

APPENDIX A

Resolution WSD-011 WSD/CTJ/gp2

ATTACHMENT 2.2



Attachment 2.2: 2021 Wildfire Mitigation
Plan (WMP) Guidelines Template



Wildfire Safety Division
Attachment 2.2: 2021 Wildfire
Mitigation Plan Guidelines Template
November 2020



I. Wildfire Mitigation Plan (WMP) submission and review process

The California Public Utilities Commission (henceforth the CPUC or the Commission) Guidance in Decision (D.19-05-036) included substantive and procedural requirements for future Wildfire Mitigation Plans (WMP) based on lessons learned during the first WMP (2019) evaluation and established an expectation for improvement in the WMPs each year. Several improvements were made for the 2020 WMP and highlighted the need for continuous improvement moving forward.

The experience of the 2020 WMP submission and review process points towards the benefit of streamlined structure and consistency in data, receiving supporting data earlier in the WMP process, and utilizing a structured and consistent approach to evaluate utility wildfire mitigation. Several guiding principles based on lessons learned, comments from stakeholders, and input from the Wildfire Safety Advisory Board, inform the WMP Update Guidelines for 2021: frontloading the WMP review cycle where possible, standardizing information collection, systematizing qualitative information, and tracking utility progress towards wildfire and PSPS risk reduction.

Accordingly, the WSD will consider these four key elements for the 2021 WMP Update submission and review process:

- 1. Frontload data collection.** This would extend the timeframe for WSD and stakeholder review of relevant utility data in advance of the WMP submission and review period, in addition to reducing the need for follow-up data requests. This means some data is collected prior to the annual WMP through Quarterly Reports.
- 2. Standardize templates for utility WMP submission.** Templates help WSD staff more easily uncover relevant supporting information and facilitate comparison across utilities. Utilities will organize their annual WMP Updates based on narrative sections and through additional sub-headings. Utilities will be required to follow a specific schema and pass automated calculation checks for data provided in Quarterly Reports.
- 3. Systematize qualitative evaluation.** An assessment framework increases the objectivity of review and allows the WSD to more efficiently conduct a thorough review.
- 4. Tracking utility progress towards wildfire and PSPS risk reduction.** The 2021 WMP Update serves as the year one update to three-year plans established in 2020. The 2021 WMP update highlights the progress utilities have made to their existing plans and is reviewed in relation to the claims made in 2020, change orders and other required filings.



II. Wildfire Mitigation Plan (WMP) Update Guidelines Template

Structure

The WMP Update (commonly referred to as “WMP” in this document) itself is composed of eight sections plus an appendix:

1. Persons responsible for executing the plan - Contact information for executives responsible, program owners and experts
2. Adherence to statutory requirements - Checklist for each requirement and cite where it was addressed in WMP
3. Actuals and planned spending - Cost summary tables and impacts to ratepayers
4. Lessons learned and risk trends - 1, 3 and 10-year investor-owned utility (IOU) outlook, projected trends in wildfire risk, research reports and proposals, and model and metric calculation methodologies
5. Inputs to the plan and directional vision - goals, objectives, program targets, and worker qualifications
6. Metrics and underlying data – Placeholder for quarterly submissions of WMP metrics. To be filled in by data from prior submissions and Quarterly Reports
7. Mitigation initiatives - Reporting of initiative progress, spend and Risk-Spend Efficiency (RSE)
8. Public Safety Power Shutoff - Separate section for PSPS narrative and data, including customer impact and cost
9. Appendix – Citations to relevant statutes, Commission directives, proceedings and orders

Instructions for filling out the WMP are given with each section of the WMP. Sections of the WMP contain a portion for the utility to provide narrative responses. This narrative response may include quantitative and qualitative explanations, as well as supporting documentation including relevant maps, spreadsheets, photographs, and other relevant information. Many sections also instruct the utility to provide a separate quantitatively-focused response, where tables must be filled out by utilities according to the instructions provided in each section.

Some tables include comment boxes. Utilities may extend the size of comment boxes as needed to provide an adequate description for each aspect of the WMP. Some tables, such as those in section 3, are required to be filled out directly in the WMP report alongside the narrative content. Other tables, which require data to be filled out in a separate spreadsheet document, are reported through the Quarterly Reports. Edits to the Quarterly Report metrics can be provided in the attached spreadsheet document as needed. For any table to be edited, report all data required in that table, not just the data to be edited, and note in the narrative of the corresponding section that the table has been updated.

If any portion of the WMP requires information that the utility has not collected itself nor could ascertain based on information that the utility does collect, the utility shall work with federal, state, and local agencies, stakeholders, and partners to collect or compile the information.

Where the information in question is not collected by any stakeholder and cannot be collected by the utility, the utility shall indicate this and include a description of the information that the utility and/or other stakeholders do track that most closely fits the requirement. Clearly cite all source data used in lieu of the data requested in the requirement.

For example, by the WMP deadline, the utility may not have a full accounting of the value of property destroyed by utility-ignited wildfire in a given year due to ongoing investigation into the cause of one or more wildfires within its service territory. In this example, the utility shall indicate 1) the known sum of the value of property determined by fire Authorities having jurisdiction (AHJs) to have been destroyed by utility-ignited wildfire in that year, albeit incomplete, and 2) a list of the wildfires in that year for which utility facilities are being investigated as a potential source of ignition



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but for which the cause is still undetermined and an estimation of value of property destroyed by each. The utility shall cite all data sources used in the calculations.

Finally, the utility shall describe its plan to improve its data collection and/or cooperation with partners with the goal of collecting the required information, including the timeline to implementation.

In the event that any of the requested information is confidential, the utility shall provide two versions to the WSD, one which includes all of the information and a second that does not include the confidential information.



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0 Glossary of defined terms

Term	Definition
10-hour dead fuel moisture content	Moisture content of small dead vegetation (e.g. grass, leaves, which burn quickly but not intensely), which can respond to changes in atmospheric moisture content within 10 hours.
Access and functional needs populations	Per Government Code § 8593.3 and D.19-05-042, individuals who have developmental or intellectual disabilities, physical disabilities, chronic conditions, injuries, limited English proficiency or who are non-English speaking, older adults, children, people living in institutionalized settings, or those who are low income, homeless, or transportation disadvantaged, including, but not limited to, those who are dependent on public transit or those who are pregnant.
Authority Having Jurisdiction	AHJ, party with assigned responsibility, depending on location and circumstance.
Asset (utility)	Electric lines, equipment, or supporting hardware.
At-risk species	Species of vegetation that are particularly likely to contact power lines in the event of high winds and/or ignite if they catch a spark.
Baseline (ignition probability, maturity)	A measure, typically of the current state, to establish a starting point for comparison.
Carbon dioxide equivalent	Tons of greenhouse gases (GHG) emitted, multiplied by the global warming potential relative to carbon dioxide.
Circuit mile	The total length in miles of separate circuits regardless of the number of conductors used per circuit
Contractor	Any individual in the temporary and/or indirect employ of the utility whose limited hours and/or time-bound term of employment are not considered as “full-time” for tax and/or any other purposes.
Critical facilities and infrastructure	<p>For brevity in the 2021 WMP, “critical facilities and infrastructure” may be shortened to “critical infrastructure” and/or “critical facilities” throughout the WMP. Critical facilities and infrastructure is defined in accordance with the definition adopted in D.19-05-042 and modified in D.20-05-051: those facilities and infrastructure that are essential to the public safety and that require additional assistance and advance planning to ensure resiliency during de energization events. Namely:</p> <ul style="list-style-type: none"> • Emergency Services Sector <ul style="list-style-type: none"> ○ Police Stations ○ Fire Station ○ Emergency Operations Centers ○ Public safety answering points • Government Facilities Sector <ul style="list-style-type: none"> ○ Schools ○ Jails and prisons • Healthcare and Public Health Sector <ul style="list-style-type: none"> ○ Public Health Departments



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	<ul style="list-style-type: none"> ○ Medical facilities, including hospitals, skilled nursing facilities, nursing homes, blood banks, health care facilities, dialysis centers and hospice facilities (excluding doctor offices and other non-essential medical facilities) ● Energy Sector <ul style="list-style-type: none"> ○ Public and private utility facilities vital to maintaining or restoring normal service, including, but not limited to, interconnected publicly-owned utilities and electric cooperatives ● Water and Wastewater Systems Sector <ul style="list-style-type: none"> ○ Facilities associated with the provision of drinking water or processing of wastewater including facilities used to pump, divert, transport, store, treat and deliver water or wastewater ● Communications Sector <ul style="list-style-type: none"> ○ Communication carrier infrastructure including selective routers, central offices, head ends, cellular switches, remote terminals and cellular sites ● Chemical Sector <ul style="list-style-type: none"> ○ Facilities associated with the provision of manufacturing, maintaining, or distributing hazardous materials and chemicals (including Category N-Customers as defined in D.01-06-085) ● Transportation Sector <ul style="list-style-type: none"> ○ Facilities associated with automobile, rail, aviation, major public transportation, and maritime transportation for civilian and military purposes
Customer hours	Total number of customers, multiplied by the average number of hours (e.g. of power outage).
Data cleaning	Calibrating raw data to remove errors (including typographical and numerical mistakes).
Dead fuel moisture content	Moisture content of dead vegetation, which responds solely to current environmental conditions and is critical in determining fire potential.
Detailed inspection	In accordance with GO 165, an inspection where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.
Enhanced inspection	Inspection whose frequency and thoroughness exceeds the requirements of the detailed inspection, particularly if driven by risk calculations.
Evacuation impact	Number of people evacuated, with the duration for which they are evacuated, from homes and businesses, due to wildfires.
Evacuation zone	Areas designated by CAL FIRE and local fire agency evacuation orders, to include both “voluntary” and “mandatory” in addition to other orders such as “precautionary” and “immediate threat”.
Fuel density	Mass of fuel (vegetation) per area which could combust in a wildfire.
Fuel management	Removing or thinning vegetation to reduce the potential rate of propagation or intensity of wildfires.
Fuel moisture content	Amount of moisture in a given mass of fuel (vegetation), measured as a percentage of its dry weight.
Full-time employee	Any individual in the ongoing and/or direct employ of the utility whose hours and/or term of employment are considered as “full-time” for tax and/or any other purposes.



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GO 95 nonconformance	Condition of a utility asset that does not meet standards established by General Order 95.
Greenhouse gas (GHG) emissions	Health and Safety Code 38505 identifies seven greenhouse gases that ARB is responsible to monitor and regulate in order to reduce emissions: carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), sulfur hexafluoride (SF ₆), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and nitrogen trifluoride (NF ₃).
Grid hardening	Actions (such as equipment upgrades, maintenance, and planning for more resilient infrastructure) taken in response to the risk of undesirable events (such as outages) or undesirable conditions of the electrical system in order to reduce or mitigate those events and conditions, informed by an assessment of the relevant risk drivers or factors.
Grid topology	General design of an electric grid, whether looped or radial, with consequences for reliability and ability to support de-energization (e.g., being able to deliver electricity from an additional source).
High Fire Threat District (HFTD)	Per D.17-01-009, areas of the State designated by the CPUC and CAL FIRE to have elevated wildfire risk, indicating where utilities must take additional action (per GO 95, GO 165, and GO 166) to mitigate wildfire risk.
Highly rural region	In accordance with 38 CFR 17.701, “highly rural” shall be defined as those areas with a population of less than 7 persons per square mile. For the purposes of the WMP, “area” shall be defined as census tracts.
High Wind Warning (HWW)	Level of wind risk from weather conditions, as declared by the National Weather Service. For historical NWS data, refer to the Iowa State University Iowa archive of NWS watch / warnings. ¹
HWW overhead (OH) Circuit Mile Day	Sum of overhead circuit miles of utility grid subject to High Wind Warnings (HWW, as defined by the National Weather Service) each day within a given time period, calculated as the number of overhead circuit miles that were under an HWW multiplied by the number of days those miles were under said HWW. For example, if 100 overhead circuit miles were under an HWW for 1 day, and 10 of those miles were under HWW for an additional day, then the total HWW OH circuit mile days would be 110.
Ignition probability	The relative possibility that an ignition will occur, probability is quantified as a number between 0% and 100% (where 0% indicates impossibility and 100% indicates certainty). The higher the probability of an event, the more certainty there is that the event will occur. (Often informally referred to as likelihood or chance).
Ignition-related deficiency	Any condition which may result in ignition or has previously resulted in ignition, even if not during the past five years.
Impact/consequence of ignitions	The effect or outcome of a wildfire ignition, affecting objectives, which may be expressed by terms including, although not limited to health, safety, reliability, economic and/or environmental damage.
Initiative	Measure or activity proposed or in process designed to reduce the consequences and/or probability of wildfire or PSPS.
Inspection protocol	Documented procedures to be followed in order to validate that a piece of equipment is in good condition and expected to operate safely and effectively.
Invasive species	Non-native species whose proliferation increases the risk of wildfires.

¹ <https://mesonet.agron.iastate.edu/request/gis/watchwarn.phtml>



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Level 1 finding	In accordance with GO 95, an immediate safety and/or reliability risk with high probability for significant impact.
Level 2 finding	In accordance with GO 95, a variable (non-immediate high to low) safety and/or reliability risk.
Level 3 finding	In accordance with GO 95, an acceptable safety and/or reliability risk.
Life expectancy	Anticipated years that a piece of equipment can be expected to meet safety and performance requirements.
Limited English Proficiency (LEP)	Populations with limited English working proficiency based on the International Language Roundtable scale.
Line miles	The number of miles of transmission and/or distribution line. Differs from circuit miles because individual circuits, such as the two circuits of a double-circuit line, are not counted separately in circuit miles but are counted as separate total miles of line.
Live fuel moisture content	Moisture content within living vegetation, which can retain water longer than dead fuel.
Lost energy	Energy that would have been delivered were it not for an outage.
Major roads	Interstate highways, U.S. highways, state and county routes.
Match drop simulation	Wildfire simulation method that takes an arbitrary ignition and forecasts propagation and consequence/impact.
Member of the public	Any individual not employed by the utility.
Multi-attribute value function	Risk calculation methodology introduced during CPUC's S-MAP and RAMP proceedings.
Near miss	Previously used to define an event with probability of ignition. Redefined under "Risk event."
Need for PSPS	When utilities' criteria for utilizing PPS are met.
Noncompliant clearance	Rights-of-way whose vegetation is not trimmed in accordance with the requirements of GO 95.
Outages of the type that could ignite a wildfire	Outages that, in the judgement of the utility, could have ignited a wildfire.
Outcome metrics	Measurements of the performance of the utility and its service territory in terms of both leading and lagging indicators of wildfire, PPS, and other consequences of wildfire risk, including the potential unintended consequences of wildfire mitigation work, such as acreage burned by utility-ignited wildfire.
Overcapacity	When the energy transmitted by utility equipment exceeds that of its nameplate capacity.
Patrol inspection	In accordance with GO 165, a simple visual inspection of applicable utility equipment and structures that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.
Percentile conditions	Top X% of a particular set (e.g. wind speed), based on a historical data set with sufficient detail. For example, "Top 95 percentile wind speeds in the last 5 years" would refer to the 5% of avg daily wind speeds recorded by each weather station. If 1,000 weather stations recorded average daily wind speeds over 10 days, then the 95 th percentile wind speed would be the top 5% of weather station-days. In this example, there will be 10 days each with 1,000 weather station reports and a total of 10,000 weather station-days, so 50 observations will be in the top 5%. The lowest wind speed in this top 5% would be the "95 th percentile wind speed".
Planned outage	Electric outage announced ahead of time by the utility.



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Preventive maintenance (PM)	The practice of maintaining equipment on a regular schedule, based on risk, elapsed time, run-time meter readings, or number of operations. The intent of PM is to “prevent” maintenance problems or failures before they take place by following routine and comprehensive maintenance procedures. The goal is to achieve fewer, shorter, and more predictable outages.
Priority essential services	Critical first responders, public safety partners, critical facilities and infrastructure, operators of telecommunications infrastructure, and water utilities/agencies.
Program targets	Quantifiable measurements of activity identified in WMPs and subsequent updates used to show progress towards reaching the objectives, such as number of trees trimmed or miles of power lines hardened.
Progress metrics	Measurements that track how much utility wildfire mitigation activity has changed the conditions of utility wildfire risk exposure or utility ability to manage wildfire risk exposure, in terms of leading indicators of ignition probability and wildfire consequences.
Property	Private and public property, buildings and structures, infrastructure, and other items of value that were destroyed by wildfire, including both third-party property and utility assets.
PSPS event	Defined as the time period from the first public safety partner notified of a planned public safety de-energization to the final customer re-energized.
PSPS risk	The potential for the occurrence of a PSPS event expressed in terms of a combination of various outcomes of the event and their associated probabilities.
PSPS weather	Weather that exceeds a utility’s risk threshold for initiating a PSPS.
Red Flag Warning (RFW)	Level of wildfire risk from weather conditions, as declared by the National Weather Service. For historical NWS data, refer to the Iowa State University Iowa archive of NWS watch / warnings. ²
RFW OH Circuit Mile Day	Sum of overhead circuit miles of utility grid subject to Red Flag Warning each day within a given time period, calculated as the number of overhead circuit miles that were under an RFW multiplied by the number of days those miles were under said RFW. For example, if 100 overhead circuit miles were under an RFW for 1 day, and 10 of those miles were under RFW for an additional day, then the total RFW OH circuit mile days would be 110.
Risk event	An event with probability of ignition, including wires down, contacts with objects, line slap, events with evidence of heat generation, and other events that cause sparking or have the potential to cause ignition. The following risk events all qualify as risk event: <ul style="list-style-type: none"> • Ignitions • Outages not caused by vegetation • Vegetation-caused outages • Wire-down events • Faults • Other risk events with potential to cause ignitions
Risk event simulation	Simulation of what the consequence would have been of an ignition had it occurred.
Risk-spend efficiency (RSE)	An estimate of the cost-effectiveness of initiatives, calculated by dividing the mitigation risk reduction benefit by the mitigation cost estimate based on the full set of risk reduction benefits estimated from the incurred costs. For ongoing initiatives, the RSE can be calculated by determining the “marginal benefit” of additional spending in the ongoing

² <https://mesonet.agron.iastate.edu/request/gis/watchwarn.phtml>



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	initiative. For example, the RSE of an ongoing initiative could be calculated by dividing the mitigation risk reduction benefit from a 5% increase in spend by the cost associated with a 5% increase in spend.
Rule	Section of public utility code requiring a particular activity or establishing a particular threshold.
Run-to-failure	A maintenance approach that replaces equipment only when it fails.
Rural region	In accordance with GO 165, "rural" shall be defined as those areas with a population of less than 1,000 persons per square mile as determined by the United States Bureau of the Census. For the purposes of the WMP, "area" shall be defined as census tracts.
Safety Hazard	A condition that poses a significant threat to human life or property.
Simulated wildfire	Propagation and impact/consequence of a wildfire ignited at a particular point ('match drop'), as simulated by fire spread software.
Span	The space between adjacent supporting poles or structures on a circuit consisting of electric lines and equipment. "Span level" refers to asset-scale granularity.
System Average Interruption Duration Index (SAIDI)	System-wide total number of minutes per year of sustained outage per customer served.
Third-party contact	Contact between a piece of electrical equipment and another object, whether natural (tree branch) or human (vehicle).
Time to expected failure	Time remaining on the life expectancy of a piece of equipment.
Top 30% of proprietary fire potential index	Top 30% of FPI or equivalent scale (e.g., "Extreme" on SCE's FPI; "extreme", 15 or greater, on SDG&E's FPI; and 4 or above on PG&E's FPI).
Trees with strike potential / hazard trees	Trees that could either 'fall in' to a power line, or have branches detach and 'fly in' to contact a power line in high-wind conditions.
Unplanned outage	Electric outage that occurs with no advance notice from the utility (e.g. blackout).
Urban region	In accordance with GO 165, "urban" shall be defined as those areas with a population of more than 1,000 persons per square mile as determined by the United States Bureau of the Census.
Utility-ignited wildfire	Wildfires ignited by utility infrastructure or employees, including all wildfires determined by AHJ investigation to originate from ignition caused by utility infrastructure. For the purposes of the WMP, "area" shall be defined as census tracts.
Vegetation management	Trimming and clearance of trees, branches, and other vegetation that poses the risk of contact with electric equipment.
Vegetation risk index	Risk index indicating the probability of vegetation-related outages along a particular circuit, based on the vegetation species, density, height, and growth rate.
Weather normalization	Adjusting metrics based on relative weather risk factors or indices
Wildfire impact/consequence	The effect or outcome of a wildfire affecting objectives, which may be expressed, by terms including, although not limited to health, safety, reliability, economic and/or environmental damage.
Wildfire risk	The potential for the occurrence of a wildfire event expressed in terms of ignition probability, wildfire impact/consequence.
Wildfire-only WMP programs	Activities, practices, and strategies that are only necessitated by wildfire risk, unrelated to or beyond that required by minimum reliability and/or safety requirements. Such programs are not indicated or in common use in areas where wildfire risk is minimal (e.g., territory



	with no vegetation or fuel) or under conditions where wildfires are unlikely to ignite or spread (e.g., when rain is falling).
Wildland urban interface (WUI)	A geographical area identified by the state as a “Fire Hazard Severity Zone”, or other areas designated by the enforcing agency to be a significant risk from wildfires, established pursuant to Title 24, Part 2, Chapter 7A.
Wire down	Instance where an electric transmission or distribution conductor is broken and falls from its intended position to rest on the ground or a foreign object.

1 Persons responsible for executing the WMP

Provide an accounting of the responsibilities of the responsible person(s) executing the plan, including:

1. Executive level with overall responsibility
2. Program owners specific to each component of the plan

Title, credentials and components of responsible must be released publicly, but other contact information may be provided in a redacted file attached to the WMP submission.

Executive-level owner with overall responsibility

- Name and title:
- Email:
- Phone number:

Program owners specific to each section of the plan

Note: A program owner may own multiple sections, and multiple components across sections, but each section must have a program owner accountable.

Section 1: Persons responsible for executing the plan

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:
- Phone number:
- Component (if entire section, put “entire section”):

Section 2: Adherence to statutory requirements

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:
- Phone number:
- Component (if entire section, put “entire section”):

Section 3: Actuals and planned spending

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:



- Phone number:
- Component (if entire section, put "entire section"):

Section 4: Lessons learned and risk trends

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:
- Phone number:
- Component (if entire section, put "entire section"):

Section 5: Inputs to the plan and directional vision

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:
- Phone number:
- Component (if entire section, put "entire section"):

Section 6: Metrics and underlying data

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:
- Phone number:
- Component (if entire section, put "entire section"):

Section 7: Mitigation initiatives

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:
- Phone number:
- Component (if entire section, put "entire section"):

Section 8: Public Safety Power Shutoff

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:
- Phone number:
- Component (if entire section, put "entire section"):

Section 9: Appendix

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:



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- Phone number:
- Component (if entire section, put "entire section"):



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1.1 Verification

Complete the following verification for the WMP submission:

(See Rule 1.11)
(Where Applicant is a Corporation)

I am an officer of the applicant corporation herein, and am authorized to make this verification on its behalf. The statements in the foregoing document are true of my own knowledge, except as to matters which are therein stated on information or belief, and as to those matters I believe them to be true.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on _____ at _____, California.
(Date) (Name of city)

(Signature and Title of Corporate Officer)



2 Adherence to statutory requirements

Section 2 comprises a “check list” of the CPUC Code Sec. 8386 (c) requirements and subparts. Each utility shall both affirm that the WMP addresses each requirement AND cite the Section or Page Number where it is more fully described (whether in Executive Summary or other section of the WMP).

Illustrative Table 2-1 check-list:

Requirement	Description	WMP Section/Page
2	The objectives of the plan	Section 4.1 pg. 13
10	Protocols for the de-energization of the electrical corporation’s transmission infrastructure, etc.	Section 5 overview, pg. 30-31

Mark the following table with the location of each requirement. If requirement is located in multiple areas, mention all WMP sections and pages, separated by semi-colon (e.g., Section 5, pg. 30-32; Section 7, pg. 43)



Requirement	Description	WMP Section/Page
1	An accounting of the responsibilities of persons responsible for executing the plan	
2	The objectives of the plan	
3	A description of the preventive strategies and programs to be adopted by the electrical corporation to minimize the risk of its electrical lines and equipment causing catastrophic wildfires, including consideration of dynamic climate change risks	
4	A description of the metrics the electrical corporation plans to use to evaluate the plan's performance and the assumptions that underlie the use of those metrics	
5	A discussion of how the application of previously identified metrics to previous plan performances has informed the plan	
6	Protocols for disabling reclosers and deenergizing portions of the electrical distribution system that consider the associated impacts on public safety. As part of these protocols, each electrical corporation shall include protocols related to mitigating the public safety impacts of disabling reclosers and deenergizing portions of the electrical distribution system that consider the impacts on all of the aspects listed in PU Code 8386c	
7	Appropriate and feasible procedures for notifying a customer who may be impacted by the deenergizing of electrical lines, including procedures for those customers receiving a medical baseline allowance as described in paragraph (6). The procedures shall direct notification to all public safety offices, critical first responders, health care facilities, and operators of telecommunications infrastructure with premises within the footprint of potential deenergization for a given event	
8	Plans for vegetation management	
9	Plans for inspections of the electrical corporation's electrical infrastructure	
10	Protocols for the deenergization of the electrical corporation's transmission infrastructure, for instances when the deenergization may impact customers who, or entities that, are dependent upon the infrastructure	



11	A list that identifies, describes, and prioritizes all wildfire risks, and drivers for those risks, throughout the electrical corporation's service territory, including all relevant wildfire risk and risk mitigation information that is part of the Safety Model Assessment Proceeding and the Risk Assessment Mitigation Phase filings	
12	A description of how the plan accounts for the wildfire risk identified in the electrical corporation's Risk Assessment Mitigation Phase filing	
13	A description of the actions the electrical corporation will take to ensure its system will achieve the highest level of safety, reliability, and resiliency, and to ensure that its system is prepared for a major event, including hardening and modernizing its infrastructure with improved engineering, system design, standards, equipment, and facilities, such as undergrounding, insulation of distribution wires, and pole replacement	
14	A description of where and how the electrical corporation considered undergrounding electrical distribution lines within those areas of its service territory identified to have the highest wildfire risk in a commission fire threat map	
15	A showing that the electrical corporation has an adequately sized and trained workforce to promptly restore service after a major event, taking into account employees of other utilities pursuant to mutual aid agreements and employees of entities that have entered into contracts with the electrical corporation	
16	Identification of any geographic area in the electrical corporation's service territory that is a higher wildfire threat than is currently identified in a commission fire threat map, and where the commission should consider expanding the high fire threat district based on new information or changes in the environment	
17	A methodology for identifying and presenting enterprise wide safety risk and wildfire-related risk that is consistent with the methodology used by other electrical corporations unless the commission determines otherwise	
18	A description of how the plan is consistent with the electrical corporation's disaster and emergency preparedness plan prepared pursuant to Section 768.6, including plans to restore service and community outreach	
19	A statement of how the electrical corporation will restore service after a wildfire	



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20	Protocols for compliance with requirements adopted by the commission regarding activities to support customers during and after a wildfire, outage reporting, support for low-income customers, billing adjustments, deposit waivers, extended payment plans, suspension of disconnection and nonpayment fees, repair processing and timing, access to electrical corporation representatives, and emergency communications	
21	A description of the processes and procedures the electrical corporation will use to do the following: (A) Monitor and audit the implementation of the plan. (B) Identify any deficiencies in the plan or the plan's implementation and correct those deficiencies. (C) Monitor and audit the effectiveness of electrical line and equipment inspections, including inspections performed by contractors, carried out under the plan and other applicable statutes and commission rules.	

(22) Cites "Any other information that the Wildfire Safety Division might require. While it is assumed such information will be incorporated into the WMP, substantive additions will be identified for easier reference.



3 Actuals and Planned Spending for Mitigation Plan

3.1 Summary of WMP initiative expenditures

In the Table 3-1, summarize the projected costs (in thousands) per year over the three-year WMP cycle, including actual expenditures for years passed. In Table 3-2 break out projected costs per category of mitigations, over the three-year WMP cycle. The financials represented in the summary tables below equal the aggregate spending listed in the mitigations financial tables reported quarterly. Nothing in this document shall be construed as a statement that costs listed are approved or deemed reasonable if the WMP is approved, denied, or otherwise acted upon.

Table 3-1: Summary of WMP Expenditures - Total

	Spend in thousands \$
2020 WMP Planned	
2020 Actual	
Difference	
2021 Planned	
2022 Planned	
2020-22 Planned	

Table 3-2: Summary of WMP Expenditures by Category



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WMP Category	2020 WMP Planned	2020 Actual	Difference	2021 Planned	2022 Planned	2020-22 Planned (w/ 2020 Actual)
Risk and Mapping						
Situational Awareness						
Grid Design and System Hardening						
Asset Management and Inspections						
Vegetation Management						
Grid Operations						
Data Governance						
Resource Allocation						
Emergency Planning						
Stakeholder Cooperation and Community Engagement						
Total						

3.2 Summary of ratepayer impact

Report the projected cost increase to ratepayers due to utility-ignited wildfires and wildfire mitigation activities engaged in each of the years below. Account for all expenditure incurred in that year due to utility-ignited wildfires / mitigation activities and provide methodology behind calculation below Table 3-3.

Table 3-3: WMP Electricity cost increase to ratepayers



Outcome metric name	Annual performance - Actual					Unit(s)
	2016	2017	2018	2019	2020	
Increase in electric costs to ratepayer due to utility-ignited wildfires (total)						Dollar value of average monthly rate increase attributable to utility-ignited wildfires per year (e.g., \$3/month on average across customers for utility-ignited wildfires occurring in 20XX)
Increase in electric costs to ratepayer due to wildfire mitigation activities (total)						Dollar value of average monthly rate increase attributable to WMPs per year

4 Lessons Learned and Risk Trends

4.1 Lessons Learned: how tracking metrics on the 2020 plan has informed the 2021 plan

Describe how the utility’s plan has evolved since the 2020 WMP submission. Outline any major themes and lessons learned from the 2020 plan and subsequent implementation of the initiatives. In particular, focus on how utility performance against the metrics used has informed the utility’s 2021 WMP.

