Utility Wildfire Mitigation Maturity Model

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1.1 Approach to Utility Wildfire Mitigation Maturity Assessment

The Utility Wildfire Mitigation Maturity Model is a method to assess utility wildfire risk reduction capabilities and examine the relative maturity of the wildfire mitigation programs. When leveraged with requirements to increase maturity over time, the maturity assessment can be used to drive continuous improvement in utility wildfire mitigation. Implementation of the maturity assessment will help to identify and share best practices amongst the utilities and to establish a continually improving suite of best practices and lessons learned to combat the growing risk of utility-caused wildfires.

This assessment evaluates maturity, the capacity to address wildfire risk displayed by a utility. The maturity assessment is not designed to assess performance or regulatory compliance, which should be conducted separately. The maturity assessment will be applied by the Wildfire Safety Division (WSD) to track each utility's maturity using the following process:

1. **In the 2020 WMP review, the WSD will assess maturity** by comparing the utility's practices to an absolute reference using self-reported data—subject to verification and audit—from the utility's maturity survey, wildfire mitigation plan, and other relevant data sources. On an annual basis, the WSD will require each utility to complete the maturity survey that asks utilities to report their current activities, capabilities and plans, a copy of which is outlined below.
2. **The WSD will score the utility's projected maturity** for the next 3 years, assuming full implementation of each of the elements of the utility's WMP. The WSD will evaluate each utility's maturity based on four data sources: its response to the survey, additional data requests, selected deep-dive audits into the utility's capability, and the utility's other filings, including their WMP.
3. **After WMP approvals, the WSD will annually re-evaluate each utility's maturity** to track progress against WMP-projected maturity. The WSD will require each utility to report their current activities, capabilities, and plans using the maturity survey, a copy of which is outlined below.
4. **Finally, every three years, the maturity model rubrics** are expected to be updated, in order to drive continued improvement over the longer term. The WSD will periodically adjust the scale and re-define the maturity scoring such that there is room for this utility to continuously improve. By way of example, a utility that improves on the scale from a 1 (meets minimum ~~rules and regulations~~expectations) to a 4 (improvement over current best practices) should continue to improve over time. In contrast, a utility that scores a 3 should not necessarily expect the same score in the future without additional improvements.

The maturity assessment scores each utility against a total of 52 capabilities, organized in 10 categories. Each capability is scored into one of five possible levels of maturity. Table 1 below summarizes the capabilities being assessed.

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

Table 1: Description of capabilities

Category	Capability	Capability description
A. Risk mapping and simulation	1. Climate scenario modeling and sensitivities	For planning purposes, the ability of the utility to reliably model various climate scenarios. The ability to understand how changing weather patterns impact wildfire and PSPS risk across their grid. Higher scores are achieved for incorporating a wider range of inputs and having more granularity.
	2. Ignition risk estimation	Having tools and capabilities to assess ignition risk across the utility's grid based on the combination of electric lines and equipment, vegetation, and weather/climate. Higher scores are achieved for having greater automation, with tools that take utilize a wider range of variables to more accurately estimate ignition risk.
	3. Estimation of wildfire consequences for communities	Having tools and capabilities to assess how communities would be affected, given an ignition. Higher scores are achieved for having more highly-automated tools that take into account more variables and more granular data to accurately estimate the consequence of wildfire.
	4. Estimation of wildfire and PSPS risk-reduction impact	The ability of the utility to estimate the consequence of various initiatives in reducing wildfire and PSPS risk to communities. Higher scores are achieved for being able to estimate risk reduction at a more granular level and for taking into account the specific existing lines and equipment, vegetation, weather/climate, and other factors specific to the location in which the initiative is being undertaken.
	5. Risk maps and simulation algorithms	Having established processes to update risk maps and wildfire simulation algorithms, based deviations of estimates from measured results. Higher scores are achieved by having more robust mechanisms for detecting deviations, and for more frequent updates.
B. Situational awareness and forecasting	6. Weather variables collected	The completeness of weather data variables collected. Higher scores are achieved by collecting a greater scope of reliable and relevant weather data and have more processes to validate the readings on each of these variables.
	7. Weather data resolution	The spatial and temporal resolution with which relevant weather data is collected, with higher scores achieved for collecting more data at a resolution that helps them understand the specific conditions at a finer resolution across the grid and in time.
	8. Weather forecasting ability	The ability of the utility to accurately predict weather across its grid. Higher scores are awarded for utilities that are able to forecast more accurately, at higher

Category	Capability	Capability description
		spatial and temporal resolution, and at a longer range.
	9. External sources used in weather forecasting	The external sources and validation processes the utility uses to obtain and validate its weather data. Higher scores are awarded for utilities that use external weather data to error check utility collected data.
	10. Wildfire detection processes and capabilities	The ability of utilities to detect ignitions and wildfire within their territory, particularly along the utility's lines and equipment. Higher scores are awarded for greater automated in its detection, and having more means of detection.
C. Grid design and system hardening	11. Approach to prioritizing initiatives across territory	The effectiveness of the utility's approach to prioritizing initiatives to the areas along their grid that would most benefit from wildfire risk reduction initiatives. Higher scores are awarded for utilities that can prioritize geographically at a higher granularity and take into account evolving impact on communities and surrounding environment.
	12. Grid design for minimizing ignition risk	The parameters of the utility's grid that minimize ignition risk. Higher scores are awarded for strategic grid design and localization (e.g., including solutions such as microgrids and minigrids, as well as geographically-targeted hardening initiatives and locating lines away from highest risk areas of landscape).
	13. Grid design for resiliency and minimizing PSPS	The level of redundancy and resilience in the utility's grid to avoid leaving customers without any electricity supply, should a line be de-energized, and to confine any PSPS to a limited number of customers. Higher scores are awarded for more redundant grid topologies, and for greater sectionalization.
	14. Risk-based grid hardening and cost efficiency	The degree to which the utility's grid is built using ignition prevention equipment. Higher scores are awarded to utilities that use more risk spend efficient ignition prevention equipment.
	15. Grid design and asset innovation	The program in place by the utility to evaluate and develop new design and hardening initiatives. Higher scores are awarded to utilities that have more robust processes for evaluating new technologies and evaluating their risk spend efficiency.
D. Asset management and inspections	16. Asset inventory and condition assessments	Having an accurate inventory database of utility lines and equipment by asset type across the grid, as well as the condition of each component. Higher scores are achieved by recording more wildfire-related attributes of each piece of equipment, with greater frequency.
	17. Asset inspection cycle	How the utility determines the cycle with which inspections of the utility's grid are conducted. Higher scores are achieved by understanding equipment failure

