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



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 of small dead vegetation (e.g. grass, leaves, which burn quickly but not	
moisture content	intensely), which can respond to changes in atmospheric moisture content within 10 hours.	
Access and functional	Per Government Code § 8593.3 and D.19-05-042, individuals who have developmental or	
needs populations	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	AHJ, party with assigned responsibility, depending on location and circumstance.	
Jurisdiction		
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	A measure, typically of the current state, to establish a starting point for comparison.	
probability, maturity)		
Carbon dioxide	I ons of greenhouse gases (GHG) emitted, multiplied by the global warming potential	
equivalent	relative to carbon dioxide.	
Circuit mile	The total length in miles of separate circuits regardless of the number of conductors t	
Contractor	Any individual in the temporary and/or indirect employ of the utility whose limited hours	
Contractor	and/or time-bound term of employment are not considered as "full-time" for tax and/or	
	any other purposes.	
Critical facilities and	For brevity in the 2021 WMP, "critical facilitates and infrastructure" may be shortened to	
infrastructure	"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:	
	Emergency Services Sector	
	 Police Stations 	
	 Fire Station 	
	 Emergency Operations Centers 	
	 Public safety answering points 	
	Government Facilities Sector	
	o Schools	
	o Jails and prisons	
	Healthcare and Public Health Sector	
	 Public Health Departments 	

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	 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	
	 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	
 Facilities associated with the provision of drinking water or pro wastewater including facilities used to pump, divert, transport, and deliver water or wastewater 		
	Communications Sector	
	 Communication carrier infrastructure including selective routers, central offices, head ends, cellular switches, remote terminals and cellular sites 	
	Chemical Sector	
	 Facilities associated with the provision of manufacturing, maintaining, or distributing hazardous materials and chemicals (including Category N- Customers as defined in D.01.06.085) 	
Customers as defined in D.01-06-085)		
	 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	Moisture content of dead vegetation, which responds solely to current environmental	
Content Dotailed inspection	conditions and is critical in determining fire potential.	
Detailed inspection	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	
F	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 "procautionary" 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 (CO2), methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and nitrogen trifluoride (NF3).			
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.			
	good condition and expected to operate safely and effectively.			
	i ton native species whose promeration mercases the fisk of windines.			

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

California Public Utilities Commission				
Level 1 finding In accordance with GO 95, an immediate safety and/or reliability risk with high probability risk with high probab				
Loval 2 finding	for significant impact.			
Level 2 Inding In accordance with GO 95, a variable (non-immediate high to low) safety and/or re				
Loval 2 finding	In accordance with $CO(95)$ an acceptable safety and/or reliability risk			
Life superstance. Anticipated second that a piece of a minute state to present and to meet a fet and to present				
performance requirements.				
Limited English	Populations with limited English working proficiency based on the International Language			
Proficiency (LEP)	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	Moisture content within living vegetation, which can retain water longer than dead fuel.			
content				
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	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	Risk calculation methodology introduced during CPUC's S-MAP and RAMP proceedings.			
function				
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	Rights-of-way whose vegetation is not trimmed in accordance with the requirements of GO			
clearance	95.			
Outages of the type	Outages that, in the judgement of the utility, could have ignited a wildfire.			
that could ignite 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,			
	acreage burned by utility ignited wildfire			
Overcanacity	When the energy transmitted by utility equipment exceeds that of its namenlate canacity			
Detrol inspection	In accordance with CO 165, a simple visual inspection of applicable utility equipment and			
Patron inspection	in accordance with GO 105, a simple visual inspection of applicable utility equipment and structures that is designed to identify obvious structural problems and bazards. Patrol			
	inspections may be carried out in the course of other company husiness			
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	The practice of maintaining equipment on a regular schedule, based on risk, elapsed time,		
maintenance (PM)	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	Critical first responders, public safety partners, critical facilities and infrastructure,		
services	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 trimn			
	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	Level of wildfire risk from weather conditions, as declared by the National Weather		
(RFW)	Service. For historical NWS data, refer to the Iowa State University Iowa archive of NWS		
watch / warnings. ²			
RFW OH Circuit Mile	Sum of overhead circuit miles of utility grid subject to Red Flag Warning each day within a		
Day	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:		
	• 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 officiency	An estimate of the cost-effectiveness of initiatives calculated by dividing the mitigation		
(RSF)	risk reduction henefit by the mitigation cost estimate based on the full set of risk reduction		
henefits estimated from the incurred costs. For ongoing initiatives, the PSE can be			
	calculated by determining the "marginal benefit" of additional coording in the oppoing		
	I calculated by determining the marginal benefit of additional spending in the ongoing		