4.2 Understanding major trends impacting ignition probability and wildfire consequence

Describe how the utility assesses wildfire risk in terms of ignition probability and estimated wildfire consequence, including use of Multi-Attribute Risk Score (MARS) and Multi-Attribute Value Function (MAVF) as in the Safety Model and Assessment Proceeding (S-MAP)³ and Risk Assessment Mitigation Phase (RAMP), highlighting changes since the 2020 WMP report. Include description of how the utility distinguishes between these risks and the risks to safety and reliability. List and describe each “known local condition” that the utility monitors per GO 95, Rule 31.1, including how the condition is monitored and evaluated. In addition:

- A. Describe how the utility monitors and accounts for the contribution of weather to ignition probability and estimated wildfire consequence in its decision-making, including describing any utility-generated Fire Potential Index or other measure (including input variables, equations, the scale or rating system, an explanation of how uncertainties are accounted for, an explanation of how this index is used to inform operational decisions, and an explanation of how trends in index ratings impact medium-term decisions such as maintenance and longer-term decisions such as capital investments, etc.).
- B. Describe how the utility monitors and accounts for the contribution of fuel conditions to ignition probability and estimated wildfire consequence in its decision-making, including describing any proprietary fuel condition index (or other measures tracked), the outputs of said index or other measures, and the methodology used for projecting future fuel conditions. Include discussion of measurements and units for live fuel moisture content,

³ Updates to S-MAP are currently in deliberation under proceeding R. 20-07-013 – Order Instituting Rulemaking to Further Develop Risk-based Decision-making Framework for Electric and Gas Utilities



dead fuel moisture content, density of each fuel type, and any other variables tracked. Describe the measures and thresholds the utility uses to determine extreme fuel conditions, including what fuel moisture measurements and threshold values the utility considers “extreme” and its strategy for how fuel conditions inform operational decision-making.

4.2.1 Service territory fire-threat evaluation and ignition risk trends

Discuss fire-threat evaluation of the service territory to determine whether an expanded High Fire Threat District (HFTD) is warranted (i.e., beyond existing Tier 2 and Tier 3 areas). Include a discussion of any fire threat assessment of its service territory performed by the electrical corporation, highlighting any changes since the prior WMP report. In the event that the electrical corporation’s assessment determines the fire threat rating for any part of its service territory is insufficient (i.e., the actual fire threat is greater than what is indicated in the CPUC Fire Threat Map and High Fire Threat District designations), the corporation shall identify those areas for consideration of HFTD modification, based on the new information or environmental changes. To the extent this identification relies upon a meteorological or climatological study, a thorough explanation and copy of the study shall be included.

List and describe any macro trends impacting ignition probability and estimated wildfire consequence within utility service territory, highlighting any changes since the 2020 WMP report:

1. Change in ignition probability and estimated wildfire consequence due to climate change
2. Change in ignition probability and estimated wildfire consequence due to relevant invasive species, such as bark beetles
3. Change in ignition probability and estimated wildfire consequence due to other drivers of change in fuel density and moisture
4. Population changes (including Access and Functional Needs population) that could be impacted by utility ignition
5. Population changes in HFTD that could be impacted by utility ignition
6. Population changes in WUI that could be impacted by utility ignition
7. Utility infrastructure location in HFTD vs non-HFTD
8. Utility infrastructure location in urban vs rural vs highly rural areas

4.3 Change in ignition probability drivers

Based on the implementation of the above wildfire mitigation initiatives, explain how the utility sees its ignition probability drivers evolving over the 3-year term of the WMP, highlighting any changes since the 2020 WMP report. Focus on ignition probability and estimated wildfire consequence reduction by ignition probability driver, detailed risk driver, and include a description of how the utility expects to see incidents evolve over the same period, both in total number (of occurrence of a given incident type, whether resulting in an ignition or not) and in likelihood of causing an ignition by type. Outline methodology for determining ignition probability from events, including data used to determine likelihood of ignition probability, such as past ignition events, number of risk events, and description of events (including vegetation and equipment condition).

4.4 Research proposals and findings

Report all utility-sponsored research proposals, findings from ongoing studies and findings from studies completed in 2020 relevant to wildfire and PSPS mitigation.



4.4.1 Research proposals

Report proposals for future utility-sponsored studies relevant to wildfire and PSPS mitigation. Organize proposals under the following structure:

1. **Purpose of research** – brief summary of context and goals of research
2. **Relevant terms** - Definitions of relevant terms (e.g., defining "enhanced vegetation management" for research on enhanced vegetation management)
3. **Data elements** - Details of data elements used for analysis, including scope and granularity of data in time and location (i.e., date range, reporting frequency and spatial granularity for each data element, see example table below)
4. **Methodology** - Methodology for analysis, including list of analyses to perform; section shall include statistical models, equations, etc. behind analyses
5. **Timeline** - Project timeline and reporting frequency to WSD

Example table reporting data elements

Data Element	Collection period	Collection frequency	Spatial granularity	Temporal granularity	Comments
Ignitions from contact with vegetation in non-enhanced vegetation areas	2014 – 2020+ (ongoing)	Per ignition	Lat/lon per ignition	Date, hour of ignition (estimated)	-
Ignitions from contact with vegetation in enhanced vegetation areas	2019 – 2020+ (ongoing)	Per ignition	Lat/lon per ignition	Date, hour of ignition (estimated)	-

4.4.2 Research findings

Report findings from ongoing and completed studies relevant to wildfire and PSPS mitigation. Organize findings reports under the following structure:

1. **Purpose of research** – Brief summary of context and goals of research
2. **Relevant terms** - Definitions of relevant terms (e.g., defining "enhanced vegetation management" for research on enhanced vegetation management)
3. **Data elements** - Details of data elements used for analysis, including scope and granularity of data in time and location (i.e., date range, reporting frequency and spatial granularity for each data element, see example table above)
4. **Methodology** - Methodology for analysis, including list of analyses to perform; section shall include statistical models, equations, etc. behind analyses
5. **Timeline** - Project timeline and reporting frequency to WSD. Include any changes to timeline since last update
6. **Results and discussion** – Findings and discussion based on findings, highlighting new results and changes to conclusions since last update
7. **Follow-up planned** – Follow up research or action planned as a result of the research



4.5 Model and metric calculation methodologies

4.5.1 Additional models for ignition probability, wildfire and PSPS risk

Report details on methodology used to calculate or model ignition probability, potential impact of ignitions and / or PSPS, including list of all input used in impact simulation; data selection and treatment methodologies; assumptions, including Subject Matter Expert (SME) input; equation(s), functions, or other algorithms used to obtain output; output type(s), e.g., wind speed model; and comments.

For each model, organize details under the following headings:

1. **Purpose of model** – Brief summary of context and goals of model
2. **Relevant terms** - Definitions of relevant terms (e.g., defining "enhanced vegetation management" for a model on vegetation-related ignitions)
3. **Data elements** - Details of data elements used for analysis, including scope and granularity of data in time and location (i.e., date range, reporting frequency and spatial granularity for each data element, see example table above)
4. **Methodology** - Methodology and assumptions for analysis, including Subject Matter Expert (SME) input; equation(s), functions, statistical models, or other algorithms used to obtain output
5. **Timeline** – Model initiation and development progress over time. If updated in last WMP, provide update to changes since prior report.
6. **Application and results** – Explain where the model has been applied, how it has informed decisions, and any metrics or information on model accuracy and effectiveness collected in the prior year.

4.5.2 Calculation of key metrics

Report details on the calculation of the metrics below. For each metric, a standard definition is provided with statute cited where relevant. The utility must follow the definition provided and detail the procedure they used to calculate the metric values aligned with these definitions. Utilities must cite all data sources used in calculating the metrics below.

1. **Red Flag Warning overhead circuit mile days** – Detail the steps to calculate the annual number of red flag warning (RFW) overhead (OH) circuit mile days. Calculated as the number of circuit miles that were under an RFW multiplied by the number of days those miles were under said RFW. Refer to Red Flag Warnings as issued by the National Weather Service (NWS). For historical NWS data, refer to the Iowa State University Iowa archive of NWS watch / warnings.⁴ Detail the steps used to determine if an overhead circuit mile was under a Red Flag Warning, providing an example of how the RFW OH circuit mile days were calculated for a Red Flag Warning that occurred within utility territory over the last five years.
2. **High Wind Warning overhead circuit mile days** – Detail the steps used to calculate the annual number of High Wind Warning (HWW) overhead circuit mile days. Calculated as the number of overhead circuit miles that were under an HWW multiplied by the number of days those miles were under said HWW. Refer to High Wind Warnings as issued by the National Weather Service (NWS). For historical NWS data, refer to the Iowa State University Iowa archive of NWS watch / warnings.⁵ Detail the steps used to determine if an overhead circuit mile was under a High Wind Warning, providing an example of how the OH HWW circuit mile days were calculated for a High Wind Warning that occurred within utility territory over the last five years.

⁴ <https://mesonet.agron.iastate.edu/request/gis/watchwarn.phtml>

⁵ <https://mesonet.agron.iastate.edu/request/gis/watchwarn.phtml>



3. **Access and Functional Needs population** – Detail the steps to calculate the annual number of customers that are considered part of the Access and Functional Needs (AFN) population. Defined in Government Code § 8593.3 and D.19-05-042 as individuals who have developmental or intellectual disabilities, physical disabilities, chronic conditions, injuries, limited English proficiency or who are non-English speaking,⁶ older adults, children, people living in institutionalized settings, or those who are low income, homeless, or transportation disadvantaged, including, but not limited to, those who are dependent on public transit or those who are pregnant.
4. **Wildlife Urban Interface** – Detail the steps to calculate the annual number of circuit miles and customers in Wildlife Urban Interface (WUI) territory. WUI is defined as the area where houses exist at more than 1 housing unit per 40 acres and (1) wildland vegetation covers more than 50% of the land area (intermix WUI) or (2) wildland vegetation covers less than 50% of the land area, but a large area (over 1,235 acres) covered with more than 75% wildland vegetation is within 1.5 mi (interface WUI) (Radeloff et al, 2005).⁷
5. **Urban, rural and highly rural** – Detail the steps for calculating the number of customers and circuit miles in utility territory that are in highly rural, rural, and urban regions for each year. Use the following definitions for classifying an area highly rural/rural/urban (also referenced in glossary):
 - a. Highly rural – In accordance with 38 CFR 17.701, “highly rural” shall be defined as those areas with a population of less than 7 persons per square mile as determined by the United States Bureau of the Census. For the purposes of the WMP, “area” shall be defined as census tracts.
 - b. Rural – In accordance with GO 165, “rural” shall be defined as those areas with a population of less than 1,000 persons per square mile as determined by the United States Bureau of the Census. For the purposes of the WMP, “area” shall be defined as census tracts.
 - c. Urban – In accordance with GO 165, “urban” shall be defined as those areas with a population of more than 1,000 persons per square mile as determined by the United States Bureau of the Census. For the purposes of the WMP, “area” shall be defined as census tracts.

Population density numbers are calculated using the American Community Survey (ACS) 1-year estimates on population density by census tract for each corresponding year (2016 ACS 1-year estimate for 2016 metrics, 2017 ACS 1-year estimate for 2017 metrics, etc.). For years with no ACS 1-year estimate available, use the 1-year estimate immediately before the missing year (use 2019 estimate if 2020 estimate is not yet published, etc.)

4.6 Progress reporting on past deficiencies

Report progress on all deficiencies provided in the 2020 WMP relevant to the utility. This includes deficiencies in Resolution WSD-002.

Response: Summarize how the utility has responded and addressed the conditions in the table below. Reference documents that serve as part of the utility’s response (e.g. submitted in the utility’s Remedial Compliance Plan, location in 2021 WMP update, etc.). Note action taken by the WSD for Class A and B deficiencies (e.g. response found sufficient, response found insufficient and further action required, etc.).

Table 4.6-1: List of utility deficiencies and summary of response, 2020

⁶ Guidance on calculating number of households with limited or no English proficiency can be found in D.20-04-003

⁷ Paper can be found here - https://www.fs.fed.us/pnw/pubs/journals/pnw_2005_radeloff001.pdf with the latest WUI map (form 2010) found here - <http://silvis.forest.wisc.edu/data/wui-change/>



Deficiency number	Deficiency title	Utility response (brief summary)	Referenced documents	WSD Action

Add additional rows as needed

5 Inputs to the plan and directional vision for WMP

5.1 Goal of Wildfire Mitigation Plan

The goal of the Wildfire Mitigation Plan is shared across WSD and all utilities: Documented reductions in the number of ignitions caused by utility actions or equipment and minimization of the societal consequences (with specific consideration to the impact on Access and Functional Needs populations and marginalized communities) of both wildfires and the mitigations employed to reduce them, including PSPS.

In the following sub-sections report utility-specific objectives and program targets towards the WMP goal. No utility response required for section 5.1.

5.2 The objectives of the plan

Objectives are unique to each utility and reflect the 1, 3, and 10-Year projections of progress towards the WMP goal. Objectives are determined by the portfolio of mitigation strategies proposed in the WMP. The objectives of the plan shall, at a minimum, be consistent with the requirements of California Public Utilities Code §8386(a) –

Each electrical corporation shall construct, maintain, and operate its electrical lines and equipment in a manner that will minimize the risk of catastrophic wildfire posed by those electrical lines and equipment.

Describe utility WMP objectives, categorized by each of the following timeframes, highlighting changes since the prior WMP report:

1. Before the next Annual WMP Update
2. Within the next 3 years
3. Within the next 10 years – long-term planning beyond the 3-year cycle

5.3 Plan program targets

Program targets are quantifiable measurements of activity identified in WMPs and subsequent updates used to show progress towards reaching the objectives, such as number of trees trimmed or miles of power lines hardened.

List and describe all program targets the electrical corporation uses to track utility WMP implementation and utility performance over the last five years. For all program targets, list the 2019 and 2020 performance, a numeric target value that is the projected target for end of year 2021 and 2022, units on the metrics reported, the assumptions that underlie the use of those metrics, update frequency, and how the performance reported could be validated by third parties outside the utility, such as analysts or academic researchers. Identified metrics must be of enough detail and scope to effectively inform the performance (i.e., reduction in ignition probability or wildfire consequence) of each targeted preventive strategy and program.



Table 5.3-1: List and description of program targets, last 5 years

Program target	2019 performance	2020 performance	Projected target by end of 2021	Projected target by end of 2022	Units	Underlying assumptions	Update frequency	Third-party validation

Add additional rows as needed

5.4 Planning for Workforce and Other Limited Resources

Report on worker qualifications and training practices regarding wildfire and PSPS mitigation for workers in the following target roles:

1. Vegetation inspections
2. Vegetation management projects
3. Asset inspections
4. Grid hardening
5. Risk event inspection

For each of the target roles listed above:

1. List all worker titles relevant to target role (target roles listed above)
2. For each worker title, list and explain minimum qualifications with an emphasis on qualifications relevant to wildfire and PSPS mitigation. Note if the job requirements include the following:
 - a. Going beyond a basic knowledge of General Order 95 requirements to perform relevant types of inspections or activities in the target role
 - b. Being a “Qualified Electrical Worker” (QEW) and define what certifications, qualifications, experience, etc. is required to be a QEW for the target role for the utility.
 - c. Include special certification requirements such as being an International Society of Arboriculture (ISA) Certified Arborist with specialty certification as a Utility Specialist
3. Report percentage of Full Time Employees (FTEs) in target role with specific job title
4. Provide a summarized report detailing the overall percentage of FTEs with qualifications listed in (2) for each of the target roles.
5. Report plans to improve qualifications of workers relevant to wildfire and PSPS mitigation. Utilities will explain how they are developing more robust outreach and onboarding training programs for new electric workers to identify hazards that could ignite wildfires.

5.4.1 Target role: Vegetation inspections

1. Worker titles in target role
2. Minimum qualifications
3. FTE percentages by title in target role
4. Percent of FTEs by high-interest qualification
5. Plans to improve worker qualifications



5.4.2 Target role: Vegetation management projects

1. Worker titles in target role
2. Minimum qualifications
3. FTE percentages by title in target role
4. Percent of FTEs by high-interest qualification
5. Plans to improve worker qualifications

5.4.3 Target role: Asset Inspections

1. Worker titles in target role
2. Minimum qualifications
3. FTE percentages by title in target role
4. Percent of FTEs by high-interest qualification
5. Plans to improve worker qualifications

5.4.4 Target role: Grid hardening

1. Worker titles in target role
2. Minimum qualifications
3. FTE percentages by title in target role
4. Percent of FTEs by high-interest qualification
5. Plans to improve worker qualifications

5.4.5 Target role: Risk event inspections

1. Worker titles in target role
2. Minimum qualifications
3. FTE percentages by title in target role
4. Percent of FTEs by high-interest qualification
5. Plans to improve worker qualifications



6 Performance metrics and underlying data

Instructions: Section to be populated from Quarterly Reports. Tables to be populated are listed below for reference.

NOTE: Report updates to projected metrics that are now actuals (e.g., projected 2020 spend will be replaced with actual unless otherwise noted). If an actual is substantially different from the projected (>10% difference), highlight the corresponding metric in light green.

6.1 Recent performance on progress metrics, last 5 years

Instructions for Table 1:

In the attached spreadsheet document, report performance on the following metrics within the utility’s service territory over the past five years as needed to correct previously-reported data. Where the utility does not collect its own data on a given metric, the utility shall work with the relevant state agencies to collect the relevant information for its service territory, and clearly identify the owner and dataset used to provide the response in the “Comments” column.

Table 1: Recent performance on progress metrics, last 5 years – reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Progress metric name	2015	2016	2017	2018	2019	2020	Unit(s)
1. Grid condition findings from inspection - Distribution lines in HFTD	1.a.	Number of circuit miles inspected from patrol inspections in HFTD - Distribution lines							# miles
	1.b.	Number of circuit miles inspected from detailed inspections in HFTD - Distribution lines							# miles
	1.c.	Number of circuit miles inspected from other inspections in HFTD - Distribution lines							# miles
...



6.2 Recent performance on outcome metrics, annual and normalized for weather, last 5 years

Instructions for Table 2:

In the attached spreadsheet document, report performance on the following metrics within the utility’s service territory over the past five years as needed to correct previously-reported data. Where the utility does not collect its own data on a given metric, the utility shall work with the relevant state agencies to collect the relevant information for its service territory, and clearly identify the owner and dataset used to provide the response in “Comments” column.

Provide a list of all types of findings and number of findings per type, in total and in number of findings per circuit mile.

Table 2: Recent performance on outcome metrics, last 5 years– reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Progress metric name	2015	2016	2017	2018	2019	2020	Unit(s)
1. Risk events	1.a.	Number of all events with probability of ignition, including wires down, contacts with objects, line slap, events with evidence of heat generation, and other events that cause sparking or have the potential to cause ignition							
	1.b.	Number of wires down (total)							
2. Utility inspection findings - Distribution	2.a.	Number of Level 1 findings that could increase the probability of ignition discovered							

6.3 Description of additional metrics

Instructions for Table 3:

In addition to the metrics specified above, list and describe all other metrics the utility uses to evaluate wildfire mitigation performance, the utility’s performance on those metrics over the last five years, the units reported, the assumptions that underlie the use of those metrics, and how the performance reported could be validated by third parties outside the utility, such as analysts or academic researchers. Identified metrics must be of enough detail and scope to effectively inform the performance (i.e., reduction in ignition probability or wildfire consequence) of each preventive strategy and program.



Table 3: List and description of additional metrics, last 5 years – reference only, fill out attached spreadsheet to correct prior reports

Metric	Definition	Purpose	Assumptions made to connect metric to purpose	Third-party validation (if any)	2015	2016	2017	2018	2019	2020	Unit(s)

Note: Add more rows as needed.

6.4 Detailed information supporting outcome metrics

Enclose detailed information as requested for the metrics below.

Instructions for Table 4:

In the attached spreadsheet document, report numbers of fatalities attributed to any utility wildfire mitigation initiatives, as listed in the utility’s previous or current WMP filings or otherwise, according to the type of activity in column one, and by the victim’s relationship to the utility (i.e., full-time employee, contractor, or member of the general public), for each of the last five years as needed to correct previously-reported data. For fatalities caused by initiatives beyond these categories, add rows to specify accordingly. The relationship to the utility statuses of full-time employee, contractor, and member of public are mutually exclusive, such that no individual can be counted in more than one category, nor can any individual fatality be attributed to more than one initiative.

Table 4: Fatalities due to utility wildfire mitigation initiatives, last 5 years – reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Progress metric name	2015	2016	2017	2018	2019	2020	Unit(s)
1. Fatalities - Full-time Employee	1.a.	Fatalities due to inspection - Full-time employee							
	1.b.	Fatalities due to vegetation management - Full-time employee							
	1.c.	Fatalities due to utility fuel management - Full-time employee							

Instructions for Table 5:



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In the attached spreadsheet document, report numbers of OSHA-reportable injuries attributed to any utility wildfire mitigation initiatives, as listed in the utility's previous or current WMP filings or otherwise, according to the type of activity in column one, and by the victim's relationship to the utility (i.e., full-time employee, contractor, of member of the general public), for each of the last five years as needed to correct previously-reported data. For members of the public, all injuries that meet OSHA-reportable standards of severity (i.e., injury or illness resulting in loss of consciousness or requiring medical treatment beyond first aid) shall be included, even if those incidents are not reported to OSHA due to the identity of the victims.

For OSHA-reportable injuries caused by initiatives beyond these categories, add rows to specify accordingly. The victim identities listed are mutually exclusive, such that no individual victim can be counted as more than one identity, nor can any individual OSHA-reportable injury be attributed to more than one activity.

Table 5: OSHA-reportable injuries due to utility wildfire mitigation initiatives, last 5 years – reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Progress metric name	2015	2016	2017	2018	2019	2020	Unit(s)
1. OSHA injuries - Full-time Employee	1.a.	OSHA injuries due to inspection - Full-time employee							
	1.b.	OSHA injuries due to vegetation management - Full-time employee							
	1.c.	OSHA injuries due to utility fuel management - Full-time employee							

6.5 Mapping recent, modelled, and baseline conditions

Underlying data for recent conditions (over the last five years) of the utility service territory in a downloadable shapefile GIS format, following the schema provided in the spatial reporting schema attachment. All data is reported quarterly, this is a placeholder for quarterly spatial data.

6.6 Recent weather patterns, last 5 years

Instructions for Table 6:



In the attached spreadsheet document, report weather measurements based upon the duration and scope of NWS Red Flag Warnings, High wind warnings and upon proprietary Fire Potential Index (or other similar fire risk potential measure if used) for each year. Calculate and report 5-year historical average as needed to correct previously-reported data.

Table 6: Weather patterns, last 5 years – reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Progress metric name	2015	2016	2017	2018	2019	2020	Unit(s)
1. Red Flag Warning overhead Circuit Mile Days	1.a.	Red Flag Warning overhead Circuit Mile days - entire utility territory							RFW OH circuit mile days
	1.b.	Red Flag Warning overhead Circuit Mile days - HFTD Zone 1							RFW OH circuit mile days
	1.c.	Red Flag Warning overhead Circuit Mile days - HFTD Tier 2							RFW OH circuit mile days

Note: Add additional rows as needed.

6.7 Recent and projected drivers of ignition probability

Instructions for Table 7:

In the attached spreadsheet document, report recent drivers of ignition probability according to whether or not risk events of that type are tracked, the number of incidents per year (e.g., all instances of animal contact regardless of whether they caused an outage, an ignition, or neither), the rate at which those incidents (e.g., object contact, equipment failure, etc.) cause an ignition in the column, and the number of ignitions that those incidents caused by category, for each of last five years as needed to correct previously-reported data.

Calculate and include 5-year historical averages. This requirement applies to all utilities, not only those required to submit annual ignition data. Any utility that does not have complete 2020 ignition data compiled by the WMP deadline shall indicate in the 2020 columns that said information is incomplete.



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Table 7.1: Key recent and projected drivers of ignition probability, last 5 years and projections – reference only, fill out attached spreadsheet to correct prior reports

Risk Event category	Cause category	#	Sub-cause category	Quarter:	Number of risk events					Projected risk events				
					2015	2016	2017	2018	2019	2020	Q1	Q2	Q3	Q4
Wire down event - Distribution	1. Contact from object - Distribution	1.a	Veg. contact-Distribution	Are risk events tracked?										
		1.b	Animal contact-Distribution											
		1.c	Balloon contact-Distribution											
...



Table 7.2: Key recent and projected drivers of ignition probability by HFTD status, last 5 years and projections – reference only, fill out attached spreadsheet to correct prior reports

Risk Event category	Cause category	#	Sub-cause category	Are ignitions tracked?	Non-HFTD	HFTD Zone	HFTD Tier	HFTD Tier	Non-HFTD
					2015	1 2015	2 2015	3 2015	2016
Wire down event - Distribution	1. Contact from object - Distribution	1.a	Veg. contact-Distribution						
		1.b	Animal contact-Distribution						
		1.c	Balloon contact-Distribution						
...				

6.8 Baseline state of equipment and wildfire and PSPS event risk reduction plans

6.8.1 Current baseline state of service territory and utility equipment

Instructions for Table 8:

In the attached spreadsheet document, provide summary data for the current baseline state of HFTD and non-HFTD service territory in terms of circuit miles; overhead transmission lines, overhead distribution lines, substations, weather stations, and critical facilities located within the territory; and customers by type, located in urban versus rural versus highly rural areas and including the subset within the Wildland-Urban Interface (WUI) as needed to correct previously-reported data.

The totals of the cells for each category of information (e.g., “circuit miles (including WUI and non-WUI)”) would be equal to the overall service territory total (e.g., total circuit miles). For example, the total of number of customers in urban, rural, and highly rural areas of HFTD plus those in urban, rural, and highly rural areas of non-HFTD would equal the total number of customers of the entire service territory.

Table 8: State of service territory and utility equipment – reference only, fill out attached spreadsheet to correct prior reports



Metric type	#	Outcome metric name	Non-HFTD 2015	HFTD Zone 1 2015	HFTD Tier 2 2015	HFTD Tier 3 2015	Non-HFTD 2016
1. State of service territory and equipment in urban areas	1.a.	Circuit miles (including WUI and non-WUI)					
	1.b.	Circuit miles in WUI					
	1.c.	Number of critical facilities (including WUI and non-WUI)					
	1.d.	Number of critical facilities in WUI					
...

6.8.2 Additions, removal, and upgrade of utility equipment by end of 3-year plan term

Instructions for Table 9:

In the attached spreadsheet document, input summary information of plans and actuals for additions or removals of utility equipment as needed to correct previously-reported data. Report net additions using positive numbers and net removals and undergrounding using negative numbers for circuit miles and numbers of substations. Report changes planned or actualized for that year – for example, if 10 net overhead circuit miles were added in 2020, then report “10” for 2020. If 20 net overhead circuit miles are planned for addition by 2022, with 15 being added by 2021 and 5 more added by 2022, then report “15” for 2022 and “5” for 2021. Do not report cumulative change across years. In this case, do not report “20” for 2022, but instead the number planned to be added for just that year, which is “5”.

Table 9: Location of actual and planned utility equipment additions or removal year over year – reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Outcome metric name	Non-HFTD 2020	HFTD Zone 1 2020	HFTD Tier 2 2020	HFTD Tier 3 2020	Non-HFTD 2021
1. Planned utility equipment net addition (or removal) year over year - in urban areas	1.a.	Circuit miles of overhead transmission lines (including WUI and non-WUI)					
	1.b.	Circuit miles of overhead distribution lines (including WUI and non-WUI)					



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1.c.	Circuit miles of overhead transmission lines in WUI	
1.d.	Circuit miles of overhead distribution lines in WUI	
...

Transmission lines refer to all lines at or above 65kV, and distribution lines refer to all lines below 65kV.

Instructions for Table 10:

Referring to the program targets discussed above, report plans and actuals for hardening upgrades in detail in the attached spreadsheet document. Report in terms of number of circuit miles or stations to be upgraded for each year, assuming complete implementation of wildfire mitigation activities, for HFTD and non-HFTD service territory for circuit miles of overhead transmission lines, circuit miles of overhead distribution lines, circuit miles of overhead transmission lines located in Wildland-Urban Interface (WUI), circuit miles of overhead distribution lines in WUI, number of substations, number of substations in WUI, number of weather stations and number of weather stations in WUI as needed to correct previously-reported data.

If updating previously-reported data, separately include a list of the hardening initiatives included in the calculations for the table.

Table 10: Location of actual and planned utility infrastructure upgrades year over year – reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Outcome metric name	Non-HFTD 2020	HFTD Zone 1 2020	HFTD Tier 2 2020	HFTD Tier 3 2020	Non-HFTD 2021
1. Planned utility infrastructure upgrades year over year - in urban areas	1.a.	Circuit miles of overhead transmission lines planned for upgrades (including WUI and non-WUI)					
	1.b.	Circuit miles of overhead distribution lines planned for upgrades (including WUI and non-WUI)					
	1.c.	Circuit miles of overhead transmission lines planned for upgrades in WUI					
	1.d.	Circuit miles of overhead distribution lines planned for upgrades in WUI					
...					



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Transmission lines refer to all lines at or above 65kV, and distribution lines refer to all lines below 65kV.