Category	Capability	Capability description
		probability, and timing inspections accordingly to maximize risk mitigation efficacy.
	18. Asset inspection effectiveness	The depth and detail to which inspections are performed and recorded. Higher scores are achieved by having greater ability to identify higher risk areas and assets and conducting more in-depth inspections to maximize risk mitigation efficacy.
	19. Asset maintenance and repair	The approach taken by the utility to maintain and repair equipment in higher risk areas. Higher scores are awarded to utilities that maintain equipment in better condition in areas with the highest wildfire risk.
	20. QA/QC for asset management	Having established processes for monitoring the quality of inspection and maintenance work across the grid. Higher scores are achieved for having robust processes, trainings, and leveraging technologies to monitor and validate work performed.
E. Vegetation management and inspection	21. Vegetation inventory and condition assessments	Having an accurate inventory database of vegetation along rights of way, and vegetation with strike potential, including the condition of each vegetation. Higher scores are achieved by more granular information and having a more up-to-date database.
	22. Vegetation inspection cycle	How the utility determines the cycle with which inspections of the vegetation are conducted. Higher scores are achieved by understanding vegetation growth, characteristics, and failure probability and timing inspections accordingly to maximize risk mitigation efficacy.
	23. Vegetation inspection effectiveness	The depth and detail to which inspections are performed and recorded. Higher scores are achieved by having greater ability to identify higher risk areas and vegetation and conducting more in-depth inspections to maximize risk mitigation efficacy.
	24. Vegetation grow-in mitigation	The utility's standards and actions for treating vegetation that has grow-in potential around lines and equipment. Higher scores are awarded for utilities that use ignition risk modeling and vegetation growth rates to determine appropriate vegetation clearances and trim cycles.
	25. Vegetation fall-in mitigation	The utility's processes for treating vegetation that has strike potential on its grid. Higher scores are awarded to utilities that treat vegetation based on a granular understanding of individual vegetation strike potential.
	26. QA/QC for vegetation management	Having established processes for monitoring the quality of inspection and treatment work across the grid. Higher scores are achieved for having robust processes, trainings, and leveraging technologies to monitor and

Category	Capability	Capability description
		validate work performed.
F. Grid operations and protocols	27. Protective equipment and device settings	The utilities procedures for adjusting the sensitivity of grid elements that can reduce wildfire risk. For example, this includes the utility's approach to adjusting reclosers by limiting or disabling reclosers in high fire threat districts. Higher scores are awarded for more automated processes.
	28. Incorporating ignition risk factors in grid control	The utility's process for determining when to operate electric lines and equipment above rated nameplate capacity. Higher scores are awarded for utilities that have clearly defined and explained protocols for operating equipment above nameplate capacity and incorporate understanding of incremental wildfire risk associated with operating conditions.
	29. PSPS operating model and consequence mitigation	The utility's ability to implement PSPS events including accurate predictions, customer communication, and mitigation activities. Higher scores are awarded to utilities that better predict, communicate, and mitigate consequences of PSPS.
	30. Protocols for PSPS initiation	The utility's approach to determining the thresholds for activating PSPS events. Highest scores are awarded to utilities that do not use PSPS; average scores are awarded to utilities that have well-defined PSPS protocols, and whose decisions are supported by risk assessing algorithms.
	31. Protocols for PSPS re-energization	The utility's approach to inspecting circuits after they have been de-energized and prior to a re-energization. Higher scores are awarded to utilities that have faster inspection processes and use technologies to complete these inspections cost-effectively.
	32. Ignition prevention and suppression	The utility personnel's ability to prevent and suppress ignitions caused by their activities. Higher scores are awarded for utilities that provide personnel with more robust training, tools, and explicit policies about what activities that they should be undertaking.
G. Data governance	33. Data collection and curation	The ability of the utility to track and retrieve a variety of situational, operational, and risk data to drive decisions. Higher scores are awarded for utilities that have the capabilities needed to handle large amounts of data, conduct sophisticated analytics, & share real time data.
	34. Data transparency and analytics	The utility's organization and openness toward sharing data listed in a centralized catalogue. Higher scores are awarded for utilities with a comprehensive catalogue of data, analyses, and algorithms and that can share data across multiple permissions levels.
	35. Near-miss tracking	The utility's approach to tracking events that had the

Category	Capability	Capability description
		potential to result in ignition. Higher scores are awarded to utilities that track near misses and accurately estimate their potential to cause ignition.
	36. Data sharing with research community	The level of involvement and support that utilities provide those in the research community. Higher scores are provided for utilities that participate in research that addresses utility-ignited wildfire.
H. Resource allocation methodology	37. Scenario analysis across different risk levels	The ability of the utility to understand and explain the incremental risk reduction potential that incremental funding would enable. Higher scores are provided to utilities that are able to show the incremental risk reduction potential at a more granular level.
	38. Presentation of relative risk spend efficiency for portfolio of initiatives	The utility's ability to estimate the degree of wildfire risk reduction achieved by specific wildfire risk management initiatives and weigh these reductions against the cost of those initiatives, across the utility's grid. Higher scores are provided for increased granularity by location and the frequency with which these estimates are updated.
	39. Process for determining risk spend efficiency of vegetation management initiatives	The utility's ability to estimate the degree of wildfire risk reduction achieved by specific vegetation management initiatives and weigh these reductions against the cost of those initiatives, across the utility's grid. Higher scores are provided for increased granularity by location and the frequency with which these estimates are updated.
	40. Process for determining risk spend efficiency of system hardening initiatives	The utility's ability to estimate the degree of wildfire risk reduction achieved by specific system hardening initiatives and weigh these reductions against the cost of those initiatives, across the utility's grid. Higher scores are provided for increased granularity by location and the frequency with which these estimates are updated.
	41. Portfolio-wide initiative allocation methodology	The utility's ability to efficiently and effectively decide which initiatives should be applied and to which part of its grid. Higher scores are provided for increased granularity and use of risk spend efficiency calculations.
	42. Portfolio-wide innovation in new wildfire initiatives	The program in place by the utility to evaluate and develop new initiatives across the entire portfolio, including inspection, grid operations, simulation, etc. Higher scores are awarded to utilities that have more robust processes for evaluating new technologies and evaluating their risk spend efficiency.
I. Emergency planning and preparedness	43. Wildfire plan integrated with overall disaster / emergency plan	The extent of coordination and synchronization between the utility's wildfire mitigation plan and emergency operations plans of the State and local jurisdictions. Higher scores are awarded for additional stakeholder engagement and for the use of simulations to stress-test plans.

Category	Capability	Capability description
	44. Plan to restore service after wildfire related outage	The extent and sophistication of utility's plans to restore electric service after a wildfire-related outage. Higher scores are awarded for a greater granularity at which plans are customized.
	45. Emergency community engagement during and immediately after wildfire	The utility's ability to clearly and effectively communicate information to affected communities. Higher scores are awarded for the utility's ability to reach vulnerable populations, the use of multiple channels, and the relevance and usefulness of the information communicated.
	46. Protocols in place to learn from wildfire events	The processes used by a utility to undertake after-action reviews following wildfire events. Higher scores are awarded for more extensive documentation, and the extent to which the lessons learned are used to update capital and operational plans.
	47. Processes for continuous improvement after wildfire and PSPS events	The utility's application of continuous improvement processes, and incorporation of performance benchmarks and stakeholder feedback, to update capital and operational plans. Higher scores are awarded for more formalized review procedures, more extensive benchmarking, and more sophisticated stakeholder engagement.
J. Stakeholder cooperation and community engagement	48. Cooperation and best practice sharing with other utilities	The extent and sophistication of the utility's incorporation of lessons learned by peers, including those outside the State. Higher points are awarded for greater formalization of learning processes.
	49. Engagement with communities on utility wildfire mitigation initiatives	The extent and sophistication of the utility's engagement with the communities that it serves (and in which its assets are located), including key stakeholder groups. Higher scores are awarded for more successful engagement of landowners, other potential partners.
	50. Engagement with LEP and AFN populations	The extent of the utility's relationship with stakeholders representing Limited English Proficiency (LEP) and Access and Functional Needs (AFN) populations, and the utility's ability to reach these populations, both proactively and during emergencies. Higher scores are awarded for the ability of the utility to utilize these relationships to minimize the consequence of PSPS, and other wildfire mitigation measures on these populations.
	51. Collaboration with emergency response agencies	The extent and sophistication of the utility's engagement with suppression and other emergency planning agencies and stakeholder groups involved in wildfire response. Higher scores are awarded for broader engagement and deeper planning processes.
	52. Collaboration on	The extent and sophistication of the utility's

