and education awareness	34. Public engagement in electrical corporation wildfire mitigation planning process	35. Engagement with AFN and socially vulnerable populations	36. Collaboration on local wildfire mitigation planning	37. Cooperation and best practice sharing with other electrical corporations	

3.2 Sub-Capabilities

Each capability comprises a set of relevant sub-capabilities that together determine the maturity level for that capability. Table-5 lists all the sub-capabilities used in the Maturity Model. Each capability includes only a subset of these sub-capabilities.

Table 5. Sub-capabilities used to determine the maturity level of electrical corporations for each capability in the Maturity Model.

Sub-Capability	Definition	Maturity Indicators
Anticipation	The electrical corporation's ability to identify the potential for issues that could result in a hazardous event before they occur	More mature programs have mechanisms, systems, algorithms, and procedures in place to assess the potential for faults, ignitions, and high fire-risk weather before they occur.
Automation	The electrical corporation's ability to receive, process, and act on information in a prescribed, consistent, and timely fashion that reduces wildfire risk	More mature programs have fully automated, time-sensitive processes that maximize wildfire risk reduction. Note: not all processes and procedures benefit from full automation.
Climate change	The ability of the electrical corporation to evaluate the impact of long-term climate change on the wildfire and PSPS risk.	More mature programs evaluate the impact of climate change on a broader range of modeling inputs and decisions.
Comprehensiveness	The breadth of the factors considered in the capability. One example is the breadth of inputs and outputs included in models.	More mature systems include a larger breadth of factors, more detailed modeling inputs, resolve more physics in the modeling algorithms, and consider a broader range of model inputs.
Coordination and integration	The extent to which the electrical corporation coordinates its mitigation, planning, and response activities with other Public Safety Partners.	More mature programs coordinate with a broader range of partners on a larger quantity of activities.
Documentation and disclosures	The electrical corporation's ability to effectively record processes, procedures, and models as well as properly disseminate information to stakeholders such as Energy Safety, other electrical corporations, and the public	More mature programs have consistent and navigable documentation across activities and disseminate documentation to appropriate shareholders in a timely fashion.

Sub-Capability	Definition	Maturity Indicators
Effectiveness	The extent to which the decisions, actions, and activities undertaken by the electrical corporation increase the resilience of the community and reduce negative outcomes of a risk event, wildfire, and/or PSPS.	More mature programs have time-efficient decisions, actions, and activities.
Frequency	The time granularity associated with the electrical corporation's wildfire mitigation activities such as inspections, data collection, analysis, and modeling	More mature programs conduct inspections, obtain and document data, and update and improve models at shorter time intervals.
IT infrastructure and database management	The electrical corporation's ability to develop and maintain the underlying technological platforms and databases necessary to support wildfire and PSPS risk mitigation activities and information	More mature programs have comprehensive, navigable, and accessible information databases that are updated in real time as risk mitigation activities and events occur, and appropriately link related databases.
Learning and improvement	The electrical corporation's ability to improve processes, procedures, and models based on lessons learned from risk events, stakeholder feedback, and WMP activities	More mature programs conduct more extensive analysis, more widespread integration of lessons learned across the programs, and benchmarking of lessons learned with other electrical corporations.
Level of sophistication	The inclusiveness and importance of factors considered in the electrical corporation's wildfire mitigation activities such as inspections, data collection, analysis, and modeling	More mature programs consider more characteristic considerations in their wildfire mitigation activities and communicate these to Energy Safety and other relevant stakeholders,
Modularization	The degree to which software is designed with related but separate components that can be easily enabled or disabled at runtime.	More mature programs develop and use modeling software which contains a greater number of sub-modules as well as sub-modules which are narrower in scope.
Quality assurance and quality control (QA/QC)	The degree to which the electrical corporation's observations, predictions, and decisions are verified, and wildfire-related systems, features, and procedures are maintained	More mature programs include redundant measurements, procedures to verify operations and maintenance, cross-validation of model results, and regular performance evaluations.
Risk spend efficiency	The cost efficiency of the electrical corporation's wildfire mitigation activities, determined from activity cost and resulting reduction in overall wildfire and PSPS risk	More mature programs have a higher marginal benefit of spending on each initiative in reducing the overall wildfire and PSPS risk.

Sub-Capability	Definition	Maturity Indicators
Spatial granularity	The physical resolution associated with the electrical corporation's data collection, analysis, modeling, mitigation prioritization, and mitigation activities such as inspections and maintenance	More mature programs have finer spatial granularity in data collection, analysis, modeling, mitigation prioritization, mitigation activities, and asset inventory and condition databases.
Stability of assumptions	The degree to which the assumed information used by an electrical corporation in its mitigation program remains accurate over time and changes to such information are not warranted	More mature programs regularly assess the assumptions used and find the assumptions, if still needed, remain valid.
Standardized processes	The electrical corporation's ability to have personnel receive, process, and act on information is a prescribed and consistent fashion	More mature programs have detailed and tested workflow systems that have additional redundancies to verify system adherence and effectiveness.
Subject matter expert verification and evaluation	The degree to which the electrical corporation's analyses, decisions, modeling, emergency procedures, and other aspects of its mitigation activities are evaluated and verified by qualified experts	More mature programs include external and more rigorous verification, higher SME qualifications, and transparency of the review process.
Transparency	The electrical corporation's openness toward sharing data, analyses, methods, algorithms, and procedures with other stakeholders, such as other electrical corporations and the public	More mature programs have a publicly shared, comprehensive, and centralized catalogue of data, algorithms, software, and validation bases.
Validation	The electrical corporation's ability to demonstrate the accuracy, repeatability, stability, and thoroughness of its models and procedures. This includes an understanding of the uncertainty in the process and how this uncertainty propagates through the process.	More mature programs have expanded validation bases, integrate redundant systems to reduce systematic bias, use transparent methodologies, and present sensitivity studies.

Each sub-capability within a capability will have a maturity level fitting the following general pattern:

- Level 0: Electrical corporation does not meet the minimum expectations or regulatory requirements
- Level 1: Electrical corporation meets the minimum expectations or regulatory requirements
- Level 2: Electrical corporation exceeds the minimum expectations or regulatory requirements but is not consistent with industry best practices
- Level 3: Electrical corporation is consistent with industry best practices
- Level 4: Electrical corporation exceeds industry best practices

The requirements to achieve maturity levels for each capability are specific to that capability. An electrical corporation must meet specified qualitative and/or quantitative requirements to achieve specific maturity levels for each sub-capability. The detailed requirements for each maturity level for each capability are presented in Section 5.

3.3 Cross-Category Themes

In addition to capabilities and categories, the 2023–2025 Maturity Model includes cross-category themes. Maturity levels on cross category themes are calculated by averaging the levels on related sub-capabilities across capabilities and categories. This provides high-level slices of electrical corporation performance in several concept- and infrastructure-level areas. Table-6 lists the cross-category themes in the 2023 Maturity Model, along with their definitions and the sub-capabilities used in their determination.

Table 6. Cross-category themes, definitions, and sub-capabilities.

Theme	Definition	Sub-Capabilities
Plan quality	The electrical corporation's ability to ensure wildfire mitigation activities are conducted with high levels of accuracy and free of errors.	• Documentation and Disclosures • QA/QC • SME verification • Validation
Risk prioritization	The electrical corporation's ability to determine which wildfire mitigation activities will have the largest impact on wildfire risk reduction and implement identified activities with financial efficiency.	• Anticipation • Risk-spend efficiency
Enterprise systems	The capability of the electrical corporation to ensure high-quality data exist throughout the complete life cycle of data. This includes processes for data collection as well as controls for its use in modeling and decision making.	• IT infrastructure and database management • QA/QC • Stability of assumptions • SME verification
Automation and systemization	The electrical corporation's ability to quickly integrate new information into its wildfire risk mitigation processes without the need for manual intervention. This includes the integration of sensor data, inspection and maintenance data, and lessons learned.	• Automation • IT infrastructure and database management • Learning and improvement • Systemization, policies, and procedures
Continuous improvement	The electrical corporation's ability to identify where shortcomings in its wildfire risk mitigation processes are and leverage knowledge from across multiple sources to improve its mitigation activities to effectively reduce wildfire risk in its service area.	• Learning and improvement • Risk-spend efficiency • Stability of assumptions • Systemization, policies, and procedures • Transparency

3.4 Risk and Risk Components

The 2023–2025 Maturity Model also includes maturity levels for each risk and risk component defined in Section 6.1 of the WMP Guidelines. Each capability is linked to one or more fundamental risk components. Risk and risk component maturity levels are calculated by averaging the levels of capabilities linked to each risk component. These maturity levels are intended to provide a more holistic picture of the electrical corporation's ability to understand and mitigate risk across the program. The fundamental risk components and their links to maturity capabilities are summarized in Table-7.

Table 7. Summary of fundamental risk components aggregated from relevant Maturity Model Capabilities.

Risk Component	Definition	Included Capabilities
Equipment ignition likelihood	The likelihood that electrical corporation-owned equipment will cause an ignition either through normal operation (such as arcing) or through failure.	1. Statistical weather, climate, and wildfire modeling 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 7. Ignition likelihood estimation 8. Weather forecasting ability 10. Data collection for near-real-time conditions 11. Wildfire detection and alarm systems 12. Centralized monitoring of real-time conditions 13. Asset inventory and condition database 14. Asset inspections 15. Asset maintenance and repair 16. Grid design and resiliency 17. Asset and grid personnel training and quality assurance 22. Protective equipment and device settings 23. Incorporation of ignition risk factors in grid control 30. Preparedness and planning for service restoration 32. Learning after wildfires and PSPS incidents 37. Collaboration and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
Contact from vegetation ignition likelihood	The likelihood that vegetation will contact electrical corporation-owned equipment and result in an ignition.	4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 7. Ignition likelihood estimation 8. Weather forecasting ability 10. Data collection for near-real-time conditions 11. Wildfire detection and alarm systems 12. Centralized monitoring of real-time conditions 18. Vegetation inventory and condition database 19. Vegetation inspections 20. Vegetation treatment 21. Vegetation personnel training and quality assurance 22. Protective equipment and device settings 23. Incorporation of ignition risk factors in grid control 33. Public outreach and education awareness program 34. Public engagement in electrical corporation wildfire mitigation planning 30. Preparedness and planning for service restoration 32. Learning after wildfires and PSPS events 37. Collaboration and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
Contact by object ignition likelihood	The likelihood that a non-vegetative object (such as balloons or vehicles) will contact electrical corporation-owned equipment and result in an ignition.	1. Statistical weather, climate, and wildfire modeling 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 7. Ignition likelihood estimation 8. Weather forecasting ability 10. Data collection for near-real-time conditions 11. Wildfire detection and alarm systems 12. Centralized monitoring of real-time conditions 22. Protective equipment and device settings 23. Incorporation of ignition risk factors in grid control 30. Preparedness and planning for service restoration 32. Learning after wildfires and PSPS events 33. Public outreach and education awareness program 34. Public engagement in electrical corporation wildfire mitigation planning 37. Cooperation and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
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.	1. Statistical weather, climate, and wildfire modeling 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 8. Weather forecasting ability 9. Wildfire spread forecasting 10. Data collection for near-real-time conditions 12. Centralized monitoring of real-time conditions 26. Ignition prevention and suppression 28. Collaboration and coordination with Public Safety Partners 32. Learning after wildfires and PSPS events 36. Collaboration on local wildfire mitigation planning 37. Cooperation and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
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.	2. Calculation of wildfire and PSPS hazard and exposure to societal values 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 8. Weather forecasting ability 9. Wildfire spread forecasting 10. Data collection for near-real-time conditions 12. Centralized monitoring of real-time conditions 32. Learning after wildfires and PSPS events 36. Collaboration on local wildfire mitigation planning

Risk Component	Definition	Included Capabilities
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.	2. Calculation of wildfire and PSPS hazard and exposure to societal values 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 27. Wildfire and PSPS emergency & disaster preparedness plan 28. Collaboration and coordination with Public Safety Partners 29. Public emergency communication strategy 30. Preparedness and planning for service restoration 31. Customer support in wildfire and PSPS emergencies 32. Learning after wildfires and PSPS events 33. Public outreach and education awareness program 34. Public engagement in electrical corporation wildfire mitigation planning 35. Engagement with AFN and socially vulnerable populations 36. Collaboration on local wildfire mitigation planning 37. Collaboration and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
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., access and functional needs [AFN], age of structures, firefighting capacities).	3. Calculation of community vulnerability to wildfire and PSPS 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 27. Wildfire and PSPS emergency & disaster preparedness plan 28. Collaboration and coordination with Public Safety Partners 29. Public emergency communication strategy 30. Preparedness and planning for service restoration 31. Customer support in wildfire and PSPS emergencies 32. Learning after wildfires and PSPS events 33. Public outreach and education awareness program 34. Public engagement in electrical corporation wildfire mitigation planning 35. Engagement with AFN and socially vulnerable populations 36. Collaboration on local wildfire mitigation planning 37. Collaboration and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
PSPS likelihood	The likelihood of an electrical corporation requiring a PSPS given a probabilistic set of environmental conditions.	1. Statistical weather, climate, and wildfire modeling 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 7. Ignition likelihood estimation 8. Weather forecasting ability 10. Data collection for near-real-time conditions 11. Wildfire detection and alarm systems 12. Centralized monitoring of real-time conditions 15. Asset maintenance and repair 16. Grid design and resiliency 17. Asset and grid personnel training and quality assurance 22. Protective equipment and device settings 23. Incorporation of ignition risk factors in grid control 32. Learning after wildfires and PSPS events 36. Collaboration on local wildfire mitigation planning 37. Collaboration and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
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.	2. Calculation of wildfire and PSPS hazard and exposure to societal values 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 15. Asset maintenance and repair 16. Grid design and resiliency 17. Asset and grid personnel training and quality assurance 24. PSPS operating model 25. Protocols for PSPS re-energization 27. Wildfire and PSPS emergency & disaster preparedness plan 28. Collaboration and coordination with Public Safety Partners 29. Public emergency communication strategy 31. Customer support in wildfire and PSPS emergencies 32. Learning after wildfires and PSPS events 33. Public outreach and education awareness program 34. Public engagement in electrical corporation wildfire mitigation planning 35. Engagement with AFN and socially vulnerable populations 36. Collaboration on local wildfire mitigation planning 37. Collaboration and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
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., AFN, energy resiliency, low socioeconomics).	3. Calculation of community vulnerability to wildfire and PSPS 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 27. Wildfire and PSPS emergency & disaster preparedness plan 28. Collaboration and coordination with Public Safety Partners 29. Public emergency communication strategy 31. Customer support in wildfire and PSPS emergencies 32. Learning after wildfires and PSPS events 33. Public outreach and education awareness program 34. Public engagement in electrical corporation wildfire mitigation planning 35. Engagement with AFN and socially vulnerable populations 36. Collaboration on local wildfire mitigation planning 37. Collaboration and best practice sharing with other electrical corporations

3.5 Summary of Capabilities

The following pages include a table summarizing the following for each Maturity Model capability organized by category:

- **Summary description** of the capability
- **Fundamental risk components** linked to the capability
- **Metrics** that are expected to be related to improved maturity.

The risk components and outcome metrics are intended to provide additional context into the expected impact of improved maturity on the broader wildfire mitigation program.

The risk components indicate the specific parts of risk which could be reduced through improved maturity. This is intended to support the risk informed engineering process to identify mitigations; however, the specific risk reduction achieved through increased maturity in any individual capability will not be quantifiable due to the interconnectivity of these capabilities.

The metrics indicate key parts of the wildfire mitigation program that are expected to be related to improved maturity. These include specific outcomes, such as ignitions or number of customers notified, quantitative indicators of maturity, such as number of experiments / data sets included in validation studies, and quantitative mitigation efforts, such as average time between a severe vegetation finding and trimming. This is intended to provide additional context on how increased maturity is expected to improve the program in measurable ways. Due to the interconnectivity of these capabilities, it is not expected that independent progress in any one capability will result in direct improvement in these metrics. However, it is expected that improved performance in these metrics would be a result of the electrical corporation improving in maturity across all capabilities over time.

Table 8. Summary of capabilities

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
Risk assessment and mitigation strategy	1. Statistical weather, climate, and wildfire modeling	For planning purposes, the ability of the electrical corporation to model various weather and climate scenarios, characterize the statistical distribution of various weather and climate conditions, and quantify the likelihood of extreme weather conditions on a seasonal, annual, and decadal basis, as well as the ability of the electrical corporation to model various wildfire scenarios, characterize the statistical distribution of various outcomes, and quantify the likelihood of fire spread from all points of the electrical corporation's infrastructure.	• Equipment likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • PSPS likelihood	• Number of experiments in validation • Validation error (systematic bias and standard deviation) • Observed wind percentiles compared with calculated statistical percentiles • Observed input percentiles compared with calculated statistical percentiles (e.g., fuel aridity) • Risk events normalized by observed weather percentile
	2. Calculation of wildfire and PSPS hazard and exposure to societal values	The ability of the electrical corporation to estimate the hazard and exposure potential to a wildfire or PSPS of specific regions within its service area. This capability is intended to neglect the probability of occurrence and vulnerability components of the risk equation, instead focusing solely on the intensity of the hazard and potential exposures (people, structures, valued resources, etc.) of a wildfire or PSPS if it reaches a specific geographic location.	• Wildfire hazard intensity • Wildfire exposure potential • PSPS exposure potential	• Wildfire losses normalized by RFW • Comparison of consequence model results with actual observed losses after an event • PSPS customer hours (absolute and normalized by RFW days) • PSPS infrastructure downtime (absolute and normalized by RFW days)
	3. Calculation of community vulnerability to wildfire and PSPS	The ability of the electrical corporation to estimate the vulnerability of a community to a wildfire or PSPS in specific regions within its service area. This capability is intended to focus on the predisposition of communities to be disproportionately at risk to the negative impacts of a wildfire or PSPS if it reaches a specific geographic location. This typically includes the presence of AFN populations, socially vulnerable groups, rural and underrepresented communities, etc.	• Wildfire vulnerability • PSPS vulnerability	• Wildfire losses normalized by RFW • Comparison of consequence model results with actual observed losses after an event • PSPS customer hours (absolute and normalized by RFW days) • PSPS infrastructure downtime (absolute and normalized by RFW days)

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	4. Calculation of risk and combination of risk components	The ability of the electrical corporation to determine the total risk in their service area by incorporating the different components of the risk equation (likelihood, hazard intensity, exposure potential, and vulnerability). This capability focuses on the combination of risk components to determine overall risk and the maturity in the approach used in this combination (i.e., considering a broader range of attributes). Improving the quality of individual likelihood and consequence components is a co-factor for this capability, but those requirements are presented in the other related capabilities.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • Wildfire exposure potential • Wildfire vulnerability • PSPS likelihood • PSPS exposure potential • PSPS vulnerability	• Wildfire losses normalized by RFW • Comparison of consequence model results with actual observed losses after an event • PSPS customer hours (absolute and normalized by RFW days) • PSPS infrastructure downtime (absolute and normalized by RFW days)
	5. Risk event tracking and integration of lessons learned	The ability of the electrical corporation to track and retrieve a variety of situational, operational, and risk data to drive decisions. This includes the types of risk events tracking, the ability of the electrical corporation to understand the root cause of the events, identify lessons learned, and develop and implement corrective action plans to reduce the likelihood of recurrence. It also includes identification of generic lessons to improve overall WMP effectiveness.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • Wildfire exposure potential • Wildfire vulnerability • PSPS likelihood • PSPS exposure potential • PSPS vulnerability	• Wildfire losses normalized by RFW • Comparison of consequence model results with actual observed losses after an event • PSPS customer hours (absolute and normalized by RFW days) • PSPS infrastructure downtime (absolute and normalized by RFW days)

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	6. Risk-informed wildfire mitigation strategy	The ability of the electrical corporation to prioritize mitigation initiatives by their potential risk reduction. This includes the processes and procedures used to prioritize areas for mitigation and to select specific mitigation initiatives for implementation and to determine the need to implement interim risk mitigation measures in the event long-term/permanent measures will require substantial time to put in place. In addition, this includes quantifying the risk reduction impact of mitigation initiatives (such as grid hardening and vegetation management) on each risk component and the overall risk.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • Wildfire exposure potential • Wildfire vulnerability • PSPS likelihood • PSPS exposure potential • PSPS vulnerability	• Wildfire losses normalized by RFW • Comparison of consequence model results with actual observed losses after an event • PSPS customer hours (absolute and normalized by RFW days) • PSPS infrastructure downtime (absolute and normalized by RFW days)
Situational awareness and forecasting	7. Ignition likelihood estimation	The ability of the electrical corporation to assess the likelihood of ignition across the grid under near-real-time and short-range forecasted weather and grid operating conditions. This capability focuses on the integration of near-real-time weather forecasting (Capability 10) with historic failure/ignition data on equipment and vegetation-related ignitions to evaluate the likelihood in the short-term. This should also be informed by real-time monitoring of grid system faults, failures, etc. (Capability 12).	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • PSPS likelihood	• Ignition likelihood maps compared with observed ignition maps • Grid risk maps
	8. Weather forecasting ability	The ability of the electrical corporation to generate accurate short-range (days to weeks) weather forecasts across the electrical corporation's service territory. This capability is intended to cover the accuracy of forecasts of weather which can result in an ignition and large fire spread.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • PSPS likelihood	• Monitoring of forecast performance at different lead times

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	9. Wildfire spread forecasting	For near-real-time monitoring and forecasting purposes, the ability of the electrical corporation to model various wildfire scenarios, characterize the statistical distribution of outcomes, and quantify the likelihood of fire spread from all electrical corporation T&D lines and equipment in the electrical corporation's service area. This capability is intended to cover the accuracy of forecasts of wildfire propagation in near-real time.	• Wildfire spread likelihood • Wildfire hazard intensity	• Forecasted fire perimeters (i.e., the spatial distribution of the fire line) evaluated at different positive lead times compared with observed fire perimeters
	10. Data collection for near-real-time conditions	The ability of the electrical corporation to collect and process measurements of key quantities across the electrical corporation's service area. Measurements may be obtained from electrical corporation-owned instruments or from external sources such as National Oceanic and Atmospheric Administration (NOAA). This capability is intended to cover the collection of data for assessment and prediction of wildfire occurrence and spread in near-real time.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • PSPS likelihood	• Geo-spatial grid health (i.e., how often is repair/inspection required across service area)
	11. Wildfire detection and alarm systems	The ability of the electrical corporation to detect incipient fires prior to rapid growth within the electrical corporation's area of service (particularly along the electrical corporation's transmission and distribution lines and equipment) and to notify relevant stakeholders and customers of the ignition. This includes the availability of sensors to detect fires and anomalies throughout the service area and relay that data through communications frameworks (means of transmission, bandwidth of the transmission, and interpretability of the signal) to responsible electrical corporation personnel and other stakeholders. This communication contains sufficient information for the operator to follow established procedures to distinguish between the presence of a fire, a nuisance condition, or a false alarm.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • PSPS likelihood	• Time to detection (i.e., performance when ignition time is known) • Quantity of false detections and missed ignitions (detection accuracy) • Time to notify customers and stakeholders after a detection • Effectiveness of notification strategies • Quality of detection information (such as location)

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	12. Centralized monitoring of real-time conditions	The intent of this capability is for an electrical corporation to aggregate information from various near-real-time weather monitoring, grid ignition monitoring, grid diagnostics, wildfire detection and alarm systems, as well as other analytical systems and models (e.g., weather forecasting, wildfire spread modeling) and apply this information to evaluate the ongoing wildfire and PSPS risks to support emergency management decision making. This capability also includes the physical location of the centralized monitoring systems, redundancy of systems, operational resiliency (e.g., power supplies, emergency/standby power, construction type, size), staffing, training, and qualifications of staff managing and operating the central monitoring station or emergency operation center.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • PSPS likelihood	• Time to notify customers and stakeholders after a detection • Quality of detection information • Time to verify a detection

Grid design, inspections, and maintenance	13. Asset inventory and condition database	The ability of the electrical corporation to collect and process the inventory and condition of deployed lines and assets within their service area including the timeliness and accuracy of data entry from inspections as well as the accuracy and accessibility of the information for the development of risk models	• Equipment likelihood of ignition	• Database reflects current condition of assets
				  Completeness
				  Timeliness
				• Percentage of lessons-learned flagged for correction

	14. Asset inspections	The ability of the electrical corporation to inspect assets and characterize the condition of these assets. This includes inspection frequency, scope, quality assurance/training, and reporting	• Equipment likelihood of ignition	• Percentage of HFTD areas inspected per year • Findings per inspection • QA/QC, Quantity of equipment failures that were not flagged in the inspections (%)
	15. Asset maintenance and repair	The ability of the electrical corporation to effectively maintain and repair assets in a timely and risk-informed manner to mitigate risk-inducing failure.	• Equipment likelihood of ignition • PSPS likelihood • PSPS exposure potential	• Average time delay between inspection findings and maintenance in HFTD areas • Average time delay between inspection findings and maintenance in non-HFTD areas • Average number of customers, customer hours, and critical infrastructure impacted by a PSPS per single circuit in HFTD areas. • Total percentage of grid segmentation/localization features normalized by circuit length in HFTD areas.

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	16. Grid design and resiliency	The electrical corporation's approach towards grid design that focuses on reducing the likelihood of ignition and consequences of PSPS. Grid design encompasses the selection of circuit locations, circuit segmentation, integration of microgrids, and the selection of circuit type to reduce the area affected by wildfires and PSPS events. Grid hardening includes redundant measures to prevent ignition if equipment does fail and the resiliency of the grid to existing fires.	• Equipment likelihood of ignition • PSPS likelihood • PSPS exposure potential	• Average time delay between inspection findings and maintenance in HFTD areas • Average time delay between inspection findings and maintenance in non-HFTD areas • Average number of customers affected by de-energization in a specific circuit segment per event in HFTD areas
	17. Asset and grid personnel training and quality assurance	The ability of the electrical corporation to train employees, contractors, and subcontractors to effectively design, install, inspect, maintain, and repair grid assets. This includes the training of staff, contractors, and subcontractors, documenting qualifications and certificates, evaluating capabilities, and providing necessary tools and equipment to perform required activities (unless otherwise provided by contractors/subcontractors meeting specified standards).	• Equipment likelihood of ignition • PSPS likelihood • PSPS exposure potential	• Frequency of drills, simulations, and exercises • Passing rate of drills and training activities • Completeness and consistency of training materials (manuals, exams, self-tests) Fraction of procedures covered in training Quality controls to update previously trained employees on changes to procedures Quality of materials is independently reviewed by third-party SMEs • Fraction of personnel (employee and contractor) working in HFTD areas that are current in their training
Vegetation management and inspections	18. Vegetation inventory and condition database	The ability of the electrical corporation to generate and maintain an accurate inventory database of vegetation along rights of way, and vegetation with strike potential within its service area, including the type and condition of each vegetation. This capability includes the scope, precision, and quality of the electrical corporation's documentation of vegetation inventory.	• Contact by vegetation likelihood of ignition	• Database reflects current condition of assets Completeness Timeliness • Database flags new risks since last survey
	19. Vegetation inspections	The ability of the electrical corporation to inspect vegetation along rights of way, and vegetation with strike potential for its assets. This includes both the quality and frequency of vegetation inspections.	• Contact by vegetation likelihood of ignition	• Percentage of high-risk fire areas inspected per year • Findings per inspection • Findings from QA/QC • Time between initial and detailed inspections

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	20. Vegetation treatment	The electrical corporation's standards and actions for treating vegetation that is around lines and equipment which has the potential to cause an ignition. This includes both vegetation grow-in and fall-in (strike potential) mitigation efforts as well as post-trim vegetative waste removal. This capability focuses on how quickly and effectively the electrical corporation responds to findings from inspections.	• Contact by vegetation likelihood of ignition	• Vegetation risk events • Time between routine findings and vegetation trimming • Time between imminent hazard findings and vegetation trimming
	21. Vegetation personnel training and quality assurance	The ability of the electrical corporation to train employees, contractors, and subcontractors to effectively inspect and treat vegetation that is around lines and equipment that has the potential to cause an ignition. This includes the training of staff, contractors, and subcontractors, documenting qualifications and certificates, evaluating capabilities, and providing necessary tools and equipment to perform required activities (unless otherwise provided by contractors/subcontractors meeting specified standards).	• Contact by vegetation likelihood of ignition	• Frequency of drills, simulations, and exercises • Passing rate of drills and training activities • Completeness and consistency of training materials (manuals, exams, self-tests) Fraction of procedures covered in training Quality controls to update previously trained employees on changes to procedures Quality of materials is independently reviewed by third-party SMEs • Fraction of personnel (employee and contractor) working in HFTD areas that are current in their training
Grid operations and protocols	22. Protective equipment and device settings	The ability of the electrical corporation to effectively and automatically de-energize segments of the grid rapidly when faults occur. This ability is enabled by the use of protective devices such as reclosers, which under normal operating conditions reclose the circuit once the line is cleared of a temporary fault. Under wildfire threat conditions, these devices may be set to activate more quickly and be programmed to remain open leaving a segment of the circuit de-energized. The frequent use of high threshold settings can have a negative impact on communities. Mature calibrations, using locally relevant thresholds based on data and forecasting, will optimize these settings to minimize nuisance de-energizations.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • PSPS likelihood	• Fraction of circuit miles in HFTD areas protected by early/sensitive detection systems • Average time between de-energization and inspection of line • Average customers impacted per automated de-energization • Number of automated de-energizations per RFW-OCM

Category	Capability	Capability Description	Fundamental Risk Components	Metrics

	23. Incorporation of ignition risk factors in grid control	The ability of the electrical corporation to incorporate risk considerations into real-time grid control. This includes defined procedures to control operation above rated nameplate capacity (over-load operation), tracking and recording operation conditions, and estimating equipment life based on grid operational history.	• Equipment likelihood of ignition
			• Contact by vegetation likelihood of ignition
			• Contact by object likelihood of ignition
			• PSPS likelihood
				• Circuit mile days operated above nameplate capacity
				  ○ In HFTD areas
				  ○ Overall grid
				• RFW-OCM operated above nameplate capacity
				  ○ In HFTD areas
				  ○ Overall grid

	24. PSPS operating model	The ability of the electrical corporation to effectively implement a PSPS to reduce the likelihood of an ignition. This includes the ability to accurately assess the net change in risk associated with a PSPS event (i.e., accurate comparison of the wildfire and PSPS risk) and to use this assessment to inform PSPS decision making as well as the establishment of protocols for the initiation of a PSPS.	• PSPS exposure potential	• Accuracy of PSPS decisions • Granularity of PSPS decisions • PSPS customer hours normalized by RFW-OCM • PSPS critical infrastructure hours normalized by RFW-OCM
	25. Protocols for PSPS re-energization	The ability of the electrical corporation to effectively re-energize their grid after implementing a PSPS. This includes conducting inspections of their own equipment as well as protocols in place to notify customers who own non-electrical corporation overhead distribution equipment. In addition, electrical corporations must have procedures and equipment in place to prevent back-feed of power from connected non-electrical corporation backup power from energizing electrical corporation equipment unintentionally.	• PSPS exposure potential	• Circuit miles inspected per manhour • Speed of re-energization • Number of re-energization related ignitions • Customers notified of re-energization timing
	26. Ignition prevention and suppression	The ability of the electrical corporation to train employees, contractors, and subcontractors to prevent and/or reduce the likelihood of causing an ignition, control or suppress an incipient phase fire and respond effectively per emergency management protocols. This includes the training of staff, contractors, and subcontractors, documenting qualifications and certificates, evaluating capabilities, and providing necessary tools and equipment to perform required activities (unless otherwise provided by contractors/subcontractors meeting specified standards).	• Wildfire spread likelihood	• Fraction of risk events which result in a sustained ignition • Fraction of ignitions which transition to a wildfire • Fraction of maintenance activities in HFTD areas with fire suppression and safety teams on-site • Fraction of vegetation management activities in HFTD areas with fire suppression and safety teams on-site • Fraction of personnel (employee and contractor) working in HFTD areas that are current in their training

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
Emergency and Disaster Planning and Preparedness	27. Wildfire- and PSPS-emergency and disaster preparedness plan	The extent and frequency of evaluating, developing, integrating, and maintaining wildfire- and PSPS-specific emergency and disaster preparedness strategies, practices, and procedures into the electrical corporation's overall Emergency and Disaster Preparedness Plan. This includes protocols, policies and procedures for preparation and planning before, during and after an incident; defining roles and responsibilities for key personnel, qualifications, and training; resource planning and allocation; plans for drills, simulations, and tabletop exercises; strategies for coordinating and collaborating with Public Safety Partners through common standards and structures to ensure safety and timeliness. Increasing maturity is dependent on the extent, frequency and scale of preparedness and planning practices (e.g., frequency and scope of drills, collecting data from drills and after-action reports to integrate lessons learned, and remedial actions into improving plans).	• Wildfire exposure potential • Community vulnerability to wildfire • PSPS exposure potential • Community vulnerability to PSPS	• Frequency of coordinating, reviewing, and updating plans • Frequency of drills, simulations, and exercises • Fraction of relevant agencies with integrated plans • Percent of stakeholder feedback integrated into plan updates • Fraction of relevant stakeholders involved in drills • Fraction of lessons learned integrated into updated plans
	28. Collaboration and coordination with Public Safety Partners	The ability of the electrical corporation to coordinate and collaborate with Public Safety Partners at state, county, city, and tribal levels on wildfire and PSPS emergency and disaster preparedness, response, and recovery activities within the electrical corporation's service territory. This includes identifying all relevant public safety partners, their contact information and having MOAs in place for defined role & responsibilities before, during and after an incident. This also includes actions for evaluating, designing, and coordinating appropriate protocols and procedures for effective emergency communication strategies (e.g., voice and data), use of systems and technologies. This includes the capacities to synthesize and communicate near-real-time information. This also includes frequently conducting internal and external exercises and drills.	• Wildfire exposure potential • Community vulnerability to wildfire • PSPS exposure potential • Community vulnerability to PSPS	• Frequency of coordinating, reviewing, and updating communication plan • Percent of stakeholder feedback integrated into plan updates • Frequency of drills, simulations, and exercises • Percent of relevant stakeholders involved in drills • Percentage of lessons learned integrated into improving communication plan and associated systems

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	29. Public emergency communication strategy	The ability of the electrical corporation to develop, integrate and maintain an effective, near-real time communication strategy for informing essential customers and the general public before, during and after wildfires, outages due to wildfires and PSPS events, and service restoration. This includes policies, practices, and procedures to establish appropriate communication protocols to ensure timeliness, accuracy, and completeness of communications, particularly for access and functional needs (AFN) and other vulnerable populations. This also includes effectiveness of communicating information on high fire danger and PSPS conditions, location, and extent of electrical corporation-initiated wildfires or PSPS events, and referrals to relevant public wildfire response and recovery resources.	• Wildfire exposure potential • Community vulnerability to wildfire • PSPS exposure potential • Community vulnerability to PSPS	• Frequency of coordinating, reviewing, and updating communication plan • Percent of stakeholder feedback integrated into plan updates • Frequency of drills, simulations, and exercises • Percent of relevant stakeholders involved in drills • Percentage of lessons learned integrated into improving communication plan and associated systems
	30. Preparedness and planning for service restoration	The ability of the electrical corporation to restore service after a wildfire-related outages and PSPS events in a timely, safe, and coordinated manner. This includes having enough highly qualified staff and contract personnel, appropriate training programs, planning and allocation of resources (personnel and equipment), coordination with public safety partners and other electrical corporations, and plans for notifying customers. This also includes having policies, practices, and protocols in place to coordinate power restoration with other interconnected power entities.	• Equipment likelihood of ignition • Wildfire exposure potential • Community vulnerability to wildfire	• Number of re-energization related ignitions • Frequency of coordinating, reviewing, and updating restoration plans • Percent of stakeholder feedback integrated into restoration plan updates • Frequency of drills, simulations, and exercises • Percent of relevant stakeholders involved in drills • Percentage of lessons learned integrated into improving restoration plan
	31. Customer support in wildfire and PSPS emergencies	Resources dedicated to customer support during emergencies, such as outage reporting, support for low-income customers, billing adjustments, repair processing and timing, community assistance locations and services, medical baseline support services, etc.	• Wildfire exposure • Wildfire vulnerability • PSPS exposure • PSPS vulnerability	• Reduced percentage of customer "busies" • Reduced impact to AFN and other vulnerable populations during and after wildfires and PSPS events • Reduced secondary, indirect impact to life-safety and livelihoods from wildfires and PSPS incidents

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	32. Learning after wildfires and PSPS events	The ability of the electrical corporation to perform post-wildfire investigations (e.g., causal analysis, precursor risk events, after action reviews), as well as proactive diagnostic/performance testing and near miss studies to identify technical and human behavior shortcomings and other sources of error that can inform improvements to operations, management, technical systems, and other fire safety features of the Wildfire Mitigation Plan.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • Wildfire exposure potential • Wildfire vulnerability • PSPS likelihood • PSPS exposure potential • PSPS vulnerability	• Results and lessons learned from wildfire and PSPS events that have occurred • Frequency of stakeholder feedback • Frequency of plan updates based on lessons learned • Number of human-caused errors/omissions • Number of equipment failures • Number of equipment failures on de-energized segments • Number of potential ignition sources on de-energized segments • Number of ignitions • Percent of fire leading to catastrophic outcomes • Percent of near miss fires leading to catastrophic outcomes • PSPS consequences (e.g., number of customers impacted, duration of PSPS event)

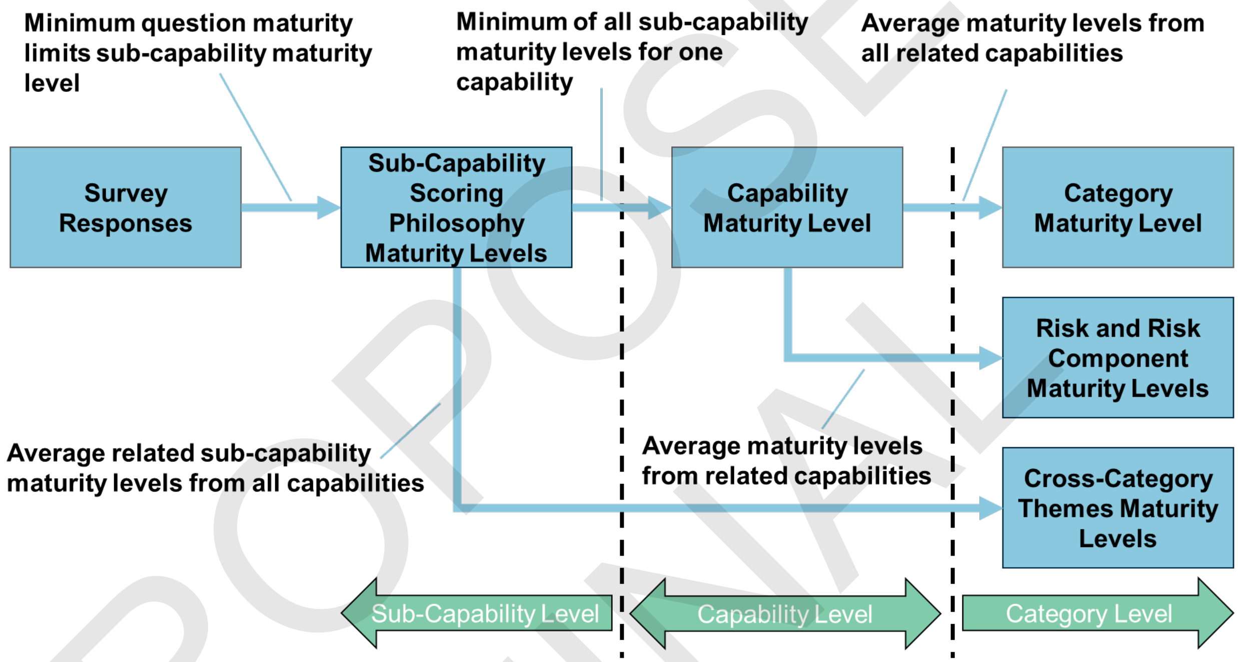
Category	Capability	Capability Description	Fundamental Risk Components	Metrics
Community outreach and engagement	33. Public outreach and education awareness program	The ability of the electrical corporation to develop, update and maintain an effective public outreach program to educate and raise the awareness of the public on the risks of wildfires and PSPS incidents, as well as appropriate preparedness activities for each incident type. This includes designing and establishing a public outreach program that addresses the specific needs of the community, effectively engages all key community stakeholder groups (e.g., individuals, families, homeowners, ranchers, AFN,, rural & urban populations, businesses, other civil society groups), and provides locally relevant information to assist individuals, families, and civil society groups on how to prepare and plan for wildfire and PSPS events before, during and after.	• Wildfire exposure potential • Wildfire vulnerability • PSPS exposure potential • PSPS vulnerability	• Reduced loss of life and property due to wildfires, and outages due to wildfires or PSPS events • Reductions in consequences to social capital • Increased access to landowner properties for vegetation management • Increased participation of the general public, medical baseline, AFN, socially vulnerable groups, and other vulnerable populations on providing feedback on WMP
	34. Public engagement in electrical corporation wildfire mitigation planning	The ability of the electrical corporation to implement strategies and actions to provide various methods for customers, the general public, and other community groups to actively participate in the electrical corporation's wildfire mitigation planning process. This includes various opportunities for the public to participate, offer views, have open and transparent communications, etc. with the electrical corporation.	• Wildfire exposure • Wildfire vulnerability • PSPS exposure • PSPS vulnerability	• Reduced loss of life and property due to wildfires, and outages due to wildfires or PSPS events • Increased participation of customers, the general public, and other community groups in the electrical corporation's wildfire mitigation planning process • Reduced impacts to AFN, medical baseline, and socially vulnerable populations
	35. Engagement with AFN and socially vulnerable populations	The ability of the electrical corporation to develop, integrate and maintain a targeted communication, outreach, and engagement program (policies, procedures, systems) to identify, understand and serve the specific needs of AFN, medical baseline, and socially vulnerable populations to the risks before, during and after wildfire and PSPS events. This includes designing, adapting, and implementing strategies that provide diverse, equitable and inclusive public outreach programs (community education and awareness raising), stakeholder participation & engagement initiatives, communication strategies, response and recovery resources that work for the whole community.	• Wildfire vulnerability • PSPS vulnerability	• Reduced impacts to AFN, medical baseline and socially vulnerable populations • Increased depth, breadth, and access of information to AFN, medical baseline, and socially vulnerable populations • Increased participation of AFN, medical baseline, and socially vulnerable populations on WMP and other wildfire mitigation programs/needs.

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	36. Collaboration on local wildfire mitigation planning	The extent and effectiveness of the electrical corporation's collaboration with local governments and community groups that are involved in local wildfire and PSPS risk reduction initiatives (e.g., community wildfire protection plans, wildfire safety elements in general plans, community chipper events, grazing programs, home ignition zone assessments, structural hardening activities). This includes the electrical corporation's level of support and commitment of resources for community-led, grass-roots initiatives that reduce wildfire & PSPS risks, reduce individual and community vulnerabilities, and increase local capacities to prepare, prevent, respond, and recover.	• Wildfire spread likelihood • Wildfire hazard intensity • Wildfire exposure potential • Wildfire vulnerability • PSPS likelihood • PSPS exposure potential • PSPS vulnerability	• Reduced loss of life and property due to wildfires, and outages due to wildfires or PSPS events • Reduced impacts to AFN, medical baseline, and socially vulnerable populations • Increased access to landowner properties for vegetation management • Increased number of collaborators • Increased frequency of collaborations • Increased coordination efforts between electrical corporation and local partners
	37. Collaboration and best practice sharing with other electrical corporations	The extent and degree of the electrical corporation's collaboration with other electrical corporations and electrical corporations in sharing and implementing lessons learned, best practices, and standards for wildfire and PSPS risk mitigation programs. This includes the electrical corporation's degree of involvement in establishing consensus standards and evaluating the relevance and validity of best practices.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • Wildfire exposure potential • Wildfire vulnerability • PSPS likelihood • PSPS exposure potential • PSPS vulnerability	• Frequency of collaborations • Percent of best practices integrated into plan updates • Frequency of benchmarking • Frequency of plan updates based on lessons learned • Reductions in wildfire consequences • Reductions in number and impacts of PSPS

4 Maturity Level Determination

Energy Safety determines maturity levels based on the electrical corporation's self-reported survey responses through the process shown in Figure 2. In general, the maturity level at all sub-capability and capability levels is determined by the **minimum** of all related input factors, and the maturity level at all summary levels is determined by the **average** of all related input factors. The following subsections provide additional detail on this process.

Figure 1. High-level overview of maturity level determination process.



4.1 Sub-Capability Maturity Levels

Energy Safety uses the survey responses to calculate the sub-capability maturity level for each sub-capability. This is done comparing the response to each survey question to the detailed maturity levels provided for each capability in Section 5. The maturity level for each sub-capability is the **minimum** value based on the survey responses related to that sub-capability.

For example, sub-capability C (learning and improvement and QA/QC) for Capability 10 (data collection for near-real-time conditions) contains requisites for SME review, processes for handling data discrepancies, participation in industry groups, and third-party data benchmarks for increasing maturity levels. Each of these requisites has a corresponding question in the survey. If an electrical corporation leverages

SME review and participates in industry groups but does not satisfy the requirements on data discrepancies, data implementation, and third-party data benchmarks, it does not meet the requirements of level 1. The electrical corporation would therefore receive a maturity level of 0 for this sub-capability.

4.2 Capability Maturity Levels

To reach a given level of maturity, an electrical corporation must meet all requirements for that level and each previous level for all sub-capabilities relevant to that capability. The capability level is thus the **minimum** of the relevant sub-capability maturity levels. The maximum attainable maturity for each sub-capability is 4 and, for sub-capabilities which do not have additional criteria associated with level 4 maturity, meeting all of the preceding criteria qualifies the electrical corporation for a score of 4.

For example, an electrical corporation that receives a mix of maturity levels ranging from 1 to 3 for the various sub-capability will receive a maturity level of 1 for the capability, as seen in Table-9.

Table 9. Example determination of capability maturity level based on sub-capability maturity levels

Capability	Sub-Capability	Maturity Level
10. Data collection for near-real-time conditions	a. Automation	2
	b. Frequency	2
	c. Learning and continuous improvement & QA/QC	2
	d. Level of sophistication	1 (minimum)
	e. Spatial granularity	3
	f. Transparency	3
	g. Validation	2
	Capability Maturity Level	**1**

4.3 Category Maturity Levels

The category maturity levels are determined by taking the **average** of all capabilities within that category, as shown in Table-10.

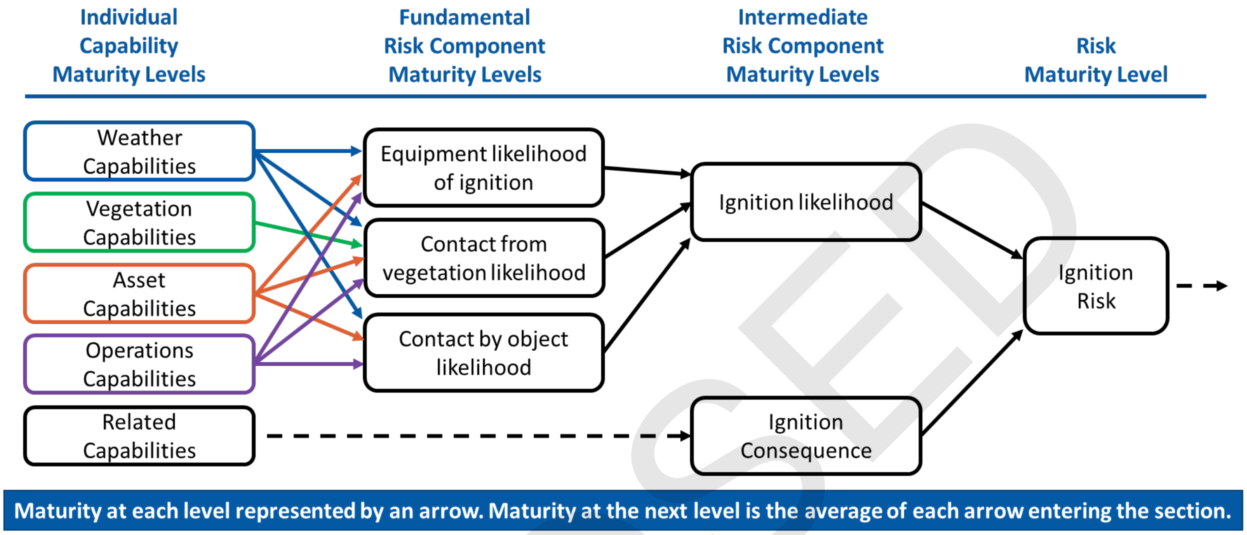
Table 10. Example calculation of electrical corporation category maturity level calculation based on individual capability maturity levels.

Category	Capability	Maturity Level
C. Grid design, inspections, and maintenance	13. Asset inventory and condition database	3
	14. Asset inspections	2
	15. Asset maintenance and repair	1
	16. Grid design and resiliency	3
	17. Asset and grid personnel training and quality assurance	0
	Capability Maturity Level	**1.8 (Average)**

4.4 Risk and Risk Component Maturity Levels

A fundamental risk component maturity level is the **average** of the maturity levels of all capabilities linked to that risk component. This is calculated as it is for the category maturity levels. The maturity level of each intermediate risk component, hazard risk, and overall risk the **average** of the maturity levels of the risk components composing the maturity level. Figure 3 provides an overview of this process.

Figure 2. High-level overview of risk and risk component maturity level determination.



4.5 Cross Category Theme Maturity Levels

Maturity levels on cross category themes are calculated by **averaging** the levels on related sub-capabilities across capabilities and categories. This is done in the same way as it is for the category maturity levels (shown in Section 4.3).

5 Detailed Maturity Levels

The following pages provide an overview of the detailed requirements to reach each maturity level for each capability.

5.1 A. Risk Assessment and Mitigation Strategy

5.1.1 1. Statistical weather, climate, and wildfire modeling

Statistical weather, climate, and wildfire modeling		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Climate change	Impact of long-term climate change on the statistical weather and fire behavior modeling. More mature systems evaluate the impact of climate change on the length of the fire season, statistical weather conditions, statistical vegetation growth and moisture, vegetative species / invasive species, and extension of the WUI.	Electrical corporation does not consider long term climate change in statistical weather and fire modeling used for long-term planning.	Electrical corporation considers the impact of climate change on at least one of the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species	Electrical corporation considers the impact of climate change on at least two of the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species	Electrical corporation considers the impact of climate change on at least three of the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species	Electrical corporation considers the impact of climate change on all the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species

Statistical weather, climate, and wildfire modeling		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Inputs to estimate statistical weather, climate, and wildfire behavior are comprehensive including all key physics in weather, fire, and vegetation. Statistical conditions are evaluated at required percentiles.	Electrical corporation does not account for statistical weather, climate, and fire behavior.	Fire weather conditions meet the minimum design scenarios established by Energy Safety requirements. Electrical corporation calculates weather parameters (e.g., wind speed, relative humidity, temperature, and fuel moisture content) required to estimate the likelihood of ignition, wildfire spread probability, and wildfire hazard intensity.	Fire weather conditions meet the minimum design scenarios established by Energy Safety requirements. Model inputs at a minimum include all the following: 1. Local topography 2. Local weather 3. Local vegetation 4. Climate change requirements for level 2 Model outputs at a minimum include all the following: 1. Statistical fire weather conditions at 20-year, 60-year, and 300-year return intervals 2. Relative fire spread likelihood across service territory	Fire weather conditions meet the minimum design scenarios established by Energy Safety requirements. Model inputs at a minimum include all the following: 1. Local topography 2. Local weather 3. Local vegetation 4. Climate change requirements for level 3 Model outputs at a minimum include all the following: 1. Statistical fire weather conditions at 20-year, 60-year, and 300-year return intervals 2. Relative fire spread likelihood across service territory 3. Estimated acres burned at 20-year, 60-year, and 300-year return intervals	Fire weather conditions meet the minimum design scenarios. established by Energy Safety requirements. Model inputs at a minimum include all the following: 1. Local topography 2. Local weather 3. Local vegetation 4. Climate change requirements for level 4 5. Fire service activities / containment and suppression activities 6. Community-specific vegetation treatment plans throughout service territory Model outputs at a minimum include all the following: 1. Statistical fire weather conditions at 20-year, 60-year, and 300-year return intervals 2. Relative fire spread likelihood across service territory Estimated acres burned at 20-year, 60-year, and 300-year return intervals 4. Air quality effects including GHG emissions and population health impacts

Statistical weather, climate, and wildfire modeling		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. This includes weather, climate, and wildfire input data and modeling results used to prioritize mitigation activities.	No additional requirements beyond level 1	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. This includes weather, climate, and wildfire input data and modeling results used to prioritize mitigation activities. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3

Statistical weather, climate, and wildfire modeling		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Learning and continuous improvement	Historic model performance is consistently compared to observed conditions to determine discrepancies and biases in the model not covered by the validation basis. Processes are in place to document these findings and improve the models over time.	No process in place to inform model based on errors in model predictions or comments from stakeholders.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format.	No additional requirements beyond level 1	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions. Electrical corporation funds and participates in both independent and collaborative research that focuses on extending best practices.

Statistical weather, climate, and wildfire modeling		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Modularization	Modularization of the software models. Higher maturity includes more modular code which can be used to evaluate the impact of different assumptions on the statistical results.	Software code is not modular.	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Statistical weather analysis 2. Statistical fire behavior analysis 3. Statistical seasonal vegetation analysis	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Statistical weather analysis 2. Statistical fire behavior analysis 3. Statistical seasonal vegetation analysis 4. Impact of climate change on statistical weather 5. Impact of weather on seasonal vegetation moisture 6. Impact of weather on seasonal vegetation growth cycle	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least two of the following: 1. Statistical weather analysis 2. Statistical fire behavior analysis 3. Statistical seasonal vegetation analysis 4. Impact of climate change on statistical weather 5. Impact of weather on seasonal vegetation moisture 6. Impact of weather on seasonal vegetation growth cycle 7. Synoptic scale weather 8. Mesoscale weather	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include all the following: 1. Statistical weather analysis 2. Statistical fire behavior analysis 3. Statistical seasonal vegetation analysis 4. Impact of climate change on statistical weather 5. Impact of weather on seasonal vegetation moisture 6. Impact of weather on seasonal vegetation growth cycle 7. Synoptic scale weather 8. Mesoscale weather 9. Large eddy scale weather
Spatial granularity	Vertical and horizontal / geo-coordinate resolution of the weather, climate, and wildfire predictions. Higher maturity is achieved by using a sufficiently fine resolution to resolve the local effects of fire and weather.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Horizontal resolution of the statistical weather and climate modeling is evaluated at a resolution <= 4 km. Horizontal resolution of the statistical fire modeling is evaluated at a resolution <= 1 km. Vertical resolution of the statistical weather modeling is sufficient to evaluate average conditions at measured locations in the service territory.	Horizontal resolution of the statistical weather and climate modeling is evaluated at a resolution <= 2 km. Horizontal resolution of the statistical fire modeling is evaluated at a resolution <= 100 m. Vertical resolution of the statistical weather and climate modeling is sufficiently resolved to evaluate the local conditions at the average height of lines on a circuit.	Horizontal resolution of the statistical weather and climate modeling is evaluated at a resolution <= 1 km. Horizontal resolution of the statistical fire modeling is evaluated at a resolution <= 30 m. Vertical resolution of the statistical weather and climate modeling is sufficiently resolved to evaluate the local conditions at the average height of lines on a span.	Horizontal resolution of the statistical weather and climate modeling is evaluated at a resolution <= 100 m. Horizontal resolution of the statistical fire modeling is evaluated at a resolution <= 10 m. Vertical resolution of the statistical weather and climate modeling is sufficiently resolved to evaluate the local conditions at the average height of individual lines.

Statistical weather, climate, and wildfire modeling		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Stability of assumptions	Assumptions and limitations of the model are known, and the model does not need significant changes in future updates to the WMP	Assumptions and limitations of the model(s) are unknown and/or not documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are evaluated using hindcast in the development environment. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are developed in the previous year and are planned for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Validation results justify no changes to modeling assumptions for a period **greater than one year**. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.

Statistical weather, climate, and wildfire modeling		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to input data, source code, and an automated verification and validation suite to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum Energy Safety reporting requirements.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical documentation is available to the public.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial and geospatial data with the community. Model software source code and data for verification and validation provided by the electrical corporation to the public.

Validation	Documentation of the uncertainty in weather, climate, and fire behavior predictions and the resulting sensitivity of the overall risk model predictions to 1) inputs to these models 2) modeling assumptions, limitations, and parameterizations, and 3) down-stream impacts of uncertainty propagation in model predictions.	The statistical uncertainty in model inputs parameters (aleatory) and model assumptions, limitations, and parameterizations (epistemic) and the impact on model outputs is unknown or not documented. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model inputs parameters (aleatory) and model assumptions, limitations, and parameterizations (epistemic) and the impact on model outputs is known and documented in accordance with Energy Safety requirements. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model inputs parameters (aleatory) and model assumptions, limitations, and parameterizations (epistemic) and the impact on model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. Sensitivity analyses are used to evaluate model predictions at different percentiles for use in down-stream models and decision making. The choice of percentile is justified in the WMP.	The statistical uncertainty in model inputs parameters (aleatory) and model assumptions, limitations, and parameterizations (epistemic) and the impact on model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. Sensitivity analyses are used to evaluate model predictions at different percentiles for use in down-stream models and decision making. The choice of percentile is justified in the WMP. The uncertainty in measurements used in model validation is known and documented.	The statistical uncertainty in model inputs parameters (aleatory) and model assumptions, limitations, and parameterizations (epistemic) and the impact on model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. Sensitivity analyses are used to evaluate model predictions at different percentiles for use in down-stream models and decision making. The choice of percentile is justified in the WMP. The uncertainty in measurements used in model validation is known and documented. Uncertainty propagation is analytically calculated and presented using standard methods such as Bayesian inference and uncertainty quantification.

Statistical weather, climate, and wildfire modeling		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation, documentation, and disclosures	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to validate performance. Model performance on each key metric demonstrates a **systematic bias < 20%.** Model performance on each key metric demonstrates a standard **deviation in error < 40%.** Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to validate performance. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a **systematic bias < 10%.** Model performance on each key metric demonstrates a standard **deviation in error < 20%.** Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to validate performance. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a **systematic bias < 5%.** Model performance on each key metric demonstrates a standard **deviation in error < 15%.** Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.

5.1.2 2. Calculation of wildfire and PSPS hazard and exposure to societal values

Calculation of wildfire and PSPS hazard and exposure to societal values		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation	Automated calculation of wildfire and PSPS hazard and exposure potential in the service area.	Calculation of wildfire and PSPS hazard intensity and exposure potential in the service area are not automated.	Calculation of wildfire and PSPS hazard intensity and exposure potential in the service area are not automated.	Calculation of wildfire and PSPS hazard intensity and exposure potential in the service area are automated.	Calculation of wildfire and PSPS hazard intensity and exposure potential in the service area are automated. Discrepancies between model calculation and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review.	Calculation of wildfire and PSPS hazard intensity and exposure potential in the service area are automated. Discrepancies between model calculation and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review. Discrepancies are automatically integrated into the predictive model to improve future performance.

Calculation of wildfire and PSPS hazard and exposure to societal values		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Model inputs and outputs to quantify wildfire and PSPS hazard and exposure potential in the service area are comprehensive including all aspects of weather, vegetation, and community composition.	Model inputs and outputs to quantify wildfire and PSPS hazard and exposure potential in the service area do not meet the minimum expectations or requirements.	Model inputs to calculate wildfire and PSPS hazard and exposure potential include the following: 1. Population 2. Buildings 3. Fire intensity Model outputs include the following: 1. Loss of life 2. Injuries 3. Property damage 4. Acres burned 5. Number of customers impacted by the PSPS 6. Number of AFN, medical baseline, and socially vulnerable customers impacted by the PSPS	Model inputs to calculate wildfire and PSPS hazard and exposure potential include the following: 1. Population 2. Buildings 3. Fire intensity Model outputs include the following: 1. Loss of life 2. Injuries 3. Property damage 4. Acres burned 5. Number of customers impacted by the PSPS 6. Number of AFN, medical baseline, and socially vulnerable customers impacted by the PSPS 7. Customer hours of PSPS 8. Customer hours of PSPS for AFN, medical baseline, and socially vulnerable customers	Model inputs to calculate wildfire and PSPS hazard and exposure potential include the following: 1. Population 2. Buildings 3. Fire intensity 4. Ingress & egress capacity and planning Model outputs include the following: 1. Loss of life 2. Injuries 3. Property damage 4. Acres burned 5. Number of customers impacted by the PSPS 6. Number of AFN, medical baseline, and socially vulnerable customers impacted by the PSPS 7. Customer hours of PSPS 8. Customer hours of PSPS for AFN, medical baseline, and socially vulnerable customers 9. Economic impact on small businesses	Model inputs to calculate wildfire and PSPS hazard and exposure potential include the following: 1. Population 2. Buildings 3. Fire intensity 4. Ingress & egress capacity and planning 5. Containment & suppression difficulty Model outputs include the following: 1. Loss of life 2. Injuries 3. Property damage 4. Acres burned 6. Number of AFN, medical baseline, and socially vulnerable customers impacted by the PSPS 7. Customer hours of PSPS 8. Customer hours of PSPS for AFN, medical baseline, and socially vulnerable customers 9. Economic impact on small businesses

Calculation of wildfire and PSPS hazard and exposure to societal values		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. Definition of each element contained in the databases is clearly explained.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. Definition of each element contained in the databases is clearly explained. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3
QA/QC	Process to evaluate the accuracy of wildfire and PSPS hazard and exposure potential estimation.	No process in place to evaluate the quality of model calculations.	The quality of model calculations is assessed annually through subject matter expert (SME) review.	The quality of model calculations is assessed quarterly through subject matter expert (SME) review.	The quality of model calculations is assessed monthly through subject matter expert (SME) review. Electrical corporation benchmarks wildfire and PSPS hazard and exposure estimation with other electrical corporations.	The quality of model calculations is assessed monthly through subject matter expert (SME) review. Electrical corporation benchmarks wildfire and PSPS hazard and exposure estimation with other electrical corporations. Regular monitoring is complemented with more in-depth analysis to provide a comprehensive understanding of strengths and weaknesses of the system.

Calculation of wildfire and PSPS hazard and exposure to societal values		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Spatial granularity	Granularity of wildfire and PSPS hazard and exposure potential estimation.	Model calculations are conducted at a spatial granularity less than a regional level.	Model calculations are conducted at a regional level (i.e., at a scale larger than individual circuits)	Model calculations are conducted at a circuit level (i.e., independent values for each circuit)	Model calculations are conducted at a span level (i.e., independent values for each span within a circuit)	Model calculations are conducted at an asset level (i.e., independent values for each asset)

Calculation of wildfire and PSPS hazard and exposure to societal values		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Stability of assumptions	Assumptions and limitations of the models used to calculate the wildfire and PSPS hazard and exposure potential are known, and the models do not need significant changes in future updates to the WMP	Assumptions and limitations of the model(s) are unknown and/or not documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are evaluated using hindcast in the development environment. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are developed in the previous year and are planned for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Validation results justify no changes to modeling assumptions for a period **greater than one year**. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.

Calculation of wildfire and PSPS hazard and exposure to societal values		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to input data, source code, and an automated verification and validation suite to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum Energy Safety reporting requirements.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical documentation is available to the public.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial and geospatial data with the community. Model software source code and data for verification and validation provided by the electrical corporation to the public.

Calculation of wildfire and PSPS hazard and exposure to societal values		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to performance. Model performance on each key metric demonstrates a systematic bias < 20%. Model performance on each key metric demonstrates a standard deviation in error < 40%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 10%. Model performance on each key metric demonstrates a standard deviation in error < 20%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 5%. Model performance on each key metric demonstrates a standard deviation in error < 15%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.