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

	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	System-wide total number of minutes per year of sustained outage per customer served.
Interruption Duration	
Index (SAIDI)	
Third-party contact	Contact between a piece of electrical equipment and another object, whether natural (tree
	branch) or human (vehicle).
Time to expected	Time remaining on the life expectancy of a piece of equipment.
failure	
Top 30% of proprietary	Top 30% of FPI or equivalent scale (e.g., "Extreme" on SCE's FPI; "extreme", 15 or greater,
fire potential index	on SDG&E's FPI; and 4 or above on PG&E's FPI).
Trees with strike	Trees that could either 'fall in' to a power line, or have branches detach and 'fly in' to
potential / hazard trees	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	Trimming and clearance of trees, branches, and other vegetation that poses the risk of
management	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/	The effect or outcome of a wildfire affecting objectives, which may be expressed, by terms
consequence	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	Activities, practices, and strategies that are only necessitated by wildfire risk, unrelated to
programs or beyond that required by minimum reliability and/or safety requirements. Su	
	are not indicated or in common use in areas where wildfire risk is minimal (e.g., territory

	California Public Utilities Commission		
	with no vegetation or fuel) or under conditions where wildfires are unlikely to ignite or		
	spread (e.g., when rain is falling).		
Wildland urban A geographical area identified by the state as a "Fire Hazard Severity Zone", or othe			
interface (WUI) 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 fall			
	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:



- 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	

	California Public Utilities Commiss	sion
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	

	California Public Utilities Commissi	ion
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

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



	Annual pe	rformance	- Actual			
Outcome metric name	2016	2017	2018	2019	2020	Unit(s)
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.





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.

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

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

		California Public Utilities Commission								
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 d	lescription o	f program	targets,	last 5 years
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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	1.a.	Number of circuit miles inspected from							#
from inspection -		patrol inspections in HFTD - Distribution							miles
Distribution lines in HFTD		lines							
	1.b.	Number of circuit miles inspected from				#			
		detailed inspections in HFTD - Distribution							miles
		lines							
	1.c.	Number of circuit miles inspected from							#
		other inspections in HFTD - Distribution							miles
		lines							



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.

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							

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

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, of 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:



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 -	1.a.	OSHA injuries due to inspection - Full-time							
Full-time		employee							
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.

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

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

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.



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

									Projected risk				
					Numb	er of ris	k event	S			ev	ents	
				Quarter:						Q1	Q2	Q3	Q4
Risk Event category	Cause category	#	Sub-cause category	Are risk events tracked?	2015	2016	2017	2018	2019	2020	2020	2020	2020
	1. Contact from	1.a	Veg. contact-										
Wire down event -	object -		Distribution										
Distribution	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

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



			Non- HFTD	HFTD Zone 1	HFTD Tier 2	HFTD Tier 3	Non- HFTD
Metric type	#	Outcome metric name	2015	2015	2015	2015	2016
 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 <u>not</u> report cumulative change across years. In this case, do <u>not</u> 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

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

	California Public Utilities Comm	nission
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

			Non-	HFTD Zone 1	HFTD Tior 2	HFTD	Non-	
Metric type	#	Outcome metric name	2020	2010 I	2020	2020	2021	
 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						



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 <u>5</u>. 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 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 linemiles 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.