Category	Capability	Capability description
	wildfire mitigation planning with stakeholders	engagement with non-emergency planning agencies and stakeholder groups involved in wildfire risk reduction initiatives. Higher scores will be awarded for broader engagement, a more comprehensive planning processes (e.g., including environmental values as well as wildfire risk), and greater financial involvement in plan implementation.

The utility's maturity is then graded across each of these categories from a score of 0 at the low end to a score of 4 at the high end. Scores are generally awarded according to the following philosophy:

~~**0.** Below regulatory requirements or expected standards~~
0. Below expectations
1. Meets minimum ~~regulatory requirements or expected standards~~expectations
2. Beyond minimum ~~regulatory requirements~~expectations but not consistent with best practice
3. Consistent with best practice
4. Improvement over best practice

Additional descriptions that may represent typical scores are provided in the table below.

Table 2: Illustrative descriptions that may represent typical maturity levels

		Maturity				
		0	**1**	**2**	**3**	**4**
	Scoring philosophy	**~~Below regulatory requirements~~** ~~or expected standards~~**Below expectations**	**Meets minimum ~~regulatory requirements~~** ~~or expected standards (e.g., GO-95, FERC)~~**expectations**	**Beyond minimum ~~regulatory requirements~~expectations** but not consistent with best practices	**Consistent with best practice**	**Improvement over best practice**
	Typical characteristics	• Fails to establish consistent procedures or policies that meet minimum ~~regulations~~expectations	• Basic collaboration with other agencies	• Utility coordinates closely with other agencies	• Utility leads efforts with other agencies in all areas where appropriate	• Utility leads efforts with other agencies and develops new protocols to reduce wildfire risk
	Typical data validation and granularity	• Sporadic or inconsistent data validation • Generally, little granularity across grid	• Ad-hoc data validation by experts • Regional granularity across grid	• Systematic data validation using historical measurements and expert input • Circuit-level granularity	• Systematic validation using historical measurements and expert input • Span-level granularity	• Systematic validation using historical measurements and expert input • Real-time machine learning • Asset-level granularity

	**Level of systematization and automation**	• Little systematization • No automation	• Basic systems in place for workflow management • Some automated processes to support decision makers	• Detailed and tested workflow systems • Semi-automated processes exist to support decision makers in key decisions	• Detailed and tested workflow systems • Automated and vetted processes exist for to support decision makers in nearly all circumstances	• Detailed and tested workflow systems • Automated processes competently handle most decisions and actions without manual intervention
	**Typical approach to learning and updates**	• Insufficient structures to incorporate learnings in updated processes	• Basic systems and methods in place to manually incorporate learnings into new processes • Subject matter experts review decision-making and manually incorporate learnings into new decision-making	• Detailed systems and methods in place to manually incorporate learnings into processes • Subject matter experts review decision-making and incorporate learnings into future decisions using defined processes	• Well-defined systems and methods in place to frequently incorporate most learnings into processes • Subject matter experts review decision-making and incorporate learnings into automated processes to support decision makers	• Tested systems and methods to automatically and continuously update processes and tools in real time • Subject matter experts review decision-making and incorporate learnings into fully automated decision-making processes and algorithms

Category A: Risk assessment and mapping

Illustrative descriptions that may represent typical grades—not comprehensive

	Maturity level				
Capability	**0**	**1**	**2**	**3**	**4**
1. Climate scenario modeling	No clear ability to understand incremental risk under various weather scenarios	Ability to reliably determine wildfire risk i) across each region of the grid ii) based on weather and estimates of how the weather affects failure modes and fire propagation	i) Partially automated tools and process to reliably categorize weather scenarios by level of risk ii) across each circuit of the grid, iii) based on existing hardware, and weather and estimates of how the weather affects failure modes and fire propagation, and iv) independently assessed by experts	i) Mostly automated tools and process to reliably estimate risk of various weather scenarios ii) for each span of the grid, iii) based on level of vegetation, weather as measured at circuit level, existing hardware, and estimates of how the weather affects failure modes and fire propagation, and iv) independently assessed by experts and supported by historical data of incidents and near misses	i) Fully automated tools and processes to accurately and quantitatively estimate incremental risk of foreseeable weather scenarios ii) for each asset of the grid, iii) based on level of vegetation, weather measured at the circuit level, and existing hardware, and estimates of how the weather affects failure modes and fire propagation, iv) independently assessed by experts and verified by historical evidence of near misses and incidents, and v) updated based on real-time learning during weather event
2. Ignition risk estimation	No reliable tool or process to estimate risk across sections of the	i) Partially automated tools and processes to reliably categorize	i) Mostly automated tools and processes to reliably categorize ii)	i) Fully automated tools and processes to ii) quantitatively and	i) Fully automated tools and processes to ii) accurately and

Capability	Maturity level 0	1	2	3	4
	grid based on characteristics and condition of lines and equipment and vegetation	regions of the grid as ii) high or low risk based on iii) at least characteristics and condition of lines and equipment and surrounding vegetation, with iv) subjective assessment of areas by experts	individual circuits into iii) high or low risk based on iv) at least characteristics and condition of lines and equipment, surrounding vegetation, and area weather patterns, with v) assessment risk confirmed based on historical data	accurately assess the risk of ignition at iii) span level across entire grid based on characteristics including surrounding vegetation, weather patterns at individual span, and other factors, with iv) assessment risk confirmed based on historical data	quantitatively assess the risk of ignition iii) across entire grid iv) at asset level resolution within individual circuits, v) based on characteristics including surrounding vegetation, weather patterns at individual circuit, flying debris probability, and other factors, vi) with probability estimated based on understanding of specific failure modes and top contributors to those failure modes with vii) assessment risk confirmed based on historical data
 **3. Estimation of wildfire consequences on communities**	No translation of ignition risk estimates to potential consequences for communities	i) Partially automated tools to reliably categorize ignition events as high or low risk to communities ii) as a function of at least one of structures burned, potential fatalities, area burned, or damages for each region of the grid,	i) Mostly automated tools to reliably categorize ignition events in 5 or more levels of risk to communities ii) as a function of at least potential fatalities, and one of structures burned or area burned or damages, for each circuit	i) Fully automated tools and processes to accurately and quantitatively estimate consequence ii) as a function of at least potential fatalities and structures burned or area burned or damages, iii) the damage to communities for ignition	i) Fully automated tools and processes to ii) accurately and quantitatively estimate consequence from ignition iii) as a function of at least potential fatalities, structures burned or monetary damages, area burned, and consequence air