5.1.3 3. Calculation of community vulnerability to wildfire and PSPS

Calculation of community vulnerability to wildfire and PSPS		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation	Automated calculation of community vulnerability to wildfire and PSPS in the service area.	Calculation of vulnerability to wildfire and PSPS are not automated	Calculation of vulnerability to wildfire and PSPS are not automated.	Calculation of vulnerability to wildfire and PSPS are automated.	Calculation of vulnerability to wildfire and PSPS are automated. Discrepancies between model calculation and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review.	Calculation of vulnerability to wildfire and PSPS are automated. Discrepancies between model calculation and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review. Discrepancies are automatically integrated into the predictive model to improve future performance.
Comprehensiveness	Model inputs and outputs to quantify community vulnerability to wildfire and PSPS in the service area are comprehensive including all aspects of weather, vegetation, and community composition.	Model inputs and outputs to quantify wildfire and PSPS hazard and exposure potential in the service area do not meet the minimum expectations or requirements.	Model inputs to calculate community vulnerability to wildfire and PSPS include the following: 1. Vulnerable populations (AFN, LEP, elderly) 2. Critical infrastructure Model outputs include the following: 1. Affected number of people for PSPS event occurring 2. Affected number of people for a wildfire occurring	Model inputs to calculate community vulnerability to wildfire and PSPS include the following: 1. Vulnerable populations (AFN, LEP, elderly) 2. Critical infrastructure 3. Redundant systems such as generators 4. Legacy building codes Model outputs include the following: 1. Affected number of people for PSPS event occurring 2. Affected number of people for a wildfire occurring	Model inputs to calculate community vulnerability to wildfire and PSPS include the following: 1. Vulnerable populations (AFN, LEP, elderly) 2. Critical infrastructure 3. Redundant systems such as generators 4. Legacy building codes 5. Community collaborative wildfire preparedness initiatives (e.g., firewise) Model outputs include the following: 1. Affected number of people for PSPS event occurring 2. Affected number of people for a wildfire occurring 3. Potential life and property loss for a wildfire occurring	Model inputs to calculate community vulnerability to wildfire and PSPS include the following: 1. Vulnerable populations (AFN, LEP, elderly) 2. Critical infrastructure 3. Redundant systems such as generators 4. Legacy building codes 5. Community collaborative wildfire preparedness initiatives (e.g., firewise) 6. Availability of ingress and egress Model outputs include the following: 1. Affected number of people for PSPS event occurring 2. Affected number of people for wildfire occurring 3. Potential life and property loss for a wildfire occurring

Calculation of community vulnerability to wildfire and PSPS		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. Definition of each element contained in the databases is clearly explained.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. Definition of each element contained in the databases is clearly explained. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3
QA/QC	Process to evaluate the accuracy of community vulnerability to wildfire and PSPS.	No process in place to evaluate the quality of model calculations.	The quality of model calculations is assessed annually through subject matter expert (SME) review.	The quality of model calculations is assessed quarterly through subject matter expert (SME) review.	The quality of model calculations is assessed monthly through subject matter expert (SME) review. Electrical corporation benchmarks wildfire and PSPS hazard and exposure estimation with other electrical corporations.	The quality of model calculations is assessed monthly through subject matter expert (SME) review. Electrical corporation benchmarks wildfire and PSPS hazard and exposure estimation with other electrical corporations. Regular monitoring is complemented with more in-depth analyses to provide a comprehensive understanding of strengths and weaknesses of the system.
Spatial granularity	Granularity of community vulnerability to wildfire and PSPS.	Model calculations are conducted at a spatial granularity less than a regional level.	Model calculations are conducted at a regional level (i.e., at a scale larger than individual circuits)	Model calculations are conducted at a circuit level (i.e., independent values for each circuit)	Model calculations are conducted at a span level (i.e., independent values for each span within a circuit)	Model calculations are conducted at an asset level (i.e., independent values for each asset)

Calculation of community vulnerability to wildfire and PSPS		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Stability of assumptions	Assumptions and limitations of the models used to calculate the community vulnerability to wildfire and PSPS are known, and the models do not need significant changes in future updates to the WMP	Assumptions and limitations of the model(s) are unknown and/or not documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are evaluated using hindcast in the development environment. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are developed in the previous year and are planned for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Validation results justify no changes to modeling assumptions for a period **greater than one year**. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.

Calculation of community vulnerability to wildfire and PSPS		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to input data, source code, and an automated verification and validation suite to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum Energy Safety reporting requirements.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical documentation is available to the public.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial and geospatial data with the community. Model software source code and data for verification and validation provided by the electrical corporation to the public.

Calculation of community vulnerability to wildfire and PSPS		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to performance. Model performance on each key metric demonstrates a systematic bias < 20%. Model performance on each key metric demonstrates a standard deviation in error < 40%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 10%. Model performance on each key metric demonstrates a standard deviation in error < 20%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 5%. Model performance on each key metric demonstrates a standard deviation in error < 15%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.

5.1.4 4. Calculation of risk and risk components

Calculation of risk and risk components		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Climate change	Impact of long-term climate change on the statistical risk analysis. More mature systems evaluate the impact of climate change on the length of the fire season, statistical weather conditions, statistical vegetation growth and moisture, vegetative species / invasive species, and extension of the WUI.	Electrical corporation does not consider long term climate change in statistical weather and fire modeling used for long-term planning.	Electrical corporation considers the impact of climate change on at least one of the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species	Electrical corporation considers the impact of climate change on at least two of the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species	Electrical corporation considers the impact of climate change on at least three of the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species	Electrical corporation considers the impact of climate change on all the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species

Calculation of risk and risk components		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Inputs to calculate each risk and risk component are comprehensive including all key physics, required values / attributes, and statistical percentiles.	Electrical corporation does not sufficiently calculate risks and risk components.	Electrical corporation calculates each risk and risk component in accordance with Energy Safety requirements. The combination of risks and risk components includes evaluation of the relative importance of the following performance objectives: 1. Life Safety 2. Reliability 3. Affordability	Electrical corporation calculates each risk and risk component in accordance with Energy Safety requirements. Model inputs and outputs at a minimum meet the Level 2 requirements for each of the following capabilities: 1. Statistical Weather, Climate, and Fire Modeling 2. Estimation of Wildfire and PSPS Hazard and Exposure 3. Estimation of Community Vulnerability to Wildfire and PSPS 4. Ignition Likelihood Estimation 5. Weather Forecasting Ability 6. Wildfire Forecasting Ability The combination of risks and risk components includes evaluation of the relative importance of the following performance objectives: 1. Life Safety 2. Property Protection 3. Reliability 4. Affordability	Electrical corporation calculates each risk and risk component in accordance with Energy Safety requirements. Model inputs and outputs at a minimum meet the Level 3 requirements for each of the following capabilities: 1. Statistical Weather, Climate, and Fire Modeling 2. Estimation of Wildfire and PSPS Hazard and Exposure 3. Estimation of Community Vulnerability to Wildfire and PSPS 4. Ignition Likelihood Estimation 5. Weather Forecasting Ability 6. Wildfire Forecasting Ability The combination of risks and risk components includes evaluation of the relative importance of the following performance objectives: 1. Life Safety 2. Property Protection 3. Resiliency 4. Reliability 5. Affordability 6. Environmental Protection	Electrical corporation calculates each risk and risk component in accordance with Energy Safety requirements. Model inputs and outputs at a minimum meet the Level 4 requirements for each of the following capabilities: 1. Statistical Weather, Climate, and Fire Modeling 2. Estimation of Wildfire and PSPS Hazard and Exposure 3. Estimation of Community Vulnerability to Wildfire and PSPS 4. Ignition Likelihood Estimation 5. Weather Forecasting Ability 6. Wildfire Forecasting Ability The combination of risks and risk components includes evaluation of the relative importance of the following performance objectives: 1. Immediate Life Safety 2. Long-Term Health Impacts 3. Property Protection 4. Resiliency 5. Reliability 6. Affordability 7. Environmental Protection 8. Public Perception

Calculation of risk and risk components		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained.	No additional requirements beyond level 1	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3

Calculation of risk and risk components		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Learning and continuous improvement & QA/QC	Historic model performance is consistently compared to observed conditions to determine discrepancies and biases in the model not covered by the validation basis. Processes are in place to document these findings and improve the models over time.	No process in place to inform model based on errors in model predictions or comments from stakeholders.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Risk maps are annually assessed through subject matter expert (SME) review.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Risk maps are annually assessed through an independent third-party subject matter expert (SME) review.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Risk maps are annually assessed through an independent third-party subject matter expert (SME) review. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Risk maps are annually assessed through an independent third-party subject matter expert (SME) review. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions. Electrical corporation funds and participates in both independent and collaborative research that focuses on extending best practices.

Calculation of risk and risk components		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Modularization	Modularization of the software models. Higher maturity includes more modular code which can be used to evaluate the impact of different assumptions on the statistical results.	Software code is not modular.	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Ignition risk 2. PSPS risk	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Ignition risk 2. PSPS risk 3. Ignition likelihood 4. Ignition consequence	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Ignition risk 2. PSPS risk 3. Ignition likelihood 4. Ignition consequence 5. Equipment likelihood of ignition 6. Contact from vegetation likelihood of ignition 7. Contact from object likelihood of ignition 8. Wildfire spread likelihood 9. Wildfire consequence 10. PSPS likelihood 11. PSPS consequence	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Ignition risk 2. PSPS risk 3. Ignition likelihood 4. Ignition consequence 5. Equipment likelihood of ignition 6. Contact from vegetation likelihood of ignition 7. Contact from object likelihood of ignition 8. Wildfire spread likelihood 9. Wildfire consequence 10. PSPS likelihood 11. PSPS consequence 12. Wildfire hazard intensity 13. Wildfire exposure potential 14. Community vulnerability to wildfire 15. PSPS exposure potential 16. Community vulnerability to PSPS

Calculation of risk and risk components		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Spatial granularity	Spatial granularity of the model inputs, outputs, calculation steps, and validation basis on which the risk and risk components calculations build. Higher maturity is achieved by using a sufficiently fine resolution to resolve the local impacts of each modeling capability on the local region.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Spatial granularity of model inputs, outputs, calculation steps, and validation basis at a minimum meet the Level 1 requirements for each of the following capabilities defined in the respective definitions (number reflects the corresponding Maturity capability): 1. Statistical Weather, Climate, and Fire Modeling 2. Estimation of Wildfire and PSPS Hazard and Exposure 3. Estimation of Community Vulnerability to Wildfire and PSPS 7. Ignition Likelihood Estimation 8. Weather Forecasting Ability 9. Wildfire Forecasting Ability	Spatial granularity of model inputs, outputs, calculation steps, and validation basis at a minimum meet the Level 2 requirements for each of the following capabilities defined in the respective definitions (number reflects the corresponding Maturity capability): 1. Statistical Weather, Climate, and Fire Modeling 2. Estimation of Wildfire and PSPS Hazard and Exposure 3. Estimation of Community Vulnerability to Wildfire and PSPS 7. Ignition Likelihood Estimation 8. Weather Forecasting Ability 9. Wildfire Forecasting Ability	Spatial granularity of model inputs, outputs, calculation steps, and validation basis at a minimum meet the Level 3 requirements for each of the following capabilities defined in the respective definitions: (number reflects the corresponding Maturity capability): 1. Statistical Weather, Climate, and Fire Modeling 2. Estimation of Wildfire and PSPS Hazard and Exposure 3. Estimation of Community Vulnerability to Wildfire and PSPS 7. Ignition Likelihood Estimation 8. Weather Forecasting Ability 9. Wildfire Forecasting Ability	Spatial granularity of model inputs, outputs, calculation steps, and validation basis at a minimum meet the Level 4 requirements for each of the following capabilities defined in the respective definitions: (number reflects the corresponding Maturity capability): 1. Statistical Weather, Climate, and Fire Modeling 2. Estimation of Wildfire and PSPS Hazard and Exposure 3. Estimation of Community Vulnerability to Wildfire and PSPS 7. Ignition Likelihood Estimation 8. Weather Forecasting Ability 9. Wildfire Forecasting Ability

Calculation of risk and risk components		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Stability of assumptions	Assumptions and limitations of the model are known, and the model does not need significant changes in future updates to the WMP	Assumptions and limitations of the model(s) are unknown and/or not documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements.). Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are evaluated using hindcast in the development environment. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are developed in the previous year and are planned for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Validation results justify no changes to modeling assumptions for a period **greater than one year**. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.

Calculation of risk and risk components		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to input data, source code, and an automated verification and validation suite to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum reporting requirements of Energy Safety requirements.	Data and methods meet the minimum reporting requirements of Energy Safety requirements. Statistical summary of data and model performance is provided to the public. Model technical documentation is available to the public.	Data and methods meet the minimum reporting requirements of Energy Safety requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	Data and methods meet the minimum reporting requirements of Energy Safety requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial and geospatial data with the community. Model software source code and data for verification and validation provided by the electrical corporation to the public.

Calculation of risk and risk components		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation	Documentation of the uncertainty in risk components and the resulting sensitivity of the overall risk model predictions to 1) inputs to these models and 2) down-stream impacts of uncertainty propagation in model predictions.	The statistical uncertainty in model inputs parameters and outputs is unknown or not documented. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. Sensitivity analyses are used to evaluate model predictions at different percentiles for use in down-stream models and decision making. The choice of percentile is justified in the WMP.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 84th percentile in down-stream models and decision making.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 97.5th percentile in down-stream models and decision making. Uncertainty propagation is analytically calculated and presented using standard methods such as Bayesian inference and uncertainty quantification.

Calculation of risk and risk components		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation & Documentation and disclosures	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to performance. Model performance on each key metric demonstrates a systematic bias < 20%. Model performance on each key metric demonstrates a standard deviation in error < 40%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 10%. Model performance on each key metric demonstrates a standard deviation in error < 20%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 5%. Model performance on each key metric demonstrates a standard deviation in error < 15%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.

5.1.5 5. Risk event tracking and integration of lessons learned

Risk event tracking and integration of lessons learned		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation	Automated integration of risk estimation with informing decision making.	Incident reports from risk events are not automatically entered into the corrective action program.	No additional requirements beyond level 0	Incident reports from risk events are automatically entered into the corrective action program.	Incident reports from risk events are automatically entered into the corrective action program. Risk events are automatically prioritized for SME review based on details of the event.	Incident reports from risk events are automatically entered into the corrective action program. Risk events are automatically prioritized for SME review based on details of the event. Data from risk events are automatically integrated into the risk analysis to improve model quality and validation.
Documentation and disclosures	Documentation of electrical corporation risk event tracking, corrective action program, and integration of lessons learned. Higher maturity includes a more robust and transparent corrective action program which is audited by a third party.	Risk events are not tracked in accordance with Energy Safety requirements.	Risk events are tracked in accordance with Energy Safety requirements.	Risk events are tracked in accordance with Energy Safety requirements. Wildfire and PSPS related risk events are formally tracked in the electrical corporation corrective action program.	Risk events are tracked in accordance with Energy Safety requirements. Wildfire and PSPS related risk events are formally tracked in the electrical corporation corrective action program. Actions to prevent recurrence are formally documented and tracked within the electrical corporation WMP.	Risk events are tracked in accordance with Energy Safety requirements. Wildfire and PSPS related risk events are formally tracked in the electrical corporation corrective action program. Actions to prevent recurrence are formally documented and tracked within the electrical corporation WMP.

Risk event tracking and integration of lessons learned		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	The frequency at which risk events are tracked, evaluated, entered into the corrective action program, and resolved.	Risk events are not tracked in the corrective action program.	Risk events are evaluated and entered into the corrective action program annually.	Risk events are evaluated and entered into the corrective action program **at least quarterly.** Corrective actions are closed within one year of entering the program or, for long lead-time items, have an approved schedule for closure.	Risk events are evaluated and entered into the corrective action program **at least monthly.** Corrective actions are closed within six months of entering the program or, for long lead-time items, have an approved schedule for closure.	Risk events are evaluated and entered into the corrective action program **at least weekly.** Corrective actions are closed within one quarter of entering the program or, for long lead-time items, have an approved schedule for closure.
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. Each risk event should be maintained in the database along with any reconstructions and root cause analysis. More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Risk event data, model inputs, and outputs are maintained in the electrical corporation database(s) with versions documented and maintained. This includes all data tracked on risk events as part of the electrical corporation corrective action program.	No additional requirements beyond level 1	Risk event data, model inputs, and outputs are maintained in the electrical corporation database(s) with versions documented and maintained. This includes all data tracked on risk events as part of the electrical corporation corrective action program. The database(s) of risk events, model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3

Risk event tracking and integration of lessons learned		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Learning and continuous improvement	Processes and procedures are in place to integrate lessons learned from risk events to improve the electrical corporation WMP program.	No process in place to integrate lessons learned from risk events to improve the electrical corporation WMP program.	The electrical corporation has clearly defined operational processes and procedures in place to integrate lessons learned from risk events to improve the electrical corporation WMP program.	The electrical corporation has clearly defined operational processes and procedures in place to integrate lessons learned from risk events to improve the electrical corporation WMP program. The electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on the lessons learned from risk events and their corrective action program.	The electrical corporation has clearly defined operational processes and procedures in place to integrate lessons learned from risk events to improve the electrical corporation WMP program. The electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on the lessons learned from risk events and their corrective action program. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions.	The electrical corporation has clearly defined operational processes and procedures in place to integrate lessons learned from risk events to improve the electrical corporation WMP program. The electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on the lessons learned from risk events and their corrective action program. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions. Electrical corporation funds and participates in both independent and collaborative research that focuses on extending best practices based on data from risk events.

Risk event tracking and integration of lessons learned		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
QA/QC	Process to evaluate the quality of the electrical corporation processes and procedures risk event tracking, corrective action program, and integration of lessons learned.	No process in place to evaluate the quality of risk event tracking and electrical corporation corrective action program.	Electrical corporation has established internal processes and procedures to evaluate the quality of risk event tracking and the electrical corporation corrective action program. The electrical corporation corrective action program is annually audited by internal QA/QC.	Electrical corporation has established internal processes and procedures to evaluate the quality of risk event tracking and the electrical corporation corrective action program. Electrical corporation regularly submits their corrective action program to independent third-party review.	Electrical corporation has established internal processes and procedures to evaluate the quality of risk event tracking and the electrical corporation corrective action program. Electrical corporation regularly submits their corrective action program to independent third-party review. Electrical corporation benchmarks risk event data and corrective actions with other electrical corporations.	No additional requirements beyond level 3
Spatial granularity	Spatial resolution at which the risk events are tracked.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Risk events are tracked at the regional level (HFTD tier 2/3 and non-HFTD).	Risk events are tracked at the circuit segment level.	Risk events are tracked at the span level.	Risk events are tracked at the asset level.

5.1.6 6. Risk-informed wildfire mitigation strategy

Risk-informed wildfire mitigation strategy		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation	Automated estimation of the impact of risk reduction and mitigation initiatives.	Estimation of the impact of risk reduction and mitigation initiatives is not automated.	Estimation of the impact of risk reduction and mitigation initiatives are partially automated (<50%). Estimation of the impact of risk reduction and mitigation initiatives are automated for the following sources: 1. Weather forecast models 2. Ignition likelihood estimates models 3. Sensor data of vegetation conditions	Estimation of the impact of risk reduction and mitigation initiatives are mostly automated (>=50%). Estimation of the impact of risk reduction and mitigation initiatives are automated for the following sources: 1. Weather forecast models 2. Ignition likelihood models 3. Sensor data of vegetation conditions 4. Other factors specific to the location in which the initiative is being undertaken	Estimation of the impact of risk reduction and mitigation initiatives is fully automated. Estimation of the impact of risk reduction and mitigation initiatives are automated for the following sources: 1. Weather forecast models 2. Ignition likelihood models 3. Sensor data of vegetation conditions 4. Other factors specific to the location in which the initiative is being undertaken 5. Air quality effects including GHG emissions and population health impacts 6. RSE for individual initiatives Discrepancies between risk estimation and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review.	Estimation of the impact of risk reduction and mitigation initiatives is fully automated. Estimation of the impact of risk reduction and mitigation initiatives are automated for the following sources: 1. Weather forecast models 2. Ignition likelihood models 3. Sensor data of vegetation conditions 4. Other factors specific to the location in which the initiative is being undertaken 5. Air quality effects including GHG emissions and population health impacts 6. RSE for individual initiatives Discrepancies between risk estimation and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review. Discrepancies between observed data / outcomes and the predictive models are evaluated and resultant enhancements are integrated into the predictive model to improve future performance.

Risk-informed wildfire mitigation strategy		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Inputs to quantify the impact of risk reduction and mitigation initiatives are comprehensive including all aspects of weather, vegetation, grid health, and factors that are relevant to the risk reduction or mitigation initiative being undertaken. Higher maturity includes the impact of each risk reduction and mitigation initiative on reducing each risk component and the calculation of the RSE.	Model inputs and outputs are not sufficient to quantify the impact of risk mitigation initiatives or assess RSE.	Model inputs at a minimum include the following: 1. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 2. Grid performance data including faults, failures, and recloser de-energizations throughout the service area 3. Basic vegetation data including vegetation type, and seasonal trends in fuel moisture Model outputs at a minimum include the following: 1. impact of each mitigation initiative on reducing each risk component 2. RSE for each individual risk reduction or mitigation initiative	No additional requirements beyond level 1	Model inputs at a minimum include the following: 1. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 2. Grid performance data including faults, failures, and recloser de-energizations throughout the service area 3. Basic vegetation data including vegetation type, and seasonal trends in fuel moisture 4. Community-specific vegetation treatment plans throughout service territory Model outputs at a minimum include the following: 1. impact of each mitigation initiative on reducing each risk component 2. RSE for each individual risk reduction or mitigation initiative 3. Impact of community vulnerabilities	No additional requirements beyond level 3

Risk-informed wildfire mitigation strategy		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency and risk spend efficiency	Frequency of risk spend efficiency (RSE) metric calculation.	RSE is not calculated or updated.	RSE is updated with management review at least once per year (annual update) for each individual risk reduction and mitigation initiative.	RSE is updated with management review at least twice per year (semi-annual update) for each individual risk reduction and mitigation initiative.	RSE is updated with management review at least four times per year (quarterly update) for each individual risk reduction and mitigation initiative.	RSE is updated at least once per month (monthly update) for each individual initiative.
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained.	No additional requirements beyond level 1	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3

Risk-informed wildfire mitigation strategy		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
QA/QC	Process to evaluate the accuracy of risk reduction estimates for risk reduction measures which will be implemented.	No process in place to evaluate the accuracy of risk reduction estimates for risk reduction measures which will be implemented.	Evaluation of the accuracy of risk reduction estimates for risk reduction measures which will be implemented is assessed through subject matter expert (SME) review at least **once per 3-year WMP cycle**.	Evaluation of the accuracy of risk reduction estimates for risk reduction measures which will be implemented is assessed through subject matter expert (SME) review at least **once per year**. Evaluation of the risk reductions that are achieved for risk improvements that are implemented are assessed and compared to estimates and results used to further enhance risk management processes. Electrical corporation engages with external stakeholders to provide risk reduction estimates for risk reduction measures which will be implemented over the WMP cycle.	Evaluation of the accuracy of risk reduction estimates for risk reduction measures which will be implemented is assessed through subject matter expert (SME) review at least **once per month**. Evaluation of the risk reductions that are achieved for risk improvements that are implemented are assessed in collaboration with external stakeholders (including other electrical corporations and government) with results compared to estimates. Results are used to further enhance risk management processes. Electrical corporation engages with external stakeholders to provide risk reduction estimates for risk reduction measures which will be implemented over the next year.	Evaluation of the accuracy of risk reduction estimates for risk reduction measures which will be implemented is assessed through subject matter expert (SME) review at least **once per month**. Evaluation of the risk reductions that are achieved for risk improvements that are implemented are assessed in collaboration with external stakeholders (including other electrical corporations and government) with results compared to estimates. Results are used to further enhance risk management processes. Electrical corporation engages with external stakeholders to provide risk reduction estimates for risk reduction measures which will be implemented over the next year. Electrical corporation engages with external stakeholders to report actual risk reductions achieved compared to original estimates and describes lessons learned and process enhancements to improve decision making for risk reduction initiatives.

Risk-informed wildfire mitigation strategy		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Spatial granularity	Resolution of risk reduction estimation of mitigation activities. Higher maturity is achieved by using a sufficiently fine resolution to estimate risk reduction at an asset level.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Resolution of risk reduction estimation of mitigation activities is evaluated at a resolution <= 1 km.	Resolution of risk reduction estimation of mitigation activities is evaluated at a resolution <= 500 m.	Resolution of risk reduction estimation of mitigation activities is evaluated at a resolution <= 100 m.	Resolution of risk reduction estimation of mitigation activities is evaluated at a resolution <= 50 m.

Risk-informed wildfire mitigation strategy		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Stability of assumptions	Assumptions and limitations of the model are known, and the model does not need significant changes in future updates to the WMP	Assumptions and limitations of the model are unknown and/or not documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are evaluated using hindcast in the development environment. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are developed in the previous year and are planned for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Validation results justify no changes to modeling assumptions for a period **greater than one year**. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.

Risk-informed wildfire mitigation strategy		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to performance. Model performance on each key metric demonstrates a systematic bias < 20%. Model performance on each key metric demonstrates a standard deviation in error < 40%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the start of the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 10%. Model performance on each key metric demonstrates a standard deviation in error < 20%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the start of the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 5%. Model performance on each key metric demonstrates a standard deviation in error < 15%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the start of the fire season.

5.2 B. Situational Awareness and Forecasting

5.2.1 7. Ignition likelihood estimation

Ignition likelihood estimation		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation	Automated integration of real-time monitoring system with other relevant systems, such as grid monitoring, weather data collection, weather forecasting, vegetation moisture, and short-term risk modeling.	Equipment data, weather data, and weather forecasts are not used in assessing ignition likelihood.	Equipment data, weather data, and weather forecasts are used in assessing likelihood of ignition without significant automation. Ignition likelihood estimation is linked to deterministic real-time risk model and weather forecasts.	Equipment data, weather data, and weather forecasts are used in assessing likelihood of ignition with partial automation. Integration of systems into the likelihood of ignition estimation is automated for the following sources: 1. Weather data and forecasts 2. Grid performance data and forecasts 3. Vegetative fuel moisture forecasts Ignition likelihood estimation is linked to ensemble weather forecasts and resulting probabilistic real-time risk model	Equipment data, weather data, and weather forecasts are used in assessing likelihood of ignition with partial automation. Integration of systems into the likelihood of ignition estimation is automated for the following sources: 1. Weather data and forecasts 2. Grid performance data and forecasts 3. Vegetative fuel moisture data and forecasts 4. Equipment condition data Ignition likelihood estimation is linked to ensemble weather forecasts and resulting probabilistic real-time risk model Discrepancies between ignition likelihood estimate and observed reality (i.e., high likelihood of ignition was predicted but no risk event occurred) are automatically identified, documented, and sent to Subject Matter Experts for review.	Equipment data, weather data, and weather forecasts are used in assessing likelihood of ignition with partial automation. Integration of systems into the likelihood of ignition estimation is automated for the following sources: 1. Weather data and forecasts 2. Grid performance data and forecasts 3. Vegetative fuel moisture data and forecasts 4. Equipment condition data Ignition likelihood estimation is linked to ensemble weather forecasts and resulting probabilistic real-time risk model Discrepancies between ignition likelihood estimate and observed reality (i.e., high likelihood of ignition was predicted but no risk event occurred) are automatically identified, documented, and sent to Subject Matter Experts for review. Discrepancies are automatically integrated into the predictive model to improve future performance.

Ignition likelihood estimation		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Inputs to estimate ignition likelihood are comprehensive including all aspects of weather, vegetation, grid health, and asset management.	Electrical corporation does sufficiently calculate ignition likelihood.	Ignition likelihood estimation considers each type of equipment operation/failure, vegetation contact, and object contact. Model inputs at a minimum include the following: 1. Basic equipment data including type (including differentiation for the presence of mitigation such as covered conductors, vibration dampers, etc.), equipment age, and equipment maintenance history. 2. Basic operations data including presence of protective equipment and device settings, time since most recent inspection of equipment, presence of open work requests, and spark generation rates from normal operations. 3. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 4. Basic vegetation data including type of potential contact, vegetation species, time since most recent vegetation inspection, and seasonal fuel moisture content.	Ignition likelihood estimation considers each type of equipment operation/failure, vegetation contact, and object contact. Model inputs at a minimum include the following: 1. Basic equipment data including type (including differentiation for the presence of mitigation such as covered conductors, vibration dampers, etc.), equipment age, and equipment maintenance history. 2. Basic operations data including presence of protective equipment and device settings, time since most recent inspection of equipment, presence of open work requests, and spark generation rates from normal operations. 3. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 4. Basic vegetation data including type of potential contact, vegetation species, time since most recent vegetation inspection, and seasonal fuel moisture content. 5. Equipment performance indicators including long-term trends in inspection and maintenance.	Ignition likelihood estimation considers each type of equipment operation/failure, vegetation contact, and object contact. Model inputs at a minimum include the following: 1. Basic equipment data including type (including differentiation for the presence of mitigation such as covered conductors, vibration dampers, etc.), equipment age, and equipment maintenance history. 2. Basic operations data including presence of protective equipment and device settings, time since most recent inspection of equipment, presence of open work requests, and spark generation rates from normal operations. 3. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 4. Basic vegetation data including type of potential contact, vegetation species, time since most recent vegetation inspection, and seasonal fuel moisture content. 5. Equipment performance indicators including long-term trends in inspection and maintenance. 6. Grid performance indicators including faults,	Ignition likelihood estimation considers each type of equipment operation/failure, vegetation contact, and object contact. Model inputs at a minimum include the following: 1. Basic equipment data including type (including differentiation for the presence of mitigation such as covered conductors, vibration dampers, etc.), equipment age, and equipment maintenance history. 2. Basic operations data including presence of protective equipment and device settings, time since most recent inspection of equipment, presence of open work requests, and spark generation rates from normal operations. 3. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 4. Basic vegetation data including type of potential contact, vegetation species, time since most recent vegetation inspection, and seasonal fuel moisture content. 5. Equipment performance indicators including long-term trends in inspection and maintenance. 6. Grid performance indicators including faults,

Ignition likelihood estimation		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
			Model outputs at a minimum include the following: 1. Equipment likelihood of ignition 2. Contact from vegetation likelihood of ignition 3. Contact from object likelihood of ignition	Model outputs at a minimum include the following: 1. Equipment likelihood of ignition 2. Contact from vegetation likelihood of ignition 3. Contact from object likelihood of ignition	failures, and recloser de-energizations throughout the service area 7. Recent trends in fuel moisture. 8. Long-term grid health trends at the asset resolution. Model outputs at a minimum include the following: 1. Equipment likelihood of ignition 2. Contact from vegetation likelihood of ignition 3. Contact from object likelihood of ignition 4. Ignition from human activity	failures, and recloser de-energizations throughout the service area 7. Recent trends in fuel moisture. 8. Long-term grid health trends at the asset resolution. 9. Height of equipment lines are known In HFTD, and weather data used in model predictions is evaluated at the height of individual lines. Model outputs at a minimum include the following: 1. Equipment likelihood of ignition 2. Contact from vegetation likelihood of ignition 3. Contact from object likelihood of ignition 4. Ignition from human activity

Ignition likelihood estimation		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained.	No additional requirements beyond level 1	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3

Ignition likelihood estimation		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Learning and continuous improvement	Historic model performance is consistently compared to observed conditions to determine discrepancies and biases in the model not covered by the validation basis. Processes are in place to document these findings and improve the models over time.	No process in place to inform model based on errors in model predictions or comments from stakeholders.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions. Electrical corporation funds and participates in both independent and collaborative research that focuses on extending best practices.

Ignition likelihood estimation		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Modularization	Modularization of the software models. Higher maturity includes more modular code which can be used to evaluate the impact of different assumptions on the results.	Software code is not modular.	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Impact of vegetation characteristics 2. Impact of weather conditions 3. Impact of equipment characteristics	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Impact of vegetation characteristics 2. Impact of weather conditions 3. Impact of equipment characteristics 4. Impact of long-term climate change	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least two of the following: 1. Impact of vegetation characteristics 2. Impact of weather conditions 3. Impact of equipment characteristics 4. Impact of long-term climate change 5. Impact of weather on seasonal vegetation moisture	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include all the following: 1. Impact of vegetation characteristics 2. Impact of weather conditions 3. Impact of equipment characteristics 4. Impact of long-term climate change 5. Impact of weather on seasonal vegetation moisture 6. Impact of weather on seasonal vegetation growth cycle
QA/QC	Process to evaluate the accuracy of ignition likelihood calculations.	No process in place to evaluate ignition likelihood maps.	Electrical corporation has established internal processes and procedures to evaluate the quality of ignition likelihood calculations. The electrical corporation ignition likelihood calculation is annually audited by internal QA/QC.	Electrical corporation has established internal processes and procedures to evaluate the quality of ignition likelihood calculations. Electrical corporation regularly submits their ignition likelihood calculations to independent third-party review.	Electrical corporation has established internal processes and procedures to evaluate the quality of ignition likelihood calculations. Electrical corporation regularly submits their ignition likelihood calculations to independent third-party review. Electrical corporation benchmarks ignition likelihood data and calculations with other electrical corporations.	No additional requirements beyond level 3

Ignition likelihood estimation		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Spatial granularity	Resolution of ignition likelihood estimation. Higher maturity is achieved by using a sufficiently fine resolution to estimate ignition likelihood at an asset level.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Ignition likelihood calculations are evaluated at the circuit level within HFTD tier 2 and 3.	Ignition likelihood calculations are evaluated at the circuit segment level within HFTD tier 2 and 3. Ignition likelihood calculations are evaluated at the region level in non-HFTD region.	Ignition likelihood calculations are evaluated at the span level within HFTD tier 2 and 3. Ignition likelihood calculations are evaluated at the circuit-segment level in non-HFTD regions.	Ignition likelihood calculations are evaluated at the asset level within HFTD tier 2 and 3. Ignition likelihood calculations are evaluated at the span level in non-HFTD regions.

Ignition likelihood estimation		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Stability of assumptions	Assumptions and limitations of the model are known, and the model does not need significant changes in future updates to the WMP	Assumptions and limitations of the model are unknown and/or not documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are evaluated using hindcast in the development environment. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are developed in the previous year and are planned for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Validation results justify no changes to modeling assumptions for a period **greater than one year**. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.

Ignition likelihood estimation		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to input data, source code, and an automated verification and validation suite to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum Energy Safety reporting requirements.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical documentation is available to the public.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial and geospatial data with the community. Model software source code and data for verification and validation provided by the electrical corporation to the public.

Ignition likelihood estimation		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation	Documentation of the uncertainty in ignition likelihood predictions and the resulting sensitivity of the overall risk model predictions to 1) inputs to these models and 2) down-stream impacts of uncertainty propagation in model predictions.	The statistical uncertainty in model inputs parameters and outputs is unknown or not documented. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. Sensitivity analyses are used to evaluate model predictions at different percentiles for use in down-stream models and decision making. The choice of percentile is justified in the WMP.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 84th percentile in down-stream models and decision making.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 97.5th percentile in down-stream models and decision making. Uncertainty propagation is analytically calculated and presented using standard methods such as Bayesian inference and uncertainty quantification.

Ignition likelihood estimation		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation, documentation, and disclosures	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to performance. Model performance on each key metric demonstrates a systematic bias < 20%. Model performance on each key metric demonstrates a standard deviation in error < 40%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 10%. Model performance on each key metric demonstrates a standard deviation in error < 20%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 5%. Model performance on each key metric demonstrates a standard deviation in error < 15%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.

5.2.2 8. Weather forecasting ability

Weather forecasting ability		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation	Automated short-term weather forecasting and its integration with other systems.	Weather forecasting models are not automated.	Short-term weather forecasting is automated.	Short-term weather forecasting is automated.	Short-term weather forecasting is automated. Discrepancies between weather forecasting and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review.	Short-term weather forecasting is automated. Discrepancies between weather forecasting and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review. Discrepancies are automatically integrated into the predictive model to improve future performance.

Weather forecasting ability		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensive	Inputs to generate accurate short-range (days to weeks) weather forecasts across the electrical corporation's service territory are comprehensive including all key physics in weather.	Electrical corporation does not sufficiently generate short-range weather forecasts across the electrical corporation's service territory.	Electrical corporation sufficiently generates short-range weather forecasts aligned with minimum Energy Safety requirements. Model inputs at a minimum include the following: 1. Local topography 2. Land cover / land use type 3. Solar radiation Model output at a minimum include the following: 1. Forecast horizon of three (3) days. 2. Barometric pressure 3. Wind velocity (speed and direction) 4. Air temperature 5. Relative humidity	Electrical corporation sufficiently generates short-range weather forecasts aligned with the minimum Energy Safety requirements. Model inputs at a minimum include the following: 1. Local topography 2. Land cover / land use type 3. Solar radiation 4. Synoptic scale patterns Model output at a minimum include the following: 1. Forecast horizon of five (5) days. 2. Barometric pressure 3. Wind velocity (speed and direction) 4. Air temperature 5. Relative humidity	Electrical corporation sufficiently generates short-range weather forecasts aligned with the minimum Energy Safety requirements. Model inputs at a minimum include the following: 1. Local topography 2. Land cover / land use type 3. Solar radiation 4. Synoptic scale patterns 5. Mesoscale patterns Model output at a minimum include the following: 1. Forecast horizon of seven (7) days. 2. Barometric pressure 3. Wind velocity (speed and direction) 4. Air temperature 5. Relative humidity 6. Vegetation moisture content 7. Air quality impacts from smoke	Electrical corporation sufficiently generates short-range weather forecasts aligned with the minimum Energy Safety requirements. Model inputs at a minimum include the following: 1. Local topography 2. Land cover / land use type 3. Solar radiation 4. Synoptic scale patterns 5. Mesoscale patterns Model output at a minimum include the following: 1. Forecast horizon of ten (10) days. 2. Barometric pressure 3. Wind velocity (speed and direction) 4. Air temperature 5. Relative humidity 6. Vegetation moisture content 7. Air quality impacts from smoke
Frequency	Data assimilation frequency of collected weather observations	Data assimilation is not performed.	Data assimilation is performed at least twice per day (12-h interval).	Data assimilation is performed at least four times per day (6-h interval).	Data assimilation is performed at least six times per day (4-h interval).	Data assimilation is performed at least twelve times per day (2-h interval).

Weather forecasting ability		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained.	No additional requirements beyond level 1	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3
Level of sophistication	Number of forecasts produced in ensemble forecasting varying initial conditions.	Ensemble forecasting is not used.	Ensemble forecasting is performed with at least ten (10) forecasts in which one is the control forecast and is produced with the best available data and unperturbed models. Inherent uncertainty is quantified for at least one of the following weather forecasting elements as a function of positive lead time: 1. Temperature 2. Wind speed and direction 3. Precipitation 4. Relative Humidity	Ensemble forecasting is performed with at least thirty (30) forecasts in which one is the control forecast and is produced with the best available data and unperturbed models. Inherent uncertainty is quantified for at least two of the following weather forecasting elements as a function of positive lead time: 1. Temperature 2. Wind speed and direction 3. Precipitation 4. Relative Humidity	Ensemble forecasting is performed with at least fifty-one (51) forecasts in which one is the control forecast and is produced with the best available data and unperturbed models. Inherent uncertainty is quantified for at least three of the following weather forecasting elements as a function of positive lead time: 1. Temperature 2. Wind speed and direction 3. Precipitation 4. Relative Humidity	Ensemble forecasting is performed with at least fifty-one (51) forecasts in which one is the control forecast and is produced with the best available data and unperturbed models. Inherent uncertainty is quantified for the following weather forecasting elements as a function of positive lead time: 1. Temperature 2. Wind speed and direction 3. Precipitation 4. Relative Humidity

Weather forecasting ability		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Modularization	Modularization of the software models. Higher maturity includes more modular code which can be used to evaluate the impact of different assumptions on the results.	Software code is not modular.	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Local weather analysis 2. Local vegetation analysis	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Local weather analysis 2. Local vegetation analysis 3. Impact of climate change on weather 4. Impact of weather on vegetation moisture 5. Impact of weather on vegetation growth cycle	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Local weather analysis 2. Local vegetation analysis 3. Impact of climate change on weather 4. Impact of weather on vegetation moisture 5. Impact of weather on vegetation growth cycle 6. Synoptic scale weather 7. Mesoscale weather	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Local weather analysis 2. Local vegetation analysis 3. Impact of climate change on weather 4. Impact of weather on vegetation moisture 5. Impact of weather on vegetation growth cycle 6. Synoptic scale weather 7. Mesoscale weather 8. Large eddy scale weather

Weather forecasting ability		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
QA/QC	Process to evaluate the accuracy of weather forecasting.	No process in place to evaluate the quality of weather forecasting.	Accuracy of weather forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Weather forecasts are assessed through subject matter expert (SME) review at least once per month.	Accuracy of weather forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Weather forecasts are assessed through subject matter expert (SME) review at least twice per month. Accuracy of weather forecasts are assessed in near-real-time through regular comparison of weather forecasts with available data.	Accuracy of weather forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Weather forecasts are assessed through subject matter expert (SME) review at least once per week. Accuracy of weather forecasts are assessed in near-real-time through regular comparison of weather forecasts with available data. Electrical corporation benchmarks weather forecasts with those of other electrical corporations and government agencies.	Accuracy of weather forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Weather forecasts are assessed through subject matter expert (SME) review daily. Accuracy of weather forecasts are assessed in near-real-time through regular comparison of weather forecasts with available data. Electrical corporation benchmarks weather forecasts with those of other electrical corporations and government agencies. Historic discrepancies between weather forecasts and observations in similar conditions are synthesized and used to analyze the expected quality of current forecasts.

Weather forecasting ability		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Spatial granularity	Vertical and horizontal / geo-coordinate resolution of the weather forecasts. Higher maturity is achieved by using a sufficiently fine resolution to resolve the local effects of weather.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Horizontal resolution of the weather forecasts is evaluated at a resolution <= 4 km. Vertical resolution of the weather forecasts is sufficient to evaluate average conditions at measured locations in the service territory.	Horizontal resolution of the weather forecasts is evaluated at a resolution <= 2 km. Vertical resolution of the weather forecasts is sufficient to evaluate the local conditions at the average height of lines on a circuit.	Horizontal resolution of the weather forecasts in non-HFTD regions is evaluated at a resolution <= 2 km. Vertical resolution of the weather forecasts in non-HFTD regions is sufficient to evaluate the local conditions at the average height of lines on a circuit. Horizontal resolution of the weather forecasts in HFTD tier 2 and 3 is evaluated at a resolution <= 1 km. Vertical resolution of the weather forecasts in HFTD tier 2 and 3 is sufficient to evaluate the local conditions at the average height of lines on a span.	Horizontal resolution of the weather forecasts in non-HFTD regions is evaluated at a resolution <= 2 km. Vertical resolution of the weather forecasts in non-HFTD regions is sufficient to evaluate the local conditions at the average height of lines on a circuit. Horizontal resolution of the weather forecasts in HFTD tier 2 and 3 is evaluated at a resolution <= 100 m. Vertical resolution of the weather forecasts in HFTD tier 2 and 3 is sufficient to evaluate the local conditions at the average height of individual lines.

Weather forecasting ability		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Stability of assumptions	Assumptions and limitations of the model are known, and the model does not need significant changes in future updates to the WMP	Assumptions and limitations of the model are unknown and/or not documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are evaluated using hindcast in the development environment. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are developed in the previous year and are planned for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Validation results justify no changes to modeling assumptions for a period **greater than one year.** Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.

Weather forecasting ability		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to input data, source code, and an automated verification and validation suite to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum Energy Safety reporting requirements.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical documentation is available to the public.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial and geospatial data with the community. Model software source code and data for verification and validation provided by the electrical corporation to the public.

Weather forecasting ability		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation	Documentation of the uncertainty in ignition likelihood predictions and the resulting sensitivity of the overall risk model predictions to 1) inputs to these models and 2) down-stream impacts of uncertainty propagation in model predictions.	The statistical uncertainty in model inputs parameters and outputs is unknown or not documented. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. Sensitivity analyses are used to evaluate model predictions at different percentiles for use in down-stream models and decision making. The choice of percentile is justified in the WMP.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 84th percentile in down-stream models and decision making.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 97.5th percentile in down-stream models and decision making. Uncertainty propagation is analytically calculated and presented using standard methods such as Bayesian inference and uncertainty quantification.

Weather forecasting ability		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation, documentation, and disclosures	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements.B.10.3) Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to performance. Model performance on each key metric demonstrates a systematic bias < 20%. Model performance on each key metric demonstrates a standard deviation in error < 40%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 10%. Model performance on each key metric demonstrates a standard deviation in error < 20%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 5%. Model performance on each key metric demonstrates a standard deviation in error < 15%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.

5.2.3 9. Wildfire spread forecasting

Wildfire spread forecasting		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation and frequency	Automated wildfire spread forecasting models, frequency of evaluation, and integration with other systems.	Wildfire spread forecasting is not used, automated, or integrated with other systems.	Wildfire spread forecasting is conducted in accordance with Energy Safety requirements. Fire Potential Index (FPI) is calculated in accordance with Energy Safety requirements. Weather forecasting meets the Level 1 automation requirements in capability 8. Wildfire spread forecasts are conducted whenever real-time risk conditions exceed 90% of design conditions. Wildfire spread forecasting is automatically integrated with at least 1 of the following systems/tools: 1. Decision making policies and procedures 2. PSPS decision making 3. Notification with external government agencies 4. Notification with the public	Wildfire spread forecasting is conducted in accordance with Energy Safety requirements. Fire Potential Index (FPI) is calculated in accordance with Energy Safety requirements. Weather forecasting meets the Level 2 automation requirements in capability 8. Wildfire spread forecasts are conducted whenever real-time risk conditions exceed 80% of design conditions. Wildfire spread forecasting is automatically integrated with at least 2 of the following systems/tools: 1. Decision making policies and procedures 2. PSPS decision making 3. Notification with external government agencies 4. Notification with the public	Wildfire spread forecasting is conducted in accordance with Energy Safety requirements. Fire Potential Index (FPI) is calculated in accordance with Energy Safety requirements. Weather forecasting meets the Level 3 automation requirements in capability 8. Wildfire spread forecasts are conducted whenever real-time risk conditions exceed 70% of design conditions. Wildfire spread forecasting is automatically integrated with at least 3 of the following systems/tools: 1. Decision making policies and procedures 2. PSPS decision making 3. Notification with external government agencies 4. Notification with the public Discrepancies between wildfire spread forecasting and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review.	Wildfire spread forecasting is conducted in accordance with Energy Safety requirements. Fire Potential Index (FPI) is calculated in accordance with Energy Safety requirements. Weather forecasting meets the Level 4 automation requirements in capability 8. Wildfire spread forecasts are conducted whenever real-time risk conditions exceed 60% of design conditions. Wildfire spread forecasting is automatically integrated with the following systems/tools: 1. Decision making policies and procedures 2. PSPS decision making 3. Notification with external government agencies 4. Notification with the public Discrepancies between wildfire spread forecasting and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review. Discrepancies are automatically integrated into the predictive model to improve future performance.

Wildfire spread forecasting		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Inputs to generate accurate short-range (hours to days) wildfire spread forecasts across the electrical corporation's service territory are comprehensive including all key physics in fire behavior, vegetation, and weather.	Electrical corporation does not sufficiently forecast wildfire spread.	Electrical corporation sufficiently generates short-range wildfire spread forecasts aligned with Energy Safety requirements. Model inputs at a minimum include the following: 1. Weather forecast requirements for level 1 (capability 8) 2. Local topography 3. Local vegetation type 4. Local vegetation moisture Model output at a minimum include the following: 1. Forecast horizon of eight (8) hours 2. Fire arrival times / fire perimeter 3. Fire intensity	Electrical corporation sufficiently generates short-range wildfire spread forecasts aligned with Energy Safety requirements. Model inputs at a minimum include the following: 1. Weather forecast requirements for level 2 (capability 8) 2. Local topography 3. Local vegetation type 4. Local vegetation moisture Model output at a minimum include the following: 1. Forecast horizon of twelve (12) hours 2. Fire arrival times / fire perimeter 3. Fire intensity	Electrical corporation sufficiently generates short-range wildfire spread forecasts aligned with Energy Safety requirements. Model inputs at a minimum include the following: 1. Weather forecast requirements for level 3 (capability 8) 2. Local topography 3. Local vegetation type 4. Local vegetation moisture 5. Ensemble weather forecasts Model output at a minimum include the following: 1. Forecast horizon of twenty-four (24) hours 2. Fire arrival times / fire perimeter 3. Fire intensity 4. Statistical distribution of various outcomes (50th, 84th, and 98th percentiles)	Electrical corporation sufficiently generates short-range wildfire spread forecasts aligned with Energy Safety requirements. Model inputs at a minimum include the following: 1. Weather forecast requirements for level 3 (capability 8) 2. Local topography 3. Local vegetation type 4. Local vegetation moisture 5. Ensemble weather forecasts 6. Suppression likelihood Model output at a minimum include the following: 1. Forecast horizon of forty-eight (48) hours 2. Fire arrival times / fire perimeter 3. Fire intensity 4. Statistical distribution of various outcomes (50th, 84th, and 98th percentiles) 5. Air quality impacts

Wildfire spread forecasting		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained.	No additional requirements beyond level 1	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3
Level of sophistication	Degree of interaction between wildfire and weather modeling.	Weather conditions are not used in wildfire spread forecasts.	30-year historic weather conditions are used in determination of Fire Potential Index (FPI) Mass consistent steady-state wind maps are used in detailed wildfire spread forecasting. Wildfire spread forecasting is calculated using an empirical, phenomenological, physics-based, or physics-informed model.	30-year historic weather conditions are used in determination of Fire Potential Index (FPI) Weather forecasts are used in wildfire spread forecasts. Wildfire spread forecasting is calculated using an empirical, phenomenological, physics-based, or physics-informed model.	30-year historic weather conditions are used in determination of Fire Potential Index (FPI) Weather and wildfire spread forecasts are calculated together through a two-way coupled approach. Wildfire spread forecasting is calculated using an empirical, phenomenological, physics-based, or physics-informed model.	30-year historic weather conditions are used in determination of Fire Potential Index (FPI) Weather and wildfire spread forecasts are calculated together through a two-way coupled approach. Wildfire spread is calculated through a physics-based or physics-informed model.

Wildfire spread forecasting		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Modularization	Modularization of the software models. Higher maturity includes more modular code which can be used to evaluate the impact of different assumptions on the statistical results.	Software code is not modular.	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Weather forecasting 2. Fire behavior forecasting	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Weather forecasting 2. Fire behavior forecasting 3. Impact of weather on seasonal vegetation moisture	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Weather forecasting 2. Fire behavior forecasting 3. Impact of weather on seasonal vegetation moisture 4. Synoptic scale weather 5. Mesoscale weather	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Weather forecasting 2. Fire behavior forecasting 3. Impact of weather on seasonal vegetation moisture 4. Synoptic scale weather 5. Mesoscale weather 6. Large eddy scale weather

Wildfire spread forecasting		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
QA/QC	Process to evaluate the accuracy of wildfire spread forecasting.	No process in place to evaluate the quality of wildfire spread forecasting.	Accuracy of wildfire spread forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Wildfire spread forecasts are assessed through subject matter expert (SME) review at least once per quarter.	Accuracy of wildfire spread forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Wildfire spread forecasts are assessed through subject matter expert (SME) review at least once per month during fire season. Accuracy of wildfire spread forecasts are assessed in near-real-time through regular comparison of wildfire spread forecasts with available data.	Accuracy of wildfire spread forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Wildfire spread forecasts are assessed through subject matter expert (SME) review at least once during fire season. Accuracy of wildfire spread forecasts are assessed in near-real-time through regular comparison of wildfire spread forecasts with available data. Electrical corporation benchmarks wildfire spread forecasts with those of other electrical corporations and government agencies.	Accuracy of wildfire spread forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Wildfire spread forecasts are assessed through subject matter expert (SME) review daily during fire season. Accuracy of wildfire spread forecasts are assessed in near-real-time through regular comparison of wildfire spread forecasts with available data. Electrical corporation benchmarks wildfire spread forecasts with those of other electrical corporations and government agencies. Historic discrepancies between wildfire spread forecasts and observations in similar conditions are synthesized and used to analyze the expected quality of current forecasts.
Spatial granularity	Horizontal resolution of the wildfire forecasts. Higher maturity is achieved by using a sufficiently fine resolution to resolve the local effects of fire and weather.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Horizontal resolution of the weather forecasting meets the Level 1 requirements (capability 8). Horizontal resolution of the wildfire forecasting is evaluated at a resolution <= 1 km.	Horizontal resolution of the weather forecasting meets the Level 2 requirements (capability 8). Horizontal resolution of the wildfire forecasting is evaluated at a resolution <= 100 m.	Horizontal resolution of the weather forecasting meets the Level 3 requirements (capability 8). Horizontal resolution of the wildfire forecasting is evaluated at a resolution <= 30 m.	Horizontal resolution of the weather forecasting meets the Level 4 requirements (capability 8). Horizontal resolution of the wildfire forecasting is evaluated at a resolution <= 10 m.

Wildfire spread forecasting		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to input data, source code, and an automated verification and validation suite to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum Energy Safety reporting requirements.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical documentation is available to the public.	Data and methods meet the minimum Energy Safety reporting. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial and geospatial data with the community. Model software source code and data for verification and validation provided by the electrical corporation to the public.

Wildfire spread forecasting		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation	Documentation of the uncertainty in ignition likelihood predictions and the resulting sensitivity of the overall risk model predictions to 1) inputs to these models and 2) down-stream impacts of uncertainty propagation in model predictions.	The statistical uncertainty in model inputs parameters and outputs is unknown or not documented. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. Sensitivity analyses are used to evaluate model predictions at different percentiles for use in down-stream models and decision making. The choice of percentile is justified in the WMP.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 84th percentile in down-stream models and decision making.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 97.5th percentile in down-stream models and decision making. Uncertainty propagation is analytically calculated and presented using standard methods such as Bayesian inference and uncertainty quantification.

Wildfire spread forecasting		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation, documentation, and disclosures	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to performance. Model performance on each key metric demonstrates a systematic bias < 20%. Model performance on each key metric demonstrates a standard deviation in error < 40%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 10%. Model performance on each key metric demonstrates a standard deviation in error < 20%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 5%. Model performance on each key metric demonstrates a standard deviation in error < 15%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.

5.2.4 10. Data collection for near-real-time conditions

Data collection for near-real-time conditions		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation	Automated integration of real-time monitoring system for data collection with other relevant models and/or decision-making tools, such as weather forecasting and short-term risk modeling.	Data collected on weather, grid performance, and vegetative fuel are not linked to relevant models and/or decision-making tools, such as weather forecasting and short-term risk modeling.	Data collected on weather, grid performance, and vegetative fuel are linked to deterministic relevant models and/or decision-making tools, such as weather forecasting and short-term risk modeling without significant automation. Integration of data collected into the relevant models and/or decision-making tools is automated for at least 1 of the following sources: 1. Weather data 2. Grid performance data 3. Vegetative fuel data 4. Equipment condition data	Data collected on weather, grid performance, and vegetative fuel are linked to deterministic relevant models and/or decision-making tools, such as weather forecasting and short-term risk modeling. Integration of data collected into the relevant models and/or decision-making tools is automated for at least 2 of the following sources: 1. Weather data 2. Grid performance data 3. Vegetative fuel data 4. Equipment condition data	Data collected on weather, grid performance, and vegetative fuel are linked to deterministic relevant models and/or decision-making tools, such as weather forecasting and short-term risk modeling. Integration of data collected into the relevant models and/or decision-making tools is automated for at least 3 of the following sources: 1. Weather data 2. Grid performance data 3. Vegetative fuel data 4. Equipment condition data Data collected are linked to ensemble weather forecasts and resulting probabilistic real-time risk model.	Data collected on weather, grid performance, and vegetative fuel are linked to deterministic relevant models and/or decision-making tools, such as weather forecasting and short-term risk modeling. Integration of data collected into the relevant models and/or decision-making tools is automated for the following sources: 1. Weather data 2. Grid performance data 3. Vegetative fuel data 4. Equipment condition data Data collected are linked to ensemble weather forecasts and resulting probabilistic real-time risk model.
Frequency	Frequency of collected data.	Intermittent data collection (less frequently than hourly).	Intermittent data collection (at least hourly).	Intermittent data collection (at least four (4) times per hour).	Intermittent data collection (at least sixty (60) times per hour).	Continuous data collection (at least three-thousand six hundred (3,600) times per hour).

Data collection for near-real-time conditions		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Learning, continuous improvement, and QA/QC	Processes are in place to evaluate the quality of data. Historic data collection is consistently compared to observed conditions to determine discrepancies and biases in sensor data. Processes are in place to document these findings and ensure consistency in data collection over time.	No process in place to evaluate the quality of data collected. No process in place to inform models based on data collected.	Data quality is assessed through subject matter expert (SME) review during annual planning. Electrical corporation has a clearly defined operational process in place to track discrepancies between current data collections and historic observations. Electrical corporation has a clearly defined operational process to inform models based on data collected.	Data quality is assessed through subject matter expert (SME) review at least once per quarter. Electrical corporation has a clearly defined operational process in place to track discrepancies between current data collections and historic observations. Electrical corporation has a clearly defined operational process to inform models based on data collected.	Data quality is assessed through subject matter expert (SME) review at least once per month. Electrical corporation has a clearly defined operational process in place to track discrepancies between current data collections and historic observations. Electrical corporation has a clearly defined operational process to inform models based on data collected. Electrical corporation participates in task groups focused on improving best practices in data collection, including participation by industry, government, and academic institutions.	Data quality is assessed through subject matter expert (SME) review at least once per week. Electrical corporation has a clearly defined operational process in place to track discrepancies between current data collections and historic observations. Electrical corporation has a clearly defined operational process to inform models based on data collected. Electrical corporation participates in task groups focused on improving best practices in data collection, including participation by industry, government, and academic institutions. Electrical corporation benchmarks data collected with other electrical corporations.

Data collection for near-real-time conditions		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Level of sophistication	Data type collected	Collected data do not meet the minimum expectations or requirements.	Collected data include each of the following: 1. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 2. Grid performance data including faults, failures, and recloser de-energizations throughout the service area 3. Basic vegetation data including vegetation type, and seasonal trends in fuel moisture	Collected data include each of the following: 1. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 2. Grid performance data including faults, failures, and recloser de-energizations throughout the service area 3. Basic vegetation data including vegetation type, and seasonal trends in fuel moisture 4. Equipment inspection and maintenance trends for individual circuits	Collected data include each of the following: 1. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 2. Grid performance data including faults, failures, and recloser de-energizations throughout the service area 3. Basic vegetation data including vegetation type, and seasonal trends in fuel moisture 4. Equipment inspection and maintenance trends for individual circuits 5. Intermittent collection (minimum frequency of once per month during fire season) within HFTD regions of additional weather-related parameters such as fuel moisture content	Collected data include each of the following: 1. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 2. Grid performance data including faults, failures, and recloser de-energizations throughout the service area 3. Basic vegetation data including vegetation type, and seasonal trends in fuel moisture 4. Equipment inspection and maintenance trends for individual circuits 5. Intermittent collection (minimum frequency of once per month during fire season) within HFTD regions of additional weather-related parameters such as fuel moisture content 6. Long-term grid health trends at the asset resolution using historic data 7. Height of equipment lines are known in HFTD, and weather data used in model predictions is evaluated at the height of individual lines
Spatial granularity	Granularity of sensors used to collect data. Higher maturity is achieved by using collected data with sufficiently fine resolution to resolve the local effects of fire and weather.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Collected data allows for validation of statistical weather and weather forecasting at a horizontal resolution <= 4 km.	Collected data allows for validation of statistical weather and weather forecasting at a horizontal resolution <= 2 km.	Collected data allows for validation of statistical weather and weather forecasting at a horizontal resolution <= 1 km.	Collected data allows for validation of statistical weather and weather forecasting at a horizontal resolution <= 100 m.

Data collection for near-real-time conditions		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to electrical corporation collected data to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum Energy Safety reporting requirements.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data is provided to the public. Data collection methods technical documentation is available to the public.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data is provided to the public. Data collection methods technical documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	No additional requirements beyond level 3
Validation, documentation, and disclosures	Documentation of the uncertainty in data collection is known and the resulting sensitivity of the overall risk model predictions is quantified in the model validation basis documents.	The statistical uncertainty in data collection is unknown or not documented.	The statistical uncertainty in data collection is known and documented in accordance with Energy Safety requirements.	No additional requirements beyond level 1	No additional requirements beyond level 1	No additional requirements beyond level 1

5.2.5 11. Wildfire detection and alarm systems

Wildfire detection and alarm systems		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation	Automatic processing of signals received from fire detection systems	Electrical corporation currently has no automation of wildfire detection system signaling	Electrical corporation uses computer automation software to process signals received from individual sensors	Electrical corporation uses computer automation software to process signals received from multiple sensor technologies	Electrical corporation uses computer automation software to process signals received and algorithms for data aggregation from multiple sensors Automation software compiles sensor data.	No additional requirements beyond level 3
Documentation and disclosures	Documentation detailing wildfire detection methods, coverage areas, and confirmation strategies	Electrical corporation has not provided documentation on its wildfire detection methods, coverage areas, or confirmation strategies	Electrical corporation provides detailed documentation on at least one of the following: 1. Wildfire detection methods 2. Detection technologies 3. Distribution of detection technologies 4. Wildfire confirmation strategies	Electrical corporation provides detailed documentation on at least two of the following: 1. Wildfire detection methods 2. Detection technologies 3. Distribution of detection technologies 4. Wildfire confirmation strategies	Electrical corporation provides detailed documentation on at least three of the following: 1. Wildfire detection methods 2. Detection technologies 3. Distribution of detection technologies 4. Wildfire confirmation strategies	Electrical corporation provides detailed documentation for the following: 1. Wildfire detection methods 2. Detection technologies 3. Distribution of detection technologies 4. Wildfire confirmation strategies
Frequency	Frequency of reporting to central monitoring from field sensors, frequency of updates	Sensors do not report status and are not part of a controller-based network	Sensors report status only when queried but are part of a stand-alone controller-based network.	Sensors continually report status to controllers at prescribed intervals. Controllers report sensor status to receivers at the central monitoring facility.	Sensors continually report status to controllers at prescribed intervals. Controllers report sensor status to receivers at the central monitoring facility.	No additional requirements beyond level 3

Wildfire detection and alarm systems		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Learning and continuous improvement	Processes and procedures are in place to integrate lessons learned from risk events to improve the capabilities of currently deployed wildfire detection and alarm systems.	No process in place to integrate lessons learned from risk events to improve the capabilities of wildfire detection systems.	The electrical corporation has clearly defined operational processes and procedures in place to integrate lessons learned from risk events to improve the capabilities of its fire detection and alarm systems.	No additional requirements beyond level 1	The electrical corporation has clearly defined operational processes and procedures in place to integrate lessons learned from risk events to improve the capabilities of its fire detection and alarm systems. The electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on the lessons learned from risk events and their corrective action program.	The electrical corporation has clearly defined operational processes and procedures in place to integrate lessons learned from risk events to improve the capabilities of its fire detection and alarm systems. The electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on the lessons learned from risk events and their corrective action program. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions. Electrical corporation funds and participates in both independent and collaborative research that focuses on extending best practices based on data from risk events.
Spatial granularity	Density of sensors or high sensor resolution within high fire risk areas	Electrical corporation does not have sensors located in high fire risk areas or is using sensors with low resolution or sensitivity	Electrical corporation has minimal sensor coverage in high fire risk areas. Sensors are spaced with gaps between coverage areas.	Electrical corporation has moderate sensor coverage in high fire risk areas. Sensors deployed are spaced at 100% of the maximum distance of sensitivity but with no overlap between sensors.	Electrical corporation has a high level of sensor coverage in high fire risk areas. Sensors deployed are spaced at 50% or less of the maximum distance of sensitivity with significant overlap between sensors.	No additional requirements beyond level 3

Wildfire detection and alarm systems		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation	Sensors and algorithms used in detection must be explained and each deployed technology must be preceded by testing and validation.	Electrical corporation provides no documentation regarding their installed wildfire detection capabilities.	Electrical corporation provides detailed documentation regarding sensor technology deployed for ignition detection and wildfire confirmation	Electrical corporation provides detailed documentation regarding sensor technology deployed for ignition detection and wildfire confirmation. Results of sensor and system capability testing are provided for review. At least one sensor technology is installed for each circuit in the grid.	Electrical corporation provides detailed documentation regarding sensor technology deployed for ignition detection and wildfire confirmation. Test results of sensors and systems are provided for review. At least two sensor technologies are installed for each circuit in the grid.	Electrical corporation provides detailed documentation regarding sensor technology deployed for ignition detection and wildfire confirmation. Test results of sensors and systems are provided for review. At least two sensor technologies are installed for each circuit in the grid with automatic verification.