7 Mitigation initiatives

7.1 Wildfire mitigation strategy

Describe organization-wide wildfire mitigation strategy and goals for each of the following time periods, highlighting changes since the prior WMP report:

1. By June 1 of current year
2. By Sept 1 of current year
3. Before the next Annual WMP Update
4. Within the next 3 years
5. Within the next 10 years

The description of utility wildfire mitigation strategy shall:

- A. Discuss the utility's approach to determining how to manage wildfire risk (in terms of ignition probability and estimated wildfire consequence) as distinct from managing risks to safety and/or reliability. Describe how this determination is made both for (1) the types of activities needed and (2) the extent of those activities needed to mitigate these two different groups of risks. Describe to what degree the activities needed to manage wildfire risk may be incremental to those needed to address safety and/or reliability risks.
- B. Include a summary of what major investments and implementation of wildfire mitigation initiatives achieved over the past year, any lessons learned, any changed circumstances for the 2020 WMP term (i.e., 2020-2022), and any corresponding adjustment in priorities for the upcoming plan term. Organize summaries of initiatives by the wildfire mitigation categories listed in Section 7.3.
- C. List and describe all challenges associated with limited resources and how these challenges are expected to evolve over the next 3 years.
- D. Outline how the utility expects new technologies and innovations to impact the utility's strategy and implementation approach over the next 3 years, including the utility's program for integrating new technologies into the utility's grid. Include utility research listed above in Section 4.4.

7.2 Wildfire Mitigation Plan implementation

Describe the processes and procedures the electrical corporation will use to do all the following:

- A. Monitor and audit the implementation of the plan. Include what is being audited, who conducts the audits, what type of data is being collected, and how the data undergoes quality assurance and quality control.
- B. Identify any deficiencies in the plan or the plan's implementation and correct those deficiencies.
- C. Monitor and audit the effectiveness of inspections, including inspections performed by contractors, carried out under the plan and other applicable statutes and commission rules.
- D. Ensure that across audits, initiatives, monitoring, and identifying deficiencies, the utility will report in a format that matches across WMPs, Quarterly Reports, Quarterly Advice Letters,⁸ and annual compliance assessment.

⁸ General Rule for filing Advice Letters are available in General Order 96-B:
<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M023/K381/23381302.PDF>



7.3 Detailed wildfire mitigation programs

In this section, describe how the utility's specific programs and initiatives plan to execute the strategy set out in Section [7.1.4.5](#). The specific programs and initiatives are divided into 10 categories, with each providing a space for a narrative description of the utility's initiatives and a summary table for numeric input in the subsequent tables in this section. The initiatives are organized by the following categories provided in this section:

1. Risk assessment and mapping
2. Situational awareness and forecasting
3. Grid design and system hardening
4. Asset management and inspections
5. Vegetation management and inspections
6. Grid operations and protocols
7. Data governance
8. Resource allocation methodology
9. Emergency planning and preparedness
10. Stakeholder cooperation and community engagement

7.3.1 7.3.a Financial data on mitigation initiatives, by category

In the following section (7.3.2) is a list of potential wildfire and PSPS mitigation activities which fit under the 10 categories listed above. While it is not necessary to have initiatives within all activities, all mitigation initiatives will fit into one or more of the activities listed below. Financial information—including actual / projected spend, spend per line-miles treated, and risk-spend-efficiency for activity by HFTD tier (all regions, non-HFTD, HFTD tier 2, HFTD tier 3) for all HFTD tiers which the activity has been or plans to be applied—is reported in the attached file quarterly. Report any updates to the financial data in the spreadsheet attached in Table 12.

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7.3.2 7.3.b Detailed information on mitigation initiatives by category and activity

Report detailed information for each initiative activity in which spending was above \$0 over the course of the current WMP cycle (2020-2022). For each activity, organize details under the following headings:

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1. **Risk to be mitigated** / problem to be addressed
2. **Initiative selection** ("why" engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives
3. **Region prioritization** ("where" to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as "high-risk")
4. **Progress on initiative** (amount spent, regions covered) and plans for next year
5. **Future improvements to initiative**

List of initiative activities by category - Detailed definitions for each mitigation activity are provided in the appendix

7.3.1 Risk assessment and mapping

1.1. A summarized risk map showing the overall ignition probability and estimated wildfire consequence along electric lines and equipment

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- [1.2. Climate-driven risk map and modelling based on various relevant weather scenarios](#)
- [1.3. Ignition probability mapping showing the probability of ignition along the electric lines and equipment](#)
- [1.4. Initiative mapping and estimation of wildfire and PSPS risk-reduction impact](#)
- [1.5. Match drop simulations showing the potential wildfire consequence of ignitions that occur along the electric lines and equipment](#)

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7.3.2 Situational awareness and forecasting

- [2.1. Advanced weather monitoring and weather stations](#)
- [2.2. Continuous monitoring sensors](#)
- [2.3. Fault indicators for detecting faults on electric lines and equipment](#)
- [2.4. Forecast of a fire risk index, fire potential index, or similar](#)
- [2.5. Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions](#)
- [2.6. Weather forecasting and estimating impacts on electric lines and equipment](#)

7.3.3 Grid design and system hardening

- [3.1. Capacitor maintenance and replacement program](#)
- [3.2. Circuit breaker maintenance and installation to de-energize lines upon detecting a fault](#)
- [3.3. Covered conductor installation](#)
- [3.4. Covered conductor maintenance](#)
- [3.5. Crossarm maintenance, repair, and replacement](#)
- [3.6. Distribution pole replacement and reinforcement, including with composite poles](#)
- [3.7. Expulsion fuse replacement](#)
- [3.8. Grid topology improvements to mitigate or reduce PSPS events](#)
- [3.9. Installation of system automation equipment](#)
- [3.10. Maintenance, repair, and replacement of connectors, including hotline clamps](#)
- [3.11. Mitigation of impact on customers and other residents affected during PSPS event](#)
- [3.12. Other corrective action](#)
- [3.13. Pole loading infrastructure hardening and replacement program based on pole loading assessment program](#)
- [3.14. Transformers maintenance and replacement](#)
- [3.15. Transmission tower maintenance and replacement](#)
- [3.16. Undergrounding of electric lines and/or equipment](#)
- [3.17. Updates to grid topology to minimize risk of ignition in HFTDs](#)

7.3.4 Asset management and inspections

- [4.1. Detailed inspections of distribution electric lines and equipment](#)
- [4.2. Detailed inspections of transmission electric lines and equipment](#)
- [4.3. Improvement of inspections](#)
- [4.4. Infrared inspections of distribution electric lines and equipment](#)
- [4.5. Infrared inspections of transmission electric lines and equipment](#)
- [4.6. Intrusive pole inspections](#)



- [4.7. LiDAR inspections of distribution electric lines and equipment](#)
- [4.8. LiDAR inspections of transmission electric lines and equipment](#)
- [4.9. Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations](#)
- [4.10. Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations](#)
- [4.11. Patrol inspections of distribution electric lines and equipment](#)
- [4.12. Patrol inspections of transmission electric lines and equipment](#)
- [4.13. Pole loading assessment program to determine safety factor](#)
- [4.14. Quality assurance / quality control of inspections](#)
- [4.15. Substation inspections](#)

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7.3.5 Vegetation management and inspections

- [5.1. Additional efforts to manage community and environmental impacts](#)
- [5.2. Detailed inspections of vegetation around distribution electric lines and equipment](#)
- [5.3. Detailed inspections of vegetation around transmission electric lines and equipment](#)
- [5.4. Emergency response vegetation management due to red flag warning or other urgent conditions](#)
- [5.5. Fuel management and reduction of "slash" from vegetation management activities](#)
- [5.6. Improvement of inspections](#)
- [5.7. LiDAR inspections of vegetation around distribution electric lines and equipment](#)
- [5.8. LiDAR inspections of vegetation around transmission electric lines and equipment](#)
- [5.9. Other discretionary inspection of vegetation around distribution electric lines and equipment, beyond inspections mandated by rules and regulations](#)
- [5.10. Other discretionary inspection of vegetation around transmission electric lines and equipment, beyond inspections mandated by rules and regulations](#)
- [5.11. Patrol inspections of vegetation around distribution electric lines and equipment](#)
- [5.12. Patrol inspections of vegetation around transmission electric lines and equipment](#)
- [5.13. Quality assurance / quality control of inspections](#)
- [5.14. Recruiting and training of vegetation management personnel](#)
- [5.15. Remediation of at-risk species](#)
- [5.16. Removal and remediation of trees with strike potential to electric lines and equipment](#)
- [5.17. Substation inspections](#)
- [5.18. Substation vegetation management](#)
- [5.19. Vegetation inventory system](#)
- [5.20. Vegetation management to achieve clearances around electric lines and equipment](#)

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7.3.6 Grid operations and protocols

- [6.1. Automatic recloser operations](#)
- [6.2. Crew-accompanying ignition prevention and suppression resources and services](#)
- [6.3. Personnel work procedures and training in conditions of elevated fire risk](#)
- [6.4. Protocols for PSPS re-energization](#)
- [6.5. PSPS events and mitigation of PSPS impacts](#)
- [6.6. Stationed and on-call ignition prevention and suppression resources and services](#)



7.3.7 Data governance

- 7.1. Centralized repository for data
- 7.2. Collaborative research on utility ignition and/or wildfire
- 7.3. Documentation and disclosure of wildfire-related data and algorithms
- 7.4. Tracking and analysis of risk event data

7.3.8 Resource allocation methodology

- 8.1. Allocation methodology development and application
- 8.2. Risk reduction scenario development and analysis
- 8.3. Risk spend efficiency analysis – not to include PSPS

7.3.9 Emergency planning and preparedness

- 9.1. Adequate and trained workforce for service restoration
- 9.2. Community outreach, public awareness, and communications efforts
- 9.3. Customer support in emergencies
- 9.4. Disaster and emergency preparedness plan
- 9.5. Preparedness and planning for service restoration
- 9.6. Protocols in place to learn from wildfire events

7.3.10 Stakeholder cooperation and community engagement

- 10.1. Community engagement
- 10.2. Cooperation and best practice sharing with agencies outside CA
- 10.3. Cooperation with suppression agencies
- 10.4. Forest service and fuel reduction cooperation and joint roadmap

7.3.1 Risk assessment and mapping

- 1. A summarized risk map showing the overall ignition probability and estimated wildfire consequence along electric lines and equipment
- 2. Climate driven risk map and modelling based on various relevant weather scenarios
- 3. Ignition probability mapping showing the probability of ignition along the electric lines and equipment
- 4. Initiative mapping and estimation of wildfire and PSPS risk reduction impact
- 5. Match drop simulations showing the potential wildfire consequence of ignitions that occur along the electric lines and equipment
- 5.6. Weather driven risk map and modelling based on various relevant weather scenarios

Situational awareness and forecasting

- 7. Advanced weather monitoring and weather stations

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- 8. Continuous monitoring sensors
- 9. Fault indicators for detecting faults on electric lines and equipment
- 10. Forecast of a fire risk index, fire potential index, or similar
- 11. Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions
- 12. Weather forecasting and estimating impacts on electric lines and equipment

Grid design and system hardening

- 13. Capacitor maintenance and replacement program
- 14. Circuit breaker maintenance and installation to de-energize lines upon detecting a fault
- 15. Covered conductor installation
- 16. Covered conductor maintenance
- 17. Crossarm maintenance, repair, and replacement
- 18. Distribution pole replacement and reinforcement, including with composite poles
- 19. Expulsion fuse replacement
- 20. Grid topology improvements to mitigate or reduce PSPS events
- 21. Installation of system automation equipment
- 22. Maintenance, repair, and replacement of connectors, including hotline clamps
- 23. Mitigation of impact on customers and other residents affected during PSPS event
- 24. Other corrective action
- 25. Pole loading infrastructure hardening and replacement program based on pole loading assessment program
- 26. Transformers maintenance and replacement
- 27. Transmission tower maintenance and replacement
- 28. Undergrounding of electric lines and/or equipment
- 29. Updates to grid topology to minimize risk of ignition in HFTDs

Asset management and inspections

- 30. Detailed inspections of distribution electric lines and equipment
- 31. Detailed inspections of transmission electric lines and equipment
- 32. Improvement of inspections
- 33. Infrared inspections of distribution electric lines and equipment
- 34. Infrared inspections of transmission electric lines and equipment
- 35. Intrusive pole inspections
- 36. LIDAR inspections of distribution electric lines and equipment
- 37. LIDAR inspections of transmission electric lines and equipment
- 38. Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations
- 39. Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations
- 40. Patrol inspections of distribution electric lines and equipment
- 41. Patrol inspections of transmission electric lines and equipment
- 42. Pole loading assessment program to determine safety factor
- 43. Quality assurance / quality control of inspections
- 44. Substation inspections

Vegetation management and inspections

- 45. Additional efforts to manage community and environmental impacts
- 46. Detailed inspections of vegetation around distribution electric lines and equipment

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- 47. Detailed inspections of vegetation around transmission electric lines and equipment
- 48. Emergency response vegetation management due to red flag warning or other urgent conditions
- 49. Fuel management and reduction of "slash" from vegetation management activities
- 50. Improvement of inspections
- 51. LIDAR inspections of vegetation around distribution electric lines and equipment
- 52. LIDAR inspections of vegetation around transmission electric lines and equipment
- 53. Other discretionary inspection of vegetation around distribution electric lines and equipment, beyond inspections mandated by rules and regulations
- 54. Other discretionary inspection of vegetation around transmission electric lines and equipment, beyond inspections mandated by rules and regulations
- 55. Patrol inspections of vegetation around distribution electric lines and equipment
- 56. Patrol inspections of vegetation around transmission electric lines and equipment
- 57. Quality assurance / quality control of inspections
- 58. Recruiting and training of vegetation management personnel
- 59. Remediation of at-risk species
- 60. Removal and remediation of trees with strike potential to electric lines and equipment
- 61. Substation inspections
- 62. Substation vegetation management
- 63. Vegetation inventory system
- 64. Vegetation management to achieve clearances around electric lines and equipment

Grid operations and protocols

- 65. Automatic recloser operations
- 66. Crew accompanying ignition prevention and suppression resources and services
- 67. Personnel work procedures and training in conditions of elevated fire risk
- 68. Protocols for PSPS re-energization
- 69. PSPS events and mitigation of PSPS impacts
- 70. Stationed and on-call ignition prevention and suppression resources and services

Data governance

- 71. Centralized repository for data
- 72. Collaborative research on utility ignition and/or wildfire
- 73. Documentation and disclosure of wildfire-related data and algorithms
- 74. Tracking and analysis of risk event data

Resource allocation methodology

- 75. Allocation methodology development and application
- 76. Risk reduction scenario development and analysis
- 77. Risk spend efficiency analysis—not to include PSPS

Emergency planning and preparedness

- 78. Adequate and trained workforce for service restoration
- 79. Community outreach, public awareness, and communications efforts
- 80. Customer support in emergencies
- 81. Disaster and emergency preparedness plan
- 82. Preparedness and planning for service restoration
- 83. Protocols in place to learn from wildfire events

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Stakeholder cooperation and community engagement

- 84. Community engagement
- 85. Cooperation and best practice sharing with agencies outside CA
- 86. Cooperation with suppression agencies
- 87. Forest service and fuel reduction cooperation and joint roadmap

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8 Public Safety Power Shutoff (PSPS), including directional vision for PSPS

8.1 Directional vision for necessity of PSPS

Describe any lessons learned from PSPS since the utility's last WMP submission and expectations for how the utility's PSPS program will evolve over the coming 1, 3, and 10 years. Be specific by including a description of the utility's protocols and thresholds for PSPS implementation. Include a quantitative description of how the circuits and numbers of customers that the utility expects will be impacted by any necessary PSPS events is expected to evolve over time. The description of protocols must be sufficiently detailed and clear to enable a skilled operator to follow the same protocols.

When calculating anticipated PSPS, consider recent weather extremes, including peak weather conditions over the past 10 years as well as recent weather years and how the utility's current PSPS protocols would be applied to those years.

Instructions for Table 8-1:

Rank order the characteristic of PSPS events (in terms of numbers of customers affected, frequency, scope, and duration) anticipated to change the most and have the greatest impact on reliability (be it to increase or decrease) over the next ten years. Rank in order from 1 to 9, where 1 means greatest anticipated change or impact and 9 means minimal change or impact on ignition probability and estimated wildfire consequence. To the right of the ranked magnitude of impact, indicate whether the impact is to significantly increase reliability, moderately increase reliability, have limited or no impact, moderately decrease reliability, or significantly decrease reliability. For each, include comments describing expected change and expected impact, using quantitative estimates wherever possible.

Table 8-1: Anticipated characteristics of PSPS use over next 10 years

Rank order 1-9	PSPS characteristic	Significantly increase; increase; no change; decrease; significantly decrease	Comments
	Number of customers affected by PSPS events (total)		
	Number of customers affected by PSPS events (normalized by fire weather, e.g., Red Flag Warning line mile days)		
	Frequency of PSPS events in number of instances where utility operating protocol requires de-energization of a circuit or portion		



	thereof to reduce ignition probability (total)		
	Frequency of PSPS events in number of instances where utility operating protocol requires de-energization of a circuit or portion thereof to reduce ignition probability (normalized by fire weather, e.g., Red Flag Warning line mile days)		
	Scope of PSPS events in circuit-events, measured in number of events multiplied by number of circuits targeted for de-energization (total)		
	Scope of PSPS events in circuit-events, measured in number of events multiplied by number of circuits targeted for de-energization (normalized by fire weather, e.g., Red Flag Warning line mile days)		
	Duration of PSPS events in customer hours (total)		
	Duration of PSPS events in customer hours (normalized by fire weather, e.g., Red Flag Warning line mile days)		
	Other		

8.2 Protocols on Public Safety Power Shut-off

Describe protocols on Public Safety Power Shut-off (PSPS or de-energization), highlighting changes since the previous WMP report:

1. Strategy to minimize public safety risk during high wildfire risk conditions and details of the considerations, including but not limited to list and description of community assistance locations and services provided during a de-energization event.
2. Outline of tactical and strategic decision-making protocol for initiating a PSPS/de-energization (e.g., decision tree).
3. Strategy to provide for safe and effective re-energization of any area that was de-energized due to PSPS protocol.
4. Company standards relative to customer communications, including consideration for the need to notify priority essential services – critical first responders, public safety partners, critical facilities and infrastructure, operators of telecommunications infrastructure, and water utilities/agencies. This section, or an appendix to this section, shall include a complete listing of which entities the electrical corporation considers to be priority essential services. This section shall also include a description of strategy and protocols to ensure timely notifications to customers, including access and functional needs populations, in the languages prevalent within the utility’s service territory.



5. Protocols for mitigating the public safety impacts of these protocols, including impacts on first responders, health care facilities, operators of telecommunications infrastructure, and water utilities/agencies.

8.3 Projected changes to PSPS impact

Describe organization-wide plan to reduce scale, scope and frequency of PSPS for each of the following time periods, highlighting changes since the prior WMP report and including key program targets used to track progress over time,

1. By June 1 of current year
2. By September 1 of current year
3. By next Annual WMP Update

8.4 Engaging vulnerable communities

Report on the following:

1. Describe protocols for PSPS that are intended to mitigate the public safety impacts of PSPS on vulnerable, marginalized and/or at-risk communities. Describe how the utility is identifying these communities.
2. List all languages which are “prevalent” in utility’s territory. A language is prevalent if it is spoken by 1,000 or more persons in the utility’s territory or if it is spoken by 5% or more of the population within a “public safety answering point” in the utility territory⁹ (D.20-03-004).
3. List all languages for which public outreach material is available, in written or oral form.
4. Detail the community outreach efforts for PSPS and wildfire-related outreach. Include efforts to reach all languages prevalent in utility territory.

8.5 PSPS-specific metrics

PSPS data reported quarterly. Placeholder tables below to be filled in based on quarterly data.

Instructions for PSPS table:

In the attached spreadsheet document, report performance on the following PSPS metrics within the utility’s service territory over the past five years as needed to correct previously-reported data. Where the utility does not collect its own data on a given metric, the utility shall work with the relevant state agencies to collect the relevant information for its service territory, and clearly identify the owner and dataset used to provide the response in the “Comments” column.

Table 11: Recent use of PSPS and other PSPS metrics – reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Outcome metric name	2015	2016	2017	2018	2019	2020	2021 Q1, Q2...,Q4 projected	Comments
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⁹ See Cal. Government Code § 53112



1. Recent use of PSPS	1.a.	Frequency of PSPS events (total)	
	1.b.	Scope of PSPS events (total)	
	1.c.	Duration of PSPS events (total)	
...

9 Appendix

9.1 Definitions of initiative activities by category

Category	Initiative activity	Definition
A. Risk mapping and simulation	A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment	Development and use of tools and processes to develop and update risk map and simulations and to estimate risk reduction potential of initiatives for a given portion of the grid (or more granularly, e.g., circuit, span, or asset). May include verification efforts, independent assessment by experts, and updates.
	Climate-driven risk map and modelling based on various relevant weather scenarios	Development and use of tools and processes to estimate incremental risk of foreseeable climate scenarios, such as drought, across a given portion of the grid (or more granularly, e.g., circuit, span, or asset). May include verification efforts, independent assessment by experts, and updates.
	Ignition probability mapping showing the probability of ignition along the electric lines and equipment	Development and use of tools and processes to assess the risk of ignition across regions of the grid (or more granularly, e.g., circuits, spans, or assets).
	Initiative mapping and estimation of wildfire and PSPS risk-reduction impact	Development of a tool to estimate the risk reduction efficacy (for both wildfire and PSPS risk) and risk-spend efficiency of various initiatives.
	Match drop simulations showing the potential wildfire consequence of ignitions that occur along the electric lines and equipment	Development and use of tools and processes to assess the impact of potential ignition and risk to communities (e.g., in terms of potential fatalities, structures burned, monetary damages, area burned, impact on air quality and greenhouse gas, or GHG, reduction goals, etc.).



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B. Situational awareness and forecasting	Advanced weather monitoring and weather stations	Purchase, installation, maintenance, and operation of weather stations. Collection, recording, and analysis of weather data from weather stations and from external sources.
	Continuous monitoring sensors	Installation, maintenance, and monitoring of sensors and sensorized equipment used to monitor the condition of electric lines and equipment.
	Fault indicators for detecting faults on electric lines and equipment	Installation and maintenance of fault indicators.
	Forecast of a fire risk index, fire potential index, or similar	Index that uses a combination of weather parameters (such as wind speed, humidity, and temperature), vegetation and/or fuel conditions, and other factors to judge current fire risk and to create a forecast indicative of fire risk. A sufficiently granular index shall inform operational decision-making.
	Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions	Personnel position within utility service territory to monitor system conditions and weather on site. Field observations shall inform operational decisions.
	Weather forecasting and estimating impacts on electric lines and equipment	Development methodology for forecast of weather conditions relevant to utility operations, forecasting weather conditions and conducting analysis to incorporate into utility decision-making, learning and updates to reduce false positives and false negatives of forecast PSPS conditions.
C. Grid design and system hardening	Capacitor maintenance and replacement program	Remediation, adjustments, or installations of new equipment to improve or replace existing capacitor equipment.
	Circuit breaker maintenance and installation to de-energize lines upon detecting a fault	Remediation, adjustments, or installations of new equipment to improve or replace existing fast switching circuit breaker equipment to improve the ability to protect electrical circuits from damage caused by overload of electricity or short circuit.
	Covered conductor installation	Installation of covered or insulated conductors to replace standard bare or unprotected conductors (defined in accordance with GO 95 as supply conductors, including but not limited to lead wires, not enclosed in a grounded metal pole or not covered by: a "suitable protective covering" (in accordance with Rule 22.8), grounded metal conduit, or grounded metal sheath or shield). In accordance with GO 95, conductor is defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency (12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material



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	meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D.
Covered conductor maintenance	Remediation and adjustments to installed covered or insulated conductors. In accordance with GO 95, conductor is defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency (12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D.
Crossarm maintenance, repair, and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing crossarms, defined as horizontal support attached to poles or structures generally at right angles to the conductor supported in accordance with GO 95.
Distribution pole replacement and reinforcement, including with composite poles	Remediation, adjustments, or installations of new equipment to improve or replace existing distribution poles (i.e., those supporting lines under 65kV), including with equipment such as composite poles manufactured with materials reduce ignition probability by increasing pole lifespan and resilience against failure from object contact and other events.
Expulsion fuse replacement	Installations of new and CAL FIRE-approved power fuses to replace existing expulsion fuse equipment.
Grid topology improvements to mitigate or reduce PSPS events	Plan to support and actions taken to mitigate or reduce PSPS events in terms of geographic scope and number of customers affected, such as installation and operation of electrical equipment to sectionalize or island portions of the grid, microgrids, or local generation.
Installation of system automation equipment	Installation of electric equipment that increases the ability of the utility to automate system operation and monitoring, including equipment that can be adjusted remotely such as automatic reclosers (switching devices designed to detect and interrupt momentary faults that can reclose automatically and detect if a fault remains, remaining open if so).
Maintenance, repair, and replacement of connectors, including hotline clamps	Remediation, adjustments, or installations of new equipment to improve or replace existing connector equipment, such as hotline clamps.
Mitigation of impact on customers and other residents affected during PSPS event	Actions taken to improve access to electricity for customers and other residents during PSPS events, such as installation and operation of local generation equipment (at the community, household, or other level).



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	Other corrective action	Other maintenance, repair, or replacement of utility equipment and structures so that they function properly and safely, including remediation activities (such as insulator washing) of other electric equipment deficiencies that may increase ignition probability due to potential equipment failure or other drivers.
	Pole loading infrastructure hardening and replacement program based on pole loading assessment program	Actions taken to remediate, adjust, or install replacement equipment for poles that the utility has identified as failing to meet safety factor requirements in accordance with GO 95 or additional utility standards in the utility's pole loading assessment program.
	Transformers maintenance and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing transformer equipment.
	Transmission tower maintenance and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing transmission towers (e.g., structures such as lattice steel towers or tubular steel poles that support lines at or above 65kV).
	Undergrounding of electric lines and/or equipment	Actions taken to convert overhead electric lines and/or equipment to underground electric lines and/or equipment (i.e., located underground and in accordance with GO 128).
	Updates to grid topology to minimize risk of ignition in HFTDs	Changes in the plan, installation, construction, removal, and/or undergrounding to minimize the risk of ignition due to the design, location, or configuration of utility electric equipment in HFTDs.
D. Asset management and inspections	Detailed inspections of distribution electric lines and equipment	In accordance with GO 165, careful visual inspections of overhead electric distribution lines and equipment where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.
	Detailed inspections of transmission electric lines and equipment	Careful visual inspections of overhead electric transmission lines and equipment where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.
	Improvement of inspections	Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors.
	Infrared inspections of distribution electric lines and equipment	Inspections of overhead electric distribution lines, equipment, and right-of-way using infrared (heat-sensing) technology and cameras that can identify "hot spots", or conditions that indicate deterioration or potential equipment failures, of electrical equipment.
	Infrared inspections of transmission electric lines and equipment	Inspections of overhead electric transmission lines, equipment, and right-of-way using infrared (heat-sensing) technology and cameras that can identify "hot spots", or conditions that



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	indicate deterioration or potential equipment failures, of electrical equipment.
Intrusive pole inspections	In accordance with GO 165, intrusive inspections involve movement of soil, taking samples for analysis, and/or using more sophisticated diagnostic tools beyond visual inspections or instrument reading.
LIDAR inspections of distribution electric lines and equipment	Inspections of overhead electric transmission distribution lines, equipment, and right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
LIDAR inspections of transmission electric lines and equipment	Inspections of overhead electric distribution transmission lines, equipment, and right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations	Inspections of overhead electric transmission distribution lines, equipment, and right-of-way that exceed or otherwise go beyond those mandated by rules and regulations, including GO 165, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations	Inspections of overhead electric distribution transmission lines, equipment, and right-of-way that exceed or otherwise go beyond those mandated by rules and regulations, including GO 165, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
Patrol inspections of distribution electric lines and equipment	In accordance with GO 165, simple visual inspections of overhead electric distribution lines and equipment that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.
Patrol inspections of transmission electric lines and equipment	Simple visual inspections of overhead electric transmission lines and equipment that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.
Pole loading assessment program to determine safety factor	Calculations to determine whether a pole meets pole loading safety factor requirements of GO 95, including planning and information collection needed to support said calculations. Calculations shall consider many factors including the size, location, and type of pole; types of attachments; length of conductors attached; and number and design of supporting guys, per D.15-11-021.
Quality assurance / quality control of inspections	Establishment and function of audit process to manage and confirm work completed by employees or subcontractors, including packaging QA/QC information for input to decision-making and related integrated workforce management processes.