7.3.2 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

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
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- 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
- 6. Weather-driven risk map and modelling based on various relevant weather scenarios

Situational awareness and forecasting

- 7. Advanced weather monitoring and weather stations
- 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
- 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

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

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		

	California Public Utilities	Commission
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-		
weather e.g. Red Elag Warning		
line mile days)		
Duration of PSPS events in		
customer hours (total)		
Duration of DSDS overts in		
puration of PSPS events in		
weather e.g. Red Elag Warning		
line mile days)		
Othor		
Utilei		

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:

- 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.
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- 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.
- 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

⁹ See Cal. Government Code § 53112 48

	The second secon			Califor	nia Put	olic Utili	ties Co	mmissi	on	
Metric type	#	Outcome metric name	2015	2016	2017	2018	2019	2020	2021 Q1, Q2,Q4 projected	Comm ents
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	A summarized risk map that	Development and use of tools and processes to develop and
and simulation	shows the overall ignition	update risk map and simulations and to estimate risk reduction
	probability and estimated	potential of initiatives for a given portion of the grid (or more
	wildfire consequence along the	granularly, e.g., circuit, span, or asset). May include verification
	electric lines and equipment	efforts, independent assessment by experts, and updates.
	Climate-driven risk map and	Development and use of tools and processes to estimate
	modelling based on various	incremental risk of foreseeable climate scenarios, such as
	relevant weather scenarios	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	Development and use of tools and processes to assess the risk
	showing the probability of	of ignition across regions of the grid (or more granularly, e.g.,
	ignition along the electric lines	circuits, spans, or assets).
	and equipment	
	Initiative mapping and	Development of a tool to estimate the risk reduction efficacy
	estimation of wildfire and PSPS	(for both wildfire and PSPS risk) and risk-spend efficiency of
	risk-reduction impact	various initiatives.
	Match drop simulations	Development and use of tools and processes to assess the
	showing the potential wildfire	impact of potential ignition and risk to communities (e.g., in
	consequence of ignitions that	terms of potential fatalities, structures burned, monetary

8	-

	occur along the electric lines	damages, area burned, impact on air quality and greenhouse
	and equipment	gas, or GHG, reduction goals, etc.).
B. Situational	Advanced weather monitoring	Purchase, installation, maintenance, and operation of weather
awareness and	and weather stations	stations. Collection, recording, and analysis of weather data
forecasting		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	Installation and maintenance of fault indicators.
	faults on electric lines and	
	equipment	
	Forecast of a fire risk index, fire	Index that uses a combination of weather parameters (such as
	potential index, or similar	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	Personnel position within utility service territory to monitor
	electric lines and equipment in	system conditions and weather on site. Field observations shall
	elevated fire risk conditions	inform operational decisions.
	Weather forecasting and	Development methodology for forecast of weather conditions
	estimating impacts on electric	relevant to utility operations, forecasting weather conditions
	lines and equipment	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	Capacitor maintenance and	Remediation, adjustments, or installations of new equipment
and system	replacement program	to improve or replace existing capacitor equipment.
hardening	Circuit breaker maintenance	Remediation, adjustments, or installations of new equipment
	and installation to de-energize	to improve or replace existing fast switching circuit breaker
	lines upon detecting a fault	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 (20ftlbs) 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	Demodiation and adjustments to installed several or insulated
		Remediation and adjustments to installed covered or insulated
	maintenance	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,	Remediation, adjustments, or installations of new equipment
	and replacement	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	Remediation, adjustments, or installations of new equipment
	and reinforcement, including	to improve or replace existing distribution poles (i.e., those
	with composite poles	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	Plan to support and actions taken to mitigate or reduce PSPS
	mitigate or reduce PSPS events	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	Installation of electric equipment that increases the ability of
	automation equipment	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	Remediation, adjustments, or installations of new equipment
	replacement of connectors,	to improve or replace existing connector equipment, such as
	including hotline clamps	hotline clamps.
	Mitigation of impact on	Actions taken to improve access to electricity for customers
	customers and other residents	and other residents during PSPS events, such as installation
	affected during PSPS event	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.