Capability	Maturity level 0	1	2	3	4
		iii) independently assessed by experts	of the grid, iii) based on level and conditions of vegetation and weather, and iv) independently assessed by experts	events at each individual span across the grid iv) across all seasons of the year, v) based on vegetation species and weather, vi) independently assessed by experts & confirmed by historical data	quality and GHG reduction goals, across entire grid iv) at asset level resolution within individual circuits, v) based on characteristics including surrounding vegetation species and up-to-date moisture content, weather patterns at individual circuit, across all seasons, vi) independently assessed by experts & confirmed updated based on real time learning
 **4. Estimation of wildfire and PSPS risk-reduction impact of initiatives**	No clear estimation of risk reduction potential across most initiatives	Mostly manual approach to i) accurately estimate risk reduction potential of initiatives averaged across the territory where such initiatives could be installed for each region, ii) with evidence and logical reasoning to support estimates	i) Automated tools and process to support subject matter experts in ii) accurately categorizing initiatives by risk reduction potential iii) for each circuit of the grid, iv) based on existing hardware, and v) independently assessed by third-party experts	i) Mostly automated tools and process to ii) reliably and accurately estimate risk reduction potential of initiatives iii) for each span of the grid, iv) based on level and condition of vegetation, weather, and existing hardware type and condition including operating history, and v) independently assessed by third-party experts	i) Fully automated tools and processes to ii) accurately and quantitatively estimate risk reduction potential of initiatives iii) for each asset on the grid, iv) based on level and condition of vegetation, weather, and existing hardware, v) and considering the combination of initiatives already

Capability	Maturity level				
	0	1	2	3	4
					deployed, and vi) independently assessed by experts and verified by historical evidence
 **5. Risk maps and simulation algorithms**	No defined process for updating risk mapping algorithms	Risk mapping algorithms i) updated at least bi-annually based on ii) manually detected deviations of risk model to actual ignitions and wildfire propagation	i) Partially automated tools and process to reliably determine whether risk map and simulations should be updated ii) based on semi-automated detection of deviations of risk model from iii) actual ignition and propagation data, and iv) independently assessed by experts	i) Mostly automated tools and process to reliably determine whether risk map and simulations should be updated ii) based on semi-automated detection of deviations of risk model from iii) near miss and actual ignition and propagation data, and iv) independently assessed by experts and historical data	i) Fully automated tools and process to accurately and quantitatively update risk map and simulations substantially continuously in real-time ii) based on automated detection of deviations of risk model using iii) both near miss and actual ignition and propagation data, iv) including data derived from other utilities or other sources, and v) independently assessed by experts and historical data

Category B: Situational awareness and forecasting

Illustrative descriptions that may represent typical grades—not comprehensive

Capability	Maturity level 0	1	2	3	4
6. Weather variables collected	Weather data being collected insufficient to properly understand risks along grid	Wind, temperature, and relative humidity being accurately measured along grid	i) Range of accurate weather variables collected including at least wind, temperature, and relative humidity, that ii) affect risk of ignition and propagation from utility assets; iii) manual field calibration measurements taken to validate measurement hardware	i) Range of accurate weather variables collected including at least wind, temperature, and relative humidity, that ii) impact risk of ignition from utility assets and propagation; iii) manual field calibration measurements taken to validate measurement hardware; iv) accurate predictions made of the status of elements that cannot reliably be measured in real time (e.g., fuel moisture content); v) further data collected to measure physical impact of weather on grid (e.g., sway in lines, sway in vegetation, etc.)	i) Range of accurate weather variables collected, including at least wind, temperature, and relative humidity, that ii) impact risk of ignition from utility assets and propagation; iii) automatic field calibration measurements taken to validate measurement hardware; iv) accurate predictions made of the status of elements that cannot reliably be measured in real time (e.g., fuel moisture content), v) further data collected to measure physical impact of weather on grid (e.g., sway in lines, sway in vegetation, etc.), vi) with each collected from multiple sources
7. Weather data resolution	Weather data collected does not accurately	Gather weather data with i) sufficient	Gather weather data with i) sufficient	Gather weather data with i) sufficient	Gather weather data with i) sufficient

	Maturity level				
Capability	**0**	**1**	**2**	**3**	**4**
	reflect local weather conditions across grid infrastructure	granularity to reliably measure weather conditions ii) independently for each area of the grid iii) at least on an hourly basis	granularity to reliably measure weather conditions using a partially automated process ii) independently for each circuit mile of the grid iii) at least 4 times per hour	granularity to reliably measure weather conditions using a mostly automated process ii) independently and sufficient to reliably estimate conditions at each span of the grid iii) at least 6 times per hour; iv) along the entire grid and in all areas needed to predict weather on the grid	granularity to reliably measure weather conditions using a completely automated process ii) independently and sufficient to estimate conditions around each span and each asset that may cause wildfire iii) at least 60 times per hour; iv) along the entire grid and in all areas needed to predict weather on the grid; v) including wind estimations at various atmospheric altitudes relevant to risk of wildfire ignition and consequence
 **8. Weather forecasting ability**	No reliable independent weather forecasting ability	Weather forecasting ability sufficiently accurate to fulfill PSPS requirements at circuit level	Utility i) uses a combination of accurate weather stations and ii) external weather data to make partially automated and accurate forecasts iii) at least 1 week in advance iv) at circuit level; v) which are error-checked against historical weather patterns	Utility i) uses a combination of accurate weather stations and ii) external weather data to make mostly automated and accurate forecasts iii) at least 1 week in advance iv) at individual span level; v) which are error-checked against historical weather	Utility i) uses a combination of accurate weather stations and ii) external weather data to make mostly automated and accurate forecasts iii) at least 2 weeks in advance iv) at individual span level and around each asset with potential to cause ignition; v) which are

Capability	Maturity level 0	1	2	3	4
				patterns and subject matter expert input	error checked against historical weather patterns and subject matter expert input; and vi) adjusted in real-time based on a learning algorithm and updated weather inputs
9. External sources used in weather forecasting	Utility does not use external weather data	Utility i) uses external data ii) where direct measurements from the utility's own weather stations are not available	Utility i) uses a combination of accurate weather stations and ii) external weather data to make decisions, and iii) has reliable, defined, and mostly manual processes for error checking weather stations with external data sources	Utility i) uses a combination of accurate weather stations and ii) external weather data to iii) automatically produce a combined weather map, and iv) has reliable, defined, and mostly automated processes for combining and error checking weather stations with external data sources, v) and electing to use the data set that, as a whole or in composite is most accurate	Utility i) uses a combination of accurate weather stations and ii) external weather data to iii) automatically produce a combined weather map, and iv) has reliable, defined, and completely automated processes for combining and error checking weather stations with external data sources into a single visual and configurable live map, v) and where the utility builds new weather stations or verifies the accuracy of existing stations and calibrates stations where possible based on these error checking processes