5.2.6 12. Centralized monitoring of real-time conditions

Centralized monitoring of real-time conditions		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation	Automation of wildfire and fault reporting	Electrical corporation currently has no automation of reporting processes	Electrical corporation uses computer software to identify relevant staff of identified faults and wildfires	No additional requirements beyond level 1	No additional requirements beyond level 1	No additional requirements beyond level 1
Documentation and disclosures	Documentation of facility operation and location Staff hiring, training, and certification processes Job descriptions with staff member qualifications Organizational chart	Electrical corporation does not provide documentation of facility design to show its operation, location, staffing, and redundancy of critical power, lighting, and life-safety systems.	Electrical corporation provides documentation on the following: 1. Facility operational guidelines and location 2. Staff hiring, training, and certification processes	Electrical corporation provides documentation on the following: 1. Facility operational guidelines and location 2. Staff hiring, training, and certification processes 3. Frequency of drills, simulations, and exercises	Electrical corporation provides documentation on the following: 1. Facility operational guidelines and location 2. Staff hiring, training, and certification processes; job descriptions with staff qualifications 3. Frequency of drills, simulations, and exercises 4. Organizational chart	Electrical corporation provides documentation on the following: 1. Facility operational guidelines and location 2. Staff hiring, training, and certification processes; job descriptions with staff member qualifications 3. Frequency of drills, simulations, and exercises 4. Organizational chart 5. Ability to act as an Emergency Operations Center during wildfire events
Level of sophistication	Construction of buildings and infrastructure Redundancy of critical power, lighting, communication, and life-safety systems Security measures and systems	Electrical corporation does not maintain documentation of facility construction, critical systems, or security measures and systems.	Electrical corporation maintains documentation on the construction of buildings. Electrical corporation maintains redundancy in all critical systems (e.g., critical power, lighting, communications, and life-safety systems). Electrical corporation provides access to the documentation to authorized external agencies (e.g., Energy Safety, US Department of Homeland Security, etc.) when required. Operational and physical security measures are in place and documented.	No additional requirements beyond level 1	No additional requirements beyond level 1	No additional requirements beyond level 1

Centralized monitoring of real-time conditions		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Standardized processes	Electrical corporation central monitoring station is fully automated using detection algorithms or software to detect ignitions along grid. Sensor data is aggregated with near-real-time weather monitoring, grid diagnostics, wildfire detection and alarm systems, as well as other analytical models (e.g., weather forecasting, wildfire spread modeling) to evaluate the ongoing risk for emergency management decision making.	Electrical corporation does not own a central monitoring station and does not outsource monitoring service for detection of ignitions along the grid.	Electrical corporation owns or contracts with a central monitoring station but does not support automated wildfire detection algorithms or software. Wildfire detection is based on operator interpretation of sensor data.	Electrical corporation owns or contracts with a central monitoring station providing automated wildfire detection algorithms or software.	Electrical corporation owns a central monitoring station providing automated wildfire detection algorithms or software. Sensor data is aggregated with near-real-time weather monitoring, grid diagnostics, wildfire detection and alarm systems, as well as other analytical models (e.g., weather forecasting, wildfire spread modeling) to evaluate the ongoing risk for emergency management decision making.	No additional requirements beyond level 3
Transparency	Sharing of facility design and operation with the public and industry partners	Electrical corporation does not share facility guidelines	Electrical corporation shares facility guidelines with industry partners	Electrical corporation shares facility guidelines with industry partners and the public and accepts recommendations for revisions	Electrical corporation shares facility guidelines with industry partners and the public and incorporates recommendations for revisions	No additional requirements beyond level 3

5.3 C. Grid Design, Inspections, and Maintenance

5.3.1 13. Asset inventory and condition database

Asset inventory and condition database		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	Frequency of updates to database. More mature systems incorporate more frequent updates to the database from inspections.	Database is never updated. There is no existence of protocols to incorporate inspection findings into the database.	Database is updated annually. Additionally, protocols are developed to incorporate asset inspection findings within 2 weeks of the inspection.	Database is updated monthly. Additionally, protocols are developed to incorporate asset inspection findings within 1 week of the inspection.	Database is updated weekly. Additionally, protocols are developed to incorporate asset inspection findings within 1 day of the inspection.	Database is updated daily. Additionally, protocols are developed to incorporate asset inspection findings within 1 day of the inspection. Asset inspection findings are verified through QA/QC process within 1 day of the inspection.

Asset inventory and condition database		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Level of sophistication	Information contained in the asset inventory and condition database that should include: the geo-spatial path of each transmission and distribution circuit (including locations of poles and lines which deviate from the average direction) as well as each transformer and switch gear in accordance with the GIS reporting standards published by Energy Safety. More mature systems include additional named asset features.	Information contains in the database does not meet the minimum expectations or requirements.	Database contains the geo-spatial path of each transmission and distribution circuit (including locations of poles and lines which deviate from the average direction) as well as each transformer and switch gear in accordance with the GIS reporting standards published by Energy Safety. The database contains the following features for each equipment within the service area: 1. Name 2. Lifespan 3. Age 4. Voltage 5. Inspection finding history	Database contains the geo-spatial path of each transmission and distribution circuit (including locations of poles and lines which deviate from the average direction) as well as each transformer and switch gear in accordance with the GIS reporting standards published by Energy Safety. The database contains the following features for each equipment within the service area: 1. Name 2. Lifespan 3. Age 4. Voltage 5. Inspection finding history 6. Operating history At least 80% of assets and components have age data.	Database contains the geo-spatial path of each transmission and distribution circuit (including locations of poles and lines which deviate from the average direction) as well as each transformer and switch gear in accordance with the GIS reporting standards published by Energy Safety. The database contains the following features for each equipment within the service area: 1. Name 2. Lifespan 3. Age 4. Voltage 5. Inspection finding history 6. Operating history 7. Overload history At least 90% of assets and components have age data.	Database contains the geo-spatial path of each transmission and distribution circuit (including locations of poles and lines which deviate from the average direction) as well as each transformer and switch gear in accordance with the GIS reporting standards published by Energy Safety. The database contains the following features for each equipment within the service area: 1. Name 2. Lifespan 3. Age 4. Voltage 5. Inspection finding history 6. Operating history 7. Overload history 8. Minimum line clearance beyond GO based on risk analysis 9. Manufacturer 10. Repair history At least 99% of assets and components have age data.

Asset inventory and condition database		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Spatial granularity	Spatial granularity of the asset inventory and condition database within their service area.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Asset inventory and condition database within their service area are evaluated at a circuit segment resolution. The resolution of the asset inventory and condition of deployed lines and assets within their service area is sufficient to the development of spatially informed risk models at circuit segment level.	Asset inventory and condition database within their service area are evaluated at a span resolution. The resolution of the asset inventory and condition of deployed lines and assets within their service area is sufficient to the development of spatially informed risk models at span level.	Asset inventory and condition database within their service area are evaluated at an individual asset resolution. The resolution of the asset inventory and condition of deployed lines and assets within their service area is sufficient to the development of spatially informed risk models at an individual asset level.	No additional requirements beyond level 3
Subject matter expert (SME) verification/(QA/QC)	Subject Matter Expert (SME) verification to evaluate the accuracy of asset inventory and condition database.	No subject matter expert verification in place to evaluate asset Inventory and condition database.	The asset Inventory and condition database is assessed through subject matter expert (SME) review at least once per year.	The asset Inventory and condition database is assessed through subject matter expert (SME) review at least once per year. Other electrical corporations and government participate in the auditing process.	The asset Inventory and condition database is assessed through subject matter expert (SME) review at least twice per year. Other electrical corporations and government participate in the auditing process.	The asset inventory and condition of deployed lines and assets database is assessed through subject matter expert (SME) review at least four times per year. Other electrical corporations and government participate in the auditing process. Verification is complemented with more in-depth diagnosis to provide a comprehensive understanding of strengths and weaknesses of the data and collection process.

5.3.2 14. Asset inspections

Asset inspections		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	Frequency of asset inspections within HFTD and service areas. In more mature systems, inspection frequency is prioritized incorporating a dynamic, risk-informed inspection cycle based on real-time monitoring of conditions.	Asset inspections are less frequent than regulations require.	Detailed inspection and patrol inspection frequency consistent with regulations	Detailed inspections and patrol inspections of electric lines and equipment scheduled based on: 1. an up-to-date static map of equipment type and environment 2. more frequent inspections for highest risk areas 3. more frequent inspections for HFTD areas	Detailed inspections and patrol inspections of electric lines and equipment scheduled based on: 1. an up-to-date dynamic map of equipment type and environment based on real-time risk 2. more frequent inspections for highest risk areas 3. more frequent inspections for HFTD areas 4. accurate predictive modeling of equipment failure probability 5. analysis of early indicators of failure probability via analysis of actual failures 6. additional inspection types (i.e., beyond routine patrols and detailed) implemented as needed 7. 80% of line miles are continuously monitored by sensors to monitor the condition of electric lines and equipment areas with fire risk	Detailed inspections and patrol inspections of electric lines and equipment scheduled based on: 1. an up-to-date dynamic map of equipment type and environment based on real-time risk 2. more frequent inspections for highest risk areas 3. more frequent inspections for HFTD areas 4. **content of each inspection (I.e., checklist or technology being used) determined independently** by accurate predictive modeling of equipment failure probability 5. analysis of early indicators of failure probability via analysis of actual failures 6. additional inspection types (i.e., beyond routine patrols and detailed) implemented as needed 7. 95% of line miles are continuously monitored by sensors to monitor the condition of electric lines and equipment areas with fire risk

Asset inspections		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Level of sophistication	Measured parameters, procedure, and checklist during the asset inspection to determine the depth and detail (quality) of inspections. Higher maturity is achieved by having a greater ability to determine equipment failure probability, identify higher risk areas and assets.	Measured parameters and procedure during asset inspections do not allow for identifying higher risk areas and assets.	Measured parameters and procedure during asset inspections allow for identifying higher risk areas and assets.	Measured parameters and procedure during asset inspections allow for identifying higher risk areas and assets. In addition, measured parameters allow for determining equipment failure probability.	Measured parameters and procedure during asset inspections allow for identifying higher risk areas and assets. In addition, measured parameters allow for determining equipment failure probability and timing of inspections.	No additional requirements beyond level 3
QA/QC	Process to evaluate the quality of asset inspections. Higher maturity includes audit through third-party of the quality/training of inspectors and inspection outcomes.	No process in place to evaluate the quality/training of pre-inspectors and inspection outcomes.	The quality of asset inspections is assessed through subject matter expert (SME) review at least once per year.	The quality of asset inspections is assessed through subject matter expert (SME) review at least once per year. Other electrical corporations and government participate in the auditing process.	The quality of asset inspections is assessed through subject matter expert (SME) review at least twice per year. Other electrical corporations and government participate in the auditing process.	The quality of asset inspections is assessed through subject matter expert (SME) review at least four times per year. Other electrical corporations and government participate in the auditing process.

5.3.3 15. Asset maintenance and repair

Asset maintenance and repair		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	Frequency of maintenance on assets to mitigate risk-inducing failure. In more mature systems, frequency of maintenance is prioritized based on identified wildfire and PSPS risk as well as usage and environmental conditions.	Maintenance frequency is not risk-informed.	Maintenance frequency is determined based on each of the following: 1. Wildfire risk in relevant circuit 2. PSPS risk 3. Usage	Maintenance frequency is determined based on each of the following: 1. Wildfire risk in relevant circuit 2. PSPS risk 3. Usage 4. Environmental conditions	Maintenance frequency is determined based on each of the following: 1. Wildfire risk in relevant circuit 2. PSPS risk 3. Usage 4. Environmental conditions 5. Performance history 6. 95% of line miles are continuously monitored by sensors to monitor the condition of electric lines and equipment areas with fire risk	Maintenance frequency is determined based on each of the following: 1. Wildfire risk in relevant circuit 2. PSPS risk 3. Usage 4. Environmental conditions 5. Performance history 6. 95% of line miles are continuously monitored by sensors to monitor the condition of electric lines and equipment areas with fire risk
Level of sophistication	Time between inspection findings and maintenance or repair. Lower times between inspection findings and maintenance are indicative of a more mature system.	Level 1 findings (as defined in GO-95 rule 18) are not addressed immediately. Level 2 findings (as defined in GO-95 rule 18) are not addressed within the time identified in GO-95. Routine findings (level 3 as defined in GO-95 rule 18) in service area are not addressed within five (5) years.	Level 1 findings (as defined in GO-95 rule 18) **are addressed immediately**. Level 2 findings within HFTD Tier 3 are addressed **within 6 months**. Level 2 findings within HFTD Tier 2 are addressed **within 12 months.** Level 2 findings in non-HFTD areas are addressed **within 5 years.** Routine findings (level 3 as defined in GO-95 rule 18) in service area are addressed within five (5) years.	Level 1 findings (as defined in GO-95 rule 18) **are addressed immediately**. Level 2 findings within HFTD Tier 3 are addressed **within 3 months**. Level 2 findings within HFTD Tier 2 are addressed **within 6 months**. Level 2 findings in non-HFTD areas are addressed **within 1 year**. Routine findings (level 3 as defined in GO-95 rule 18) in service area are addressed within five (5) years.	Level 1 findings (as defined in GO-95 rule 18) **are addressed immediately**. Level 2 findings within HFTD Tier 3 are addressed **within 1 month.** Level 2 findings within HFTD Tier 2 are addressed **within 3 months.** Level 2 findings in non-HFTD areas are addressed **within 6 months**. Routine findings (level 3 as defined in GO-95 rule 18) in service area are addressed within five (5) years.	Level 1 findings (as defined in GO-95 rule 18) **are addressed immediately**. Level 2 findings within HFTD Tier 3 are addressed **within 2 weeks.** Level 2 findings within HFTD Tier 2 are addressed **within 1 month.** Level 2 findings in non-HFTD areas are addressed **within 3 months**. Routine findings (level 3 as defined in GO-95 rule 18) in service area are addressed within five (5) years.

Asset maintenance and repair		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
QA/QC	Process in place to evaluate the maintenance quality. Higher maturity is achieved with more robust QA/QC procedures.	No process in place to evaluate the maintenance quality or ensure the identification of compromised or aging equipment.	Maintenance quality and procedures are assessed through subject matter expert (SME) review at least once per year.	Maintenance quality and procedures are assessed through subject matter expert (SME) review at least twice per year. Other electrical corporations and government participate in the auditing process. Electrical corporation estimates equipment service life reduction based on usage and environmental conditions.	Maintenance quality and procedures are assessed through subject matter expert (SME) review at least quarterly. Other electrical corporations and government participate in the auditing process. Electrical corporation estimates equipment service life reduction based on usage and environmental conditions.	Maintenance quality and procedures are assessed through subject matter expert (SME) review at least monthly. Other electrical corporations and government participate in the auditing process. Electrical corporation estimates equipment service life reduction based on usage and environmental conditions.
Risk spend efficiency (RSE)	The utilization of risk-spend-efficiency (RSE) for maintenance prioritization. Higher maturity is achieved using other elements such as wildfire and PSPS risk, inspection findings, and vegetation management.	RSE is not used for maintenance prioritization.	At least the following elements are used for maintenance prioritization: 1. Inspection findings	At least the following elements are used for maintenance prioritization: 1. Inspection findings 2. Wildfire and PSPS risk Additionally, the degree of wildfire and PSPS risk reduction achieved by maintenance prioritization is estimated.	At least the following elements are used for maintenance prioritization: 1. Inspection findings 2. Wildfire and PSPS risk 3. Vegetation management Additionally, the degree of wildfire and PSPS risk reduction achieved by maintenance prioritization is estimated.	At least the following elements are used for maintenance prioritization: 1. Inspection findings 2. Wildfire and PSPS risk 3. Vegetation management 4. RSE Additionally, the degree of wildfire and PSPS risk reduction achieved by maintenance prioritization is estimated.

5.3.4 16. Grid design and resiliency

Grid design and resiliency		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	Frequency of grid design evaluation and circuit load assessment.	Grid design evaluation and circuit load assessment are never performed.	Grid design evaluation and circuit load assessment are performed on an annual basis.	Grid design evaluation and circuit load assessment are performed every 6 months.	Grid design evaluation and circuit load assessment are performed at least once per quarter.	No additional requirements beyond level 3
Learning and continuous improvement	The efforts the electrical corporation undertakes and funds to improve the state-of-the-art in grid design and resilience. This includes internal department of the electrical corporation or third-party institutions such as independent labs, consulting companies, research organizations, universities, etc.	No established program for developing innovative grid design to advance the state-of-the-art.	New initiatives developed and evaluated based on each of the following: 1. Installation of hardening initiatives into grid 2. Measuring direct reduction in ignition events	New initiatives developed and evaluated based on each of the following: 1. Installation of hardening initiatives into grid 2. Measuring direct reduction in ignition events 3. Measuring reduction impact on risk event metrics 4. Including an evaluation of the total cost of the initiative	New initiatives developed and evaluated based on each of the following: 1. Installation of hardening initiatives into grid 2. Measuring direct reduction in ignition events 3. Measuring reduction impact on risk event metrics **at a span level** 4. Including an evaluation of the total cost of the initiative 5. Developed and independently evaluated using lab facilities by a trained team of grid innovation specialists 6. Validated by field testing based on installation into grid	New initiatives developed and evaluated based on each of the following: 1. Installation of hardening initiatives into grid 2. Measuring direct reduction in ignition events 3. Measuring reduction impact on risk event metrics **at an asset level** 4. Including an evaluation of the total cost of the initiative 5. Developed and independently evaluated using lab facilities by a trained team of grid innovation specialists 6. Validated by field testing based on installation into grid 7. Independent auditing of performance in grid 8. Extensive data sharing with industry, academia, and other electrical corporations utilizing the same initiatives to share results

Grid design and resiliency		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Level of sophistication	Elements considered and documented during grid design, design evaluation, and grid impact evaluation. More mature systems consider evaluation of the impact of PSPS on community and egress reliance and identify high risk configuration in the existing grid based on ignition likelihood and overall risk.	The grid design, design evaluation, and grid impact evaluation do not meet the minimum expectations or requirements.	The grid design, design evaluation, and grid impact evaluation consider and document the following: 1. Geo-spatial number of customers and critical infrastructure impacted by PSPS in HFTD areas 2. Total percentage of grid localization features normalized by circuit length in HFTD areas	The grid design, design evaluation, and grid impact evaluation consider and document the following: 1. Geo-spatial number of customers and critical infrastructure impacted by PSPS in HFTD areas 2. Total percentage of grid localization features normalized by circuit length in HFTD areas 3. Number and type of specific grid localization features in HFTD areas 4. Type and location of non-electrical corporation overhead distribution equipment in HFTD areas	The grid design, design evaluation, and grid impact evaluation consider and document the following: 1. Geo-spatial number of customers and critical infrastructure impacted by PSPS in HFTD areas 2. Total percentage of grid localization features normalized by circuit length in HFTD areas 3. Number and type of specific grid localization features in HFTD areas 4. Type and location of non-electrical corporation overhead distribution equipment in HFTD areas 5. Identification of high-risk configurations in the existing grid based on ignition likelihood and overall risk	The grid design, design evaluation, and grid impact evaluation consider and document the following: 1. Geo-spatial number of customers and critical infrastructure impacted by PSPS in HFTD areas 2. Total percentage of grid localization features normalized by circuit length in HFTD areas 3. Number and type of specific grid localization features in HFTD areas 4. Type and location of non-electrical corporation overhead distribution equipment in HFTD areas 5. Identification of high-risk configurations in the existing grid based on ignition likelihood and overall risk 6. Evaluation of the design on circuits that are experiencing frequent overload operation to prioritize modifications in grid design

Grid design and resiliency		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Risk spend efficiency (RSE)	The utilization of risk-spend-efficiency (RSE) for selection/exclusion of grid design features and identify the level or risk reduction afforded by different hardening activities.	RSE is not used for selection/exclusion of grid design features and identify the level or risk reduction afforded by different hardening activities.	RSE is used for selection/exclusion of grid design features and identify the level or risk reduction afforded by different hardening activities.	RSE is used for selection/exclusion of grid design features and identify the level or risk reduction afforded by different hardening activities. Each grid hardening initiative, indicating pros, cons, and an estimate of normalized implementation cost (per circuit, circuit mile, or another appropriate metric) is described and documented.	RSE is used for selection/exclusion of grid design features and identify the level or risk reduction afforded by different hardening activities. Each grid hardening initiative, indicating pros, cons, and an estimate of normalized implementation cost (per circuit, circuit mile, or another appropriate metric) is described and documented. The degree of wildfire risk reduction achieved by each grid hardening initiative is estimated.	RSE is used for selection/exclusion of grid design features and identify the level or risk reduction afforded by different hardening activities. Each grid hardening initiative, indicating pros, cons, and an estimate of normalized implementation cost (per circuit, circuit mile, or another appropriate metric) is described and documented. The degree of wildfire risk reduction achieved by each grid hardening initiative and weight of these reductions against the cost of those initiatives are estimated.

Grid design and resiliency		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Spatial granularity	Spatial granularity of grid design evaluation.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Grid design is evaluated at a resolution <= 20 km (circuit level). The resolution of grid design evaluation is sufficient for determining each of the following: 1. The length of spans 2. Degree of circuit isolation 3. The geo-spatial number of customers and critical infrastructure impacted by PSPS of specific circuits in the HFTD	Grid design is evaluated at a resolution <= 2 km (segment level). The resolution of grid design evaluation is sufficient for determining each of the following: 1. The length of spans 2. Degree of circuit isolation 3. The geo-spatial number of customers and critical infrastructure impacted by PSPS of specific circuits in the HFTD 4. High-risk configurations in the existing grid based on ignition likelihood and overall risk	Grid design is evaluated at a resolution <= 400 m (span level). The resolution of grid design evaluation is sufficient for determining each of the following: 1. The length of spans 2. Degree of circuit isolation 3. The geo-spatial number of customers and critical infrastructure impacted by PSPS of specific circuits in the HFTD 4. High-risk configurations in the existing grid based on ignition likelihood and overall risk 5. Number and type of specific grid localization features in HFTD areas	No additional requirements beyond level 3

Grid design and resiliency		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Subject matter expert (SME) verification	Subject Matter Expert (SME) verification for grid design decisions approval.	No subject matter expert verification for grid design decisions approval.	At minimum each of the following grid design decisions is assessed through subject matter verification (SME): 1. Circuit routing 2. Determination of circuit span lengths Each of the following elements are considered during grid design decisions: 1. Resilient egress and traffic 2. Community resilience	At minimum each of the following grid design decisions is assessed through subject matter verification (SME) in collaboration with other electrical corporations and government: 1. Circuit routing 2. Determination of circuit span lengths 3. Selection of design type Each of the following elements are considered during grid design decisions: 1. Resilient egress and traffic 2. Community resilience	At minimum each of the following grid design decisions is assessed through subject matter verification (SME) in collaboration with other electrical corporations, government, and research community: 1. Circuit routing 2. Determination of circuit span lengths 3. Selection of design type 4. Integration of microgrids Each of the following elements are considered during grid design decisions: 1. Resilient egress and traffic 2. Community resilience	At minimum each of the following grid design decisions is assessed through subject matter verification (SME) in collaboration with other electrical corporations, government, and research community: 1. Circuit routing 2. Determination of circuit span lengths 3. Selection of design type 4. Integration of microgrids 5. Integration of new technologies Each of the following elements are considered during grid design decisions: 1. Resilient egress and traffic 2. Community resilience

5.3.5 17. Asset and grid personnel training and quality

Asset and grid personnel training and quality		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Documentation and disclosures	The degree to which electrical corporations collaborate and share best practices in personnel training and quality assessment.	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding the training and QA of asset maintenance and repair personnel with or from other California electrical corporations.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of asset personnel. Electrical corporation procedures include at least 1 of the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of personnel.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of personnel. Electrical corporation procedures include at least 2 of the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of personnel.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of personnel. Electrical corporation procedures include at least 3 of the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of personnel.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of personnel. Electrical corporation procedures include all the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of personnel.

Asset and grid personnel training and quality		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	Frequency at which personnel are trained.	Electrical corporation has no formal training program and no standardized training documentation.	Electrical corporation provides standard training material to all employees. Electrical corporation requires wildfire related conditions and work aspects to be discussed with work teams before daily work begins.	Electrical corporation conducts onboard training for new employees and provides standard training material on wildfire related conditions and work aspects to all relevant employees. Electrical corporation requires wildfire related conditions and work aspects to be discussed with work teams before daily work begins.	Electrical corporation conducts onboard training for new employees and provides standard training material on wildfire related conditions and work aspects to all relevant employees. Electrical corporation requires wildfire related conditions and work aspects to be discussed with work teams before daily work begins. Electrical corporation conducts refresher training on wildfire risk and work aspects for all relevant employees at least once per year.	No additional requirements beyond level 3

Asset and grid personnel training and quality		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Level of sophistication	Content covered by training	Electrical corporation training content does not address wildfire risk related conditions and work content.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for routine inspections.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for routine and detailed inspections. 4. Use of specialized equipment (e.g., LiDAR and drones) for inspecting assets for conditions that increase wildfire risk.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for routine and detailed inspections. 4. Use of specialized equipment (e.g., LiDAR and drones) for inspecting assets for conditions that increase wildfire risk. 5. Suppression of ignitions caused by workers or in the immediate vicinity of workers. 6. Simulated inspections in controlled environments with known reportable conditions.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for routine and detailed inspections. 4. Use of specialized equipment (e.g., LiDAR and drones) for inspecting assets for conditions that increase wildfire risk. 5. Suppression of ignitions caused by workers or in the immediate vicinity of workers. 6. Simulated inspections in controlled environments with known reportable conditions.

Asset and grid personnel training and quality		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
QA/QC	Verification of the effectiveness of personnel training.	Results of post construction and repair inspections and audits are not used to inform training of personnel	Results of post construction and repair inspections and audits are used to identify systematic deficiencies and recommend training improvements for electrical corporation asset management personnel based on weaknesses. Asset and grid personnel drills are conducted with pass/fail criteria	Results of post construction and repair inspections and audits are used to identify systematic deficiencies and recommend training improvements for electrical corporation and contractor asset personnel based on weaknesses annually. Asset and grid personnel drills are conducted with pass/fail criteria and at least 75% of drills are passed	Results of post construction and repair inspections and audits are used to identify systematic deficiencies and recommend training improvements for electrical corporation, contractor, and subcontractor asset management personnel based on weaknesses annually. Results of post training assessments and audits are used to identify systematic deficiencies and recommend modifications to training material for electrical corporation asset management personnel based on weaknesses. Asset and grid personnel drills are conducted with pass/fail criteria and at least 75% of drills are passed Asset and grid personnel drills are conducted at least once annually	Results of post construction and repair inspections and audits are used to identify systematic deficiencies, grade individuals, and recommend personalized pre-made and tested training modules for individual electrical corporation, contractor, and subcontractor employees based on weaknesses. Results of post training assessments and audits are used to identify systematic deficiencies and recommend modifications to training material for electrical corporation asset management personnel based on weaknesses. Asset and grid personnel drills are conducted with pass/fail criteria and at least 95% of drills are passed Asset and grid personnel drills are conducted at least once annually

5.4 D. Vegetation Management and Inspections

5.4.1 18. Vegetation inventory and condition database

Vegetation inventory and condition database		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	Frequency of updates to database from inspections. More mature systems incorporate more frequent updates to the database from inspections/activities.	Electrical corporation does not update its vegetation database at a sufficient frequency.	Database is updated within 30 days of an inspection/activity.	Database is updated within 2 weeks of an inspection/activity.	Database is updated within 1 week of an inspection/activity.	Database is updated within 1 day of an inspection/activity.
Level of sophistication	Information contained in the vegetation database that should include tree species, typical environmental conditions, and vegetation growth rate in inspection prioritization. Higher maturity is achieved by recording of more specific information on the tree species and expected growth rates to prioritize future inspections.	Information in the vegetation database do not meet the minimum expectations or requirements.	Information in the vegetation database at a minimum includes the following: 1. All vegetation within the right of way and within strike potential of the assets 2. Logs documenting findings and remedial actions taken 3. General information on the tree such as common name and genus 4. Typical environmental conditions such as slope, aspect, soil type, and wind exposure	Information in the vegetation database at a minimum includes the following: 1. All vegetation within the right of way and within strike potential of the assets 2.Logs documenting findings and remedial actions taken 3. General information on the tree such as common name, genus, and species 4. Typical environmental conditions such as slope, aspect, soil type, and wind exposure. 5. Individual high risk-trees across grid	Information in the vegetation database at a minimum includes the following: 1. All vegetation within the right of way and within strike potential of the assets 2.Logs documenting findings and remedial actions taken 3. General information on the tree such as common name, genus, and species 4. Typical environmental conditions such as slope, aspect, soil type, and wind exposure 5. Individual high risk-trees across grid 6. Vegetation growth rate for inspection prioritization	Information in the vegetation database at a minimum includes the following: 1. All vegetation within the right of way and within strike potential of the assets 2. Logs documenting findings and remedial actions taken 3. General information on the tree such as common name, genus, and species 4. Typical environmental conditions such as slope, aspect, soil type, and wind exposure 5. Individual high risk-trees across grid 6. Vegetation growth rate for inspection prioritization 7. Up-to-date tree health and moisture content to determine risk of ignition and propagation

Vegetation inventory and condition database		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
QA/QC	Process to evaluate the accuracy of vegetation database. Higher maturity includes a well-defined auditing process of the vegetation database.	No process in place to evaluate vegetation database.	Vegetation database is assessed through subject matter expert (SME) review **at least once per year**.	Vegetation database is assessed through subject matter expert (SME) review **at least once per year**. QA/QC processes and procedures for ensuring data quality in the vegetation database are benchmarked with other electrical corporations.	Vegetation database is assessed through subject matter expert (SME) review **at least twice per year**. QA/QC processes and procedures for ensuring data quality in the vegetation database are benchmarked with other electrical corporations.	Vegetation database is assessed through subject matter expert (SME) review **at least four times per year**. QA/QC processes and procedures for ensuring data quality in the vegetation database are benchmarked with other electrical corporations. Electrical corporation internal audits are complemented with more in-depth analyses to provide a comprehensive understanding of strengths and weaknesses of the data and collection process.
Spatial granularity	Spatial granularity of the vegetation inventory along rights of way, and vegetation with strike potential, including condition of each vegetation.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Vegetation inventory and condition are evaluated at a resolution <= 20 km (Circuit level). The resolution of vegetation inventory is sufficient for identifying higher risk areas and vegetation at the circuit level.	Vegetation inventory and condition are evaluated at a resolution <= 2 km (Segment level) The resolution of vegetation inventory is sufficient for identifying higher risk areas and vegetation at the circuit segment level.	Vegetation inventory and condition are evaluated at a resolution <= 400 m (Span level). The resolution of vegetation inventory is sufficient for identifying higher risk areas and vegetation at the span level.	Vegetation inventory and condition are evaluated at a resolution <= 15 m (Asset level). The resolution of vegetation inventory is sufficient for identifying higher risk areas and vegetation at the asset level.

5.4.2 19. Vegetation inspections

Vegetation inspections		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	Frequency of inspections for the entire grid and HFTD areas. In more mature systems, inspection frequency is prioritized based on risk modeling, and have a shorter window between Level 1 and Level 2/Level 3 inspections.	Inspections are less frequent than regulations require.	Vegetation inspections for the entire grid and HFTD areas are conducted at least annually.	Vegetation inspections for the entire grid and HFTD areas are conducted at least every 6 months. The inspection frequency is prioritized based on risk modeling considering predicted species-specific vegetation growth and equipment type for each circuit of the service territory	Vegetation inspections for the entire grid and HFTD areas are conducted at least every 6 months. The inspection frequency is prioritized based on risk modeling considering predicted species-specific vegetation growth, tree health, and other vegetation risk factors along with equipment type and age for each span of the service territory to conduct more frequent inspections in less healthy areas. The frequency of inspections allow for understanding vegetation growth, characteristics, and failure probability.	Vegetation inspections for the entire grid and HFTD areas are conducted at least every 3 months. The inspection frequency is prioritized based on risk modeling considering predicted species-specific vegetation growth, tree health, and other continuously monitored vegetation risk factors along with equipment type, age, condition, and operating history for each asset of the service territory to conduct more frequent inspections in areas with high rates of dead or dying vegetation. The frequency of inspections allows for understanding vegetation growth, characteristics, failure probability, and timing inspections.

Vegetation inspections		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Level of sophistication	Measured parameters, procedure, and checklist during the vegetation inspection to determine the depth and detail (quality) of inspections. Higher maturity is achieved by having a greater ability to identify higher risk areas.	Measured parameters and procedure during vegetation inspections do not allow for identifying higher risk areas and vegetation.	Measured parameters and procedure during detailed vegetation inspections allow for identifying higher risk areas and vegetation.	Measured parameters and procedure during detailed vegetation inspections allow for identifying higher risk areas and vegetation. The electrical corporation describes the types of inspections and the procedure performed and parameters that should be measured in each one.	Measured parameters and procedure during detailed vegetation inspections allow for identifying higher risk areas and vegetation. The electrical corporation describes the types of inspections and the procedure performed and parameters that should be measured in each one. The parameters measured during detailed inspections allow for understanding vegetation growth, characteristics, and failure probability.	Measured parameters and procedure during detailed vegetation inspections allow for identifying higher risk areas and vegetation. The electrical corporation describes the types of inspections and the procedure performed and parameters that should be measured in each one. The parameters measured during detailed inspections allow for understanding vegetation growth, characteristics, failure probability, and timing inspections.
QA/QC	Process to evaluate the quality of vegetation inspections. Higher maturity includes audit through third-party of the quality/training of inspectors and inspection outcomes.	No process in place to evaluate the quality/training of inspectors and inspection outcomes.	Vegetation inspections are assessed through subject matter expert (SME) review **at least once per year**.	Vegetation inspections are assessed through subject matter expert (SME) review **at least once per year**. QA/QC processes and procedures for ensuring vegetation inspections are benchmarked with other electrical corporations.	Vegetation inspections are assessed through subject matter expert (SME) review **at least twice per year**. QA/QC processes and procedures for ensuring vegetation inspections are benchmarked with other electrical corporations.	Vegetation inspections are assessed through subject matter expert (SME) review **at least four times per year**. QA/QC processes and procedures for ensuring vegetation inspections are benchmarked with other electrical corporations.

Vegetation inspections		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Risk spend efficiency (RSE)	The utilization of risk-spend-efficiency (RSE) for making decisions regarding vegetation inspections. High maturity involves utilizing risk-spend-efficiency (RSE) in determining which areas in the electrical corporation service area should be prioritized in conducting more frequent and/or more in-depth inspections.	RSE is not used to determine areas subjected to vegetation inspections.	RSE is utilized to determine areas that should be prioritized in conducting more frequent inspections.	RSE is utilized to determine areas that should be prioritized in conducting more frequent inspections. RSE is used to determine the inspection level.	RSE is utilized to determine areas that should be prioritized in conducting more frequent inspections. RSE is used to determine the inspection level. The degree of risk reduction achieved by inspections and specific initiatives is estimated.	RSE is utilized to determine areas that should be prioritized in conducting more frequent inspections. RSE is used to determine the inspection level. The degree of risk reduction achieved by inspections and specific initiatives is estimated. Relative risk reduction and the cost of inspections are considered in strategy development.

5.4.3 20. Vegetation treatment

Vegetation treatment		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Anticipation	The electrical corporation capacity of anticipating reducing risk considering historic trends (e.g., refusal rates, periodic grow-in findings, etc.) in the geo-spatial regions of their service area to prioritize mitigation efforts. Higher maturity includes modifying the grid design to reduce risk based on these observed trends.	The electrical corporation does not consider historic trends (e.g., refusal rates, periodic grow-in findings, etc.) to prioritize mitigation efforts.	The electrical corporation considers historic trends (e.g., refusal rates, periodic grow-in findings, etc.) in the geo-spatial regions of their service area to prioritize mitigation efforts.	The electrical corporation considers historic trends (e.g., refusal rates, periodic grow-in findings, etc.) in the geo-spatial regions of their service area to prioritize mitigation efforts. Re-evaluation of the grid design is performed based on historic trends.	The electrical corporation considers historic trends (e.g., refusal rates, periodic grow-in findings, etc.) in the geo-spatial regions of their service area to prioritize mitigation efforts. Revaluation of the grid design is performed based on historic trends. Decisions related to increasing isolation of affected circuits or integration of advanced sensor (e.g., protective equipment and device settings) to reduce the likelihood of ignition from grow-in are based on historic trends.	No additional requirements beyond level 3

Vegetation treatment		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Level of sophistication	Time between inspection findings or predictive model results (such as species-specific vegetative growth and limb, trunk, or root failure rates) and vegetation trimming. More mature systems respond quickly to findings from inspections. This scoring also includes the removal time after trimming and vegetative waste disposal outside the wildland (e.g., routine treatment versus dying tree which is likely to fall on a line).	The electrical corporation does not perform any mitigation efforts to routine findings from inspections. In addition, the electrical corporation does not remove vegetative waste outside the wildland (e.g., in a homeowner's yard, along a street, etc.).	The electrical corporation responds to findings from inspections within thirty (30) days. The electrical corporation responds to severe findings (e.g., dying tree which is likely to fall on a line) from inspections within seven (7) days. The electrical corporation removes vegetative waste after trimming and outside the wildland (e.g., in a homeowner's yard, along a street, etc.) within 1 week after disposal.	The electrical corporation responds to findings from inspections within 1 week or less. The electrical corporation responds to severe findings (e.g., dying tree which is likely to fall on a line) from inspections within sixteen (16) hours. The electrical corporation systematically removes vegetative waste after trimming and outside the wildland (e.g., in a homeowner's yard, along a street, etc.) within 3 days after trimming.	The electrical corporation responds to findings from inspections on the same day. The electrical corporation responds to severe findings (e.g., dying tree which is likely to fall on a line) from inspections within eight (8) hours. The electrical corporation systematically removes vegetative waste after trimming and outside the wildland (e.g., in a homeowner's yard, along a street, etc.) on the same day after disposal. The electrical corporation proactively trims trees based on predictive model results (such as species-specific vegetative growth and limb, trunk, or root failure rates).	The electrical corporation responds to findings from inspections on the same day. The electrical corporation responds to severe findings (e.g., dying tree which is likely to fall on a line) from inspections within four (4) hours. The electrical corporation systematically removes vegetative waste after trimming and outside the wildland (e.g., in a homeowner's yard, along a street, etc.) on the same day after disposal, **informing relevant communities of removal**. The electrical corporation proactively trims trees based on predictive model results (such as species-specific vegetative growth and limb, trunk, or root failure rates).

Vegetation treatment		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
QA/QC	Process to evaluate the quality of vegetation trimming and training tree contractors.	No process in place to evaluate the quality of vegetation trimming.	The quality of vegetation trimming is assessed through post vegetation treatment inspections of employee and contractor work and non-conformances are corrected through additional treatment. QA/QC information is used identify deficiencies in inspection procedures and execution.	The quality of vegetation trimming is assessed through post vegetation treatment inspections of employee and contractor work and non-conformances are corrected through additional treatment. QA/QC information is used identify deficiencies in inspection procedures and execution. Procedures are updated to address deficiencies identified from QA/QC information at least once per year. Contractors and subcontractors are required to follow processes and standards set forth for the electrical corporation	The quality of vegetation trimming is assessed through post vegetation treatment inspections of employee and contractor work and non-conformances are corrected through additional treatment. QA/QC information is used identify deficiencies in inspection procedures and execution. Procedures are updated to address deficiencies identified from QA/QC information at least once per quarter. Contractors and subcontractors are required to follow processes and standards set forth for the electrical corporation	The quality of vegetation trimming is assessed through post vegetation treatment inspections of employee and contractor work and non-conformances are corrected through additional treatment. QA/QC information is used identify deficiencies in inspection procedures and execution. Procedures are updated to address deficiencies identified from QA/QC information at least once per month. Contractors and subcontractors are required to follow processes and standards set forth for the electrical corporation
Risk spend efficiency (RSE)	The utilization of risk-spend-efficiency (RSE) for vegetation mitigation planning.	RSE is not used to plan vegetation mitigation efforts.	RSE is utilized to plan vegetation mitigation efforts.	RSE is utilized to plan vegetation mitigation efforts. Additionally, the degree of wildfire risk reduction achieved by specific vegetation management initiatives is estimated.	RSE is utilized to plan vegetation mitigation efforts. Additionally, the degree of wildfire risk reduction achieved by specific vegetation management initiatives is estimated. The degree of wildfire risk reduction achieved by each initiative and the cost of those initiatives are considered in strategy development.	No additional requirements beyond level 3

5.4.4 21. Vegetation personnel training and quality

Vegetation personnel training and quality		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Documentation and disclosures	The degree to which electrical corporations collaborate and share best practices in personnel training and quality assessment.	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding the training and QA of vegetation personnel with or from other California electrical corporations.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of vegetation personnel. Electrical corporation procedures include at least 1 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of vegetation personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of vegetation personnel.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of vegetation personnel. Electrical corporation procedures include at least 2 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of vegetation personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of vegetation personnel.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of vegetation personnel. Electrical corporation procedures include at least 3 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of vegetation personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of vegetation personnel.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of vegetation personnel. Electrical corporation procedures include all the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of vegetation personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of vegetation personnel.

Vegetation personnel training and quality		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	Frequency at which personnel are trained.	Electrical corporation has no formal training program and no standardized training documentation.	Electrical corporation provides standard training material to all employees. Electrical corporation requires wildfire related conditions and work aspects to be discussed with work teams before daily work begins.	Electrical corporation conducts onboard training for new employees and provides standard training material on wildfire related conditions and work aspects to all relevant employees. Electrical corporation requires wildfire related conditions and work aspects to be discussed with work teams before daily work begins.	Electrical corporation conducts onboard training for new employees and provides standard training material on wildfire related conditions and work aspects to all relevant employees. Electrical corporation requires wildfire related conditions and work aspects to be discussed with work teams before daily work begins. Electrical corporation conducts refresher training on wildfire risk and work aspects for all relevant employees at least once per year.	No additional requirements beyond level 3

Vegetation personnel training and quality		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Level of sophistication	Content covered by training	Electrical corporation training content does not address wildfire risk related conditions and work content.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for basic vegetation inspections.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for basic and detailed vegetation inspections. 4. Use of specialized equipment (e.g., LiDAR and drones) for inspecting vegetation conditions that increase wildfire risk.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for basic and detailed vegetation inspections. 4. Use of specialized equipment (e.g., LiDAR and drones) for inspecting vegetation conditions that increase wildfire risk. 5. Suppression of ignitions caused by workers or in the immediate vicinity of workers. 6. Simulated inspections in controlled environments with known reportable conditions.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for basic and detailed vegetation inspections. 4. Use of specialized equipment (e.g., LiDAR and drones) for inspecting vegetation conditions that increase wildfire risk. 5. Suppression of ignitions caused by workers or in the immediate vicinity of workers. 6. Simulated inspections in controlled environments with known reportable conditions.

Vegetation personnel training and quality		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
QA/QC	Verification of the effectiveness of personnel training.	Results of post treatment inspections and audits are not used to inform training of personnel	Results of post treatment inspections and audits are used to identify systematic deficiencies, and recommend training for electrical corporation vegetation management personnel based on weaknesses Vegetation personnel drills are conducted with pass/fail criteria	Results of post treatment inspections and audits are used to identify systematic deficiencies and recommend training for electrical corporation and contractor vegetation personnel based on weaknesses. Vegetation personnel drills are conducted with pass/fail criteria and at least 75% of drills are passed	Results of post treatment inspections and audits are used to identify systematic deficiencies and recommend training for electrical corporation, contractor, and subcontractor vegetation management personnel based on weaknesses. Results of post training assessments and audits are used to identify systematic deficiencies and recommend modifications to training material for electrical corporation vegetation management personnel based on weaknesses. Vegetation personnel drills are conducted with pass/fail criteria and at least 75% of drills are passed Vegetation personnel drills are conducted at least once annually	Results of post treatment inspections and audits are used to identify systematic deficiencies, grade individuals, and recommend personalized pre-made and tested training for individual electrical corporation, contractor, and subcontractor employees based on weaknesses. Results of post training assessments and audits are used to identify systematic deficiencies, and recommend modifications to training material for electrical corporation vegetation management personnel based on weaknesses. Vegetation personnel drills are conducted with pass/fail criteria and at least 95% of drills are passed Vegetation personnel drills are conducted at least once annually

5.5 E. Grid Operations and Protocols

5.5.1 22. Protective equipment and device settings

Protective equipment and device settings		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation	The degree of automation used in setting thresholds for grid elements and protective equipment.	Electrical corporation does not automatically set sensitivity of grid elements and protective equipment.	Electrical corporation has multiple sets of thresholds for grid elements and protective equipment programmed locally at the device	Electrical corporation has multiple sets of thresholds for grid elements and protective equipment selected remotely	Electrical corporation has multiple sets of thresholds for grid elements and protective equipment automatically selected remotely based on RFW and area-wide fuel moisture conditions	Electrical corporation has multiple sets of thresholds for grid elements and protective equipment automatically selected remotely based on RFW and fuel moisture conditions on individual circuit segments

Protective equipment and device settings		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Learning and improvement	The degree to which Electrical corporation exchanges on a regular basis best practices and lessons learned with other California electrical corporations and implements information from other electrical corporations regarding the utilization and operation of protective equipment.	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding the utilization and operation of protective equipment with or from other California electrical corporations.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the utilization and operation of protective equipment. Electrical corporation procedures include at least 1 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the utilization and operation of protective equipment. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the utilization and operation of protective equipment.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the utilization and operation of protective equipment. Electrical corporation procedures include at least 2 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the utilization and operation of protective equipment. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the utilization and operation of protective equipment.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the utilization and operation of protective equipment. Electrical corporation procedures include at least 3 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the utilization and operation of protective equipment. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the utilization and operation of protective equipment.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the utilization and operation of protective equipment. Electrical corporation procedures include all the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the utilization and operation of protective equipment. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the utilization and operation of protective equipment.

Protective equipment and device settings		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Level of sophistication	The amount of information used to determine appropriate thresholds for protective devices and implementation	Electrical corporation does not consider current wildfire threat conditions for setting appropriate fault thresholds for protective devices.	Electrical corporation does appropriately adjust control settings on protective devices for high wildfire threat weather conditions. Electrical corporation monitors and documents fault events that occur. Electrical corporation records data on the effectiveness of adjusted control settings.	Electrical corporation does appropriately adjust control settings on protective devices for high wildfire threat weather conditions. Electrical corporation monitors and documents fault events that occur. Electrical corporation records data on the effectiveness of adjusted control settings and continuously improves setting thresholds.	Electrical corporation does appropriately adjust control settings on protective devices **based on predictive risk modeling** for high wildfire threat weather conditions. Electrical corporation monitors and documents fault events that occur. Electrical corporation records data on the effectiveness of adjusted control settings and continuously improves setting thresholds.	No additional requirements beyond level 3
QA/QC	The amount of review conducted of the policies, procedures, and conditions used for grid elements and protective equipment	Policies and procedures for determining and applying thresholds of grid elements and protective equipment as well as inspecting equipment following de-energization do not undergo SME review.	Policies and procedures for determining and applying thresholds of grid elements and protective equipment as well as inspecting equipment following de-energization undergo SME review at least **once per year**	No additional requirements beyond level 1	Policies and procedures for determining and applying thresholds of grid elements and protective equipment as well as inspecting equipment following de-energization undergo SME review at least **once per 6 months**	Policies and procedures for determining and applying thresholds of grid elements and protective equipment as well as inspecting equipment following de-energization undergo SME review at least **once per quarter**
Spatial granularity	The fraction and location of circuits protected by protective equipment and device settings within an electrical corporation's service area	Electrical corporation does not incorporate protective equipment and device settings into grid	No additional requirements beyond level 0	Electrical corporation incorporates protective equipment and device settings into **50% grid within HFTDs**	Electrical corporation incorporates protective equipment and device settings into **75% grid within HFTDs**	Electrical corporation incorporates protective equipment and device settings into **entire grid within HFTDs**

Protective equipment and device settings		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Standardized processes	The degree to which policies and procedures to set grid element and protective equipment sensitivities is standardized. This includes evaluation of conditions, determination of sensitivities, and re-energization of de-energized equipment	Electrical corporation does not have a predetermined protocol for determining the sensitivity of grid elements and protective equipment based on current fire risk conditions.	Electrical corporation does not have a predetermined protocol for determining the sensitivity of grid elements and protective equipment based on current fire risk conditions. Electrical corporation has procedures in place to inspect assets after de-energization by protective equipment.	No additional requirements beyond level 1	Electrical corporation has a predetermined protocol for determining the sensitivity of grid elements and protective equipment based on current fire risk conditions. Electrical corporation has procedures in place to inspect assets after de-energization by protective equipment.	Electrical corporation has automatic protocol for determining the sensitivity of grid elements and protective equipment based on current fire risk conditions. Electrical corporation has procedures in place to inspect assets after de-energization by protective equipment as well as when protective equipment causes intermittent de-energization.

5.5.2 23. Incorporation of ignition risk factors in grid control

Incorporation of ignition risk factors in grid control		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Anticipation	The level to which the electrical corporation uses historical operating details to inform grid operation and health.	Electrical corporation does not consider operating history when determining the left expectancy of equipment.	No additional requirements beyond level 0	Electrical corporation uses predictive modeling to shorten the expected life of equipment based on documented grid operating history Electrical corporation uses data on faults to prioritize response on individual circuits in high-risk areas.	Electrical corporation uses predictive modeling to shorten the expected life of equipment based on documented grid operating history and replaces the equipment before predicted failure Electrical corporation uses data on faults to prioritize response on individual circuits in high-risk areas.	No additional requirements beyond level 3
Documentation and disclosures	The ability of the electrical corporation to document the operational history of equipment, particularly when operating above nameplate capacity	Electrical corporation does not record when operating equipment above current carrying capacity	Electrical corporation tracks and documents electric operational history of circuits when operating equipment above current carrying capacity at the circuit level	No additional requirements beyond level 1	Electrical corporation tracks and documents electric operational history of assets continuously and flags when ratings are exceeded.	No additional requirements beyond level 3

Incorporation of ignition risk factors in grid control		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Learning and improvement	The degree to which Electrical corporation exchanges on a regular basis best practices and lessons learned with other California electrical corporations and implements information from other electrical corporations regarding the use of ignition risk factors in grid control.	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding the use of ignition risk factors in grid control with or from other California electrical corporations.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the use of ignition risk factors in grid control. Electrical corporation procedures include at least 1 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the use of ignition risk factors in grid control. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the use of ignition risk factors in grid control.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the use of ignition risk factors in grid control. Electrical corporation procedures include at least 2 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the use of ignition risk factors in grid control. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the use of ignition risk factors in grid control.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the use of ignition risk factors in grid control. Electrical corporation procedures include at least 3 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the use of ignition risk factors in grid control. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the use of ignition risk factors in grid control.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the use of ignition risk factors in grid control. Electrical corporation procedures include all the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the use of ignition risk factors in grid control. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the use of ignition risk factors in grid control.

Incorporation of ignition risk factors in grid control		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
QA/QC	The amount of SME review conducted on the processes and models used in grid control	Process for wildfire risk incorporation and predictive modeling of equipment expected life are not reviewed by SME	No additional requirements beyond level 0	Process for incorporating wildfire risk in determination of electric control limits beyond current carrying capacity undergoes SME review at least once per year.	Process for incorporating wildfire risk in determination of electric control limits beyond equipment current carrying capacity undergoes SME review at least once per year. Predictive model used for shortening the expected life of equipment undergoes SME review at least once per year.	Process for incorporating wildfire risk in determination of electric control limits beyond equipment current carrying capacity undergoes SME review at least once per 6 months. Predictive model used for shortening the expected life of equipment undergoes SME review at least once per 6 months.
Standardized processes	The amount of standardization of grid operation control procedures and the extent to which equipment is operated beyond nameplate capacity.	Electrical corporation does not have process for incorporating wildfire risk in determination of electric control limits beyond equipment nameplate capacities.	Electrical corporation has a clearly defined process for incorporating wildfire risk in determination of electric control limits beyond equipment nameplate capacities	No additional requirements beyond level 1	No additional requirements beyond level 1	Equipment is never operated above nameplate capacity within HFTD areas

5.5.3 24. PSPS operating model

PSPS operating model		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Effectiveness	The amount and effectiveness of communication to the community about PSPS events as well as the amount of support provided by the electrical corporation to the community to mitigate PSPS impacts	Electrical corporation communicates upcoming PSPS events to <95% of affected customers and <99% of medical baseline customers. Electrical corporation website goes offline during communication about PSPS events or during PSPS events. Electrical corporation does not provide resources to mitigate PSPS impact to customers.	Electrical corporation communicates upcoming PSPS events to >95% of affected customers and >99% of medical baseline customers. Electrical corporation website remains online during communication about PSPS events and during the PSPS events. Electrical corporation provides resources to mitigate PSPS impact to all customers including water and phone charging.	Electrical corporation communicates upcoming PSPS events to >98% of affected customers and >99.5% of medical baseline customers. Electrical corporation website remains online during communication about PSPS events and during the PSPS events. Electrical corporation has fewer than 0.5% of customers complain of lack of communication. Electrical corporation provides resources to mitigate PSPS impact to all customers including water and phone charging.	Electrical corporation communicates upcoming PSPS events to >99% of affected customers and >99.9% of medical baseline customers. Electrical corporation website remains online during communication about PSPS events and during the PSPS events. Electrical corporation has fewer than 0.5% of customers complain of lack of communication. Electrical corporation provides resources to mitigate PSPS impact to all customers including water and phone charging. Electrical corporation provides additional resources to vulnerable and other select customers to mitigate PSP impact (such as backup generators and batteries).	Electrical corporation communicates upcoming PSPS events to >99.9% of affected customers and 100% of medical baseline customers. Electrical corporation website remains online during communication about PSPS events and during the PSPS events. Electrical corporation has fewer than 0.5% of customers complain of lack of communication. Electrical corporation provides resources to mitigate PSPS impact to all customers including water and phone charging. Electrical corporation provides additional resources to vulnerable and other select customers to mitigate PSP impact (such as backup generators and batteries).

PSPS operating model		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Learning and improvement	The degree to which Electrical corporation exchanges on a regular basis best practices and lessons learned with other California electrical corporations and implements information from other electrical corporations regarding PSPS implementation.	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding the effective implementation PSPS with or from other California electrical corporations.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the effective implementation PSPS.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the effective implementation PSPS. Electrical corporation procedures include at least 2 of the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the effective implementation PSPS. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the effective implementation PSPS.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the effective implementation PSPS. Electrical corporation procedures include all the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the effective implementation PSPS. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the effective implementation PSPS.	No additional requirements beyond level 3

PSPS operating model		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Level of sophistication	The factors used in determining whether to initiate a PSPS as well as frequency of PSPS events initiated by the electrical corporation	Electrical corporation has more than 1 hour of average PSPS per customer per year.	Electrical corporation has less than 1 hour of average PSPS per customer per year. Electrical corporation considers ignition likelihood associated with upcoming conditions in initiating a PSPS event	Electrical corporation has less than 0.5 hours of average PSPS per customer per year. Electrical corporation considers overall PSPS risk to general population in initiating a PSPS event	Electrical corporation has less than 0.25 hours of average PSPS per customer per year. Electrical corporation considers overall PSPS risk to general population as well as critical facilities and vulnerable populations in initiating a PSPS event. Electrical corporation maintains grid in a sufficiently low risk condition to only require PSPS events due to damaged equipment, contact with a foreign object, or maintain safety of suppression and other personnel.	Electrical corporation has less than 0.1 hours of average PSPS per customer per year. Electrical corporation considers overall PSPS risk to general population as well as critical facilities and vulnerable populations in initiating a PSPS event. Electrical corporation maintains grid in a sufficiently low risk condition to only require PSPS events due to damaged equipment, contact with a foreign object, or maintain safety of suppression and other personnel. PSPS events are conducted such that de-energized circuits have sufficient redundancy to create not disruption in energy supply to customers.
QA/QC	The amount and frequency of material regarding PSPS initiation that is reviewed by SMEs.	Policies and procedures as well as ignition and risk thresholds to initiate a PSPS do not undergo SME review. SME review is conducted as part of PSPS initiation decisions	No additional requirements beyond level 0	Policies and procedures as well as risk thresholds used to initiate a PSPS event undergo SME review at least once per year.	No additional requirements beyond level 2	Policies and procedures as well as risk thresholds used to initiate a PSPS event undergo SME review at least once per year and after every PSPS event.
Standardized processes	The level of standardization for thresholds and conditions used to initiate a PSPS event	Electrical corporation has no well-defined and clearly explained thresholds and conditions for initiation PSPS	Electrical corporation has explicitly and well-defined policies, thresholds, and conditions for PSPS initiation	No additional requirements beyond level 1	No additional requirements beyond level 1	No additional requirements beyond level 1

PSPS operating model		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation	The ability of the electrical corporation to accurately initiate or not initiate PSPS events when conditions warrant	Electrical corporation PSPS events are initiated with more than 50% of events occurring when actual conditions would not warrant a PSPS.	Electrical corporation PSPS events are appropriately initiated with fewer than 50% of events occurring when actual conditions would not warrant a PSPS	Electrical corporation PSPS events are appropriately initiated with fewer than 33% of events occurring when actual conditions would not warrant a PSPS	Electrical corporation PSPS events are appropriately initiated with fewer than 25% of events occurring when actual conditions would not warrant a PSPS	Electrical corporation PSPS events are appropriately initiated with fewer than 10% of events occurring when actual conditions would not warrant a PSPS

5.5.4 25. Protocols for PSPS re-energization

Protocols for PSPS re-energization		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation	The degree of advanced equipment and techniques used in inspecting the lines prior to re-energization.	Electrical corporation uses only manual processes to inspect de-energized circuits prior to re-energization.	No additional requirements beyond level 0	Electrical corporation uses automated processes (such as drones or LiDAR) to inspect at least 33% of de-energized circuits prior to re-energization.	Electrical corporation uses automated processes (such as drones or LiDAR) to inspect at least 66% of de-energized circuits prior to re-energization.	Electrical corporation uses automated processes (such as drones or LiDAR) to inspect at least 90% of de-energized circuits prior to re-energization.
Effectiveness	The amount and effectiveness of communication to the community about PSPS re-energization as well as the amount of support provided by the electrical corporation to the community to mitigate PSPS impacts	Electrical corporation does not communicate re-energization process and timeline with owners of non-electrical corporation overhead distribution equipment.	Electrical corporation notifies owners of non-electrical corporation overhead distribution equipment of re-energization process and timeline to help prevent backfeed of power from these systems in HFTD areas.	No additional requirements beyond level 1	Electrical corporation notifies owners of non-electrical corporation overhead distribution equipment of re-energization process and timeline to help prevent backfeed of power from these systems over entire service territory	No additional requirements beyond level 3
Frequency	The amount of delay in communication to the community about PSPS re-energization.	Electrical corporation requires more than 24 hours after conditions requiring PSPS have ended to restore service to the grid.	Electrical corporation restores service to the grid within 24 hours of conditions returning below electrical corporation's PSPS threshold.	Electrical corporation restores service to the grid within 12 hours of conditions returning below electrical corporation's PSPS threshold.	Electrical corporation restores service to the grid within 4 hours of conditions returning below electrical corporation's PSPS threshold.	Electrical corporation restores service to the grid within 2 hours of conditions returning below electrical corporation's PSPS threshold.

Protocols for PSPS re-energization		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Learning and improvement	The degree to which Electrical corporation exchanges on a regular basis best practices and lessons learned with other California electrical corporations and implements information from other electrical corporations regarding PSPS re-energization.	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding the effective implementation PSPS with or from other California electrical corporations.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the effective implementation PSPS. Electrical corporation procedures include at least 1 of the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the effective implementation PSPS. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the effective implementation PSPS.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the effective implementation of PSPS. Electrical corporation procedures include at least 2 of the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the effective implementation PSPS. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the effective implementation PSPS.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the effective implementation of PSPS. Electrical corporation procedures include at least 3 of the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the effective implementation PSPS. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the effective implementation PSPS.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the effective implementation of PSPS. Electrical corporation procedures include all the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the effective implementation PSPS. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the effective implementation PSPS.
Level of sophistication	The level of inspections of de-energized circuits the Electrical corporation performs prior to re-energization	Electrical corporation does not conduct adequate inspections of de-energized circuits prior to re-energization.	Electrical corporation performs adequate inspections of de-energized circuits prior to re-energization	No additional requirements beyond level 1	No additional requirements beyond level 1	No additional requirements beyond level 1

Protocols for PSPS re-energization		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
QA/QC	The amount and frequency of material regarding PSPS re-energization that is reviewed by SMEs.	Electrical corporation does not review after-event inspection procedures and causes after-event ignitions during re-energization.	Electrical corporation performs SME review of after-event inspection procedures at least once per year. Electrical corporation causes at least 1 after-event ignition during re-energization	Electrical corporation performs SME review of after-event inspection procedures at least once per year. Electrical corporation causes 0 after-event ignitions during re-energization.	No additional requirements beyond level 2	No additional requirements beyond level 2

5.5.5 26. Ignition prevention and suppression

Ignition prevention and suppression		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Documentation and disclosures	The electrical corporation shares internally developed and adopted ignition and suppression activities and procedures with other electrical corporations.	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding ignition prevention and suppression with or from other California electrical corporations.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression. Electrical corporation procedures include at least 1 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding ignition prevention and suppression. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding ignition prevention and suppression.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression. Electrical corporation procedures include at least 2 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding ignition prevention and suppression. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding ignition prevention and suppression.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression. Electrical corporation procedures include at least 3 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding ignition prevention and suppression. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding ignition prevention and suppression.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression. Electrical corporation procedures include all the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding ignition prevention and suppression. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding ignition prevention and suppression.

Ignition prevention and suppression		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Level of sophistication	The Electrical corporation has capabilities of controlling any ignitions on-site or provides rapid real-time reporting of ignition events.	Electrical corporation does not provide workers with communication or suppression tools to report and suppress ignitions caused by workers or in the vicinity of workers.	Electrical corporation provides communication equipment tools to immediate report ignitions caused by workers or in the vicinity of workers.	Electrical corporation provides communication equipment tools to immediate report ignitions caused by workers or in the vicinity of workers. Electrical corporation provides suppression tools to immediate suppress ignitions caused by workers or in the vicinity of workers.	Electrical corporation provides communication equipment tools that function without cell reception to immediate report ignitions caused by workers or in the vicinity of workers. Electrical corporation provides a variety of suppression tools to immediate suppress ignitions caused by workers or in the vicinity of workers.	Electrical corporation provides communication equipment tools that function without cell reception to immediate report ignitions caused by workers or in the vicinity of workers and requires contractors and subcontractors to do the same. Electrical corporation provides a variety of suppression tools to immediate suppress ignitions caused by workers or in the vicinity of workers.
Standardized processes	The Electrical corporation process for asset and vegetation management Teams is clear, explicit, and standardized on wildfire avoidance, suppression, and reporting.	Electrical corporation has no policies dictating the role of personnel in reporting and suppressing ignitions.	Electrical corporation has explicitly defined policies and procedures dictating the role of electrical corporation employees at the site of ignition.	Electrical corporation has explicitly defined policies and procedures dictating the role of electrical corporation, contractor, and subcontractor employees at the site of ignition.	No additional requirements beyond level 2	Electrical corporation has explicitly defined policies and procedures dictating the role of electrical corporation, contractor, and subcontractor employees at the site of ignition. Electrical corporation has fire suppression and safety teams on site during asset and vegetation management work in HFTD areas.