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	Substation inspections	In accordance with GO 175, inspection of substations performed by qualified persons and according to the frequency established by the utility, including record-keeping.
E. Vegetation management and inspection	Additional efforts to manage community and environmental impacts	Plan and execution of strategy to mitigate negative impacts from utility vegetation management to local communities and the environment, such as coordination with communities to plan and execute vegetation management work or promotion of fire-resistant planting practices
	Detailed inspections of vegetation around distribution electric lines and equipment	Careful visual inspections of vegetation around the right-of-way, where individual trees are carefully examined, visually, and the condition of each rated and recorded.
	Detailed inspections of vegetation around transmission electric lines and equipment	Careful visual inspections of vegetation around the right-of-way, where individual trees are carefully examined, visually, and the condition of each rated and recorded.
	Emergency response vegetation management due to red flag warning or other urgent conditions	Plan and execution of vegetation management activities, such as trimming or removal, executed based upon and in advance of forecast weather conditions that indicate high fire threat in terms of ignition probability and wildfire consequence.
	Fuel management and reduction of "slash" from vegetation management activities	Plan and execution of fuel management activities that reduce the availability of fuel in proximity to potential sources of ignition, including both reduction or adjustment of live fuel (in terms of species or otherwise) and of dead fuel, including "slash" from vegetation management activities that produce vegetation material such as branch trimmings and felled trees.
	Improvement of inspections	Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors.
	LiDAR inspections of vegetation around distribution electric lines and equipment	Inspections of right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
	LiDAR inspections of vegetation around transmission electric lines and equipment	Inspections of right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
	Other discretionary inspections of vegetation around distribution electric lines and equipment	Inspections of rights-of-way and adjacent vegetation that may be hazardous, which exceeds or otherwise go beyond those mandated by rules and regulations, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
	Other discretionary inspections of vegetation around transmission electric lines and equipment	Inspections of rights-of-way and adjacent vegetation that may be hazardous, which exceeds or otherwise go beyond those mandated by rules and regulations, in terms of frequency, inspection checklist requirements or detail, analysis of and



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	response to problems identified, or other aspects of inspection or records kept.
Patrol inspections of vegetation around distribution electric lines and equipment	Visual inspections of vegetation along rights-of-way that is designed to identify obvious hazards. Patrol inspections may be carried out in the course of other company business.
Patrol inspections of vegetation around transmission electric lines and equipment	Visual inspections of vegetation along rights-of-way that is designed to identify obvious hazards. Patrol inspections may be carried out in the course of other company business.
Quality assurance / quality control of vegetation inspections	Establishment and function of audit process to manage and confirm work completed by employees or subcontractors, including packaging QA/QC information for input to decision-making and related integrated workforce management processes.
Recruiting and training of vegetation management personnel	Programs to ensure that the utility is able to identify and hire qualified vegetation management personnel and to ensure that both full-time employees and contractors tasked with vegetation management responsibilities are adequately trained to perform vegetation management work, according to the utility's wildfire mitigation plan, in addition to rules and regulations for safety.
Remediation of at-risk species	Actions taken to reduce the ignition probability and wildfire consequence attributable to at-risk vegetation species, such as trimming, removal, and replacement.
Removal and remediation of trees with strike potential to electric lines and equipment	Actions taken to remove or otherwise remediate trees that could potentially strike electrical equipment, if adverse events such as failure at the ground-level of the tree or branch breakout within the canopy of the tree, occur.
Substation inspection	Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping.
Substation vegetation management	Based on location and risk to substation equipment only, actions taken to reduce the ignition probability and wildfire consequence attributable to contact from vegetation to substation equipment.
Vegetation inventory system	Inputs, operation, and support for centralized inventory of vegetation clearances updated based upon inspection results, including (1) inventory of species, (2) forecasting of growth, (3) forecasting of when growth threatens minimum right-of-way clearances ("grow-in" risk) or creates fall-in/fly-in risk.
Vegetation management to achieve clearances around electric lines and equipment	Actions taken to ensure that vegetation does not encroach upon the minimum clearances set forth in Table 1 of GO 95, measured between line conductors and vegetation, such as trimming adjacent or overhanging tree limbs.



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F. Grid operations and protocols	Automatic recloser operations	Designing and executing protocols to deactivate automatic reclosers based on local conditions for ignition probability and wildfire consequence.
	Crew-accompanying ignition prevention and suppression resources and services	Those firefighting staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, and water) that are deployed with construction crews and other electric workers to provide site-specific fire prevention and ignition mitigation during on-site work
	Personnel work procedures and training in conditions of elevated fire risk	Work activity guidelines that designate what type of work can be performed during operating conditions of different levels of wildfire risk. Training for personnel on these guidelines and the procedures they prescribe, from normal operating procedures to increased mitigation measures to constraints on work performed.
	Protocols for PSPS re-energization	Designing and executing procedures that accelerate the restoration of electric service in areas that were de-energized, while maintaining safety and reliability standards.
	PSPS events and mitigation of PSPS impacts	Designing, executing, and improving upon protocols to conduct PSPS events, including development of advanced methodologies to determine when to use PSPS, and to mitigate the impact of PSPS events on affected customers and local residents.
	Stationed and on-call ignition prevention and suppression resources and services	Firefighting staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, firefighting foam, chemical extinguishing agent, and water) stationed at utility facilities and/or standing by to respond to calls for fire suppression assistance.
G. Data governance	Centralized repository for data	Designing, maintaining, hosting, and upgrading a platform that supports storage, processing, and utilization of all utility proprietary data and data compiled by the utility from other sources.
	Collaborative research on utility ignition and/or wildfire	Developing and executing research work on utility ignition and/or wildfire topics in collaboration with other non-utility partners, such as academic institutions and research groups, to include data-sharing and funding as applicable.
	Documentation and disclosure of wildfire-related data and algorithms	Design and execution of processes to document and disclose wildfire-related data and algorithms to accord with rules and regulations, including use of scenarios for forecasting and stress testing.
	Tracking and analysis of near miss data	Tools and procedures to monitor, record, and conduct analysis of data on near miss events.
H. Resource allocation methodology	Allocation methodology development and application	Development of prioritization methodology for human and financial resources, including application of said methodology to utility decision-making.
	Risk reduction scenario development and analysis	Development of modelling capabilities for different risk reduction scenarios based on wildfire mitigation initiative



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		implementation; analysis and application to utility decision-making.
	Risk spend efficiency analysis	Tools, procedures, and expertise to support analysis of wildfire mitigation initiative risk-spend efficiency, in terms of MAVF and/ or MARS methodologies.
I. Emergency planning and preparedness	Adequate and trained workforce for service restoration	Actions taken to identify, hire, retain, and train qualified workforce to conduct service restoration in response to emergencies, including short-term contracting strategy and implementation.
	Community outreach, public awareness, and communications efforts	Actions to identify and contact key community stakeholders; increase public awareness of emergency planning and preparedness information; and design, translate, distribute, and evaluate effectiveness of communications taken before, during, and after a wildfire, including Access and Functional Needs populations and Limited English Proficiency populations in particular.
	Customer support in emergencies	Resources dedicated to customer support during emergencies, such as website pages and other digital resources, dedicated phone lines, etc.
	Disaster and emergency preparedness plan	Development of plan to deploy resources according to prioritization methodology for disaster and emergency preparedness of utility and within utility service territory (such as considerations for critical facilities and infrastructure), including strategy for collaboration with Public Safety Partners and communities.
	Preparedness and planning for service restoration	Development of plans to prepare the utility to restore service after emergencies, such as developing employee and staff trainings, and to conduct inspections and remediation necessary to re-energize lines and restore service to customers.
	Protocols in place to learn from wildfire events	Tools and procedures to monitor effectiveness of strategy and actions taken to prepare for emergencies and of strategy and actions taken during and after emergencies, including based on an accounting of the outcomes of wildfire events.
J. Stakeholder cooperation and community engagement	Community engagement	Strategy and actions taken to identify and contact key community stakeholders; increase public awareness and support of utility wildfire mitigation activity; and design, translate, distribute, and evaluate effectiveness of related communications. Includes specific strategies and actions taken to address concerns and serve needs of Access and Functional Needs populations and Limited English Proficiency populations in particular.
	Cooperation and best practice sharing with agencies outside CA	Strategy and actions taken to engage with agencies outside of California to exchange best practices both for utility wildfire mitigation and for stakeholder cooperation to mitigate and respond to wildfires.
	Cooperation with suppression agencies	Coordination with CAL FIRE, federal fire authorities, county fire authorities, and local fire authorities to support planning and



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		operations, including support of aerial and ground firefighting in real-time, including information-sharing, dispatch of resources, and dedicated staff.
	Forest service and fuel reduction cooperation and joint roadmap	Strategy and actions taken to engage with local, state, and federal entities responsible for or participating in forest management and fuel reduction activities; and design utility cooperation strategy and joint stakeholder roadmap (plan for coordinating stakeholder efforts for forest management and fuel reduction activities).

9.2 Citations for relevant statutes, Commission directives, proceedings and orders

Throughout the WMP, cite relevant state and federal statutes, Commission directives, orders, and proceedings. Place the title or tracking number of the statute in parentheses next to comment, or in the appropriate column if noted in a table. Provide in this section a brief description or summary of the relevant portion of the statute. Track citations as end-notes and order (1, 2, 3...) across sections (e.g., if section 1 has 4 citations, section 2 begins numbering at 5).

APPENDIX B



Attachment 2.2: 2021 Wildfire Mitigation
Plan (WMP) Guidelines Template



Wildfire Safety Division
Attachment 2.2: 2021 Wildfire
Mitigation Plan Guidelines Template
November 2020



I. Wildfire Mitigation Plan (WMP) submission and review process

The California Public Utilities Commission (henceforth the CPUC or the Commission) Guidance in Decision (D.19-05-036) included substantive and procedural requirements for future Wildfire Mitigation Plans (WMP) based on lessons learned during the first WMP (2019) evaluation and established an expectation for improvement in the WMPs each year. Several improvements were made for the 2020 WMP and highlighted the need for continuous improvement moving forward.

The experience of the 2020 WMP submission and review process points towards the benefit of streamlined structure and consistency in data, receiving supporting data earlier in the WMP process, and utilizing a structured and consistent approach to evaluate utility wildfire mitigation. Several guiding principles based on lessons learned, comments from stakeholders, and input from the Wildfire Safety Advisory Board, inform the WMP Update Guidelines for 2021: frontloading the WMP review cycle where possible, standardizing information collection, systematizing qualitative information, and tracking utility progress towards wildfire and PSPS risk reduction.

Accordingly, the WSD will consider these four key elements for the 2021 WMP Update submission and review process:

- 1. Frontload data collection.** This would extend the timeframe for WSD and stakeholder review of relevant utility data in advance of the WMP submission and review period, in addition to reducing the need for follow-up data requests. This means some data is collected prior to the annual WMP through Quarterly Reports.
- 2. Standardize templates for utility WMP submission.** Templates help WSD staff more easily uncover relevant supporting information and facilitate comparison across utilities. Utilities will organize their annual WMP Updates based on narrative sections and through additional sub-headings. Utilities will be required to follow a specific schema and pass automated calculation checks for data provided in Quarterly Reports.
- 3. Systematize qualitative evaluation.** An assessment framework increases the objectivity of review and allows the WSD to more efficiently conduct a thorough review.
- 4. Tracking utility progress towards wildfire and PSPS risk reduction.** The 2021 WMP Update serves as the year one update to three-year plans established in 2020. The 2021 WMP update highlights the progress utilities have made to their existing plans and is reviewed in relation to the claims made in 2020, change orders and other required filings.



II. Wildfire Mitigation Plan (WMP) Update Guidelines Template

Structure

The WMP Update (commonly referred to as “WMP” in this document) itself is composed of eight sections plus an appendix:

1. Persons responsible for executing the plan - Contact information for executives responsible, program owners and experts
2. Adherence to statutory requirements - Checklist for each requirement and cite where it was addressed in WMP
3. Actuals and planned spending - Cost summary tables and impacts to ratepayers
4. Lessons learned and risk trends - 1, 3 and 10-year investor-owned utility (IOU) outlook, projected trends in wildfire risk, research reports and proposals, and model and metric calculation methodologies
5. Inputs to the plan and directional vision - goals, objectives, program targets, and worker qualifications
6. Metrics and underlying data – Placeholder for quarterly submissions of WMP metrics. To be filled in by data from prior submissions and Quarterly Reports
7. Mitigation initiatives - Reporting of initiative progress, spend and Risk-Spend Efficiency (RSE)
8. Public Safety Power Shutoff - Separate section for PSPS narrative and data, including customer impact and cost
9. Appendix – Citations to relevant statutes, Commission directives, proceedings and orders

Instructions for filling out the WMP are given with each section of the WMP. Sections of the WMP contain a portion for the utility to provide narrative responses. This narrative response may include quantitative and qualitative explanations, as well as supporting documentation including relevant maps, spreadsheets, photographs, and other relevant information. Many sections also instruct the utility to provide a separate quantitatively-focused response, where tables must be filled out by utilities according to the instructions provided in each section.

Some tables include comment boxes. Utilities may extend the size of comment boxes as needed to provide an adequate description for each aspect of the WMP. Some tables, such as those in section 3, are required to be filled out directly in the WMP report alongside the narrative content. Other tables, which require data to be filled out in a separate spreadsheet document, are reported through the Quarterly Reports. Edits to the Quarterly Report metrics can be provided in the attached spreadsheet document as needed. For any table to be edited, report all data required in that table, not just the data to be edited, and note in the narrative of the corresponding section that the table has been updated.

If any portion of the WMP requires information that the utility has not collected itself nor could ascertain based on information that the utility does collect, the utility shall work with federal, state, and local agencies, stakeholders, and partners to collect or compile the information.

Where the information in question is not collected by any stakeholder and cannot be collected by the utility, the utility shall indicate this and include a description of the information that the utility and/or other stakeholders do track that most closely fits the requirement. Clearly cite all source data used in lieu of the data requested in the requirement.

For example, by the WMP deadline, the utility may not have a full accounting of the value of property destroyed by utility-ignited wildfire in a given year due to ongoing investigation into the cause of one or more wildfires within its service territory. In this example, the utility shall indicate 1) the known sum of the value of property determined by fire Authorities having jurisdiction (AHJs) to have been destroyed by utility-ignited wildfire in that year, albeit incomplete, and 2) a list of the wildfires in that year for which utility facilities are being investigated as a potential source of ignition



but for which the cause is still undetermined and an estimation of value of property destroyed by each. The utility shall cite all data sources used in the calculations.

Finally, the utility shall describe its plan to improve its data collection and/or cooperation with partners with the goal of collecting the required information, including the timeline to implementation.

In the event that any of the requested information is confidential, the utility shall provide two versions to the WSD, one which includes all of the information and a second that does not include the confidential information.



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0 Glossary of defined terms

Term	Definition
10-hour dead fuel moisture content	Moisture content of small dead vegetation (e.g. grass, leaves, which burn quickly but not intensely), which can respond to changes in atmospheric moisture content within 10 hours.
Access and functional needs populations	Per Government Code § 8593.3 and D.19-05-042, individuals who have developmental or intellectual disabilities, physical disabilities, chronic conditions, injuries, limited English proficiency or who are non-English speaking, older adults, children, people living in institutionalized settings, or those who are low income, homeless, or transportation disadvantaged, including, but not limited to, those who are dependent on public transit or those who are pregnant.
Authority Having Jurisdiction	AHJ, party with assigned responsibility, depending on location and circumstance.
Asset (utility)	Electric lines, equipment, or supporting hardware.
At-risk species	Species of vegetation that are particularly likely to contact power lines in the event of high winds and/or ignite if they catch a spark.
Baseline (ignition probability, maturity)	A measure, typically of the current state, to establish a starting point for comparison.
Carbon dioxide equivalent	Tons of greenhouse gases (GHG) emitted, multiplied by the global warming potential relative to carbon dioxide.
Circuit mile	The total length in miles of separate circuits regardless of the number of conductors used per circuit
Contractor	Any individual in the temporary and/or indirect employ of the utility whose limited hours and/or time-bound term of employment are not considered as “full-time” for tax and/or any other purposes.
Critical facilities and infrastructure	<p>For brevity in the 2021 WMP, “critical facilitates and infrastructure” may be shortened to “critical infrastructure” and/or “critical facilities” throughout the WMP. Critical facilities and infrastructure is defined in accordance with the definition adopted in D.19-05-042 and modified in D.20-05-051: those facilities and infrastructure that are essential to the public safety and that require additional assistance and advance planning to ensure resiliency during de energization events. Namely:</p> <ul style="list-style-type: none"> • Emergency Services Sector <ul style="list-style-type: none"> ○ Police Stations ○ Fire Station ○ Emergency Operations Centers ○ Public safety answering points • Government Facilities Sector <ul style="list-style-type: none"> ○ Schools ○ Jails and prisons • Healthcare and Public Health Sector <ul style="list-style-type: none"> ○ Public Health Departments



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	<ul style="list-style-type: none"> ○ Medical facilities, including hospitals, skilled nursing facilities, nursing homes, blood banks, health care facilities, dialysis centers and hospice facilities (excluding doctor offices and other non-essential medical facilities) ● Energy Sector <ul style="list-style-type: none"> ○ Public and private utility facilities vital to maintaining or restoring normal service, including, but not limited to, interconnected publicly-owned utilities and electric cooperatives ● Water and Wastewater Systems Sector <ul style="list-style-type: none"> ○ Facilities associated with the provision of drinking water or processing of wastewater including facilities used to pump, divert, transport, store, treat and deliver water or wastewater ● Communications Sector <ul style="list-style-type: none"> ○ Communication carrier infrastructure including selective routers, central offices, head ends, cellular switches, remote terminals and cellular sites ● Chemical Sector <ul style="list-style-type: none"> ○ Facilities associated with the provision of manufacturing, maintaining, or distributing hazardous materials and chemicals (including Category N-Customers as defined in D.01-06-085) ● Transportation Sector <ul style="list-style-type: none"> ○ Facilities associated with automobile, rail, aviation, major public transportation, and maritime transportation for civilian and military purposes
Customer hours	Total number of customers, multiplied by the average number of hours (e.g. of power outage).
Data cleaning	Calibrating raw data to remove errors (including typographical and numerical mistakes).
Dead fuel moisture content	Moisture content of dead vegetation, which responds solely to current environmental conditions and is critical in determining fire potential.
Detailed inspection	In accordance with GO 165, an inspection where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.
Enhanced inspection	Inspection whose frequency and thoroughness exceeds the requirements of the detailed inspection, particularly if driven by risk calculations.
Evacuation impact	Number of people evacuated, with the duration for which they are evacuated, from homes and businesses, due to wildfires.
Evacuation zone	Areas designated by CAL FIRE and local fire agency evacuation orders, to include both “voluntary” and “mandatory” in addition to other orders such as “precautionary” and “immediate threat”.
Fuel density	Mass of fuel (vegetation) per area which could combust in a wildfire.
Fuel management	Removing or thinning vegetation to reduce the potential rate of propagation or intensity of wildfires.
Fuel moisture content	Amount of moisture in a given mass of fuel (vegetation), measured as a percentage of its dry weight.
Full-time employee	Any individual in the ongoing and/or direct employ of the utility whose hours and/or term of employment are considered as “full-time” for tax and/or any other purposes.



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GO 95 nonconformance	Condition of a utility asset that does not meet standards established by General Order 95.
Greenhouse gas (GHG) emissions	Health and Safety Code 38505 identifies seven greenhouse gases that ARB is responsible to monitor and regulate in order to reduce emissions: carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), sulfur hexafluoride (SF ₆), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and nitrogen trifluoride (NF ₃).
Grid hardening	Actions (such as equipment upgrades, maintenance, and planning for more resilient infrastructure) taken in response to the risk of undesirable events (such as outages) or undesirable conditions of the electrical system in order to reduce or mitigate those events and conditions, informed by an assessment of the relevant risk drivers or factors.
Grid topology	General design of an electric grid, whether looped or radial, with consequences for reliability and ability to support de-energization (e.g., being able to deliver electricity from an additional source).
High Fire Threat District (HFTD)	Per D.17-01-009, areas of the State designated by the CPUC and CAL FIRE to have elevated wildfire risk, indicating where utilities must take additional action (per GO 95, GO 165, and GO 166) to mitigate wildfire risk.
Highly rural region	In accordance with 38 CFR 17.701, “highly rural” shall be defined as those areas with a population of less than 7 persons per square mile. For the purposes of the WMP, “area” shall be defined as census tracts.
High Wind Warning (HWW)	Level of wind risk from weather conditions, as declared by the National Weather Service. For historical NWS data, refer to the Iowa State University Iowa archive of NWS watch / warnings. ¹
HWW overhead (OH) Circuit Mile Day	Sum of overhead circuit miles of utility grid subject to High Wind Warnings (HWW, as defined by the National Weather Service) each day within a given time period, calculated as the number of overhead circuit miles that were under an HWW multiplied by the number of days those miles were under said HWW. For example, if 100 overhead circuit miles were under an HWW for 1 day, and 10 of those miles were under HWW for an additional day, then the total HWW OH circuit mile days would be 110.
Ignition probability	The relative possibility that an ignition will occur, probability is quantified as a number between 0% and 100% (where 0% indicates impossibility and 100% indicates certainty). The higher the probability of an event, the more certainty there is that the event will occur. (Often informally referred to as likelihood or chance).
Ignition-related deficiency	Any condition which may result in ignition or has previously resulted in ignition, even if not during the past five years.
Impact/consequence of ignitions	The effect or outcome of a wildfire ignition, affecting objectives, which may be expressed by terms including, although not limited to health, safety, reliability, economic and/or environmental damage.
Initiative	Measure or activity proposed or in process designed to reduce the consequences and/or probability of wildfire or PSPS.
Inspection protocol	Documented procedures to be followed in order to validate that a piece of equipment is in good condition and expected to operate safely and effectively.
Invasive species	Non-native species whose proliferation increases the risk of wildfires.

¹ <https://mesonet.agron.iastate.edu/request/gis/watchwarn.phtml>



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Level 1 finding	In accordance with GO 95, an immediate safety and/or reliability risk with high probability for significant impact.
Level 2 finding	In accordance with GO 95, a variable (non-immediate high to low) safety and/or reliability risk.
Level 3 finding	In accordance with GO 95, an acceptable safety and/or reliability risk.
Life expectancy	Anticipated years that a piece of equipment can be expected to meet safety and performance requirements.
Limited English Proficiency (LEP)	Populations with limited English working proficiency based on the International Language Roundtable scale.
Line miles	The number of miles of transmission and/or distribution line. Differs from circuit miles because individual circuits, such as the two circuits of a double-circuit line, are not counted separately in circuit miles but are counted as separate total miles of line.
Live fuel moisture content	Moisture content within living vegetation, which can retain water longer than dead fuel.
Lost energy	Energy that would have been delivered were it not for an outage.
Major roads	Interstate highways, U.S. highways, state and county routes.
Match drop simulation	Wildfire simulation method that takes an arbitrary ignition and forecasts propagation and consequence/impact.
Member of the public	Any individual not employed by the utility.
Multi-attribute value function	Risk calculation methodology introduced during CPUC's S-MAP and RAMP proceedings.
Near miss	Previously used to define an event with probability of ignition. Redefined under "Risk event."
Need for PSPS	When utilities' criteria for utilizing PSPS are met.
Noncompliant clearance	Rights-of-way whose vegetation is not trimmed in accordance with the requirements of GO 95.
Outages of the type that could ignite a wildfire	Outages that, in the judgement of the utility, could have ignited a wildfire.
Outcome metrics	Measurements of the performance of the utility and its service territory in terms of both leading and lagging indicators of wildfire, PSPS, and other consequences of wildfire risk, including the potential unintended consequences of wildfire mitigation work, such as acreage burned by utility-ignited wildfire.
Overcapacity	When the energy transmitted by utility equipment exceeds that of its nameplate capacity.
Patrol inspection	In accordance with GO 165, a simple visual inspection of applicable utility equipment and structures that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.
Percentile conditions	Top X% of a particular set (e.g. wind speed), based on a historical data set with sufficient detail. For example, "Top 95 percentile wind speeds in the last 5 years" would refer to the 5% of avg daily wind speeds recorded by each weather station. If 1,000 weather stations recorded average daily wind speeds over 10 days, then the 95 th percentile wind speed would be the top 5% of weather station-days. In this example, there will be 10 days each with 1,000 weather station reports and a total of 10,000 weather station-days, so 50 observations will be in the top 5%. The lowest wind speed in this top 5% would be the "95 th percentile wind speed".
Planned outage	Electric outage announced ahead of time by the utility.



Preventive maintenance (PM)	The practice of maintaining equipment on a regular schedule, based on risk, elapsed time, run-time meter readings, or number of operations. The intent of PM is to “prevent” maintenance problems or failures before they take place by following routine and comprehensive maintenance procedures. The goal is to achieve fewer, shorter, and more predictable outages.
Priority essential services	Critical first responders, public safety partners, critical facilities and infrastructure, operators of telecommunications infrastructure, and water utilities/agencies.
Program targets	Quantifiable measurements of activity identified in WMPs and subsequent updates used to show progress towards reaching the objectives, such as number of trees trimmed or miles of power lines hardened.
Progress metrics	Measurements that track how much utility wildfire mitigation activity has changed the conditions of utility wildfire risk exposure or utility ability to manage wildfire risk exposure, in terms of leading indicators of ignition probability and wildfire consequences.
Property	Private and public property, buildings and structures, infrastructure, and other items of value that were destroyed by wildfire, including both third-party property and utility assets.
PSPS event	Defined as the time period from the first public safety partner notified of a planned public safety de-energization to the final customer re-energized.
PSPS risk	The potential for the occurrence of a PSPS event expressed in terms of a combination of various outcomes of the event and their associated probabilities.
PSPS weather	Weather that exceeds a utility's risk threshold for initiating a PSPS.
Red Flag Warning (RFW)	Level of wildfire risk from weather conditions, as declared by the National Weather Service. For historical NWS data, refer to the Iowa State University Iowa archive of NWS watch / warnings. ²
RFW OH Circuit Mile Day	Sum of overhead circuit miles of utility grid subject to Red Flag Warning each day within a given time period, calculated as the number of overhead circuit miles that were under an RFW multiplied by the number of days those miles were under said RFW. For example, if 100 overhead circuit miles were under an RFW for 1 day, and 10 of those miles were under RFW for an additional day, then the total RFW OH circuit mile days would be 110.
Risk event	An event with probability of ignition, including wires down, contacts with objects, line slap, events with evidence of heat generation, and other events that cause sparking or have the potential to cause ignition. The following risk events all qualify as risk event: <ul style="list-style-type: none"> • Ignitions • Outages not caused by vegetation • Vegetation-caused outages • Wire-down events • Faults • Other risk events with potential to cause ignitions
Risk event simulation	Simulation of what the consequence would have been of an ignition had it occurred.
Risk-spend efficiency (RSE)	An estimate of the cost-effectiveness of initiatives, calculated by dividing the mitigation risk reduction benefit by the mitigation cost estimate based on the full set of risk reduction benefits estimated from the incurred costs. For ongoing initiatives, the RSE can be calculated by determining the “marginal benefit” of additional spending in the ongoing

² <https://mesonet.agron.iastate.edu/request/gis/watchwarn.phtml>



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	initiative. For example, the RSE of an ongoing initiative could be calculated by dividing the mitigation risk reduction benefit from a 5% increase in spend by the cost associated with a 5% increase in spend.
Rule	Section of public utility code requiring a particular activity or establishing a particular threshold.
Run-to-failure	A maintenance approach that replaces equipment only when it fails.
Rural region	In accordance with GO 165, "rural" shall be defined as those areas with a population of less than 1,000 persons per square mile as determined by the United States Bureau of the Census. For the purposes of the WMP, "area" shall be defined as census tracts.
Safety Hazard	A condition that poses a significant threat to human life or property.
Simulated wildfire	Propagation and impact/consequence of a wildfire ignited at a particular point ('match drop'), as simulated by fire spread software.
Span	The space between adjacent supporting poles or structures on a circuit consisting of electric lines and equipment. "Span level" refers to asset-scale granularity.
System Average Interruption Duration Index (SAIDI)	System-wide total number of minutes per year of sustained outage per customer served.
Third-party contact	Contact between a piece of electrical equipment and another object, whether natural (tree branch) or human (vehicle).
Time to expected failure	Time remaining on the life expectancy of a piece of equipment.
Top 30% of proprietary fire potential index	Top 30% of FPI or equivalent scale (e.g., "Extreme" on SCE's FPI; "extreme", 15 or greater, on SDG&E's FPI; and 4 or above on PG&E's FPI).
Trees with strike potential / hazard trees	Trees that could either 'fall in' to a power line, or have branches detach and 'fly in' to contact a power line in high-wind conditions.
Unplanned outage	Electric outage that occurs with no advance notice from the utility (e.g. blackout).
Urban region	In accordance with GO 165, "urban" shall be defined as those areas with a population of more than 1,000 persons per square mile as determined by the United States Bureau of the Census.
Utility-ignited wildfire	Wildfires ignited by utility infrastructure or employees, including all wildfires determined by AHJ investigation to originate from ignition caused by utility infrastructure. For the purposes of the WMP, "area" shall be defined as census tracts.
Vegetation management	Trimming and clearance of trees, branches, and other vegetation that poses the risk of contact with electric equipment.
Vegetation risk index	Risk index indicating the probability of vegetation-related outages along a particular circuit, based on the vegetation species, density, height, and growth rate.
Weather normalization	Adjusting metrics based on relative weather risk factors or indices
Wildfire impact/consequence	The effect or outcome of a wildfire affecting objectives, which may be expressed, by terms including, although not limited to health, safety, reliability, economic and/or environmental damage.
Wildfire risk	The potential for the occurrence of a wildfire event expressed in terms of ignition probability, wildfire impact/consequence.
Wildfire-only WMP programs	Activities, practices, and strategies that are only necessitated by wildfire risk, unrelated to or beyond that required by minimum reliability and/or safety requirements. Such programs are not indicated or in common use in areas where wildfire risk is minimal (e.g., territory



	with no vegetation or fuel) or under conditions where wildfires are unlikely to ignite or spread (e.g., when rain is falling).
Wildland urban interface (WUI)	A geographical area identified by the state as a “Fire Hazard Severity Zone”, or other areas designated by the enforcing agency to be a significant risk from wildfires, established pursuant to Title 24, Part 2, Chapter 7A.
Wire down	Instance where an electric transmission or distribution conductor is broken and falls from its intended position to rest on the ground or a foreign object.

1 Persons responsible for executing the WMP

Provide an accounting of the responsibilities of the responsible person(s) executing the plan, including:

1. Executive level with overall responsibility
2. Program owners specific to each component of the plan

Title, credentials and components of responsible must be released publicly, but other contact information may be provided in a redacted file attached to the WMP submission.

Executive-level owner with overall responsibility

- Name and title:
- Email:
- Phone number:

Program owners specific to each section of the plan

Note: A program owner may own multiple sections, and multiple components across sections, but each section must have a program owner accountable.