Capability	Maturity level				
	0	1	2	3	4
10. Wildfire detection processes and capabilities	No reliable equipment or procedures for detecting ignitions along grid	i) Well-defined procedures and equipment for detecting ignitions along grid, including ii) remote detection equipment, including cameras	i) Well-defined procedures and equipment for detecting ignitions along grid, including ii) remote detection equipment, including cameras iii) augmented by ignition detection algorithms or software, and iv) including a procedure for notifying suppression forces	i) Well-defined procedures and equipment for detecting ignitions along grid, including ii) remote detection equipment, including cameras that are iii) augmented with automated ignition detection algorithms or software, in which iv) satellite monitoring of utility territory to detect utility ignitions automatically, in which v) detection is reported to key stakeholders including suppression forces vi) automatically, accurately, and in real time	i) Well-defined procedures and equipment for detecting ignitions along grid, including ii) remote detection equipment, including cameras that are iii) fully operated using automated ignition detection algorithms or software, and iv) satellite monitoring of utility territory to detect utility ignitions automatically, in which v) detection is reported to key stakeholders including suppression forces automatically, and vi) propagation paths are tracked and reported to suppression forces accurately and in real time

Category C: Grid design and system hardening

Illustrative descriptions that may represent typical grades—not comprehensive

Capability	Maturity level 0	1	2	3	4
11. Approach to prioritizing initiatives across territory	Plan does not clearly prioritize initiatives geographically to focus on highest risk areas	Plan prioritizes wildfire risk reduction initiatives to within only HFTD areas	Plan prioritizes wildfire risk reduction initiatives at the circuit level based on local geography and climate/weather conditions within HFTD areas	Plan prioritizes wildfire risk reduction initiatives at the span level based on i) risk modeling driven by local geography and climate/weather conditions, fuel loads and moisture content and topography ii) detailed wildfire and PSPS risk simulations across individual circuits	Plan prioritizes wildfire risk reduction initiatives at the asset level based on i) risk modeling driven by local geography and climate/weather conditions, fuel loads and moisture content and topography ii) risk estimates across individual circuits, including estimates of actual consequence, and iii) taking power delivery uptime into account (e.g. reliability, PSPS, etc.)
12. Grid design for minimizing ignition risk	Grid topology does not meet minimal design standards in areas with high wildfire risk	Grid topology meets minimal design standards in areas with high wildfire risk, and routing of new portions of grid takes wildfire risk into account	Grid topology i) demonstrates an understanding of the drivers of utility ignition risk, and ii) is designed in a way to substantially address it, exceeding design requirements, with routing of new portions of grid taking wildfire risk into account	Grid topology designed in a manner that incorporates the latest principles of asset management, utilizes new technologies, and reflects an aggressive commitment to minimizing utility ignition by providing the utility control over its assets	Grid topology sets planned using wildfire risk as a key driver for minimizing ignition risk through its use of innovative technologies and asset management strategies, and routing of new portions of grid takes wildfire risk into account, including by

Capability	Maturity level 0	1	2	3	4
				during periods of high fire risk, with routing of new portions of grid taking wildfire risk into account	providing microgrids or islanding in situations where traditional grid infrastructure is impracticable and at high wildfire risk
13. Grid design for resiliency and minimizing PSPS	Grid design and architecture has many single points of failure	Grid architecture i) includes n-1 redundancy for transmission circuits subject to PSPS ii) and switches in HFTD areas to individually isolate circuits	Grid architecture i) includes n-1 redundancy for transmission circuits subject to PSPS and n-1 redundancy for distribution subject to PSPS covering at least 50% of customers in HFTD ii) and switches in HFTD areas to isolate individual circuits such that no more than 2000 customers sit within one switch iii) with egress points used as an input for grid topology design	Grid architecture i) includes n-1 redundancy for transmission circuits subject to PSPS and n-1 redundancy for distribution subject to PSPS covering at least 70% of customers in HFTD ii) and switches in HFTD areas to isolate individual circuits such that no more than 1000 customers sit within one switch iii) with egress points available and mapped for each customer, with potential traffic mapped based on traffic simulation and taken into consideration for grid topology design	Grid architecture i) includes n-1 redundancy for transmission circuits subject to PSPS and n-1 redundancy for distribution subject to PSPS covering at least 85% of customers in HFTD ii) and switches in HFTD areas to isolate individual circuits such that no more than 200 customers sit on one switch iii) with egress points available and mapped for each customer, with potential traffic simulated and taken into consideration for grid topology design, and iv) microgrids or other means to reduce consequence for customers at frequent risk of PSPS

Capability	Maturity level 0	1	2	3	4
14. Risk-based grid hardening and cost efficiency	Utility has no clear understanding of the relative risk spend efficiency of hardening initiatives	Utility has i) accurate relative understanding of the ii) cost, and iii) feasibility of producing a iv) reliable risk spend efficiency estimate of v) commonly-deployed and commercially available grid hardening initiatives vi) in each area of the utility's grid	Utility has i) accurate relative understanding of the ii) cost, and iii) feasibility of producing a iv) reliable risk spend efficiency estimate of v) commonly-deployed and commercially available grid hardening initiatives vi) for each **circuit** of the utility's grid vii) updated on an annual basis	Utility has i) accurate quantitative understanding of the ii) cost, including sensitivities, and iii) feasibility of producing a iv) reliable risk spend efficiency estimate of v) all commercially available grid hardening initiatives vi) for each **span** along the utility's grid vii) updated on an annual basis	Utility has i) accurate quantitative understanding of the ii) cost, including sensitivities, and iii) feasibility of producing a iv) reliable risk spend efficiency estimate of v) all commercially available grid hardening initiatives, vi) and those initiatives that are lab-tested, vii) for each **asset** along the utility's grid viii) updated on an annual basis, ix) including risk reduction effect from the combination of various initiatives to reduce risk to communities
15. Grid design and asset innovation	No established program for evaluating the wildfire risk and risk spend efficiency of new hardening initiatives	New initiatives developed and evaluated based on i) installation of hardening initiatives into grid and ii) measuring direct reduction in ignition events	New initiatives developed and evaluated based on i) installation of hardening initiatives into grid and ii) measuring direct reduction in ignition events and iii) measuring reduction impact on near-miss metrics; iv) including an	New initiatives i) developed and independently evaluated using lab facilities by a trained team of grid innovation specialists, followed by ii) field testing based on installation into grid and iii) measuring direct reduction in ignition	New initiatives i) developed and independently evaluated using lab facilities by a trained team of grid innovation specialists, ii) field testing done by installation into grid and iii) measuring direct reduction in ignition events and iv) measuring

	Maturity level				
Capability	**0**	**1**	**2**	**3**	**4**
			evaluation of the total cost of the initiative	events at a span level and iv) measuring reduction impact on near-miss metrics; v) including an evaluation of the total cost of the initiative	reduction impact on near-miss metrics v) independent auditing of performance in grid; vi) extensive data sharing with industry, academia, and other utilities utilizing the same initiatives to share results; vii) including an evaluation of the total cost of initiative