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	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 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).
LiC tra eq	LiDAR inspections of transmission 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).
	Other discretionary inspection of distribution 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.
C c a ii a	Other discretionary inspection of transmission electric lines and equipment, beyond inspections mandated by rules and regulations	Inspections of overhead electric distribution lines, equipment, and right-of-way that exceed or otherwise go beyond those mandated by rules and regulations, including GO 165, in terms of frequency, inspection checklist requirements or detail, analysis of and response to problems 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
F Vegetation	Additional efforts to manage	Plan and execution of strategy to mitigate negative impacts
management and	community and environmental	from utility vegetation management to local communities and
inspection	impacts	the environment such as coordination with communities to
inspection		alan and execute vegetation management work or promotion
		of fire resistant planting practices
		of me-resistant planting plactices
	Detailed inspections of	Careful visual inspections of vegetation around the right-of-
	vegetation around distribution	way, where individual trees are carefully examined, visually,
	electric lines and equipment	and the condition of each rated and recorded.
	Detailed inspections of	Careful visual inspections of vegetation around the right-of-
	vegetation around transmission	way, where individual trees are carefully examined, visually,
	electric lines and equipment	and the condition of each rated and recorded.
	Emergency response	Plan and execution of vegetation management activities, such
	vegetation management due to	as trimming or removal, executed based upon and in advance
	red flag warning or other	of forecast weather conditions that indicate high fire threat in
	urgent conditions	terms of ignition probability and wildfire consequence.
	Fuel management and	Plan and execution of fuel management activities that reduce
	reduction of "slash" from	the availability of fuel in proximity to potential sources of
	vegetation management	ignition, including both reduction or adjustment of live fuel (in
	activities	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	Inspections of right-of-way using LiDAR (Light Detection and
	around distribution electric	Ranging, a remote sensing method that uses light in the form
	lines and equipment	of a pulsed laser to measure variable distances).
	LiDAR inspections of vegetation	Inspections of right-of-way using LiDAR (Light Detection and
	around transmission electric	Ranging, a remote sensing method that uses light in the form
	lines and equipment	of a pulsed laser to measure variable distances).
	Other discretionary inspections	Inspections of rights-of-way and adjacent vegetation that may
	of vegetation around	be hazardous, which exceeds or otherwise go beyond those
	distribution electric lines and	mandated by rules and regulations, in terms of frequency.
	equipment	inspection checklist requirements or detail analysis of and
		response to problems identified, or other aspects of inspection
		or records kept.
	Other discretionary inspections	Inspections of rights-of-way and adjacent vegetation that may
	of vegetation around	he hazardous, which exceeds or otherwise go hevond those
	transmission electric lines and	mandated by rules and regulations in terms of frequency
	aquinment	incruated by rules and regulations, in terms of nequency,
	equipment	inspection checklist requirements or detail, analysis of and