Section 1: Persons responsible for executing the plan

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:
- Phone number:
- Component (if entire section, put “entire section”):

Section 2: Adherence to statutory requirements

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:
- Phone number:
- Component (if entire section, put “entire section”):

Section 3: Actuals and planned spending

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:



- Phone number:
- Component (if entire section, put “entire section”):

Section 4: Lessons learned and risk trends

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:
- Phone number:
- Component (if entire section, put “entire section”):

Section 5: Inputs to the plan and directional vision

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:
- Phone number:
- Component (if entire section, put “entire section”):

Section 6: Metrics and underlying data

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:
- Phone number:
- Component (if entire section, put “entire section”):

Section 7: Mitigation initiatives

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:
- Phone number:
- Component (if entire section, put “entire section”):

Section 8: Public Safety Power Shutoff

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:
- Phone number:
- Component (if entire section, put “entire section”):

Section 9: Appendix

Program owner (add additional program owners if separated by component in section)

- Name and title:
- Email:



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- Phone number:
- Component (if entire section, put “entire section”):



1.1 Verification

Complete the following verification for the WMP submission:

(See Rule 1.11)
(Where Applicant is a Corporation)

I am an officer of the applicant corporation herein, and am authorized to make this verification on its behalf. The statements in the foregoing document are true of my own knowledge, except as to matters which are therein stated on information or belief, and as to those matters I believe them to be true.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on _____ at _____, California.
(Date) (Name of city)

(Signature and Title of Corporate Officer)



2 Adherence to statutory requirements

Section 2 comprises a “check list” of the CPUC Code Sec. 8386 (c) requirements and subparts. Each utility shall both affirm that the WMP addresses each requirement AND cite the Section or Page Number where it is more fully described (whether in Executive Summary or other section of the WMP).

Illustrative Table 2-1 check-list:

Requirement	Description	WMP Section/Page
2	The objectives of the plan	Section 4.1 pg. 13
10	Protocols for the de-energization of the electrical corporation’s transmission infrastructure, etc.	Section 5 overview, pg. 30-31

Mark the following table with the location of each requirement. If requirement is located in multiple areas, mention all WMP sections and pages, separated by semi-colon (e.g., Section 5, pg. 30-32; Section 7, pg. 43)



Requirement	Description	WMP Section/Page
1	An accounting of the responsibilities of persons responsible for executing the plan	
2	The objectives of the plan	
3	A description of the preventive strategies and programs to be adopted by the electrical corporation to minimize the risk of its electrical lines and equipment causing catastrophic wildfires, including consideration of dynamic climate change risks	
4	A description of the metrics the electrical corporation plans to use to evaluate the plan’s performance and the assumptions that underlie the use of those metrics	
5	A discussion of how the application of previously identified metrics to previous plan performances has informed the plan	
6	Protocols for disabling reclosers and deenergizing portions of the electrical distribution system that consider the associated impacts on public safety. As part of these protocols, each electrical corporation shall include protocols related to mitigating the public safety impacts of disabling reclosers and deenergizing portions of the electrical distribution system that consider the impacts on all of the aspects listed in PU Code 8386c	
7	Appropriate and feasible procedures for notifying a customer who may be impacted by the deenergizing of electrical lines, including procedures for those customers receiving a medical baseline allowance as described in paragraph (6). The procedures shall direct notification to all public safety offices, critical first responders, health care facilities, and operators of telecommunications infrastructure with premises within the footprint of potential deenergization for a given event	
8	Plans for vegetation management	
9	Plans for inspections of the electrical corporation’s electrical infrastructure	
10	Protocols for the deenergization of the electrical corporation’s transmission infrastructure, for instances when the deenergization may impact customers who, or entities that, are dependent upon the infrastructure	



11	A list that identifies, describes, and prioritizes all wildfire risks, and drivers for those risks, throughout the electrical corporation’s service territory, including all relevant wildfire risk and risk mitigation information that is part of the Safety Model Assessment Proceeding and the Risk Assessment Mitigation Phase filings	
12	A description of how the plan accounts for the wildfire risk identified in the electrical corporation’s Risk Assessment Mitigation Phase filing	
13	A description of the actions the electrical corporation will take to ensure its system will achieve the highest level of safety, reliability, and resiliency, and to ensure that its system is prepared for a major event, including hardening and modernizing its infrastructure with improved engineering, system design, standards, equipment, and facilities, such as undergrounding, insulation of distribution wires, and pole replacement	
14	A description of where and how the electrical corporation considered undergrounding electrical distribution lines within those areas of its service territory identified to have the highest wildfire risk in a commission fire threat map	
15	A showing that the electrical corporation has an adequately sized and trained workforce to promptly restore service after a major event, taking into account employees of other utilities pursuant to mutual aid agreements and employees of entities that have entered into contracts with the electrical corporation	
16	Identification of any geographic area in the electrical corporation’s service territory that is a higher wildfire threat than is currently identified in a commission fire threat map, and where the commission should consider expanding the high fire threat district based on new information or changes in the environment	
17	A methodology for identifying and presenting enterprise wide safety risk and wildfire-related risk that is consistent with the methodology used by other electrical corporations unless the commission determines otherwise	
18	A description of how the plan is consistent with the electrical corporation’s disaster and emergency preparedness plan prepared pursuant to Section 768.6, including plans to restore service and community outreach	
19	A statement of how the electrical corporation will restore service after a wildfire	



20	<p>Protocols for compliance with requirements adopted by the commission regarding activities to support customers during and after a wildfire, outage reporting, support for low-income customers, billing adjustments, deposit waivers, extended payment plans, suspension of disconnection and nonpayment fees, repair processing and timing, access to electrical corporation representatives, and emergency communications</p>	
21	<p>A description of the processes and procedures the electrical corporation will use to do the following:</p> <p>(A) Monitor and audit the implementation of the plan.</p> <p>(B) Identify any deficiencies in the plan or the plan’s implementation and correct those deficiencies.</p> <p>(C) Monitor and audit the effectiveness of electrical line and equipment inspections, including inspections performed by contractors, carried out under the plan and other applicable statutes and commission rules.</p>	

(22) Cites “Any other information that the Wildfire Safety Division might require. While it is assumed such information will be incorporated into the WMP, substantive additions will be identified for easier reference.



3 Actuals and Planned Spending for Mitigation Plan

3.1 Summary of WMP initiative expenditures

In the Table 3-1, summarize the projected costs (in thousands) per year over the three-year WMP cycle, including actual expenditures for years passed. In Table 3-2 break out projected costs per category of mitigations, over the three-year WMP cycle. The financials represented in the summary tables below equal the aggregate spending listed in the mitigations financial tables reported quarterly. Nothing in this document shall be construed as a statement that costs listed are approved or deemed reasonable if the WMP is approved, denied, or otherwise acted upon.

Table 3-1: Summary of WMP Expenditures - Total

	Spend in thousands \$
2020 WMP Planned	
2020 Actual	
Difference	
2021 Planned	
2022 Planned	
2020-22 Planned	

Table 3-2: Summary of WMP Expenditures by Category



WMP Category	2020 WMP Planned	2020 Actual	Difference	2021 Planned	2022 Planned	2020-22 Planned (w/ 2020 Actual)
Risk and Mapping						
Situational Awareness						
Grid Design and System Hardening						
Asset Management and Inspections						
Vegetation Management						
Grid Operations						
Data Governance						
Resource Allocation						
Emergency Planning						
Stakeholder Cooperation and Community Engagement						
Total						

3.2 Summary of ratepayer impact

Report the projected cost increase to ratepayers due to utility-ignited wildfires and wildfire mitigation activities engaged in each of the years below. Account for all expenditure incurred in that year due to utility-ignited wildfires / mitigation activities and provide methodology behind calculation below Table 3-3.

Table 3-3: WMP Electricity cost increase to ratepayers



Outcome metric name	Annual performance - Actual					Unit(s)
	2016	2017	2018	2019	2020	
Increase in electric costs to ratepayer due to utility-ignited wildfires (total)						Dollar value of average monthly rate increase attributable to utility-ignited wildfires per year (e.g., \$3/month on average across customers for utility-ignited wildfires occurring in 20XX)
Increase in electric costs to ratepayer due to wildfire mitigation activities (total)						Dollar value of average monthly rate increase attributable to WMPs per year

4 Lessons Learned and Risk Trends

4.1 Lessons Learned: how tracking metrics on the 2020 plan has informed the 2021 plan

Describe how the utility’s plan has evolved since the 2020 WMP submission. Outline any major themes and lessons learned from the 2020 plan and subsequent implementation of the initiatives. In particular, focus on how utility performance against the metrics used has informed the utility’s 2021 WMP.

4.2 Understanding major trends impacting ignition probability and wildfire consequence

Describe how the utility assesses wildfire risk in terms of ignition probability and estimated wildfire consequence, including use of Multi-Attribute Risk Score (MARS) and Multi-Attribute Value Function (MAVF) as in the Safety Model and Assessment Proceeding (S-MAP)³ and Risk Assessment Mitigation Phase (RAMP), highlighting changes since the 2020 WMP report. Include description of how the utility distinguishes between these risks and the risks to safety and reliability. List and describe each “known local condition” that the utility monitors per GO 95, Rule 31.1, including how the condition is monitored and evaluated. In addition:

- A. Describe how the utility monitors and accounts for the contribution of weather to ignition probability and estimated wildfire consequence in its decision-making, including describing any utility-generated Fire Potential Index or other measure (including input variables, equations, the scale or rating system, an explanation of how uncertainties are accounted for, an explanation of how this index is used to inform operational decisions, and an explanation of how trends in index ratings impact medium-term decisions such as maintenance and longer-term decisions such as capital investments, etc.).
- B. Describe how the utility monitors and accounts for the contribution of fuel conditions to ignition probability and estimated wildfire consequence in its decision-making, including describing any proprietary fuel condition index (or other measures tracked), the outputs of said index or other measures, and the methodology used for projecting future fuel conditions. Include discussion of measurements and units for live fuel moisture content,

³ Updates to S-MAP are currently in deliberation under proceeding R. 20-07-013 – Order Instituting Rulemaking to Further Develop a Risk-based Decision-making Framework for Electric and Gas Utilities



dead fuel moisture content, density of each fuel type, and any other variables tracked. Describe the measures and thresholds the utility uses to determine extreme fuel conditions, including what fuel moisture measurements and threshold values the utility considers “extreme” and its strategy for how fuel conditions inform operational decision-making.

4.2.1 Service territory fire-threat evaluation and ignition risk trends

Discuss fire-threat evaluation of the service territory to determine whether an expanded High Fire Threat District (HFTD) is warranted (i.e., beyond existing Tier 2 and Tier 3 areas). Include a discussion of any fire threat assessment of its service territory performed by the electrical corporation, highlighting any changes since the prior WMP report. In the event that the electrical corporation’s assessment determines the fire threat rating for any part of its service territory is insufficient (i.e., the actual fire threat is greater than what is indicated in the CPUC Fire Threat Map and High Fire Threat District designations), the corporation shall identify those areas for consideration of HFTD modification, based on the new information or environmental changes. To the extent this identification relies upon a meteorological or climatological study, a thorough explanation and copy of the study shall be included.

List and describe any macro trends impacting ignition probability and estimated wildfire consequence within utility service territory, highlighting any changes since the 2020 WMP report:

1. Change in ignition probability and estimated wildfire consequence due to climate change
2. Change in ignition probability and estimated wildfire consequence due to relevant invasive species, such as bark beetles
3. Change in ignition probability and estimated wildfire consequence due to other drivers of change in fuel density and moisture
4. Population changes (including Access and Functional Needs population) that could be impacted by utility ignition
5. Population changes in HFTD that could be impacted by utility ignition
6. Population changes in WUI that could be impacted by utility ignition
7. Utility infrastructure location in HFTD vs non-HFTD
8. Utility infrastructure location in urban vs rural vs highly rural areas

4.3 Change in ignition probability drivers

Based on the implementation of the above wildfire mitigation initiatives, explain how the utility sees its ignition probability drivers evolving over the 3-year term of the WMP, highlighting any changes since the 2020 WMP report. Focus on ignition probability and estimated wildfire consequence reduction by ignition probability driver, detailed risk driver, and include a description of how the utility expects to see incidents evolve over the same period, both in total number (of occurrence of a given incident type, whether resulting in an ignition or not) and in likelihood of causing an ignition by type. Outline methodology for determining ignition probability from events, including data used to determine likelihood of ignition probability, such as past ignition events, number of risk events, and description of events (including vegetation and equipment condition).

4.4 Research proposals and findings

Report all utility-sponsored research proposals, findings from ongoing studies and findings from studies completed in 2020 relevant to wildfire and PSPS mitigation.



4.4.1 Research proposals

Report proposals for future utility-sponsored studies relevant to wildfire and PSPS mitigation. Organize proposals under the following structure:

1. **Purpose of research** – brief summary of context and goals of research
2. **Relevant terms** - Definitions of relevant terms (e.g., defining "enhanced vegetation management" for research on enhanced vegetation management)
3. **Data elements** - Details of data elements used for analysis, including scope and granularity of data in time and location (i.e., date range, reporting frequency and spatial granularity for each data element, see example table below)
4. **Methodology** - Methodology for analysis, including list of analyses to perform; section shall include statistical models, equations, etc. behind analyses
5. **Timeline** - Project timeline and reporting frequency to WSD

Example table reporting data elements

Data Element	Collection period	Collection frequency	Spatial granularity	Temporal granularity	Comments
Ignitions from contact with vegetation in non-enhanced vegetation areas	2014 – 2020+ (ongoing)	Per ignition	Lat/lon per ignition	Date, hour of ignition (estimated)	-
Ignitions from contact with vegetation in enhanced vegetation areas	2019 – 2020+ (ongoing)	Per ignition	Lat/lon per ignition	Date, hour of ignition (estimated)	-

4.4.2 Research findings

Report findings from ongoing and completed studies relevant to wildfire and PSPS mitigation. Organize findings reports under the following structure:

1. **Purpose of research** – Brief summary of context and goals of research
2. **Relevant terms** - Definitions of relevant terms (e.g., defining "enhanced vegetation management" for research on enhanced vegetation management)
3. **Data elements** - Details of data elements used for analysis, including scope and granularity of data in time and location (i.e., date range, reporting frequency and spatial granularity for each data element, see example table above)
4. **Methodology** - Methodology for analysis, including list of analyses to perform; section shall include statistical models, equations, etc. behind analyses
5. **Timeline** - Project timeline and reporting frequency to WSD. Include any changes to timeline since last update
6. **Results and discussion** – Findings and discussion based on findings, highlighting new results and changes to conclusions since last update
7. **Follow-up planned** – Follow up research or action planned as a result of the research



4.5 Model and metric calculation methodologies

4.5.1 Additional models for ignition probability, wildfire and PSPS risk

Report details on methodology used to calculate or model ignition probability, potential impact of ignitions and / or PSPS, including list of all input used in impact simulation; data selection and treatment methodologies; assumptions, including Subject Matter Expert (SME) input; equation(s), functions, or other algorithms used to obtain output; output type(s), e.g., wind speed model; and comments.

For each model, organize details under the following headings:

1. **Purpose of model** – Brief summary of context and goals of model
2. **Relevant terms** - Definitions of relevant terms (e.g., defining "enhanced vegetation management" for a model on vegetation-related ignitions)
3. **Data elements** - Details of data elements used for analysis, including scope and granularity of data in time and location (i.e., date range, reporting frequency and spatial granularity for each data element, see example table above)
4. **Methodology** - Methodology and assumptions for analysis, including Subject Matter Expert (SME) input; equation(s), functions, statistical models, or other algorithms used to obtain output
5. **Timeline** – Model initiation and development progress over time. If updated in last WMP, provide update to changes since prior report.
6. **Application and results** – Explain where the model has been applied, how it has informed decisions, and any metrics or information on model accuracy and effectiveness collected in the prior year.

4.5.2 Calculation of key metrics

Report details on the calculation of the metrics below. For each metric, a standard definition is provided with statute cited where relevant. The utility must follow the definition provided and detail the procedure they used to calculate the metric values aligned with these definitions. Utilities must cite all data sources used in calculating the metrics below.

1. **Red Flag Warning overhead circuit mile days** – Detail the steps to calculate the annual number of red flag warning (RFW) overhead (OH) circuit mile days. Calculated as the number of circuit miles that were under an RFW multiplied by the number of days those miles were under said RFW. Refer to Red Flag Warnings as issued by the National Weather Service (NWS). For historical NWS data, refer to the Iowa State University Iowa archive of NWS watch / warnings.⁴ Detail the steps used to determine if an overhead circuit mile was under a Red Flag Warning, providing an example of how the RFW OH circuit mile days were calculated for a Red Flag Warning that occurred within utility territory over the last five years.
2. **High Wind Warning overhead circuit mile days** – Detail the steps used to calculate the annual number of High Wind Warning (HWW) overhead circuit mile days. Calculated as the number of overhead circuit miles that were under an HWW multiplied by the number of days those miles were under said HWW. Refer to High Wind Warnings as issued by the National Weather Service (NWS). For historical NWS data, refer to the Iowa State University Iowa archive of NWS watch / warnings.⁵ Detail the steps used to determine if an overhead circuit mile was under a High Wind Warning, providing an example of how the OH HWW circuit mile days were calculated for a High Wind Warning that occurred within utility territory over the last five years.

⁴ <https://mesonet.agron.iastate.edu/request/gis/watchwarn.phtml>

⁵ <https://mesonet.agron.iastate.edu/request/gis/watchwarn.phtml>



3. **Access and Functional Needs population** – Detail the steps to calculate the annual number of customers that are considered part of the Access and Functional Needs (AFN) population. Defined in Government Code § 8593.3 and D.19-05-042 as individuals who have developmental or intellectual disabilities, physical disabilities, chronic conditions, injuries, limited English proficiency or who are non-English speaking,⁶ older adults, children, people living in institutionalized settings, or those who are low income, homeless, or transportation disadvantaged, including, but not limited to, those who are dependent on public transit or those who are pregnant.
4. **Wildlife Urban Interface** – Detail the steps to calculate the annual number of circuit miles and customers in Wildlife Urban Interface (WUI) territory. WUI is defined as the area where houses exist at more than 1 housing unit per 40 acres and (1) wildland vegetation covers more than 50% of the land area (intermix WUI) or (2) wildland vegetation covers less than 50% of the land area, but a large area (over 1,235 acres) covered with more than 75% wildland vegetation is within 1.5 mi (interface WUI) (Radeloff et al, 2005).⁷
5. **Urban, rural and highly rural** – Detail the steps for calculating the number of customers and circuit miles in utility territory that are in highly rural, rural, and urban regions for each year. Use the following definitions for classifying an area highly rural/rural/urban (also referenced in glossary):
 - a. Highly rural – In accordance with 38 CFR 17.701, “highly rural” shall be defined as those areas with a population of less than 7 persons per square mile as determined by the United States Bureau of the Census. For the purposes of the WMP, “area” shall be defined as census tracts.
 - b. Rural – In accordance with GO 165, “rural” shall be defined as those areas with a population of less than 1,000 persons per square mile as determined by the United States Bureau of the Census. For the purposes of the WMP, “area” shall be defined as census tracts.
 - c. Urban – In accordance with GO 165, “urban” shall be defined as those areas with a population of more than 1,000 persons per square mile as determined by the United States Bureau of the Census. For the purposes of the WMP, “area” shall be defined as census tracts.

Population density numbers are calculated using the American Community Survey (ACS) 1-year estimates on population density by census tract for each corresponding year (2016 ACS 1-year estimate for 2016 metrics, 2017 ACS 1-year estimate for 2017 metrics, etc.). For years with no ACS 1-year estimate available, use the 1-year estimate immediately before the missing year (use 2019 estimate if 2020 estimate is not yet published, etc.)

4.6 Progress reporting on past deficiencies

Report progress on all deficiencies provided in the 2020 WMP relevant to the utility. This includes deficiencies in Resolution WSD-002.

Response: Summarize how the utility has responded and addressed the conditions in the table below. Reference documents that serve as part of the utility’s response (e.g. submitted in the utility’s Remedial Compliance Plan, location in 2021 WMP update, etc.). Note action taken by the WSD for Class A and B deficiencies (e.g. response found sufficient, response found insufficient and further action required, etc.).

Table 4.6-1: List of utility deficiencies and summary of response, 2020

⁶ Guidance on calculating number of households with limited or no English proficiency can be found in D.20-04-003

⁷ Paper can be found here - https://www.fs.fed.us/pnw/pubs/journals/pnw_2005_radeloff001.pdf with the latest WUI map (form 2010) found here - <http://silvis.forest.wisc.edu/data/wui-change/>



Deficiency number	Deficiency title	Utility response (brief summary)	Referenced documents	WSD Action

Add additional rows as needed

5 Inputs to the plan and directional vision for WMP

5.1 Goal of Wildfire Mitigation Plan

The goal of the Wildfire Mitigation Plan is shared across WSD and all utilities: Documented reductions in the number of ignitions caused by utility actions or equipment and minimization of the societal consequences (with specific consideration to the impact on Access and Functional Needs populations and marginalized communities) of both wildfires and the mitigations employed to reduce them, including PSPS.

In the following sub-sections report utility-specific objectives and program targets towards the WMP goal. No utility response required for section 5.1.

5.2 The objectives of the plan

Objectives are unique to each utility and reflect the 1, 3, and 10-Year projections of progress towards the WMP goal. Objectives are determined by the portfolio of mitigation strategies proposed in the WMP. The objectives of the plan shall, at a minimum, be consistent with the requirements of California Public Utilities Code §8386(a) –

Each electrical corporation shall construct, maintain, and operate its electrical lines and equipment in a manner that will minimize the risk of catastrophic wildfire posed by those electrical lines and equipment.

Describe utility WMP objectives, categorized by each of the following timeframes, highlighting changes since the prior WMP report:

1. Before the next Annual WMP Update
2. Within the next 3 years
3. Within the next 10 years – long-term planning beyond the 3-year cycle

5.3 Plan program targets

Program targets are quantifiable measurements of activity identified in WMPs and subsequent updates used to show progress towards reaching the objectives, such as number of trees trimmed or miles of power lines hardened.

List and describe all program targets the electrical corporation uses to track utility WMP implementation and utility performance over the last five years. For all program targets, list the 2019 and 2020 performance, a numeric target value that is the projected target for end of year 2021 and 2022, units on the metrics reported, the assumptions that underlie the use of those metrics, update frequency, and how the performance reported could be validated by third parties outside the utility, such as analysts or academic researchers. Identified metrics must be of enough detail and scope to effectively inform the performance (i.e., reduction in ignition probability or wildfire consequence) of each targeted preventive strategy and program.



Table 5.3-1: List and description of program targets, last 5 years

Program target	2019 performance	2020 performance	Projected target by end of 2021	Projected target by end of 2022	Units	Underlying assumptions	Update frequency	Third-party validation

Add additional rows as needed

5.4 Planning for Workforce and Other Limited Resources

Report on worker qualifications and training practices regarding wildfire and PSPS mitigation for workers in the following target roles:

1. Vegetation inspections
2. Vegetation management projects
3. Asset inspections
4. Grid hardening
5. Risk event inspection

For each of the target roles listed above:

1. List all worker titles relevant to target role (target roles listed above)
2. For each worker title, list and explain minimum qualifications with an emphasis on qualifications relevant to wildfire and PSPS mitigation. Note if the job requirements include the following:
 - a. Going beyond a basic knowledge of General Order 95 requirements to perform relevant types of inspections or activities in the target role
 - b. Being a “Qualified Electrical Worker” (QEW) and define what certifications, qualifications, experience, etc. is required to be a QEW for the target role for the utility.
 - c. Include special certification requirements such as being an International Society of Arboriculture (ISA) Certified Arborist with specialty certification as a Utility Specialist
3. Report percentage of Full Time Employees (FTEs) in target role with specific job title
4. Provide a summarized report detailing the overall percentage of FTEs with qualifications listed in (2) for each of the target roles.
5. Report plans to improve qualifications of workers relevant to wildfire and PSPS mitigation. Utilities will explain how they are developing more robust outreach and onboarding training programs for new electric workers to identify hazards that could ignite wildfires.

5.4.1 Target role: Vegetation inspections

1. Worker titles in target role
2. Minimum qualifications
3. FTE percentages by title in target role
4. Percent of FTEs by high-interest qualification
5. Plans to improve worker qualifications



5.4.2 Target role: Vegetation management projects

1. Worker titles in target role
2. Minimum qualifications
3. FTE percentages by title in target role
4. Percent of FTEs by high-interest qualification
5. Plans to improve worker qualifications

5.4.3 Target role: Asset Inspections

1. Worker titles in target role
2. Minimum qualifications
3. FTE percentages by title in target role
4. Percent of FTEs by high-interest qualification
5. Plans to improve worker qualifications

5.4.4 Target role: Grid hardening

1. Worker titles in target role
2. Minimum qualifications
3. FTE percentages by title in target role
4. Percent of FTEs by high-interest qualification
5. Plans to improve worker qualifications

5.4.5 Target role: Risk event inspections

1. Worker titles in target role
2. Minimum qualifications
3. FTE percentages by title in target role
4. Percent of FTEs by high-interest qualification
5. Plans to improve worker qualifications



6 Performance metrics and underlying data

Instructions: Section to be populated from Quarterly Reports. Tables to be populated are listed below for reference.

NOTE: Report updates to projected metrics that are now actuals (e.g., projected 2020 spend will be replaced with actual unless otherwise noted). If an actual is substantially different from the projected (>10% difference), highlight the corresponding metric in **light green**.

6.1 Recent performance on progress metrics, last 5 years

Instructions for Table 1:

In the attached spreadsheet document, report performance on the following metrics within the utility’s service territory over the past five years as needed to correct previously-reported data. Where the utility does not collect its own data on a given metric, the utility shall work with the relevant state agencies to collect the relevant information for its service territory, and clearly identify the owner and dataset used to provide the response in the “Comments” column.

Table 1: Recent performance on progress metrics, last 5 years – reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Progress metric name	2015	2016	2017	2018	2019	2020	Unit(s)
1. Grid condition findings from inspection - Distribution lines in HFTD	1.a.	Number of circuit miles inspected from patrol inspections in HFTD - Distribution lines							# miles
	1.b.	Number of circuit miles inspected from detailed inspections in HFTD - Distribution lines							# miles
	1.c.	Number of circuit miles inspected from other inspections in HFTD - Distribution lines							# miles



6.2 Recent performance on outcome metrics, annual and normalized for weather, last 5 years

Instructions for Table 2:

In the attached spreadsheet document, report performance on the following metrics within the utility’s service territory over the past five years as needed to correct previously-reported data. Where the utility does not collect its own data on a given metric, the utility shall work with the relevant state agencies to collect the relevant information for its service territory, and clearly identify the owner and dataset used to provide the response in “Comments” column.

Provide a list of all types of findings and number of findings per type, in total and in number of findings per circuit mile.

Table 2: Recent performance on outcome metrics, last 5 years– reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Progress metric name	2015	2016	2017	2018	2019	2020	Unit(s)
1. Risk events	1.a.	Number of all events with probability of ignition, including wires down, contacts with objects, line slap, events with evidence of heat generation, and other events that cause sparking or have the potential to cause ignition							
	1.b.	Number of wires down (total)							
2. Utility inspection findings - Distribution	2.a.	Number of Level 1 findings that could increase the probability of ignition discovered							

6.3 Description of additional metrics

Instructions for Table 3:

In addition to the metrics specified above, list and describe all other metrics the utility uses to evaluate wildfire mitigation performance, the utility’s performance on those metrics over the last five years, the units reported, the assumptions that underlie the use of those metrics, and how the performance reported could be validated by third parties outside the utility, such as analysts or academic researchers. Identified metrics must be of enough detail and scope to effectively inform the performance (i.e., reduction in ignition probability or wildfire consequence) of each preventive strategy and program.



Table 3: List and description of additional metrics, last 5 years – reference only, fill out attached spreadsheet to correct prior reports

Metric	Definition	Purpose	Assumptions made to connect metric to purpose	Third-party validation (if any)	2015	2016	2017	2018	2019	2020	Unit(s)

Note: Add more rows as needed.

6.4 Detailed information supporting outcome metrics

Enclose detailed information as requested for the metrics below.

Instructions for Table 4:

In the attached spreadsheet document, report numbers of fatalities attributed to any utility wildfire mitigation initiatives, as listed in the utility’s previous or current WMP filings or otherwise, according to the type of activity in column one, and by the victim’s relationship to the utility (i.e., full-time employee, contractor, or member of the general public), for each of the last five years as needed to correct previously-reported data. For fatalities caused by initiatives beyond these categories, add rows to specify accordingly. The relationship to the utility statuses of full-time employee, contractor, and member of public are mutually exclusive, such that no individual can be counted in more than one category, nor can any individual fatality be attributed to more than one initiative.

Table 4: Fatalities due to utility wildfire mitigation initiatives, last 5 years – reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Progress metric name	2015	2016	2017	2018	2019	2020	Unit(s)
1. Fatalities - Full-time Employee	1.a.	Fatalities due to inspection - Full-time employee							
	1.b.	Fatalities due to vegetation management - Full-time employee							
	1.c.	Fatalities due to utility fuel management - Full-time employee							

Instructions for Table 5:



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In the attached spreadsheet document, report numbers of OSHA-reportable injuries attributed to any utility wildfire mitigation initiatives, as listed in the utility’s previous or current WMP filings or otherwise, according to the type of activity in column one, and by the victim’s relationship to the utility (i.e., full-time employee, contractor, of member of the general public), for each of the last five years as needed to correct previously-reported data. For members of the public, all injuries that meet OSHA-reportable standards of severity (i.e., injury or illness resulting in loss of consciousness or requiring medical treatment beyond first aid) shall be included, even if those incidents are not reported to OSHA due to the identity of the victims.

For OSHA-reportable injuries caused by initiatives beyond these categories, add rows to specify accordingly. The victim identities listed are mutually exclusive, such that no individual victim can be counted as more than one identity, nor can any individual OSHA-reportable injury be attributed to more than one activity.

Table 5: OSHA-reportable injuries due to utility wildfire mitigation initiatives, last 5 years – reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Progress metric name	2015	2016	2017	2018	2019	2020	Unit(s)
1. OSHA injuries - Full-time Employee	1.a.	OSHA injuries due to inspection - Full-time employee							
	1.b.	OSHA injuries due to vegetation management - Full-time employee							
	1.c.	OSHA injuries due to utility fuel management - Full-time employee							

6.5 Mapping recent, modelled, and baseline conditions

Underlying data for recent conditions (over the last five years) of the utility service territory in a downloadable shapefile GIS format, following the schema provided in the spatial reporting schema attachment. All data is reported quarterly, this is a placeholder for quarterly spatial data.