Category D: Asset management and inspections

Illustrative descriptions that may represent typical grades—not comprehensive

Capability	Maturity level 0	1	2	3	4
16. Asset inventory and condition assessments	Lack of inventory of all electric lines and equipment and their state of wear or disrepair across the service territory	Accurate i) inventory database that is updated within 90 days of equipment inventory or conditions being collected of ii) equipment that may contribute to wildfire risk, iii) including age, state of wear, and expected lifecycle	Accurate i) inventory database that is updated within 30 days of equipment inventory or conditions being collected of ii) equipment that may contribute to wildfire risk, iii) including age, state of wear, and expected lifecycle, iv) and records of all inspections and repairs conducted	Accurate i) at least monthly-updated inventory database that is updated within 7 days of equipment inventory or conditions being collected of ii) all components that may contribute to wildfire ignition, iii) including age, state of wear, operating history, expected lifecycle, and probability of failure, iv) and records of all inspections and repairs conducted, v) up to date work plans on expected future repairs and replacements, vi) wherein repairs are independently audited, vii) and a system and approach are in place to reliably detect incipient malfunctions likely to cause ignition	Accurate and i) substantially real-time inventory database that is updated within 1 day of equipment inventory or conditions being collected of ii) all components that may contribute to wildfire ignition, iii) including age, state of wear, operating history, expected lifecycle, and probability of failure, iv) and records of all inspections and repairs conducted, v) inputs from sensorized equipment that substantially continuously monitors the state of electric lines and equipment, vi) up to date work plans on expected future repairs and replacements, vii) wherein repairs and

Capability	Maturity level 0	1	2	3	4
					sensor outputs are independently audited, viii) and a system and approach are in place to reliably detect incipient malfunctions likely to cause ignition, including in real time and with the ability to de-activate electric lines and equipment exhibiting incipient failure
17. Asset inspection cycle	Inspections less frequent than regulations require	Detailed inspection and patrol inspection frequency consistent with minimum regulatory requirements	Detailed inspections and patrol inspections of electric lines and equipment scheduled based on: i) an up-to-date static map of equipment type and environment, ii) with more frequent inspections for highest risk equipment in areas with fire potential, and all equipment in HFTD areas	Detailed inspections and patrol inspections i) scheduled based on risk, and ii) demonstrated to be determined by accurate predictive modeling of equipment failure probability and risk of failure causing ignition; iii) where failure probability is assessed via analysis of early indicators and actual failures; additional inspection types (i.e., beyond routine patrols and detailed) implemented as needed	Detailed inspections and patrol inspections i) scheduled based on risk, with ii) each inspection type (e.g., ground-based, aerial, subsurface, etc.) iii) demonstrated to be determined independently by accurate predictive modeling of equipment failure probability and risk of failure causing ignition, iv) where failure probability is assessed via analysis of early indicators and actual failures, and v) continuous monitoring

Capability	Maturity level 0	1	2	3	4
					by sensors to monitor the condition of electric lines and equipment areas with fire risk
18. Asset inspection effectiveness	Patrol, detailed, enhanced, and other inspection procedures and checklists do not include all items required by statute and regulations	Patrol, detailed, enhanced, and other inspection procedures and checklists include all items required by statute and regulations	Procedures and checklists for patrol, detailed, enhanced, and other inspections each determined according to: i) wildfire risk estimated via accurate predictive modeling, ii) for each circuit of the service territory, iii) based on equipment type and age, iv) which includes inspections for electric lines and equipment responsible for wildfire ignitions and near misses	Procedures and checklists for patrol, detailed, enhanced, and other inspections i) determined according to wildfire risk estimated via accurate predictive modeling ii) for each span iii) based on equipment type, age, and condition iv) which includes inspections for electric lines and equipment responsible for wildfire ignitions and near misses, v) validated by independent experts, and vi) providing basic training and conducting spot inspections to identify vegetation-based risk drivers	Inspection procedures and checklists for patrol, detailed, enhanced, and other inspections determined i) according to wildfire risk estimated via accurate predictive modeling, and ii) adjusted dynamically and in real time based on number and severity of deficiencies found during inspection iii) for each asset iv) based on equipment type, age, condition, and operating history v) which includes inspections for electric lines and equipment responsible for wildfire ignitions and near misses, and vi) based on predictive modeling based on equipment type, age, and condition and validated by independent experts,

Capability	Maturity level 0	1	2	3	4
					with dynamic adjustments in real time based on deficiencies found during inspection, and vi) asset inspection personnel being trained to conduct vegetation patrol inspections to identify vegetation-based risk drivers, including logging relevant risk drivers and in a vegetation management system
 **19. Asset maintenance and repair**	Electric lines and equipment not consistently maintained at required condition over multiple circuits	Electric lines and equipment maintained as required by applicable rules and regulations	Electric lines and equipment maintained as required by regulations, and additional maintenance done in circuits at highest wildfire risk based on detailed risk mapping	Electric lines and equipment maintained as required by regulations, and additional maintenance done in spans at highest wildfire risk based on detailed risk mapping, with service intervals of equipment being set based on wildfire risk in the relevant area, with maintenance and repair procedures taking into account wildfire risk	Electric lines and equipment maintained as required by regulations, and additional maintenance done on assets at highest wildfire risk based on detailed risk mapping, with service intervals of equipment being set based on wildfire risk in the relevant circuit, as well as real-time monitoring from sensors, with maintenance and repair procedures taking into account wildfire risk, performance history and past operating conditions

Capability	Maturity level 0	1	2	3	4
20. QA/QC for asset management	Lack of any one of i) established controls for ii) maintenance or inspection work, iii) post construction inspections of employee and contractor work, iv) follow-up and correction process and documentation, and v) auditing work completed including deep-dive spot inspections, whether conducted by employees or sub-contractors	Established and demonstrably functioning i) maintenance and inspection work, ii) post construction inspections of employee and contractor work, iii) follow-up and correction process and documentation, and audit process to manage and confirm work completed by employees or subcontractors, and iv) QA/QC information is used periodically to identify deficiencies in quality of work and inspections	Established and demonstrably functioning i) maintenance and inspection work, ii) post construction inspections of employee and contractor work, iii) follow-up and correction process and documentation, and audit process to manage and confirm work completed by subcontractors, iv) where subcontractors follow same processes and standards as utility's own employees, and v) QA/QC information is regularly used to identify systematic deficiencies in quality of work and inspections	Established and demonstrably functioning i) maintenance and inspection work, ii) post construction inspections of employee and contractor work, iii) follow-up and correction process and documentation, and audit process to manage and confirm work completed by subcontractors, and where subcontractors follow same processes and standards as utility's own employees iv) where contractor activity is subject to semi-automated audits (e.g., using photographic evidence, LiDAR scans, etc.), and v) a defined procedure is in place to use QA/QC information to identify systematic deficiencies in quality of work and inspections, and recommend training based on weaknesses	Established and demonstrably functioning i) maintenance and inspection work, ii) post construction inspections of employee and contractor work, iii) follow-up and correction process and documentation, and audit process to manage and confirm work completed by employees and subcontractors, iv) where subcontractors follow same processes and standards as utility's own employees, v) use integrated workforce management processes and tools vi) where contractor activity is subject to automated audits (e.g., using photographic evidence, LiDAR scans, etc.), and vii) real-time QA/QC information is used to identify systematic deficiencies, grade individuals, and recommend specific pre-made and tested training based on weaknesses