5.6 F. Emergency Preparedness

5.6.1 27. Wildfire and PSPS emergency & disaster preparedness plan

Wildfire and PSPS emergency & disaster preparedness plan		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Coordination and integration	Development and integration of wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures throughout the disaster life cycle (i.e., prevention, mitigation, response, and recovery) into the electrical corporation's overall Emergency and Disaster Preparedness Plan and in the equivalent plans for Public Safety Partners	The electrical corporation does not have wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures	The electrical corporation has wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices and procedures for prevention, mitigation, and response in compliance with GO 166 and SEMS The electrical corporation has an all-hazards approach to its Emergency and Disaster Preparedness Plan, but does not fully integrate wildfire- and PSPS-specific features	The electrical corporation has wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures throughout the disaster life cycle (i.e., prevention, mitigation, response, and **recovery**) and in compliance with GO 166, SEMs **and compatible with NIMS** The electrical corporation adopts a **hazard specific** approach to Emergency and Disaster Preparedness and Planning. Wildfire- and PSPS-specific preparedness plans, policies, practices, and procedures are **fully integrated** into electrical corporation's overall emergency and disaster operations, systems, and protocols.	The electrical corporation has wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures throughout the disaster life cycle (i.e., prevention, mitigation, response, and **recovery**) and in compliance with GO 166, SEMs **and compatible with NIMS** The electrical corporation adopts a **hazard specific** approach to Emergency and Disaster Preparedness and Planning. Wildfire- and PSPS-specific preparedness plans, policies, practices, and procedures are **fully integrated** into the electrical corporation's overall emergency and disaster operations, systems, and protocols. The electrical corporation coordinates the integration of their wildfire- and PSPS-specific emergency and disaster preparedness plans into **50-75%** of all relevant public safety partner's emergency plans within their service territory	The electrical corporation has wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures throughout the disaster life cycle (i.e., prevention, mitigation, response, and **recovery**) and in compliance with GO 166, SEMs **and compatible with NIMS** The electrical corporation adopts a **hazard specific** approach to Emergency and Disaster Preparedness and Planning. Wildfire- and PSPS-specific preparedness plans, policies, practices, and procedures are **fully integrated** into the electrical corporation's overall emergency and disaster operations, systems, and protocols. The electrical corporation coordinates the integration of their wildfire- and PSPS-specific emergency and disaster preparedness plans into **75-100%** of all relevant public safety partner's emergency plans within their service territory The electrical corporation takes a primary partner role in planning, coordinating, and integrating plans across all public safety partners in their service territory including state and tribal partners

Wildfire and PSPS emergency & disaster preparedness plan		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Documentation and disclosures	Level of detail of Information documented regarding wildfire- and PSPS-specific emergency and disaster preparedness plans. Higher maturity is achieved when detailed information such as operational procedures, policies, protocols, systems used before, during and after wildfire and PSPS incidents is documented. In addition, mature systems document personnel roles and responsibilities (internal and external), training, operational and discussion-based exercises (drills, simulations, tabletop exercises), and verification of completed coordination efforts, training, exercises, and plan revisions.	The information documented regarding wildfire- and PSPS-specific emergency and preparedness plan does not meet the minimum expectations or requirements.	The information documented at minimum includes the following elements: 1. Standard wildfire- and PSPS-specific emergency operational policies, practices, and procedures before, during and after an incident 2. Physical emergency response and recovery systems used (e.g., detection & notification systems, communications systems) 3. Training/simulation exercises and programs 4. Personnel roles and responsibilities 5. Verification of coordination efforts with Public Safety Partners 6. Verification of completed training and exercises 7. Verification of updated plan 8. Gaps, limitations, and improvement areas with remedial action plans.	The information documented at minimum includes the following elements: 1. Standard wildfire- and PSPS-specific emergency operational policies, practices, and procedures before, during and after an incident 2. Physical emergency response and recovery systems used (e.g., detection & notification systems, communications systems) 3. Training/simulation exercises and programs 4. Personnel roles and responsibilities 5. Verification of coordination efforts with Public Safety Partners 6. Verification of completed training and exercises 7. Verification of updated plan 8. Gaps, limitations, and improvement areas with remedial action plans. 9. Integration of internal lessons-learned 10. Feedback from external third-party evaluation	The information documented at minimum includes the following elements: 1. Standard wildfire- and PSPS-specific emergency operational policies, practices, and procedures before, during and after an incident 2. Physical emergency response and recovery systems used (e.g., detection & notification systems, communications systems) 3. Training/simulation exercises and programs 4. Personnel roles and responsibilities 5. Verification of coordination efforts with Public Safety Partners 6. Verification of completed training and exercises 7. Verification of updated plan 8. Gaps, limitations, and improvement areas with remedial action plans. 9. Integration of internal lessons-learned 10. Feedback from external third-party evaluation 11. Actions taken to incorporate periodic external third-party feedback	The information documented at minimum includes the following elements: 1. Standard wildfire- and PSPS-specific emergency operational policies, practices, and procedures before, during and after an incident 2. Physical emergency response and recovery systems used (e.g., detection & notification systems, communications systems) 3. Training/simulation exercises and programs 4. Personnel roles and responsibilities 5. Verification of coordination efforts with Public Safety Partners 6. Verification of completed training and exercises 7. Verification of updated plan 8. Gaps, limitations, and improvement areas with remedial action plans. 9. Integration of internal lessons-learned 10. Feedback from external third-party evaluation 11. Actions taken to incorporate periodic external third-party feedback 12. Data collected from drills and after-action reports, and integrated into updated plans

Wildfire and PSPS emergency & disaster preparedness plan		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	The frequency by which the electrical corporation evaluates, maintains, and updates its wildfire- and PSPS-specific emergency and disaster preparedness policies, practices, procedures, and protocols. This includes frequency for activities such as plan revisions, training, drills and other exercises, integration, and coordination with public safety partners.	The electrical corporation does **not** have wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures Or The electrical corporation evaluates, maintains, and updates its wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures at a frequency **greater than 2-year intervals**	The electrical corporation evaluates, maintains, and updates its wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures **every 2 years** The electrical corporation performs the following activities at least once annually: • Personnel and contractor training • Internal discussion-based and operations-based exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external) • Review and integration of feedback from internal discussion-based and operations-based exercises	The electrical corporation evaluates, maintains, and updates its wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures **every 2 years** The electrical corporation performs the following activities at least once annually, immediately before core fire season(s): • Personnel and contractor training • Internal discussion-based and operations-based exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external) • Review and integration of feedback from internal discussion-based and operations-based exercises The electrical corporation performs the following activities at least once annually, immediately after core fire season(s): • Review and integrate public feedback on wildfire- and PSPS-specific emergency preparedness activities (e.g., public notifications, emergency services) • Seek feedback from public safety partners on	The electrical corporation evaluates, maintains, and updates its wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures **every 2 years** The electrical corporation performs the following activities at least once annually, immediately before core fire season(s): • Personnel and contractor training • Internal discussion-based and operations-based exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external) • Review and integration of feedback from internal discussion-based and operations-based exercises The electrical corporation performs the following activities at least once annually, immediately after core fire season(s): • Review and integrate public feedback on wildfire- and PSPS-specific emergency preparedness activities (e.g., public notifications, emergency services) • Seek feedback from public safety partners on	The electrical corporation evaluates, maintains, and updates its wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures **every 2 years** The electrical corporation performs the following activities at least once annually, immediately before core fire season(s): • Personnel and contractor training • Internal discussion-based and operations-based exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external) • Review and integration of feedback from internal discussion-based and operations-based exercises The electrical corporation performs the following activities at least once annually, immediately after core fire season(s): • Review and integrate public feedback on wildfire- and PSPS-specific emergency preparedness activities (e.g., public notifications, emergency services) • Seek feedback from public safety partners on preparedness plan revisions • Reviews MOAs and MAAs with key public safety

Wildfire and PSPS emergency & disaster preparedness plan		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
				preparedness plan revisions	preparedness plan revisions • Reviews MOAs and MAAs with key public safety partners for any required updates The electrical corporation reviews and provides feedback on public safety partners' Emergency and Disaster Preparedness plans to be in-line with the electrical corporations plans **every 5 years**	partners for any required updates The electrical corporation reviews and provides feedback on public safety partners' Emergency and Disaster Preparedness plans to be in-line with the electrical corporations plans **every 2 years**
Subject matter expert (SME) evaluation /(QA/QC)	Subject Matter Expert (SME) and third-party entities evaluate wildfire- and PSPS-specific emergency operations and disaster preparedness plans.	No Subject Matter Expert (SME) and third-party entities evaluate of wildfire- and PSPS-specific emergency operations and disaster preparedness plans.	Wildfire- and PSPS-emergency operations and disaster preparedness plans are assessed through subject matter expert (SME) review at least once per year.	Wildfire- and PSPS-emergency operations and disaster preparedness plans are assessed through subject matter expert (SME) review at least once per year. External third-party evaluation of plans every 5 years 50-75% of state, county, city, and tribal public safety partners evaluate the plans once every 3 years	Wildfire emergency operations and disaster preparedness plans are assessed through subject matter expert (SME) review at least once per year **and after every catastrophic wildfire**. External third-party evaluation of plans every 5 years 50-75% of state, county, city, and tribal public safety partners evaluate the plans once **every 2 years**	Wildfire emergency operations and disaster preparedness plans are assessed through subject matter expert (SME) review at least once per year and after every catastrophic wildfire. External third-party evaluation of plans every 5 years **75-100%** of state, county, city, and tribal public safety partners evaluate the plans once **every 2 years** Electrical corporation SME partners review and evaluate plans once every 5 years

5.6.2 28. Collaboration and coordination with public safety partners

Collaboration and coordination with public safety partners		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Coordination and integration	Coordination of wildfire- and PSPS-specific electrical corporation emergency and disaster preparedness plans, policies, practices and procedures for response and recovery, with existing emergency and disaster preparedness practices and protocols with Public Safety Partners.	The electrical corporation does **not** have wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures Or Electrical corporation's wildfire- and PSPS-emergency operations and disaster preparedness plans are not coordinated with any Public Safety Partner	The electrical corporation coordinates the following aspects of their wildfire- and PSPS-emergency and disaster preparedness plans with relevant Public Safety Partners: • List of all relevant state, city, county and tribal agencies and key point(s)-of-contacts (e.g., operations, PIO, Emergency Director) with associated contact information • **50%** of relevant Public Safety Partners have provided consultation and/or verbal or written comments on electrical corporation's most recent plan • List of all relevant MOAs with all Public Safety Partners • **50%** of relevant Public Safety Partners' communication strategy (e.g., protocols, procedures, and systems) to inform public safety partners and other interconnected electrical corporation partners of wildfire, PSPS and re-energization incidents • **50%** of partner establish frequency of pre-arranged comms strategy reviews and updates	The electrical corporation coordinates the following aspects of their wildfire- and PSPS-emergency and disaster preparedness plans with relevant Public Safety Partners: • List of all relevant state, city, county and tribal agencies and key point(s)-of-contacts (e.g., operations, PIO, Emergency Director) with associated contact information • **50 - 75%** of relevant Public Safety Partners have provided consultation and/or verbal or written comments on electrical corporation's most recent plan • List of all relevant MOAs with all Public Safety Partners • **50-75%** of relevant Public Safety Partners' communication strategy (e.g., protocols, procedures, and systems) to inform public safety partners and other interconnected electrical corporation partners of wildfire, PSPS and re-energization incidents • **50-75%** of partner establish frequency of pre-arranged comms	The electrical corporation coordinates the following aspects of their wildfire- and PSPS-emergency and disaster preparedness plans with relevant Public Safety Partners: • List of all relevant state, city, county and tribal agencies and key point(s)-of-contacts (e.g., operations, PIO, Emergency Director) with associated contact information • **75 - 90%** of relevant Public Safety Partners have provided consultation and/or verbal or written comments on electrical corporation's most recent plan • List of all relevant MOAs with all Public Safety Partners • **75-90%** of relevant Public Safety Partners' communication strategy (e.g., protocols, procedures, and systems) to inform public safety partners and other interconnected electrical corporation partners of wildfire, PSPS and re-energization incidents • **75-90%** of partner establish frequency of pre-arranged comms	The electrical corporation coordinates the following aspects of their wildfire- and PSPS-emergency and disaster preparedness plans with relevant Public Safety Partners: • List of all relevant state, city, county and tribal agencies and key point(s)-of-contacts (e.g., operations, PIO, Emergency Director) with associated contact information • **99%** of relevant Public Safety Partners have provided consultation and/or verbal or written comments on electrical corporation's most recent plan • List of all relevant MOAs with all Public Safety Partners • **99%** of relevant Public Safety Partners' communication strategy (e.g., protocols, procedures, and systems) to inform public safety partners and other interconnected electrical corporation partners of wildfire, PSPS and re-energization incidents • **99%** of partner establish frequency of pre-arranged comms strategy reviews and updates

Collaboration and coordination with public safety partners		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
			Resources available for Mutual Aid Agreements	strategy reviews and updates Resources available for Mutual Aid Agreements	strategy reviews and updates Resources available for Mutual Aid Agreements	Resources available for Mutual Aid Agreements
Frequency	The frequency by which the electrical corporation evaluates, maintains, and updates its wildfire-, PSPS- and power restoration-specific interoperation communication strategies, procedures, and protocols interoperability with Public Safety Partners and other interconnected electrical corporations. This includes frequency for activities such as communication plan revisions, discussion-based and operational exercise schedules	The electrical corporation does **not coordinate** its wildfire-, PSPS- and power restoration- specific interoperation communication strategies, procedures, and protocols with Public Safety Partners and other interconnected electrical corporations Or The electrical corporation coordinates its wildfire-, PSPS and power-restoration-specific interoperation communication strategies, procedures, and protocols interoperability once every 5-years	The electrical corporation coordinates its wildfire-, PSPS and power-restoration-specific interoperation communication strategies, procedures, and protocols once **every 2 years** The electrical corporation performs the following activities at least once annually: • Identify and confirm interoperation communications protocols, practices, and procedures before, during and after an incident for all relevant Public Safety Partners and interconnected electrical corporations • Discussion-based and operations-based communications interoperability exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external)	The electrical corporation coordinates its wildfire-, PSPS and power-restoration-specific interoperation communication strategies, procedures, and protocols once **every 2 years** The electrical corporation performs the following activities at least once annually, immediately before core fire season(s): • Identify and confirm interoperation communications protocols, practices, and procedures before, during and after an incident for all relevant Public Safety Partners and interconnected electrical corporations • Discussion-based and operations-based communications interoperability exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external)	The electrical corporation coordinates its wildfire-, PSPS and power-restoration-specific interoperation communication strategies, procedures, and protocols once **every 2 years** The electrical corporation performs the following activities at least once annually, immediately before core fire season(s): • Identify and confirm interoperation communications protocols, practices, and procedures before, during and after an incident for all relevant Public Safety Partners and interconnected electrical corporations • Discussion-based and operations-based communications interoperability exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external)	The electrical corporation coordinates its wildfire-, PSPS and power-restoration-specific interoperation communication strategies, procedures, and protocols once **a year** The electrical corporation performs the following activities at least once annually, immediately before core fire season(s): • Identify and confirm interoperation communications protocols, practices, and procedures before, during and after an incident for all relevant Public Safety Partners and interconnected electrical corporations • Discussion-based and operations-based communications interoperability exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external)

Collaboration and coordination with public safety partners		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
			• Review and integration of feedback from external discussion-based and operations-based communications interoperability exercises	• Review and integration of feedback from external discussion-based and operations-based communications interoperability exercises The electrical corporation performs the following activities at least once annually, immediately after core fire season(s): • Seek feedback from public safety partners and interconnected electrical corporation partners on wildfire, PSPS and power restoration interoperation communications for timeliness, completeness, and reliability	• Review and integration of feedback from external discussion-based and operations-based communications interoperability exercises The electrical corporation performs the following activities at least once annually, immediately after core fire season(s): • Seek feedback from public safety partners and interconnected electrical corporation partners on wildfire, PSPS and power restoration interoperation communications for timeliness, completeness, and reliability • Reviews MOAs with key public safety partners and interconnected electrical corporations for any required updates	• Review and integration of feedback from external discussion-based and operations-based communications interoperability exercises The electrical corporation performs the following activities at least once annually, immediately after core fire season(s): • Seek feedback from public safety partners and interconnected electrical corporation partners on wildfire, PSPS and power restoration interoperation communications for timeliness, completeness, and reliability • Reviews MOAs with key public safety partners and interconnected electrical corporations for any required updates

5.6.3 29. Public emergency communication strategy

Public emergency communication strategy		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation	Levels of automation for monitoring and transmitting emergency information. This also includes frequency reporting updates based on near-real-time conditions	Emergency information monitoring and transmission are not automated.	Emergency information monitoring and transmission are partially automated (<50%). At least three (3) of the following parameters are determined and communicated automatically: 1. Detection and alarm for wildfire ignition 2. Location and extent of wildfire perimeter 3. Local wildfire settings (e.g., weather, RFW, climate data) 4. Electrical corporation emergency resources already deployed 5. Customers impacted and anticipated duration of power outages caused by wildfire and PSPS 6. Locations of support services 7. Instructions for emergency action 8. Accessibility and Translation of information into Spanish and 2-3 of the top languages in the service territory	Emergency information monitoring and transmission are partially automated (<50%). At least four (4) of the following parameters are determined and communicated automatically: 1. Detection and alarm for wildfire ignition 2. Location and extent of wildfire perimeter 3. Local wildfire settings (e.g., weather, RFW, climate data) 4. Electrical corporation emergency resources already deployed 5. Customers impacted and anticipated duration of power outages caused by wildfire and PSPS 6. Locations of support services 7. Instructions for emergency action 8. Accessibility and Translation of information into Spanish and 2-3 of the top languages in the service territory	Emergency information monitoring and transmission are mostly automated (>50%). At least five (5) of the following parameters are determined and communicated automatically: 1. Detection and alarm for wildfire ignition 2. Location and extent of wildfire perimeter 3. Local wildfire settings (e.g., weather, RFW, climate data) 4. Electrical corporation emergency resources already deployed 5. Customers impacted and anticipated duration of power outages caused by wildfire and PSPS 6. Locations of support services 7. Instructions for emergency action 8. Accessibility and Translation of information into Spanish and 2-3 of the top languages in the service territory	Emergency information monitoring and transmission are fully automated. Each of the following parameters are determined and communicated automatically: 1. Detection and alarm for wildfire ignition 2. Location and extent of wildfire perimeter 3. Local wildfire settings (e.g., weather, RFW, climate data) 4. Electrical corporation emergency resources already deployed 5. Customers impacted and anticipated duration of power outages caused by wildfire and PSPS 6. Locations of support services 7. Instructions for emergency action 8. Accessibility and Translation of information into Spanish and 2-3 of the top languages in the service territory
Coordination and integration	Coordination with public interest groups and Alerting Authority for timely, accurate, complete, and comprehensive public communication strategy(s) to inform essential customers and all community stakeholder groups of	Electrical corporation's public communication strategy for wildfires, outages due to wildfires and PSPS, and service restoration are not coordinated with any Alerting Authority or public interest groups.	The electrical corporation coordinates the following aspects of their communication strategy for wildfires, outages due to wildfires and PSPS, and service restoration with Alerting Authorities or public interest groups:	The electrical corporation coordinates the following aspects of their communication strategy for wildfires, outages due to wildfires and PSPS, and service restoration with Alerting Authorities or public interest groups:	The electrical corporation coordinates the following aspects of their communication strategy for wildfires, outages due to wildfires and PSPS, and service restoration with Alerting Authorities or public interest groups:	The electrical corporation coordinates the following aspects of their communication strategy for wildfires, outages due to wildfires and PSPS, and service restoration with Alerting Authorities or public interest groups:

Public emergency communication strategy		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
	wildfires, outages due to wildfires and PSPS, and service restoration before, during and after the incident		1. Roles and responsibilities for designing, preparing, and disseminating public communications before, during and after each incident type 2. Identification of essential customers and key community stakeholder groups across the electrical corporation's service territory 3. Understand the specific needs and communication methods required to effectively notify essential customers, medical baseline, and other key community stakeholder groups 4. Notification protocols, message objectives for each interest group 5. Available technical resources for public communication systems (e.g., radio, TV, social media) 6. Targeted messaging and diversity of communication methods per public stakeholder group and incident type. 7. Means to verify message receipt. 8. Gaps, limitations, and improvement areas with remedial action plans.	1. Roles and responsibilities for designing, preparing, and disseminating public communications before, during and after each incident type 2. **Detailed list** of essential customers and **all** key community stakeholder groups **by county/city** 3. Understand the specific needs and communication methods required to effectively notify essential customers, medical baseline and all community stakeholder groups, **with a particular focus on AFN and other vulnerable populations**. 4. **Locally relevant** notification protocols, message objectives for each interest group 5. **Locally** available technical resources for public communication systems (e.g., radio, TV, social media) 6. Targeted messaging and diversity of communication methods per public stakeholder group and incident type. 7. Assess and obtain feedback from Alerting Authorities, public interest groups, essential customers on timeliness, quality, and completeness of messaging. 8. Gaps, limitations, and improvement areas with remedial action plans.	1. Roles and responsibilities for designing, preparing, and disseminating public communications before, during and after each incident type 2. **Detailed list** of essential customers and **all** key community stakeholder groups **by county/city** 3. Understand the specific needs and communication methods required to effectively notify essential customers and all community stakeholder groups, **with a particular focus on AFN and other vulnerable populations**. 4. **Locally relevant** notification protocols, message objectives for each interest group 5. **Locally** available technical resources for public communication systems (e.g., radio, TV, social media) 6. Targeted messaging and diversity of communication methods per public stakeholder group and incident type. 7. Assess and obtain feedback from Alerting Authorities, public interest groups, essential customers on timeliness, quality, and completeness of messaging. 8. Gaps, limitations, and improvement areas with remedial action plans.	1. Roles and responsibilities for designing, preparing, and disseminating public communications before, during and after each incident type 2. **Detailed list** of essential customers and **all** key community stakeholder groups **by county/city** 3. Understand the specific needs and communication methods required to effectively notify essential customers and all community stakeholder groups, **with a particular focus on AFN and other vulnerable populations**. 4. **Locally relevant** notification protocols, message objectives for each interest group 5. **Locally** available technical resources for public communication systems (e.g., radio, TV, social media) 6. Targeted messaging and diversity of communication methods per public stakeholder group and incident type. 7. Assess and obtain feedback from Alerting Authorities, public interest groups, essential customers on timeliness, quality, and completeness of messaging. 8. Gaps, limitations, and improvement areas with remedial action plans.

Public emergency communication strategy		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
					9. Assess and verify that essential customers and community stakeholder groups not only received emergency notifications, but understood how to act	9. Assess and verify that essential customers and community stakeholder groups not only received the notifications, but understood how to act and then took appropriate action for all incident types
Documentation	Level of detail and comprehensiveness of public communication strategy to inform essential customers and all community stakeholder groups of wildfires, outages due to wildfires and PSPS, and service restoration before, during and after the incident types. Higher maturity is achieved when detailed information such as public communication strategies, policies, practices, and procedures used before, during and after wildfires, outages due to wildfires and PSPS events, and service restoration incidents are documented. In addition, mature systems identify key communication personnel (roles and responsibilities), key stakeholder groups and associated needs, methods and technologies for COMMS, messaging detail, coordination with Alerting Authorities, training, exercises, and system testing.	The information documented regarding communication strategies to inform essential customers and all community stakeholder groups of wildfires, outages due to wildfires and PSPS, and service restoration before, during and after an incident do not meet the minimum expectations or requirements.	The information documented at minimum includes the following elements: 1. Standard wildfire, outages due to wildfires and PSPS events, and service restoration operational policies, protocol, and procedures for communicating to the public before, during and after an incident 2. Physical public communication systems used (e.g., detection & notification systems, communications systems) 3. Targeted messaging and communication methods per public stakeholder group and incident type. 4. Personnel roles and responsibilities 5. Resiliency and redundancy of notification and communication systems and methods. 6. Training/simulation exercises and programs 7. Verification of coordination efforts with Public Safety Partners 8. Verification of completed training and exercises	The information documented at minimum includes the following elements: Same as Level 1, plus: 10. AFN and vulnerable population-specific communication methods and systems 11. Seek feedback from essential customers, AFN/vulnerable populations, and the general public on timeliness, accuracy, and completeness of messaging 12. Feedback from external third-party evaluation	The information documented at minimum includes the following elements: Same as Level 2, plus: 13. Actions taken to incorporate periodic external third-party feedback	The information documented at minimum includes the following elements: Same as Level 3, plus: 14. Data collected from drills and after-action reports, and integrated into updated plans

Public emergency communication strategy		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
			9. Gaps, limitations, and improvement areas with remedial action plans.			
Effectiveness	Degree to which public notifications and communication strategies, practices and protocols are not only timely, accurate and complete, but lead to increased awareness and risk-informed action during and after an emergency	Limited or poor communication before, during and after a wildfire, outages due to wildfires or PSPS, and service restoration No ability to measure effectiveness of public notification or communications during or after an emergency	The following aspects of an electrical corporation's emergency notifications and communications to the public for wildfires, outages due to wildfires and PSPS, and service restoration are provided: 1. Severe weather warnings and alerts (e.g., RFW) 2. Location and extent of wildfire perimeter 3. Public notification of wildfire incident immediately when there is an imminent threat to life, health, or property. 4. Customers impacted, and anticipated duration of power outages caused by wildfire and PSPS within 4 hours of outage 5. Public notification (i.e., warnings and alerts) of PSPS incidents no more than 2 days beforehand 6. Locations and timing of power restoration at predefined intervals 7. Locations in community for support services within 1 hour of wildfire detection; 2 days before PSPS incident	The following aspects of an electrical corporation's emergency notifications and communications to the public for wildfires, outages due to wildfires and PSPS, and service restoration are provided: • Same as Level 1, plus: • Messaging is designed to be specific, consistent, confident, clear, and accurate per IPAWS • Provide redundancy and enhanced interoperability for the following: ○ Loss of power ○ Loss of cell towers or overloaded cell systems ○ Internet outages ○ Overloaded networks ○ Cyber-attacks ○ Ability of carriers to redistribute ○ Overloaded infrastructure ○ Cross-jurisdictional needs ○ Availability of staffing to effectively	The following aspects of an electrical corporation's emergency notifications and communications to the public for wildfires, outages due to wildfires and PSPS, and service restoration are provided: • Same as Level 2, plus • Adopting Integrated Public Warning Systems (IPAWS) • Applying 3-5 methods of communication: ○ Telephonic alert system ○ Email distribution ○ Website override ○ Internet-based services ○ High-frequency radio ○ Social media ○ Opt-in features • AFN considerations (e.g., TTY/TTD, font size, color analyzer) • Conduct post-incident surveys and other forms of public feedback to assess timeliness, accuracy, and completeness of	The following aspects of an electrical corporation's emergency notifications and communications to the public for wildfires, outages due to wildfires and PSPS, and service restoration are provided: • Same as Level 3, plus • Implement corrective plans based on public feedback survey

Public emergency communication strategy		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
			8. Instructions for emergency protective action and links to credible Public Safety Partners emergency communications and instructions (e.g., shelter-in-place, evacuation) within 30 min of wildfire detection; 2 days before PSPS incident 9. Accessibility and Translation of information into Spanish and 2-3 of the top languages in the service territory 10. Emergency notifications are limited to people at risk. 11. Delivery of warnings and alerts using various formats across multiple media platforms 12. Structure training and practice to minimize false alarms	manage and deploy systems	information of impacted populations	
Quality assurance and quality control (QA/QC)	Evaluation and verification of protocols to provide timely, accurate and complete public emergency communications for wildfires, PSPS and service restoration information to public safety partners and public interest groups	Maintenance, testing, and inspection of the physical communication-related systems that provide detection, alarm, notification, central monitoring, situational awareness, and transmission of “approved” reporting information are **never performed**.	Maintenance, testing, and inspection of the physical communication-related systems that provide detection, alarm, notification, central monitoring, situational awareness, and transmission of “approved” reporting information are performed at least **once a year**.	Maintenance, testing, and inspection of the physical communication-related systems that provide detection, alarm, notification, central monitoring, situational awareness, and transmission of “approved” reporting information are performed at least **twice a year**.	Maintenance, testing, and inspection of the physical communication-related systems that provide detection, alarm, notification, central monitoring, situational awareness, and transmission of “approved” reporting information are performed at least **monthly**.	Maintenance, testing, and inspection of the physical communication-related systems that provide detection, alarm, notification, central monitoring, situational awareness, and transmission of “approved” reporting information are performed at least **weekly**.
Spatial granularity	Granularity of reported public emergency notification and communication strategies, practices, and protocols.	Resolution of reported information, policies, practices, and protocols are evaluated and implemented at territory-wide resolution.	Resolution of reported data, practices, and protocols are evaluated and implemented at county level resolution.	Resolution of reported data, practices, and protocols are evaluated and implemented at city level resolution.	Resolution of reported data, practices, and protocols are evaluated and implemented at community level resolution.	Resolution of reported data, practices, and protocols are evaluated and implemented at neighborhood level resolution.

5.6.4 30. Preparedness and planning for service restoration

Preparedness and planning for service restoration		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation	Level of automation of safety checks.	Safety checks are not automated.	Safety checks are partially automated (<50%).	Safety checks are mostly automated (>=50%).	Safety checks are fully automated.	No additional requirements beyond level 3
Coordination and integration	Coordination and integration of re-energization and recovery plan with state/county/city agencies and interconnected power entities in the electrical corporation's service area. Mature plans are coordinated, maintained, and integrated into the emergency response and recovery plans of all relevant state, city, and county agencies, as well as associated, interconnected power entities in the electrical corporation's service area.	Electrical corporation's e-energization and recovery plan is not coordinated and integrated with any stakeholder's recovery plans.	Electrical corporation's e-energization and recovery plan is coordinated with at least 75-100% of state, county, and city agencies and all interconnected power entities in the electrical corporation's service area annually.	Electrical corporation's e-energization and recovery plan is coordinated with all state/county/city agencies and all interconnected power entities in the electrical corporation's service area annually.	Electrical corporation's e-energization and recovery plan is coordinated with all state/county/city agencies and all interconnected power entities in the electrical corporation's service area. The electrical corporation participates in drills to audit the viability and execution of plans across stakeholders annually	Electrical corporation's e-energization and recovery plan is coordinated with all state/county/city agencies and all interconnected power entities in the electrical corporation's service area. The electrical corporation participates in drills to audit the viability and execution of plans across stakeholders annually The electrical corporation takes a primary partner role in planning, coordinating, and integrating plans across stakeholders. The electrical corporation leads efforts to run annual drills.
Documentation and disclosures	Development and documentation of re-energization and recovery plan. Higher maturity is achieved when more elements are involved for decision-making during restoration and recovery plans as well as detailed explanation information is included.	The elements considered for the re-energization and recovery plan development and information documented do not meet the minimum expectations or requirements.	The elements considered for the re-energization and recovery plan development and information documented include the following: 1. Risk-informed decision-making framework 2. Detailed and actionable policies, procedures, and protocols for power restoration 3. Appropriate staffing and	The elements considered for the re-energization and recovery plan development and information documented include the following: 1. Risk-informed decision-making framework 2. Detailed and actionable policies, procedures, and protocols for power restoration 3. Appropriate staffing and	The elements considered for the re-energization and recovery plan development and information documented include the following: 1. Risk-informed decision-making framework 2. Detailed and actionable policies, procedures, and protocols for power restoration 3. Appropriate staffing and	The elements considered for the re-energization and recovery plan development and information documented include the following: 1. Risk-informed decision-making framework 2. Detailed and actionable policies, procedures, and protocols for power restoration 3. Appropriate staffing and

Preparedness and planning for service restoration		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
			contractor resources, training, and qualifications	contractor resources, training, and qualifications 4. Personnel roles and responsibilities	contractor resources, training, and qualifications 4. Personnel roles and responsibilities 5. Instructions on how to execute duties during plan 6. Feedback from external third-party evaluation	contractor resources, training, and qualifications 4. Personnel roles and responsibilities 5. Instructions on how to execute duties during plan 6. Feedback from external third-party evaluation 7. Actions taken to incorporate periodic external third-party feedback 8. Data collected from drills and after-action reports
Level of sophistication	Number of ignitions due to re-energization. Mature systems result in zero (0) ignitions due to re-energization.	Multiple ignitions due to re-energization per year.	Not more than 1 ignition due to re-energization per year.	Zero (0) ignitions due to re-energization per year.	No additional requirements beyond level 2	No additional requirements beyond level 2
Spatial granularity	Level of customization of procedures to restore service after a wildfire-related outage.	Procedures to restore service after a wildfire-related outage are customizable to territory-wide level.	Procedures to restore service after a wildfire-related outage are customizable to region level.	Procedures to restore service after a wildfire-related outage are customizable to circuit level.	Procedures to restore service after a wildfire-related outage are customizable to span level.	No additional requirements beyond level 3
Subject matter expert (SME) verification/(QA/QC)	Subject Matter Expert (SME) and third-party entities verification to evaluate re-energization and recovery plan.	No Subject matter expert (SME) verification in place to evaluate re-energization and recovery plan.	Re-energization and recovery plan is assessed through subject matter expert (SME) review at least once every 3-5 years.	Re-energization and recovery plan is assessed through subject matter expert (SME) review at least once every 2 years. State/local agencies are involved during the evaluation.	Re-energization and recovery plan is assessed through subject matter expert (SME) review at least once per year. State/local agencies are involved during the evaluation.	Re-energization and recovery plan is assessed through subject matter expert (SME) review at least two times per year. State/local agencies are involved during the evaluation.

5.6.5 31. Customer support in wildfire and PSPS emergencies

Customer support in wildfire and PSPS emergencies		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Extent and accessibility of customer support in wildfire	Electrical corporation does not provide emergency support services for residential and non-residential customers during and after wildfire and PSPS incidents	Electrical corporation provides the following emergency support services for residential and non-residential customers within 4 hours of a wildfire and PSPS incidents • Outage reporting (location, expected duration and cause) • 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 • Tracks metrics that measure customer access to information on customer service calls and web host availability	Electrical corporation provides the following emergency support services for residential and non-residential customers within 4 hours of a wildfire and PSPS incidents • Same as Level 1, plus • Call Center busies calculation is lower than Level-1 • Evaluates customer access metrics and web host availability metrics, and develops corrective action plans where deficiencies are identified	No additional requirements beyond level 2	No additional requirements beyond level 2

5.6.6 32. Learning after wildfires and PSPS events

Learning after wildfires and PSPS events		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Learning and continuous improvement	Processes and programs to identify lessons learned and implement correction action plans for both process and capital improvements.	Policies, practices, and procedures recorded and evaluated to identify lessons learned and implement correction action plans do not meet the minimum expectations or requirements.	At minimum the following policies, practices, and procedures are recorded and evaluated to identify lessons learned and implement corrective action plans annually: 1. Proactive diagnostic/ performance testing 2. Post-fire incident data and operations collection such as origin & cause 3. Environmental risk factors (e.g., weather conditions, vegetation conditions) 4. Staff & contractor behaviors 5. Wildfire emergency management 6. Technical systems performance (e.g., detection, alarm, notification) 7. Interactions with response and other government agencies 8. Pre-incident diagnostics, drills, training, and stress-testing	At minimum the following policies, practices, and procedures are recorded and evaluated to identify lessons learned and implement corrective action plans monthly: 1. Proactive diagnostic/ performance testing 2. Post-fire incident data and operation collection such as origin & cause 3. Environmental risk factors (e.g., weather conditions, vegetation conditions) 4. Staff & contractor behaviors 5. Wildfire emergency management 6. Technical systems performance (e.g., detection, alarm, notification) 7. Interactions with response and other government agencies 8. Pre-incident diagnostics, drills, training, and stress-testing	At minimum the following policies, practices, and procedures are recorded and evaluated to identify lessons learned and implement corrective action plans weekly: 1. Proactive diagnostic/ performance testing 2. Post-fire incident data and operations collection such as origin & cause 3. Environmental risk factors (e.g., weather conditions, vegetation conditions) 4. Staff & contractor behaviors 5. Wildfire emergency management 6. Technical systems performance (e.g., detection, alarm, notification) 7. Interactions with response and other government agencies 8. Pre-incident diagnostics, drills, training, and stress-testing	At minimum the following policies, practices, and procedures are recorded and evaluated to identify lessons learned and implement corrective action plans daily: 1. Proactive diagnostic/ performance testing 2. Post-fire incident data and operations collection such as origin & cause 3. Environmental risk factors (e.g., weather conditions, vegetation conditions) 4. Staff & contractor behaviors 5. Wildfire emergency management 6. Technical systems performance (e.g., detection, alarm, notification) 7. Interactions with response and other government agencies 8. Pre-incident diagnostics, drills, training, and stress-testing
Subject matter expert (SME) verification/(QA/QC)	"Dry runs", Subject Matter Expert (SME), and third-party entities verification to evaluate the effectiveness of updated plans.	No Subject matter expert (SME) verification in place to evaluate the effectiveness of updated plans.	Subject Matter Expert (SME) verification in place to evaluate the effectiveness of updated plans at least once per year. Feedback implementation is performed within thirty (30) days.	"Dry runs", Subject Matter Expert (SME) and third-party entities verification are in place to evaluate the effectiveness of updated plans at least once per year. Feedback implementation is performed within thirty (30) days.	"Dry runs", Subject Matter Expert (SME) and third-party entities verification are in place to evaluate the effectiveness of updated plans at least twice per year. Feedback implementation is performed within seven (7) days.	"Dry runs", Subject Matter Expert (SME) and third-party entities verification are in place to evaluate the effectiveness of updated plans at least four times per year. Feedback implementation is performed within the same day.

5.7 G. Community Outreach and Engagement

5.7.1 33. Public outreach and education awareness

Public outreach and education awareness		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Depth, breadth, and accessibility of an electrical corporation's public outreach and education awareness program for wildfires, outages due to wildfire and PSPS events, and service restoration incidents. This includes providing multiple, targeted activities to meet the needs of the "whole" community before, during and after an incident.	Electrical corporation does not provide community outreach and education awareness program activities before, during and after wildfire and PSPS events	Electrical corporation provides the following community outreach and educational awareness program activities for wildfires and PSPS events before, during and after an incident: • Identifies and evaluates all key community stakeholder groups across the electrical corporation's service territory • For each community stakeholder group, the electrical corporation identifies specific concerns, interests, and needs for outreach and education awareness • Identify key community partnerships to collaborate and coordinate on wildfire and PSPS public education and awareness efforts • Develop and implement a diverse range of outreach and educational awareness programs targeted to address the specific needs and concerns of each community stakeholder group • Develop and implement operational strategies and resources to establish and sustain public outreach and education program activities.	Electrical corporation provides the following community outreach and educational awareness program activities for wildfires and PSPS events before, during and after an incident: • Same as Level 1, plus • Establish working relationships with a minimum of 4 community partners per county within the Electrical corporation's service territory to coordinate and collaborate on public outreach and education awareness activities. • Develop and implement a diverse range of outreach and educational awareness programs targeted to address the specific needs and concerns of each community stakeholder group, specific to each County in the Electrical corporation's service territory. • Obtain feedback from public on community outreach and educational awareness programs	Electrical corporation provides the following community outreach and educational awareness program activities for wildfires and PSPS events before, during and after an incident: • Same as Level 2, plus • Support (e.g., grants, access to electrical corporation representatives) public outreach and education awareness programs (e.g., chipper days, HIZ assessments, townhalls) managed by local community partners. • Obtain targeted feedback (e.g., host meetings, townhalls) from each community stakeholder group on public on community outreach and educational awareness programs annually.	Electrical corporation provides the following community outreach and educational awareness program activities for wildfires and PSPS events before, during and after an incident: • Same as Level 3, plus • Identify and establish working relationships with at least 1 community partner for each of the key community stakeholder groups at the County and/or City level within the Electrical corporation's territory • Coordinate, collaborate and support all community partners on their respective community outreach and educational awareness programs annually.

Public outreach and education awareness		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Spatial granularity	Level of customization of public outreach and education awareness for wildfires, outages due to wildfire or PSPS, power restoration before, during and after the incident	No public outreach and education awareness program(s) for wildfires, outages due to wildfire or PSPS events, power restoration before, during and after the incident	Public outreach and education awareness program(s) for wildfires, outages due to wildfire or PSPS events, power restoration before, during and after the incident are based on an enterprise-wide level.	Public outreach and education awareness program(s) for wildfires, outages due to wildfire or PSPS events, power restoration before, during and after the incident are based on county-wide level.	Public outreach and education awareness program(s) for wildfires, outages due to wildfire or PSPS events, power restoration before, during and after the incident are based on city-wide level.	Public outreach and education awareness program(s) for wildfires, outages due to wildfire or PSPS events, power restoration before, during and after the incident are based on community-level (e.g., a grouping of neighborhoods or sub-area of a city/town/unincorporated lands with common living characteristics as defined locally).

5.7.2 34. Public engagement in electrical corporation wildfire mitigation planning

Public engagement in electrical corporation wildfire mitigation planning		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Depth, breadth, and accessibility of an electrical corporation's wildfire mitigation planning process to customers and the general public. This includes providing a range of participatory activities for essential customers, medical baseline, the general public, and other civil society groups to engage and have a voice throughout the wildfire mitigation planning process.	Electrical corporation does not provide public engagement or participatory activities in its wildfire mitigation planning.	Electrical corporation provides public engagement activities as part of its wildfire mitigation planning process, which informs Energy Safety's annual WMP/WMP Update submission and evaluation process in accordance with Public Electrical corporations Code section 8386 and all Energy Safety reporting requirements. •	Electrical corporation provides the following public engagement activities, in addition to statutory requirements, as part of its wildfire mitigation planning process: • Develop and implement structured programs that give citizens and representative public interest groups accessible means and methods to provide feedback. • Establishing several participatory activities for representative community interest groups and civil society groups in its wildfire mitigation planning process. • Establish working groups or other advisory panels represented by community interest groups that the electrical corporation consults to better integrate community needs into its wildfire mitigation planning • Provide engagement and participation throughout its wildfire mitigation planning. • Identify public interest group's role & responsibilities.	Electrical corporation provides the following public engagement activities, in addition to statutory requirements, as part of its wildfire mitigation planning process: • Same as Level 2, plus • Develop and implement public engagement activities at the **county-level**	Electrical corporation provides the following public engagement activities, in addition to statutory requirements, as part of its wildfire mitigation planning process: • Same as Level 2, plus • Develop and implement public engagement activities at the **community-level**

Public engagement in electrical corporation wildfire mitigation planning		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	Number of occurrences the Electrical corporation seeks public engagement, feedback, and participation in its wildfire mitigation planning process	No public engagement or participatory activities in its wildfire mitigation planning process. Or Electrical corporation seeks public engagement, feedback, and participation in its wildfire mitigation planning process less than once per year	Electrical corporation seeks public engagement, feedback and participation in its wildfire mitigation planning process at least once a year as part of its base WMP or WMP Update submission to Energy Safety	Electrical corporation seeks public engagement, feedback and participation in the development and decision-making process of its WMP at least once a year and after every major wildfire or PSPS event, in addition to the formal submission and evaluation process for Energy Safety	No additional requirements beyond level 2	No additional requirements beyond level 2
Spatial granularity	Level of customization of public engagement activities as part of an electrical corporation's wildfire mitigation planning process	No public engagement or participatory activities in the electrical corporation's wildfire mitigation planning process	Public engagement or participatory activities in f the electrical corporation's wildfire mitigation planning process are based on statutory minimums (i.e., as part of the annual WMP submission and evaluation process)	Public engagement or participatory activities in the electrical corporation's wildfire mitigation planning process are based on an enterprise-wide level.	Public engagement or participatory activities in the electrical corporation's wildfire mitigation planning process are based on a county-wide level.	Public engagement or participatory activities in the electrical corporation's wildfire mitigation planning process are based on a community-wide level.

5.7.3 35. Engagement with AFN and socially vulnerable populations

Engagement with AFN and socially vulnerable populations		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Depth and breadth of an electrical corporation's engagement (i.e., outreach, education, and support) program with AFN, medical baseline and socially vulnerable populations throughout their service territory. This includes providing multiple, targeted activities to meet the specific needs of AFN, medical baseline and socially vulnerable populations before, during and after wildfires and outages due to wildfires or PSPS events.	Electrical corporation does not have a specific and targeted engagement program for AFN, medical baseline and socially vulnerable populations throughout its territory	Electrical corporation provides the following engagement activities for AFN, medical baseline, and socially vulnerable populations for wildfires and PSPS events before, during and after an event: • Identifies and evaluates all AFN, medical baseline and socially vulnerable stakeholder groups across the electrical corporation's service territory. • Understands extent, size, and distribution of AFN, medical baseline, and socially vulnerable populations • For each vulnerable group, the electrical corporation identifies specific concerns, interests, and needs before, during and after a wildfire or PSPS event • Develop and implement a diverse range of outreach, educational, engagement and support programs targeted and specific to the needs and concerns of each vulnerable group • Develop and implement operational strategies and resources to establish and sustain AFN, medical baseline, and socially vulnerable group activities	Electrical corporation provides the following engagement activities for AFN, medical baseline, and socially vulnerable populations for wildfires and PSPS events before, during and after an event: • Same as Level 1, plus • Understands extent, size, and distribution of AFN, medical baseline, and socially vulnerable populations by county. • Establish working relationships with a minimum of 4 community partners per county within the Electrical corporation's service territory to coordinate and collaborate on engagement activities for AFN, medical baseline and socially vulnerable populations • Develop and implement a diverse range of outreach, educational, engagement and support programs targeted and specific to the needs and concerns of each vulnerable group at the county-level. • Obtain feedback from each vulnerable population and/or representatives of AFN, medical baseline and socially vulnerable populations on accessibility and effectiveness of engagement activities	Electrical corporation provides the following engagement activities for AFN, medical baseline, and socially vulnerable populations for wildfires and PSPS events before, during and after an event: • Same as Level 2, plus • Support (e.g., grants, access to electrical corporation representatives) of AFN, medical baseline and socially vulnerable populations engagement activities and programs managed by local community partners. • Obtain targeted feedback (e.g., host meetings) from AFN, medical baseline and socially vulnerable populations on accessibility and effectiveness of engagement activities annually and after major events.	Electrical corporation provides the following engagement activities for AFN, medical baseline, and socially vulnerable populations for wildfires and PSPS events before, during and after an event: • Same as Level 3, plus • Identify and establish working relationships with at least 1 community partner for each of the key AFN, medical baseline and socially vulnerable groups at the County and/or City level within the Electrical corporation's territory • Coordinate, collaborate and support all community partners on their respective vulnerable populations outreach, educational and support programs annually.

Effectiveness	Degree to which electrical corporation's engagement (i.e., outreach, education, and support) program with AFN, medical baseline and socially vulnerable populations are not only timely, accurate and complete, but lead to increased awareness and risk-informed action during and after an emergency	Electrical corporation does not have a specific and targeted engagement program for AFN, medical baseline, and socially vulnerable populations throughout its territory Or No ability to measure effectiveness of engagement (i.e., outreach, education, and support) program with AFN, medical baseline and socially vulnerable populations during or after an emergency	At a minimum, the electrical corporation: • Seeks feedback from AFN, medical baseline, and socially vulnerable populations and/or representatives of such groups on accessibility and effectiveness of engagement activities annually • Has demonstrated that its engagement (i.e., outreach, education, and support) has reach at least **50-75%** of the AFN, medical baseline and socially vulnerable populations before, during and after a wildfire and/or PSPS event in its service territory • Has demonstrated that its support services before and during a PSPS event has reached at least **90%** of medical baseline customers.	At a minimum, the electrical corporation: • Same as Level 1, plus • Updates program and activities based on feedback from AFN, medical baseline, and socially vulnerable populations and/or representatives of such groups on accessibility and effectiveness of engagement activities annually • Has demonstrated that its engagement (i.e., outreach, education, and support) has reach at least **75-90%** of the AFN, medical baseline, and socially vulnerable populations before, during and after a wildfire and/or PSPS event in its service territory • Prior to and during PSPS outages, provides back-up power (e.g., generators) to **95%** of medical baseline customers who are at an elevated risk due to lack of power.	At a minimum, the electrical corporation: • Same as Level 2, plus • Updates program and activities based on feedback from AFN, medical baseline, and socially vulnerable populations and/or representatives of such groups on accessibility and effectiveness of engagement activities annually and **after every major event** • Has demonstrated that its engagement (i.e., outreach, education, and support) has reach at least **90-95%** of the AFN, medical baseline and socially vulnerable populations before, during and after a wildfire and/or PSPS event in its service territory • Prior to and during PSPS outages, provides back-up power (e.g., generators) to **99%** of medical baseline customers who are at an elevated risk due to lack of power.	At a minimum, the electrical corporation: • Same as Level 3, plus • Has demonstrated that its engagement (i.e., outreach, education, and support) has reach at least **99%** of the AFN, medical baseline, and socially vulnerable populations before, during and after a wildfire and/or PSPS event in its service territory

Engagement with AFN and socially vulnerable populations		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Spatial granularity	Level of customization of engagement (i.e., outreach, education, and support) program with AFN, medical baseline and socially vulnerable populations	No engagement (i.e., outreach, education, and support) program with AFN, medical baseline and socially vulnerable populations	Engagement (i.e., outreach, education, and support) program with AFN, medical baseline and socially vulnerable populations are based on statutory minimums	Engagement (i.e., outreach, education, and support) program with AFN, medical baseline and socially vulnerable populations are based on an enterprise-wide level.	Engagement (i.e., outreach, education, and support) program with AFN, medical baseline, and socially vulnerable populations are based on a county-wide level.	Engagement (i.e., outreach, education, and support) program with AFN. medical baseline and socially vulnerable populations are based on a community-wide level.

5.7.4 36. Collaboration on local wildfire mitigation planning

Collaboration on local wildfire mitigation planning		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Depth and breadth an electrical corporation's collaboration efforts in local wildfire mitigation planning with community partners. This includes community wildfire protection plans, safety elements in general plans, chipper program, local multi-hazard mitigation planning, etc.	Electrical corporation does not collaborate on local wildfire mitigation planning with community partners	Electrical corporation provides the following collaborative efforts in local wildfire mitigation planning: • Identifies relevant county, city, tribal and civil society groups conducting wildfire mitigation planning across the electrical corporation's service territory • For each entity, electrical corporation identifies local wildfire mitigation planning programs, activities and/or documents and level of collaboration, and date of collaboration to which the electrical corporation has contributed. • Identify key community partnerships to collaborate and coordinate on wildfire and PSPS mitigation planning efforts. • Develop and implement sustainable operational strategies to provide necessary resources to support and collaborate on local wildfire mitigation planning efforts.	Electrical corporation provides the following collaborative efforts in local wildfire mitigation planning: • Same as Level 1, plus • Establishes working relationships with a minimum of 4 community partners per county within the Electrical corporation's service territory • Provide feedback and input on a minimum of 4 local wildfire mitigation planning activities (e.g., CWPPs, safety elements in general plans, local hazard mitigation plans) per county. • The frequency of these efforts should be based on the update cycle of the respective planning effort (e.g., every 5 years for a CWPP)	Electrical corporation provides the following collaborative efforts in local wildfire mitigation planning: • Same as Level 2, plus • Take an active and proactive role in supporting local wildfire mitigation planning managed by local community partners. • Establish working relationships and provide support for 75% of all community partners conducting local wildfire mitigation planning in the electrical corporation's service territory	Electrical corporation provides the following collaborative efforts in local wildfire mitigation planning: • Same as Level 3, plus • Establish working relationships and provide support for 90% of all community partners conducting local wildfire mitigation planning in the electrical corporation's service territory

Collaboration on local wildfire mitigation planning		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	Number of occurrences the Electrical corporation collaborates on local wildfire mitigation planning with community partners	Electrical corporation does not collaborate on local wildfire mitigation planning with community partners	Electrical corporation collaborates on local wildfire mitigation planning with community partners **once every 5 years** or as often as the local planning effort is updated	Electrical corporation collaborates on local wildfire mitigation planning with community partners **once every 2-4 years** or as often as the local planning effort is updated	Electrical corporation collaborates on local wildfire mitigation planning with community partners **annually** or as often as the local planning effort is updated	Electrical corporation collaborates on local wildfire mitigation planning with community partners **more than once a year** or has often as the local planning effort is updated

5.7.5 37. Cooperation and best practice sharing with other electrical corporations

Cooperation and best practice sharing with other electrical corporations		**Maturity Level**				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Extent of cooperation and best practices which are shared with other electrical corporations.	Electrical corporation does not cooperate or share best practices with other electrical corporations or electrical corporations.	Electrical corporation cooperates or participates in best practice sharing through **2 of** the following activities: 1. Benchmarking risk and risk component calculations. 2. Benchmarking risk event data and corrective actions with other electrical corporations. 3. Benchmark weather forecasts with those of other electrical corporations and government agencies. 4. Benchmark near-real-time data collected for wildfire monitoring of other electrical corporations and government agencies. 5. Compare asset inspection, maintenance and repair procedures, training, and lessons learned with other electrical corporations. 6. Compare vegetation inspection, management, treatment procedures, training, and lessons learned with other electrical corporations. 7. Compare grid operations procedures for minimizing ignition and PSPS risk factors with other electrical corporations. 8. Compare processes and protocols for learning following wildfire and PSPS events electrical corporations.	Electrical corporation cooperates or participates in best practice sharing through **4 of** the following activities: 1. Benchmarking risk and risk component calculations. 2. Benchmarking risk event data and corrective actions with other electrical corporations. 3. Benchmark weather forecasts with those of other electrical corporations and government agencies. 4. Benchmark near-real-time data collected for wildfire monitoring of other electrical corporations and government agencies. 5. Compare asset inspection, maintenance and repair procedures, training, and lessons learned with other electrical corporations. 6. Compare vegetation inspection, management, treatment procedures, training, and lessons learned with other electrical corporations. 7. Compare grid operations procedures for minimizing ignition and PSPS risk factors with other electrical corporations. 8. Compare processes and protocols for learning following wildfire and PSPS events electrical corporations.	Electrical corporation cooperates or participates in best practice sharing through **6 of** the following activities: 1. Benchmarking risk and risk component calculations. 2. Benchmarking risk event data and corrective actions with other electrical corporations. 3. Benchmark weather forecasts with those of other electrical corporations and government agencies. 4. Benchmark near-real-time data collected for wildfire monitoring of other electrical corporations and government agencies. 5. Compare asset inspection, maintenance and repair procedures, training, and lessons learned with other electrical corporations. 6. Compare vegetation inspection, management, treatment procedures, training, and lessons learned with other electrical corporations. 7. Compare grid operations procedures for minimizing ignition and PSPS risk factors with other electrical corporations. 8. Compare processes and protocols for learning following wildfire and PSPS events electrical corporations.	Electrical corporation cooperates or participates in best practice sharing through **all** the following activities: 1. Benchmarking risk and risk component calculations. 2. Benchmarking risk event data and corrective actions with other electrical corporations. 3. Benchmark weather forecasts with those of other electrical corporations and government agencies. 4. Benchmark near-real-time data collected for wildfire monitoring of other electrical corporations and government agencies. 5. Compare asset inspection, maintenance and repair procedures, training, and lessons learned with other electrical corporations. 6. Compare vegetation inspection, management, treatment procedures, training, and lessons learned with other electrical corporations. 7. Compare grid operations procedures for minimizing ignition and PSPS risk factors with other electrical corporations. 8. Compare processes and protocols for learning following wildfire and PSPS events electrical corporations.

Cooperation and best practice sharing with other electrical corporations		Maturity Level				
Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	Frequency at which the electrical corporation cooperates or shares best practices with other electrical corporations.	Electrical corporation does not cooperate or share information with other electrical corporations at least once per year	Electrical corporation cooperates or shares information with other electrical corporations at least once per year.	Electrical corporation cooperates or shares information with other electrical corporations at least once per quarter.	Electrical corporation cooperates or shares information with other electrical corporations at least once per month.	No additional requirements beyond level 3
Standardized processes	The methods used to share best practices with other electrical corporations	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding ignition prevention and suppression with or from other California electrical corporations.	Electrical corporation has standard procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression. Electrical corporation seeks out information from and provides information to other electrical corporations. Electrical corporation has a consistent format and venue/medium through which information is exchanged	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression. Electrical corporation seeks out information from and provides information to other electrical corporations. Electrical corporation has a consistent format and venue/medium through which information is exchanged Participate in task groups focused on sharing lessons learned and improving best practices.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression. Electrical corporation seeks out information from and provides information to other electrical corporations. Electrical corporation has a consistent format and venue/medium through which information is exchanged Participate in task groups focused on sharing lessons learned and improving best practices. Electrical corporation has standard process for testing applicability of best practices and lessons learned of other electrical corporations.

APPENDIX C

2023-2025 ELECTRICAL COPORATION WILDFIRE MITIGATION MATURITY MODEL

DRAFT

2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model

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1 Introduction

The 2023-2025 Electrical Corporation Wildfire Mitigation Maturity Model (Maturity Model) is a ~~quick and~~ quantitative method to assess electrical corporation wildfire risk mitigation capabilities and examine how electrical corporations propose to continuously improve in key areas of their Wildfire Mitigation Plan (WMP). The model is designed to guide electrical corporations to achieve year-over-year improvements in the design, implementation, and maintenance of an effective wildfire mitigation program by assessing and monitoring the maturities of a range of wildfire mitigation capabilities that define an electrical corporation's WMP.

In addition to assessing an electrical corporation's capabilities for reducing electrical corporation-related wildfire risk, the Maturity Model also examines the relative maturity of each electrical corporation's wildfire mitigation program and encourages continuous improvement through the sharing of lessons learned and best practices across the industry. Thus, the four main objectives of the Maturity Model are:

1. Provide a simple, quantitative tool to measure an electrical corporation's maturity in mitigating wildfire and Public Safety Power Shutoff (PSPS) risk
2. Drive year-over-year continuous improvement
3. Identify and share best practices
4. Provide high-level information to key stakeholders

Given that the state of the art in electrical corporation-related wildfire risk management knowledge, science, engineering, and best practices evolves over time, the requirements that must be met to reach each maturity level are intended to change with time. Thus, maintaining a given maturity level, in theory, would require improved outcomes over time. Conversely, maintaining a static capability would result in a decreasing level of maturity over time. The 2023-2025 Maturity Model is the first significant update since the first WMP Guidelines cycle and reflects many of these changes.

The Maturity Model consists of 37 individual capabilities describing the ability of electrical corporations to ~~mitigation~~mitigate wildfire and PSPS risk within their service territory. Maturity levels range from 0 (below minimum requirements) to 4 (beyond best practice). The level of each capability is evaluated with respect to 20 possible sub-capabilities, with unique scoring philosophies~~, with unique requirements~~ for each level. Each capability is organized into one of 7 key categories which are used to calculate category maturity levels. In addition, the Maturity Model establishes additional cross-category metrics to assess maturity. These include cross-category themes which are important across the entire program~~ (such as data governance),~~, and risk metrics which quantify the ability of the electrical corporation to mitigate specific risk drivers.

To assess the maturity level of an electrical corporation's wildfire mitigation program, the electrical corporation must perform the following steps:

1. Each electrical corporation responds to each question in the Electrical Corporation Wildfire Mitigation Maturity Survey (Maturity Survey) based on its current and forecasted response.
2. The electrical corporation self-assesses its maturity level across each capability, category, cross-category theme, and risk metric using the results of the survey and the scoring criteria described herein.
3. The electrical corporation presents their maturity level in each section of the WMP and discusses how their planned mitigation activities will increase maturity in the specific area. Note that activities undertaken which are not related to maturity may also be described and used to recommend inclusion in the 2026 Maturity Model update.

The following sections describe the Maturity Model in additional detail.

2 Maturity Model Development

The first electrical corporation Maturity Model was developed in 2020 and was integrated as part of the 2020-2022 Wildfire Mitigation Plan (WMP) Guidelines. Per Resolution WSD-002, Attachment 2, the Maturity Model is re-examined by Energy Safety every three years to identity any new additions, modifications and/or deletions to help improve and advance the model for the next three-year WMP cycle.

The 2023-2025 Maturity Model is the first significant update since the first WMP Guidelines cycle. The following subsections provide an overview of lessons learned from the 2020–2022 Maturity Model, objectives of the redesign, and a summary of key changes.

2.1 Lessons Learned from the 2020–2022 Maturity Model

The original Maturity Model used in 2020-2022 was a first step towards quantitative assessment of electrical corporation capabilities in wildfire risk mitigation. There were several lessons learned during its use over the three-year cycle which were considered in the development of the update for 2023-2025. The critical lessons learned are summarized in Table 0-1.

Table 0-1. Summary of lessons learned from 2020-2022 Maturity Model.

Transparency The technical bases of capabilities and how they relate to risk reduction could be clearer. Transparency in how maturity levels are scored could help electrical corporations focus their improvements to reduce wildfire and PSPS risk.
Comprehensiveness The electrical corporations are making progress in areas which were not captured in the 2020-2022 Maturity Model. Addressing these gaps is important to measure the progress electrical corporations are making. The scoring approach used in 2020-2022 did not provide specific guidance on what the electrical corporations needed to improve to achieve higher maturity levels.
Standardization Improving clarity in survey questions could improve consistency in question interpretation and responses across electrical corporations. Establishing guidance on the usage of the Maturity Model in the WMP could improve consistency in electrical corporation submissions.

2.2 Objectives of Redesign for 2023-2025

The lessons learned from the 2020-2022 Maturity Model were used to establish 4 core objectives for the redesign for the 2023-2025 Maturity Model. These objectives are described in Table 2.

Table 2-. Summary of objectives of redesign for 2023-2025.

Objective	Detailed Description
1. Establish link between increased maturity and reduced risk	• Integrate maturity capabilities with updated risk assessment framework in WMP Guidelines • Identify technical basis for each capability and how it links to overall electrical corporation risk • Evaluate existing capabilities in each subject matter area and identify gaps to be addressed with additional capabilities
2. Improve standardization in use of maturity model among electrical corporations	• Standardize metrics used in assessment and reporting of outcomes and maturity • Integrate maturity self-assessment in the WMP Guidelines • Enhance feedback between mitigation initiatives and continuous improvement in WMP/Maturity Model
3. Improve quantitative assessment of maturity	• Identify data/metrics linked to improved maturity, including related activities (e.g., frequency of inspections) and outcomes (e.g., findings from inspections) • Identify comprehensive maturity levels/metrics to support evaluation of electrical corporation maturity • Coordinate data/metrics improvements related to maturity with the data collected in the quarterly data reports (QDR)
4. Increase transparency in maturity assessment	• Establish transparent criteria for determining maturity levels • Develop metrics to provide insights into electrical corporation progress beyond existing capability and category maturity levels • Redesign maturity levels and survey questions to facilitate third-party and compliance review

2.3 Summary of Key Changes

The objectives discussed in Section 2.2 were accomplished through 6 key changes to design and implementation of the Maturity Model. These key changes are summarized in Table 3.

Table 3 ~~-~~. Summary of key changes in the 2023-2025 Maturity Model.

Description	Related Obj.
1. Reorganized the Maturity Model • Restructured into 7 categories and 37 capabilities (see Section 3.1) • Merged existing "grid design and system hardening" and "asset management and inspections" categories into "grid design, inspections, and maintenance" category (Category C) • Merged~~/~~ and split existing capabilities to create more distinct individual capabilities ~~characterized by the expanded list of scoring philosophies~~ • Replaced "resource allocation methodology" and "data governance" categories with cross category theme maturity levels (see number 3)	**1, 2**
2. Identified links between capabilities and risk outcomes • Linked each maturity capability to related risks and risk components (see Section 3.4) • Linked each maturity capability to related outcome metrics (see Section 3.5) • Enabled determination of maturity levels for risks and risk components (see number 4)	**1, 3**
3. Expanded capability scoring and increased transparency in level determination • Expanded list of ~~scoring philosophies~~sub-capabilities from 4 to 19 (see Table 5 for details) • Improved granularity in the maturity of each capability based on the different ~~scoring philosophies~~sub-capabilities (see Section 5) Enabled determination of maturity levels for cross-category themes based on sub-capability maturity levels ~~or each scoring philosophy (see number 4)~~ •	**2, 3, 4**
4. Introduced cross-category maturity levels • Established maturity levels for cross-category themes (see Section 0) • Established maturity levels for risks and risk components (see Section 4.4)	**2, 3, 4**
5. Increased transparency in maturity level determination • Documented the approach to determine maturity levels (see Section 4) • Required the electrical corporations to identify their maturity levels and discuss in their WMP	**4**
6. Linked maturity assessment to electrical corporation WMP • Added maturity assessment reporting requirements in WMP for the electrical corporation to describe how it expects the initiatives to advance its maturity • Provided space for electrical corporations to describe efforts undertaken in each capability that are expanding the state of the art and are not captured in the existing maturity level definitions, for potential inclusion in the 2026 update	**2**

3 Overview of the Maturity Model

The Maturity Model is organized into seven (7) categories that define key components of an electrical corporation's wildfire mitigation program. Each category consists of a set of capabilities (e.g., 3-6) that characterize in more detail, the specific methods, plans and activities the electrical corporation must achieve as part of that category. Each capability is defined by several ~~scoring philosophies~~sub-capabilities (e.g., automation, comprehensiveness) with associated maturity levels (Levels 0 to 4) that quantitatively and qualitatively describe the maturity of the electrical corporation's wildfire risk mitigation activities. The maturity levels range from being below statutory minimums up to leading industry best practices.

The 2023-2025 Maturity Model consists of two methods for assessing an electrical corporation's maturity level for its WMP, as follows:

1. Maturity Levels for Capabilities, Categories, and Overall WMP

- **Capability Maturity** –The maturity level of a specific capability is determined from the minimum maturity level achieved across all the ~~scoring philosophies of that capability~~component sub-capabilities.
- **Capability Average** – The capability average is determined from the average of all component sub-capabilities. The capability average is an additional tool to electrical corporations' wildfire mitigation program.
- **Category Maturity** – The maturity level of a single category is determined from the average of all the capability maturity levels within that category.
- **Overall WMP Maturity** – The maturity levels across all categories are then further averaged to develop a single maturity level for the entire WMP.

2. Cross-Category Maturity Levels

- **Cross-Category Theme Maturity** – In addition to assessing maturity levels at the capability and category levels, the maturity model also incorporates cross-category maturity assessments to capture key functional characteristics of an electrical corporation's WMP that are cross-cutting themes (e.g., ~~data governance,~~ risk prioritization). These themes provide additional information on underlying functional features of the electrical corporation's WMPs that may not readily be defined by a single capability or category.
- **Capability Risk Scoring** – Capabilities are also aggregated into the risk components that they contribute to, allowing for additional high-level performance information on the electrical corporation's WMP. The following sections provide a more detailed description of these aspects of the Maturity Model.

3.1 Capabilities and Categories

The Maturity Model is organized into thirty-seven (37) capabilities aggregated into seven (7) categories. This organizational structure is provided in

Table 4. Independent capabilities aggregate to independent categories that comprehensively address all aspects of their defined scope. More detailed summary information about each capability is provided in Section 3.5, and a detailed description of the maturity requirements for each capability is provided in Section 5.

Table 4~~-~~. Maturity Model capability and category organization.