6.6 Recent weather patterns, last 5 years

Instructions for Table 6:



In the attached spreadsheet document, report weather measurements based upon the duration and scope of NWS Red Flag Warnings, High wind warnings and upon proprietary Fire Potential Index (or other similar fire risk potential measure if used) for each year. Calculate and report 5-year historical average as needed to correct previously-reported data.

Table 6: Weather patterns, last 5 years – reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Progress metric name	2015	2016	2017	2018	2019	2020	Unit(s)
1. Red Flag Warning overhead Circuit Mile Days	1.a.	Red Flag Warning overhead Circuit Mile days - entire utility territory							RFW OH circuit mile days
	1.b.	Red Flag Warning overhead Circuit Mile days - HFTD Zone 1							RFW OH circuit mile days
	1.c.	Red Flag Warning overhead Circuit Mile days - HFTD Tier 2							RFW OH circuit mile days

Note: Add additional rows as needed.

6.7 Recent and projected drivers of ignition probability

Instructions for Table 7:

In the attached spreadsheet document, report recent drivers of ignition probability according to whether or not risk events of that type are tracked, the number of incidents per year (e.g., all instances of animal contact regardless of whether they caused an outage, an ignition, or neither), the rate at which those incidents (e.g., object contact, equipment failure, etc.) cause an ignition in the column, and the number of ignitions that those incidents caused by category, for each of last five years as needed to correct previously-reported data.

Calculate and include 5-year historical averages. This requirement applies to all utilities, not only those required to submit annual ignition data. Any utility that does not have complete 2020 ignition data compiled by the WMP deadline shall indicate in the 2020 columns that said information is incomplete.



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Table 7.1: Key recent and projected drivers of ignition probability, last 5 years and projections – reference only, fill out attached spreadsheet to correct prior reports

Risk Event category	Cause category	#	Sub-cause category	Quarter: Are risk events tracked?	Number of risk events					Projected risk events						
					2015	2016	2017	2018	2019	2020	Q1	Q2	Q3	Q4		
					2020	2020	2020	2020	2020	2020	2020	2020	2020	2020		
Wire down event - Distribution	1. Contact from object - Distribution	1.a	Veg. contact-Distribution													
		1.b	Animal contact-Distribution													
		1.c	Balloon contact-Distribution													
...	



Table 7.2: Key recent and projected drivers of ignition probability by HFTD status, last 5 years and projections – reference only, fill out attached spreadsheet to correct prior reports

Risk Event category	Cause category	#	Sub-cause category	Are ignitions tracked?	Non-HFTD	HFTD Zone	HFTD Tier	HFTD Tier	Non-HFTD
					2015	1 2015	2 2015	3 2015	2016
Wire down event - Distribution	1. Contact from object - Distribution	1.a	Veg. contact-Distribution						
		1.b	Animal contact-Distribution						
		1.c	Balloon contact-Distribution						
...				

6.8 Baseline state of equipment and wildfire and PSPS event risk reduction plans

6.8.1 Current baseline state of service territory and utility equipment

Instructions for Table 8:

In the attached spreadsheet document, provide summary data for the current baseline state of HFTD and non-HFTD service territory in terms of circuit miles; overhead transmission lines, overhead distribution lines, substations, weather stations, and critical facilities located within the territory; and customers by type, located in urban versus rural versus highly rural areas and including the subset within the Wildland-Urban Interface (WUI) as needed to correct previously-reported data.

The totals of the cells for each category of information (e.g., “circuit miles (including WUI and non-WUI)”) would be equal to the overall service territory total (e.g., total circuit miles). For example, the total of number of customers in urban, rural, and highly rural areas of HFTD plus those in urban, rural, and highly rural areas of non-HFTD would equal the total number of customers of the entire service territory.

Table 8: State of service territory and utility equipment – reference only, fill out attached spreadsheet to correct prior reports



Metric type	#	Outcome metric name	Non-HFTD 2015	HFTD Zone 1 2015	HFTD Tier 2 2015	HFTD Tier 3 2015	Non-HFTD 2016
1. State of service territory and equipment in urban areas	1.a.	Circuit miles (including WUI and non-WUI)					
	1.b.	Circuit miles in WUI					
	1.c.	Number of critical facilities (including WUI and non-WUI)					
	1.d.	Number of critical facilities in WUI					
...				

6.8.2 Additions, removal, and upgrade of utility equipment by end of 3-year plan term

Instructions for Table 9:

In the attached spreadsheet document, input summary information of plans and actuals for additions or removals of utility equipment as needed to correct previously-reported data. Report net additions using positive numbers and net removals and undergrounding using negative numbers for circuit miles and numbers of substations. Report changes planned or actualized for that year – for example, if 10 net overhead circuit miles were added in 2020, then report “10” for 2020. If 20 net overhead circuit miles are planned for addition by 2022, with 15 being added by 2021 and 5 more added by 2022, then report “15” for 2022 and “5” for 2021. Do not report cumulative change across years. In this case, do not report “20” for 2022, but instead the number planned to be added for just that year, which is “5”.

Table 9: Location of actual and planned utility equipment additions or removal year over year – reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Outcome metric name	Non-HFTD 2020	HFTD Zone 1 2020	HFTD Tier 2 2020	HFTD Tier 3 2020	Non-HFTD 2021
1. Planned utility equipment net addition (or removal) year over year - in urban areas	1.a.	Circuit miles of overhead transmission lines (including WUI and non-WUI)					
	1.b.	Circuit miles of overhead distribution lines (including WUI and non-WUI)					



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	1.c.	Circuit miles of overhead transmission lines in WUI	
	1.d.	Circuit miles of overhead distribution lines in WUI	
...

Transmission lines refer to all lines at or above 65kV, and distribution lines refer to all lines below 65kV.

Instructions for Table 10:

Referring to the program targets discussed above, report plans and actuals for hardening upgrades in detail in the attached spreadsheet document. Report in terms of number of circuit miles or stations to be upgraded for each year, assuming complete implementation of wildfire mitigation activities, for HFTD and non-HFTD service territory for circuit miles of overhead transmission lines, circuit miles of overhead distribution lines, circuit miles of overhead transmission lines located in Wildland-Urban Interface (WUI), circuit miles of overhead distribution lines in WUI, number of substations, number of substations in WUI, number of weather stations and number of weather stations in WUI as needed to correct previously-reported data.

If updating previously-reported data, separately include a list of the hardening initiatives included in the calculations for the table.

Table 10: Location of actual and planned utility infrastructure upgrades year over year – reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Outcome metric name	Non-HFTD 2020	HFTD Zone 1 2020	HFTD Tier 2 2020	HFTD Tier 3 2020	Non-HFTD 2021
1. Planned utility infrastructure upgrades year over year - in urban areas	1.a.	Circuit miles of overhead transmission lines planned for upgrades (including WUI and non-WUI)					
	1.b.	Circuit miles of overhead distribution lines planned for upgrades (including WUI and non-WUI)					
	1.c.	Circuit miles of overhead transmission lines planned for upgrades in WUI					
	1.d.	Circuit miles of overhead distribution lines planned for upgrades in WUI					
...



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Transmission lines refer to all lines at or above 65kV, and distribution lines refer to all lines below 65kV.



7 Mitigation initiatives

7.1 Wildfire mitigation strategy

Describe organization-wide wildfire mitigation strategy and goals for each of the following time periods, highlighting changes since the prior WMP report:

1. By June 1 of current year
2. By Sept 1 of current year
3. Before the next Annual WMP Update
4. Within the next 3 years
5. Within the next 10 years

The description of utility wildfire mitigation strategy shall:

- A. Discuss the utility's approach to determining how to manage wildfire risk (in terms of ignition probability and estimated wildfire consequence) as distinct from managing risks to safety and/or reliability. Describe how this determination is made both for (1) the types of activities needed and (2) the extent of those activities needed to mitigate these two different groups of risks. Describe to what degree the activities needed to manage wildfire risk may be incremental to those needed to address safety and/or reliability risks.
- B. Include a summary of what major investments and implementation of wildfire mitigation initiatives achieved over the past year, any lessons learned, any changed circumstances for the 2020 WMP term (i.e., 2020-2022), and any corresponding adjustment in priorities for the upcoming plan term. Organize summaries of initiatives by the wildfire mitigation categories listed in Section 7.3.
- C. List and describe all challenges associated with limited resources and how these challenges are expected to evolve over the next 3 years.
- D. Outline how the utility expects new technologies and innovations to impact the utility's strategy and implementation approach over the next 3 years, including the utility's program for integrating new technologies into the utility's grid. Include utility research listed above in Section 4.4.

7.2 Wildfire Mitigation Plan implementation

Describe the processes and procedures the electrical corporation will use to do all the following:

- A. Monitor and audit the implementation of the plan. Include what is being audited, who conducts the audits, what type of data is being collected, and how the data undergoes quality assurance and quality control.
- B. Identify any deficiencies in the plan or the plan's implementation and correct those deficiencies.
- C. Monitor and audit the effectiveness of inspections, including inspections performed by contractors, carried out under the plan and other applicable statutes and commission rules.
- D. Ensure that across audits, initiatives, monitoring, and identifying deficiencies, the utility will report in a format that matches across WMPs, Quarterly Reports, Quarterly Advice Letters,⁸ and annual compliance assessment.

⁸ General Rule for filing Advice Letters are available in General Order 96-B:

<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M023/K381/23381302.PDF>



7.3 Detailed wildfire mitigation programs

In this section, describe how the utility's specific programs and initiatives plan to execute the strategy set out in Section 7.1. The specific programs and initiatives are divided into 10 categories, with each providing a space for a narrative description of the utility's initiatives and a summary table for numeric input in the subsequent tables in this section. The initiatives are organized by the following categories provided in this section:

1. Risk assessment and mapping
2. Situational awareness and forecasting
3. Grid design and system hardening
4. Asset management and inspections
5. Vegetation management and inspections
6. Grid operations and protocols
7. Data governance
8. Resource allocation methodology
9. Emergency planning and preparedness
10. Stakeholder cooperation and community engagement

7.3.a Financial data on mitigation initiatives, by category

In the following section (7.3.2) is a list of potential wildfire and PSPS mitigation activities which fit under the 10 categories listed above. While it is not necessary to have initiatives within all activities, all mitigation initiatives will fit into one or more of the activities listed below. Financial information—including actual / projected spend, spend per line-miles treated, and risk-spend-efficiency for activity by HFTD tier (all regions, non-HFTD, HFTD tier 2, HFTD tier 3) for all HFTD tiers which the activity has been or plans to be applied—is reported in the attached file quarterly. Report any updates to the financial data in the spreadsheet attached in Table 12.

7.3.b Detailed information on mitigation initiatives by category and activity

Report detailed information for each initiative activity in which spending was above \$0 over the course of the current WMP cycle (2020-2022). For each activity, organize details under the following headings:

1. **Risk to be mitigated** / problem to be addressed
2. **Initiative selection** ("why" engage in activity) – include reference to a risk informed analysis on empirical (or projected) impact of initiative in comparison to alternatives
3. **Region prioritization** ("where" to engage activity) – include reference to a risk informed analysis in allocation of initiative (e.g., veg clearance is done for trees tagged as "high-risk")
4. **Progress on initiative** (amount spent, regions covered) and plans for next year
5. **Future improvements to initiative**

List of initiative activities by category - Detailed definitions for each mitigation activity are provided in the appendix

7.3.1 Risk assessment and mapping

- 1.1. A summarized risk map showing the overall ignition probability and estimated wildfire consequence along electric lines and equipment



- 1.2. Climate-driven risk map and modelling based on various relevant weather scenarios
- 1.3. Ignition probability mapping showing the probability of ignition along the electric lines and equipment
- 1.4. Initiative mapping and estimation of wildfire and PSPS risk-reduction impact
- 1.5. Match drop simulations showing the potential wildfire consequence of ignitions that occur along the electric lines and equipment

7.3.2 Situational awareness and forecasting

- 2.1. Advanced weather monitoring and weather stations
- 2.2. Continuous monitoring sensors
- 2.3. Fault indicators for detecting faults on electric lines and equipment
- 2.4. Forecast of a fire risk index, fire potential index, or similar
- 2.5. Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions
- 2.6. Weather forecasting and estimating impacts on electric lines and equipment

7.3.3 Grid design and system hardening

- 3.1. Capacitor maintenance and replacement program
- 3.2. Circuit breaker maintenance and installation to de-energize lines upon detecting a fault
- 3.3. Covered conductor installation
- 3.4. Covered conductor maintenance
- 3.5. Crossarm maintenance, repair, and replacement
- 3.6. Distribution pole replacement and reinforcement, including with composite poles
- 3.7. Expulsion fuse replacement
- 3.8. Grid topology improvements to mitigate or reduce PSPS events
- 3.9. Installation of system automation equipment
- 3.10. Maintenance, repair, and replacement of connectors, including hotline clamps
- 3.11. Mitigation of impact on customers and other residents affected during PSPS event
- 3.12. Other corrective action
- 3.13. Pole loading infrastructure hardening and replacement program based on pole loading assessment program
- 3.14. Transformers maintenance and replacement
- 3.15. Transmission tower maintenance and replacement
- 3.16. Undergrounding of electric lines and/or equipment
- 3.17. Updates to grid topology to minimize risk of ignition in HFTDs

7.3.4 Asset management and inspections

- 4.1. Detailed inspections of distribution electric lines and equipment
- 4.2. Detailed inspections of transmission electric lines and equipment
- 4.3. Improvement of inspections
- 4.4. Infrared inspections of distribution electric lines and equipment
- 4.5. Infrared inspections of transmission electric lines and equipment
- 4.6. Intrusive pole inspections
- 4.7. LiDAR inspections of distribution electric lines and equipment



- 4.8. LiDAR inspections of transmission electric lines and equipment
- 4.9. Other discretionary inspection of distribution electric lines and equipment, beyond inspections mandated by rules and regulations
- 4.10. Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations
- 4.11. Patrol inspections of distribution electric lines and equipment
- 4.12. Patrol inspections of transmission electric lines and equipment
- 4.13. Pole loading assessment program to determine safety factor
- 4.14. Quality assurance / quality control of inspections
- 4.15. Substation inspections

7.3.5 Vegetation management and inspections

- 5.1. Additional efforts to manage community and environmental impacts
- 5.2. Detailed inspections of vegetation around distribution electric lines and equipment
- 5.3. Detailed inspections of vegetation around transmission electric lines and equipment
- 5.4. Emergency response vegetation management due to red flag warning or other urgent conditions
- 5.5. Fuel management and reduction of “slash” from vegetation management activities
- 5.6. Improvement of inspections
- 5.7. LiDAR inspections of vegetation around distribution electric lines and equipment
- 5.8. LiDAR inspections of vegetation around transmission electric lines and equipment
- 5.9. Other discretionary inspection of vegetation around distribution electric lines and equipment, beyond inspections mandated by rules and regulations
- 5.10. Other discretionary inspection of vegetation around transmission electric lines and equipment, beyond inspections mandated by rules and regulations
- 5.11. Patrol inspections of vegetation around distribution electric lines and equipment
- 5.12. Patrol inspections of vegetation around transmission electric lines and equipment
- 5.13. Quality assurance / quality control of inspections
- 5.14. Recruiting and training of vegetation management personnel
- 5.15. Remediation of at-risk species
- 5.16. Removal and remediation of trees with strike potential to electric lines and equipment
- 5.17. Substation inspections
- 5.18. Substation vegetation management
- 5.19. Vegetation inventory system
- 5.20. Vegetation management to achieve clearances around electric lines and equipment

7.3.6 Grid operations and protocols

- 6.1. Automatic recloser operations
- 6.2. Crew-accompanying ignition prevention and suppression resources and services
- 6.3. Personnel work procedures and training in conditions of elevated fire risk
- 6.4. Protocols for PSPS re-energization
- 6.5. PSPS events and mitigation of PSPS impacts
- 6.6. Stationed and on-call ignition prevention and suppression resources and services



7.3.7 Data governance

- 7.1. Centralized repository for data
- 7.2. Collaborative research on utility ignition and/or wildfire
- 7.3. Documentation and disclosure of wildfire-related data and algorithms
- 7.4. Tracking and analysis of risk event data

7.3.8 Resource allocation methodology

- 8.1. Allocation methodology development and application
- 8.2. Risk reduction scenario development and analysis
- 8.3. Risk spend efficiency analysis – not to include PSPS

7.3.9 Emergency planning and preparedness

- 9.1. Adequate and trained workforce for service restoration
- 9.2. Community outreach, public awareness, and communications efforts
- 9.3. Customer support in emergencies
- 9.4. Disaster and emergency preparedness plan
- 9.5. Preparedness and planning for service restoration
- 9.6. Protocols in place to learn from wildfire events

7.3.10 Stakeholder cooperation and community engagement

- 10.1. Community engagement
- 10.2. Cooperation and best practice sharing with agencies outside CA
- 10.3. Cooperation with suppression agencies
- 10.4. Forest service and fuel reduction cooperation and joint roadmap

8 Public Safety Power Shutoff (PSPS), including directional vision for PSPS

8.1 Directional vision for necessity of PSPS

Describe any lessons learned from PSPS since the utility's last WMP submission and expectations for how the utility's PSPS program will evolve over the coming 1, 3, and 10 years. Be specific by including a description of the utility's protocols and thresholds for PSPS implementation. Include a quantitative description of how the circuits and numbers of customers that the utility expects will be impacted by any necessary PSPS events is expected to evolve over time. The description of protocols must be sufficiently detailed and clear to enable a skilled operator to follow the same protocols.

When calculating anticipated PSPS, consider recent weather extremes, including peak weather conditions over the past 10 years as well as recent weather years and how the utility's current PSPS protocols would be applied to those years.



Instructions for Table 8-1:

Rank order the characteristic of PSPS events (in terms of numbers of customers affected, frequency, scope, and duration) anticipated to change the most and have the greatest impact on reliability (be it to increase or decrease) over the next ten years. Rank in order from 1 to 9, where 1 means greatest anticipated change or impact and 9 means minimal change or impact on ignition probability and estimated wildfire consequence. To the right of the ranked magnitude of impact, indicate whether the impact is to significantly increase reliability, moderately increase reliability, have limited or no impact, moderately decrease reliability, or significantly decrease reliability. For each, include comments describing expected change and expected impact, using quantitative estimates wherever possible.

Table 8-1: Anticipated characteristics of PSPS use over next 10 years

Rank order 1-9	PSPS characteristic	Significantly increase; increase; no change; decrease; significantly decrease	Comments
	Number of customers affected by PSPS events (total)		
	Number of customers affected by PSPS events (normalized by fire weather, e.g., Red Flag Warning line mile days)		
	Frequency of PSPS events in number of instances where utility operating protocol requires de-energization of a circuit or portion thereof to reduce ignition probability (total)		
	Frequency of PSPS events in number of instances where utility operating protocol requires de-energization of a circuit or portion thereof to reduce ignition probability (normalized by fire weather, e.g., Red Flag Warning line mile days)		
	Scope of PSPS events in circuit-events, measured in number of events multiplied by number of circuits targeted for de-energization (total)		
	Scope of PSPS events in circuit-events, measured in number of events multiplied by number of circuits targeted for de-energization (normalized by fire weather, e.g., Red Flag Warning line mile days)		



	Duration of PSPS events in customer hours (total)		
	Duration of PSPS events in customer hours (normalized by fire weather, e.g., Red Flag Warning line mile days)		
	Other		

8.2 Protocols on Public Safety Power Shut-off

Describe protocols on Public Safety Power Shut-off (PSPS or de-energization), highlighting changes since the previous WMP report:

1. Strategy to minimize public safety risk during high wildfire risk conditions and details of the considerations, including but not limited to list and description of community assistance locations and services provided during a de-energization event.
2. Outline of tactical and strategic decision-making protocol for initiating a PSPS/de-energization (e.g., decision tree).
3. Strategy to provide for safe and effective re-energization of any area that was de-energized due to PSPS protocol.
4. Company standards relative to customer communications, including consideration for the need to notify priority essential services – critical first responders, public safety partners, critical facilities and infrastructure, operators of telecommunications infrastructure, and water utilities/agencies. This section, or an appendix to this section, shall include a complete listing of which entities the electrical corporation considers to be priority essential services. This section shall also include a description of strategy and protocols to ensure timely notifications to customers, including access and functional needs populations, in the languages prevalent within the utility’s service territory.
5. Protocols for mitigating the public safety impacts of these protocols, including impacts on first responders, health care facilities, operators of telecommunications infrastructure, and water utilities/agencies.

8.3 Projected changes to PSPS impact

Describe organization-wide plan to reduce scale, scope and frequency of PSPS for each of the following time periods, highlighting changes since the prior WMP report and including key program targets used to track progress over time,

1. By June 1 of current year
2. By September 1 of current year
3. By next Annual WMP Update

8.4 Engaging vulnerable communities

Report on the following:

1. Describe protocols for PSPS that are intended to mitigate the public safety impacts of PSPS on vulnerable, marginalized and/or at-risk communities. Describe how the utility is identifying these communities.



2. List all languages which are “prevalent” in utility’s territory. A language is prevalent if it is spoken by 1,000 or more persons in the utility’s territory or if it is spoken by 5% or more of the population within a “public safety answering point” in the utility territory⁹ (D.20-03-004).
3. List all languages for which public outreach material is available, in written or oral form.
4. Detail the community outreach efforts for PSPS and wildfire-related outreach. Include efforts to reach all languages prevalent in utility territory.

8.5 PSPS-specific metrics

PSPS data reported quarterly. Placeholder tables below to be filled in based on quarterly data.

Instructions for PSPS table:

In the attached spreadsheet document, report performance on the following PSPS metrics within the utility’s service territory over the past five years as needed to correct previously-reported data. Where the utility does not collect its own data on a given metric, the utility shall work with the relevant state agencies to collect the relevant information for its service territory, and clearly identify the owner and dataset used to provide the response in the “Comments” column.

Table 11: Recent use of PSPS and other PSPS metrics – reference only, fill out attached spreadsheet to correct prior reports

Metric type	#	Outcome metric name	2015	2016	2017	2018	2019	2020	2021 Q1, Q2...,Q4 projected	Comments
1. Recent use of PSPS	1.a.	Frequency of PSPS events (total)								
	1.b.	Scope of PSPS events (total)								
	1.c.	Duration of PSPS events (total)								
...							

⁹ See Cal. Government Code § 53112



9 Appendix

9.1 Definitions of initiative activities by category

Category	Initiative activity	Definition
A. Risk mapping and simulation	A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment	Development and use of tools and processes to develop and update risk map and simulations and to estimate risk reduction potential of initiatives for a given portion of the grid (or more granularly, e.g., circuit, span, or asset). May include verification efforts, independent assessment by experts, and updates.
	Climate-driven risk map and modelling based on various relevant weather scenarios	Development and use of tools and processes to estimate incremental risk of foreseeable climate scenarios, such as drought, across a given portion of the grid (or more granularly, e.g., circuit, span, or asset). May include verification efforts, independent assessment by experts, and updates.
	Ignition probability mapping showing the probability of ignition along the electric lines and equipment	Development and use of tools and processes to assess the risk of ignition across regions of the grid (or more granularly, e.g., circuits, spans, or assets).
	Initiative mapping and estimation of wildfire and PSPS risk-reduction impact	Development of a tool to estimate the risk reduction efficacy (for both wildfire and PSPS risk) and risk-spend efficiency of various initiatives.
	Match drop simulations showing the potential wildfire consequence of ignitions that occur along the electric lines and equipment	Development and use of tools and processes to assess the impact of potential ignition and risk to communities (e.g., in terms of potential fatalities, structures burned, monetary damages, area burned, impact on air quality and greenhouse gas, or GHG, reduction goals, etc.).
B. Situational awareness and forecasting	Advanced weather monitoring and weather stations	Purchase, installation, maintenance, and operation of weather stations. Collection, recording, and analysis of weather data from weather stations and from external sources.
	Continuous monitoring sensors	Installation, maintenance, and monitoring of sensors and sensorized equipment used to monitor the condition of electric lines and equipment.
	Fault indicators for detecting faults on electric lines and equipment	Installation and maintenance of fault indicators.
	Forecast of a fire risk index, fire potential index, or similar	Index that uses a combination of weather parameters (such as wind speed, humidity, and temperature), vegetation and/or fuel conditions, and other factors to judge current fire risk and to create a forecast indicative of fire risk. A sufficiently granular index shall inform operational decision-making.
	Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions	Personnel position within utility service territory to monitor system conditions and weather on site. Field observations shall inform operational decisions.



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	Weather forecasting and estimating impacts on electric lines and equipment	Development methodology for forecast of weather conditions relevant to utility operations, forecasting weather conditions and conducting analysis to incorporate into utility decision-making, learning and updates to reduce false positives and false negatives of forecast PSPS conditions.
C. Grid design and system hardening	Capacitor maintenance and replacement program	Remediation, adjustments, or installations of new equipment to improve or replace existing capacitor equipment.
	Circuit breaker maintenance and installation to de-energize lines upon detecting a fault	Remediation, adjustments, or installations of new equipment to improve or replace existing fast switching circuit breaker equipment to improve the ability to protect electrical circuits from damage caused by overload of electricity or short circuit.
	Covered conductor installation	Installation of covered or insulated conductors to replace standard bare or unprotected conductors (defined in accordance with GO 95 as supply conductors, including but not limited to lead wires, not enclosed in a grounded metal pole or not covered by: a “suitable protective covering” (in accordance with Rule 22.8), grounded metal conduit, or grounded metal sheath or shield). In accordance with GO 95, conductor is defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency (12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D.
	Covered conductor maintenance	Remediation and adjustments to installed covered or insulated conductors. In accordance with GO 95, conductor is defined as a material suitable for: (1) carrying electric current, usually in the form of a wire, cable or bus bar, or (2) transmitting light in the case of fiber optics; insulated conductors as those which are surrounded by an insulating material (in accordance with Rule 21.6), the dielectric strength of which is sufficient to withstand the maximum difference of potential at normal operating voltages of the circuit without breakdown or puncture; and suitable protective covering as a covering of wood or other non-conductive material having the electrical insulating efficiency (12kV/in. dry) and impact strength (20ft.-lbs) of 1.5 inches of redwood or other material meeting the requirements of Rule 22.8-A, 22.8-B, 22.8-C or 22.8-D.
	Crossarm maintenance, repair, and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing crossarms, defined as horizontal



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		support attached to poles or structures generally at right angles to the conductor supported in accordance with GO 95.
	Distribution pole replacement and reinforcement, including with composite poles	Remediation, adjustments, or installations of new equipment to improve or replace existing distribution poles (i.e., those supporting lines under 65kV), including with equipment such as composite poles manufactured with materials reduce ignition probability by increasing pole lifespan and resilience against failure from object contact and other events.
	Expulsion fuse replacement	Installations of new and CAL FIRE-approved power fuses to replace existing expulsion fuse equipment.
	Grid topology improvements to mitigate or reduce PSPS events	Plan to support and actions taken to mitigate or reduce PSPS events in terms of geographic scope and number of customers affected, such as installation and operation of electrical equipment to sectionalize or island portions of the grid, microgrids, or local generation.
	Installation of system automation equipment	Installation of electric equipment that increases the ability of the utility to automate system operation and monitoring, including equipment that can be adjusted remotely such as automatic reclosers (switching devices designed to detect and interrupt momentary faults that can reclose automatically and detect if a fault remains, remaining open if so).
	Maintenance, repair, and replacement of connectors, including hotline clamps	Remediation, adjustments, or installations of new equipment to improve or replace existing connector equipment, such as hotline clamps.
	Mitigation of impact on customers and other residents affected during PSPS event	Actions taken to improve access to electricity for customers and other residents during PSPS events, such as installation and operation of local generation equipment (at the community, household, or other level).
	Other corrective action	Other maintenance, repair, or replacement of utility equipment and structures so that they function properly and safely, including remediation activities (such as insulator washing) of other electric equipment deficiencies that may increase ignition probability due to potential equipment failure or other drivers.
	Pole loading infrastructure hardening and replacement program based on pole loading assessment program	Actions taken to remediate, adjust, or install replacement equipment for poles that the utility has identified as failing to meet safety factor requirements in accordance with GO 95 or additional utility standards in the utility's pole loading assessment program.
	Transformers maintenance and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing transformer equipment.
	Transmission tower maintenance and replacement	Remediation, adjustments, or installations of new equipment to improve or replace existing transmission towers (e.g., structures such as lattice steel towers or tubular steel poles that support lines at or above 65kV).