Category E: Vegetation management and inspections

Illustrative descriptions that may represent typical grades—not comprehensive

Capability	Maturity level 0	1	2	3	4
21. Vegetation inventory and condition assessments	Lack of vegetation inventory sufficient to determine vegetation clearances across grid at time of last inspection	i) Centralized and accurate ii) inventory database of vegetation clearances that is updated within 90 days of vegetation inventory or conditions being collected ii) across each region based on most recent inspection	i) Centralized and accurate inventory database of vegetation clearances that is updated within 30 days of vegetation inventory or conditions being collected ii) across each circuit based on most recent inspection, including iii) inventory of predominant vegetation species at each circuit, and iv) individual high-risk trees (e.g., those within striking distance) across grid	i) Centralized and accurate inventory of vegetation clearances that is updated within 7 days of vegetation inventory or conditions being collected ii) across each span based on most recent inspection, iii) inventory of individual vegetation species around each span, and iv) including expected growth rates and v) individual high-risk trees (e.g., those within striking distance) across grid vi) wherein inspections are independently audited, vii) and including capturing tree health and other vegetation risk factors	i) Accurate centralized inventory database of ii) real-time vegetation clearances that is updated within 1 day of vegetation inventory or conditions being collected ii) across each asset based on most recent inspection, with iii) inventory of vegetation types and species around each asset, iv) individual high-risk trees (e.g., those with strike potential) across entire grid, and v) up-to-date tree health and moisture content at the time of last inspection to determine risk of ignition and propagation; vi) wherein inspections are independently audited vi) and including capturing tree health and other vegetation risk

Capability	Maturity level				
	0	1	2	3	4
					factors
 **22. Vegetation inspection cycle**	Inspections less frequent than regulations require	All inspection frequency consistent with minimum regulatory requirements	All inspections scheduled based on i) a static vegetation map of predominant vegetation species and environments across the utility territory, with ii) more frequent inspections for areas with fastest growing vegetation based on typical growth rates	All inspections i) scheduled based on risk, ii) demonstrated to be determined by predictive modeling of vegetation growth iii) assessed via vegetation species and iv) growing conditions (e.g., precipitation, temperature, etc.), v) and considering tree health and other vegetation risk factors for more frequent inspections in less healthy areas	All inspections i) scheduled based on risk, with ii) each inspection type (e.g., ground-based, aerial, subsurface, etc.) iii) demonstrated to be determined independently by predictive modeling of vegetation growth iv) assessed via vegetation species, growing conditions (e.g., precipitation, temperature, etc.), and failure characteristics, v) continuous sampling of sensor data, vi) and considering tree health and other vegetation risk factors for more frequent inspections in less healthy areas

	23. Vegetation inspection effectiveness	Patrol, detailed, enhanced, and other inspection procedures and checklists do not include all items required by statute and regulations	Patrol, detailed, enhanced, and other inspection procedures and checklists include all items required by statute and regulations	Procedures and checklists for patrol, detailed, enhanced, and other inspections each determined according to: i) wildfire risk estimated via accurate predictive modeling, ii) for each circuit of the service territory, iii) based on vegetation density and equipment type and age, iv) which includes inspections for electric lines and equipment responsible for wildfire ignitions and near misses	Procedures and checklists for patrol, detailed, enhanced, and other inspections i) determined according to wildfire risk estimated via accurate predictive modeling ii) for each span iii) based on vegetation and equipment type, age, and condition iv) which includes inspections for electric lines and equipment responsible for wildfire ignitions and near misses, and v) validated by independent experts; vi) vegetation inspection personnel being trained to conduct simple equipment patrol inspections and logging faults into the utility's asset management tool	Inspection procedures and checklists for patrol, detailed, enhanced, and other inspections determined i) according to wildfire risk estimated via accurate predictive modeling, and ii) adjusted dynamically and in real time based on number and severity of deficiencies found during inspection iii) for each asset iv) based on vegetation species, condition, environment and equipment type, age, condition, and operating history v) which includes inspections for electric lines and equipment responsible for wildfire ignitions and near misses, and vi) based on predictive modeling based on vegetation and equipment type, age, and condition and validated by independent experts, with dynamic adjustments in real time

Capability	Maturity level 0	1	2	3	4
					based on deficiencies found during inspection; vii) vegetation inspection personnel being trained to conduct equipment patrol inspections, particularly in areas of highest risk to identify and prioritize faults for the utility's asset management tool
24. Vegetation grow-in mitigation	Utility often fails to maintain minimum statutory and regulatory clearances around lines and equipment. Utility does not remove vegetation waste along right of ways.	Utility maintains vegetation around lines and equipment according to minimum statutory and regulatory clearances. Utility i) removes vegetation waste along right of ways ii) within 1 week of cutting vegetation across entire grid	Utility meets or exceeds minimum statutory and regulatory clearances during all seasons around electric lines and equipment in the HFTD at circuit level. Utility i) removes vegetation waste along right of ways ii) within 3 days of cutting vegetation across entire grid, and iii) works with landowners to ensure wood removed from potential ignition areas	Utility meets or exceeds minimum statutory and regulatory clearances where relevant based on input from ignition risk modeling during all seasons around electric lines and equipment in the HFTD, with clearances also determined by species growth rates and species limb failure estimates at the span level, and engages with communities on clearances protocols. Utility i) removes vegetation waste along	Utility meets or exceeds minimum statutory and regulatory clearances, with clearances being determined based on species growth rates, species limb failure rates cross-referenced with local climatological conditions, and an accurate ignition and propagation risk modeling, and works with community organizations to cooperatively set local clearances and protocols. Utility i) removes vegetation waste along right of ways on ii) same

Capability	Maturity level 0	1	2	3	4
				right of ways ii) on same day as cutting vegetation	day as cutting vegetation; iii) utility collaborates with local landowners to provide a use for cutting vegetation across entire grid; iv) utility works with partners to identify new cost-effective uses for vegetation waste and v) takes into consideration environmental consequences and emissions of vegetation waste
 **25. Vegetation fall-in mitigation**	Utility does not remove vegetation outside of right of way. Utility does not remove vegetation waste along right of ways.	Utility i) removes some vegetation outside of right of ways but ii) does not have a specific process in place to systematically identify trees likely to pose a risk Utility iii) removes vegetation waste outside right of ways ii) within 1 week of cutting vegetation across entire grid	Utility i) systematically removes vegetation outside of right of ways ii) based on the height of trees with potential to make contact with electric lines and equipment and iii) informs communities about vegetation removal. Utility iv) removes vegetation waste outside of right of ways v) within 3 days of cutting vegetation across entire grid, and vi) works	Utility i) systematically removes vegetation outside of right of ways ii) based on the probability and consequence for electric lines and equipment iii) based on risk modeling and iv) engages with communities on vegetation removal. Utility v) removes vegetation waste outside of right of ways vi) on same day as cutting vegetation	Utility i) conducts regular and ii) accurate systematic inspections for individual trees outside the right of way to identify high risk trees and considers iii) environmental or climatological conditions contributing to increased risk and removes this vegetation, the with cooperation from community. Utility iv) removes vegetation waste along right of ways