Category	I. Capability	II. Capability	III. Capability	IV. Capability	V. Capability	VI. Capability
A. Risk assessment and mitigation strategy	1. Statistical weather, climate, and wildfire modeling	2. Calculation of wildfire and PSPS hazard and exposure to societal values	3. Calculation of community vulnerability to wildfire and PSPS	4. Calculation of risk and risk components	5. Risk event tracking and integration of lessons learned	6. Risk-informed wildfire mitigation strategy
B. Situational awareness and forecasting	7. Ignition likelihood estimation	8. Weather forecasting ability	9. Wildfire spread forecasting	10. Data collection for near-real-time conditions	11. Wildfire detection and alarm systems	12. Centralized monitoring of real-time conditions
C. Grid design, inspections, and maintenance	13. Asset inventory and condition database	14. Asset inspections	15. Asset maintenance and repair	16. Grid design and resiliency	17. Asset and grid personnel training and quality	
D. Vegetation management and inspections	18. Vegetation inventory and condition database	19. Vegetation inspections	20. Vegetation treatment ~~and removal~~	21. Vegetation personnel training and quality		
E. Grid operations and protocols	22. Protective equipment and device settings	23. Incorporation of ignition risk factors in grid control	24. PSPS operating model	25. Protocols for PSPS re-energization	26. Ignition prevention and suppression	
F. Emergency preparedness	27. Wildfire- and PSPS-emergency & disaster preparedness plan	28. Collaboration and coordination with public safety partners	29. Public emergency communication strategy	30. Preparedness and planning for service restoration	31. Customer support in wildfire and PSPS emergencies	32. Learning after wildfires and PSPS events
G. Community outreach and engagement	33. Public outreach and education awareness	34. Public engagement in electrical corporation wildfire mitigation planning process	35. Engagement with AFN and socially vulnerable populations	36. Collaboration on local wildfire mitigation planning	37. Cooperation and best practice sharing with other electrical corporations	

~~3.2 Scoring Philosophies~~

3.2 Sub-Capabilities

Each capability comprises a set of relevant ~~scoring philosophies~~sub-capabilities that together determine the maturity level for that capability. Table 5 lists all the ~~scoring philosophies~~sub-capabilities used in the Maturity Model. Each capability includes only a subset of these ~~scoring philosophies.~~sub-capabilities.

Table 5 ~~. Scoring philosophies~~. Sub-capabilities used to determine the maturity level of electrical corporations for each capability in the Maturity Model.

~~Philosophy~~Sub-Capability	Definition	Maturity Indicators
Anticipation	The electrical corporation's ability to identify the potential for issues that could result in a hazardous event before they occur	More mature programs have mechanisms, systems, algorithms, and procedures in place to assess the potential for faults, ignitions, and high fire-risk weather before they occur.
Automation	The electrical corporation's ability to receive, process, and act on information in a prescribed, consistent, and timely fashion that reduces wildfire risk	More mature programs have fully automated, time-sensitive processes that maximize wildfire risk reduction. Note: not all processes and procedures benefit from full automation.
Climate change	The ability of the electrical corporation to evaluate the impact of long-term climate change on the wildfire and PSPS risk.	More mature programs evaluate the impact of climate change on a broader range of modeling inputs and decisions.
Comprehensiveness	The breadth of the factors considered in the capability. One example is the breadth of inputs and outputs included in models.	More mature systems include a larger breadth of factors, more detailed modeling inputs, resolve more physics in the modeling algorithms, and consider a broader range of model inputs.
Coordination and integration	The extent to which the electrical corporation coordinates its mitigation, planning, and response activities with other Public Safety Partners.	More mature programs coordinate with a broader range of partners on a larger quantity of activities.
Documentation and disclosures	The electrical corporation's ability to effectively record processes, procedures, and models as well as properly disseminate information to stakeholders such as Energy Safety,	More mature programs have consistent and navigable documentation across activities and disseminate documentation to appropriate shareholders in a timely

~~Philosophy~~Sub-Capability	Definition	Maturity Indicators
	other electrical corporations, and the public	fashion.
Effectiveness	The extent to which the decisions, actions, and activities undertaken by the electrical corporation increase the resilience of the community and reduce negative outcomes of a risk event, wildfire, and/or PSPS.	More mature programs have time-efficient decisions, actions, and activities.
Frequency	The time granularity associated with the electrical corporation's wildfire mitigation activities such as inspections, data collection, analysis, and modeling	More mature programs conduct inspections, obtain and document data, and update and improve models at shorter time intervals.
IT infrastructure and database management	The electrical corporation's ability to develop and maintain the underlying technological platforms and databases necessary to support wildfire and PSPS risk mitigation activities and information	More mature programs have comprehensive, navigable, and accessible information databases that are updated in real time as risk mitigation activities and events occur, and appropriately link related databases.
Learning and improvement	The electrical corporation's ability to improve processes, procedures, and models based on lessons learned from risk events, stakeholder feedback, and WMP activities	More mature programs conduct more extensive analysis, more widespread integration of lessons learned across the programs, and benchmarking of lessons learned with other electrical corporations.
Level of sophistication	The inclusiveness and importance of factors considered in the electrical corporation's wildfire mitigation activities such as inspections, data collection, analysis, and modeling	More mature programs consider more characteristic considerations in their wildfire mitigation activities and communicate these to Energy Safety and other relevant stakeholders,
Modularization	The degree to which software is designed with related but separate components that can be easily enabled or disabled at runtime.	More mature programs develop and use modeling software which contains a greater number of sub-modules as well as sub-modules which are narrower in scope.

~~Philosophy~~Sub-Capability	Definition	Maturity Indicators
Quality assurance and quality control (QA/QC)	The degree to which the electrical corporation's observations, predictions, and decisions are verified, and wildfire-related systems, features, and procedures are maintained	More mature programs include redundant measurements, procedures to verify operations and maintenance, cross-validation of model results, and regular performance evaluations.
Risk spend efficiency	The cost efficiency of the electrical corporation's wildfire mitigation activities, determined from activity cost and resulting reduction in overall wildfire and PSPS risk	More mature programs have a higher marginal benefit of spending on each initiative in reducing the overall wildfire and PSPS risk.
Spatial granularity	The physical resolution associated with the electrical corporation's data collection, analysis, modeling, mitigation prioritization, and mitigation activities such as inspections and maintenance	More mature programs have finer spatial granularity in data collection, analysis, modeling, mitigation prioritization, mitigation activities, and asset inventory and condition databases.
Stability of assumptions	The degree to which the assumed information used by an electrical corporation in its mitigation program remains accurate over time and changes to such information are not warranted	More mature programs regularly assess the assumptions used and find the assumptions, if still needed, remain valid.
Standardized processes	The electrical corporation's ability to have personnel receive, process, and act on information is a prescribed and consistent fashion	More mature programs have detailed and tested workflow systems that have additional redundancies to verify system adherence and effectiveness.
Subject matter expert verification and evaluation	The degree to which the electrical corporation's analyses, decisions, modeling, emergency procedures, and other aspects of its mitigation activities are evaluated and verified by qualified experts	More mature programs include external and more rigorous verification, higher SME qualifications, and transparency of the review process.
Transparency	The electrical corporation's openness toward sharing data, analyses, methods, algorithms, and procedures with other stakeholders, such as other electrical corporations and the public	More mature programs have a publicly shared, comprehensive, and centralized catalogue of data, algorithms, software, and validation bases.
Validation	The electrical corporation's ability to demonstrate the accuracy, repeatability, stability, and thoroughness of its models and procedures. This includes an	More mature programs have expanded validation bases, integrate redundant systems to reduce systematic bias, use transparent methodologies, and present sensitivity

~~Philosophy~~Sub-Capability	Definition	Maturity Indicators
	understanding of the uncertainty in the process and how this uncertainty propagates through the process.	studies.

Each ~~scoring philosophy~~sub-capability within a capability will have a maturity level fitting the following general pattern:

- Level 0: Electrical corporation does not meet the minimum expectations or regulatory requirements
- Level 1: Electrical corporation meets the minimum expectations or regulatory requirements
- Level 2: Electrical corporation exceeds the minimum expectations or regulatory requirements but is not consistent with industry best practices
- Level 3: Electrical corporation is consistent with industry best practices
- Level 4: Electrical corporation exceeds industry best practices

The requirements to achieve maturity levels for each capability are specific to that capability~~; however, a set of exemplar descriptions that represent typical scores are provided in for four scoring philosophies.~~. An electrical corporation must meet specified qualitative and/or quantitative requirements to achieve specific maturity levels for each ~~scoring philosophy within a~~ sub-capability. The detailed requirements for each maturity level for each capability are presented in Section 5.

~~*Figure C . Exemplar maturity levels associated with a selection of scoring philosophies.*~~

Maturity

	0	1	2	3	4
Scoring philosophy	**Below minimum expectations or requirements** (e.g., GO-95, FERC)	**Meets minimum expectations or requirements** (e.g., GO-95, FERC)	**Beyond minimum expectations or requirements** but not consistent with best practices	**Consistent with best practice**	**Improvement over best practice**
Automation	• No automation	• Automated processes to support decision makers in time-sensitive applications	• Automated processes in time-sensitive applications link data collected and ensemble forecasts to real-time risk model	• Automated processes monitor the quality of system predictions and automatically document and send discrepancies for review	• Automated processes integrate observed discrepancies to improve future performance (e.g., real-time machine learning)
Learning and Continuous Improvement	• Insufficient structures to incorporate learnings in updated processes	• Procedures in place to incorporate lessons learned • Subject matter experts review decision-making and identify corrective actions	• Procedures in place to monitor incorporation of lessons learned • Subject matter experts review events from other utilities to identify corrective actions	• Procedures in place to track and adjudicate stakeholder comments on decisions and methods • Participation in industry task groups	• Utility finances and/or participates in research to evaluate and extend best practices
Level of Sophistication	• Insufficient activities in inspections, data collection, analysis, and/or modeling	• Utility conducts activities meeting the minimum requirements in inspections, data collection, analysis and/ or modeling	• Utility conducts activities beyond the minimum requirements (e.g., more detailed inspections)	• Utility activities are aligned with best practices supported by scientific literature and conducted by other utilities	• Utility finances and/or participates in research to develop/improve mitigation activities
Spatial Granularity	• Sporadic or inconsistent data collection • Little granularity across grid	• Consistent data collection processes and procedures • Regional / circuit-level granularity across grid	• Circuit segment-level granularity	• Span-level granularity	• Asset-level granularity
Validation	• Sporadic or inconsistent data validation • Ad-hoc data validation by experts	• Systematic data validation using historical measurements and expert input	• Sensitivity of predictions and the downstream impacts of uncertainty is known	• Uncertainty in measurements used in validation is known	• Uncertainty propagation is analytically calculated and presented using standard methods

3.3 Cross-Category Themes

In addition to capabilities and categories, the 2023–2025 Maturity Model includes cross-category themes. Maturity levels on cross category themes are calculated by averaging the levels on related ~~scoring philosophies~~sub-capabilities across capabilities and categories. This provides high-level slices of electrical corporation performance in several concept- and infrastructure-level areas.

Table 6 lists the cross-category themes in the 2023 Maturity Model, along with their definitions and the ~~scoring philosophies~~sub-capabilities used in their determination.

Table 6~~-~~. Cross-category themes, definitions, and ~~scoring philosophies~~sub-capabilities.

Theme	Definition	~~Scoring Philosophies~~Sub-Capabilities
Plan quality	The electrical corporation's ability to ensure wildfire mitigation activities are conducted with high levels of accuracy and free of errors.	• Documentation and Disclosures • QA/QC • SME verification • Validation
Risk prioritization	The electrical corporation's ability to determine which wildfire mitigation activities will have the largest impact on wildfire risk reduction and implement identified activities with financial efficiency.	• Anticipation • Risk-spend efficiency
~~Data governance~~Enterprise systems	The capability of the electrical corporation to ensure high-quality data exist throughout the complete life cycle of data. This includes processes for data collection as well as controls for its use in modeling and decision making.	• IT infrastructure and database management • QA/QC • Stability of assumptions • SME verification
Automation and systemization	The electrical corporation's ability to quickly integrate new information into its wildfire risk mitigation processes without the need for manual intervention. This includes the integration of sensor data, inspection and maintenance data, and lessons learned.	• Automation • IT infrastructure and database management • Learning and improvement • Systemization, policies, and procedures
Continuous improvement	The electrical corporation's ability to identify where shortcomings in its wildfire risk mitigation processes are and leverage knowledge from across multiple sources to improve its mitigation activities to effectively reduce wildfire risk in its service area.	• Learning and improvement • Risk-spend efficiency • Stability of assumptions • Systemization, policies, and procedures • Transparency

3.4 Risk and Risk Components

The 2023–2025 Maturity Model also includes maturity levels for each risk and risk component defined in Section 6.1 of the WMP Guidelines. Each capability is linked to one or more fundamental risk components. Risk and risk component maturity levels are calculated by averaging the levels of capabilities linked to each risk component. These maturity levels are intended to provide a more holistic picture of the electrical corporation's ability to understand and mitigate risk across the program. The fundamental risk components and their links to maturity capabilities are summarized in Table 7.

Table 7~~-~~. Summary of fundamental risk components aggregated from relevant Maturity Model Capabilities.

Risk Component	Definition	Included Capabilities
Equipment ignition likelihood	The likelihood that electrical corporation-owned equipment will cause an ignition either through normal operation (such as arcing) or through failure.	1. Statistical weather, climate, and wildfire modeling 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 7. Ignition likelihood estimation 8. Weather forecasting ability 10. Data collection for near-real-time conditions 11. Wildfire detection and alarm systems 12. Centralized monitoring of real-time conditions 13. Asset inventory and condition database 14. Asset inspections 15. Asset maintenance and repair 16. Grid design and resiliency 17. Asset and grid personnel training and quality assurance 22. Protective equipment and device settings 23. Incorporation of ignition risk factors in grid control 30. Preparedness and planning for service restoration 32. Learning after wildfires and PSPS incidents 37. Collaboration and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
Contact from vegetation ignition likelihood	The likelihood that vegetation will contact electrical corporation-owned equipment and result in an ignition.	4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 7. Ignition likelihood estimation 8. Weather forecasting ability 10. Data collection for near-real-time conditions 11. Wildfire detection and alarm systems 12. Centralized monitoring of real-time conditions 18. Vegetation inventory and condition database 19. Vegetation inspections 20. Vegetation treatment ~~and removal~~ 21. Vegetation personnel training and quality assurance 22. Protective equipment and device settings 23. Incorporation of ignition risk factors in grid control 33. Public outreach and education awareness program 34. Public engagement in electrical corporation wildfire mitigation planning 30. Preparedness and planning for service restoration 32. Learning after wildfires and PSPS events 37. Collaboration and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
Contact by object ignition likelihood	The likelihood that a non-vegetative object (such as balloons or vehicles) will contact electrical corporation-owned equipment and result in an ignition.	1. Statistical weather, climate, and wildfire modeling 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 7. Ignition likelihood estimation 8. Weather forecasting ability 10. Data collection for near-real-time conditions 11. Wildfire detection and alarm systems 12. Centralized monitoring of real-time conditions 22. Protective equipment and device settings 23. Incorporation of ignition risk factors in grid control 30. Preparedness and planning for service restoration 32. Learning after wildfires and PSPS events 33. Public outreach and education awareness program 34. Public engagement in electrical corporation wildfire mitigation planning 37. Cooperation and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
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.	1. Statistical weather, climate, and wildfire modeling 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 8. Weather forecasting ability 9. Wildfire spread forecasting 10. Data collection for near-real-time conditions 12. Centralized monitoring of real-time conditions 26. Ignition prevention and suppression 28. Collaboration and coordination with Public Safety Partners 32. Learning after wildfires and PSPS events 36. Collaboration on local wildfire mitigation planning 37. Cooperation and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
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.	2. Calculation of wildfire and PSPS hazard and exposure to societal values 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 8. Weather forecasting ability 9. Wildfire spread forecasting 10. Data collection for near-real-time conditions 12. Centralized monitoring of real-time conditions 32. Learning after wildfires and PSPS events 36. Collaboration on local wildfire mitigation planning

Risk Component	Definition	Included Capabilities
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.	2. Calculation of wildfire and PSPS hazard and exposure to societal values 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 27. Wildfire and PSPS emergency & disaster preparedness plan 28. Collaboration and coordination with Public Safety Partners 29. Public emergency communication strategy 30. Preparedness and planning for service restoration 31. Customer support in wildfire and PSPS emergencies 32. Learning after wildfires and PSPS events 33. Public outreach and education awareness program 34. Public engagement in electrical corporation wildfire mitigation planning 35. Engagement with AFN and socially vulnerable populations 36. Collaboration on local wildfire mitigation planning 37. Collaboration and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
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., access and functional needs [AFN], age of structures, firefighting capacities).	3. Calculation of community vulnerability to wildfire and PSPS 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 27. Wildfire and PSPS emergency & disaster preparedness plan 28. Collaboration and coordination with Public Safety Partners 29. Public emergency communication strategy 30. Preparedness and planning for service restoration 31. Customer support in wildfire and PSPS emergencies 32. Learning after wildfires and PSPS events 33. Public outreach and education awareness program 34. Public engagement in electrical corporation wildfire mitigation planning 35. Engagement with AFN and socially vulnerable populations 36. Collaboration on local wildfire mitigation planning 37. Collaboration and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
PSPS likelihood	The likelihood of an electrical corporation requiring a PSPS given a probabilistic set of environmental conditions.	1. Statistical weather, climate, and wildfire modeling 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 7. Ignition likelihood estimation 8. Weather forecasting ability 10. Data collection for near-real-time conditions 11. Wildfire detection and alarm systems 12. Centralized monitoring of real-time conditions 15. Asset maintenance and repair 16. Grid design and resiliency 17. Asset and grid personnel training and quality assurance 22. Protective equipment and device settings 23. Incorporation of ignition risk factors in grid control 32. Learning after wildfires and PSPS events 36. Collaboration on local wildfire mitigation planning 37. Collaboration and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
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.	2. Calculation of wildfire and PSPS hazard and exposure to societal values 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 15. Asset maintenance and repair 16. Grid design and resiliency 17. Asset and grid personnel training and quality assurance 24. PSPS operating model 25. Protocols for PSPS re-energization 27. Wildfire and PSPS emergency & disaster preparedness plan 28. Collaboration and coordination with Public Safety Partners 29. Public emergency communication strategy 31. Customer support in wildfire and PSPS emergencies 32. Learning after wildfires and PSPS events 33. Public outreach and education awareness program 34. Public engagement in electrical corporation wildfire mitigation planning 35. Engagement with AFN and socially vulnerable populations 36. Collaboration on local wildfire mitigation planning 37. Collaboration and best practice sharing with other electrical corporations

Risk Component	Definition	Included Capabilities
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., AFN, energy resiliency, low socioeconomics).	3. Calculation of community vulnerability to wildfire and PSPS 4. Calculation of risk and combination of risk components 5. Risk event tracking and integration of lessons learned 6. Risk-informed wildfire mitigation strategy 27. Wildfire and PSPS emergency & disaster preparedness plan 28. Collaboration and coordination with Public Safety Partners 29. Public emergency communication strategy 31. Customer support in wildfire and PSPS emergencies 32. Learning after wildfires and PSPS events 33. Public outreach and education awareness program 34. Public engagement in electrical corporation wildfire mitigation planning 35. Engagement with AFN and socially vulnerable populations 36. Collaboration on local wildfire mitigation planning 37. Collaboration and best practice sharing with other electrical corporations

3.5 Summary of Capabilities

The following pages include a table summarizing the following for each Maturity Model capability organized by category:

Summary description of the capability
Fundamental risk components linked to the capability
Metrics that are expected to be related to improved maturity.

The risk components and outcome metrics are intended to provide additional context into the expected impact of improved maturity on the broader wildfire mitigation program.

The risk components indicate the specific parts of risk which could be reduced through improved maturity. This is intended to support the risk informed engineering process to identify mitigations; however, the specific risk reduction achieved through increased maturity in any individual capability will not be quantifiable due to the interconnectivity of these capabilities.

The metrics indicate key parts of the wildfire mitigation program that are expected to be related to improved maturity. These include specific outcomes, such as ignitions or number of customers notified, quantitative indicators of maturity, such as number of experiments / data sets included in validation studies, and quantitative mitigation efforts, such as average time between a severe vegetation finding and trimming. This is intended to provide additional context on how increased maturity is expected to improve the program in measurable ways. Due to the interconnectivity of these capabilities, it is not expected that independent progress in any one capability will result in direct improvement in these metrics. However, it is expected that improved performance in these metrics would be a result of the electrical corporation improving in maturity across all capabilities over time.

Table 8~~-~~. Summary of capabilities

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
Risk assessment and mitigation strategy	1. Statistical weather, climate, and wildfire modeling	For planning purposes, the ability of the electrical corporation to model various weather and climate scenarios, characterize the statistical distribution of various weather and climate conditions, and quantify the likelihood of extreme weather conditions on a seasonal, annual, and decadal basis, as well as the ability of the electrical corporation to model various wildfire scenarios, characterize the statistical distribution of various outcomes, and quantify the likelihood of fire spread from all points of the electrical corporation's infrastructure.	• Equipment likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • PSPS likelihood	• Number of experiments in validation • Validation error (systematic bias and standard deviation) • Observed wind percentiles compared with calculated statistical percentiles • Observed input percentiles compared with calculated statistical percentiles (e.g., fuel aridity) • Risk events normalized by observed weather percentile
	2. Calculation of wildfire and PSPS hazard and exposure to societal values	The ability of the electrical corporation to estimate the hazard and exposure potential to a wildfire or PSPS of specific regions within its service area. This capability is intended to neglect the probability of occurrence and vulnerability components of the risk equation, instead focusing solely on the intensity of the hazard and potential exposures (people, structures, valued resources, etc.) of a wildfire or PSPS if it reaches a specific geographic location.	• Wildfire hazard intensity • Wildfire exposure potential • PSPS exposure potential	• Wildfire losses normalized by RFW • Comparison of consequence model results with actual observed losses after an event • PSPS customer hours (absolute and normalized by RFW days) • PSPS infrastructure downtime (absolute and normalized by RFW days)
	3. Calculation of community vulnerability to wildfire and PSPS	The ability of the electrical corporation to estimate the vulnerability of a community to a wildfire or PSPS in specific regions within its service area. This capability is intended to focus on the predisposition of communities to be disproportionately at risk to the negative impacts of a wildfire or PSPS if it reaches a specific geographic location. This typically includes the presence of AFN populations, socially vulnerable groups, rural and underrepresented communities, etc.	• Wildfire vulnerability • PSPS vulnerability	• Wildfire losses normalized by RFW • Comparison of consequence model results with actual observed losses after an event • PSPS customer hours (absolute and normalized by RFW days) • PSPS infrastructure downtime (absolute and normalized by RFW days)

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	4. Calculation of risk and combination of risk components	The ability of the electrical corporation to determine the total risk in their service area by incorporating the different components of the risk equation (likelihood, hazard intensity, exposure potential, and vulnerability). This capability focuses on the combination of risk components to determine overall risk and the maturity in the approach used in this combination (i.e., considering a broader range of attributes). Improving the quality of individual likelihood and consequence components is a co-factor for this capability, but those requirements are presented in the other related capabilities.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • Wildfire exposure potential • Wildfire vulnerability • PSPS likelihood • PSPS exposure potential • PSPS vulnerability	• Wildfire losses normalized by RFW • Comparison of consequence model results with actual observed losses after an event • PSPS customer hours (absolute and normalized by RFW days) • PSPS infrastructure downtime (absolute and normalized by RFW days)
	5. Risk event tracking and integration of lessons learned	The ability of the electrical corporation to track and retrieve a variety of situational, operational, and risk data to drive decisions. This includes the types of risk events tracking, the ability of the electrical corporation to understand the root cause of the events, identify lessons learned, and develop and implement corrective action plans to reduce the likelihood of recurrence. It also includes identification of generic lessons to improve overall WMP effectiveness.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • Wildfire exposure potential • Wildfire vulnerability • PSPS likelihood • PSPS exposure potential • PSPS vulnerability	• Wildfire losses normalized by RFW • Comparison of consequence model results with actual observed losses after an event • PSPS customer hours (absolute and normalized by RFW days) • PSPS infrastructure downtime (absolute and normalized by RFW days)

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	6. Risk-informed wildfire mitigation strategy	The ability of the electrical corporation to prioritize mitigation initiatives by their potential risk reduction. This includes the processes and procedures used to prioritize areas for mitigation and to select specific mitigation initiatives for implementation and to determine the need to implement interim risk mitigation measures in the event long-term/permanent measures will require substantial time to put in place. In addition, this includes quantifying the risk reduction impact of mitigation initiatives (such as grid hardening and vegetation management) on each risk component and the overall risk.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • Wildfire exposure potential • Wildfire vulnerability • PSPS likelihood • PSPS exposure potential • PSPS vulnerability	• Wildfire losses normalized by RFW • Comparison of consequence model results with actual observed losses after an event • PSPS customer hours (absolute and normalized by RFW days) • PSPS infrastructure downtime (absolute and normalized by RFW days)
Situational awareness and forecasting	7. Ignition likelihood estimation	The ability of the electrical corporation to assess the likelihood of ignition across the grid under near-real-time and short-range forecasted weather and grid operating conditions. This capability focuses on the integration of near-real-time weather forecasting (Capability 10) with historic failure/ignition data on equipment and vegetation-related ignitions to evaluate the likelihood in the short-term. This should also be informed by real-time monitoring of grid system faults, failures, etc. (Capability 12).	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • PSPS likelihood	• Ignition likelihood maps compared with observed ignition maps • Grid risk maps
	8. Weather forecasting ability	The ability of the electrical corporation to generate accurate short-range (days to weeks) weather forecasts across the electrical corporation's service territory. This capability is intended to cover the accuracy of forecasts of weather which can result in an ignition and large fire spread.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • PSPS likelihood	• Monitoring of forecast performance at different lead times

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	9. Wildfire spread forecasting	For near-real-time monitoring and forecasting purposes, the ability of the electrical corporation to model various wildfire scenarios, characterize the statistical distribution of outcomes, and quantify the likelihood of fire spread from all electrical corporation T&D lines and equipment in the electrical corporation's service area. This capability is intended to cover the accuracy of forecasts of wildfire propagation in near-real time.	• Wildfire spread likelihood • Wildfire hazard intensity	• Forecasted fire perimeters (i.e., the spatial distribution of the fire line) evaluated at different positive lead times compared with observed fire perimeters
	10. Data collection for near-real-time conditions	The ability of the electrical corporation to collect and process measurements of key quantities across the electrical corporation's service area. Measurements may be obtained from electrical corporation-owned instruments or from external sources such as National Oceanic and Atmospheric Administration (NOAA). This capability is intended to cover the collection of data for assessment and prediction of wildfire occurrence and spread in near-real time.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • PSPS likelihood	• Geo-spatial grid health (i.e., how often is repair/inspection required across service area)
	11. Wildfire detection and alarm systems	The ability of the electrical corporation to detect incipient fires prior to rapid growth within the electrical corporation's area of service (particularly along the electrical corporation's transmission and distribution lines and equipment) and to notify relevant stakeholders and customers of the ignition. This includes the availability of sensors to detect fires and anomalies throughout the service area and relay that data through communications frameworks (means of transmission, bandwidth of the transmission, and interpretability of the signal) to responsible electrical corporation personnel and other stakeholders. This communication contains sufficient information for the operator to follow established procedures to distinguish between the presence of a fire, a nuisance condition, or a false alarm.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • PSPS likelihood	• Time to detection (i.e., performance when ignition time is known) • Quantity of false detections and missed ignitions (detection accuracy) • Time to notify customers and stakeholders after a detection • Effectiveness of notification strategies • Quality of detection information (such as location)

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	12. Centralized monitoring of real-time conditions	The intent of this capability is for an electrical corporation to aggregate information from various near-real-time weather monitoring, grid ignition monitoring, grid diagnostics, wildfire detection and alarm systems, as well as other analytical systems and models (e.g., weather forecasting, wildfire spread modeling) and apply this information to evaluate the ongoing wildfire and PSPS risks to support emergency management decision making. This capability also includes the physical location of the centralized monitoring systems, redundancy of systems, operational resiliency (e.g., power supplies, emergency/standby power, construction type, size), staffing, training, and qualifications of staff managing and operating the central monitoring station or emergency operation center.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • PSPS likelihood	• Time to notify customers and stakeholders after a detection • Quality of detection information • Time to verify a detection

Grid design, inspections, and maintenance	13. Asset inventory and condition database	The ability of the electrical corporation to collect and process the inventory and condition of deployed lines and assets within their service area including the timeliness and accuracy of data entry from inspections as well as the accuracy and accessibility of the information for the development of risk models	• Equipment likelihood of ignition	• Database reflects current condition of assets
				  Completeness
				  Timeliness
				• Percentage of lessons-learned flagged for correction

	14. Asset inspections	The ability of the electrical corporation to inspect assets and characterize the condition of these assets. This includes inspection frequency, scope, quality assurance/training, and reporting	• Equipment likelihood of ignition	• Percentage of HFTD areas inspected per year • Findings per inspection • QA/QC, Quantity of equipment failures that were not flagged in the inspections (%)
	15. Asset maintenance and repair	The ability of the electrical corporation to effectively maintain and repair assets in a timely and risk-informed manner to mitigate risk-inducing failure.	• Equipment likelihood of ignition • PSPS likelihood • PSPS exposure potential	• Average time delay between inspection findings and maintenance in HFTD areas • Average time delay between inspection findings and maintenance in non-HFTD areas • Average number of customers, customer hours, and critical infrastructure impacted by a PSPS per single circuit in HFTD areas. • Total percentage of grid segmentation/localization features normalized by circuit length in HFTD areas.

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	16. Grid design and resiliency	The electrical corporation's approach towards grid design that focuses on reducing the likelihood of ignition and consequences of PSPS. Grid design encompasses the selection of circuit locations, circuit segmentation, integration of microgrids, and the selection of circuit type to reduce the area affected by wildfires and PSPS events. Grid hardening includes redundant measures to prevent ignition if equipment does fail and the resiliency of the grid to existing fires.	• Equipment likelihood of ignition • PSPS likelihood • PSPS exposure potential	• Average time delay between inspection findings and maintenance in HFTD areas • Average time delay between inspection findings and maintenance in non-HFTD areas • Average number of customers affected by de-energization in a specific circuit segment per event in HFTD areas

	17. Asset and grid personnel training and quality assurance	The ability of the electrical corporation to train employees, contractors, and subcontractors to effectively design, install, inspect, maintain, and repair grid assets. This includes the training of staff, contractors, and subcontractors, documenting qualifications and certificates, evaluating capabilities, and providing necessary tools and equipment to perform required activities (unless otherwise provided by contractors/subcontractors meeting specified standards).	• Equipment likelihood of ignition
			• PSPS likelihood
			• PSPS exposure potential
				• Frequency of drills, simulations, and exercises
				• Passing rate of drills and training activities
				• Completeness and consistency of training materials (manuals, exams, self-tests)
				  Fraction of procedures covered in training
				  Quality controls to update previously trained employees on changes to procedures
				  Quality of materials is independently reviewed by third-party SMEs
				• Fraction of personnel (employee and contractor) working in HFTD areas that are current in their training

Vegetation management and inspections	18. Vegetation inventory and condition database	The ability of the electrical corporation to generate and maintain an accurate inventory database of vegetation along rights of way, and vegetation with strike potential within its service area, including the type and condition of each vegetation. This capability includes the scope, precision, and quality of the electrical corporation's documentation of vegetation inventory.	• Contact by vegetation likelihood of ignition	• Database reflects current condition of assets
				  Completeness
				  Timeliness
				• Database flags new risks since last survey

	19. Vegetation inspections	The ability of the electrical corporation to inspect vegetation along rights of way, and vegetation with strike potential for its assets. This includes both the quality and frequency of vegetation inspections.	• Contact by vegetation likelihood of ignition	• Percentage of high-risk fire areas inspected per year • Findings per inspection • Findings from QA/QC • Time between initial and detailed inspections

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	20. Vegetation treatment ~~and removal~~	The electrical corporation's standards and actions for treating vegetation that is around lines and equipment which has the potential to cause an ignition. This includes both vegetation grow-in and fall-in (strike potential) mitigation efforts~~.~~ as well as post-trim vegetative waste removal. This capability focuses on how quickly and effectively the electrical corporation responds to findings from inspections.	• Contact by vegetation likelihood of ignition	• Vegetation risk events • Time between routine findings and vegetation trimming • Time between imminent hazard findings and vegetation trimming
	21. Vegetation personnel training and quality assurance	The ability of the electrical corporation to train employees, contractors, and subcontractors to effectively inspect and treat vegetation that is around lines and equipment that has the potential to cause an ignition. This includes the training of staff, contractors, and subcontractors, documenting qualifications and certificates, evaluating capabilities, and providing necessary tools and equipment to perform required activities (unless otherwise provided by contractors/subcontractors meeting specified standards).	• Contact by vegetation likelihood of ignition	• Frequency of drills, simulations, and exercises • Passing rate of drills and training activities • Completeness and consistency of training materials (manuals, exams, self-tests) Fraction of procedures covered in training Quality controls to update previously trained employees on changes to procedures Quality of materials is independently reviewed by third-party SMEs • Fraction of personnel (employee and contractor) working in HFTD areas that are current in their training
Grid operations and protocols	22. Protective equipment and device settings	The ability of the electrical corporation to effectively and automatically de-energize segments of the grid rapidly when faults occur. This ability is enabled by the use of protective devices such as reclosers, which under normal operating conditions reclose the circuit once the line is cleared of a temporary fault. Under wildfire threat conditions, these devices may be set to activate more quickly and be programmed to remain open leaving a segment of the circuit de-energized. The frequent use of high threshold settings can have a negative impact on communities. Mature calibrations, using locally relevant thresholds based on data and forecasting, will optimize these settings to minimize nuisance de-energizations.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • PSPS likelihood	• Fraction of circuit miles in HFTD areas protected by early/sensitive detection systems • Average time between de-energization and inspection of line • Average customers impacted per automated de-energization • Number of automated de-energizations per RFW-OCM

Category	Capability	Capability Description	Fundamental Risk Components	Metrics

	23. Incorporation of ignition risk factors in grid control	The ability of the electrical corporation to incorporate risk considerations into real-time grid control. This includes defined procedures to control operation above rated nameplate capacity (over-load operation), tracking and recording operation conditions, and estimating equipment life based on grid operational history.	• Equipment likelihood of ignition
			• Contact by vegetation likelihood of ignition
			• Contact by object likelihood of ignition
			• PSPS likelihood
				• Circuit mile days operated above nameplate capacity
				  ○ In HFTD areas
				  ○ Overall grid
				• RFW-OCM operated above nameplate capacity
				  ○ In HFTD areas
				  ○ Overall grid

	24. PSPS operating model	The ability of the electrical corporation to effectively implement a PSPS to reduce the likelihood of an ignition. This includes the ability to accurately assess the net change in risk associated with a PSPS event (i.e., accurate comparison of the wildfire and PSPS risk) and to use this assessment to inform PSPS decision making as well as the establishment of protocols for the initiation of a PSPS.	• PSPS exposure potential	• Accuracy of PSPS decisions • Granularity of PSPS decisions • PSPS customer hours normalized by RFW-OCM • PSPS critical infrastructure hours normalized by RFW-OCM
	25. Protocols for PSPS re-energization	The ability of the electrical corporation to effectively re-energize their grid after implementing a PSPS. This includes conducting inspections of their own equipment as well as protocols in place to notify customers who own non-electrical corporation overhead distribution equipment. In addition, electrical corporations must have procedures and equipment in place to prevent back-feed of power from connected non-electrical corporation backup power from energizing electrical corporation equipment unintentionally.	• PSPS exposure potential	• Circuit miles inspected per manhour • Speed of re-energization • Number of re-energization related ignitions • Customers notified of re-energization timing
	26. Ignition prevention and suppression	The ability of the electrical corporation to train employees, contractors, and subcontractors to prevent and/or reduce the likelihood of causing an ignition, control or suppress an incipient phase fire and respond effectively per emergency management protocols. This includes the training of staff, contractors, and subcontractors, documenting qualifications and certificates, evaluating capabilities, and providing necessary tools and equipment to perform required activities (unless otherwise provided by contractors/subcontractors meeting specified standards).	• Wildfire spread likelihood	• Fraction of risk events which result in a sustained ignition • Fraction of ignitions which transition to a wildfire • Fraction of maintenance activities in HFTD areas with fire suppression and safety teams on-site • Fraction of vegetation management activities in HFTD areas with fire suppression and safety teams on-site • Fraction of personnel (employee and contractor) working in HFTD areas that are current in their training

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
Emergency and Disaster Planning and Preparedness	27. Wildfire- and PSPS-emergency and disaster preparedness plan	The extent and frequency of evaluating, developing, integrating, and maintaining wildfire- and PSPS-specific emergency and disaster preparedness strategies, practices, and procedures into the electrical corporation's overall Emergency and Disaster Preparedness Plan. This includes protocols, policies and procedures for preparation and planning before, during and after an incident; defining roles and responsibilities for key personnel, qualifications, and training; resource planning and allocation; plans for drills, simulations, and tabletop exercises; strategies for coordinating and collaborating with Public Safety Partners through common standards and structures to ensure safety and timeliness. Increasing maturity is dependent on the extent, frequency and scale of preparedness and planning practices (e.g., frequency and scope of drills, collecting data from drills and after-action reports to integrate lessons learned, and remedial actions into improving plans).	• Wildfire exposure potential • Community vulnerability to wildfire • PSPS exposure potential • Community vulnerability to PSPS	• Frequency of coordinating, reviewing, and updating plans • Frequency of drills, simulations, and exercises • Fraction of relevant agencies with integrated plans • Percent of stakeholder feedback integrated into plan updates • Fraction of relevant stakeholders involved in drills • Fraction of lessons learned integrated into updated plans
	28. Collaboration and coordination with Public Safety Partners	The ability of the electrical corporation to coordinate and collaborate with Public Safety Partners at state, county, city, and tribal levels on wildfire and PSPS emergency and disaster preparedness, response, and recovery activities within the electrical corporation's service territory. This includes identifying all relevant public safety partners, their contact information and having MOAs in place for defined role & responsibilities before, during and after an incident. This also includes actions for evaluating, designing, and coordinating appropriate protocols and procedures for effective emergency communication strategies (e.g., voice and data), use of systems and technologies. This includes the capacities to synthesize and communicate near-real-time information. This also includes frequently conducting internal and external exercises and drills.	• Wildfire exposure potential • Community vulnerability to wildfire • PSPS exposure potential • Community vulnerability to PSPS	• Frequency of coordinating, reviewing, and updating communication plan • Percent of stakeholder feedback integrated into plan updates • Frequency of drills, simulations, and exercises • Percent of relevant stakeholders involved in drills • Percentage of lessons learned integrated into improving communication plan and associated systems

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	29. Public emergency communication strategy	The ability of the electrical corporation to develop, integrate and maintain an effective, near-real time communication strategy for informing essential customers and the general public before, during and after wildfires, outages due to wildfires and PSPS events, and service restoration. This includes policies, practices, and procedures to establish appropriate communication protocols to ensure timeliness, accuracy, and completeness of communications, particularly for access and functional needs (AFN) and other vulnerable populations. This also includes effectiveness of communicating information on high fire danger and PSPS conditions, location, and extent of electrical corporation-initiated wildfires or PSPS events, and referrals to relevant public wildfire response and recovery resources.	• Wildfire exposure potential • Community vulnerability to wildfire • PSPS exposure potential • Community vulnerability to PSPS	• Frequency of coordinating, reviewing, and updating communication plan • Percent of stakeholder feedback integrated into plan updates • Frequency of drills, simulations, and exercises • Percent of relevant stakeholders involved in drills • Percentage of lessons learned integrated into improving communication plan and associated systems
	30. Preparedness and planning for service restoration	The ability of the electrical corporation to restore service after a wildfire-related outages and PSPS events in a timely, safe, and coordinated manner. This includes having enough highly qualified staff and contract personnel, appropriate training programs, planning and allocation of resources (personnel and equipment), coordination with public safety partners and other electrical corporations, and plans for notifying customers. This also includes having policies, practices, and protocols in place to coordinate power restoration with other interconnected power entities.	• Equipment likelihood of ignition • Wildfire exposure potential • Community vulnerability to wildfire	• Number of re-energization related ignitions • Frequency of coordinating, reviewing, and updating restoration plans • Percent of stakeholder feedback integrated into restoration plan updates • Frequency of drills, simulations, and exercises • Percent of relevant stakeholders involved in drills • Percentage of lessons learned integrated into improving restoration plan
	31. Customer support in wildfire and PSPS emergencies	Resources dedicated to customer support during emergencies, such as outage reporting, support for low-income customers, billing adjustments, repair processing and timing, community assistance locations and services, medical baseline support services, etc.	• Wildfire exposure • Wildfire vulnerability • PSPS exposure • PSPS vulnerability	• Reduced percentage of customer "busies" • Reduced impact to AFN and other vulnerable populations during and after wildfires and PSPS events • Reduced secondary, indirect impact to life-safety and livelihoods from wildfires and PSPS incidents

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	32. Learning after wildfires and PSPS events	The ability of the electrical corporation to perform post-wildfire investigations (e.g., causal analysis, precursor risk events, after action reviews), as well as proactive diagnostic/performance testing and near miss studies to identify technical and human behavior shortcomings and other sources of error that can inform improvements to operations, management, technical systems, and other fire safety features of the Wildfire Mitigation Plan.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • Wildfire exposure potential • Wildfire vulnerability • PSPS likelihood • PSPS exposure potential • PSPS vulnerability	• Results and lessons learned from wildfire and PSPS events that have occurred • Frequency of stakeholder feedback • Frequency of plan updates based on lessons learned • Number of human-caused errors/omissions • Number of equipment failures • Number of equipment failures on de-energized segments • Number of potential ignition sources on de-energized segments • Number of ignitions • Percent of fire leading to catastrophic outcomes • Percent of near miss fires leading to catastrophic outcomes • PSPS consequences (e.g., number of customers impacted, duration of PSPS event)

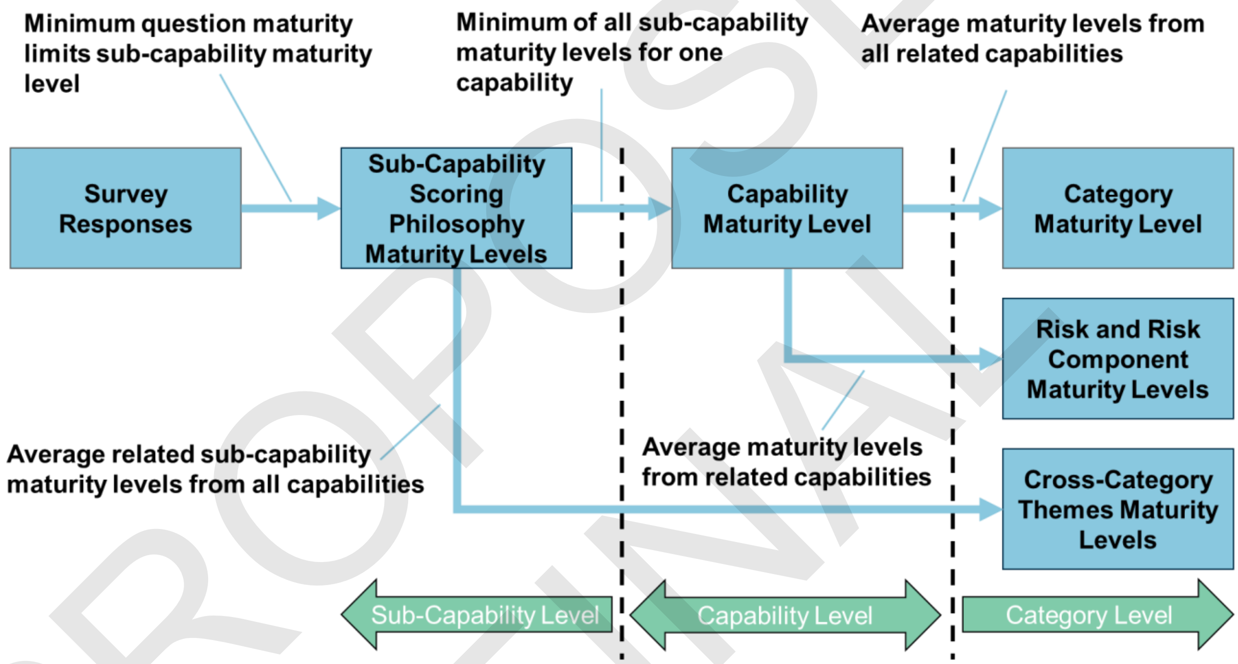
Category	Capability	Capability Description	Fundamental Risk Components	Metrics
Community outreach and engagement	33. Public outreach and education awareness program	The ability of the electrical corporation to develop, update and maintain an effective public outreach program to educate and raise the awareness of the public on the risks of wildfires and PSPS incidents, as well as appropriate preparedness activities for each incident type. This includes designing and establishing a public outreach program that addresses the specific needs of the community, effectively engages all key community stakeholder groups (e.g., individuals, families, homeowners, ranchers, AFN,, rural & urban populations, businesses, other civil society groups), and provides locally relevant information to assist individuals, families, and civil society groups on how to prepare and plan for wildfire and PSPS events before, during and after.	• Wildfire exposure potential • Wildfire vulnerability • PSPS exposure potential • PSPS vulnerability	• Reduced loss of life and property due to wildfires, and outages due to wildfires or PSPS events • Reductions in consequences to social capital • Increased access to landowner properties for vegetation management • Increased participation of the general public, medical baseline, AFN, socially vulnerable groups, and other vulnerable populations on providing feedback on WMP
	34. Public engagement in electrical corporation wildfire mitigation planning	The ability of the electrical corporation to implement strategies and actions to provide various methods for customers, the general public, and other community groups to actively participate in the electrical corporation's wildfire mitigation planning process. This includes various opportunities for the public to participate, offer views, have open and transparent communications, etc. with the electrical corporation.	• Wildfire exposure • Wildfire vulnerability • PSPS exposure • PSPS vulnerability	• Reduced loss of life and property due to wildfires, and outages due to wildfires or PSPS events • Increased participation of customers, the general public, and other community groups in the electrical corporation's wildfire mitigation planning process • Reduced impacts to AFN, medical baseline, and socially vulnerable populations
	35. Engagement with AFN and socially vulnerable populations	The ability of the electrical corporation to develop, integrate and maintain a targeted communication, outreach, and engagement program (policies, procedures, systems) to identify, understand and serve the specific needs of AFN, medical baseline, and socially vulnerable populations to the risks before, during and after wildfire and PSPS events. This includes designing, adapting, and implementing strategies that provide diverse, equitable and inclusive public outreach programs (community education and awareness raising), stakeholder participation & engagement initiatives, communication strategies, response and recovery resources that work for the whole community.	• Wildfire vulnerability • PSPS vulnerability	• Reduced impacts to AFN, medical baseline and socially vulnerable populations • Increased depth, breadth, and access of information to AFN, medical baseline, and socially vulnerable populations • Increased participation of AFN, medical baseline, and socially vulnerable populations on WMP and other wildfire mitigation programs/needs.

Category	Capability	Capability Description	Fundamental Risk Components	Metrics
	36. Collaboration on local wildfire mitigation planning	The extent and effectiveness of the electrical corporation's collaboration with local governments and community groups that are involved in local wildfire and PSPS risk reduction initiatives (e.g., community wildfire protection plans, wildfire safety elements in general plans, community chipper events, grazing programs, home ignition zone assessments, structural hardening activities). This includes the electrical corporation's level of support and commitment of resources for community-led, grass-roots initiatives that reduce wildfire & PSPS risks, reduce individual and community vulnerabilities, and increase local capacities to prepare, prevent, respond, and recover.	• Wildfire spread likelihood • Wildfire hazard intensity • Wildfire exposure potential • Wildfire vulnerability • PSPS likelihood • PSPS exposure potential • PSPS vulnerability	• Reduced loss of life and property due to wildfires, and outages due to wildfires or PSPS events • Reduced impacts to AFN, medical baseline, and socially vulnerable populations • Increased access to landowner properties for vegetation management • Increased number of collaborators • Increased frequency of collaborations • Increased coordination efforts between electrical corporation and local partners
	37. Collaboration and best practice sharing with other electrical corporations	The extent and degree of the electrical corporation's collaboration with other electrical corporations and electrical corporations in sharing and implementing lessons learned, best practices, and standards for wildfire and PSPS risk mitigation programs. This includes the electrical corporation's degree of involvement in establishing consensus standards and evaluating the relevance and validity of best practices.	• Equipment likelihood of ignition • Contact by vegetation likelihood of ignition • Contact by object likelihood of ignition • Wildfire spread likelihood • Wildfire hazard intensity • Wildfire exposure potential • Wildfire vulnerability • PSPS likelihood • PSPS exposure potential • PSPS vulnerability	• Frequency of collaborations • Percent of best practices integrated into plan updates • Frequency of benchmarking • Frequency of plan updates based on lessons learned • Reductions in wildfire consequences • Reductions in number and impacts of PSPS

4 Maturity Level Determination

Energy Safety determines maturity levels based on the electrical corporation's self-reported survey responses through the process shown in **Error! Reference source not found.**. In general, the maturity level at all sub-capability and capability levels is determined by the **minimum** of all related input factors, and the maturity level at all summary levels is determined by the **average** of all related input factors. The following subsections provide additional detail on this process.

Figure 1~~C~~. High-level overview of maturity level determination process.



4.1 Sub-Capability ~~Scoring Philosophy~~ Maturity Levels

Energy Safety uses the survey responses to calculate the sub-capability maturity level for each ~~scoring philosophy within each~~ sub-capability. This is done comparing the response to each survey question to the detailed maturity levels provided for each capability in Section 5. The maturity level for each sub-capability ~~scoring philosophy~~ is the **minimum** value based on the survey responses related to that sub-capability.

For example, ~~scoring philosophy~~sub-capability C (learning and improvement and QA/QC) for Capability 10 (data collection for near-real-time conditions) contains requisites for SME review, processes for handling data discrepancies, processes for data implementation, participation in industry groups, and third-party data benchmarks for increasing maturity levels. Each of these requisites has a corresponding question in the survey. If an electrical corporation leverages SME review and participates in industry groups but does not satisfy the requirements on data discrepancies, data implementation, and third-party data benchmarks, it does not meet the requirements of level 1. The electrical corporation would therefore receive a maturity level of 0 for this ~~scoring philosophy~~sub-capability.

4.2 Capability Maturity Levels

To reach a given level of maturity, an electrical corporation must meet all requirements for that level and each previous level for all ~~scoring philosophies~~sub-capabilities relevant to that capability. The capability level is thus the **minimum** of the relevant sub-capability ~~scoring philosophy~~ maturity levels. The maximum attainable maturity for each ~~scoring philosophy~~sub-capability is 4 and, for ~~scoring philosophies~~sub-capabilities which do not have additional criteria associated with level 4 maturity, meeting all of the preceding criteria qualifies the electrical corporation for a score of 4 ~~in that philosophy~~.

For example, an electrical corporation that receives a mix of maturity levels ranging from 1 to 3 for the various sub-capability ~~scoring philosophies~~ will receive a maturity level of 1 for the capability, as seen in Table 9.

Table 9~~-~~. Example determination of capability maturity level based on sub-capability ~~scoring philosophy~~ maturity levels

Capability	~~Scoring Philosophy~~Sub-Capability	Maturity Level
10. Data collection for near-real-time conditions	a. Automation	2
	b. Frequency	2
	c. Learning and continuous improvement & QA/QC	2
	d. Level of sophistication	1 (minimum)
	e. Spatial granularity	3
	f. Transparency	3
	g. Validation	2

	Capability Maturity Level	**1**

4.3 Category Maturity Levels

The category maturity levels are determined by taking the **average** of all capabilities within that category, as shown in Table 10.

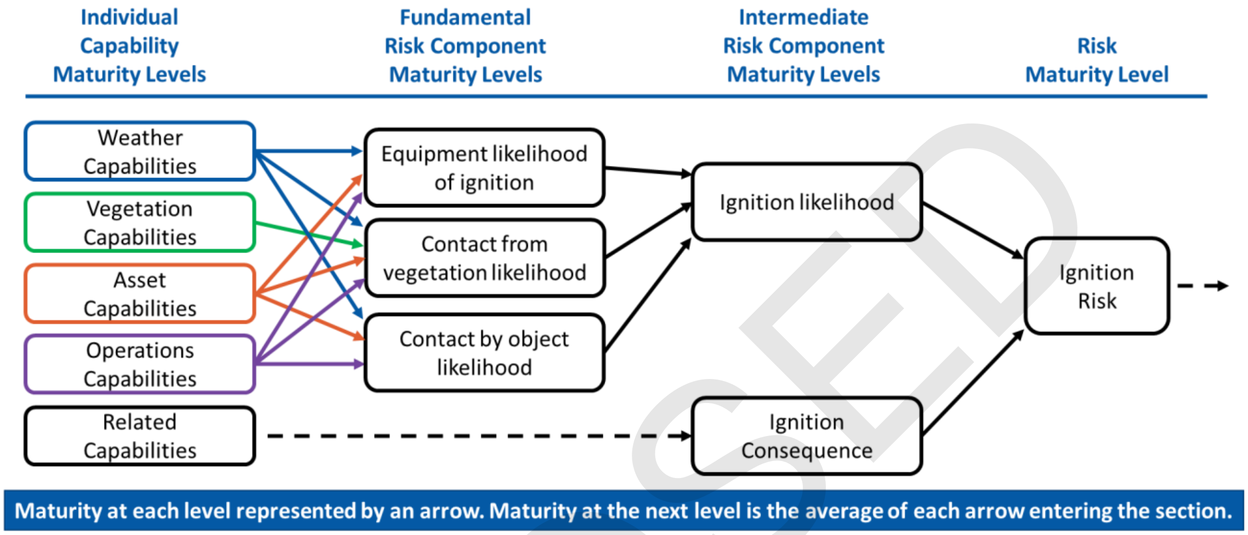
Table 10~~-~~. Example calculation of electrical corporation category maturity level calculation based on individual capability maturity levels.

Category	Capability	Maturity Level
C. Grid design, inspections, and maintenance	13. Asset inventory and condition database	3
	14. Asset inspections	2
	15. Asset maintenance and repair	1
	16. Grid design and resiliency	3
	17. Asset and grid personnel training and quality assurance	0
	Capability Maturity Level	**1.8 (Average)**

4.4 Risk and Risk Component Maturity Levels

A fundamental risk component maturity level is the **average** of the maturity levels of all capabilities linked to that risk component. This is calculated as it is for the category maturity levels. The maturity level of each intermediate risk component, hazard risk, and overall risk the **average** of the maturity levels of the risk components composing the maturity level. **Error! Reference source not found.** provides an overview of this process.

Figure 2~~C~~. High-level overview of risk and risk component maturity level determination.



4.5 Cross Category Theme Maturity Levels

Maturity levels on cross category themes are calculated by **averaging** the levels on related ~~scoring philosophies~~sub-capabilities across capabilities and categories. This is done in the same way as it is for the category maturity levels (shown in Section 4.3).

5 Detailed Maturity Levels

The following pages provide an overview of the detailed requirements to reach each maturity level for each capability.

5.1 A. Risk Assessment and Mitigation Strategy

5.1.1 1. Statistical weather, climate, and wildfire modeling

Statistical weather, climate, and wildfire modeling		**Maturity Level**				
~~Scoring Philosophy~~Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Climate change	Impact of long-term climate change on the statistical weather and fire behavior modeling. More mature systems evaluate the impact of climate change on the length of the fire season, statistical weather conditions, statistical vegetation growth and moisture, vegetative species / invasive species, and extension of the WUI.	Electrical corporation does not consider long term climate change in statistical weather and fire modeling used for long-term planning.	Electrical corporation considers the impact of climate change on at least one of the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species	Electrical corporation considers the impact of climate change on at least two of the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species	Electrical corporation considers the impact of climate change on at least three of the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species	Electrical corporation considers the impact of climate change on all the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species

Statistical weather, climate, and wildfire modeling		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Comprehensiveness	Inputs to estimate statistical weather, climate, and wildfire behavior are comprehensive including all key physics in weather, fire, and vegetation. Statistical conditions are evaluated at required percentiles.	Electrical corporation does not account for statistical weather, climate, and fire behavior.	Fire weather conditions meet the minimum design scenarios established by Energy Safety requirements. Electrical corporation calculates weather parameters (e.g., wind speed, relative humidity, temperature, and fuel moisture content) required to estimate the likelihood of ignition, wildfire spread probability, and wildfire hazard intensity.	Fire weather conditions meet the minimum design scenarios established by Energy Safety requirements. Model inputs at a minimum include all the following: 1. Local topography 2. Local weather 3. Local vegetation 4. Climate change requirements for level 2 Model outputs at a minimum include all the following: 1. Statistical fire weather conditions at 20-year, 60-year, and 300-year return intervals 2. Relative fire spread likelihood across service territory	Fire weather conditions meet the minimum design scenarios established by Energy Safety requirements. Model inputs at a minimum include all the following: 1. Local topography 2. Local weather 3. Local vegetation 4. Climate change requirements for level 3 Model outputs at a minimum include all the following: 1. Statistical fire weather conditions at 20-year, 60-year, and 300-year return intervals 2. Relative fire spread likelihood across service territory 3. Estimated acres burned at 20-year, 60-year, and 300-year return intervals	Fire weather conditions meet the minimum design scenarios. established by Energy Safety requirements. Model inputs at a minimum include all the following: 1. Local topography 2. Local weather 3. Local vegetation 4. Climate change requirements for level 4 5. Fire service activities / containment and suppression activities 6. Community-specific vegetation treatment plans throughout service territory Model outputs at a minimum include all the following: 1. Statistical fire weather conditions at 20-year, 60-year, and 300-year return intervals 2. Relative fire spread likelihood across service territory Estimated acres burned at 20-year, 60-year, and 300-year return intervals 4. Air quality effects including GHG emissions and population health impacts

Statistical weather, climate, and wildfire modeling		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. This includes weather, climate, and wildfire input data and modeling results used to prioritize mitigation activities.	No additional requirements beyond level 1	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. This includes weather, climate, and wildfire input data and modeling results used to prioritize mitigation activities. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3

Statistical weather, climate, and wildfire modeling		**Maturity Level**				
~~**Scoring Philosophy**~~**Sub-Capability**	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Learning and continuous improvement	Historic model performance is consistently compared to observed conditions to determine discrepancies and biases in the model not covered by the validation basis. Processes are in place to document these findings and improve the models over time.	No process in place to inform model based on errors in model predictions or comments from stakeholders.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format.	No additional requirements beyond level 1	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions. Electrical corporation funds and participates in both independent and collaborative research that focuses on extending best practices.

Statistical weather, climate, and wildfire modeling		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Modularization	Modularization of the software models. Higher maturity includes more modular code which can be used to evaluate the impact of different assumptions on the statistical results.	Software code is not modular.	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Statistical weather analysis 2. Statistical fire behavior analysis 3. Statistical seasonal vegetation analysis	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Statistical weather analysis 2. Statistical fire behavior analysis 3. Statistical seasonal vegetation analysis 4. Impact of climate change on statistical weather 5. Impact of weather on seasonal vegetation moisture 6. Impact of weather on seasonal vegetation growth cycle	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least two of the following: 1. Statistical weather analysis 2. Statistical fire behavior analysis 3. Statistical seasonal vegetation analysis 4. Impact of climate change on statistical weather 5. Impact of weather on seasonal vegetation moisture 6. Impact of weather on seasonal vegetation growth cycle 7. Synoptic scale weather 8. Mesoscale weather	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include all the following: 1. Statistical weather analysis 2. Statistical fire behavior analysis 3. Statistical seasonal vegetation analysis 4. Impact of climate change on statistical weather 5. Impact of weather on seasonal vegetation moisture 6. Impact of weather on seasonal vegetation growth cycle 7. Synoptic scale weather 8. Mesoscale weather 9. Large eddy scale weather
Spatial granularity	Vertical and horizontal / geo-coordinate resolution of the weather, climate, and wildfire predictions. Higher maturity is achieved by using a sufficiently fine resolution to resolve the local effects of fire and weather.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Horizontal resolution of the statistical weather and climate modeling is evaluated at a resolution <= 4 km. Horizontal resolution of the statistical fire modeling is evaluated at a resolution <= 1 km. Vertical resolution of the statistical weather modeling is sufficient to evaluate average conditions at measured locations in the service territory.	Horizontal resolution of the statistical weather and climate modeling is evaluated at a resolution <= 2 km. Horizontal resolution of the statistical fire modeling is evaluated at a resolution <= 100 m. Vertical resolution of the statistical weather and climate modeling is sufficiently resolved to evaluate the local conditions at the average height of lines on a circuit.	Horizontal resolution of the statistical weather and climate modeling is evaluated at a resolution <= 1 km. Horizontal resolution of the statistical fire modeling is evaluated at a resolution <= 30 m. Vertical resolution of the statistical weather and climate modeling is sufficiently resolved to evaluate the local conditions at the average height of lines on a span.	Horizontal resolution of the statistical weather and climate modeling is evaluated at a resolution <= 100 m. Horizontal resolution of the statistical fire modeling is evaluated at a resolution <= 10 m. Vertical resolution of the statistical weather and climate modeling is sufficiently resolved to evaluate the local conditions at the average height of individual lines.

Statistical weather, climate, and wildfire modeling		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Stability of assumptions	Assumptions and limitations of the model are known, and the model does not need significant changes in future updates to the WMP	Assumptions and limitations of the model(s) are unknown and/or not documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are evaluated using hindcast in the development environment. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are developed in the previous year and are planned for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Validation results justify no changes to modeling assumptions for a period **greater than one year**. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.

Statistical weather, climate, and wildfire modeling		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to input data, source code, and an automated verification and validation suite to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum Energy Safety reporting requirements.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical documentation is available to the public.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial and geospatial data with the community. Model software source code and data for verification and validation provided by the electrical corporation to the public.

Validation	Documentation of the uncertainty in weather, climate, and fire behavior predictions and the resulting sensitivity of the overall risk model predictions to 1) inputs to these models 2) modeling assumptions, limitations, and parameterizations, and 3) down-stream impacts of uncertainty propagation in model predictions.	The statistical uncertainty in model inputs parameters (aleatory) and model assumptions, limitations, and parameterizations (epistemic) and the impact on model outputs is unknown or not documented. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model inputs parameters (aleatory) and model assumptions, limitations, and parameterizations (epistemic) and the impact on model outputs is known and documented in accordance with Energy Safety requirements. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model inputs parameters (aleatory) and model assumptions, limitations, and parameterizations (epistemic) and the impact on model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. Sensitivity analyses are used to evaluate model predictions at different percentiles for use in down-stream models and decision making. The choice of percentile is justified in the WMP.	The statistical uncertainty in model inputs parameters (aleatory) and model assumptions, limitations, and parameterizations (epistemic) and the impact on model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. Sensitivity analyses are used to evaluate model predictions at different percentiles for use in down-stream models and decision making. The choice of percentile is justified in the WMP. The uncertainty in measurements used in model validation is known and documented.	The statistical uncertainty in model inputs parameters (aleatory) and model assumptions, limitations, and parameterizations (epistemic) and the impact on model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. Sensitivity analyses are used to evaluate model predictions at different percentiles for use in down-stream models and decision making. The choice of percentile is justified in the WMP. The uncertainty in measurements used in model validation is known and documented. Uncertainty propagation is analytically calculated and presented using standard methods such as Bayesian inference and uncertainty quantification.

Statistical weather, climate, and wildfire modeling		**Maturity Level**				
~~**Scoring Philosophy**~~**Sub-Capability**	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Validation, documentation, and disclosures	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to validate performance. Model performance on each key metric demonstrates a **systematic bias < 20%.** Model performance on each key metric demonstrates a standard **deviation in error < 40%.** Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to validate performance. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a **systematic bias < 10%.** Model performance on each key metric demonstrates a standard **deviation in error < 20%.** Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to validate performance. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a **systematic bias < 5%.** Model performance on each key metric demonstrates a standard **deviation in error < 15%.** Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.

5.1.2 2. Calculation of wildfire and PSPS hazard and exposure to societal values

Calculation of wildfire and PSPS hazard and exposure to societal values		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Automation	Automated calculation of wildfire and PSPS hazard and exposure potential in the service area.	Calculation of wildfire and PSPS hazard intensity and exposure potential in the service area are not automated.	Calculation of wildfire and PSPS hazard intensity and exposure potential in the service area are not automated.	Calculation of wildfire and PSPS hazard intensity and exposure potential in the service area are automated.	Calculation of wildfire and PSPS hazard intensity and exposure potential in the service area are automated. Discrepancies between model calculation and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review.	Calculation of wildfire and PSPS hazard intensity and exposure potential in the service area are automated. Discrepancies between model calculation and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review. Discrepancies are automatically integrated into the predictive model to improve future performance.