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	Undergrounding of electric lines and/or equipment	Actions taken to convert overhead electric lines and/or equipment to underground electric lines and/or equipment (i.e., located underground and in accordance with GO 128).
	Updates to grid topology to minimize risk of ignition in HFTDs	Changes in the plan, installation, construction, removal, and/or undergrounding to minimize the risk of ignition due to the design, location, or configuration of utility electric equipment in HFTDs.
D. Asset management and inspections	Detailed inspections of distribution electric lines and equipment	In accordance with GO 165, careful visual inspections of overhead electric distribution lines and equipment where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.
	Detailed inspections of transmission electric lines and equipment	Careful visual inspections of overhead electric transmission lines and equipment where individual pieces of equipment and structures are carefully examined, visually and through use of routine diagnostic test, as appropriate, and (if practical and if useful information can be so gathered) opened, and the condition of each rated and recorded.
	Improvement of inspections	Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors.
	Infrared inspections of distribution electric lines and equipment	Inspections of overhead electric distribution lines, equipment, and right-of-way using infrared (heat-sensing) technology and cameras that can identify "hot spots", or conditions that indicate deterioration or potential equipment failures, of electrical equipment.
	Infrared inspections of transmission electric lines and equipment	Inspections of overhead electric transmission lines, equipment, and right-of-way using infrared (heat-sensing) technology and cameras that can identify "hot spots", or conditions that indicate deterioration or potential equipment failures, of electrical equipment.
	Intrusive pole inspections	In accordance with GO 165, intrusive inspections involve movement of soil, taking samples for analysis, and/or using more sophisticated diagnostic tools beyond visual inspections or instrument reading.
	LiDAR inspections of distribution electric lines and equipment	Inspections of overhead electric distribution lines, equipment, and right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
	LiDAR inspections of transmission electric lines and equipment	Inspections of overhead electric transmission lines, equipment, and right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
	Other discretionary inspection of distribution electric lines and	Inspections of overhead electric distribution lines, equipment, and right-of-way that exceed or otherwise go beyond those



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	equipment, beyond inspections mandated by rules and regulations	mandated by rules and regulations, including GO 165, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
	Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations	Inspections of overhead electric transmission lines, equipment, and right-of-way that exceed or otherwise go beyond those mandated by rules and regulations, including GO 165, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
	Patrol inspections of distribution electric lines and equipment	In accordance with GO 165, simple visual inspections of overhead electric distribution lines and equipment that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.
	Patrol inspections of transmission electric lines and equipment	Simple visual inspections of overhead electric transmission lines and equipment that is designed to identify obvious structural problems and hazards. Patrol inspections may be carried out in the course of other company business.
	Pole loading assessment program to determine safety factor	Calculations to determine whether a pole meets pole loading safety factor requirements of GO 95, including planning and information collection needed to support said calculations. Calculations shall consider many factors including the size, location, and type of pole; types of attachments; length of conductors attached; and number and design of supporting guys, per D.15-11-021.
	Quality assurance / quality control of inspections	Establishment and function of audit process to manage and confirm work completed by employees or subcontractors, including packaging QA/QC information for input to decision-making and related integrated workforce management processes.
	Substation inspections	In accordance with GO 175, inspection of substations performed by qualified persons and according to the frequency established by the utility, including record-keeping.
E. Vegetation management and inspection	Additional efforts to manage community and environmental impacts	Plan and execution of strategy to mitigate negative impacts from utility vegetation management to local communities and the environment, such as coordination with communities to plan and execute vegetation management work or promotion of fire-resistant planting practices
	Detailed inspections of vegetation around distribution electric lines and equipment	Careful visual inspections of vegetation around the right-of-way, where individual trees are carefully examined, visually, and the condition of each rated and recorded.
	Detailed inspections of vegetation around transmission electric lines and equipment	Careful visual inspections of vegetation around the right-of-way, where individual trees are carefully examined, visually, and the condition of each rated and recorded.



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Emergency response vegetation management due to red flag warning or other urgent conditions	Plan and execution of vegetation management activities, such as trimming or removal, executed based upon and in advance of forecast weather conditions that indicate high fire threat in terms of ignition probability and wildfire consequence.
Fuel management and reduction of "slash" from vegetation management activities	Plan and execution of fuel management activities that reduce the availability of fuel in proximity to potential sources of ignition, including both reduction or adjustment of live fuel (in terms of species or otherwise) and of dead fuel, including "slash" from vegetation management activities that produce vegetation material such as branch trimmings and felled trees.
Improvement of inspections	Identifying and addressing deficiencies in inspections protocols and implementation by improving training and the evaluation of inspectors.
LiDAR inspections of vegetation around distribution electric lines and equipment	Inspections of right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
LiDAR inspections of vegetation around transmission electric lines and equipment	Inspections of right-of-way using LiDAR (Light Detection and Ranging, a remote sensing method that uses light in the form of a pulsed laser to measure variable distances).
Other discretionary inspections of vegetation around distribution electric lines and equipment	Inspections of rights-of-way and adjacent vegetation that may be hazardous, which exceeds or otherwise go beyond those mandated by rules and regulations, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
Other discretionary inspections of vegetation around transmission electric lines and equipment	Inspections of rights-of-way and adjacent vegetation that may be hazardous, which exceeds or otherwise go beyond those mandated by rules and regulations, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems identified, or other aspects of inspection or records kept.
Patrol inspections of vegetation around distribution electric lines and equipment	Visual inspections of vegetation along rights-of-way that is designed to identify obvious hazards. Patrol inspections may be carried out in the course of other company business.
Patrol inspections of vegetation around transmission electric lines and equipment	Visual inspections of vegetation along rights-of-way that is designed to identify obvious hazards. Patrol inspections may be carried out in the course of other company business.
Quality assurance / quality control of vegetation inspections	Establishment and function of audit process to manage and confirm work completed by employees or subcontractors, including packaging QA/QC information for input to decision-making and related integrated workforce management processes.
Recruiting and training of vegetation management personnel	Programs to ensure that the utility is able to identify and hire qualified vegetation management personnel and to ensure that both full-time employees and contractors tasked with vegetation management responsibilities are adequately trained to perform vegetation management work, according to



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		the utility's wildfire mitigation plan, in addition to rules and regulations for safety.
	Remediation of at-risk species	Actions taken to reduce the ignition probability and wildfire consequence attributable to at-risk vegetation species, such as trimming, removal, and replacement.
	Removal and remediation of trees with strike potential to electric lines and equipment	Actions taken to remove or otherwise remediate trees that could potentially strike electrical equipment, if adverse events such as failure at the ground-level of the tree or branch breakout within the canopy of the tree, occur.
	Substation inspection	Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping.
	Substation vegetation management	Based on location and risk to substation equipment only, actions taken to reduce the ignition probability and wildfire consequence attributable to contact from vegetation to substation equipment.
	Vegetation inventory system	Inputs, operation, and support for centralized inventory of vegetation clearances updated based upon inspection results, including (1) inventory of species, (2) forecasting of growth, (3) forecasting of when growth threatens minimum right-of-way clearances ("grow-in" risk) or creates fall-in/fly-in risk.
	Vegetation management to achieve clearances around electric lines and equipment	Actions taken to ensure that vegetation does not encroach upon the minimum clearances set forth in Table 1 of GO 95, measured between line conductors and vegetation, such as trimming adjacent or overhanging tree limbs.
F. Grid operations and protocols	Automatic recloser operations	Designing and executing protocols to deactivate automatic reclosers based on local conditions for ignition probability and wildfire consequence.
	Crew-accompanying ignition prevention and suppression resources and services	Those firefighting staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, and water) that are deployed with construction crews and other electric workers to provide site-specific fire prevention and ignition mitigation during on-site work
	Personnel work procedures and training in conditions of elevated fire risk	Work activity guidelines that designate what type of work can be performed during operating conditions of different levels of wildfire risk. Training for personnel on these guidelines and the procedures they prescribe, from normal operating procedures to increased mitigation measures to constraints on work performed.
	Protocols for PSPS re-energization	Designing and executing procedures that accelerate the restoration of electric service in areas that were de-energized, while maintaining safety and reliability standards.
	PSPS events and mitigation of PSPS impacts	Designing, executing, and improving upon protocols to conduct PSPS events, including development of advanced methodologies to determine when to use PSPS, and to mitigate the impact of PSPS events on affected customers and local residents.



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	Stationed and on-call ignition prevention and suppression resources and services	Firefighting staff and equipment (such as fire suppression engines and trailers, firefighting hose, valves, firefighting foam, chemical extinguishing agent, and water) stationed at utility facilities and/or standing by to respond to calls for fire suppression assistance.
G. Data governance	Centralized repository for data	Designing, maintaining, hosting, and upgrading a platform that supports storage, processing, and utilization of all utility proprietary data and data compiled by the utility from other sources.
	Collaborative research on utility ignition and/or wildfire	Developing and executing research work on utility ignition and/or wildfire topics in collaboration with other non-utility partners, such as academic institutions and research groups, to include data-sharing and funding as applicable.
	Documentation and disclosure of wildfire-related data and algorithms	Design and execution of processes to document and disclose wildfire-related data and algorithms to accord with rules and regulations, including use of scenarios for forecasting and stress testing.
	Tracking and analysis of near miss data	Tools and procedures to monitor, record, and conduct analysis of data on near miss events.
H. Resource allocation methodology	Allocation methodology development and application	Development of prioritization methodology for human and financial resources, including application of said methodology to utility decision-making.
	Risk reduction scenario development and analysis	Development of modelling capabilities for different risk reduction scenarios based on wildfire mitigation initiative implementation; analysis and application to utility decision-making.
	Risk spend efficiency analysis	Tools, procedures, and expertise to support analysis of wildfire mitigation initiative risk-spend efficiency, in terms of MAVF and/ or MARS methodologies.
I. Emergency planning and preparedness	Adequate and trained workforce for service restoration	Actions taken to identify, hire, retain, and train qualified workforce to conduct service restoration in response to emergencies, including short-term contracting strategy and implementation.
	Community outreach, public awareness, and communications efforts	Actions to identify and contact key community stakeholders; increase public awareness of emergency planning and preparedness information; and design, translate, distribute, and evaluate effectiveness of communications taken before, during, and after a wildfire, including Access and Functional Needs populations and Limited English Proficiency populations in particular.
	Customer support in emergencies	Resources dedicated to customer support during emergencies, such as website pages and other digital resources, dedicated phone lines, etc.
	Disaster and emergency preparedness plan	Development of plan to deploy resources according to prioritization methodology for disaster and emergency preparedness of utility and within utility service territory (such as considerations for critical facilities and infrastructure),



		including strategy for collaboration with Public Safety Partners and communities.
	Preparedness and planning for service restoration	Development of plans to prepare the utility to restore service after emergencies, such as developing employee and staff trainings, and to conduct inspections and remediation necessary to re-energize lines and restore service to customers.
	Protocols in place to learn from wildfire events	Tools and procedures to monitor effectiveness of strategy and actions taken to prepare for emergencies and of strategy and actions taken during and after emergencies, including based on an accounting of the outcomes of wildfire events.
J. Stakeholder cooperation and community engagement	Community engagement	Strategy and actions taken to identify and contact key community stakeholders; increase public awareness and support of utility wildfire mitigation activity; and design, translate, distribute, and evaluate effectiveness of related communications. Includes specific strategies and actions taken to address concerns and serve needs of Access and Functional Needs populations and Limited English Proficiency populations in particular.
	Cooperation and best practice sharing with agencies outside CA	Strategy and actions taken to engage with agencies outside of California to exchange best practices both for utility wildfire mitigation and for stakeholder cooperation to mitigate and respond to wildfires.
	Cooperation with suppression agencies	Coordination with CAL FIRE, federal fire authorities, county fire authorities, and local fire authorities to support planning and operations, including support of aerial and ground firefighting in real-time, including information-sharing, dispatch of resources, and dedicated staff.
	Forest service and fuel reduction cooperation and joint roadmap	Strategy and actions taken to engage with local, state, and federal entities responsible for or participating in forest management and fuel reduction activities; and design utility cooperation strategy and joint stakeholder roadmap (plan for coordinating stakeholder efforts for forest management and fuel reduction activities).

9.2 Citations for relevant statutes, Commission directives, proceedings and orders

Throughout the WMP, cite relevant state and federal statutes, Commission directives, orders, and proceedings. Place the title or tracking number of the statute in parentheses next to comment, or in the appropriate column if noted in a table. Provide in this section a brief description or summary of the relevant portion of the statute. Track citations as end-notes and order (1, 2, 3...) across sections (e.g., if section 1 has 4 citations, section 2 begins numbering at 5).

APPENDIX C



Wildfire Safety Division Attachment 2.3

Wildfire Mitigation Plan Quarterly report - non-spatial data template

Resolution WSD-011 Attachment 2.3

Instructions for use	
1.	Fill out the tan cells (color represented here) starting with the cell below (D17: Utility). The Utility name will populate the Table tabs to follow. Date modified will vary by table.
2.	Cells will only accept valid entries. For most cells, this is positive numbers
3.	For each Table tab, after a modification is made, denote the date of the change in cell C4 for each Table tab.
4.	Some columns have an additional header in row 5 to serve as clarification for several columns. With the exception of projected data, row 5 will be highlighted in blue (color represented here)
5.	Some required metrics are future projections. For these, row 5, above the projections will be highlighted light green (color represented here) In future submissions, report updated projected numbers if / when projections have changed, and report actuals once the quarter / year has passed.
6.	For data required annually rather than quarterly (see Tables 7.3 - 10), report for entire year even if part of the year is projected. Once year has passed, update cell with actuals
7.	Some tables will have additional instructions provided in a Notes box located in cells D2 - D4 Notes will explain terms, signal where projections are required, and provide other useful information.
8.	For the initial quarterly submission, utilities are required to submit data on annual metrics for 2015 - 2020, which should represent the most updated data from the 2020 WMP for years 2015-2019
* Do not add or manipulate the template for any of the tabs	

Update the below table to establish which year, quarter of the WMP cycle this submission this represents.

Utility	X
First year of 3-year WMP cycle	2020
Submission year	2021
Submission quarter	Q4
Date Modified	Will update once date modified is added to individual tables

Utility	Notes:
Table No.	
Date Modified	

1. Transmission lines refer to all lines at or above 65KV, and distribution lines refer to all lines below 65KV.

Note: These columns are placeholders for future QR submissions.

Table 1. Recent performance on progress metrics

Metric type	#	Progress metric name	2015	2016	2017	2018	2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Unit(s)	Comments	
1. Grid condition findings from inspection - Distribution lines in HFTD	1.a.	Number of circuit miles inspected from patrol inspections in HFTD - Distribution lines																		# circuit miles		
	1.b.	Number of circuit miles inspected from detailed inspections in HFTD - Distribution lines																			# circuit miles	
	1.c.	Number of circuit miles inspected from other inspections (list types of "other" inspections in comments) in HFTD - Distribution lines																			# circuit miles	
	1.d.	Level 1 findings in HFTD for patrol inspections - Distribution lines																			# findings	
	1.e.	Level 1 findings in HFTD for detailed inspections - Distribution lines																			# findings	
	1.f.	Level 1 findings in HFTD for other inspections (list types of "other" inspections in comments) - Distribution lines																			# findings	
	1.g.	Level 2 findings in HFTD for patrol inspections - Distribution lines																			# findings	
	1.h.	Level 2 findings in HFTD for detailed inspections - Distribution lines																			# findings	
	1.i.	Level 2 findings in HFTD for other inspections (list types of "other" inspections in comments) - Distribution lines																			# findings	
	1.j.	Level 3 findings in HFTD for patrol inspections - Distribution lines																			# findings	
	1.k.	Level 3 findings in HFTD for detailed inspections - Distribution lines																			# findings	
	1.l.	Level 3 findings in HFTD for other inspections (list types of "other" inspections in comments) - Distribution lines																			# findings	
1. Grid condition findings from inspection - Distribution lines total	1.a.ii.	Number of total circuit miles inspected from patrol inspections - Distribution lines																			# circuit miles	
	1.b.ii.	Number of total circuit miles inspected from detailed inspections - Distribution lines																			# circuit miles	
	1.c.ii.	Number of total circuit miles inspected from other inspections (list types of "other" inspections in comments) - Distribution lines																			# circuit miles	
	1.d.ii.	Level 1 findings for patrol inspections - Distribution lines																			# findings	
	1.e.ii.	Level 1 findings for detailed inspections - Distribution lines																			# findings	
	1.f.ii.	Level 1 findings for other inspections (list types of "other" inspections in comments) - Distribution lines																			# findings	
	1.g.ii.	Level 2 findings for patrol inspections - Distribution lines																			# findings	
	1.h.ii.	Level 2 findings for detailed inspections - Distribution lines																			# findings	
	1.i.ii.	Level 2 findings for other inspections (list types of "other" inspections in comments) - Distribution lines																			# findings	
	1.j.ii.	Level 3 findings for patrol inspections - Distribution lines																			# findings	
	1.k.ii.	Level 3 findings for detailed inspections - Distribution lines																			# findings	
	1.l.ii.	Level 3 findings for other inspections (list types of "other" inspections in comments) - Distribution lines																			# findings	
1. Grid condition findings from inspection - Transmission lines in HFTD	1.a.iii.	Number of circuit miles inspected from patrol inspections in HFTD - Transmission lines																			# circuit miles	
	1.b.iii.	Number of circuit miles inspected from detailed inspections in HFTD - Transmission lines																			# circuit miles	
	1.c.iii.	Number of circuit miles inspected from other inspections (list types of "other" inspections in comments) in HFTD - Transmission lines																			# circuit miles	
	1.d.iii.	Level 1 findings in HFTD for patrol inspections - Transmission lines																			# findings	
	1.e.iii.	Level 1 findings in HFTD for detailed inspections - Transmission lines																			# findings	
	1.f.iii.	Level 1 findings in HFTD for other inspections (list types of "other" inspections in comments) - Transmission lines																			# findings	
	1.g.iii.	Level 2 findings in HFTD for patrol inspections - Transmission lines																			# findings	
	1.h.iii.	Level 2 findings in HFTD for detailed inspections - Transmission lines																			# findings	
	1.i.iii.	Level 2 findings in HFTD for other inspections (list types of "other" inspections in comments) - Transmission lines																			# findings	
	1.j.iii.	Level 3 findings in HFTD for patrol inspections - Transmission lines																			# findings	
	1.k.iii.	Level 3 findings in HFTD for detailed inspections - Transmission lines																			# findings	
	1.l.iii.	Level 3 findings in HFTD for other inspections (list types of "other" inspections in comments) - Distribution lines																			# findings	
1. Grid condition findings from inspection - Transmission lines total	1.a.iv.	Number of total circuit miles inspected from patrol inspections - Transmission lines																			# circuit miles	
	1.b.iv.	Number of total circuit miles inspected from detailed inspections - Transmission lines																			# circuit miles	
	1.c.iv.	Number of total circuit miles inspected from other inspections (list types of "other" inspections in comments) - Transmission lines																			# circuit miles	
	1.d.iv.	Level 1 findings for patrol inspections - Transmission lines																			# findings	
	1.e.iv.	Level 1 findings for detailed inspections - Transmission lines																			# findings	
	1.f.iv.	Level 1 findings for other inspections (list types of "other" inspections in comments) - Transmission lines																			# findings	
	1.g.iv.	Level 2 findings for patrol inspections - Transmission lines																			# findings	
	1.h.iv.	Level 2 findings for detailed inspections - Transmission lines																			# findings	
	1.i.iv.	Level 2 findings for other inspections (list types of "other" inspections in comments) - Transmission lines																			# findings	
	1.j.iv.	Level 3 findings for patrol inspections - Transmission lines																			# findings	
	1.k.iv.	Level 3 findings for detailed inspections - Transmission lines																			# findings	
	1.l.iv.	Level 3 findings for other inspections (list types of "other" inspections in comments) - Transmission lines																			# findings	
2. Vegetation clearance findings from inspection - total	2.a.i.	Number of spans inspected where at least some vegetation was found in non-compliant condition - total																			# of spans inspected with noncompliant clearance based on applicable rules and regulations at the time of inspection	
	2.a.ii.	Number of spans inspected for vegetation compliance - total																			# of spans inspected for vegetation compliance	
2. Vegetation clearance findings from inspection - in HFTD	2.b.i.	Number of spans inspected where at least some vegetation was found in non-compliant condition in HFTD																			# of spans inspected with noncompliant clearance based on applicable rules and regulations at the time of inspection	
	2.b.ii.	Number of spans inspected for vegetation compliance in HFTD																			# of spans inspected for vegetation compliance	
3. Customer outreach metrics	3.a.	# Customers in an evacuation zone for utility-ignited wildfire																			# customers (if customer was in an evacuation zone for multiple wildfires, count the customer for each relevant wildfire)	
	3.b.	# Customers notified of evacuation orders																			# customers (count customer multiple times for each unique wildfire of which they were notified)	
	3.c.	% of customers notified of evacuation in evacuation zone of a utility-ignited wildfire																			Percentage of customers notified of evacuation	

Utility	X
Table No.	2
Date Modified	

Notes:
 2 Transmission lines refer to all lines at or above 65kV, and distribution lines refer to all lines below 65kV.

Note: These columns are placeholders for future QR submissions.

Table 2: Recent performance on outcome metrics

Metric type	#	Outcome metric name	2015	2016	2017	2018	2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Unit(s)	Comments	
1. Risk events	1.a.	Number of all events with probability of ignition, including wires down, contacts with objects, line slap, events with evidence of heat generation, and other events that cause sparking or have the potential to cause ignition																		Number per year		
	1.b.	Number of wires down (total)																			Number of wires down per year	
	1.c.	Number of outage events not caused by contact with vegetation (total)																			Number of outage events per year	
	1.d.	Number of outage events caused by contact with vegetation (total)																			Number of outage events per year	
2. Utility inspection findings - Distribution	2.a.	Number of Level 1 findings (distribution - total)																			# findings	
	2.b.	Number of Level 2 findings (distribution - total)																			# findings	
	2.c.	Number of Level 3 findings (distribution - total)																			# findings	
	2.d.	Number of distribution circuit miles inspected																			# circuit miles	
2. Utility inspection findings - Transmission	2.a.ii	Number of Level 1 findings (transmission - total)																			# findings	
	2.b.ii	Number of Level 2 findings (transmission - total)																			# findings	
	2.c.ii	Number of Level 3 findings (transmission - total)																			# findings	
	2.d.ii	Number of transmission circuit miles inspected																			# circuit miles	
3. Utility ignited wildfire fatalities	3.a.	Fatalities due to utility-ignited wildfire (total)																			Number of fatalities per year	
	3.b.	Injuries due to utility-ignited wildfire (total)																			Number of injuries per year	
4. Value of assets destroyed by utility-ignited wildfire, listed by asset type	4.a.	Value of assets destroyed by utility-ignited wildfire (total)																			Dollars of damage or destruction per year	
5. Structures damaged or destroyed by utility-ignited wildfire	5.a.	Number of structures destroyed by utility-ignited wildfire (total)																			Number of structures destroyed per year	
	5.b.	Critical infrastructure damaged/destroyed by utility-ignited wildfire (total)																			Number of critical infrastructure damaged/destroyed per year	
6. Acreage burned by utility-ignited wildfire	6.a.	Acreage burned by utility-ignited wildfire (total)																			Acres burned per year	
7. Number of utility wildfire ignitions	7.a.	Number of ignitions (total) according to existing ignition data reporting requirement																			Number per year	
	7.b.	Number of ignitions in HFTD (subtotal)																			Number in HFTD per year	
	7.c.	Number of ignitions in HFTD Zone 1																			Number in HFTD Zone 1 per year	
	7.c.ii.	Number of ignitions in HFTD Tier 2																			Number in HFTD Tier 2 per year	
	7.c.iii.	Number of ignitions in HFTD Tier 3																			Number in HFTD Tier 3 per year	
	7.d.	Number of ignitions in non-HFTD (subtotal)																			Number in non-HFTD per year	
8. Fatalities resulting from utility wildfire mitigation initiatives	8.a.	Fatalities due to utility wildfire mitigation activities (total) - "activities" defined as all activities accounted for in the 2020 WMP proposed WMP spend																			Number of fatalities per year	
9. OSHA-reportable injuries from utility wildfire mitigation initiatives	9.a.	OSHA-reportable injuries due to utility wildfire mitigation activities (total) - "activities" defined as all activities accounted for in the 2020 WMP proposed WMP spend																			Number of OSHA-reportable injuries per year	

Utility	X
Table No.	4
Date Modified	

Note: These columns are placeholders for future QR submissions.

Table 4: Fatalities due to utility wildfire mitigation initiatives

Metric type	#	Outcome metric name	2015	2016	2017	2018	2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Unit(s)	Comments
1. Fatalities - Full-time Employee	1.a.	Fatalities due to utility inspection - Full-time employee																		# fatalities	
	1.b.	Fatalities due to vegetation management - Full-time employee																		# fatalities	
	1.c.	Fatalities due to utility fuel management - Full-time employee																		# fatalities	
	1.d.	Fatalities due to grid hardening - Full-time employee																		# fatalities	
	1.e.	Fatalities due to other - Full-time employee																		# fatalities	
2. Fatalities - Contractor	2.a.	Fatalities due to utility inspection - Contractor																		# fatalities	
	2.b.	Fatalities due to vegetation management - Contractor																		# fatalities	
	2.c.	Fatalities due to utility fuel management - Contractor																		# fatalities	
	2.d.	Fatalities due to grid hardening - Contractor																		# fatalities	
	2.e.	Fatalities due to other - Contractor																		# fatalities	
3. Fatalities - Member of public	3.a.	Fatalities due to utility inspection - Public																		# fatalities	
	3.b.	Fatalities due to vegetation management - Public																		# fatalities	
	3.c.	Fatalities due to utility fuel management - Public																		# fatalities	
	3.d.	Fatalities due to grid hardening - Public																		# fatalities	
	3.e.	Fatalities due to other - Public																		# fatalities	

Utility	X
Table No.	5
Date Modified	

Note: These columns are placeholders for future QR submissions.

Table 5: OSHA-reportable injuries due to utility wildfire mitigation initiatives

Metric type	#	Outcome metric name	2015	2016	2017	2018	2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Unit(s)	Comments
1. OSHA injuries - Full-time Employee	1.a.	OSHA injuries due to utility inspection - Full-time employee																		# OSHA-reportable injuries	
	1.b.	OSHA injuries due to vegetation management - Full-time employee																		# OSHA-reportable injuries	
	1.c.	OSHA injuries due to utility fuel management - Full-time employee																		# OSHA-reportable injuries	
	1.d.	OSHA injuries due to grid hardening - Full-time employee																		# OSHA-reportable injuries	
	1.e.	OSHA injuries due to other - Full-time employee																		# OSHA-reportable injuries	
2. OSHA injuries - Contractor	2.a.	OSHA injuries due to utility inspection - Contractor																		# OSHA-reportable injuries	
	2.b.	OSHA injuries due to vegetation management - Contractor																		# OSHA-reportable injuries	
	2.c.	OSHA injuries due to utility fuel management - Contractor																		# OSHA-reportable injuries	
	2.d.	OSHA injuries due to grid hardening - Contractor																		# OSHA-reportable injuries	
	2.e.	OSHA injuries due to other - Contractor																		# OSHA-reportable injuries	
3. OSHA injuries - Member of public	3.a.	OSHA injuries due to utility inspection - Public																		# OSHA-reportable injuries	
	3.b.	OSHA injuries due to vegetation management - Public																		# OSHA-reportable injuries	
	3.c.	OSHA injuries due to utility fuel management - Public																		# OSHA-reportable injuries	
	3.d.	OSHA injuries due to grid hardening - Public																		# OSHA-reportable injuries	
	3.e.	OSHA injuries due to other - Public																		# OSHA-reportable injuries	

Utility			Notes	Number of risk events																Units	Comments									
Table No.	Date Modified	7.1	Transmission lines refer to all lines at or above 65kV, and distribution lines refer to all lines below 65kV. Data from 2015 - 2020 Q2 should be actual numbers. 2020 Q3 - 2023 should be projected. In future submissions update projected numbers with actuals	2015	2016	2017	2018	2019	2020	2020	2020	2020	2020	2021	2021	2021	2021	2022	2022	2022	2022	2022	2022	2022	2022	2022	2022	2022		
Table 7.1: Key recent and projected drivers of risk events																														
Risk Event category	Cause category	#	Sub-cause category	Are risk events tracked for ignition driver? (yes / no)																										
x	Wire down event - Distribution	1.a.	Veg. contact - Distribution																											
		1.b.	Animal contact - Distribution																											
		1.c.	Balloon contact - Distribution																											
		1.d.	Vehicle contact - Distribution																											
		1.e.	Other contact from object - Distribution																											
		2.	Equipment / facility failure - Distribution																											
		2.a.	Connector damage or failure - Distribution																											
		2.b.	Splice damage or failure - Distribution																											
		2.c.	Crossarm damage or failure - Distribution																											
		2.d.	Insulator damage or failure - Distribution																											
		2.e.	Lightning arrester damage or failure - Distribution																											
		2.f.	Tap damage or failure - Distribution																											
		2.g.	Tie wire damage or failure - Distribution																											
		2.h.	Other - Distribution																											
		3.	Wire-to-wire contact - Distribution																											
		4.	Contamination - Distribution																											
		5.	Utility work / Operation																											
6.	Vandalism / Theft - Distribution																													
7.	Other - Distribution																													
8.	Unknown - Distribution																													
x	Wire down event - Transmission	9.a.	Veg. contact - Transmission																											
		9.b.	Animal contact - Transmission																											
		9.c.	Balloon contact - Transmission																											
		9.d.	Vehicle contact - Transmission																											
		9.e.	Other contact from object - Transmission																											
		10.	Equipment / facility failure - Transmission																											
		10.a.	Connector damage or failure - Transmission																											
		10.b.	Splice damage or failure - Transmission																											
		10.c.	Crossarm damage or failure - Transmission																											
		10.d.	Insulator damage or failure - Transmission																											
		10.e.	Lightning arrester damage or failure - Transmission																											
		10.f.	Tap damage or failure - Transmission																											
		10.g.	Tie wire damage or failure - Transmission																											
		10.h.	Other - Transmission																											
		11.	Wire-to-wire contact - Transmission																											
		11.a.	Wire-to-wire contact / contamination - Transmission																											
		12.	Contamination - Transmission																											
13.	Utility work / Operation																													
14.	Vandalism / Theft - Transmission																													
15.	Other - Transmission																													
16.	Unknown - Transmission																													
x	Outage - Distribution	17.a.	Veg. contact - Distribution																											
		17.b.	Animal contact - Distribution																											
		17.c.	Balloon contact - Distribution																											
		17.d.	Vehicle contact - Distribution																											
		17.e.	Other contact from object - Distribution																											
		18.	Equipment / facility failure - Distribution																											
		18.a.	Capacitor bank damage or failure - Distribution																											
		18.b.	Conductor damage or failure - Distribution																											
		18.c.	Fuse damage or failure - Distribution																											
		18.d.	Lightning arrester damage or failure - Distribution																											
		18.e.	Switch damage or failure - Distribution																											
		18.f.	Pole damage or failure - Distribution																											
		18.g.	Insulator and brushing damage or failure - Distribution																											
		18.h.	Crossarm damage or failure - Distribution																											
		18.i.	Voltage regulator / booster damage or failure - Distribution																											
		18.j.	Recloser damage or failure - Distribution																											
		18.k.	Anchor / guy damage or failure - Distribution																											
18.l.	Sectionalizer damage or failure - Distribution																													
18.m.	Connection device damage or failure - Distribution																													
18.n.	Transformer damage or failure - Distribution																													
18.o.	Other - Distribution																													
19.	Wire-to-wire contact - Distribution																													
19.a.	Wire-to-wire contact / contamination - Distribution																													
20.	Contamination - Distribution																													
21.	Utility work / Operation																													
22.	Vandalism / Theft - Distribution																													
23.	Other - Distribution																													
24.	Unknown - Distribution																													
x	Outage - Transmission	25.a.	Veg. contact - Transmission																											
		25.b.	Animal contact - Transmission																											
		25.c.	Balloon contact - Transmission																											
		25.d.	Vehicle contact - Transmission																											
		25.e.	Other contact from object - Transmission																											
		26.	Equipment / facility failure - Transmission																											
		26.a.	Capacitor bank damage or failure - Transmission																											
		26.b.	Conductor damage or failure - Transmission																											
		26.c.	Fuse damage or failure - Transmission																											
		26.d.	Lightning arrester damage or failure - Transmission																											
		26.e.	Switch damage or failure - Transmission																											
		26.f.	Pole damage or failure - Transmission																											
		26.g.	Insulator and brushing damage or failure - Transmission																											
		26.h.	Crossarm damage or failure - Transmission																											
		26.i.	Voltage regulator / booster damage or failure - Transmission																											
		26.j.	Recloser damage or failure - Transmission																											
		26.k.	Anchor / guy damage or failure - Transmission			</																								