		response to problems identified, or other aspects of inspection
		or records kept.
	Patrol inspections of vegetation	Visual inspections of vegetation along rights-of-way that is
	around distribution electric	designed to identify obvious hazards. Patrol inspections may
	lines and equipment	be carried out in the course of other company business.
	Patrol inspections of vegetation	Visual inspections of vegetation along rights-of-way that is
	around transmission electric	designed to identify obvious hazards. Patrol inspections may
	lines and equipment	be carried out in the course of other company business.
	Quality assurance / quality	Establishment and function of audit process to manage and
	control of vegetation	confirm work completed by employees or subcontractors,
	inspections	including packaging QA/QC information for input to decision-
		making and related integrated workforce management
		processes.
	Recruiting and training of	Programs to ensure that the utility is able to identify and hire
	vegetation management	qualified vegetation management personnel and to ensure
	personnel	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	Actions taken to remove or otherwise remediate trees that
	Removal and remediation of trees with strike potential to	Actions taken to remove or otherwise remediate trees that could potentially strike electrical equipment, if adverse events
	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
	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.
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection	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. Inspection of vegetation surrounding substations, performed
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection	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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection	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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping.
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection Substation vegetation	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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. Based on location and risk to substation equipment only,
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection Substation vegetation management	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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. Based on location and risk to substation equipment only, actions taken to reduce the ignition probability and wildfire
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection Substation vegetation management	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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. 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
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection Substation vegetation management	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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. 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.
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection Substation vegetation management Vegetation inventory system	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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. 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. Inputs, operation, and support for centralized inventory of
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection Substation vegetation management Vegetation inventory system	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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. 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. Inputs, operation, and support for centralized inventory of vegetation clearances updated based upon inspection results,
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection Substation vegetation management Vegetation inventory system	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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. 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. 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)
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection Substation vegetation management Vegetation inventory system	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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. 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. 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
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection Substation vegetation management Vegetation inventory system	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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. 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. 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.
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection Substation vegetation management Vegetation inventory system	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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. 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. 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. Actions taken to ensure that vegetation does not encroach
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection Substation vegetation management Vegetation inventory system Vegetation management to achieve clearances around 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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. 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. 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. 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 weestation equipment and performance of the set of
	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection Substation vegetation management Vegetation inventory system Vegetation management to achieve clearances around 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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. 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. 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. 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 limbr.
E Grid operations	Removal and remediation of trees with strike potential to electric lines and equipment Substation inspection Substation vegetation management Vegetation inventory system Vegetation management to achieve clearances around 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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. 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. 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. 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. Designing and executing protocols to deactivate automatic
F. Grid operations	Removal and remediation of trees with strike potential to electric lines and equipmentSubstation inspectionSubstation vegetation managementVegetation inventory systemVegetation management to achieve clearances around electric lines and equipmentAutomatic recloser operations	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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. 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. 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. 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. Designing and executing protocols to deactivate automatic reclosers based on local conditions for innition probability and
F. Grid operations and protocols	Removal and remediation of trees with strike potential to electric lines and equipmentSubstation inspectionSubstation vegetation managementVegetation inventory systemVegetation management to achieve clearances around electric lines and equipmentAutomatic recloser operations	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. Inspection of vegetation surrounding substations, performed by qualified persons and according to the frequency established by the utility, including record-keeping. 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. 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. 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. Designing and executing protocols to deactivate automatic reclosers based on local conditions for ignition probability and wildfire consequence

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	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 implementation; analysis and application to utility decision- making.	

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	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	Adequate and trained	Actions taken to identify, hire, retain, and train qualified
planning and	workforce for service	workforce to conduct service restoration in response to
preparedness	restoration	emergencies, including short-term contracting strategy and implementation.
	Community outreach, public	Actions to identify and contact key community stakeholders;
	awareness, and	increase public awareness of emergency planning and
	communications efforts	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	Resources dedicated to customer support during emergencies,
	emergencies	such as website pages and other digital resources, dedicated
		phone lines, etc.
	Disaster and emergency	Development of plan to deploy resources according to
	preparedness plan	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	Development of plans to prepare the utility to restore service
	service restoration	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	Tools and procedures to monitor effectiveness of strategy and
	wildfire events	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	Community engagement	Strategy and actions taken to identify and contact key
cooperation and		community stakeholders; increase public awareness and
community		support of utility wildfire mitigation activity; and design,
engagement		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	Strategy and actions taken to engage with agencies outside of
	sharing with agencies outside	California to exchange best practices both for utility wildfire
	CA	mitigation and for stakeholder cooperation to mitigate and
		respond to wildfires.
	Cooperation with suppression	Coordination with CAL FIRE, federal fire authorities, county fire
	agencies	authorities, and local fire authorities to support planning and
		operations, including support of aerial and ground firefighting

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		in real-time, including information-sharing, dispatch of
		resources, and dedicated staff.
	Forest service and fuel	Strategy and actions taken to engage with local, state, and
	reduction cooperation and joint	federal entities responsible for or participating in forest
	roadmap	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).