Calculation of wildfire and PSPS hazard and exposure to societal values		**Maturity Level**				
~~**Scoring Philosophy**~~**Sub-Capability**	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Model inputs and outputs to quantify wildfire and PSPS hazard and exposure potential in the service area are comprehensive including all aspects of weather, vegetation, and community composition.	Model inputs and outputs to quantify wildfire and PSPS hazard and exposure potential in the service area do not meet the minimum expectations or requirements.	Model inputs to calculate wildfire and PSPS hazard and exposure potential include the following: 1. Population 2. Buildings 3. Fire intensity Model outputs include the following: 1. Loss of life 2. Injuries 3. Property damage 4. Acres burned 5. Number of customers impacted by the PSPS 6. Number of AFN, medical baseline, and socially vulnerable customers impacted by the PSPS	Model inputs to calculate wildfire and PSPS hazard and exposure potential include the following: 1. Population 2. Buildings 3. Fire intensity Model outputs include the following: 1. Loss of life 2. Injuries 3. Property damage 4. Acres burned 5. Number of customers impacted by the PSPS 6. Number of AFN, medical baseline, and socially vulnerable customers impacted by the PSPS 7. Customer hours of PSPS 8. Customer hours of PSPS for AFN, medical baseline, and socially vulnerable customers	Model inputs to calculate wildfire and PSPS hazard and exposure potential include the following: 1. Population 2. Buildings 3. Fire intensity 4. Ingress & egress capacity and planning Model outputs include the following: 1. Loss of life 2. Injuries 3. Property damage 4. Acres burned 5. Number of customers impacted by the PSPS 6. Number of AFN, medical baseline, and socially vulnerable customers impacted by the PSPS 7. Customer hours of PSPS 8. Customer hours of PSPS for AFN, medical baseline, and socially vulnerable customers 9. Economic impact on small businesses	Model inputs to calculate wildfire and PSPS hazard and exposure potential include the following: 1. Population 2. Buildings 3. Fire intensity 4. Ingress & egress capacity and planning 5. Containment & suppression difficulty Model outputs include the following: 1. Loss of life 2. Injuries 3. Property damage 4. Acres burned 6. Number of AFN, medical baseline, and socially vulnerable customers impacted by the PSPS 7. Customer hours of PSPS 8. Customer hours of PSPS for AFN, medical baseline, and socially vulnerable customers 9. Economic impact on small businesses

Calculation of wildfire and PSPS hazard and exposure to societal values		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. Definition of each element contained in the databases is clearly explained.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. Definition of each element contained in the databases is clearly explained. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3
QA/QC	Process to evaluate the accuracy of wildfire and PSPS hazard and exposure potential estimation.	No process in place to evaluate the quality of model calculations.	The quality of model calculations is assessed annually through subject matter expert (SME) review.	The quality of model calculations is assessed quarterly through subject matter expert (SME) review.	The quality of model calculations is assessed monthly through subject matter expert (SME) review. Electrical corporation benchmarks wildfire and PSPS hazard and exposure estimation with other electrical corporations.	The quality of model calculations is assessed monthly through subject matter expert (SME) review. Electrical corporation benchmarks wildfire and PSPS hazard and exposure estimation with other electrical corporations. Regular monitoring is complemented with more in-depth analysis to provide a comprehensive understanding of strengths and weaknesses of the system.

Calculation of wildfire and PSPS hazard and exposure to societal values		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Spatial granularity	Granularity of wildfire and PSPS hazard and exposure potential estimation.	Model calculations are conducted at a spatial granularity less than a regional level.	Model calculations are conducted at a regional level (i.e., at a scale larger than individual circuits)	Model calculations are conducted at a circuit level (i.e., independent values for each circuit)	Model calculations are conducted at a span level (i.e., independent values for each span within a circuit)	Model calculations are conducted at an asset level (i.e., independent values for each asset)

Calculation of wildfire and PSPS hazard and exposure to societal values		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Stability of assumptions	Assumptions and limitations of the models used to calculate the wildfire and PSPS hazard and exposure potential are known, and the models do not need significant changes in future updates to the WMP	Assumptions and limitations of the model(s) are unknown and/or not documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are evaluated using hindcast in the development environment. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are developed in the previous year and are planned for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Validation results justify no changes to modeling assumptions for a period **greater than one year**. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.

Calculation of wildfire and PSPS hazard and exposure to societal values		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to input data, source code, and an automated verification and validation suite to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum Energy Safety reporting requirements.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical documentation is available to the public.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial and geospatial data with the community. Model software source code and data for verification and validation provided by the electrical corporation to the public.

Calculation of wildfire and PSPS hazard and exposure to societal values		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Validation	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to performance. Model performance on each key metric demonstrates a systematic bias < 20%. Model performance on each key metric demonstrates a standard deviation in error < 40%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 10%. Model performance on each key metric demonstrates a standard deviation in error < 20%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 5%. Model performance on each key metric demonstrates a standard deviation in error < 15%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.

5.1.3 3. Calculation of community vulnerability to wildfire and PSPS

Calculation of community vulnerability to wildfire and PSPS		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Automation	Automated calculation of community vulnerability to wildfire and PSPS in the service area.	Calculation of vulnerability to wildfire and PSPS are not automated	Calculation of vulnerability to wildfire and PSPS are not automated.	Calculation of vulnerability to wildfire and PSPS are automated.	Calculation of vulnerability to wildfire and PSPS are automated. Discrepancies between model calculation and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review.	Calculation of vulnerability to wildfire and PSPS are automated. Discrepancies between model calculation and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review. Discrepancies are automatically integrated into the predictive model to improve future performance.
Comprehensiveness	Model inputs and outputs to quantify community vulnerability to wildfire and PSPS in the service area are comprehensive including all aspects of weather, vegetation, and community composition.	Model inputs and outputs to quantify wildfire and PSPS hazard and exposure potential in the service area do not meet the minimum expectations or requirements.	Model inputs to calculate community vulnerability to wildfire and PSPS include the following: 1. Vulnerable populations (AFN, LEP, elderly) 2. Critical infrastructure Model outputs include the following: 1. Affected number of people for PSPS event occurring 2. Affected number of people for a wildfire occurring	Model inputs to calculate community vulnerability to wildfire and PSPS include the following: 1. Vulnerable populations (AFN, LEP, elderly) 2. Critical infrastructure 3. Redundant systems such as generators 4. Legacy building codes Model outputs include the following: 1. Affected number of people for PSPS event occurring 2. Affected number of people for a wildfire occurring	Model inputs to calculate community vulnerability to wildfire and PSPS include the following: 1. Vulnerable populations (AFN, LEP, elderly) 2. Critical infrastructure 3. Redundant systems such as generators 4. Legacy building codes 5. Community collaborative wildfire preparedness initiatives (e.g., firewise) Model outputs include the following: 1. Affected number of people for PSPS event occurring 2. Affected number of people for a wildfire occurring 3. Potential life and property loss for a wildfire occurring	Model inputs to calculate community vulnerability to wildfire and PSPS include the following: 1. Vulnerable populations (AFN, LEP, elderly) 2. Critical infrastructure 3. Redundant systems such as generators 4. Legacy building codes 5. Community collaborative wildfire preparedness initiatives (e.g., firewise) 6. Availability of ingress and egress Model outputs include the following: 1. Affected number of people for PSPS event occurring 2. Affected number of people for wildfire occurring 3. Potential life and property loss for a wildfire occurring

Calculation of community vulnerability to wildfire and PSPS		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. Definition of each element contained in the databases is clearly explained.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. Definition of each element contained in the databases is clearly explained. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3
QA/QC	Process to evaluate the accuracy of community vulnerability to wildfire and PSPS.	No process in place to evaluate the quality of model calculations.	The quality of model calculations is assessed annually through subject matter expert (SME) review.	The quality of model calculations is assessed quarterly through subject matter expert (SME) review.	The quality of model calculations is assessed monthly through subject matter expert (SME) review. Electrical corporation benchmarks wildfire and PSPS hazard and exposure estimation with other electrical corporations.	The quality of model calculations is assessed monthly through subject matter expert (SME) review. Electrical corporation benchmarks wildfire and PSPS hazard and exposure estimation with other electrical corporations. Regular monitoring is complemented with more in-depth analyses to provide a comprehensive understanding of strengths and weaknesses of the system.
Spatial granularity	Granularity of community vulnerability to wildfire and PSPS.	Model calculations are conducted at a spatial granularity less than a regional level.	Model calculations are conducted at a regional level (i.e., at a scale larger than individual circuits)	Model calculations are conducted at a circuit level (i.e., independent values for each circuit)	Model calculations are conducted at a span level (i.e., independent values for each span within a circuit)	Model calculations are conducted at an asset level (i.e., independent values for each asset)

Calculation of community vulnerability to wildfire and PSPS		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Stability of assumptions	Assumptions and limitations of the models used to calculate the community vulnerability to wildfire and PSPS are known, and the models do not need significant changes in future updates to the WMP	Assumptions and limitations of the model(s) are unknown and/or not documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are evaluated using hindcast in the development environment. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are developed in the previous year and are planned for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Validation results justify no changes to modeling assumptions for a period **greater than one year**. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.

Calculation of community vulnerability to wildfire and PSPS		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to input data, source code, and an automated verification and validation suite to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum Energy Safety reporting requirements.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical documentation is available to the public.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial and geospatial data with the community. Model software source code and data for verification and validation provided by the electrical corporation to the public.

Calculation of community vulnerability to wildfire and PSPS		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Validation	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to performance. Model performance on each key metric demonstrates a systematic bias < 20%. Model performance on each key metric demonstrates a standard deviation in error < 40%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 10%. Model performance on each key metric demonstrates a standard deviation in error < 20%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 5%. Model performance on each key metric demonstrates a standard deviation in error < 15%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.

5.1.4 4. Calculation of risk and risk components

Calculation of risk and risk components		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Climate change	Impact of long-term climate change on the statistical risk analysis. More mature systems evaluate the impact of climate change on the length of the fire season, statistical weather conditions, statistical vegetation growth and moisture, vegetative species / invasive species, and extension of the WUI.	Electrical corporation does not consider long term climate change in statistical weather and fire modeling used for long-term planning.	Electrical corporation considers the impact of climate change on at least one of the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species	Electrical corporation considers the impact of climate change on at least two of the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species	Electrical corporation considers the impact of climate change on at least three of the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species	Electrical corporation considers the impact of climate change on all the following: 1. Population growth in the WUI and extension of the WUI 2. Increasing temperature affecting length and severity of fire season 3. The intensity and frequency of precipitation affecting seasonal moisture and vegetation growth 4. Long-term climate changes affecting change in predominant vegetative species

Calculation of risk and risk components		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Comprehensiveness	Inputs to calculate each risk and risk component are comprehensive including all key physics, required values / attributes, and statistical percentiles.	Electrical corporation does not sufficiently calculate risks and risk components.	Electrical corporation calculates each risk and risk component in accordance with Energy Safety requirements. The combination of risks and risk components includes evaluation of the relative importance of the following performance objectives: 1. Life Safety 2. Reliability 3. Affordability	Electrical corporation calculates each risk and risk component in accordance with Energy Safety requirements. Model inputs and outputs at a minimum meet the Level 2 requirements for each of the following capabilities: 1. Statistical Weather, Climate, and Fire Modeling 2. Estimation of Wildfire and PSPS Hazard and Exposure 3. Estimation of Community Vulnerability to Wildfire and PSPS 4. Ignition Likelihood Estimation 5. Weather Forecasting Ability 6. Wildfire Forecasting Ability The combination of risks and risk components includes evaluation of the relative importance of the following performance objectives: 1. Life Safety 2. Property Protection 3. Reliability 4. Affordability	Electrical corporation calculates each risk and risk component in accordance with Energy Safety requirements. Model inputs and outputs at a minimum meet the Level 3 requirements for each of the following capabilities: 1. Statistical Weather, Climate, and Fire Modeling 2. Estimation of Wildfire and PSPS Hazard and Exposure 3. Estimation of Community Vulnerability to Wildfire and PSPS 4. Ignition Likelihood Estimation 5. Weather Forecasting Ability 6. Wildfire Forecasting Ability The combination of risks and risk components includes evaluation of the relative importance of the following performance objectives: 1. Life Safety 2. Property Protection 3. Resiliency 4. Reliability 5. Affordability 6. Environmental Protection	Electrical corporation calculates each risk and risk component in accordance with Energy Safety requirements. Model inputs and outputs at a minimum meet the Level 4 requirements for each of the following capabilities: 1. Statistical Weather, Climate, and Fire Modeling 2. Estimation of Wildfire and PSPS Hazard and Exposure 3. Estimation of Community Vulnerability to Wildfire and PSPS 4. Ignition Likelihood Estimation 5. Weather Forecasting Ability 6. Wildfire Forecasting Ability The combination of risks and risk components includes evaluation of the relative importance of the following performance objectives: 1. Immediate Life Safety 2. Long-Term Health Impacts 3. Property Protection 4. Resiliency 5. Reliability 6. Affordability 7. Environmental Protection 8. Public Perception

Calculation of risk and risk components		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained.	No additional requirements beyond level 1	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3

Calculation of risk and risk components		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Learning and continuous improvement & QA/QC	Historic model performance is consistently compared to observed conditions to determine discrepancies and biases in the model not covered by the validation basis. Processes are in place to document these findings and improve the models over time.	No process in place to inform model based on errors in model predictions or comments from stakeholders.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Risk maps are annually assessed through subject matter expert (SME) review.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Risk maps are annually assessed through an independent third-party subject matter expert (SME) review.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Risk maps are annually assessed through an independent third-party subject matter expert (SME) review. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Risk maps are annually assessed through an independent third-party subject matter expert (SME) review. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions. Electrical corporation funds and participates in both independent and collaborative research that focuses on extending best practices.

Calculation of risk and risk components		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Modularization	Modularization of the software models. Higher maturity includes more modular code which can be used to evaluate the impact of different assumptions on the statistical results.	Software code is not modular.	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Ignition risk 2. PSPS risk	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Ignition risk 2. PSPS risk 3. Ignition likelihood 4. Ignition consequence	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Ignition risk 2. PSPS risk 3. Ignition likelihood 4. Ignition consequence 5. Equipment likelihood of ignition 6. Contact from vegetation likelihood of ignition 7. Contact from object likelihood of ignition 8. Wildfire spread likelihood 9. Wildfire consequence 10. PSPS likelihood 11. PSPS consequence	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Ignition risk 2. PSPS risk 3. Ignition likelihood 4. Ignition consequence 5. Equipment likelihood of ignition 6. Contact from vegetation likelihood of ignition 7. Contact from object likelihood of ignition 8. Wildfire spread likelihood 9. Wildfire consequence 10. PSPS likelihood 11. PSPS consequence 12. Wildfire hazard intensity 13. Wildfire exposure potential 14. Community vulnerability to wildfire 15. PSPS exposure potential 16. Community vulnerability to PSPS

Calculation of risk and risk components		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Spatial granularity	Spatial granularity of the model inputs, outputs, calculation steps, and validation basis on which the risk and risk components calculations build. Higher maturity is achieved by using a sufficiently fine resolution to resolve the local impacts of each modeling capability on the local region.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Spatial granularity of model inputs, outputs, calculation steps, and validation basis at a minimum meet the Level 1 requirements for each of the following capabilities defined in the respective definitions (number reflects the corresponding Maturity capability): 1. Statistical Weather, Climate, and Fire Modeling 2. Estimation of Wildfire and PSPS Hazard and Exposure 3. Estimation of Community Vulnerability to Wildfire and PSPS 7. Ignition Likelihood Estimation 8. Weather Forecasting Ability 9. Wildfire Forecasting Ability	Spatial granularity of model inputs, outputs, calculation steps, and validation basis at a minimum meet the Level 2 requirements for each of the following capabilities defined in the respective definitions (number reflects the corresponding Maturity capability): 1. Statistical Weather, Climate, and Fire Modeling 2. Estimation of Wildfire and PSPS Hazard and Exposure 3. Estimation of Community Vulnerability to Wildfire and PSPS 7. Ignition Likelihood Estimation 8. Weather Forecasting Ability 9. Wildfire Forecasting Ability	Spatial granularity of model inputs, outputs, calculation steps, and validation basis at a minimum meet the Level 3 requirements for each of the following capabilities defined in the respective definitions: (number reflects the corresponding Maturity capability): 1. Statistical Weather, Climate, and Fire Modeling 2. Estimation of Wildfire and PSPS Hazard and Exposure 3. Estimation of Community Vulnerability to Wildfire and PSPS 7. Ignition Likelihood Estimation 8. Weather Forecasting Ability 9. Wildfire Forecasting Ability	Spatial granularity of model inputs, outputs, calculation steps, and validation basis at a minimum meet the Level 4 requirements for each of the following capabilities defined in the respective definitions: (number reflects the corresponding Maturity capability): 1. Statistical Weather, Climate, and Fire Modeling 2. Estimation of Wildfire and PSPS Hazard and Exposure 3. Estimation of Community Vulnerability to Wildfire and PSPS 7. Ignition Likelihood Estimation 8. Weather Forecasting Ability 9. Wildfire Forecasting Ability

Calculation of risk and risk components		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Stability of assumptions	Assumptions and limitations of the model are known, and the model does not need significant changes in future updates to the WMP	Assumptions and limitations of the model(s) are unknown and/or not documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements.). Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are evaluated using hindcast in the development environment. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are developed in the previous year and are planned for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Validation results justify no changes to modeling assumptions for a period **greater than one year**. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.

Calculation of risk and risk components		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to input data, source code, and an automated verification and validation suite to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum reporting requirements of Energy Safety requirements.	Data and methods meet the minimum reporting requirements of Energy Safety requirements. Statistical summary of data and model performance is provided to the public. Model technical documentation is available to the public.	Data and methods meet the minimum reporting requirements of Energy Safety requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	Data and methods meet the minimum reporting requirements of Energy Safety requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial and geospatial data with the community. Model software source code and data for verification and validation provided by the electrical corporation to the public.

Calculation of risk and risk components		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Validation	Documentation of the uncertainty in risk components and the resulting sensitivity of the overall risk model predictions to 1) inputs to these models and 2) down-stream impacts of uncertainty propagation in model predictions.	The statistical uncertainty in model inputs parameters and outputs is unknown or not documented. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. Sensitivity analyses are used to evaluate model predictions at different percentiles for use in down-stream models and decision making. The choice of percentile is justified in the WMP.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 84^{th} percentile in down-stream models and decision making.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 97.5^{th} percentile in down-stream models and decision making. Uncertainty propagation is analytically calculated and presented using standard methods such as Bayesian inference and uncertainty quantification.

Calculation of risk and risk components		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Validation & Documentation and disclosures	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to performance. Model performance on each key metric demonstrates a systematic bias < 20%. Model performance on each key metric demonstrates a standard deviation in error < 40%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 10%. Model performance on each key metric demonstrates a standard deviation in error < 20%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 5%. Model performance on each key metric demonstrates a standard deviation in error < 15%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.

5.1.5 5. Risk event tracking and integration of lessons learned

Risk event tracking and integration of lessons learned		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Automation	Automated integration of risk estimation with informing decision making.	Incident reports from risk events are not automatically entered into the corrective action program.	No additional requirements beyond level 0	Incident reports from risk events are automatically entered into the corrective action program.	Incident reports from risk events are automatically entered into the corrective action program. Risk events are automatically prioritized for SME review based on details of the event.	Incident reports from risk events are automatically entered into the corrective action program. Risk events are automatically prioritized for SME review based on details of the event. Data from risk events are automatically integrated into the risk analysis to improve model quality and validation.
Documentation and disclosures	Documentation of electrical corporation risk event tracking, corrective action program, and integration of lessons learned. Higher maturity includes a more robust and transparent corrective action program which is audited by a third party.	Risk events are not tracked in accordance with Energy Safety requirements.	Risk events are tracked in accordance with Energy Safety requirements.	Risk events are tracked in accordance with Energy Safety requirements. Wildfire and PSPS related risk events are formally tracked in the electrical corporation corrective action program.	Risk events are tracked in accordance with Energy Safety requirements. Wildfire and PSPS related risk events are formally tracked in the electrical corporation corrective action program. Actions to prevent recurrence are formally documented and tracked within the electrical corporation WMP.	Risk events are tracked in accordance with Energy Safety requirements. Wildfire and PSPS related risk events are formally tracked in the electrical corporation corrective action program. Actions to prevent recurrence are formally documented and tracked within the electrical corporation WMP.

Risk event tracking and integration of lessons learned		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Frequency	The frequency at which risk events are tracked, evaluated, entered into the corrective action program, and resolved.	Risk events are not tracked in the corrective action program.	Risk events are evaluated and entered into the corrective action program annually.	Risk events are evaluated and entered into the corrective action program **at least quarterly.** Corrective actions are closed within one year of entering the program or, for long lead-time items, have an approved schedule for closure.	Risk events are evaluated and entered into the corrective action program **at least monthly.** Corrective actions are closed within six months of entering the program or, for long lead-time items, have an approved schedule for closure.	Risk events are evaluated and entered into the corrective action program **at least weekly.** Corrective actions are closed within one quarter of entering the program or, for long lead-time items, have an approved schedule for closure.
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. Each risk event should be maintained in the database along with any reconstructions and root cause analysis. More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Risk event data, model inputs, and outputs are maintained in the electrical corporation database(s) with versions documented and maintained. This includes all data tracked on risk events as part of the electrical corporation corrective action program.	No additional requirements beyond level 1	Risk event data, model inputs, and outputs are maintained in the electrical corporation database(s) with versions documented and maintained. This includes all data tracked on risk events as part of the electrical corporation corrective action program. The database(s) of risk events, model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3

Risk event tracking and integration of lessons learned		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Learning and continuous improvement	Processes and procedures are in place to integrate lessons learned from risk events to improve the electrical corporation WMP program.	No process in place to integrate lessons learned from risk events to improve the electrical corporation WMP program.	The electrical corporation has clearly defined operational processes and procedures in place to integrate lessons learned from risk events to improve the electrical corporation WMP program.	The electrical corporation has clearly defined operational processes and procedures in place to integrate lessons learned from risk events to improve the electrical corporation WMP program. The electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on the lessons learned from risk events and their corrective action program.	The electrical corporation has clearly defined operational processes and procedures in place to integrate lessons learned from risk events to improve the electrical corporation WMP program. The electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on the lessons learned from risk events and their corrective action program. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions.	The electrical corporation has clearly defined operational processes and procedures in place to integrate lessons learned from risk events to improve the electrical corporation WMP program. The electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on the lessons learned from risk events and their corrective action program. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions. Electrical corporation funds and participates in both independent and collaborative research that focuses on extending best practices based on data from risk events.

Risk event tracking and integration of lessons learned		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
QA/QC	Process to evaluate the quality of the electrical corporation processes and procedures risk event tracking, corrective action program, and integration of lessons learned.	No process in place to evaluate the quality of risk event tracking and electrical corporation corrective action program.	Electrical corporation has established internal processes and procedures to evaluate the quality of risk event tracking and the electrical corporation corrective action program. The electrical corporation corrective action program is annually audited by internal QA/QC.	Electrical corporation has established internal processes and procedures to evaluate the quality of risk event tracking and the electrical corporation corrective action program. Electrical corporation regularly submits their corrective action program to independent third-party review.	Electrical corporation has established internal processes and procedures to evaluate the quality of risk event tracking and the electrical corporation corrective action program. Electrical corporation regularly submits their corrective action program to independent third-party review. Electrical corporation benchmarks risk event data and corrective actions with other electrical corporations.	No additional requirements beyond level 3
Spatial granularity	Spatial resolution at which the risk events are tracked.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Risk events are tracked at the regional level (HFTD tier 2/3 and non-HFTD).	Risk events are tracked at the circuit segment level.	Risk events are tracked at the span level.	Risk events are tracked at the asset level.

5.1.6 6. Risk-informed wildfire mitigation strategy

Risk-informed wildfire mitigation strategy		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Automation	Automated estimation of the impact of risk reduction and mitigation initiatives.	Estimation of the impact of risk reduction and mitigation initiatives is not automated.	Estimation of the impact of risk reduction and mitigation initiatives are partially automated (<50%). Estimation of the impact of risk reduction and mitigation initiatives are automated for the following sources: 1. Weather forecast models 2. Ignition likelihood estimates models 3. Sensor data of vegetation conditions	Estimation of the impact of risk reduction and mitigation initiatives are mostly automated (>=50%). Estimation of the impact of risk reduction and mitigation initiatives are automated for the following sources: 1. Weather forecast models 2. Ignition likelihood models 3. Sensor data of vegetation conditions 4. Other factors specific to the location in which the initiative is being undertaken	Estimation of the impact of risk reduction and mitigation initiatives is fully automated. Estimation of the impact of risk reduction and mitigation initiatives are automated for the following sources: 1. Weather forecast models 2. Ignition likelihood models 3. Sensor data of vegetation conditions 4. Other factors specific to the location in which the initiative is being undertaken 5. Air quality effects including GHG emissions and population health impacts 6. RSE for individual initiatives Discrepancies between risk estimation and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review.	Estimation of the impact of risk reduction and mitigation initiatives is fully automated. Estimation of the impact of risk reduction and mitigation initiatives are automated for the following sources: 1. Weather forecast models 2. Ignition likelihood models 3. Sensor data of vegetation conditions 4. Other factors specific to the location in which the initiative is being undertaken 5. Air quality effects including GHG emissions and population health impacts 6. RSE for individual initiatives Discrepancies between risk estimation and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review. Discrepancies between observed data / outcomes and the predictive models are evaluated and resultant enhancements are integrated into the predictive model to improve future performance.

Risk-informed wildfire mitigation strategy		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Comprehensiveness	Inputs to quantify the impact of risk reduction and mitigation initiatives are comprehensive including all aspects of weather, vegetation, grid health, and factors that are relevant to the risk reduction or mitigation initiative being undertaken. Higher maturity includes the impact of each risk reduction and mitigation initiative on reducing each risk component and the calculation of the RSE.	Model inputs and outputs are not sufficient to quantify the impact of risk mitigation initiatives or assess RSE.	Model inputs at a minimum include the following: 1. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 2. Grid performance data including faults, failures, and recloser de-energizations throughout the service area 3. Basic vegetation data including vegetation type, and seasonal trends in fuel moisture Model outputs at a minimum include the following: 1. impact of each mitigation initiative on reducing each risk component 2. RSE for each individual risk reduction or mitigation initiative	No additional requirements beyond level 1	Model inputs at a minimum include the following: 1. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 2. Grid performance data including faults, failures, and recloser de-energizations throughout the service area 3. Basic vegetation data including vegetation type, and seasonal trends in fuel moisture 4. Community-specific vegetation treatment plans throughout service territory Model outputs at a minimum include the following: 1. impact of each mitigation initiative on reducing each risk component 2. RSE for each individual risk reduction or mitigation initiative 3. Impact of community vulnerabilities	No additional requirements beyond level 3

Risk-informed wildfire mitigation strategy		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Frequency and risk spend efficiency	Frequency of risk spend efficiency (RSE) metric calculation.	RSE is not calculated or updated.	RSE is updated with management review at least once per year (annual update) for each individual risk reduction and mitigation initiative.	RSE is updated with management review at least twice per year (semi-annual update) for each individual risk reduction and mitigation initiative.	RSE is updated with management review at least four times per year (quarterly update) for each individual risk reduction and mitigation initiative.	RSE is updated at least once per month (monthly update) for each individual initiative.
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained.	No additional requirements beyond level 1	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3

Risk-informed wildfire mitigation strategy		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
QA/QC	Process to evaluate the accuracy of risk reduction estimates for risk reduction measures which will be implemented.	No process in place to evaluate the accuracy of risk reduction estimates for risk reduction measures which will be implemented.	Evaluation of the accuracy of risk reduction estimates for risk reduction measures which will be implemented is assessed through subject matter expert (SME) review at least **once per 3-year WMP cycle**.	Evaluation of the accuracy of risk reduction estimates for risk reduction measures which will be implemented is assessed through subject matter expert (SME) review at least **once per year**. Evaluation of the risk reductions that are achieved for risk improvements that are implemented are assessed and compared to estimates and results used to further enhance risk management processes. Electrical corporation engages with external stakeholders to provide risk reduction estimates for risk reduction measures which will be implemented over the WMP cycle.	Evaluation of the accuracy of risk reduction estimates for risk reduction measures which will be implemented is assessed through subject matter expert (SME) review at least **once per month**. Evaluation of the risk reductions that are achieved for risk improvements that are implemented are assessed in collaboration with external stakeholders (including other electrical corporations and government) with results compared to estimates. Results are used to further enhance risk management processes. Electrical corporation engages with external stakeholders to provide risk reduction estimates for risk reduction measures which will be implemented over the next year.	Evaluation of the accuracy of risk reduction estimates for risk reduction measures which will be implemented is assessed through subject matter expert (SME) review at least **once per month**. Evaluation of the risk reductions that are achieved for risk improvements that are implemented are assessed in collaboration with external stakeholders (including other electrical corporations and government) with results compared to estimates. Results are used to further enhance risk management processes. Electrical corporation engages with external stakeholders to provide risk reduction estimates for risk reduction measures which will be implemented over the next year. Electrical corporation engages with external stakeholders to report actual risk reductions achieved compared to original estimates and describes lessons learned and process enhancements to improve decision making for risk reduction initiatives.

Risk-informed wildfire mitigation strategy		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Spatial granularity	Resolution of risk reduction estimation of mitigation activities. Higher maturity is achieved by using a sufficiently fine resolution to estimate risk reduction at an asset level.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Resolution of risk reduction estimation of mitigation activities is evaluated at a resolution <= 1 km.	Resolution of risk reduction estimation of mitigation activities is evaluated at a resolution <= 500 m.	Resolution of risk reduction estimation of mitigation activities is evaluated at a resolution <= 100 m.	Resolution of risk reduction estimation of mitigation activities is evaluated at a resolution <= 50 m.

Risk-informed wildfire mitigation strategy		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Stability of assumptions	Assumptions and limitations of the model are known, and the model does not need significant changes in future updates to the WMP	Assumptions and limitations of the model are unknown and/or not documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are evaluated using hindcast in the development environment. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are developed in the previous year and are planned for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Validation results justify no changes to modeling assumptions for a period **greater than one year**. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.

Risk-informed wildfire mitigation strategy		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Validation	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to performance. Model performance on each key metric demonstrates a systematic bias < 20%. Model performance on each key metric demonstrates a standard deviation in error < 40%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the start of the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 10%. Model performance on each key metric demonstrates a standard deviation in error < 20%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the start of the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 5%. Model performance on each key metric demonstrates a standard deviation in error < 15%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the start of the fire season.

5.2 B. Situational Awareness and Forecasting

5.2.1 7. Ignition likelihood estimation

Ignition likelihood estimation		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Automation	Automated integration of real-time monitoring system with other relevant systems, such as grid monitoring, weather data collection, weather forecasting, vegetation moisture, and short-term risk modeling.	Equipment data, weather data, and weather forecasts are not used in assessing ignition likelihood.	Equipment data, weather data, and weather forecasts are used in assessing likelihood of ignition without significant automation. Ignition likelihood estimation is linked to deterministic real-time risk model and weather forecasts.	Equipment data, weather data, and weather forecasts are used in assessing likelihood of ignition with partial automation. Integration of systems into the likelihood of ignition estimation is automated for the following sources: 1. Weather data and forecasts 2. Grid performance data and forecasts 3. Vegetative fuel moisture forecasts Ignition likelihood estimation is linked to ensemble weather forecasts and resulting probabilistic real-time risk model	Equipment data, weather data, and weather forecasts are used in assessing likelihood of ignition with partial automation. Integration of systems into the likelihood of ignition estimation is automated for the following sources: 1. Weather data and forecasts 2. Grid performance data and forecasts 3. Vegetative fuel moisture data and forecasts 4. Equipment condition data Ignition likelihood estimation is linked to ensemble weather forecasts and resulting probabilistic real-time risk model Discrepancies between ignition likelihood estimate and observed reality (i.e., high likelihood of ignition was predicted but no risk event occurred) are automatically identified, documented, and sent to Subject Matter Experts for review.	Equipment data, weather data, and weather forecasts are used in assessing likelihood of ignition with partial automation. Integration of systems into the likelihood of ignition estimation is automated for the following sources: 1. Weather data and forecasts 2. Grid performance data and forecasts 3. Vegetative fuel moisture data and forecasts 4. Equipment condition data Ignition likelihood estimation is linked to ensemble weather forecasts and resulting probabilistic real-time risk model Discrepancies between ignition likelihood estimate and observed reality (i.e., high likelihood of ignition was predicted but no risk event occurred) are automatically identified, documented, and sent to Subject Matter Experts for review. Discrepancies are automatically integrated into the predictive model to improve future performance.

Ignition likelihood estimation		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Comprehensiveness	Inputs to estimate ignition likelihood are comprehensive including all aspects of weather, vegetation, grid health, and asset management.	Electrical corporation does sufficiently calculate ignition likelihood.	Ignition likelihood estimation considers each type of equipment operation/failure, vegetation contact, and object contact. Model inputs at a minimum include the following: 1. Basic equipment data including type (including differentiation for the presence of mitigation such as covered conductors, vibration dampers, etc.), equipment age, and equipment maintenance history. 2. Basic operations data including presence of ~~automatic de-energization systems (i.e., fast trip),~~protective equipment and device settings, time since most recent inspection of equipment, presence of open work requests, and spark generation rates from normal operations. 3. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 4. Basic vegetation data including type of potential contact, vegetation species, time since most recent vegetation inspection, and seasonal fuel moisture content.	Ignition likelihood estimation considers each type of equipment operation/failure, vegetation contact, and object contact. Model inputs at a minimum include the following: 1. Basic equipment data including type (including differentiation for the presence of mitigation such as covered conductors, vibration dampers, etc.), equipment age, and equipment maintenance history. 2. Basic operations data including presence of ~~automatic de-energization systems (i.e., fast trip),~~protective equipment and device settings, time since most recent inspection of equipment, presence of open work requests, and spark generation rates from normal operations. 3. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 4. Basic vegetation data including type of potential contact, vegetation species, time since most recent vegetation inspection, and seasonal fuel moisture content. 5. Equipment performance indicators including long-term trends in inspection and maintenance.	Ignition likelihood estimation considers each type of equipment operation/failure, vegetation contact, and object contact. Model inputs at a minimum include the following: 1. Basic equipment data including type (including differentiation for the presence of mitigation such as covered conductors, vibration dampers, etc.), equipment age, and equipment maintenance history. 2. Basic operations data including presence of ~~automatic de-energization systems (i.e., fast trip),~~protective equipment and device settings, time since most recent inspection of equipment, presence of open work requests, and spark generation rates from normal operations. 3. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 4. Basic vegetation data including type of potential contact, vegetation species, time since most recent vegetation inspection, and seasonal fuel moisture content. 5. Equipment performance indicators including long-term trends in inspection and maintenance.	Ignition likelihood estimation considers each type of equipment operation/failure, vegetation contact, and object contact. Model inputs at a minimum include the following: 1. Basic equipment data including type (including differentiation for the presence of mitigation such as covered conductors, vibration dampers, etc.), equipment age, and equipment maintenance history. 2. Basic operations data including presence of ~~automatic de-energization systems (i.e., fast trip),~~protective equipment and device settings, time since most recent inspection of equipment, presence of open work requests, and spark generation rates from normal operations. 3. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 4. Basic vegetation data including type of potential contact, vegetation species, time since most recent vegetation inspection, and seasonal fuel moisture content. 5. Equipment performance indicators including long-term trends in inspection and maintenance.

Ignition likelihood estimation		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
			Model outputs at a minimum include the following: 1. Equipment likelihood of ignition 2. Contact from vegetation likelihood of ignition 3. Contact from object likelihood of ignition	Model outputs at a minimum include the following: 1. Equipment likelihood of ignition 2. Contact from vegetation likelihood of ignition 3. Contact from object likelihood of ignition	6. Grid performance indicators including faults, failures, and recloser de-energizations throughout the service area 7. Recent trends in fuel moisture. 8. Long-term grid health trends at the asset resolution. Model outputs at a minimum include the following: 1. Equipment likelihood of ignition 2. Contact from vegetation likelihood of ignition 3. Contact from object likelihood of ignition 4. Ignition from human activity	6. Grid performance indicators including faults, failures, and recloser de-energizations throughout the service area 7. Recent trends in fuel moisture. 8. Long-term grid health trends at the asset resolution. 9. Height of equipment lines are known In HFTD, and weather data used in model predictions is evaluated at the height of individual lines. Model outputs at a minimum include the following: 1. Equipment likelihood of ignition 2. Contact from vegetation likelihood of ignition 3. Contact from object likelihood of ignition 4. Ignition from human activity

Ignition likelihood estimation		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained.	No additional requirements beyond level 1	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3

Ignition likelihood estimation		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Learning and continuous improvement	Historic model performance is consistently compared to observed conditions to determine discrepancies and biases in the model not covered by the validation basis. Processes are in place to document these findings and improve the models over time.	No process in place to inform model based on errors in model predictions or comments from stakeholders.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions.	Electrical corporation has a clearly defined operational process in place to track discrepancies between model predictions and observed behavior during annual planning. Electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on modeling efforts which are recorded and shared in a consistent format. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions. Electrical corporation funds and participates in both independent and collaborative research that focuses on extending best practices.

Ignition likelihood estimation		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Modularization	Modularization of the software models. Higher maturity includes more modular code which can be used to evaluate the impact of different assumptions on the results.	Software code is not modular.	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Impact of vegetation characteristics 2. Impact of weather conditions 3. Impact of equipment characteristics	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least the following: 1. Impact of vegetation characteristics 2. Impact of weather conditions 3. Impact of equipment characteristics 4. Impact of long-term climate change	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include at least two of the following: 1. Impact of vegetation characteristics 2. Impact of weather conditions 3. Impact of equipment characteristics 4. Impact of long-term climate change 5. Impact of weather on seasonal vegetation moisture	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include all the following: 1. Impact of vegetation characteristics 2. Impact of weather conditions 3. Impact of equipment characteristics 4. Impact of long-term climate change 5. Impact of weather on seasonal vegetation moisture 6. Impact of weather on seasonal vegetation growth cycle
QA/QC	Process to evaluate the accuracy of ignition likelihood calculations.	No process in place to evaluate ignition likelihood maps.	Electrical corporation has established internal processes and procedures to evaluate the quality of ignition likelihood calculations. The electrical corporation ignition likelihood calculation is annually audited by internal QA/QC.	Electrical corporation has established internal processes and procedures to evaluate the quality of ignition likelihood calculations. Electrical corporation regularly submits their ignition likelihood calculations to independent third-party review.	Electrical corporation has established internal processes and procedures to evaluate the quality of ignition likelihood calculations. Electrical corporation regularly submits their ignition likelihood calculations to independent third-party review. Electrical corporation benchmarks ignition likelihood data and calculations with other electrical corporations.	No additional requirements beyond level 3

Ignition likelihood estimation		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Spatial granularity	Resolution of ignition likelihood estimation. Higher maturity is achieved by using a sufficiently fine resolution to estimate ignition likelihood at an asset level.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Ignition likelihood calculations are evaluated at the circuit level within HFTD tier 2 and 3.	Ignition likelihood calculations are evaluated at the circuit segment level within HFTD tier 2 and 3. Ignition likelihood calculations are evaluated at the region level in non-HFTD region.	Ignition likelihood calculations are evaluated at the span level within HFTD tier 2 and 3. Ignition likelihood calculations are evaluated at the circuit-segment level in non-HFTD regions.	Ignition likelihood calculations are evaluated at the asset level within HFTD tier 2 and 3. Ignition likelihood calculations are evaluated at the span level in non-HFTD regions.

Ignition likelihood estimation		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Stability of assumptions	Assumptions and limitations of the model are known, and the model does not need significant changes in future updates to the WMP	Assumptions and limitations of the model are unknown and/or not documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are evaluated using hindcast in the development environment. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are developed in the previous year and are planned for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Validation results justify no changes to modeling assumptions for a period **greater than one year**. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.

Ignition likelihood estimation		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to input data, source code, and an automated verification and validation suite to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum Energy Safety reporting requirements.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical documentation is available to the public.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial and geospatial data with the community. Model software source code and data for verification and validation provided by the electrical corporation to the public.

Ignition likelihood estimation		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Validation	Documentation of the uncertainty in ignition likelihood predictions and the resulting sensitivity of the overall risk model predictions to 1) inputs to these models and 2) down-stream impacts of uncertainty propagation in model predictions.	The statistical uncertainty in model inputs parameters and outputs is unknown or not documented. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. Sensitivity analyses are used to evaluate model predictions at different percentiles for use in down-stream models and decision making. The choice of percentile is justified in the WMP.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 84th percentile in down-stream models and decision making.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 97.5th percentile in down-stream models and decision making. Uncertainty propagation is analytically calculated and presented using standard methods such as Bayesian inference and uncertainty quantification.

Ignition likelihood estimation		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Validation, documentation, and disclosures	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to performance. Model performance on each key metric demonstrates a systematic bias < 20%. Model performance on each key metric demonstrates a standard deviation in error < 40%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 10%. Model performance on each key metric demonstrates a standard deviation in error < 20%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 5%. Model performance on each key metric demonstrates a standard deviation in error < 15%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.

5.2.2 8. Weather forecasting ability

Weather forecasting ability		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Automation	Automated short-term weather forecasting and its integration with other systems.	Weather forecasting models are not automated.	Short-term weather forecasting is automated.	Short-term weather forecasting is automated.	Short-term weather forecasting is automated. Discrepancies between weather forecasting and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review.	Short-term weather forecasting is automated. Discrepancies between weather forecasting and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review. Discrepancies are automatically integrated into the predictive model to improve future performance.

Weather forecasting ability		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Comprehensive	Inputs to generate accurate short-range (days to weeks) weather forecasts across the electrical corporation's service territory are comprehensive including all key physics in weather.	Electrical corporation does not sufficiently generate short-range weather forecasts across the electrical corporation's service territory.	Electrical corporation sufficiently generates short-range weather forecasts aligned with minimum Energy Safety requirements. Model inputs at a minimum include the following: 1. Local topography 2. Land cover / land use type 3. Solar radiation Model output at a minimum include the following: 1. Forecast horizon of three (3) days. 2. Barometric pressure 3. Wind velocity (speed and direction) 4. Air temperature 5. Relative humidity	Electrical corporation sufficiently generates short-range weather forecasts aligned with the minimum Energy Safety requirements. Model inputs at a minimum include the following: 1. Local topography 2. Land cover / land use type 3. Solar radiation 4. Synoptic scale patterns Model output at a minimum include the following: 1. Forecast horizon of five (5) days. 2. Barometric pressure 3. Wind velocity (speed and direction) 4. Air temperature 5. Relative humidity	Electrical corporation sufficiently generates short-range weather forecasts aligned with the minimum Energy Safety requirements. Model inputs at a minimum include the following: 1. Local topography 2. Land cover / land use type 3. Solar radiation 4. Synoptic scale patterns 5. Mesoscale patterns Model output at a minimum include the following: 1. Forecast horizon of seven (7) days. 2. Barometric pressure 3. Wind velocity (speed and direction) 4. Air temperature 5. Relative humidity 6. Vegetation moisture content 7. Air quality impacts from smoke	Electrical corporation sufficiently generates short-range weather forecasts aligned with the minimum Energy Safety requirements. Model inputs at a minimum include the following: 1. Local topography 2. Land cover / land use type 3. Solar radiation 4. Synoptic scale patterns 5. Mesoscale patterns Model output at a minimum include the following: 1. Forecast horizon of ten (10) days. 2. Barometric pressure 3. Wind velocity (speed and direction) 4. Air temperature 5. Relative humidity 6. Vegetation moisture content 7. Air quality impacts from smoke
Frequency	Data assimilation frequency of collected weather observations	Data assimilation is not performed.	Data assimilation is performed at least twice per day (12-h interval).	Data assimilation is performed at least four times per day (6-h interval).	Data assimilation is performed at least six times per day (4-h interval).	Data assimilation is performed at least twelve times per day (2-h interval).

Weather forecasting ability		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained.	No additional requirements beyond level 1	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3
Level of sophistication	Number of forecasts produced in ensemble forecasting varying initial conditions.	Ensemble forecasting is not used.	Ensemble forecasting is performed with at least ten (10) forecasts in which one is the control forecast and is produced with the best available data and unperturbed models. Inherent uncertainty is quantified for at least one of the following weather forecasting elements as a function of positive lead time: 1. Temperature 2. Wind speed and direction 3. Precipitation 4. Relative Humidity	Ensemble forecasting is performed with at least thirty (30) forecasts in which one is the control forecast and is produced with the best available data and unperturbed models. Inherent uncertainty is quantified for at least two of the following weather forecasting elements as a function of positive lead time: 1. Temperature 2. Wind speed and direction 3. Precipitation 4. Relative Humidity	Ensemble forecasting is performed with at least fifty-one (51) forecasts in which one is the control forecast and is produced with the best available data and unperturbed models. Inherent uncertainty is quantified for at least three of the following weather forecasting elements as a function of positive lead time: 1. Temperature 2. Wind speed and direction 3. Precipitation 4. Relative Humidity	Ensemble forecasting is performed with at least fifty-one (51) forecasts in which one is the control forecast and is produced with the best available data and unperturbed models. Inherent uncertainty is quantified for the following weather forecasting elements as a function of positive lead time: 1. Temperature 2. Wind speed and direction 3. Precipitation 4. Relative Humidity

Weather forecasting ability		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Modularization	Modularization of the software models. Higher maturity includes more modular code which can be used to evaluate the impact of different assumptions on the results.	Software code is not modular.	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Local weather analysis 2. Local vegetation analysis	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Local weather analysis 2. Local vegetation analysis 3. Impact of climate change on weather 4. Impact of weather on vegetation moisture 5. Impact of weather on vegetation growth cycle	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Local weather analysis 2. Local vegetation analysis 3. Impact of climate change on weather 4. Impact of weather on vegetation moisture 5. Impact of weather on vegetation growth cycle 6. Synoptic scale weather 7. Mesoscale weather	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Local weather analysis 2. Local vegetation analysis 3. Impact of climate change on weather 4. Impact of weather on vegetation moisture 5. Impact of weather on vegetation growth cycle 6. Synoptic scale weather 7. Mesoscale weather 8. Large eddy scale weather

Weather forecasting ability		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
QA/QC	Process to evaluate the accuracy of weather forecasting.	No process in place to evaluate the quality of weather forecasting.	Accuracy of weather forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Weather forecasts are assessed through subject matter expert (SME) review at least once per month.	Accuracy of weather forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Weather forecasts are assessed through subject matter expert (SME) review at least twice per month. Accuracy of weather forecasts are assessed in near-real-time through regular comparison of weather forecasts with available data.	Accuracy of weather forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Weather forecasts are assessed through subject matter expert (SME) review at least once per week. Accuracy of weather forecasts are assessed in near-real-time through regular comparison of weather forecasts with available data. Electrical corporation benchmarks weather forecasts with those of other electrical corporations and government agencies.	Accuracy of weather forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Weather forecasts are assessed through subject matter expert (SME) review daily. Accuracy of weather forecasts are assessed in near-real-time through regular comparison of weather forecasts with available data. Electrical corporation benchmarks weather forecasts with those of other electrical corporations and government agencies. Historic discrepancies between weather forecasts and observations in similar conditions are synthesized and used to analyze the expected quality of current forecasts.

Weather forecasting ability		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Spatial granularity	Vertical and horizontal / geo-coordinate resolution of the weather forecasts. Higher maturity is achieved by using a sufficiently fine resolution to resolve the local effects of weather.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Horizontal resolution of the weather forecasts is evaluated at a resolution <= 4 km. Vertical resolution of the weather forecasts is sufficient to evaluate average conditions at measured locations in the service territory.	Horizontal resolution of the weather forecasts is evaluated at a resolution <= 2 km. Vertical resolution of the weather forecasts is sufficient to evaluate the local conditions at the average height of lines on a circuit.	Horizontal resolution of the weather forecasts in non-HFTD regions is evaluated at a resolution <= 2 km. Vertical resolution of the weather forecasts in non-HFTD regions is sufficient to evaluate the local conditions at the average height of lines on a circuit. Horizontal resolution of the weather forecasts in HFTD tier 2 and 3 is evaluated at a resolution <= 1 km. Vertical resolution of the weather forecasts in HFTD tier 2 and 3 is sufficient to evaluate the local conditions at the average height of lines on a span.	Horizontal resolution of the weather forecasts in non-HFTD regions is evaluated at a resolution <= 2 km. Vertical resolution of the weather forecasts in non-HFTD regions is sufficient to evaluate the local conditions at the average height of lines on a circuit. Horizontal resolution of the weather forecasts in HFTD tier 2 and 3 is evaluated at a resolution <= 100 m. Vertical resolution of the weather forecasts in HFTD tier 2 and 3 is sufficient to evaluate the local conditions at the average height of individual lines.

Weather forecasting ability		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Stability of assumptions	Assumptions and limitations of the model are known, and the model does not need significant changes in future updates to the WMP	Assumptions and limitations of the model are unknown and/or not documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are planned during the year of WMP submittal for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are evaluated using hindcast in the development environment. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Changes to model formulation are developed in the previous year and are planned for implementation in a future year. Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.	Assumptions and limitations of the model(s) are known and documented in accordance with Energy Safety requirements. Validation results justify no changes to modeling assumptions for a period **greater than one year.** Electrical corporation has an established process in place to develop and document changes to the model formulation in a development environment that is version controlled and independent from the production/deployed model. Changes to model formulation are used in the development environment in parallel to the existing production model during development of annual WMP update. Discrepancies between the development and production model are quantified and statistically evaluated to demonstrate improved performance. Validation results are used to justify changes (or lack of changes) to modeling assumptions.

Weather forecasting ability		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to input data, source code, and an automated verification and validation suite to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum Energy Safety reporting requirements.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical documentation is available to the public.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial and geospatial data with the community. Model software source code and data for verification and validation provided by the electrical corporation to the public.

Weather forecasting ability		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Validation	Documentation of the uncertainty in ignition likelihood predictions and the resulting sensitivity of the overall risk model predictions to 1) inputs to these models and 2) down-stream impacts of uncertainty propagation in model predictions.	The statistical uncertainty in model inputs parameters and outputs is unknown or not documented. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. Sensitivity analyses are used to evaluate model predictions at different percentiles for use in down-stream models and decision making. The choice of percentile is justified in the WMP.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 84th percentile in down-stream models and decision making.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 97.5th percentile in down-stream models and decision making. Uncertainty propagation is analytically calculated and presented using standard methods such as Bayesian inference and uncertainty quantification.

Weather forecasting ability		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Validation, documentation, and disclosures	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements.B.10.3) Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to performance. Model performance on each key metric demonstrates a systematic bias < 20%. Model performance on each key metric demonstrates a standard deviation in error < 40%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 10%. Model performance on each key metric demonstrates a standard deviation in error < 20%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 5%. Model performance on each key metric demonstrates a standard deviation in error < 15%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.

5.2.3 9. Wildfire spread forecasting

Wildfire spread forecasting		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Automation and frequency	Automated wildfire spread forecasting models, frequency of evaluation, and integration with other systems.	Wildfire spread forecasting is not used, automated, or integrated with other systems.	Wildfire spread forecasting is conducted in accordance with Energy Safety requirements. Fire Potential Index (FPI) is calculated in accordance with Energy Safety requirements. Weather forecasting meets the Level 1 automation requirements in capability 8. Wildfire spread forecasts are conducted whenever real-time risk conditions exceed 90% of design conditions. Wildfire spread forecasting is automatically integrated with at least 1 of the following systems/tools: 1. Decision making policies and procedures 2. PSPS decision making 3. Notification with external government agencies 4. Notification with the public	Wildfire spread forecasting is conducted in accordance with Energy Safety requirements. Fire Potential Index (FPI) is calculated in accordance with Energy Safety requirements. Weather forecasting meets the Level 2 automation requirements in capability 8. Wildfire spread forecasts are conducted whenever real-time risk conditions exceed 80% of design conditions. Wildfire spread forecasting is automatically integrated with at least 2 of the following systems/tools: 1. Decision making policies and procedures 2. PSPS decision making 3. Notification with external government agencies 4. Notification with the public	Wildfire spread forecasting is conducted in accordance with Energy Safety requirements. Fire Potential Index (FPI) is calculated in accordance with Energy Safety requirements. Weather forecasting meets the Level 3 automation requirements in capability 8. Wildfire spread forecasts are conducted whenever real-time risk conditions exceed 70% of design conditions. Wildfire spread forecasting is automatically integrated with at least 3 of the following systems/tools: 1. Decision making policies and procedures 2. PSPS decision making 3. Notification with external government agencies 4. Notification with the public Discrepancies between wildfire spread forecasting and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review.	Wildfire spread forecasting is conducted in accordance with Energy Safety requirements. Fire Potential Index (FPI) is calculated in accordance with Energy Safety requirements. Weather forecasting meets the Level 4 automation requirements in capability 8. Wildfire spread forecasts are conducted whenever real-time risk conditions exceed 60% of design conditions. Wildfire spread forecasting is automatically integrated with the following systems/tools: 1. Decision making policies and procedures 2. PSPS decision making 3. Notification with external government agencies 4. Notification with the public Discrepancies between wildfire spread forecasting and observed reality are automatically identified, documented, and sent to Subject Matter Experts for review. Discrepancies are automatically integrated into the predictive model to improve future performance.

Wildfire spread forecasting		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Comprehensiveness	Inputs to generate accurate short-range (hours to days) wildfire spread forecasts across the electrical corporation's service territory are comprehensive including all key physics in fire behavior, vegetation, and weather.	Electrical corporation does not sufficiently forecast wildfire spread.	Electrical corporation sufficiently generates short-range wildfire spread forecasts aligned with Energy Safety requirements. Model inputs at a minimum include the following: 1. Weather forecast requirements for level 1 (capability 8) 2. Local topography 3. Local vegetation type 4. Local vegetation moisture Model output at a minimum include the following: 1. Forecast horizon of eight (8) hours 2. Fire arrival times / fire perimeter 3. Fire intensity	Electrical corporation sufficiently generates short-range wildfire spread forecasts aligned with Energy Safety requirements. Model inputs at a minimum include the following: 1. Weather forecast requirements for level 2 (capability 8) 2. Local topography 3. Local vegetation type 4. Local vegetation moisture Model output at a minimum include the following: 1. Forecast horizon of twelve (12) hours 2. Fire arrival times / fire perimeter 3. Fire intensity	Electrical corporation sufficiently generates short-range wildfire spread forecasts aligned with Energy Safety requirements. Model inputs at a minimum include the following: 1. Weather forecast requirements for level 3 (capability 8) 2. Local topography 3. Local vegetation type 4. Local vegetation moisture 5. Ensemble weather forecasts Model output at a minimum include the following: 1. Forecast horizon of twenty-four (24) hours 2. Fire arrival times / fire perimeter 3. Fire intensity 4. Statistical distribution of various outcomes (50th, 84th, and 98th percentiles)	Electrical corporation sufficiently generates short-range wildfire spread forecasts aligned with Energy Safety requirements. Model inputs at a minimum include the following: 1. Weather forecast requirements for level 3 (capability 8) 2. Local topography 3. Local vegetation type 4. Local vegetation moisture 5. Ensemble weather forecasts 6. Suppression likelihood Model output at a minimum include the following: 1. Forecast horizon of forty-eight (48) hours 2. Fire arrival times / fire perimeter 3. Fire intensity 4. Statistical distribution of various outcomes (50th, 84th, and 98th percentiles) 5. Air quality impacts

Wildfire spread forecasting		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
IT infrastructure and database management	Clarity and completeness of documentation of database schema and definitions. The model inputs and outputs at the time used to prioritize mitigation efforts should be maintained in the database along with the calculation methodology (i.e., model version #). More mature systems appropriately link databases (assets, weather, vegetation, model results, etc.) to support on-going evaluation.	Electrical corporation database management does not meet the minimum Energy Safety requirements.	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained.	No additional requirements beyond level 1	Model inputs, data, and outputs are maintained in the electrical corporation database(s) with the model, input, and data versions documented and maintained. The database(s) of model inputs, data, and outputs are appropriately linked with each relevant electrical corporation database (assets, weather, vegetation).	No additional requirements beyond level 3
Level of sophistication	Degree of interaction between wildfire and weather modeling.	Weather conditions are not used in wildfire spread forecasts.	30-year historic weather conditions are used in determination of Fire Potential Index (FPI) Mass consistent steady-state wind maps are used in detailed wildfire spread forecasting. Wildfire spread forecasting is calculated using an empirical, phenomenological, physics-based, or physics-informed model.	30-year historic weather conditions are used in determination of Fire Potential Index (FPI) Weather forecasts are used in wildfire spread forecasts. Wildfire spread forecasting is calculated using an empirical, phenomenological, physics-based, or physics-informed model.	30-year historic weather conditions are used in determination of Fire Potential Index (FPI) Weather and wildfire spread forecasts are calculated together through a two-way coupled approach. Wildfire spread forecasting is calculated using an empirical, phenomenological, physics-based, or physics-informed model.	30-year historic weather conditions are used in determination of Fire Potential Index (FPI) Weather and wildfire spread forecasts are calculated together through a two-way coupled approach. Wildfire spread is calculated through a physics-based or physics-informed model.

Wildfire spread forecasting		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Modularization	Modularization of the software models. Higher maturity includes more modular code which can be used to evaluate the impact of different assumptions on the statistical results.	Software code is not modular.	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Weather forecasting 2. Fire behavior forecasting	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Weather forecasting 2. Fire behavior forecasting 3. Impact of weather on seasonal vegetation moisture	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Weather forecasting 2. Fire behavior forecasting 3. Impact of weather on seasonal vegetation moisture 4. Synoptic scale weather 5. Mesoscale weather	Software design is modular with sub-modules which can be replaced to evaluate the impact of different assumptions on the results. Sub-modules include the following: 1. Weather forecasting 2. Fire behavior forecasting 3. Impact of weather on seasonal vegetation moisture 4. Synoptic scale weather 5. Mesoscale weather 6. Large eddy scale weather

Wildfire spread forecasting		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
QA/QC	Process to evaluate the accuracy of wildfire spread forecasting.	No process in place to evaluate the quality of wildfire spread forecasting.	Accuracy of wildfire spread forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Wildfire spread forecasts are assessed through subject matter expert (SME) review at least once per quarter.	Accuracy of wildfire spread forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Wildfire spread forecasts are assessed through subject matter expert (SME) review at least once per month during fire season. Accuracy of wildfire spread forecasts are assessed in near-real-time through regular comparison of wildfire spread forecasts with available data.	Accuracy of wildfire spread forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Wildfire spread forecasts are assessed through subject matter expert (SME) review at least once during fire season. Accuracy of wildfire spread forecasts are assessed in near-real-time through regular comparison of wildfire spread forecasts with available data. Electrical corporation benchmarks wildfire spread forecasts with those of other electrical corporations and government agencies.	Accuracy of wildfire spread forecasting is assessed through comparison with nearby electrical corporation owned and publicly available data in hindcast. Wildfire spread forecasts are assessed through subject matter expert (SME) review daily during fire season. Accuracy of wildfire spread forecasts are assessed in near-real-time through regular comparison of wildfire spread forecasts with available data. Electrical corporation benchmarks wildfire spread forecasts with those of other electrical corporations and government agencies. Historic discrepancies between wildfire spread forecasts and observations in similar conditions are synthesized and used to analyze the expected quality of current forecasts.
Spatial granularity	Horizontal resolution of the wildfire forecasts. Higher maturity is achieved by using a sufficiently fine resolution to resolve the local effects of fire and weather.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Horizontal resolution of the weather forecasting meets the Level 1 requirements (capability 8). Horizontal resolution of the wildfire forecasting is evaluated at a resolution <= 1 km.	Horizontal resolution of the weather forecasting meets the Level 2 requirements (capability 8). Horizontal resolution of the wildfire forecasting is evaluated at a resolution <= 100 m.	Horizontal resolution of the weather forecasting meets the Level 3 requirements (capability 8). Horizontal resolution of the wildfire forecasting is evaluated at a resolution <= 30 m.	Horizontal resolution of the weather forecasting meets the Level 4 requirements (capability 8). Horizontal resolution of the wildfire forecasting is evaluated at a resolution <= 10 m.

Wildfire spread forecasting		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to input data, source code, and an automated verification and validation suite to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum Energy Safety reporting requirements.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical documentation is available to the public.	Data and methods meet the minimum Energy Safety reporting. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data and model performance is provided to the public. Model technical, verification, and validation documentation is available to the public. Electrical corporation shares relevant nonspatial and geospatial data with the community. Model software source code and data for verification and validation provided by the electrical corporation to the public.

Wildfire spread forecasting		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Validation	Documentation of the uncertainty in ignition likelihood predictions and the resulting sensitivity of the overall risk model predictions to 1) inputs to these models and 2) down-stream impacts of uncertainty propagation in model predictions.	The statistical uncertainty in model inputs parameters and outputs is unknown or not documented. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. Sensitivity of down-stream models to uncertainty in modeling is unknown or not documented.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. Sensitivity analyses are used to evaluate model predictions at different percentiles for use in down-stream models and decision making. The choice of percentile is justified in the WMP.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 84th percentile in down-stream models and decision making.	The statistical uncertainty in model outputs is known and documented in accordance with Energy Safety requirements. The sensitivity of model output predictions to uncertainty in each input parameter is known and documented. The uncertainty in model predictions inherent to model limitations is known and documented. Sensitivity of down-stream models to uncertainty in modeling is known and documented. The uncertainty in measurements used in model validation is known and documented. Sensitivity analyses are used to evaluate model predictions at the 97.5th percentile in down-stream models and decision making. Uncertainty propagation is analytically calculated and presented using standard methods such as Bayesian inference and uncertainty quantification.

Wildfire spread forecasting		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Validation, documentation, and disclosures	Documentation of model substantiation efforts. Higher maturity includes automated verification and validation suites which are provided to the regulator for third-party review. In addition, more mature systems demonstrate a lower systematic bias and standard deviation in error in the Validation Documentation.	No model substantiation is provided.	Model substantiation is provided in accordance with Energy Safety requirements.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Discrepancies between production model and observed reality are quantified and statistically evaluated to performance. Model performance on each key metric demonstrates a systematic bias < 20%. Model performance on each key metric demonstrates a standard deviation in error < 40%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 10%. Model performance on each key metric demonstrates a standard deviation in error < 20%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.	Model substantiation is provided in accordance with Energy Safety requirements. Model verification and validation suites are automated, version controlled, and re-evaluated every time underlying data or models are updated. Model verification and validation suite (data + code) is provided to the regulator for third-party review. Model performance on each key metric demonstrates a systematic bias < 5%. Model performance on each key metric demonstrates a standard deviation in error < 15%. Annual blind model validation is accomplished by analyzing model performance for the previous year based on the data available at the time of WMP submission and on the assumptions presented in the WMP accepted prior to the fire season.

5.2.4 10. Data collection for near-real-time conditions

Data collection for near-real-time conditions		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Automation	Automated integration of real-time monitoring system for data collection with other relevant models and/or decision-making tools, such as weather forecasting and short-term risk modeling.	Data collected on weather, grid performance, and vegetative fuel are not linked to relevant models and/or decision-making tools, such as weather forecasting and short-term risk modeling.	Data collected on weather, grid performance, and vegetative fuel are linked to deterministic relevant models and/or decision-making tools, such as weather forecasting and short-term risk modeling without significant automation. Integration of data collected into the relevant models and/or decision-making tools is automated for at least 1 of the following sources: 1. Weather data 2. Grid performance data 3. Vegetative fuel data 4. Equipment condition data	Data collected on weather, grid performance, and vegetative fuel are linked to deterministic relevant models and/or decision-making tools, such as weather forecasting and short-term risk modeling. Integration of data collected into the relevant models and/or decision-making tools is automated for at least 2 of the following sources: 1. Weather data 2. Grid performance data 3. Vegetative fuel data 4. Equipment condition data	Data collected on weather, grid performance, and vegetative fuel are linked to deterministic relevant models and/or decision-making tools, such as weather forecasting and short-term risk modeling. Integration of data collected into the relevant models and/or decision-making tools is automated for at least 3 of the following sources: 1. Weather data 2. Grid performance data 3. Vegetative fuel data 4. Equipment condition data Data collected are linked to ensemble weather forecasts and resulting probabilistic real-time risk model.	Data collected on weather, grid performance, and vegetative fuel are linked to deterministic relevant models and/or decision-making tools, such as weather forecasting and short-term risk modeling. Integration of data collected into the relevant models and/or decision-making tools is automated for the following sources: 1. Weather data 2. Grid performance data 3. Vegetative fuel data 4. Equipment condition data Data collected are linked to ensemble weather forecasts and resulting probabilistic real-time risk model.
Frequency	Frequency of collected data.	Intermittent data collection (less frequently than hourly).	Intermittent data collection (at least hourly).	Intermittent data collection (at least four (4) times per hour).	Intermittent data collection (at least sixty (60) times per hour).	Continuous data collection (at least three-thousand six hundred (3,600) times per hour).

Data collection for near-real-time conditions		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Learning, continuous improvement, and QA/QC	Processes are in place to evaluate the quality of data. Historic data collection is consistently compared to observed conditions to determine discrepancies and biases in sensor data. Processes are in place to document these findings and ensure consistency in data collection over time.	No process in place to evaluate the quality of data collected. No process in place to inform models based on data collected.	Data quality is assessed through subject matter expert (SME) review during annual planning. Electrical corporation has a clearly defined operational process in place to track discrepancies between current data collections and historic observations. Electrical corporation has a clearly defined operational process to inform models based on data collected.	Data quality is assessed through subject matter expert (SME) review at least once per quarter. Electrical corporation has a clearly defined operational process in place to track discrepancies between current data collections and historic observations. Electrical corporation has a clearly defined operational process to inform models based on data collected.	Data quality is assessed through subject matter expert (SME) review at least once per month. Electrical corporation has a clearly defined operational process in place to track discrepancies between current data collections and historic observations. Electrical corporation has a clearly defined operational process to inform models based on data collected. Electrical corporation participates in task groups focused on improving best practices in data collection, including participation by industry, government, and academic institutions.	Data quality is assessed through subject matter expert (SME) review at least once per week. Electrical corporation has a clearly defined operational process in place to track discrepancies between current data collections and historic observations. Electrical corporation has a clearly defined operational process to inform models based on data collected. Electrical corporation participates in task groups focused on improving best practices in data collection, including participation by industry, government, and academic institutions. Electrical corporation benchmarks data collected with other electrical corporations.