		34.g.	Insulator and brushing damage or failure - Distribution		# ignitions	
		34.h.	Crossarm damage or failure - Distribution		# ignitions	
		34.i.	Voltage regulator / booster damage or failure - Distribution		# ignitions	
		34.j.	Recloser damage or failure - Distribution		# ignitions	
		34.k.	Anchor / guy damage or failure - Distribution		# ignitions	
		34.l.	Sectionalizer damage or failure - Distribution		# ignitions	
		34.m.	Connection device damage or failure - Distribution		# ignitions	
		34.n.	Transformer damage or failure - Distribution		# ignitions	
		34.o.	Other - Distribution		# ignitions	
		35.	Wire-to-wire contact - Distribution	35.a.	Wire-to-wire contact / contamination- Distribution	# ignitions
		36.	Contamination - Distribution	36.a.	Contamination - Distribution	# ignitions
		37.	Utility work / Operation	37.a.	Utility work / Operation	# ignitions
		38.	Vandalism / Theft - Distribution	38.a.	Vandalism / Theft - Distribution	# ignitions
		39.	Other - Distribution	39.a.	All Other - Distribution	# ignitions
		40.	Unknown - Distribution	40.a.	Unknown - Distribution	# ignitions
x	Ignition - Transmission	41.	Contact from object - Transmission	41.a.	Yeg. contact- Transmission	# ignitions
				41.b.	Animal contact- Transmission	# ignitions
				41.c.	Balloon contact- Transmission	# ignitions
				41.d.	Vehicle contact- Transmission	# ignitions
				41.e.	Other contact from object - Transmission	# ignitions
		42.	Equipment / facility failure - Transmission	42.a.		# ignitions
				42.b.	Capacitor bank damage or failure- Transmission	# ignitions
				42.c.	Conductor damage or failure - Transmission	# ignitions
				42.d.	Fuse damage or failure - Transmission	# ignitions
				42.e.	Lightning arrester damage or failure- Transmission	# ignitions
				42.f.	Switch damage or failure- Transmission	# ignitions
				42.g.	Pole damage or failure - Transmission	# ignitions
				42.h.	Insulator and brushing damage or failure - Transmission	# ignitions
				42.i.	Crossarm damage or failure - Transmission	# ignitions
				42.j.	Voltage regulator / booster damage or failure - Transmission	# ignitions
				42.k.	Recloser damage or failure - Transmission	# ignitions
				42.l.	Anchor / guy damage or failure - Transmission	# ignitions
				42.m.	Sectionalizer damage or failure - Transmission	# ignitions
				42.n.	Connection device damage or failure - Transmission	# ignitions
				42.o.	Transformer damage or failure - Transmission	# ignitions
				42.p.	Other - Transmission	# ignitions
		43.	Wire-to-wire contact - Transmission	43.a.	Wire-to-wire contact / contamination- Transmission	# ignitions
		44.	Contamination - Transmission	44.a.	Contamination - Transmission	# ignitions
		45.	Utility work / Operation	45.a.	Utility work / Operation	# ignitions
		46.	Vandalism / Theft - Transmission	46.a.	Vandalism / Theft - Transmission	# ignitions
		47.	Other - Transmission	47.a.	All Other- Transmission	# ignitions
		48.	Unknown - Transmission	48.a.	Unknown - Transmission	# ignitions

Utility
 Table No. 7.3
 Date Modified

Notes:
 Transmission lines refer to all lines at or above 69kV, and distribution lines refer to all lines below 69kV.
 Lines from 2015 - 2020 should be actual numbers. 2020 - 2023 should be projected. In future submissions update projected numbers with actuals

Table 7.3 - Key recent and projected drivers of ignitions by HFTD region		Number of ignitions by HFTD tier																	Projected ignitions by HFTD tier							Legend	Comments					
Meaning	#	Ignition driver	Are ignitions tracked for ignition driver? (yes / no)																													
			Non-HFTD	HFTD Zone 1	HFTD Tier 2	HFTD Tier 3	Non-HFTD	HFTD Zone 1	HFTD Tier 2	HFTD Tier 3	Non-HFTD	HFTD Zone 1	HFTD Tier 2	HFTD Tier 3	Non-HFTD	HFTD Zone 1	HFTD Tier 2	HFTD Tier 3	Non-HFTD	HFTD Zone 1	HFTD Tier 2	HFTD Tier 3	Non-HFTD	HFTD Zone 1	HFTD Tier 2	HFTD Tier 3						
X Ignition - Distribution	1. Contact from object - Distribution	1.a	Veg. contact - Distribution																									# ignitions				
		1.b	Animal contact - Distribution																										# ignitions			
		1.c	Ballast contact - Distribution																											# ignitions		
			1.d	Vehicle contact - Distribution																									# ignitions			
			1.e	Other contact from object - Distribution																									# ignitions			
	2. Equipment / facility failure - Distribution	2.a	2.a	Capacitor bank damage or failure - Distribution																									# ignitions			
			2.b	Conductor damage or failure - Distribution																										# ignitions		
			2.c	Fuse damage or failure - Distribution																										# ignitions		
			2.d	LIGHTNING arrester damage or failure - Distribution																										# ignitions		
			2.e	Switch damage or failure - Distribution																										# ignitions		
			2.f	Pole damage or failure - Distribution																										# ignitions		
			2.g	Insulator and bushing damage or failure - Distribution																										# ignitions		
			2.h	Crossarm damage or failure - Distribution																										# ignitions		
			2.i	Voltage regulator / booster damage or failure - Distribution																											# ignitions	
			2.j	Rectifier damage or failure - Distribution																											# ignitions	
		2.k	Anchor / guy damage or failure - Distribution																											# ignitions		
		2.m	2.m	Sectionalizer damage or failure - Distribution																										# ignitions		
			2.m	Connection device damage or failure - Distribution																										# ignitions		
			2.m	Transformer damage or failure - Distribution																										# ignitions		
		3. Wire-to-wire contact - Distribution	3.a	Other - Distribution																									# ignitions			
			3.a	Wire-to-wire contact / contamination - Distribution																										# ignitions		
		4. Contamination - Distribution	4.a	Contamination - Distribution																									# ignitions			
		5. Utility work / Operation	5.a	Utility work / Operation																									# ignitions			
	6. Vandalism / Theft - Distribution	6.a	Vandalism / Theft - Distribution																									# ignitions				
	7. Other - Distribution	7.a	All Other - Distribution																									# ignitions				
	X Ignition - Transmission	9. Contact from object - Transmission	9.a	Unknown - Distribution																								# ignitions				
9.a			Veg. contact - Transmission																									# ignitions				
9.a			Animal contact - Transmission																									# ignitions				
			9.c	Ballast contact - Transmission																								# ignitions				
			9.d	Vehicle contact - Transmission																								# ignitions				
			9.e	Other contact from object - Transmission																								# ignitions				
10. Equipment / facility failure - Transmission		10.a	10.a	Capacitor bank damage or failure - Transmission																									# ignitions			
			10.b	Conductor damage or failure - Transmission																									# ignitions			
			10.c	Fuse damage or failure - Transmission																									# ignitions			
			10.d	LIGHTNING arrester damage or failure - Transmission																									# ignitions			
			10.e	Switch damage or failure - Transmission																										# ignitions		
			10.f	Pole damage or failure - Transmission																									# ignitions			
			10.g	Insulator and bushing damage or failure - Transmission																									# ignitions			
			10.h	Crossarm damage or failure - Transmission																									# ignitions			
			10.i	Voltage regulator / booster damage or failure - Transmission																									# ignitions			
			10.l	Rectifier damage or failure - Transmission																									# ignitions			
10.k	10.k	Anchor / guy damage or failure - Transmission																									# ignitions					
	10.l	Sectionalizer damage or failure - Transmission																									# ignitions					
	10.m	Connection device damage or failure - Transmission																									# ignitions					
		10.n	Transformer damage or failure - Transmission																							# ignitions						
		10.o	Other - Transmission																							# ignitions						
11. Wire-to-wire contact - Transmission	11.a	Wire-to-wire contact / contamination - Transmission																								# ignitions						
12. Contamination - Transmission	12.a	Contamination - Transmission																								# ignitions						
13. Utility work / Operation	13.a	Utility work / Operation																								# ignitions						
14. Vandalism / Theft - Transmission	14.a	Vandalism / Theft - Transmission																								# ignitions						
15. Other - Transmission	15.a	All Other - Transmission																								# ignitions						
16. Unknown - Transmission	16.a	Unknown - Transmission																								# ignitions						

Utility	3
Table No.	8
Date Modified	

Table 8. State of service territory and utility equipment

Metric type	#	Outcome metric name	Non-HFTD 2015	HFTD Zone 1 2015	HFTD Tier 2 2015	HFTD Tier 3 2015	Non-HFTD 2016	HFTD Zone 1 2016	HFTD Tier 2 2016	HFTD Tier 3 2016	Non-HFTD 2017	HFTD Zone 1 2017	HFTD Tier 2 2017	HFTD Tier 3 2017	Non-HFTD 2018	HFTD Zone 1 2018	HFTD Tier 2 2018	HFTD Tier 3 2018	Non-HFTD 2019	HFTD Zone 1 2019	HFTD Tier 2 2019	HFTD Tier 3 2019	Non-HFTD 2020	HFTD Zone 1 2020	HFTD Tier 2 2020	HFTD Tier 3 2020	Non-HFTD 2021	HFTD Zone 1 2021	HFTD Tier 2 2021	HFTD Tier 3 2021	Non-HFTD 2022	HFTD Zone 1 2022	HFTD Tier 2 2022	HFTD Tier 3 2022	UM[6]	Comments
X	1. State of service territory and equipment in urban areas																												Circuit miles							
	1.a.	Circuit miles in WUI																											Circuit miles in WUI							
	1.c.	Number of critical facilities (including WUI and non-WUI)																											Number of critical facilities							
	1.d.	Number of critical facilities in WUI																											Number of critical facilities in WUI							
	1.e.	Number of customers (including WUI and non-WUI)																											Number of customers							
	1.f.	Number of customers in WUI																											Number of customers in WUI							
	1.g.	Number of customers belonging to access and functional needs populations (including WUI and non-WUI)																											Number of customers belonging to access and functional needs populations							
	1.h.	Number of customers belonging to access and functional needs populations in WUI																											Number of customers belonging to access and functional needs populations in WUI							
	1.i.	Circuit miles of overhead transmission lines (including WUI and non-WUI)																											Circuit miles of overhead transmission lines							
	1.j.	Circuit miles of overhead transmission lines in WUI																											Circuit miles of overhead transmission lines in WUI							
	1.k.	Circuit miles of overhead distribution lines (including WUI and non-WUI)																											Circuit miles of overhead distribution lines							
	1.l.	Circuit miles of overhead distribution lines in WUI																											Circuit miles of overhead distribution lines in WUI							
	1.m.	Number of substations (including WUI and non-WUI)																											Number of substations							
	1.n.	Number of substations in WUI																											Number of substations in WUI							
	X	2. State of service territory and equipment in rural areas																												Circuit miles						
2.a.		Circuit miles in WUI																											Circuit miles in WUI							
2.c.		Number of critical facilities (including WUI and non-WUI)																											Number of critical facilities							
2.d.		Number of critical facilities in WUI																											Number of critical facilities in WUI							
2.e.		Number of customers (including WUI and non-WUI)																											Number of customers							
2.f.		Number of customers in WUI																											Number of customers in WUI							
2.g.		Number of customers belonging to access and functional needs populations (including WUI and non-WUI)																											Number of customers belonging to access and functional needs populations							
2.h.		Number of customers belonging to access and functional needs populations in WUI																											Number of customers belonging to access and functional needs populations in WUI							
2.i.		Circuit miles of overhead transmission lines (including WUI and non-WUI)																											Circuit miles of overhead transmission lines							
2.j.		Circuit miles of overhead transmission lines in WUI																											Circuit miles of overhead transmission lines in WUI							
2.k.		Circuit miles of overhead distribution lines (including WUI and non-WUI)																											Circuit miles of overhead distribution lines							
2.l.		Circuit miles of overhead distribution lines in WUI																											Circuit miles of overhead distribution lines in WUI							
2.m.		Number of substations (including WUI and non-WUI)																											Number of substations							
2.n.		Number of substations in WUI																											Number of substations in WUI							
X		3. State of service territory and equipment in highly rural areas																												Circuit miles						
	3.a.	Circuit miles in WUI																											Circuit miles in WUI							
	3.c.	Number of critical facilities (including WUI and non-WUI)																											Number of critical facilities							
	3.d.	Number of critical facilities in WUI																											Number of critical facilities in WUI							
	3.e.	Number of customers (including WUI and non-WUI)																											Number of customers							
	3.f.	Number of customers in WUI																											Number of customers in WUI							
	3.g.	Number of customers belonging to access and functional needs populations (including WUI and non-WUI)																											Number of customers belonging to access and functional needs populations							
	3.h.	Number of customers belonging to access and functional needs populations in WUI																											Number of customers belonging to access and functional needs populations in WUI							
	3.i.	Circuit miles of overhead transmission lines (including WUI and non-WUI)																											Circuit miles of overhead transmission lines							
	3.j.	Circuit miles of overhead transmission lines in WUI																											Circuit miles of overhead transmission lines in WUI							
	3.k.	Circuit miles of overhead distribution lines (including WUI and non-WUI)																											Circuit miles of overhead distribution lines							
	3.l.	Circuit miles of overhead distribution lines in WUI																											Circuit miles of overhead distribution lines in WUI							
	3.m.	Number of substations (including WUI and non-WUI)																											Number of substations							
	3.n.	Number of substations in WUI																											Number of substations in WUI							
	3.o.	Number of weather stations (including WUI and non-WUI)																											Number of weather stations							
3.p.	Number of weather stations in WUI																											Number of weather stations in WUI								

Note: These columns are placeholders for future QR submissions.

Utility	x
Table No.	9
Date Modified	

Notes:
 Transmission lines refer to all lines at or above 65kV, and distribution lines refer to all lines below 65kV. Report net additions using positive numbers and net removals and undergrounding using negative numbers for circuit miles and numbers of substations. Only report changes expected within the target year.
 For example, if 20 net overhead circuit miles are planned for addition by 2023, with 15 being added by 2022 and 5 more added by 2023, then report "15" for 2022 and "5" for 2023. Do not report cumulative change across years. In this case, do not report "20" for 2023, but instead the number planned to be added for just that year, which is "5".

Table 9: Location of actual and planned utility equipment additions or removal year over year			Actual				Projected				Unit(s)	Comments				
Metric type	#	Outcome metric name	Non-HFTD 2020	HFTD Zone 1 2020	HFTD Tier 2 2020	HFTD Tier 3 2020	Non-HFTD 2021	HFTD Zone 1 2021	HFTD Tier 2 2021	HFTD Tier 3 2021			Non-HFTD 2022	HFTD Zone 1 2022	HFTD Tier 2 2022	HFTD Tier 3 2022
x	1.	Planned utility equipment net addition (or removal) year over year - in urban areas													Circuit miles	
	1.a.	Circuit miles of overhead transmission lines (including WUI and non-WUI)													Circuit miles	
	1.b.	Circuit miles of overhead distribution lines (including WUI and non-WUI)													Circuit miles	
	1.c.	Circuit miles of overhead transmission lines in WUI													Circuit miles in WUI	
	1.d.	Circuit miles of overhead distribution lines in WUI													Circuit miles in WUI	
	1.e.	Number of substations (including WUI and non-WUI)													Number of substations	
	1.f.	Number of substations in WUI													Number of substations in WUI	
	1.g.	Number of weather stations (including WUI and non-WUI)													Number of weather stations	
	1.h.	Number of weather stations in WUI													Number of weather stations in WUI	
	2.a.	Circuit miles of overhead transmission lines (including WUI and non-WUI)													Circuit miles	
x	2.	Planned utility equipment net addition (or removal) year over year - in rural areas													Circuit miles	
	2.b.	Circuit miles of overhead distribution lines (including WUI and non-WUI)													Circuit miles	
	2.c.	Circuit miles of overhead transmission lines in WUI													Circuit miles in WUI	
	2.d.	Circuit miles of overhead distribution lines in WUI													Circuit miles in WUI	
	2.e.	Number of substations (including WUI and non-WUI)													Number of substations	
	2.f.	Number of substations in WUI													Number of substations in WUI	
	2.g.	Number of weather stations (including WUI and non-WUI)													Number of weather stations	
	2.h.	Number of weather stations in WUI													Number of weather stations in WUI	
	3.a.	Circuit miles of overhead transmission lines (including WUI and non-WUI)													Circuit miles	
x	3.	Planned utility equipment net addition (or removal) year over year - in highly rural areas													Circuit miles	
	3.b.	Circuit miles of overhead distribution lines (including WUI and non-WUI)													Circuit miles	
	3.c.	Circuit miles of overhead transmission lines in WUI													Circuit miles in WUI	
	3.d.	Circuit miles of overhead distribution lines in WUI													Circuit miles in WUI	
	3.e.	Number of substations (including WUI and non-WUI)													Number of substations	
	3.f.	Number of substations in WUI													Number of substations in WUI	
	3.g.	Number of weather stations (including WUI and non-WUI)													Number of weather stations	
	3.h.	Number of weather stations in WUI													Number of weather stations in WUI	

Utility	x
Table No.	10
Date Modified	

Notes:
 Transmission lines refer to all lines at or above 65kV, and distribution lines refer to all lines below 65kV.
 In future submissions update planned upgrade numbers with actuals
 In the comments column on the far-right, enter the relevant program target(s) associated

Table 10: Location of actual and planned utility infrastructure upgrades year over year			Actual				Projected								Unit(s)	Comments
			Non-HFTD	HFTD Zone 1	HFTD Tier 2	HFTD Tier 3	Non-HFTD	HFTD Zone 1	HFTD Tier 2	HFTD Tier 3	Non-HFTD	HFTD Zone 1	HFTD Tier 2	HFTD Tier 3		
Metric type	#	Outcome metric name	2020	2020	2020	2020	2021	2021	2021	2021	2022	2022	2022	2022		
x	1.	Planned utility infrastructure upgrades year over year - in urban areas													Circuit miles	
	1.a.	Circuit miles of overhead transmission lines planned for upgrades (including WUI and non-WUI)														
	1.b.	Circuit miles of overhead distribution lines planned for upgrades (including WUI and non-WUI)													Circuit miles	
	1.c.	Circuit miles of overhead transmission lines planned for upgrades in WUI													Circuit miles in WUI	
	1.d.	Circuit miles of overhead distribution lines planned for upgrades in WUI													Circuit miles in WUI	
	1.e.	Number of substations planned for upgrades (including WUI and non-WUI)													Number of substations	
	1.f.	Number of substations planned for upgrades in WUI													Number of substations in WUI	
	1.g.	Number of weather stations planned for upgrades (including WUI and non-WUI)													Number of weather stations	
	1.h.	Number of weather stations planned for upgrades in WUI													Number of weather stations in WUI	
x	2.	Planned utility infrastructure upgrades year over year - in rural areas													Circuit miles	
	2.a.	Circuit miles of overhead transmission lines planned for upgrades (including WUI and non-WUI)														
	2.b.	Circuit miles of overhead distribution lines planned for upgrades (including WUI and non-WUI)													Circuit miles	
	2.c.	Circuit miles of overhead transmission lines planned for upgrades in WUI													Circuit miles in WUI	
	2.d.	Circuit miles of overhead distribution lines planned for upgrades in WUI													Circuit miles in WUI	
	2.e.	Number of substations planned for upgrades (including WUI and non-WUI)													Number of substations	
	2.f.	Number of substations planned for upgrades in WUI													Number of substations in WUI	
	2.g.	Number of weather stations planned for upgrades (including WUI and non-WUI)													Number of weather stations	
	2.h.	Number of weather stations planned for upgrades in WUI													Number of weather stations in WUI	
x	3.	Planned utility infrastructure upgrades year over year - in highly rural areas													Circuit miles	
	3.a.	Circuit miles of overhead transmission lines planned for upgrades (including WUI and non-WUI)														
	3.b.	Circuit miles of overhead distribution lines planned for upgrades (including WUI and non-WUI)													Circuit miles	
	3.c.	Circuit miles of overhead transmission lines planned for upgrades in WUI													Circuit miles in WUI	
	3.d.	Circuit miles of overhead distribution lines planned for upgrades in WUI													Circuit miles in WUI	
	3.e.	Number of substations planned for upgrades (including WUI and non-WUI)													Number of substations	
	3.f.	Number of substations planned for upgrades in WUI													Number of substations in WUI	
	3.g.	Number of weather stations planned for upgrades (including WUI and non-WUI)													Number of weather stations	
	3.h.	Number of weather stations planned for upgrades in WUI													Number of weather stations in WUI	

Utility	X	Notes:
Table No.	11	"PSPS" = Public Safety Power Shutoff
Date Modified		In future submissions update planned upgrade numbers with actuals

Table 11: Recent use of PSPS and other PSPS metrics			Actual				Projected								Unit(s)	Comments					
Metric type	#	Outcome metric name	2015	2016	2017	2018	2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022		
1. Recent use of PSPS	1.a.	Frequency of PSPS events (total)																		Number of instances where utility operating protocol requires de-energization of a circuit or portion thereof to reduce ignition probability, per year. Only include events in which de-energization ultimately occurred	
	1.b.	Scope of PSPS events (total)																		Circuit-events, measured in number of events multiplied by number of circuits de-energized per year	
	1.c.	Duration of PSPS events (total)																		Customer hours per year	
2. Customer hours of PSPS and other outages	2.a.	Customer hours of planned outages including PSPS (total)																		Total customer hours of planned outages per year	
	2.b.	Customer hours of unplanned outages, not including PSPS (total)																		Total customer hours of unplanned outages per year	
	2.c.	System Average Interruption Duration Index (SAIDI) (including PSPS)																		SAIDI index value = sum of all interruptions in time period where each interruption is defined as sum(duration of interruption * # of customer interruptions) / Total number of customers served	
	2.d.	System Average Interruption Duration Index (SAIDI) (excluding PSPS)																		SAIDI index value = sum of all interruptions in time period where each interruption is defined as sum(duration of interruption * # of customer interruptions) / Total number of customers served	
	2.e.	System Average Interruption Frequency Index (SAIFI) (including PSPS)																		SAIFI index value = sum of all interruptions in time period where each interruption is defined as (total # of customer interruptions) / (total # of customers served)	
	2.f.	System Average Interruption Frequency Index (SAIFI) (excluding PSPS)																		SAIFI index value = sum of all interruptions in time period where each interruption is defined as (total # of customer interruptions) / (total # of customers served)	
3. Critical infrastructure impacted by PSPS	3.a.	Critical infrastructure impacted by PSPS																		Number of critical infrastructure (in accordance with D.19-05-042) locations impacted per hour multiplied by hours offline per year	
4. Community outreach of PSPS metrics	4.a.	# of customers impacted by PSPS																		# of customers impacted by PSPS (if multiple PSPS events impact the same customer, count each event as a separate customer)	
	4.b.	# of medical baseline customers impacted by PSPS																		# of customers impacted by PSPS (if multiple PSPS events impact the same customer, count each event as a separate customer)	
	4.c.	# of customers notified prior to initiation of PSPS event																		# of customers notified of PSPS event prior to initiation (if multiple PSPS events impact the same customer, count each event in which customer was notified as a separate customer)	
	4.d.	# of medical baseline customers notified prior to initiation of PSPS event																		# of customers notified of PSPS event prior to initiation (if multiple PSPS events impact the same customer, count each event in which customer was notified as a separate customer)	
	4.e.	% of customers notified prior to a PSPS event impacting them																		=4. c. / 4. a.	
	4.f.	% of medical baseline customers notified prior to a PSPS event impacting them																		=4. d. / 4. b.	
5. Other PSPS metrics	5.a.	Number of PSPS events triggered where no de-energization occurred																		Number of instances where utility notified the public of a potential PSPS event but no de-energization followed	
	5.b.	Number of customers located on de-energized circuit																		Number of customers	
	5.c.	Customer hours of PSPS per RFW OH circuit mile day																		=1. c. / RFW OH circuit mile days in time period	
	5.d.	Frequency of PSPS events (total) - High Wind Warning wind conditions																		Events over time period that overlapped with a High Wind Warning as defined by the National Weather Service	
	5.e.	Scope of PSPS events (total) - High Wind Warning wind conditions																		Estimated customers impacted over time period that overlapped with a High Wind Warning as defined by the National Weather Service	
	5.f.	Duration of PSPS events (total) - High Wind Warning wind conditions																		Customer hours over time period that overlapped with a High Wind Warning as defined by the National Weather Service	

Notes:	<p>1. Risk assessment (RA) is defined as: "An estimate of the cost effectiveness of controls, calculated by dividing the mitigation risk reduction benefit by the mitigation cost estimate based on the full set of risk reduction benefits delivered from the incurred costs."</p> <p>2. CAPEX = Capital expenditure; OPEX = Operating expenditure.</p> <p>3. In some tabular captions provided (e.g., for miles treated, etc.), we have updated reported and actuals. Additional information can be found in Q8 information.</p>
How Measured:	

Table 12: Mitigation Activities Summary		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated		Estimated Mile to be Treated				
Activity	Category	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #			
Activity	Category	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #	WMP Title #		
Other	Risk Assessment & Mapping	7.3.1.1																																						
Other	Risk Assessment & Mapping	7.3.1.2																																						
Other	Risk Assessment & Mapping	7.3.1.3																																						
Other	Risk Assessment & Mapping	7.3.1.4																																						
Other	Risk Assessment & Mapping	7.3.1.5																																						
Other	Risk Assessment & Mapping	7.3.1.6																																						
Other	Risk Assessment & Mapping	7.3.1.7																																						
Other	Risk Assessment & Mapping	7.3.1.8																																						
Other	Risk Assessment & Mapping	7.3.1.9																																						
Other	Risk Assessment & Mapping	7.3.1.10																																						
Other	Risk Assessment & Mapping	7.3.1.11																																						
Other	Risk Assessment & Mapping	7.3.1.12																																						
Other	Risk Assessment & Mapping	7.3.1.13																																						
Other	Risk Assessment & Mapping	7.3.1.14																																						
Other	Risk Assessment & Mapping	7.3.1.15																																						
Other	Risk Assessment & Mapping	7.3.1.16																																						
Other	Risk Assessment & Mapping	7.3.1.17																																						
Other	Risk Assessment & Mapping	7.3.1.18																																						
Other	Risk Assessment & Mapping	7.3.1.19																																						
Other	Risk Assessment & Mapping	7.3.1.20																																						
Other	Risk Assessment & Mapping	7.3.1.21																																						
Other	Risk Assessment & Mapping	7.3.1.22																																						
Other	Risk Assessment & Mapping	7.3.1.23																																						
Other	Risk Assessment & Mapping	7.3.1.24																																						
Other	Risk Assessment & Mapping	7.3.1.25																																						
Other	Risk Assessment & Mapping	7.3.1.26																																						
Other	Risk Assessment & Mapping	7.3.1.27																																						
Other	Risk Assessment & Mapping	7.3.1.28																																						
Other	Risk Assessment & Mapping	7.3.1.29																																						
Other	Risk Assessment & Mapping	7.3.1.30																																						
Other	Risk Assessment & Mapping	7.3.1.31																																						
Other	Risk Assessment & Mapping	7.3.1.32																																						
Other	Risk Assessment & Mapping	7.3.1.33																																						
Other	Risk Assessment & Mapping	7.3.1.34																																						
Other	Risk Assessment & Mapping	7.3.1.35																																						
Other	Risk Assessment & Mapping	7.3.1.36																																						
Other	Risk Assessment & Mapping	7.3.1.37																																						
Other	Risk Assessment & Mapping	7.3.1.38																																						
Other	Risk Assessment & Mapping	7.3.1.39																																						
Other	Risk Assessment & Mapping	7.3.1.40																																						
Other	Risk Assessment & Mapping	7.3.1.41																																						
Other	Risk Assessment & Mapping	7.3.1.42																																						
Other	Risk Assessment & Mapping	7.3.1.43																																						
Other	Risk Assessment & Mapping	7.3.1.44																																						
Other	Risk Assessment & Mapping	7.3.1.45																																						
Other	Risk Assessment & Mapping	7.3.1.46																																						
Other	Risk Assessment & Mapping	7.3.1.47																																						
Other	Risk Assessment & Mapping	7.3.1.48																																						
Other	Risk Assessment & Mapping	7.3.1.49																																						