Data collection for near-real-time conditions		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Level of sophistication	Data type collected	Collected data do not meet the minimum expectations or requirements.	Collected data include each of the following: 1. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 2. Grid performance data including faults, failures, and recloser de-energizations throughout the service area 3. Basic vegetation data including vegetation type, and seasonal trends in fuel moisture	Collected data include each of the following: 1. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 2. Grid performance data including faults, failures, and recloser de-energizations throughout the service area 3. Basic vegetation data including vegetation type, and seasonal trends in fuel moisture 4. Equipment inspection and maintenance trends for individual circuits	Collected data include each of the following: 1. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 2. Grid performance data including faults, failures, and recloser de-energizations throughout the service area 3. Basic vegetation data including vegetation type, and seasonal trends in fuel moisture 4. Equipment inspection and maintenance trends for individual circuits 5. Intermittent collection (minimum frequency of once per month during fire season) within HFTD regions of additional weather-related parameters such as fuel moisture content	Collected data include each of the following: 1. Basic weather data including air temperature, relative humidity, wind velocity (speed and direction) 2. Grid performance data including faults, failures, and recloser de-energizations throughout the service area 3. Basic vegetation data including vegetation type, and seasonal trends in fuel moisture 4. Equipment inspection and maintenance trends for individual circuits 5. Intermittent collection (minimum frequency of once per month during fire season) within HFTD regions of additional weather-related parameters such as fuel moisture content 6. Long-term grid health trends at the asset resolution using historic data 7. Height of equipment lines are known in HFTD, and weather data used in model predictions is evaluated at the height of individual lines
Spatial granularity	Granularity of sensors used to collect data. Higher maturity is achieved by using collected data with sufficiently fine resolution to resolve the local effects of fire and weather.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Collected data allows for validation of statistical weather and weather forecasting at a horizontal resolution <= 4 km.	Collected data allows for validation of statistical weather and weather forecasting at a horizontal resolution <= 2 km.	Collected data allows for validation of statistical weather and weather forecasting at a horizontal resolution <= 1 km.	Collected data allows for validation of statistical weather and weather forecasting at a horizontal resolution <= 100 m.

Data collection for near-real-time conditions		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Transparency	Sharing of data and methods with the public and research community. More mature systems provide access to electrical corporation collected data to the public.	Electrical corporation does not share data and methods.	Data and methods meet the minimum Energy Safety reporting requirements.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data is provided to the public. Data collection methods technical documentation is available to the public.	Data and methods meet the minimum Energy Safety reporting requirements. Statistical summary of data is provided to the public. Data collection methods technical documentation is available to the public. Electrical corporation shares relevant nonspatial data with the community.	No additional requirements beyond level 3
Validation, documentation, and disclosures	Documentation of the uncertainty in data collection is known and the resulting sensitivity of the overall risk model predictions is quantified in the model validation basis documents.	The statistical uncertainty in data collection is unknown or not documented.	The statistical uncertainty in data collection is known and documented in accordance with Energy Safety requirements.	No additional requirements beyond level 1	No additional requirements beyond level 1	No additional requirements beyond level 1

5.2.5 11. Wildfire detection and alarm systems

Wildfire detection and alarm systems		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Automation	Automatic processing of signals received from fire detection systems	Electrical corporation currently has no automation of wildfire detection system signaling	Electrical corporation uses computer automation software to process signals received from individual sensors	Electrical corporation uses computer automation software to process signals received from multiple sensor technologies	Electrical corporation uses computer automation software to process signals received and algorithms for data aggregation from multiple sensors Automation software compiles sensor data.	No additional requirements beyond level 3
Documentation and disclosures	Documentation detailing wildfire detection methods, coverage areas, and confirmation strategies	Electrical corporation has not provided documentation on its wildfire detection methods, coverage areas, or confirmation strategies	Electrical corporation provides detailed documentation on at least one of the following: 1. Wildfire detection methods 2. Detection technologies 3. Distribution of detection technologies 4. Wildfire confirmation strategies	Electrical corporation provides detailed documentation on at least two of the following: 1. Wildfire detection methods 2. Detection technologies 3. Distribution of detection technologies 4. Wildfire confirmation strategies	Electrical corporation provides detailed documentation on at least three of the following: 1. Wildfire detection methods 2. Detection technologies 3. Distribution of detection technologies 4. Wildfire confirmation strategies	Electrical corporation provides detailed documentation for the following: 1. Wildfire detection methods 2. Detection technologies 3. Distribution of detection technologies 4. Wildfire confirmation strategies
Frequency	Frequency of reporting to central monitoring from field sensors, frequency of updates	Sensors do not report status and are not part of a controller-based network	Sensors report status only when queried but are part of a stand-alone controller-based network.	Sensors continually report status to controllers at prescribed intervals. Controllers report sensor status to receivers at the central monitoring facility.	Sensors continually report status to controllers at prescribed intervals. Controllers report sensor status to receivers at the central monitoring facility.	No additional requirements beyond level 3

Wildfire detection and alarm systems		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Learning and continuous improvement	Processes and procedures are in place to integrate lessons learned from risk events to improve the capabilities of currently deployed wildfire detection and alarm systems.	No process in place to integrate lessons learned from risk events to improve the capabilities of wildfire detection systems.	The electrical corporation has clearly defined operational processes and procedures in place to integrate lessons learned from risk events to improve the capabilities of its fire detection and alarm systems.	No additional requirements beyond level 1	The electrical corporation has clearly defined operational processes and procedures in place to integrate lessons learned from risk events to improve the capabilities of its fire detection and alarm systems. The electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on the lessons learned from risk events and their corrective action program.	The electrical corporation has clearly defined operational processes and procedures in place to integrate lessons learned from risk events to improve the capabilities of its fire detection and alarm systems. The electrical corporation has a clearly defined process to track and adjudicate comments from stakeholders on the lessons learned from risk events and their corrective action program. Electrical corporation participates in task groups focused on sharing and improving best practices, including participation by industry, government, and academic institutions. Electrical corporation funds and participates in both independent and collaborative research that focuses on extending best practices based on data from risk events.
Spatial granularity	Density of sensors or high sensor resolution within high fire risk areas	Electrical corporation does not have sensors located in high fire risk areas or is using sensors with low resolution or sensitivity	Electrical corporation has minimal sensor coverage in high fire risk areas. Sensors are spaced with gaps between coverage areas.	Electrical corporation has moderate sensor coverage in high fire risk areas. Sensors deployed are spaced at 100% of the maximum distance of sensitivity but with no overlap between sensors.	Electrical corporation has a high level of sensor coverage in high fire risk areas. Sensors deployed are spaced at 50% or less of the maximum distance of sensitivity with significant overlap between sensors.	No additional requirements beyond level 3

Wildfire detection and alarm systems		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Validation	Sensors and algorithms used in detection must be explained and each deployed technology must be preceded by testing and validation.	Electrical corporation provides no documentation regarding their installed wildfire detection capabilities.	Electrical corporation provides detailed documentation regarding sensor technology deployed for ignition detection and wildfire confirmation	Electrical corporation provides detailed documentation regarding sensor technology deployed for ignition detection and wildfire confirmation. Results of sensor and system capability testing are provided for review. At least one sensor technology is installed for each circuit in the grid.	Electrical corporation provides detailed documentation regarding sensor technology deployed for ignition detection and wildfire confirmation. Test results of sensors and systems are provided for review. At least two sensor technologies are installed for each circuit in the grid.	Electrical corporation provides detailed documentation regarding sensor technology deployed for ignition detection and wildfire confirmation. Test results of sensors and systems are provided for review. At least two sensor technologies are installed for each circuit in the grid with automatic verification.

5.2.6 12. Centralized monitoring of real-time conditions

Centralized monitoring of real-time conditions		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Automation	Automation of wildfire and fault reporting	Electrical corporation currently has no automation of reporting processes	Electrical corporation uses computer software to identify relevant staff of identified faults and wildfires	No additional requirements beyond level 1	No additional requirements beyond level 1	No additional requirements beyond level 1
Documentation and disclosures	Documentation of facility operation and location Staff hiring, training, and certification processes Job descriptions with staff member qualifications Organizational chart	Electrical corporation does not provide documentation of facility design to show its operation, location, staffing, and redundancy of critical power, lighting, and life-safety systems.	Electrical corporation provides documentation on the following: 1. Facility operational guidelines and location 2. Staff hiring, training, and certification processes	Electrical corporation provides documentation on the following: 1. Facility operational guidelines and location 2. Staff hiring, training, and certification processes 3. Frequency of drills, simulations, and exercises	Electrical corporation provides documentation on the following: 1. Facility operational guidelines and location 2. Staff hiring, training, and certification processes; job descriptions with staff qualifications 3. Frequency of drills, simulations, and exercises 4. Organizational chart	Electrical corporation provides documentation on the following: 1. Facility operational guidelines and location 2. Staff hiring, training, and certification processes; job descriptions with staff member qualifications 3. Frequency of drills, simulations, and exercises 4. Organizational chart 5. Ability to act as an Emergency Operations Center during wildfire events

Centralized monitoring of real-time conditions		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Level of sophistication	Construction of buildings and infrastructure Redundancy of critical power, lighting, communication, and life-safety systems Security measures and systems	Electrical corporation does not maintain documentation of facility construction, critical systems, or security measures and systems.	Electrical corporation maintains documentation on the construction of buildings. Electrical corporation maintains redundancy in all critical systems (e.g., critical power, lighting, communications, and life-safety systems). Electrical corporation provides access to the documentation to authorized external agencies (e.g., Energy Safety, US Department of Homeland Security, etc.) when required. Operational and physical security measures are in place and documented.	No additional requirements beyond level 1	No additional requirements beyond level 1	No additional requirements beyond level 1
Standardized processes	Electrical corporation central monitoring station is fully automated using detection algorithms or software to detect ignitions along grid. Sensor data is aggregated with near-real-time weather monitoring, grid diagnostics, wildfire detection and alarm systems, as well as other analytical models (e.g., weather forecasting, wildfire spread modeling) to evaluate the ongoing risk for emergency management decision making.	Electrical corporation does not own a central monitoring station and does not outsource monitoring service for detection of ignitions along the grid.	Electrical corporation owns or contracts with a central monitoring station but does not support automated wildfire detection algorithms or software. Wildfire detection is based on operator interpretation of sensor data.	Electrical corporation owns or contracts with a central monitoring station providing automated wildfire detection algorithms or software.	Electrical corporation owns a central monitoring station providing automated wildfire detection algorithms or software. Sensor data is aggregated with near-real-time weather monitoring, grid diagnostics, wildfire detection and alarm systems, as well as other analytical models (e.g., weather forecasting, wildfire spread modeling) to evaluate the ongoing risk for emergency management decision making.	No additional requirements beyond level 3
Transparency	Sharing of facility design and operation with the public and industry partners	Electrical corporation does not share facility guidelines	Electrical corporation shares facility guidelines with industry partners	Electrical corporation shares facility guidelines with industry partners and the public and accepts recommendations for revisions	Electrical corporation shares facility guidelines with industry partners and the public and incorporates recommendations for revisions	No additional requirements beyond level 3

5.3 C. Grid Design, Inspections, and Maintenance

5.3.1 13. Asset inventory and condition database

Asset inventory and condition database		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Frequency	Frequency of updates to database. More mature systems incorporate more frequent updates to the database from inspections.	Database is never updated. There is no existence of protocols to incorporate inspection findings into the database.	Database is updated annually. Additionally, protocols are developed to incorporate asset inspection findings within 2 weeks of the inspection.	Database is updated monthly. Additionally, protocols are developed to incorporate asset inspection findings within 1 week of the inspection.	Database is updated weekly. Additionally, protocols are developed to incorporate asset inspection findings within 1 day of the inspection.	Database is updated daily. Additionally, protocols are developed to incorporate asset inspection findings within 1 day of the inspection. Asset inspection findings are verified through QA/QC process within 1 day of the inspection.

Asset inventory and condition database		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Level of sophistication	Information contained in the asset inventory and condition database that should include: the geo-spatial path of each transmission and distribution circuit (including locations of poles and lines which deviate from the average direction) as well as each transformer and switch gear in accordance with the GIS reporting standards published by Energy Safety. More mature systems include additional named asset features.	Information contains in the database does not meet the minimum expectations or requirements.	Database contains the geo-spatial path of each transmission and distribution circuit (including locations of poles and lines which deviate from the average direction) as well as each transformer and switch gear in accordance with the GIS reporting standards published by Energy Safety. The database contains the following features for each equipment within the service area: 1. Name 2. Lifespan 3. Age 4. Voltage 5. Inspection finding history	Database contains the geo-spatial path of each transmission and distribution circuit (including locations of poles and lines which deviate from the average direction) as well as each transformer and switch gear in accordance with the GIS reporting standards published by Energy Safety. The database contains the following features for each equipment within the service area: 1. Name 2. Lifespan 3. Age 4. Voltage 5. Inspection finding history 6. Operating history At least 80% of assets and components have age data.	Database contains the geo-spatial path of each transmission and distribution circuit (including locations of poles and lines which deviate from the average direction) as well as each transformer and switch gear in accordance with the GIS reporting standards published by Energy Safety. The database contains the following features for each equipment within the service area: 1. Name 2. Lifespan 3. Age 4. Voltage 5. Inspection finding history 6. Operating history 7. Overload history At least 90% of assets and components have age data.	Database contains the geo-spatial path of each transmission and distribution circuit (including locations of poles and lines which deviate from the average direction) as well as each transformer and switch gear in accordance with the GIS reporting standards published by Energy Safety. The database contains the following features for each equipment within the service area: 1. Name 2. Lifespan 3. Age 4. Voltage 5. Inspection finding history 6. Operating history 7. Overload history 8. Minimum line clearance beyond GO based on risk analysis 9. Manufacturer 10. Repair history At least 99% of assets and components have age data.

Asset inventory and condition database		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Spatial granularity	Spatial granularity of the asset inventory and condition database within their service area.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Asset inventory and condition database within their service area are evaluated at a circuit segment resolution. The resolution of the asset inventory and condition of deployed lines and assets within their service area is sufficient to the development of spatially informed risk models at circuit segment level.	Asset inventory and condition database within their service area are evaluated at a span resolution. The resolution of the asset inventory and condition of deployed lines and assets within their service area is sufficient to the development of spatially informed risk models at span level.	Asset inventory and condition database within their service area are evaluated at an individual asset resolution. The resolution of the asset inventory and condition of deployed lines and assets within their service area is sufficient to the development of spatially informed risk models at an individual asset level.	No additional requirements beyond level 3
Subject matter expert (SME) verification/(QA/QC)	Subject Matter Expert (SME) verification to evaluate the accuracy of asset inventory and condition database.	No subject matter expert verification in place to evaluate asset Inventory and condition database.	The asset Inventory and condition database is assessed through subject matter expert (SME) review at least once per year.	The asset Inventory and condition database is assessed through subject matter expert (SME) review at least once per year. Other electrical corporations and government participate in the auditing process.	The asset Inventory and condition database is assessed through subject matter expert (SME) review at least twice per year. Other electrical corporations and government participate in the auditing process.	The asset inventory and condition of deployed lines and assets database is assessed through subject matter expert (SME) review at least four times per year. Other electrical corporations and government participate in the auditing process. Verification is complemented with more in-depth diagnosis to provide a comprehensive understanding of strengths and weaknesses of the data and collection process.

5.3.2 14. Asset inspections

Asset inspections		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Frequency	Frequency of asset inspections within HFTD and service areas. In more mature systems, inspection frequency is prioritized incorporating a dynamic, risk-informed inspection cycle based on real-time monitoring of conditions.	Asset inspections are less frequent than regulations require.	Detailed inspection and patrol inspection frequency consistent with regulations	Detailed inspections and patrol inspections of electric lines and equipment scheduled based on: 1. an up-to-date static map of equipment type and environment 2. more frequent inspections for highest risk areas 3. more frequent inspections for HFTD areas	Detailed inspections and patrol inspections of electric lines and equipment scheduled based on: 1. an up-to-date dynamic map of equipment type and environment based on real-time risk 2. more frequent inspections for highest risk areas 3. more frequent inspections for HFTD areas 4. accurate predictive modeling of equipment failure probability 5. analysis of early indicators of failure probability via analysis of actual failures 6. additional inspection types (i.e., beyond routine patrols and detailed) implemented as needed 7. 80% of line miles are continuously monitored by sensors to monitor the condition of electric lines and equipment areas with fire risk	Detailed inspections and patrol inspections of electric lines and equipment scheduled based on: 1. an up-to-date dynamic map of equipment type and environment based on real-time risk 2. more frequent inspections for highest risk areas 3. more frequent inspections for HFTD areas 4. **content of each inspection (I.e., checklist or technology being used) determined independently** by accurate predictive modeling of equipment failure probability 5. analysis of early indicators of failure probability via analysis of actual failures 6. additional inspection types (i.e., beyond routine patrols and detailed) implemented as needed 7. 95% of line miles are continuously monitored by sensors to monitor the condition of electric lines and equipment areas with fire risk

Asset inspections		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Level of sophistication	Measured parameters, procedure, and checklist during the asset inspection to determine the depth and detail (quality) of inspections. Higher maturity is achieved by having a greater ability to determine equipment failure probability, identify higher risk areas and assets.	Measured parameters and procedure during asset inspections do not allow for identifying higher risk areas and assets.	Measured parameters and procedure during asset inspections allow for identifying higher risk areas and assets.	Measured parameters and procedure during asset inspections allow for identifying higher risk areas and assets. In addition, measured parameters allow for determining equipment failure probability.	Measured parameters and procedure during asset inspections allow for identifying higher risk areas and assets. In addition, measured parameters allow for determining equipment failure probability and timing of inspections.	No additional requirements beyond level 3
QA/QC	Process to evaluate the quality of asset inspections. Higher maturity includes audit through third-party of the quality/training of inspectors and inspection outcomes.	No process in place to evaluate the quality/training of pre-inspectors and inspection outcomes.	The quality of asset inspections is assessed through subject matter expert (SME) review at least once per year.	The quality of asset inspections is assessed through subject matter expert (SME) review at least once per year. Other electrical corporations and government participate in the auditing process.	The quality of asset inspections is assessed through subject matter expert (SME) review at least twice per year. Other electrical corporations and government participate in the auditing process.	The quality of asset inspections is assessed through subject matter expert (SME) review at least four times per year. Other electrical corporations and government participate in the auditing process.

5.3.3 15. Asset maintenance and repair

Asset maintenance and repair		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Frequency	Frequency of maintenance on assets to mitigate risk-inducing failure. In more mature systems, frequency of maintenance is prioritized based on identified wildfire and PSPS risk as well as usage and environmental conditions.	Maintenance frequency is not risk-informed.	Maintenance frequency is determined based on each of the following: 1. Wildfire risk in relevant circuit 2. PSPS risk 3. Usage	Maintenance frequency is determined based on each of the following: 1. Wildfire risk in relevant circuit 2. PSPS risk 3. Usage 4. Environmental conditions	Maintenance frequency is determined based on each of the following: 1. Wildfire risk in relevant circuit 2. PSPS risk 3. Usage 4. Environmental conditions 5. Performance history 6. 95% of line miles are continuously monitored by sensors to monitor the condition of electric lines and equipment areas with fire risk	Maintenance frequency is determined based on each of the following: 1. Wildfire risk in relevant circuit 2. PSPS risk 3. Usage 4. Environmental conditions 5. Performance history 6. 95% of line miles are continuously monitored by sensors to monitor the condition of electric lines and equipment areas with fire risk
Level of sophistication	Time between inspection findings and maintenance or repair. Lower times between inspection findings and maintenance are indicative of a more mature system.	Level 1 findings (as defined in GO-95 rule 18) are not addressed immediately. Level 2 findings (as defined in GO-95 rule 18) are not addressed within the time identified in GO-95. Routine findings (level 3 as defined in GO-95 rule 18) in service area are not addressed within five (5) years.	Level 1 findings (as defined in GO-95 rule 18) **are addressed immediately**. Level 2 findings within HFTD Tier 3 are addressed **within 6 months**. Level 2 findings within HFTD Tier 2 are addressed **within 12 months.** Level 2 findings in non-HFTD areas are addressed **within 5 years.** Routine findings (level 3 as defined in GO-95 rule 18) in service area are addressed within five (5) years.	Level 1 findings (as defined in GO-95 rule 18) **are addressed immediately**. Level 2 findings within HFTD Tier 3 are addressed **within 3 months**. Level 2 findings within HFTD Tier 2 are addressed **within 6 months**. Level 2 findings in non-HFTD areas are addressed **within 1 year**. Routine findings (level 3 as defined in GO-95 rule 18) in service area are addressed within five (5) years.	Level 1 findings (as defined in GO-95 rule 18) **are addressed immediately**. Level 2 findings within HFTD Tier 3 are addressed **within 1 month.** Level 2 findings within HFTD Tier 2 are addressed **within 3 months.** Level 2 findings in non-HFTD areas are addressed **within 6 months**. Routine findings (level 3 as defined in GO-95 rule 18) in service area are addressed within five (5) years.	Level 1 findings (as defined in GO-95 rule 18) **are addressed immediately**. Level 2 findings within HFTD Tier 3 are addressed **within 2 weeks.** Level 2 findings within HFTD Tier 2 are addressed **within 1 month.** Level 2 findings in non-HFTD areas are addressed **within 3 months**. Routine findings (level 3 as defined in GO-95 rule 18) in service area are addressed within five (5) years.

Asset maintenance and repair		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
QA/QC	Process in place to evaluate the maintenance quality. Higher maturity is achieved with more robust QA/QC procedures.	No process in place to evaluate the maintenance quality or ensure the identification of compromised or aging equipment.	Maintenance quality and procedures are assessed through subject matter expert (SME) review at least once per year.	Maintenance quality and procedures are assessed through subject matter expert (SME) review at least twice per year. Other electrical corporations and government participate in the auditing process. Electrical corporation estimates equipment service life reduction based on usage and environmental conditions.	Maintenance quality and procedures are assessed through subject matter expert (SME) review at least quarterly. Other electrical corporations and government participate in the auditing process. Electrical corporation estimates equipment service life reduction based on usage and environmental conditions.	Maintenance quality and procedures are assessed through subject matter expert (SME) review at least monthly. Other electrical corporations and government participate in the auditing process. Electrical corporation estimates equipment service life reduction based on usage and environmental conditions.
Risk spend efficiency (RSE)	The utilization of risk-spend-efficiency (RSE) for maintenance prioritization. Higher maturity is achieved using other elements such as wildfire and PSPS risk, inspection findings, and vegetation management.	RSE is not used for maintenance prioritization.	At least the following elements are used for maintenance prioritization: 1. Inspection findings	At least the following elements are used for maintenance prioritization: 1. Inspection findings 2. Wildfire and PSPS risk Additionally, the degree of wildfire and PSPS risk reduction achieved by maintenance prioritization is estimated.	At least the following elements are used for maintenance prioritization: 1. Inspection findings 2. Wildfire and PSPS risk 3. Vegetation management Additionally, the degree of wildfire and PSPS risk reduction achieved by maintenance prioritization is estimated.	At least the following elements are used for maintenance prioritization: 1. Inspection findings 2. Wildfire and PSPS risk 3. Vegetation management 4. RSE Additionally, the degree of wildfire and PSPS risk reduction achieved by maintenance prioritization is estimated.

5.3.4 16. Grid design and resiliency

Grid design and resiliency		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Frequency	Frequency of grid design evaluation and circuit load assessment.	Grid design evaluation and circuit load assessment are never performed.	Grid design evaluation and circuit load assessment are performed on an annual basis.	Grid design evaluation and circuit load assessment are performed every 6 months.	Grid design evaluation and circuit load assessment are performed at least once per quarter.	No additional requirements beyond level 3
Learning and continuous improvement	The efforts the electrical corporation undertakes and funds to improve the state-of-the-art in grid design and resilience. This includes internal department of the electrical corporation or third-party institutions such as independent labs, consulting companies, research organizations, universities, etc.	No established program for developing innovative grid design to advance the state-of-the-art.	New initiatives developed and evaluated based on each of the following: 1. Installation of hardening initiatives into grid 2. Measuring direct reduction in ignition events	New initiatives developed and evaluated based on each of the following: 1. Installation of hardening initiatives into grid 2. Measuring direct reduction in ignition events 3. Measuring reduction impact on risk event metrics 4. Including an evaluation of the total cost of the initiative	New initiatives developed and evaluated based on each of the following: 1. Installation of hardening initiatives into grid 2. Measuring direct reduction in ignition events 3. Measuring reduction impact on risk event metrics **at a span level** 4. Including an evaluation of the total cost of the initiative 5. Developed and independently evaluated using lab facilities by a trained team of grid innovation specialists 6. Validated by field testing based on installation into grid	New initiatives developed and evaluated based on each of the following: 1. Installation of hardening initiatives into grid 2. Measuring direct reduction in ignition events 3. Measuring reduction impact on risk event metrics **at an asset level** 4. Including an evaluation of the total cost of the initiative 5. Developed and independently evaluated using lab facilities by a trained team of grid innovation specialists 6. Validated by field testing based on installation into grid 7. Independent auditing of performance in grid 8. Extensive data sharing with industry, academia, and other electrical corporations utilizing the same initiatives to share results

Grid design and resiliency		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Level of sophistication	Elements considered and documented during grid design, design evaluation, and grid impact evaluation. More mature systems consider evaluation of the impact of PSPS on community and egress reliance and identify high risk configuration in the existing grid based on ignition likelihood and overall risk.	The grid design, design evaluation, and grid impact evaluation do not meet the minimum expectations or requirements.	The grid design, design evaluation, and grid impact evaluation consider and document the following: 1. Geo-spatial number of customers and critical infrastructure impacted by PSPS in HFTD areas 2. Total percentage of grid localization features normalized by circuit length in HFTD areas	The grid design, design evaluation, and grid impact evaluation consider and document the following: 1. Geo-spatial number of customers and critical infrastructure impacted by PSPS in HFTD areas 2. Total percentage of grid localization features normalized by circuit length in HFTD areas 3. Number and type of specific grid localization features in HFTD areas 4. Type and location of non-electrical corporation overhead distribution equipment in HFTD areas	The grid design, design evaluation, and grid impact evaluation consider and document the following: 1. Geo-spatial number of customers and critical infrastructure impacted by PSPS in HFTD areas 2. Total percentage of grid localization features normalized by circuit length in HFTD areas 3. Number and type of specific grid localization features in HFTD areas 4. Type and location of non-electrical corporation overhead distribution equipment in HFTD areas 5. Identification of high-risk configurations in the existing grid based on ignition likelihood and overall risk	The grid design, design evaluation, and grid impact evaluation consider and document the following: 1. Geo-spatial number of customers and critical infrastructure impacted by PSPS in HFTD areas 2. Total percentage of grid localization features normalized by circuit length in HFTD areas 3. Number and type of specific grid localization features in HFTD areas 4. Type and location of non-electrical corporation overhead distribution equipment in HFTD areas 5. Identification of high-risk configurations in the existing grid based on ignition likelihood and overall risk 6. Evaluation of the design on circuits that are experiencing frequent overload operation to prioritize modifications in grid design

Grid design and resiliency		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Risk spend efficiency (RSE)	The utilization of risk-spend-efficiency (RSE) for selection/exclusion of grid design features and identify the level or risk reduction afforded by different hardening activities.	RSE is not used for selection/exclusion of grid design features and identify the level or risk reduction afforded by different hardening activities.	RSE is used for selection/exclusion of grid design features and identify the level or risk reduction afforded by different hardening activities.	RSE is used for selection/exclusion of grid design features and identify the level or risk reduction afforded by different hardening activities. Each grid hardening initiative, indicating pros, cons, and an estimate of normalized implementation cost (per circuit, circuit mile, or another appropriate metric) is described and documented.	RSE is used for selection/exclusion of grid design features and identify the level or risk reduction afforded by different hardening activities. Each grid hardening initiative, indicating pros, cons, and an estimate of normalized implementation cost (per circuit, circuit mile, or another appropriate metric) is described and documented. The degree of wildfire risk reduction achieved by each grid hardening initiative is estimated.	RSE is used for selection/exclusion of grid design features and identify the level or risk reduction afforded by different hardening activities. Each grid hardening initiative, indicating pros, cons, and an estimate of normalized implementation cost (per circuit, circuit mile, or another appropriate metric) is described and documented. The degree of wildfire risk reduction achieved by each grid hardening initiative and weight of these reductions against the cost of those initiatives are estimated.

Grid design and resiliency		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Spatial granularity	Spatial granularity of grid design evaluation.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Grid design is evaluated at a resolution <= 20 km (circuit level). The resolution of grid design evaluation is sufficient for determining each of the following: 1. The length of spans 2. Degree of circuit isolation 3. The geo-spatial number of customers and critical infrastructure impacted by PSPS of specific circuits in the HFTD	Grid design is evaluated at a resolution <= 2 km (segment level). The resolution of grid design evaluation is sufficient for determining each of the following: 1. The length of spans 2. Degree of circuit isolation 3. The geo-spatial number of customers and critical infrastructure impacted by PSPS of specific circuits in the HFTD 4. High-risk configurations in the existing grid based on ignition likelihood and overall risk	Grid design is evaluated at a resolution <= 400 m (span level). The resolution of grid design evaluation is sufficient for determining each of the following: 1. The length of spans 2. Degree of circuit isolation 3. The geo-spatial number of customers and critical infrastructure impacted by PSPS of specific circuits in the HFTD 4. High-risk configurations in the existing grid based on ignition likelihood and overall risk 5. Number and type of specific grid localization features in HFTD areas	No additional requirements beyond level 3

Grid design and resiliency		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Subject matter expert (SME) verification	Subject Matter Expert (SME) verification for grid design decisions approval.	No subject matter expert verification for grid design decisions approval.	At minimum each of the following grid design decisions is assessed through subject matter verification (SME): 1. Circuit routing 2. Determination of circuit span lengths Each of the following elements are considered during grid design decisions: 1. Resilient egress and traffic 2. Community resilience	At minimum each of the following grid design decisions is assessed through subject matter verification (SME) in collaboration with other electrical corporations and government: 1. Circuit routing 2. Determination of circuit span lengths 3. Selection of design type Each of the following elements are considered during grid design decisions: 1. Resilient egress and traffic 2. Community resilience	At minimum each of the following grid design decisions is assessed through subject matter verification (SME) in collaboration with other electrical corporations, government, and research community: 1. Circuit routing 2. Determination of circuit span lengths 3. Selection of design type 4. Integration of microgrids Each of the following elements are considered during grid design decisions: 1. Resilient egress and traffic 2. Community resilience	At minimum each of the following grid design decisions is assessed through subject matter verification (SME) in collaboration with other electrical corporations, government, and research community: 1. Circuit routing 2. Determination of circuit span lengths 3. Selection of design type 4. Integration of microgrids 5. Integration of new technologies Each of the following elements are considered during grid design decisions: 1. Resilient egress and traffic 2. Community resilience

5.3.5 17. Asset and grid personnel training and quality

Asset and grid personnel training and quality		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Documentation and disclosures	The degree to which electrical corporations collaborate and share best practices in personnel training and quality assessment.	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding the training and QA of asset maintenance and repair personnel with or from other California electrical corporations.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of asset personnel. Electrical corporation procedures include at least 1 of the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of personnel.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of personnel. Electrical corporation procedures include at least 2 of the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of personnel.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of personnel. Electrical corporation procedures include at least 3 of the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of personnel.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of personnel. Electrical corporation procedures include all the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of personnel.

Asset and grid personnel training and quality		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Frequency	Frequency at which personnel are trained.	Electrical corporation has no formal training program and no standardized training documentation.	Electrical corporation provides standard training material to all employees. Electrical corporation requires wildfire related conditions and work aspects to be discussed with work teams before daily work begins.	Electrical corporation conducts onboard training for new employees and provides standard training material on wildfire related conditions and work aspects to all relevant employees. Electrical corporation requires wildfire related conditions and work aspects to be discussed with work teams before daily work begins.	Electrical corporation conducts onboard training for new employees and provides standard training material on wildfire related conditions and work aspects to all relevant employees. Electrical corporation requires wildfire related conditions and work aspects to be discussed with work teams before daily work begins. Electrical corporation conducts refresher training on wildfire risk and work aspects for all relevant employees at least once per year.	No additional requirements beyond level 3

Asset and grid personnel training and quality		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Level of sophistication	Content covered by training	Electrical corporation training content does not address wildfire risk related conditions and work content.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for routine inspections.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for routine and detailed inspections. 4. Use of specialized equipment (e.g., LiDAR and drones) for inspecting assets for conditions that increase wildfire risk.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for routine and detailed inspections. 4. Use of specialized equipment (e.g., LiDAR and drones) for inspecting assets for conditions that increase wildfire risk. 5. Suppression of ignitions caused by workers or in the immediate vicinity of workers. 6. Simulated inspections in controlled environments with known reportable conditions.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for routine and detailed inspections. 4. Use of specialized equipment (e.g., LiDAR and drones) for inspecting assets for conditions that increase wildfire risk. 5. Suppression of ignitions caused by workers or in the immediate vicinity of workers. 6. Simulated inspections in controlled environments with known reportable conditions.

Asset and grid personnel training and quality		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
QA/QC	Verification of the effectiveness of personnel training.	Results of post construction and repair inspections and audits are not used to inform training of personnel	Results of post construction and repair inspections and audits are used to identify systematic deficiencies and recommend training improvements for electrical corporation asset management personnel based on weaknesses. Asset and grid personnel drills are conducted with pass/fail criteria	Results of post construction and repair inspections and audits are used to identify systematic deficiencies and recommend training improvements for electrical corporation and contractor asset personnel based on weaknesses annually. Asset and grid personnel drills are conducted with pass/fail criteria and at least 75% of drills are passed	Results of post construction and repair inspections and audits are used to identify systematic deficiencies and recommend training improvements for electrical corporation, contractor, and subcontractor asset management personnel based on weaknesses annually. Results of post training assessments and audits are used to identify systematic deficiencies and recommend modifications to training material for electrical corporation asset management personnel based on weaknesses. Asset and grid personnel drills are conducted with pass/fail criteria and at least 75% of drills are passed Asset and grid personnel drills are conducted at least once annually	Results of post construction and repair inspections and audits are used to identify systematic deficiencies, grade individuals, and recommend personalized pre-made and tested training modules for individual electrical corporation, contractor, and subcontractor employees based on weaknesses. Results of post training assessments and audits are used to identify systematic deficiencies and recommend modifications to training material for electrical corporation asset management personnel based on weaknesses. Asset and grid personnel drills are conducted with pass/fail criteria and at least 95% of drills are passed Asset and grid personnel drills are conducted at least once annually

5.4 D. Vegetation Management and Inspections

5.4.1 18. Vegetation inventory and condition database

Vegetation inventory and condition database		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Frequency	Frequency of updates to database from inspections. More mature systems incorporate more frequent updates to the database from inspections/activities.	Electrical corporation does not update its vegetation database at a sufficient frequency.	Database is updated within 30 days of an inspection/activity.	Database is updated within 2 weeks of an inspection/activity.	Database is updated within 1 week of an inspection/activity.	Database is updated within 1 day of an inspection/activity.
Level of sophistication	Information contained in the vegetation database that should include tree species, typical environmental conditions, and vegetation growth rate in inspection prioritization. Higher maturity is achieved by recording of more specific information on the tree species and expected growth rates to prioritize future inspections.	Information in the vegetation database do not meet the minimum expectations or requirements.	Information in the vegetation database at a minimum includes the following: 1. All vegetation within the right of way and within strike potential of the assets 2. Logs documenting findings and remedial actions taken 3. General information on the tree such as common name and genus 4. Typical environmental conditions such as slope, aspect, soil type, and wind exposure	Information in the vegetation database at a minimum includes the following: 1. All vegetation within the right of way and within strike potential of the assets 2.Logs documenting findings and remedial actions taken 3. General information on the tree such as common name, genus, and species 4. Typical environmental conditions such as slope, aspect, soil type, and wind exposure. 5. Individual high risk-trees across grid	Information in the vegetation database at a minimum includes the following: 1. All vegetation within the right of way and within strike potential of the assets 2.Logs documenting findings and remedial actions taken 3. General information on the tree such as common name, genus, and species 4. Typical environmental conditions such as slope, aspect, soil type, and wind exposure 5. Individual high risk-trees across grid 6. Vegetation growth rate for inspection prioritization	Information in the vegetation database at a minimum includes the following: 1. All vegetation within the right of way and within strike potential of the assets 2. Logs documenting findings and remedial actions taken 3. General information on the tree such as common name, genus, and species 4. Typical environmental conditions such as slope, aspect, soil type, and wind exposure 5. Individual high risk-trees across grid 6. Vegetation growth rate for inspection prioritization 7. Up-to-date tree health and moisture content to determine risk of ignition and propagation

Vegetation inventory and condition database		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
QA/QC	Process to evaluate the accuracy of vegetation database. Higher maturity includes a well-defined auditing process of the vegetation database.	No process in place to evaluate vegetation database.	Vegetation database is assessed through subject matter expert (SME) review **at least once per year**.	Vegetation database is assessed through subject matter expert (SME) review **at least once per year**. QA/QC processes and procedures for ensuring data quality in the vegetation database are benchmarked with other electrical corporations.	Vegetation database is assessed through subject matter expert (SME) review **at least twice per year**. QA/QC processes and procedures for ensuring data quality in the vegetation database are benchmarked with other electrical corporations.	Vegetation database is assessed through subject matter expert (SME) review **at least four times per year**. QA/QC processes and procedures for ensuring data quality in the vegetation database are benchmarked with other electrical corporations. Electrical corporation internal audits are complemented with more in-depth analyses to provide a comprehensive understanding of strengths and weaknesses of the data and collection process.
Spatial granularity	Spatial granularity of the vegetation inventory along rights of way, and vegetation with strike potential, including condition of each vegetation.	Electrical corporation does not meet the minimum expectations for resolution reporting.	Vegetation inventory and condition are evaluated at a resolution <= 20 km (Circuit level). The resolution of vegetation inventory is sufficient for identifying higher risk areas and vegetation at the circuit level.	Vegetation inventory and condition are evaluated at a resolution <= 2 km (Segment level) The resolution of vegetation inventory is sufficient for identifying higher risk areas and vegetation at the circuit segment level.	Vegetation inventory and condition are evaluated at a resolution <= 400 m (Span level). The resolution of vegetation inventory is sufficient for identifying higher risk areas and vegetation at the span level.	Vegetation inventory and condition are evaluated at a resolution <= 15 m (Asset level). The resolution of vegetation inventory is sufficient for identifying higher risk areas and vegetation at the asset level.

5.4.2 19. Vegetation inspections

Vegetation inspections		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Frequency	Frequency of inspections for the entire grid and HFTD areas. In more mature systems, inspection frequency is prioritized based on risk modeling, and have a shorter window between Level 1 and Level 2/Level 3 inspections.	Inspections are less frequent than regulations require.	Vegetation inspections for the entire grid and HFTD areas are conducted at least annually.	Vegetation inspections for the entire grid and HFTD areas are conducted at least every 6 months. The inspection frequency is prioritized based on risk modeling considering predicted species-specific vegetation growth and equipment type for each circuit of the service territory	Vegetation inspections for the entire grid and HFTD areas are conducted at least every 6 months. The inspection frequency is prioritized based on risk modeling considering predicted species-specific vegetation growth, tree health, and other vegetation risk factors along with equipment type and age for each span of the service territory to conduct more frequent inspections in less healthy areas. The frequency of inspections allow for understanding vegetation growth, characteristics, and failure probability.	Vegetation inspections for the entire grid and HFTD areas are conducted at least every 3 months. The inspection frequency is prioritized based on risk modeling considering predicted species-specific vegetation growth, tree health, and other continuously monitored vegetation risk factors along with equipment type, age, condition, and operating history for each asset of the service territory to conduct more frequent inspections in areas with high rates of dead or dying vegetation. The frequency of inspections allows for understanding vegetation growth, characteristics, failure probability, and timing inspections.

Vegetation inspections		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Level of sophistication	Measured parameters, procedure, and checklist during the vegetation inspection to determine the depth and detail (quality) of inspections. Higher maturity is achieved by having a greater ability to identify higher risk areas.	Measured parameters and procedure during vegetation inspections do not allow for identifying higher risk areas and vegetation.	Measured parameters and procedure during detailed vegetation inspections allow for identifying higher risk areas and vegetation.	Measured parameters and procedure during detailed vegetation inspections allow for identifying higher risk areas and vegetation. The electrical corporation describes the types of inspections and the procedure performed and parameters that should be measured in each one.	Measured parameters and procedure during detailed vegetation inspections allow for identifying higher risk areas and vegetation. The electrical corporation describes the types of inspections and the procedure performed and parameters that should be measured in each one. The parameters measured during detailed inspections allow for understanding vegetation growth, characteristics, and failure probability.	Measured parameters and procedure during detailed vegetation inspections allow for identifying higher risk areas and vegetation. The electrical corporation describes the types of inspections and the procedure performed and parameters that should be measured in each one. The parameters measured during detailed inspections allow for understanding vegetation growth, characteristics, failure probability, and timing inspections.
QA/QC	Process to evaluate the quality of vegetation inspections. Higher maturity includes audit through third-party of the quality/training of inspectors and inspection outcomes.	No process in place to evaluate the quality/training of inspectors and inspection outcomes.	Vegetation inspections are assessed through subject matter expert (SME) review **at least once per year**.	Vegetation inspections are assessed through subject matter expert (SME) review **at least once per year**. QA/QC processes and procedures for ensuring vegetation inspections are benchmarked with other electrical corporations.	Vegetation inspections are assessed through subject matter expert (SME) review **at least twice per year**. QA/QC processes and procedures for ensuring vegetation inspections are benchmarked with other electrical corporations.	Vegetation inspections are assessed through subject matter expert (SME) review **at least four times per year**. QA/QC processes and procedures for ensuring vegetation inspections are benchmarked with other electrical corporations.

Vegetation inspections		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Risk spend efficiency (RSE)	The utilization of risk-spend-efficiency (RSE) for making decisions regarding vegetation inspections. High maturity involves utilizing risk-spend-efficiency (RSE) in determining which areas in the electrical corporation service area should be prioritized in conducting more frequent and/or more in-depth inspections.	RSE is not used to determine areas subjected to vegetation inspections.	RSE is utilized to determine areas that should be prioritized in conducting more frequent inspections.	RSE is utilized to determine areas that should be prioritized in conducting more frequent inspections. RSE is used to determine the inspection level.	RSE is utilized to determine areas that should be prioritized in conducting more frequent inspections. RSE is used to determine the inspection level. The degree of risk reduction achieved by inspections and specific initiatives is estimated.	RSE is utilized to determine areas that should be prioritized in conducting more frequent inspections. RSE is used to determine the inspection level. The degree of risk reduction achieved by inspections and specific initiatives is estimated. Relative risk reduction and the cost of inspections are considered in strategy development.

5.4.3 20. Vegetation treatment ~~and removal~~

Vegetation treatment ~~and removal~~		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Anticipation	The electrical corporation capacity of anticipating reducing risk considering historic trends (e.g., refusal rates, periodic grow-in findings, etc.) in the geo-spatial regions of their service area to prioritize mitigation efforts. Higher maturity includes modifying the grid design to reduce risk based on these observed trends.	The electrical corporation does not consider historic trends (e.g., refusal rates, periodic grow-in findings, etc.) to prioritize mitigation efforts.	The electrical corporation considers historic trends (e.g., refusal rates, periodic grow-in findings, etc.) in the geo-spatial regions of their service area to prioritize mitigation efforts.	The electrical corporation considers historic trends (e.g., refusal rates, periodic grow-in findings, etc.) in the geo-spatial regions of their service area to prioritize mitigation efforts. Re-evaluation of the grid design is performed based on historic trends.	The electrical corporation considers historic trends (e.g., refusal rates, periodic grow-in findings, etc.) in the geo-spatial regions of their service area to prioritize mitigation efforts. Revaluation of the grid design is performed based on historic trends. Decisions related to increasing isolation of affected circuits or integration of advanced sensor ~~systems such as fast trip~~(e.g., protective equipment and device settings) to reduce the likelihood of ignition from grow-in are based on historic trends.	No additional requirements beyond level 3

Vegetation treatment ~~and removal~~		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Level of sophistication	Time between inspection findings or predictive model results (such as species-specific vegetative growth and limb, trunk, or root failure rates) and vegetation trimming. More mature systems respond quickly to findings from inspections. This scoring also includes the removal time after trimming and vegetative waste disposal outside the wildland (e.g., routine treatment versus dying tree which is likely to fall on a line).	The electrical corporation does not perform any mitigation efforts to routine findings from inspections. In addition, the electrical corporation does not remove vegetative waste outside the wildland (e.g., in a homeowner's yard, along a street, etc.).	The electrical corporation responds to findings from inspections within thirty (30) days. The electrical corporation responds to severe findings (e.g., dying tree which is likely to fall on a line) from inspections within seven (7) days. The electrical corporation removes vegetative waste after trimming and outside the wildland (e.g., in a homeowner's yard, along a street, etc.) within 1 week after disposal.	The electrical corporation responds to findings from inspections within 1 week or less. The electrical corporation responds to severe findings (e.g., dying tree which is likely to fall on a line) from inspections within sixteen (16) hours. The electrical corporation systematically removes vegetative waste after trimming and outside the wildland (e.g., in a homeowner's yard, along a street, etc.) within 3 days after trimming.	The electrical corporation responds to findings from inspections on the same day. The electrical corporation responds to severe findings (e.g., dying tree which is likely to fall on a line) from inspections within eight (8) hours. The electrical corporation systematically removes vegetative waste after trimming and outside the wildland (e.g., in a homeowner's yard, along a street, etc.) on the same day after disposal. The electrical corporation proactively trims trees based on predictive model results (such as species-specific vegetative growth and limb, trunk, or root failure rates).	The electrical corporation responds to findings from inspections on the same day. The electrical corporation responds to severe findings (e.g., dying tree which is likely to fall on a line) from inspections within four (4) hours. The electrical corporation systematically removes vegetative waste after trimming and outside the wildland (e.g., in a homeowner's yard, along a street, etc.) on the same day after disposal, **informing relevant communities of removal**. The electrical corporation proactively trims trees based on predictive model results (such as species-specific vegetative growth and limb, trunk, or root failure rates).

Vegetation treatment ~~and removal~~		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
QA/QC	Process to evaluate the quality of vegetation trimming and training tree contractors.	No process in place to evaluate the quality of vegetation trimming.	The quality of vegetation trimming is assessed through post vegetation treatment inspections of employee and contractor work and non-conformances are corrected through additional treatment. QA/QC information is used identify deficiencies in inspection procedures and execution.	The quality of vegetation trimming is assessed through post vegetation treatment inspections of employee and contractor work and non-conformances are corrected through additional treatment. QA/QC information is used identify deficiencies in inspection procedures and execution. Procedures are updated to address deficiencies identified from QA/QC information at least once per year. Contractors and subcontractors are required to follow processes and standards set forth for the electrical corporation	The quality of vegetation trimming is assessed through post vegetation treatment inspections of employee and contractor work and non-conformances are corrected through additional treatment. QA/QC information is used identify deficiencies in inspection procedures and execution. Procedures are updated to address deficiencies identified from QA/QC information at least once per quarter. Contractors and subcontractors are required to follow processes and standards set forth for the electrical corporation	The quality of vegetation trimming is assessed through post vegetation treatment inspections of employee and contractor work and non-conformances are corrected through additional treatment. QA/QC information is used identify deficiencies in inspection procedures and execution. Procedures are updated to address deficiencies identified from QA/QC information at least once per month. Contractors and subcontractors are required to follow processes and standards set forth for the electrical corporation
Risk spend efficiency (RSE)	The utilization of risk-spend-efficiency (RSE) for vegetation mitigation planning.	RSE is not used to plan vegetation mitigation efforts.	RSE is utilized to plan vegetation mitigation efforts.	RSE is utilized to plan vegetation mitigation efforts. Additionally, the degree of wildfire risk reduction achieved by specific vegetation management initiatives is estimated.	RSE is utilized to plan vegetation mitigation efforts. Additionally, the degree of wildfire risk reduction achieved by specific vegetation management initiatives is estimated. The degree of wildfire risk reduction achieved by each initiative and the cost of those initiatives are considered in strategy development.	No additional requirements beyond level 3

5.4.4 21. Vegetation personnel training and quality

Vegetation personnel training and quality		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Documentation and disclosures	The degree to which electrical corporations collaborate and share best practices in personnel training and quality assessment.	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding the training and QA of vegetation personnel with or from other California electrical corporations.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of vegetation personnel. Electrical corporation procedures include at least 1 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of vegetation personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of vegetation personnel.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of vegetation personnel. Electrical corporation procedures include at least 2 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of vegetation personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of vegetation personnel.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of vegetation personnel. Electrical corporation procedures include at least 3 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of vegetation personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of vegetation personnel.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the training and QA of vegetation personnel. Electrical corporation procedures include all the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the training and QA of vegetation personnel. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the training and QA of vegetation personnel.

Vegetation personnel training and quality		**Maturity Level**				
~~Scoring Philosophy~~Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	Frequency at which personnel are trained.	Electrical corporation has no formal training program and no standardized training documentation.	Electrical corporation provides standard training material to all employees. Electrical corporation requires wildfire related conditions and work aspects to be discussed with work teams before daily work begins.	Electrical corporation conducts onboard training for new employees and provides standard training material on wildfire related conditions and work aspects to all relevant employees. Electrical corporation requires wildfire related conditions and work aspects to be discussed with work teams before daily work begins.	Electrical corporation conducts onboard training for new employees and provides standard training material on wildfire related conditions and work aspects to all relevant employees. Electrical corporation requires wildfire related conditions and work aspects to be discussed with work teams before daily work begins. Electrical corporation conducts refresher training on wildfire risk and work aspects for all relevant employees at least once per year.	No additional requirements beyond level 3

Vegetation personnel training and quality		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Level of sophistication	Content covered by training	Electrical corporation training content does not address wildfire risk related conditions and work content.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for basic vegetation inspections.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for basic and detailed vegetation inspections. 4. Use of specialized equipment (e.g., LiDAR and drones) for inspecting vegetation conditions that increase wildfire risk.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for basic and detailed vegetation inspections. 4. Use of specialized equipment (e.g., LiDAR and drones) for inspecting vegetation conditions that increase wildfire risk. 5. Suppression of ignitions caused by workers or in the immediate vicinity of workers. 6. Simulated inspections in controlled environments with known reportable conditions.	Electrical corporation training content includes the following: 1. Wildfire related conditions and work aspects expected to be encountered in the field. 2. Process for reporting ignitions caused by workers or in the immediate vicinity of workers. 3. Procedures and protocols for basic and detailed vegetation inspections. 4. Use of specialized equipment (e.g., LiDAR and drones) for inspecting vegetation conditions that increase wildfire risk. 5. Suppression of ignitions caused by workers or in the immediate vicinity of workers. 6. Simulated inspections in controlled environments with known reportable conditions.

Vegetation personnel training and quality		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
QA/QC	Verification of the effectiveness of personnel training.	Results of post treatment inspections and audits are not used to inform training of personnel	Results of post treatment inspections and audits are used to identify systematic deficiencies, and recommend training for electrical corporation vegetation management personnel based on weaknesses Vegetation personnel drills are conducted with pass/fail criteria	Results of post treatment inspections and audits are used to identify systematic deficiencies and recommend training for electrical corporation and contractor vegetation personnel based on weaknesses. Vegetation personnel drills are conducted with pass/fail criteria and at least 75% of drills are passed	Results of post treatment inspections and audits are used to identify systematic deficiencies and recommend training for electrical corporation, contractor, and subcontractor vegetation management personnel based on weaknesses. Results of post training assessments and audits are used to identify systematic deficiencies and recommend modifications to training material for electrical corporation vegetation management personnel based on weaknesses. Vegetation personnel drills are conducted with pass/fail criteria and at least 75% of drills are passed Vegetation personnel drills are conducted at least once annually	Results of post treatment inspections and audits are used to identify systematic deficiencies, grade individuals, and recommend personalized pre-made and tested training for individual electrical corporation, contractor, and subcontractor employees based on weaknesses. Results of post training assessments and audits are used to identify systematic deficiencies, and recommend modifications to training material for electrical corporation vegetation management personnel based on weaknesses. Vegetation personnel drills are conducted with pass/fail criteria and at least 95% of drills are passed Vegetation personnel drills are conducted at least once annually

5.5 E. Grid Operations and Protocols

5.5.1 22. Protective equipment and device settings

Protective equipment and device settings		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Automation	The degree of automation used in setting thresholds for grid elements and protective equipment.	Electrical corporation does not automatically set sensitivity of grid elements and protective equipment.	Electrical corporation has multiple sets of thresholds for grid elements and protective equipment programmed locally at the device	Electrical corporation has multiple sets of thresholds for grid elements and protective equipment selected remotely	Electrical corporation has multiple sets of thresholds for grid elements and protective equipment automatically selected remotely based on RFW and area-wide fuel moisture conditions	Electrical corporation has multiple sets of thresholds for grid elements and protective equipment automatically selected remotely based on RFW and fuel moisture conditions on individual circuit segments

Protective equipment and device settings		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Learning and improvement	The degree to which Electrical corporation exchanges on a regular basis best practices and lessons learned with other California electrical corporations and implements information from other electrical corporations regarding the utilization and operation of protective equipment.	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding the utilization and operation of protective equipment with or from other California electrical corporations.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the utilization and operation of protective equipment. Electrical corporation procedures include at least 1 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the utilization and operation of protective equipment. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the utilization and operation of protective equipment.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the utilization and operation of protective equipment. Electrical corporation procedures include at least 2 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the utilization and operation of protective equipment. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the utilization and operation of protective equipment.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the utilization and operation of protective equipment. Electrical corporation procedures include at least 3 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the utilization and operation of protective equipment. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the utilization and operation of protective equipment.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the utilization and operation of protective equipment. Electrical corporation procedures include all the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the utilization and operation of protective equipment. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the utilization and operation of protective equipment.

Protective equipment and device settings		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Level of sophistication	The amount of information used to determine appropriate thresholds for protective devices and implementation	Electrical corporation does not consider current wildfire threat conditions for setting appropriate fault thresholds for protective devices.	Electrical corporation does appropriately adjust control settings on protective devices for high wildfire threat weather conditions. Electrical corporation monitors and documents fault events that occur. Electrical corporation records data on the effectiveness of adjusted control settings.	Electrical corporation does appropriately adjust control settings on protective devices for high wildfire threat weather conditions. Electrical corporation monitors and documents fault events that occur. Electrical corporation records data on the effectiveness of adjusted control settings and continuously improves setting thresholds.	Electrical corporation does appropriately adjust control settings on protective devices **based on predictive risk modeling** for high wildfire threat weather conditions. Electrical corporation monitors and documents fault events that occur. Electrical corporation records data on the effectiveness of adjusted control settings and continuously improves setting thresholds.	No additional requirements beyond level 3
QA/QC	The amount of review conducted of the policies, procedures, and conditions used for grid elements and protective equipment	Policies and procedures for determining and applying thresholds of grid elements and protective equipment as well as inspecting equipment following de-energization do not undergo SME review.	Policies and procedures for determining and applying thresholds of grid elements and protective equipment as well as inspecting equipment following de-energization undergo SME review at least **once per year**	No additional requirements beyond level 1	Policies and procedures for determining and applying thresholds of grid elements and protective equipment as well as inspecting equipment following de-energization undergo SME review at least **once per 6 months**	Policies and procedures for determining and applying thresholds of grid elements and protective equipment as well as inspecting equipment following de-energization undergo SME review at least **once per quarter**
Spatial granularity	The fraction and location of circuits protected by ~~fast~~ protective equipment and device settings within an electrical corporation's service area	Electrical corporation does not incorporate ~~fast~~ protective equipment and device settings into grid	No additional requirements beyond level 0	Electrical corporation incorporates ~~fast~~ protective equipment and device settings into **50% grid within HFTDs**	Electrical corporation incorporates ~~fast~~ protective equipment and device settings into **75% grid within HFTDs**	Electrical corporation incorporates ~~fast~~ protective equipment and device settings into **entire grid within HFTDs**

Protective equipment and device settings		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Standardized processes	The degree to which policies and procedures to set grid element and protective equipment sensitivities is standardized. This includes evaluation of conditions, determination of sensitivities, and re-energization of de-energized equipment	Electrical corporation does not have a predetermined protocol for determining the sensitivity of grid elements and protective equipment based on current fire risk conditions.	Electrical corporation does not have a predetermined protocol for determining the sensitivity of grid elements and protective equipment based on current fire risk conditions. Electrical corporation has procedures in place to inspect assets after de-energization by protective equipment.	No additional requirements beyond level 1	Electrical corporation has a predetermined protocol for determining the sensitivity of grid elements and protective equipment based on current fire risk conditions. Electrical corporation has procedures in place to inspect assets after de-energization by protective equipment.	Electrical corporation has automatic protocol for determining the sensitivity of grid elements and protective equipment based on current fire risk conditions. Electrical corporation has procedures in place to inspect assets after de-energization by protective equipment as well as when protective equipment causes intermittent de-energization.

5.5.2 23. Incorporation of ignition risk factors in grid control

Incorporation of ignition risk factors in grid control		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Anticipation	The level to which the electrical corporation uses historical operating details to inform grid operation and health.	Electrical corporation does not consider operating history when determining the left expectancy of equipment.	No additional requirements beyond level 0	Electrical corporation uses predictive modeling to shorten the expected life of equipment based on documented grid operating history Electrical corporation uses data on faults to prioritize response on individual circuits in high-risk areas.	Electrical corporation uses predictive modeling to shorten the expected life of equipment based on documented grid operating history and replaces the equipment before predicted failure Electrical corporation uses data on faults to prioritize response on individual circuits in high-risk areas.	No additional requirements beyond level 3
Documentation and disclosures	The ability of the electrical corporation to document the operational history of equipment, particularly when operating above nameplate capacity	Electrical corporation does not record when operating equipment above current carrying capacity	Electrical corporation tracks and documents electric operational history of circuits when operating equipment above current carrying capacity at the circuit level	No additional requirements beyond level 1	Electrical corporation tracks and documents electric operational history of assets continuously and flags when ratings are exceeded.	No additional requirements beyond level 3

Incorporation of ignition risk factors in grid control		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Learning and improvement	The degree to which Electrical corporation exchanges on a regular basis best practices and lessons learned with other California electrical corporations and implements information from other electrical corporations regarding the use of ignition risk factors in grid control.	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding the use of ignition risk factors in grid control with or from other California electrical corporations.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the use of ignition risk factors in grid control. Electrical corporation procedures include at least 1 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the use of ignition risk factors in grid control. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the use of ignition risk factors in grid control.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the use of ignition risk factors in grid control. Electrical corporation procedures include at least 2 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the use of ignition risk factors in grid control. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the use of ignition risk factors in grid control.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the use of ignition risk factors in grid control. Electrical corporation procedures include at least 3 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the use of ignition risk factors in grid control. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the use of ignition risk factors in grid control.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the use of ignition risk factors in grid control. Electrical corporation procedures include all the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the use of ignition risk factors in grid control. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the use of ignition risk factors in grid control.

Incorporation of ignition risk factors in grid control		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
QA/QC	The amount of SME review conducted on the processes and models used in grid control	Process for wildfire risk incorporation and predictive modeling of equipment expected life are not reviewed by SME	No additional requirements beyond level 0	Process for incorporating wildfire risk in determination of electric control limits beyond current carrying capacity undergoes SME review at least once per year.	Process for incorporating wildfire risk in determination of electric control limits beyond equipment current carrying capacity undergoes SME review at least once per year. Predictive model used for shortening the expected life of equipment undergoes SME review at least once per year.	Process for incorporating wildfire risk in determination of electric control limits beyond equipment current carrying capacity undergoes SME review at least once per 6 months. Predictive model used for shortening the expected life of equipment undergoes SME review at least once per 6 months.
Standardized processes	The amount of standardization of grid operation control procedures and the extent to which equipment is operated beyond nameplate capacity.	Electrical corporation does not have process for incorporating wildfire risk in determination of electric control limits beyond equipment nameplate capacities.	Electrical corporation has a clearly defined process for incorporating wildfire risk in determination of electric control limits beyond equipment nameplate capacities	No additional requirements beyond level 1	No additional requirements beyond level 1	Equipment is never operated above nameplate capacity within HFTD areas

5.5.3 24. PSPS operating model

PSPS operating model		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Effectiveness	The amount and effectiveness of communication to the community about PSPS events as well as the amount of support provided by the electrical corporation to the community to mitigate PSPS impacts	Electrical corporation communicates upcoming PSPS events to <95% of affected customers and <99% of medical baseline customers. Electrical corporation website goes offline during communication about PSPS events or during PSPS events. Electrical corporation does not provide resources to mitigate PSPS impact to customers.	Electrical corporation communicates upcoming PSPS events to >95% of affected customers and >99% of medical baseline customers. Electrical corporation website remains online during communication about PSPS events and during the PSPS events. Electrical corporation provides resources to mitigate PSPS impact to all customers including water and phone charging.	Electrical corporation communicates upcoming PSPS events to >98% of affected customers and >99.5% of medical baseline customers. Electrical corporation website remains online during communication about PSPS events and during the PSPS events. Electrical corporation has fewer than 0.5% of customers complain of lack of communication. Electrical corporation provides resources to mitigate PSPS impact to all customers including water and phone charging.	Electrical corporation communicates upcoming PSPS events to >99% of affected customers and >99.9% of medical baseline customers. Electrical corporation website remains online during communication about PSPS events and during the PSPS events. Electrical corporation has fewer than 0.5% of customers complain of lack of communication. Electrical corporation provides resources to mitigate PSPS impact to all customers including water and phone charging. Electrical corporation provides additional resources to vulnerable and other select customers to mitigate PSP impact (such as backup generators and batteries).	Electrical corporation communicates upcoming PSPS events to >99.9% of affected customers and 100% of medical baseline customers. Electrical corporation website remains online during communication about PSPS events and during the PSPS events. Electrical corporation has fewer than 0.5% of customers complain of lack of communication. Electrical corporation provides resources to mitigate PSPS impact to all customers including water and phone charging. Electrical corporation provides additional resources to vulnerable and other select customers to mitigate PSP impact (such as backup generators and batteries).

PSPS operating model		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Learning and improvement	The degree to which Electrical corporation exchanges on a regular basis best practices and lessons learned with other California electrical corporations and implements information from other electrical corporations regarding PSPS implementation.	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding the effective implementation PSPS with or from other California electrical corporations.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the effective implementation PSPS.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the effective implementation PSPS. Electrical corporation procedures include at least 2 of the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the effective implementation PSPS. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the effective implementation PSPS.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the effective implementation PSPS. Electrical corporation procedures include all the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the effective implementation PSPS. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the effective implementation PSPS.	No additional requirements beyond level 3

PSPS operating model		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Level of sophistication	The factors used in determining whether to initiate a PSPS as well as frequency of PSPS events initiated by the electrical corporation	Electrical corporation has more than 1 hour of average PSPS per customer per year.	Electrical corporation has less than 1 hour of average PSPS per customer per year. Electrical corporation considers ignition likelihood associated with upcoming conditions in initiating a PSPS event	Electrical corporation has less than 0.5 hours of average PSPS per customer per year. Electrical corporation considers overall PSPS risk to general population in initiating a PSPS event	Electrical corporation has less than 0.25 hours of average PSPS per customer per year. Electrical corporation considers overall PSPS risk to general population as well as critical facilities and vulnerable populations in initiating a PSPS event. Electrical corporation maintains grid in a sufficiently low risk condition to only require PSPS events due to damaged equipment, contact with a foreign object, or maintain safety of suppression and other personnel.	Electrical corporation has less than 0.1 hours of average PSPS per customer per year. Electrical corporation considers overall PSPS risk to general population as well as critical facilities and vulnerable populations in initiating a PSPS event. Electrical corporation maintains grid in a sufficiently low risk condition to only require PSPS events due to damaged equipment, contact with a foreign object, or maintain safety of suppression and other personnel. PSPS events are conducted such that de-energized circuits have sufficient redundancy to create not disruption in energy supply to customers.
QA/QC	The amount and frequency of material regarding PSPS initiation that is reviewed by SMEs.	Policies and procedures as well as ignition and risk thresholds to initiate a PSPS do not undergo SME review. SME review is conducted as part of PSPS initiation decisions	No additional requirements beyond level 0	Policies and procedures as well as risk thresholds used to initiate a PSPS event undergo SME review at least once per year.	No additional requirements beyond level 2	Policies and procedures as well as risk thresholds used to initiate a PSPS event undergo SME review at least once per year and after every PSPS event.
Standardized processes	The level of standardization for thresholds and conditions used to initiate a PSPS event	Electrical corporation has no well-defined and clearly explained thresholds and conditions for initiation PSPS	Electrical corporation has explicitly and well-defined policies, thresholds, and conditions for PSPS initiation	No additional requirements beyond level 1	No additional requirements beyond level 1	No additional requirements beyond level 1

PSPS operating model		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Validation	The ability of the electrical corporation to accurately initiate or not initiate PSPS events when conditions warrant	Electrical corporation PSPS events are initiated with more than 50% of events occurring when actual conditions would not warrant a PSPS.	Electrical corporation PSPS events are appropriately initiated with fewer than 50% of events occurring when actual conditions would not warrant a PSPS	Electrical corporation PSPS events are appropriately initiated with fewer than 33% of events occurring when actual conditions would not warrant a PSPS	Electrical corporation PSPS events are appropriately initiated with fewer than 25% of events occurring when actual conditions would not warrant a PSPS	Electrical corporation PSPS events are appropriately initiated with fewer than 10% of events occurring when actual conditions would not warrant a PSPS

5.5.4 25. Protocols for PSPS re-energization

Protocols for PSPS re-energization		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Automation	The degree of advanced equipment and techniques used in inspecting the lines prior to re-energization.	Electrical corporation uses only manual processes to inspect de-energized circuits prior to re-energization.	No additional requirements beyond level 0	Electrical corporation uses automated processes (such as drones or LiDAR) to inspect at least 33% of de-energized circuits prior to re-energization.	Electrical corporation uses automated processes (such as drones or LiDAR) to inspect at least 66% of de-energized circuits prior to re-energization.	Electrical corporation uses automated processes (such as drones or LiDAR) to inspect at least 90% of de-energized circuits prior to re-energization.
Effectiveness	The amount and effectiveness of communication to the community about PSPS re-energization as well as the amount of support provided by the electrical corporation to the community to mitigate PSPS impacts	Electrical corporation does not communicate re-energization process and timeline with owners of non-electrical corporation overhead distribution equipment.	Electrical corporation notifies owners of non-electrical corporation overhead distribution equipment of re-energization process and timeline to help prevent backfeed of power from these systems in HFTD areas.	No additional requirements beyond level 1	Electrical corporation notifies owners of non-electrical corporation overhead distribution equipment of re-energization process and timeline to help prevent backfeed of power from these systems over entire service territory	No additional requirements beyond level 3
Frequency	The amount of delay in communication to the community about PSPS re-energization.	Electrical corporation requires more than 24 hours after conditions requiring PSPS have ended to restore service to the grid.	Electrical corporation restores service to the grid within 24 hours of conditions returning below electrical corporation's PSPS threshold.	Electrical corporation restores service to the grid within 12 hours of conditions returning below electrical corporation's PSPS threshold.	Electrical corporation restores service to the grid within 4 hours of conditions returning below electrical corporation's PSPS threshold.	Electrical corporation restores service to the grid within 2 hours of conditions returning below electrical corporation's PSPS threshold.

Protocols for PSPS re-energization		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Learning and improvement	The degree to which Electrical corporation exchanges on a regular basis best practices and lessons learned with other California electrical corporations and implements information from other electrical corporations regarding PSPS re-energization.	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding the effective implementation PSPS with or from other California electrical corporations.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the effective implementation PSPS. Electrical corporation procedures include at least 1 of the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the effective implementation PSPS. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the effective implementation PSPS.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the effective implementation of PSPS. Electrical corporation procedures include at least 2 of the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the effective implementation PSPS. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the effective implementation PSPS.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the effective implementation of PSPS. Electrical corporation procedures include at least 3 of the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the effective implementation PSPS. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the effective implementation PSPS.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding the effective implementation of PSPS. Electrical corporation procedures include all the following: 1. Actively seeking information from and providing information to other electrical corporations. 2. Has a consistent format and venue/medium through which information is exchanged. 3. Participation in annual benchmarking exercises to identify areas of improvement regarding the effective implementation PSPS. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding the effective implementation PSPS.
Level of sophistication	The level of inspections of de-energized circuits the Electrical corporation performs prior to re-energization	Electrical corporation does not conduct adequate inspections of de-energized circuits prior to re-energization.	Electrical corporation performs adequate inspections of de-energized circuits prior to re-energization	No additional requirements beyond level 1	No additional requirements beyond level 1	No additional requirements beyond level 1

Protocols for PSPS re-energization		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
QA/QC	The amount and frequency of material regarding PSPS re-energization that is reviewed by SMEs.	Electrical corporation does not review after-event inspection procedures and causes after-event ignitions during re-energization.	Electrical corporation performs SME review of after-event inspection procedures at least once per year. Electrical corporation causes at least 1 after-event ignition during re-energization	Electrical corporation performs SME review of after-event inspection procedures at least once per year. Electrical corporation causes 0 after-event ignitions during re-energization.	No additional requirements beyond level 2	No additional requirements beyond level 2

5.5.5 26. Ignition prevention and suppression

Ignition prevention and suppression		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Documentation and disclosures	The electrical corporation shares internally developed and adopted ignition and suppression activities and procedures with other electrical corporations.	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding ignition prevention and suppression with or from other California electrical corporations.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression. Electrical corporation procedures include at least 1 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding ignition prevention and suppression. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding ignition prevention and suppression.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression. Electrical corporation procedures include at least 2 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding ignition prevention and suppression. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding ignition prevention and suppression.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression. Electrical corporation procedures include at least 3 of the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding ignition prevention and suppression. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding ignition prevention and suppression.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression. Electrical corporation procedures include all the following: 1. Actively seeking information from and providing information to other electrical corporations 2. Has a consistent format and venue/medium through which information is exchanged 3. Participation in annual benchmarking exercises to identify areas of improvement regarding ignition prevention and suppression. 4. Standard process for testing applicability of best practices and lessons learned of other electrical corporations regarding ignition prevention and suppression.

Ignition prevention and suppression		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Level of sophistication	The Electrical corporation has capabilities of controlling any ignitions on-site or provides rapid real-time reporting of ignition events.	Electrical corporation does not provide workers with communication or suppression tools to report and suppress ignitions caused by workers or in the vicinity of workers.	Electrical corporation provides communication equipment tools to immediate report ignitions caused by workers or in the vicinity of workers.	Electrical corporation provides communication equipment tools to immediate report ignitions caused by workers or in the vicinity of workers. Electrical corporation provides suppression tools to immediate suppress ignitions caused by workers or in the vicinity of workers.	Electrical corporation provides communication equipment tools that function without cell reception to immediate report ignitions caused by workers or in the vicinity of workers. Electrical corporation provides a variety of suppression tools to immediate suppress ignitions caused by workers or in the vicinity of workers.	Electrical corporation provides communication equipment tools that function without cell reception to immediate report ignitions caused by workers or in the vicinity of workers and requires contractors and subcontractors to do the same. Electrical corporation provides a variety of suppression tools to immediate suppress ignitions caused by workers or in the vicinity of workers.
Standardized processes	The Electrical corporation process for asset and vegetation management Teams is clear, explicit, and standardized on wildfire avoidance, suppression, and reporting.	Electrical corporation has no policies dictating the role of personnel in reporting and suppressing ignitions.	Electrical corporation has explicitly defined policies and procedures dictating the role of electrical corporation employees at the site of ignition.	Electrical corporation has explicitly defined policies and procedures dictating the role of electrical corporation, contractor, and subcontractor employees at the site of ignition.	No additional requirements beyond level 2	Electrical corporation has explicitly defined policies and procedures dictating the role of electrical corporation, contractor, and subcontractor employees at the site of ignition. Electrical corporation has fire suppression and safety teams on site during asset and vegetation management work in HFTD areas.

5.6 F. Emergency Preparedness

5.6.1 27. Wildfire and PSPS emergency & disaster preparedness plan

Wildfire and PSPS emergency & disaster preparedness plan		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Coordination and integration	Development and integration of wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures throughout the disaster life cycle (i.e., prevention, mitigation, response, and recovery) into the electrical corporation's overall Emergency and Disaster Preparedness Plan and in the equivalent plans for Public Safety Partners	The electrical corporation does not have wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures	The electrical corporation has wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices and procedures for prevention, mitigation, and response in compliance with GO 166 and SEMS The electrical corporation has an all-hazards approach to its Emergency and Disaster Preparedness Plan, but does not fully integrate wildfire- and PSPS-specific features	The electrical corporation has wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures throughout the disaster life cycle (i.e., prevention, mitigation, response, and **recovery**) and in compliance with GO 166, SEMs **and compatible with NIMS** The electrical corporation adopts a **hazard specific** approach to Emergency and Disaster Preparedness and Planning. Wildfire- and PSPS-specific preparedness plans, policies, practices, and procedures are **fully integrated** into electrical corporation's overall emergency and disaster operations, systems, and protocols.	The electrical corporation has wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures throughout the disaster life cycle (i.e., prevention, mitigation, response, and **recovery**) and in compliance with GO 166, SEMs **and compatible with NIMS** The electrical corporation adopts a **hazard specific** approach to Emergency and Disaster Preparedness and Planning. Wildfire- and PSPS-specific preparedness plans, policies, practices, and procedures are **fully integrated** into the electrical corporation's overall emergency and disaster operations, systems, and protocols. The electrical corporation coordinates the integration of their wildfire- and PSPS-specific emergency and disaster preparedness plans into **50-75%** of all relevant public safety partner's emergency plans within their service territory	The electrical corporation has wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures throughout the disaster life cycle (i.e., prevention, mitigation, response, and **recovery**) and in compliance with GO 166, SEMs **and compatible with NIMS** The electrical corporation adopts a **hazard specific** approach to Emergency and Disaster Preparedness and Planning. Wildfire- and PSPS-specific preparedness plans, policies, practices, and procedures are **fully integrated** into the electrical corporation's overall emergency and disaster operations, systems, and protocols. The electrical corporation coordinates the integration of their wildfire- and PSPS-specific emergency and disaster preparedness plans into **75-100%** of all relevant public safety partner's emergency plans within their service territory The electrical corporation takes a primary partner role in planning, coordinating, and integrating plans across all public safety partners in their service territory including state and tribal partners

Wildfire and PSPS emergency & disaster preparedness plan		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Documentation and disclosures	Level of detail of Information documented regarding wildfire- and PSPS-specific emergency and disaster preparedness plans. Higher maturity is achieved when detailed information such as operational procedures, policies, protocols, systems used before, during and after wildfire and PSPS incidents is documented. In addition, mature systems document personnel roles and responsibilities (internal and external), training, operational and discussion-based exercises (drills, simulations, tabletop exercises), and verification of completed coordination efforts, training, exercises, and plan revisions.	The information documented regarding wildfire- and PSPS-specific emergency and preparedness plan does not meet the minimum expectations or requirements.	The information documented at minimum includes the following elements: 1. Standard wildfire- and PSPS-specific emergency operational policies, practices, and procedures before, during and after an incident 2. Physical emergency response and recovery systems used (e.g., detection & notification systems, communications systems) 3. Training/simulation exercises and programs 4. Personnel roles and responsibilities 5. Verification of coordination efforts with Public Safety Partners 6. Verification of completed training and exercises 7. Verification of updated plan 8. Gaps, limitations, and improvement areas with remedial action plans.	The information documented at minimum includes the following elements: 1. Standard wildfire- and PSPS-specific emergency operational policies, practices, and procedures before, during and after an incident 2. Physical emergency response and recovery systems used (e.g., detection & notification systems, communications systems) 3. Training/simulation exercises and programs 4. Personnel roles and responsibilities 5. Verification of coordination efforts with Public Safety Partners 6. Verification of completed training and exercises 7. Verification of updated plan 8. Gaps, limitations, and improvement areas with remedial action plans. 9. Integration of internal lessons-learned 10. Feedback from external third-party evaluation	The information documented at minimum includes the following elements: 1. Standard wildfire- and PSPS-specific emergency operational policies, practices, and procedures before, during and after an incident 2. Physical emergency response and recovery systems used (e.g., detection & notification systems, communications systems) 3. Training/simulation exercises and programs 4. Personnel roles and responsibilities 5. Verification of coordination efforts with Public Safety Partners 6. Verification of completed training and exercises 7. Verification of updated plan 8. Gaps, limitations, and improvement areas with remedial action plans. 9. Integration of internal lessons-learned 10. Feedback from external third-party evaluation 11. Actions taken to incorporate periodic external third-party feedback	The information documented at minimum includes the following elements: 1. Standard wildfire- and PSPS-specific emergency operational policies, practices, and procedures before, during and after an incident 2. Physical emergency response and recovery systems used (e.g., detection & notification systems, communications systems) 3. Training/simulation exercises and programs 4. Personnel roles and responsibilities 5. Verification of coordination efforts with Public Safety Partners 6. Verification of completed training and exercises 7. Verification of updated plan 8. Gaps, limitations, and improvement areas with remedial action plans. 9. Integration of internal lessons-learned 10. Feedback from external third-party evaluation 11. Actions taken to incorporate periodic external third-party feedback 12. Data collected from drills and after-action reports, and integrated into updated plans

Wildfire and PSPS emergency & disaster preparedness plan		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	The frequency by which the electrical corporation evaluates, maintains, and updates its wildfire- and PSPS-specific emergency and disaster preparedness policies, practices, procedures, and protocols. This includes frequency for activities such as plan revisions, training, drills and other exercises, integration, and coordination with public safety partners.	The electrical corporation does **not** have wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures Or The electrical corporation evaluates, maintains, and updates its wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures at a frequency **greater than 2-year intervals**	The electrical corporation evaluates, maintains, and updates its wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures **every 2 years** The electrical corporation performs the following activities at least once annually: • Personnel and contractor training • Internal discussion-based and operations-based exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external) • Review and integration of feedback from internal discussion-based and operations-based exercises	The electrical corporation evaluates, maintains, and updates its wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures **every 2 years** The electrical corporation performs the following activities at least once annually, immediately before core fire season(s): • Personnel and contractor training • Internal discussion-based and operations-based exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external) • Review and integration of feedback from internal discussion-based and operations-based exercises The electrical corporation performs the following activities at least once annually, immediately after core fire season(s): • Review and integrate public feedback on wildfire- and PSPS-specific emergency preparedness activities (e.g., public notifications, emergency services) • Seek feedback from public safety partners on	The electrical corporation evaluates, maintains, and updates its wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures **every 2 years** The electrical corporation performs the following activities at least once annually, immediately before core fire season(s): • Personnel and contractor training • Internal discussion-based and operations-based exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external) • Review and integration of feedback from internal discussion-based and operations-based exercises The electrical corporation performs the following activities at least once annually, immediately after core fire season(s): • Review and integrate public feedback on wildfire- and PSPS-specific emergency preparedness activities (e.g., public notifications, emergency services) • Seek feedback from public safety partners on	The electrical corporation evaluates, maintains, and updates its wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures **every 2 years** The electrical corporation performs the following activities at least once annually, immediately before core fire season(s): • Personnel and contractor training • Internal discussion-based and operations-based exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external) • Review and integration of feedback from internal discussion-based and operations-based exercises The electrical corporation performs the following activities at least once annually, immediately after core fire season(s): • Review and integrate public feedback on wildfire- and PSPS-specific emergency preparedness activities (e.g., public notifications, emergency services) • Seek feedback from public safety partners on preparedness plan revisions • Reviews MOAs and MAAs with key public safety

Wildfire and PSPS emergency & disaster preparedness plan		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
				preparedness plan revisions	preparedness plan revisions • Reviews MOAs and MAAs with key public safety partners for any required updates The electrical corporation reviews and provides feedback on public safety partners' Emergency and Disaster Preparedness plans to be in-line with the electrical corporations plans **every 5 years**	partners for any required updates The electrical corporation reviews and provides feedback on public safety partners' Emergency and Disaster Preparedness plans to be in-line with the electrical corporations plans **every 2 years**
Subject matter expert (SME) evaluation /(QA/QC)	Subject Matter Expert (SME) and third-party entities evaluate wildfire- and PSPS-specific emergency operations and disaster preparedness plans.	No Subject Matter Expert (SME) and third-party entities evaluate of wildfire- and PSPS-specific emergency operations and disaster preparedness plans.	Wildfire- and PSPS-emergency operations and disaster preparedness plans are assessed through subject matter expert (SME) review at least once per year.	Wildfire- and PSPS-emergency operations and disaster preparedness plans are assessed through subject matter expert (SME) review at least once per year. External third-party evaluation of plans every 5 years 50-75% of state, county, city, and tribal public safety partners evaluate the plans once every 3 years	Wildfire emergency operations and disaster preparedness plans are assessed through subject matter expert (SME) review at least once per year **and after every catastrophic wildfire**. External third-party evaluation of plans every 5 years 50-75% of state, county, city, and tribal public safety partners evaluate the plans once **every 2 years**	Wildfire emergency operations and disaster preparedness plans are assessed through subject matter expert (SME) review at least once per year and after every catastrophic wildfire. External third-party evaluation of plans every 5 years **75-100%** of state, county, city, and tribal public safety partners evaluate the plans once **every 2 years** Electrical corporation SME partners review and evaluate plans once every 5 years

5.6.2 28. Collaboration and coordination with public safety partners

Collaboration and coordination with public safety partners		**Maturity Level**				
~~Scoring Philosophy~~Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Coordination and integration	Coordination of wildfire- and PSPS-specific electrical corporation emergency and disaster preparedness plans, policies, practices and procedures for response and recovery, with existing emergency and disaster preparedness practices and protocols with Public Safety Partners.	The electrical corporation does **not** have wildfire- and PSPS-specific emergency and disaster preparedness plans, policies, practices, and procedures Or Electrical corporation's wildfire- and PSPS-emergency operations and disaster preparedness plans are not coordinated with any Public Safety Partner	The electrical corporation coordinates the following aspects of their wildfire- and PSPS-emergency and disaster preparedness plans with relevant Public Safety Partners: • List of all relevant state, city, county and tribal agencies and key point(s)-of-contacts (e.g., operations, PIO, Emergency Director) with associated contact information • **50%** of relevant Public Safety Partners have provided consultation and/or verbal or written comments on electrical corporation's most recent plan • List of all relevant MOAs with all Public Safety Partners • **50%** of relevant Public Safety Partners' communication strategy (e.g., protocols, procedures, and systems) to inform public safety partners and other interconnected electrical corporation partners of wildfire, PSPS and re-energization incidents • **50%** of partner establish frequency of pre-arranged comms strategy reviews and updates	The electrical corporation coordinates the following aspects of their wildfire- and PSPS-emergency and disaster preparedness plans with relevant Public Safety Partners: • List of all relevant state, city, county and tribal agencies and key point(s)-of-contacts (e.g., operations, PIO, Emergency Director) with associated contact information • **50 - 75%** of relevant Public Safety Partners have provided consultation and/or verbal or written comments on electrical corporation's most recent plan • List of all relevant MOAs with all Public Safety Partners • **50-75%** of relevant Public Safety Partners' communication strategy (e.g., protocols, procedures, and systems) to inform public safety partners and other interconnected electrical corporation partners of wildfire, PSPS and re-energization incidents • **50-75%** of partner establish frequency of pre-arranged comms	The electrical corporation coordinates the following aspects of their wildfire- and PSPS-emergency and disaster preparedness plans with relevant Public Safety Partners: • List of all relevant state, city, county and tribal agencies and key point(s)-of-contacts (e.g., operations, PIO, Emergency Director) with associated contact information • **75 - 90%** of relevant Public Safety Partners have provided consultation and/or verbal or written comments on electrical corporation's most recent plan • List of all relevant MOAs with all Public Safety Partners • **75-90%** of relevant Public Safety Partners' communication strategy (e.g., protocols, procedures, and systems) to inform public safety partners and other interconnected electrical corporation partners of wildfire, PSPS and re-energization incidents • **75-90%** of partner establish frequency of pre-arranged comms	The electrical corporation coordinates the following aspects of their wildfire- and PSPS-emergency and disaster preparedness plans with relevant Public Safety Partners: • List of all relevant state, city, county and tribal agencies and key point(s)-of-contacts (e.g., operations, PIO, Emergency Director) with associated contact information • **99%** of relevant Public Safety Partners have provided consultation and/or verbal or written comments on electrical corporation's most recent plan • List of all relevant MOAs with all Public Safety Partners • **99%** of relevant Public Safety Partners' communication strategy (e.g., protocols, procedures, and systems) to inform public safety partners and other interconnected electrical corporation partners of wildfire, PSPS and re-energization incidents • **99%** of partner establish frequency of pre-arranged comms strategy reviews and updates

Collaboration and coordination with public safety partners		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
			Resources available for Mutual Aid Agreements	strategy reviews and updates Resources available for Mutual Aid Agreements	strategy reviews and updates Resources available for Mutual Aid Agreements	Resources available for Mutual Aid Agreements
Frequency	The frequency by which the electrical corporation evaluates, maintains, and updates its wildfire-, PSPS- and power restoration-specific interoperation communication strategies, procedures, and protocols interoperability with Public Safety Partners and other interconnected electrical corporations. This includes frequency for activities such as communication plan revisions, discussion-based and operational exercise schedules	The electrical corporation does **not coordinate** its wildfire-, PSPS- and power restoration- specific interoperation communication strategies, procedures, and protocols with Public Safety Partners and other interconnected electrical corporations Or The electrical corporation coordinates its wildfire-, PSPS and power-restoration-specific interoperation communication strategies, procedures, and protocols interoperability once every 5-years	The electrical corporation coordinates its wildfire-, PSPS and power-restoration-specific interoperation communication strategies, procedures, and protocols once **every 2 years** The electrical corporation performs the following activities at least once annually: • Identify and confirm interoperation communications protocols, practices, and procedures before, during and after an incident for all relevant Public Safety Partners and interconnected electrical corporations • Discussion-based and operations-based communications interoperability exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external)	The electrical corporation coordinates its wildfire-, PSPS and power-restoration-specific interoperation communication strategies, procedures, and protocols once **every 2 years** The electrical corporation performs the following activities at least once annually, immediately before core fire season(s): • Identify and confirm interoperation communications protocols, practices, and procedures before, during and after an incident for all relevant Public Safety Partners and interconnected electrical corporations • Discussion-based and operations-based communications interoperability exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external)	The electrical corporation coordinates its wildfire-, PSPS and power-restoration-specific interoperation communication strategies, procedures, and protocols once **every 2 years** The electrical corporation performs the following activities at least once annually, immediately before core fire season(s): • Identify and confirm interoperation communications protocols, practices, and procedures before, during and after an incident for all relevant Public Safety Partners and interconnected electrical corporations • Discussion-based and operations-based communications interoperability exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external)	The electrical corporation coordinates its wildfire-, PSPS and power-restoration-specific interoperation communication strategies, procedures, and protocols once **a year** The electrical corporation performs the following activities at least once annually, immediately before core fire season(s): • Identify and confirm interoperation communications protocols, practices, and procedures before, during and after an incident for all relevant Public Safety Partners and interconnected electrical corporations • Discussion-based and operations-based communications interoperability exercises (e.g., drills, simulations, and tabletop exercises) • Review of after-action reports (internal and external)

Collaboration and coordination with public safety partners		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
			• Review and integration of feedback from external discussion-based and operations-based communications interoperability exercises	• Review and integration of feedback from external discussion-based and operations-based communications interoperability exercises The electrical corporation performs the following activities at least once annually, immediately after core fire season(s): • Seek feedback from public safety partners and interconnected electrical corporation partners on wildfire, PSPS and power restoration interoperation communications for timeliness, completeness, and reliability	• Review and integration of feedback from external discussion-based and operations-based communications interoperability exercises The electrical corporation performs the following activities at least once annually, immediately after core fire season(s): • Seek feedback from public safety partners and interconnected electrical corporation partners on wildfire, PSPS and power restoration interoperation communications for timeliness, completeness, and reliability • Reviews MOAs with key public safety partners and interconnected electrical corporations for any required updates	• Review and integration of feedback from external discussion-based and operations-based communications interoperability exercises The electrical corporation performs the following activities at least once annually, immediately after core fire season(s): • Seek feedback from public safety partners and interconnected electrical corporation partners on wildfire, PSPS and power restoration interoperation communications for timeliness, completeness, and reliability • Reviews MOAs with key public safety partners and interconnected electrical corporations for any required updates

5.6.3 29. Public emergency communication strategy

Public emergency communication strategy		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Automation	Levels of automation for monitoring and transmitting emergency information. This also includes frequency reporting updates based on near-real-time conditions	Emergency information monitoring and transmission are not automated.	Emergency information monitoring and transmission are partially automated (<50%). At least three (3) of the following parameters are determined and communicated automatically: 1. Detection and alarm for wildfire ignition 2. Location and extent of wildfire perimeter 3. Local wildfire settings (e.g., weather, RFW, climate data) 4. Electrical corporation emergency resources already deployed 5. Customers impacted and anticipated duration of power outages caused by wildfire and PSPS 6. Locations of support services 7. Instructions for emergency action 8. Accessibility and Translation of information into Spanish and 2-3 of the top languages in the service territory	Emergency information monitoring and transmission are partially automated (<50%). At least four (4) of the following parameters are determined and communicated automatically: 1. Detection and alarm for wildfire ignition 2. Location and extent of wildfire perimeter 3. Local wildfire settings (e.g., weather, RFW, climate data) 4. Electrical corporation emergency resources already deployed 5. Customers impacted and anticipated duration of power outages caused by wildfire and PSPS 6. Locations of support services 7. Instructions for emergency action 8. Accessibility and Translation of information into Spanish and 2-3 of the top languages in the service territory	Emergency information monitoring and transmission are mostly automated (>50%). At least five (5) of the following parameters are determined and communicated automatically: 1. Detection and alarm for wildfire ignition 2. Location and extent of wildfire perimeter 3. Local wildfire settings (e.g., weather, RFW, climate data) 4. Electrical corporation emergency resources already deployed 5. Customers impacted and anticipated duration of power outages caused by wildfire and PSPS 6. Locations of support services 7. Instructions for emergency action 8. Accessibility and Translation of information into Spanish and 2-3 of the top languages in the service territory	Emergency information monitoring and transmission are fully automated. Each of the following parameters are determined and communicated automatically: 1. Detection and alarm for wildfire ignition 2. Location and extent of wildfire perimeter 3. Local wildfire settings (e.g., weather, RFW, climate data) 4. Electrical corporation emergency resources already deployed 5. Customers impacted and anticipated duration of power outages caused by wildfire and PSPS 6. Locations of support services 7. Instructions for emergency action 8. Accessibility and Translation of information into Spanish and 2-3 of the top languages in the service territory
Coordination and integration	Coordination with public interest groups and Alerting Authority for timely, accurate, complete, and comprehensive public communication strategy(s) to inform essential customers and all community stakeholder groups of	Electrical corporation's public communication strategy for wildfires, outages due to wildfires and PSPS, and service restoration are not coordinated with any Alerting Authority or public interest groups.	The electrical corporation coordinates the following aspects of their communication strategy for wildfires, outages due to wildfires and PSPS, and service restoration with Alerting Authorities or public interest groups:	The electrical corporation coordinates the following aspects of their communication strategy for wildfires, outages due to wildfires and PSPS, and service restoration with Alerting Authorities or public interest groups:	The electrical corporation coordinates the following aspects of their communication strategy for wildfires, outages due to wildfires and PSPS, and service restoration with Alerting Authorities or public interest groups:	The electrical corporation coordinates the following aspects of their communication strategy for wildfires, outages due to wildfires and PSPS, and service restoration with Alerting Authorities or public interest groups:

Public emergency communication strategy		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
	wildfires, outages due to wildfires and PSPS, and service restoration before, during and after the incident		1. Roles and responsibilities for designing, preparing, and disseminating public communications before, during and after each incident type 2. Identification of essential customers and key community stakeholder groups across the electrical corporation’s service territory 3. Understand the specific needs and communication methods required to effectively notify essential customers, medical baseline, and other key community stakeholder groups 4. Notification protocols, message objectives for each interest group 5. Available technical resources for public communication systems (e.g., radio, TV, social media) 6. Targeted messaging and diversity of communication methods per public stakeholder group and incident type. 7. Means to verify message receipt. 8. Gaps, limitations, and improvement areas with remedial action plans.	1. Roles and responsibilities for designing, preparing, and disseminating public communications before, during and after each incident type 2. **Detailed list** of essential customers and **all** key community stakeholder groups **by county/city** 3. Understand the specific needs and communication methods required to effectively notify essential customers, medical baseline and all community stakeholder groups, **with a particular focus on AFN and other vulnerable populations**. 4. **Locally relevant** notification protocols, message objectives for each interest group 5. **Locally** available technical resources for public communication systems (e.g., radio, TV, social media) 6. Targeted messaging and diversity of communication methods per public stakeholder group and incident type. 7. Assess and obtain feedback from Alerting Authorities, public interest groups, essential customers on timeliness, quality, and completeness of messaging. 8. Gaps, limitations, and improvement areas with remedial action plans.	1. Roles and responsibilities for designing, preparing, and disseminating public communications before, during and after each incident type 2. **Detailed list** of essential customers and **all** key community stakeholder groups **by county/city** 3. Understand the specific needs and communication methods required to effectively notify essential customers and all community stakeholder groups, **with a particular focus on AFN and other vulnerable populations**. 4. **Locally relevant** notification protocols, message objectives for each interest group 5. **Locally** available technical resources for public communication systems (e.g., radio, TV, social media) 6. Targeted messaging and diversity of communication methods per public stakeholder group and incident type. 7. Assess and obtain feedback from Alerting Authorities, public interest groups, essential customers on timeliness, quality, and completeness of messaging. 8. Gaps, limitations, and improvement areas with remedial action plans.	1. Roles and responsibilities for designing, preparing, and disseminating public communications before, during and after each incident type 2. **Detailed list** of essential customers and **all** key community stakeholder groups **by county/city** 3. Understand the specific needs and communication methods required to effectively notify essential customers and all community stakeholder groups, **with a particular focus on AFN and other vulnerable populations**. 4. **Locally relevant** notification protocols, message objectives for each interest group 5. **Locally** available technical resources for public communication systems (e.g., radio, TV, social media) 6. Targeted messaging and diversity of communication methods per public stakeholder group and incident type. 7. Assess and obtain feedback from Alerting Authorities, public interest groups, essential customers on timeliness, quality, and completeness of messaging. 8. Gaps, limitations, and improvement areas with remedial action plans.

Public emergency communication strategy		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
					9. Assess and verify that essential customers and community stakeholder groups not only received emergency notifications, but understood how to act	9. Assess and verify that essential customers and community stakeholder groups not only received the notifications, but understood how to act and then took appropriate action for all incident types
Documentation	Level of detail and comprehensiveness of public communication strategy to inform essential customers and all community stakeholder groups of wildfires, outages due to wildfires and PSPS, and service restoration before, during and after the incident types. Higher maturity is achieved when detailed information such as public communication strategies, policies, practices, and procedures used before, during and after wildfires, outages due to wildfires and PSPS events, and service restoration incidents are documented. In addition, mature systems identify key communication personnel (roles and responsibilities), key stakeholder groups and associated needs, methods and technologies for COMMS, messaging detail, coordination with Alerting Authorities, training, exercises, and system testing.	The information documented regarding communication strategies to inform essential customers and all community stakeholder groups of wildfires, outages due to wildfires and PSPS, and service restoration before, during and after an incident do not meet the minimum expectations or requirements.	The information documented at minimum includes the following elements: 1. Standard wildfire, outages due to wildfires and PSPS events, and service restoration operational policies, protocol, and procedures for communicating to the public before, during and after an incident 2. Physical public communication systems used (e.g., detection & notification systems, communications systems) 3. Targeted messaging and communication methods per public stakeholder group and incident type. 4. Personnel roles and responsibilities 5. Resiliency and redundancy of notification and communication systems and methods. 6. Training/simulation exercises and programs 7. Verification of coordination efforts with Public Safety Partners 8. Verification of completed training and exercises	The information documented at minimum includes the following elements: Same as Level 1, plus: 10. AFN and vulnerable population-specific communication methods and systems 11. Seek feedback from essential customers, AFN/vulnerable populations, and the general public on timeliness, accuracy, and completeness of messaging 12. Feedback from external third-party evaluation	The information documented at minimum includes the following elements: Same as Level 2, plus: 13. Actions taken to incorporate periodic external third-party feedback	The information documented at minimum includes the following elements: Same as Level 3, plus: 14. Data collected from drills and after-action reports, and integrated into updated plans

Public emergency communication strategy		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
			9. Gaps, limitations, and improvement areas with remedial action plans.			

Effectiveness	Degree to which public notifications and communication strategies, practices and protocols are not only timely, accurate and complete, but lead to increased awareness and risk-informed action during and after an emergency	Limited or poor communication before, during and after a wildfire, outages due to wildfires or PSPS, and service restoration
		
		No ability to measure effectiveness of public notification or communications during or after an emergency
			The following aspects of an electrical corporation's emergency notifications and communications to the public for wildfires, outages due to wildfires and PSPS, and service restoration are provided:
			
			1. Severe weather warnings and alerts (e.g., RFW)
			2. Location and extent of wildfire perimeter
			3. Public notification of wildfire incident immediately when there is an imminent threat to life, health, or property.
			4. Customers impacted, and anticipated duration of power outages caused by wildfire and PSPS within 4 hours of outage
			5. Public notification (i.e., warnings and alerts) of PSPS incidents no more than 2 days beforehand
			6. Locations and timing of power restoration at predefined intervals
			7. Locations in community for support services within 1 hour of wildfire detection; 2 days before PSPS incident
				The following aspects of an electrical corporation's emergency notifications and communications to the public for wildfires, outages due to wildfires and PSPS, and service restoration are provided:
				
				• Same as Level 1, plus:
				• Messaging is designed to be specific, consistent, confident, clear, and accurate per IPAWS
				• Provide redundancy and enhanced interoperability for the following:
				  ○ Loss of power
				  ○ Loss of cell towers or overloaded cell systems
				  ○ Internet outages
				  ○ Overloaded networks
				  ○ Cyber-attacks
				  ○ Ability of carriers to redistribute
				  ○ Overloaded infrastructure
				  ○ Cross-jurisdictional needs
				  ○ Availability of staffing to effectively
					The following aspects of an electrical corporation's emergency notifications and communications to the public for wildfires, outages due to wildfires and PSPS, and service restoration are provided:
					
					• Same as Level 2, plus
					• Adopting Integrated Public Warning Systems (IPAWS)
					• Applying 3-5 methods of communication:
					  ○ Telephonic alert system
					  ○ Email distribution
					  ○ Website override
					  ○ Internet-based services
					  ○ High-frequency radio
					  ○ Social media
					  ○ Opt-in features
					
					• AFN considerations (e.g., TTY/TTD, font size, color analyzer)
					• Conduct post-incident surveys and other forms of public feedback to assess timeliness, accuracy, and completeness of
						The following aspects of an electrical corporation's emergency notifications and communications to the public for wildfires, outages due to wildfires and PSPS, and service restoration are provided:
						
						• Same as Level 3, plus
						• Implement corrective plans based on public feedback survey

Public emergency communication strategy		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
			8. Instructions for emergency protective action and links to credible Public Safety Partners emergency communications and instructions (e.g., shelter-in-place, evacuation) within 30 min of wildfire detection; 2 days before PSPS incident 9. Accessibility and Translation of information into Spanish and 2-3 of the top languages in the service territory 10. Emergency notifications are limited to people at risk. 11. Delivery of warnings and alerts using various formats across multiple media platforms 12. Structure training and practice to minimize false alarms	manage and deploy systems	information of impacted populations	
Quality assurance and quality control (QA/QC)	Evaluation and verification of protocols to provide timely, accurate and complete public emergency communications for wildfires, PSPS and service restoration information to public safety partners and public interest groups	Maintenance, testing, and inspection of the physical communication-related systems that provide detection, alarm, notification, central monitoring, situational awareness, and transmission of "approved" reporting information are **never performed**.	Maintenance, testing, and inspection of the physical communication-related systems that provide detection, alarm, notification, central monitoring, situational awareness, and transmission of "approved" reporting information are performed at least **once a year**.	Maintenance, testing, and inspection of the physical communication-related systems that provide detection, alarm, notification, central monitoring, situational awareness, and transmission of "approved" reporting information are performed at least **twice a year**.	Maintenance, testing, and inspection of the physical communication-related systems that provide detection, alarm, notification, central monitoring, situational awareness, and transmission of "approved" reporting information are performed at least **monthly**.	Maintenance, testing, and inspection of the physical communication-related systems that provide detection, alarm, notification, central monitoring, situational awareness, and transmission of "approved" reporting information are performed at least **weekly**.
Spatial granularity	Granularity of reported public emergency notification and communication strategies, practices, and protocols.	Resolution of reported information, policies, practices, and protocols are evaluated and implemented at territory-wide resolution.	Resolution of reported data, practices, and protocols are evaluated and implemented at county level resolution.	Resolution of reported data, practices, and protocols are evaluated and implemented at city level resolution.	Resolution of reported data, practices, and protocols are evaluated and implemented at community level resolution.	Resolution of reported data, practices, and protocols are evaluated and implemented at neighborhood level resolution.

5.6.4 30. Preparedness and planning for service restoration

Preparedness and planning for service restoration		**Maturity Level**				
~~Scoring Philosophy~~Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Automation	Level of automation of safety checks.	Safety checks are not automated.	Safety checks are partially automated (<50%).	Safety checks are mostly automated (>=50%).	Safety checks are fully automated.	No additional requirements beyond level 3
Coordination and integration	Coordination and integration of re-energization and recovery plan with state/county/city agencies and interconnected power entities in the electrical corporation's service area. Mature plans are coordinated, maintained, and integrated into the emergency response and recovery plans of all relevant state, city, and county agencies, as well as associated, interconnected power entities in the electrical corporation's service area.	Electrical corporation's e-energization and recovery plan is not coordinated and integrated with any stakeholder's recovery plans.	Electrical corporation's e-energization and recovery plan is coordinated with at least 75-100% of state, county, and city agencies and all interconnected power entities in the electrical corporation's service area annually.	Electrical corporation's e-energization and recovery plan is coordinated with all state/county/city agencies and all interconnected power entities in the electrical corporation's service area annually.	Electrical corporation's e-energization and recovery plan is coordinated with all state/county/city agencies and all interconnected power entities in the electrical corporation's service area. The electrical corporation participates in drills to audit the viability and execution of plans across stakeholders annually	Electrical corporation's e-energization and recovery plan is coordinated with all state/county/city agencies and all interconnected power entities in the electrical corporation's service area. The electrical corporation participates in drills to audit the viability and execution of plans across stakeholders annually The electrical corporation takes a primary partner role in planning, coordinating, and integrating plans across stakeholders. The electrical corporation leads efforts to run annual drills.
Documentation and disclosures	Development and documentation of re-energization and recovery plan. Higher maturity is achieved when more elements are involved for decision-making during restoration and recovery plans as well as detailed explanation information is included.	The elements considered for the re-energization and recovery plan development and information documented do not meet the minimum expectations or requirements.	The elements considered for the re-energization and recovery plan development and information documented include the following: 1. Risk-informed decision-making framework 2. Detailed and actionable policies, procedures, and protocols for power restoration 3. Appropriate staffing and	The elements considered for the re-energization and recovery plan development and information documented include the following: 1. Risk-informed decision-making framework 2. Detailed and actionable policies, procedures, and protocols for power restoration 3. Appropriate staffing and	The elements considered for the re-energization and recovery plan development and information documented include the following: 1. Risk-informed decision-making framework 2. Detailed and actionable policies, procedures, and protocols for power restoration 3. Appropriate staffing and	The elements considered for the re-energization and recovery plan development and information documented include the following: 1. Risk-informed decision-making framework 2. Detailed and actionable policies, procedures, and protocols for power restoration 3. Appropriate staffing and

Preparedness and planning for service restoration		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
			contractor resources, training, and qualifications	contractor resources, training, and qualifications 4. Personnel roles and responsibilities	contractor resources, training, and qualifications 4. Personnel roles and responsibilities 5. Instructions on how to execute duties during plan 6. Feedback from external third-party evaluation	contractor resources, training, and qualifications 4. Personnel roles and responsibilities 5. Instructions on how to execute duties during plan 6. Feedback from external third-party evaluation 7. Actions taken to incorporate periodic external third-party feedback 8. Data collected from drills and after-action reports
Level of sophistication	Number of ignitions due to re-energization. Mature systems result in zero (0) ignitions due to re-energization.	Multiple ignitions due to re-energization per year.	Not more than 1 ignition due to re-energization per year.	Zero (0) ignitions due to re-energization per year.	No additional requirements beyond level 2	No additional requirements beyond level 2
Spatial granularity	Level of customization of procedures to restore service after a wildfire-related outage.	Procedures to restore service after a wildfire-related outage are customizable to territory-wide level.	Procedures to restore service after a wildfire-related outage are customizable to region level.	Procedures to restore service after a wildfire-related outage are customizable to circuit level.	Procedures to restore service after a wildfire-related outage are customizable to span level.	No additional requirements beyond level 3
Subject matter expert (SME) verification/(QA/QC)	Subject Matter Expert (SME) and third-party entities verification to evaluate re-energization and recovery plan.	No Subject matter expert (SME) verification in place to evaluate re-energization and recovery plan.	Re-energization and recovery plan is assessed through subject matter expert (SME) review at least once every 3-5 years.	Re-energization and recovery plan is assessed through subject matter expert (SME) review at least once every 2 years. State/local agencies are involved during the evaluation.	Re-energization and recovery plan is assessed through subject matter expert (SME) review at least once per year. State/local agencies are involved during the evaluation.	Re-energization and recovery plan is assessed through subject matter expert (SME) review at least two times per year. State/local agencies are involved during the evaluation.

5.6.5 31. Customer support in wildfire and PSPS emergencies

Customer support in wildfire and PSPS emergencies		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Comprehensiveness	Extent and accessibility of customer support in wildfire	Electrical corporation does not provide emergency support services for residential and non-residential customers during and after wildfire and PSPS incidents	Electrical corporation provides the following emergency support services for residential and non-residential customers within 4 hours of a wildfire and PSPS incidents • Outage reporting (location, expected duration and cause) • 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 • Tracks metrics that measure customer access to information on customer service calls and web host availability	Electrical corporation provides the following emergency support services for residential and non-residential customers within 4 hours of a wildfire and PSPS incidents • Same as Level 1, plus • Call Center busies calculation is lower than Level-1 • Evaluates customer access metrics and web host availability metrics, and develops corrective action plans where deficiencies are identified	No additional requirements beyond level 2	No additional requirements beyond level 2

5.6.6 32. Learning after wildfires and PSPS events

Learning after wildfires and PSPS events		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Learning and continuous improvement	Processes and programs to identify lessons learned and implement correction action plans for both process and capital improvements.	Policies, practices, and procedures recorded and evaluated to identify lessons learned and implement correction action plans do not meet the minimum expectations or requirements.	At minimum the following policies, practices, and procedures are recorded and evaluated to identify lessons learned and implement corrective action plans annually: 1. Proactive diagnostic/ performance testing 2. Post-fire incident data and operations collection such as origin & cause 3. Environmental risk factors (e.g., weather conditions, vegetation conditions) 4. Staff & contractor behaviors 5. Wildfire emergency management 6. Technical systems performance (e.g., detection, alarm, notification) 7. Interactions with response and other government agencies 8. Pre-incident diagnostics, drills, training, and stress-testing	At minimum the following policies, practices, and procedures are recorded and evaluated to identify lessons learned and implement corrective action plans monthly: 1. Proactive diagnostic/ performance testing 2. Post-fire incident data and operation collection such as origin & cause 3. Environmental risk factors (e.g., weather conditions, vegetation conditions) 4. Staff & contractor behaviors 5. Wildfire emergency management 6. Technical systems performance (e.g., detection, alarm, notification) 7. Interactions with response and other government agencies 8. Pre-incident diagnostics, drills, training, and stress-testing	At minimum the following policies, practices, and procedures are recorded and evaluated to identify lessons learned and implement corrective action plans weekly: 1. Proactive diagnostic/ performance testing 2. Post-fire incident data and operations collection such as origin & cause 3. Environmental risk factors (e.g., weather conditions, vegetation conditions) 4. Staff & contractor behaviors 5. Wildfire emergency management 6. Technical systems performance (e.g., detection, alarm, notification) 7. Interactions with response and other government agencies 8. Pre-incident diagnostics, drills, training, and stress-testing	At minimum the following policies, practices, and procedures are recorded and evaluated to identify lessons learned and implement corrective action plans daily: 1. Proactive diagnostic/ performance testing 2. Post-fire incident data and operations collection such as origin & cause 3. Environmental risk factors (e.g., weather conditions, vegetation conditions) 4. Staff & contractor behaviors 5. Wildfire emergency management 6. Technical systems performance (e.g., detection, alarm, notification) 7. Interactions with response and other government agencies 8. Pre-incident diagnostics, drills, training, and stress-testing
Subject matter expert (SME) verification/(QA/QC)	"Dry runs", Subject Matter Expert (SME), and third-party entities verification to evaluate the effectiveness of updated plans.	No Subject matter expert (SME) verification in place to evaluate the effectiveness of updated plans.	Subject Matter Expert (SME) verification in place to evaluate the effectiveness of updated plans at least once per year. Feedback implementation is performed within thirty (30) days.	"Dry runs", Subject Matter Expert (SME) and third-party entities verification are in place to evaluate the effectiveness of updated plans at least once per year. Feedback implementation is performed within thirty (30) days.	"Dry runs", Subject Matter Expert (SME) and third-party entities verification are in place to evaluate the effectiveness of updated plans at least twice per year. Feedback implementation is performed within seven (7) days.	"Dry runs", Subject Matter Expert (SME) and third-party entities verification are in place to evaluate the effectiveness of updated plans at least four times per year. Feedback implementation is performed within the same day.

5.7 G. Community Outreach and Engagement

5.7.1 33. Public outreach and education awareness

Public outreach and education awareness		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Depth, breadth, and accessibility of an electrical corporation's public outreach and education awareness program for wildfires, outages due to wildfire and PSPS events, and service restoration incidents. This includes providing multiple, targeted activities to meet the needs of the "whole" community before, during and after an incident.	Electrical corporation does not provide community outreach and education awareness program activities before, during and after wildfire and PSPS events	Electrical corporation provides the following community outreach and educational awareness program activities for wildfires and PSPS events before, during and after an incident: • Identifies and evaluates all key community stakeholder groups across the electrical corporation's service territory • For each community stakeholder group, the electrical corporation identifies specific concerns, interests, and needs for outreach and education awareness • Identify key community partnerships to collaborate and coordinate on wildfire and PSPS public education and awareness efforts • Develop and implement a diverse range of outreach and educational awareness programs targeted to address the specific needs and concerns of each community stakeholder group • Develop and implement operational strategies and resources to establish and sustain public outreach and education program activities.	Electrical corporation provides the following community outreach and educational awareness program activities for wildfires and PSPS events before, during and after an incident: • Same as Level 1, plus • Establish working relationships with a minimum of 4 community partners per county within the Electrical corporation's service territory to coordinate and collaborate on public outreach and education awareness activities. • Develop and implement a diverse range of outreach and educational awareness programs targeted to address the specific needs and concerns of each community stakeholder group, specific to each County in the Electrical corporation's service territory. • Obtain feedback from public on community outreach and educational awareness programs	Electrical corporation provides the following community outreach and educational awareness program activities for wildfires and PSPS events before, during and after an incident: • Same as Level 2, plus • Support (e.g., grants, access to electrical corporation representatives) public outreach and education awareness programs (e.g., chipper days, HIZ assessments, townhalls) managed by local community partners. • Obtain targeted feedback (e.g., host meetings, townhalls) from each community stakeholder group on public on community outreach and educational awareness programs annually.	Electrical corporation provides the following community outreach and educational awareness program activities for wildfires and PSPS events before, during and after an incident: • Same as Level 3, plus • Identify and establish working relationships with at least 1 community partner for each of the key community stakeholder groups at the County and/or City level within the Electrical corporation's territory • Coordinate, collaborate and support all community partners on their respective community outreach and educational awareness programs annually.

Public outreach and education awareness		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Spatial granularity	Level of customization of public outreach and education awareness for wildfires, outages due to wildfire or PSPS, power restoration before, during and after the incident	No public outreach and education awareness program(s) for wildfires, outages due to wildfire or PSPS events, power restoration before, during and after the incident	Public outreach and education awareness program(s) for wildfires, outages due to wildfire or PSPS events, power restoration before, during and after the incident are based on an enterprise-wide level.	Public outreach and education awareness program(s) for wildfires, outages due to wildfire or PSPS events, power restoration before, during and after the incident are based on county-wide level.	Public outreach and education awareness program(s) for wildfires, outages due to wildfire or PSPS events, power restoration before, during and after the incident are based on city-wide level.	Public outreach and education awareness program(s) for wildfires, outages due to wildfire or PSPS events, power restoration before, during and after the incident are based on community-level (e.g., a grouping of neighborhoods or sub-area of a city/town/unincorporated lands with common living characteristics as defined locally).

5.7.2 34. Public engagement in electrical corporation wildfire mitigation planning

Public engagement in electrical corporation wildfire mitigation planning		**Maturity Level**				
~~**Scoring Philosophy**~~**Sub-Capability**	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Depth, breadth, and accessibility of an electrical corporation's wildfire mitigation planning process to customers and the general public. This includes providing a range of participatory activities for essential customers, medical baseline, the general public, and other civil society groups to engage and have a voice throughout the wildfire mitigation planning process.	Electrical corporation does not provide public engagement or participatory activities in its wildfire mitigation planning.	Electrical corporation provides public engagement activities as part of its wildfire mitigation planning process, which informs Energy Safety's annual WMP/WMP Update submission and evaluation process in accordance with Public Electrical corporations Code section 8386 and all Energy Safety reporting requirements. •	Electrical corporation provides the following public engagement activities, in addition to statutory requirements, as part of its wildfire mitigation planning process: • Develop and implement structured programs that give citizens and representative public interest groups accessible means and methods to provide feedback. • Establishing several participatory activities for representative community interest groups and civil society groups in its wildfire mitigation planning process. • Establish working groups or other advisory panels represented by community interest groups that the electrical corporation consults to better integrate community needs into its wildfire mitigation planning • Provide engagement and participation throughout its wildfire mitigation planning. • Identify public interest group's role & responsibilities.	Electrical corporation provides the following public engagement activities, in addition to statutory requirements, as part of its wildfire mitigation planning process: • Same as Level 2, plus • Develop and implement public engagement activities at the **county-level**	Electrical corporation provides the following public engagement activities, in addition to statutory requirements, as part of its wildfire mitigation planning process: • Same as Level 2, plus • Develop and implement public engagement activities at the **community-level**

Public engagement in electrical corporation wildfire mitigation planning		**Maturity Level**				
~~Scoring Philosophy~~Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Frequency	Number of occurrences the Electrical corporation seeks public engagement, feedback, and participation in its wildfire mitigation planning process	No public engagement or participatory activities in its wildfire mitigation planning process. Or Electrical corporation seeks public engagement, feedback, and participation in its wildfire mitigation planning process less than once per year	Electrical corporation seeks public engagement, feedback and participation in its wildfire mitigation planning process at least once a year as part of its base WMP or WMP Update submission to Energy Safety	Electrical corporation seeks public engagement, feedback and participation in the development and decision-making process of its WMP at least once a year and after every major wildfire or PSPS event, in addition to the formal submission and evaluation process for Energy Safety	No additional requirements beyond level 2	No additional requirements beyond level 2
Spatial granularity	Level of customization of public engagement activities as part of an electrical corporation's wildfire mitigation planning process	No public engagement or participatory activities in the electrical corporation's wildfire mitigation planning process	Public engagement or participatory activities in f the electrical corporation's wildfire mitigation planning process are based on statutory minimums (i.e., as part of the annual WMP submission and evaluation process)	Public engagement or participatory activities in the electrical corporation's wildfire mitigation planning process are based on an enterprise-wide level.	Public engagement or participatory activities in the electrical corporation's wildfire mitigation planning process are based on a county-wide level.	Public engagement or participatory activities in the electrical corporation's wildfire mitigation planning process are based on a community-wide level.

5.7.3 35. Engagement with AFN and socially vulnerable populations

Engagement with AFN and socially vulnerable populations		**Maturity Level**				
~~Scoring Philosophy~~Sub-Capability	**Scoring Description**	**0**	**1**	**2**	**3**	**4**
Comprehensiveness	Depth and breadth of an electrical corporation's engagement (i.e., outreach, education, and support) program with AFN, medical baseline and socially vulnerable populations throughout their service territory. This includes providing multiple, targeted activities to meet the specific needs of AFN, medical baseline and socially vulnerable populations before, during and after wildfires and outages due to wildfires or PSPS events.	Electrical corporation does not have a specific and targeted engagement program for AFN, medical baseline and socially vulnerable populations throughout its territory	Electrical corporation provides the following engagement activities for AFN, medical baseline, and socially vulnerable populations for wildfires and PSPS events before, during and after an event: • Identifies and evaluates all AFN, medical baseline and socially vulnerable stakeholder groups across the electrical corporation's service territory. • Understands extent, size, and distribution of AFN, medical baseline, and socially vulnerable populations • For each vulnerable group, the electrical corporation identifies specific concerns, interests, and needs before, during and after a wildfire or PSPS event • Develop and implement a diverse range of outreach, educational, engagement and support programs targeted and specific to the needs and concerns of each vulnerable group • Develop and implement operational strategies and resources to establish and sustain AFN, medical baseline, and socially vulnerable group activities	Electrical corporation provides the following engagement activities for AFN, medical baseline, and socially vulnerable populations for wildfires and PSPS events before, during and after an event: • Same as Level 1, plus • Understands extent, size, and distribution of AFN, medical baseline, and socially vulnerable populations by county. • Establish working relationships with a minimum of 4 community partners per county within the Electrical corporation's service territory to coordinate and collaborate on engagement activities for AFN, medical baseline and socially vulnerable populations • Develop and implement a diverse range of outreach, educational, engagement and support programs targeted and specific to the needs and concerns of each vulnerable group at the county-level. • Obtain feedback from each vulnerable population and/or representatives of AFN, medical baseline and socially vulnerable populations on accessibility and effectiveness of engagement activities	Electrical corporation provides the following engagement activities for AFN, medical baseline, and socially vulnerable populations for wildfires and PSPS events before, during and after an event: • Same as Level 2, plus • Support (e.g., grants, access to electrical corporation representatives) of AFN, medical baseline and socially vulnerable populations engagement activities and programs managed by local community partners. • Obtain targeted feedback (e.g., host meetings) from AFN, medical baseline and socially vulnerable populations on accessibility and effectiveness of engagement activities annually and after major events.	Electrical corporation provides the following engagement activities for AFN, medical baseline, and socially vulnerable populations for wildfires and PSPS events before, during and after an event: • Same as Level 3, plus • Identify and establish working relationships with at least 1 community partner for each of the key AFN, medical baseline and socially vulnerable groups at the County and/or City level within the Electrical corporation's territory • Coordinate, collaborate and support all community partners on their respective vulnerable populations outreach, educational and support programs annually.

Effectiveness	Degree to which electrical corporation's engagement (i.e., outreach, education, and support) program with AFN, medical baseline and socially vulnerable populations are not only timely, accurate and complete, but lead to increased awareness and risk-informed action during and after an emergency	Electrical corporation does not have a specific and targeted engagement program for AFN, medical baseline, and socially vulnerable populations throughout its territory Or No ability to measure effectiveness of engagement (i.e., outreach, education, and support) program with AFN, medical baseline and socially vulnerable populations during or after an emergency	At a minimum, the electrical corporation: • Seeks feedback from AFN, medical baseline, and socially vulnerable populations and/or representatives of such groups on accessibility and effectiveness of engagement activities annually • Has demonstrated that its engagement (i.e., outreach, education, and support) has reach at least **50-75%** of the AFN, medical baseline and socially vulnerable populations before, during and after a wildfire and/or PSPS event in its service territory • Has demonstrated that its support services before and during a PSPS event has reached at least **90%** of medical baseline customers.	At a minimum, the electrical corporation: • Same as Level 1, plus • Updates program and activities based on feedback from AFN, medical baseline, and socially vulnerable populations and/or representatives of such groups on accessibility and effectiveness of engagement activities annually • Has demonstrated that its engagement (i.e., outreach, education, and support) has reach at least **75-90%** of the AFN, medical baseline, and socially vulnerable populations before, during and after a wildfire and/or PSPS event in its service territory • Prior to and during PSPS outages, provides back-up power (e.g., generators) to **95%** of medical baseline customers who are at an elevated risk due to lack of power.	At a minimum, the electrical corporation: • Same as Level 2, plus • Updates program and activities based on feedback from AFN, medical baseline, and socially vulnerable populations and/or representatives of such groups on accessibility and effectiveness of engagement activities annually and **after every major event** • Has demonstrated that its engagement (i.e., outreach, education, and support) has reach at least **90-95%** of the AFN, medical baseline and socially vulnerable populations before, during and after a wildfire and/or PSPS event in its service territory • Prior to and during PSPS outages, provides back-up power (e.g., generators) to **99%** of medical baseline customers who are at an elevated risk due to lack of power.	At a minimum, the electrical corporation: • Same as Level 3, plus • Has demonstrated that its engagement (i.e., outreach, education, and support) has reach at least **99%** of the AFN, medical baseline, and socially vulnerable populations before, during and after a wildfire and/or PSPS event in its service territory

Engagement with AFN and socially vulnerable populations		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Spatial granularity	Level of customization of engagement (i.e., outreach, education, and support) program with AFN, medical baseline and socially vulnerable populations	No engagement (i.e., outreach, education, and support) program with AFN, medical baseline and socially vulnerable populations	Engagement (i.e., outreach, education, and support) program with AFN, medical baseline and socially vulnerable populations are based on statutory minimums	Engagement (i.e., outreach, education, and support) program with AFN, medical baseline and socially vulnerable populations are based on an enterprise-wide level.	Engagement (i.e., outreach, education, and support) program with AFN, medical baseline, and socially vulnerable populations are based on a county-wide level.	Engagement (i.e., outreach, education, and support) program with AFN. medical baseline and socially vulnerable populations are based on a community-wide level.

5.7.4 36. Collaboration on local wildfire mitigation planning

Collaboration on local wildfire mitigation planning		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Comprehensiveness	Depth and breadth an electrical corporation's collaboration efforts in local wildfire mitigation planning with community partners. This includes community wildfire protection plans, safety elements in general plans, chipper program, local multi-hazard mitigation planning, etc.	Electrical corporation does not collaborate on local wildfire mitigation planning with community partners	Electrical corporation provides the following collaborative efforts in local wildfire mitigation planning: • Identifies relevant county, city, tribal and civil society groups conducting wildfire mitigation planning across the electrical corporation's service territory • For each entity, electrical corporation identifies local wildfire mitigation planning programs, activities and/or documents and level of collaboration, and date of collaboration to which the electrical corporation has contributed. • Identify key community partnerships to collaborate and coordinate on wildfire and PSPS mitigation planning efforts. • Develop and implement sustainable operational strategies to provide necessary resources to support and collaborate on local wildfire mitigation planning efforts.	Electrical corporation provides the following collaborative efforts in local wildfire mitigation planning: • Same as Level 1, plus • Establishes working relationships with a minimum of 4 community partners per county within the Electrical corporation's service territory • Provide feedback and input on a minimum of 4 local wildfire mitigation planning activities (e.g., CWPPs, safety elements in general plans, local hazard mitigation plans) per county. • The frequency of these efforts should be based on the update cycle of the respective planning effort (e.g., every 5 years for a CWPP)	Electrical corporation provides the following collaborative efforts in local wildfire mitigation planning: • Same as Level 2, plus • Take an active and proactive role in supporting local wildfire mitigation planning managed by local community partners. • Establish working relationships and provide support for 75% of all community partners conducting local wildfire mitigation planning in the electrical corporation's service territory	Electrical corporation provides the following collaborative efforts in local wildfire mitigation planning: • Same as Level 3, plus • Establish working relationships and provide support for 90% of all community partners conducting local wildfire mitigation planning in the electrical corporation's service territory

Collaboration on local wildfire mitigation planning		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Frequency	Number of occurrences the Electrical corporation collaborates on local wildfire mitigation planning with community partners	Electrical corporation does not collaborate on local wildfire mitigation planning with community partners	Electrical corporation collaborates on local wildfire mitigation planning with community partners **once every 5 years** or as often as the local planning effort is updated	Electrical corporation collaborates on local wildfire mitigation planning with community partners **once every 2-4 years** or as often as the local planning effort is updated	Electrical corporation collaborates on local wildfire mitigation planning with community partners **annually** or as often as the local planning effort is updated	Electrical corporation collaborates on local wildfire mitigation planning with community partners **more than once a year** or has often as the local planning effort is updated

5.7.5 37. Cooperation and best practice sharing with other electrical corporations

Cooperation and best practice sharing with other electrical corporations		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Comprehensiveness	Extent of cooperation and best practices which are shared with other electrical corporations.	Electrical corporation does not cooperate or share best practices with other electrical corporations or electrical corporations.	Electrical corporation cooperates or participates in best practice sharing through **2 of** the following activities: 1. Benchmarking risk and risk component calculations. 2. Benchmarking risk event data and corrective actions with other electrical corporations. 3. Benchmark weather forecasts with those of other electrical corporations and government agencies. 4. Benchmark near-real-time data collected for wildfire monitoring of other electrical corporations and government agencies. 5. Compare asset inspection, maintenance and repair procedures, training, and lessons learned with other electrical corporations. 6. Compare vegetation inspection, management, treatment procedures, training, and lessons learned with other electrical corporations. 7. Compare grid operations procedures for minimizing ignition and PSPS risk factors with other electrical corporations. 8. Compare processes and protocols for learning following wildfire and PSPS events electrical corporations.	Electrical corporation cooperates or participates in best practice sharing through **4 of** the following activities: 1. Benchmarking risk and risk component calculations. 2. Benchmarking risk event data and corrective actions with other electrical corporations. 3. Benchmark weather forecasts with those of other electrical corporations and government agencies. 4. Benchmark near-real-time data collected for wildfire monitoring of other electrical corporations and government agencies. 5. Compare asset inspection, maintenance and repair procedures, training, and lessons learned with other electrical corporations. 6. Compare vegetation inspection, management, treatment procedures, training, and lessons learned with other electrical corporations. 7. Compare grid operations procedures for minimizing ignition and PSPS risk factors with other electrical corporations. 8. Compare processes and protocols for learning following wildfire and PSPS events electrical corporations.	Electrical corporation cooperates or participates in best practice sharing through **6 of** the following activities: 1. Benchmarking risk and risk component calculations. 2. Benchmarking risk event data and corrective actions with other electrical corporations. 3. Benchmark weather forecasts with those of other electrical corporations and government agencies. 4. Benchmark near-real-time data collected for wildfire monitoring of other electrical corporations and government agencies. 5. Compare asset inspection, maintenance and repair procedures, training, and lessons learned with other electrical corporations. 6. Compare vegetation inspection, management, treatment procedures, training, and lessons learned with other electrical corporations. 7. Compare grid operations procedures for minimizing ignition and PSPS risk factors with other electrical corporations. 8. Compare processes and protocols for learning following wildfire and PSPS events electrical corporations.	Electrical corporation cooperates or participates in best practice sharing through **all** the following activities: 1. Benchmarking risk and risk component calculations. 2. Benchmarking risk event data and corrective actions with other electrical corporations. 3. Benchmark weather forecasts with those of other electrical corporations and government agencies. 4. Benchmark near-real-time data collected for wildfire monitoring of other electrical corporations and government agencies. 5. Compare asset inspection, maintenance and repair procedures, training, and lessons learned with other electrical corporations. 6. Compare vegetation inspection, management, treatment procedures, training, and lessons learned with other electrical corporations. 7. Compare grid operations procedures for minimizing ignition and PSPS risk factors with other electrical corporations. 8. Compare processes and protocols for learning following wildfire and PSPS events electrical corporations.

Cooperation and best practice sharing with other electrical corporations		Maturity Level				
~~Scoring Philosophy~~Sub-Capability	Scoring Description	0	1	2	3	4
Frequency	Frequency at which the electrical corporation cooperates or shares best practices with other electrical corporations.	Electrical corporation does not cooperate or share information with other electrical corporations at least once per year	Electrical corporation cooperates or shares information with other electrical corporations at least once per year.	Electrical corporation cooperates or shares information with other electrical corporations at least once per quarter.	Electrical corporation cooperates or shares information with other electrical corporations at least once per month.	No additional requirements beyond level 3
Standardized processes	The methods used to share best practices with other electrical corporations	Electrical corporation has no procedures for sharing or receiving best practices and lessons learned regarding ignition prevention and suppression with or from other California electrical corporations.	Electrical corporation has standard procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression. Electrical corporation seeks out information from and provides information to other electrical corporations. Electrical corporation has a consistent format and venue/medium through which information is exchanged	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression. Electrical corporation seeks out information from and provides information to other electrical corporations. Electrical corporation has a consistent format and venue/medium through which information is exchanged Participate in task groups focused on sharing lessons learned and improving best practices.	Electrical corporation has procedures for exchanging best practices and lessons learned with other California electrical corporations and implementing information from other electrical corporations regarding ignition prevention and suppression. Electrical corporation seeks out information from and provides information to other electrical corporations. Electrical corporation has a consistent format and venue/medium through which information is exchanged Participate in task groups focused on sharing lessons learned and improving best practices. Electrical corporation has standard process for testing applicability of best practices and lessons learned of other electrical corporations.