	Maturity level				
Capability	**0**	**1**	**2**	**3**	**4**
			with landowners to ensure wood removed from potential ignition areas.		on ii) same day as cutting vegetation; v) utility collaborates with local landowners to provide a use for cutting vegetation across entire grid; vi) utility works with partners to identify new cost-effective uses for vegetation waste and vi) takes into consideration environmental consequences and emissions of vegetation waste
	**26. QA/QC for vegetation management**	Lack of any one of i) established controls for ii) vegetation management or vegetation inspection work, iii) post vegetation management inspections of employee and contractor work, iv) follow-up and correction process and documentation, and v) auditing work completed including deep-dive spot inspections, whether	Established and demonstrably functioning i) vegetation management and inspection work, ii) post vegetation management inspections of employee and contractor work, iii) follow-up and correction process and documentation, and audit process to manage and confirm work completed by employees or subcontractors, and	Established and demonstrably functioning i) vegetation management and inspection work, ii) post vegetation management inspections of employee and contractor work, iii) follow-up and correction process and documentation, and audit process to manage and confirm work completed by subcontractors, iv)	Established and demonstrably functioning i) vegetation management and inspection work, ii) post vegetation management inspections of employee and contractor work, iii) follow-up and correction process and documentation, and audit process to manage and confirm work completed by subcontractors, and	Established and demonstrably functioning i) vegetation management and inspection work, ii) post vegetation management inspections of employee and contractor work, iii) follow-up and correction process and documentation, and audit process to manage and confirm work completed by employees and subcontractors, iv)

	Maturity level				
Capability	**0**	**1**	**2**	**3**	**4**
	conducted by employees or sub-contractors	iv) QA/QC information is used periodically to identify deficiencies in quality of work and inspections	where subcontractors follow same processes and standards as utility's own employees, and v) QA/QC information is regularly used to identify systematic deficiencies in quality of work and inspections	where subcontractors follow same processes and standards as utility's own employees iv) where contractor activity is subject to semi-automated audits (e.g., using photographic evidence and analytics, , LiDAR scans, etc.), and v) a defined procedure is in place to use QA/QC information to identify systematic deficiencies in quality of work and inspections, and recommend training based on weaknesses	where subcontractors follow same processes and standards as utility's own employees, v) use integrated workforce management processes and tools vi) where contractor activity is subject to automated audits (e.g., using photographic evidence and analytics, LiDAR scans, satellite and aerial imagery, etc.), and vii) real-time QA/QC information is used to identify systematic deficiencies, grade individuals, and recommend specific pre-made and tested training based on weaknesses

Category F: Grid operations and protocols

Illustrative descriptions that may represent typical grades—not comprehensive

Capability	Maturity level 0	1	2	3	4
27. Protective equipment and device settings	Utility does not make changes to adjustable equipment in response to high wildfire threat conditions	Utility i) increases sensitivity of risk reduction elements ii) during high threat weather conditions	Utility i) increases sensitivity of risk reduction elements ii) during high threat weather conditions and iii) monitors near-misses in a iv) partially automated process to set sensitivity of grid elements	Utility i) increases sensitivity of risk reduction elements ii) during high threat weather conditions based on risk mapping and iii) monitors near-misses in a iv) partially automated process to set sensitivity of grid elements and via v) mostly predetermined protocol driven by fire risk conditions	Utility i) automatically increases sensitivity of risk reduction elements ii) during high threat weather conditions based on risk mapping and iii) monitors near-misses in a iv) fully automated process to set sensitivity of grid elements via v) predetermined protocol driven by fire risk conditions
28. Incorporating risk factors in grid control	Utility has no clearly defined and explained process for incorporating wildfire risk when determining electric control limits of the grid beyond equipment nameplate capacities (e.g., exceeding rated current or voltage design) or does not track detailed electric operational history when	Utility has i) clearly defined and explained process for incorporating wildfire risk when determining electric control limits of the grid beyond equipment nameplate capacities (e.g., exceeding rated current or voltage design) and ii) has systems in place to automatically track and	Utility has i) clearly defined and explained process for incorporating wildfire risk when determining electric control limits of the grid beyond equipment nameplate capacities (e.g., exceeding rated current or voltage design) and ii) has systems in place to	Utility has i) clearly defined and explained process for incorporating wildfire risk when determining electric control limits of the grid beyond equipment nameplate capacities (e.g., exceeding rated current or voltage design) and ii) has systems in place to automatically track and record detailed electric operational history when	Utility has i) clearly defined and explained process for incorporating wildfire risk when determining electric control limits of the grid beyond equipment nameplate capacities (e.g., exceeding rated current or voltage design) and ii) has systems in place to automatically track and record detailed electric

	operating equipment above nameplate capacities	record detailed electric operational history when operating equipment above nameplate capacities at the circuit level.	automatically track and record detailed electric operational history when operating equipment above nameplate capacities at the circuit level. iii) Utility uses predictive modeling to shorten the expected life of equipment based on grid operating history	operating equipment above nameplate capacities at the circuit level. iii) Utility uses predictive modeling to shorten the expected life of equipment based on grid operating history, iv) and the utility has the predictive model reviewed by external experts and verified using historical data	operational history when operating equipment above nameplate capacities at the circuit level. iii) Utility uses predictive modeling to shorten the expected life of equipment based on grid operating history, iv) and the utility has the predictive model reviewed by external experts and verified using historical data, v) and never operates grid above rated capacities in HFTD areas
29. PSPS operating model and consequence mitigation	PSPS event frequently forecasted incorrectly and poorly communicated to affected customers	PSPS event i) generally forecasted accurately with fewer than 50% of predictions being false positives where ignition would not have been likely to occur, ii) and communicated to >95% of affected customers iii) and >99% of medical baseline customers in advance of PSPS action, iv) no website downtime, v) and fewer than 1 hrs. of average PSPS time per customer per year, vi) utility has developed	PSPS event i) generally forecasted accurately with fewer than 33% of predictions being false positives where ignition would not have been likely to occur, ii) and communicated to >98% of affected customers iii) and >99.5% of medical baseline customers in advance of PSPS action, iv) with fewer than 0.5% of customers complaining, and v) no website downtime, vi)	PSPS event i) generally forecasted accurately with fewer than 33% of predictions being false positives where ignition would not have been likely to occur, ii) and communicated to >99% of affected customers iii) and >99.9% of medical baseline customers in advance of PSPS action, iv) with fewer than 0.5% of total customers complaining, and v) no website downtime, and vi) specific resources provided to	PSPS event i) generally forecasted accurately with fewer than 25% of predictions being false positives where ignition would not have been likely to occur, ii) and communicated to >99.9% of affected customers iii) and 100% of medical baseline customers in advance of PSPS action, iv) with fewer than 0.5% of total customers complaining, and v) no website downtime, and vi)

			resources to mitigate PSPS consequence, including providing water, phone charging, other resources to all affected by PSPS	and fewer than 0.5 hrs. of average PSPS per customer per year, vii) utility has developed resources to mitigate PSPS consequence, including providing water, phone charging, and other resources to all affected by PSPS	customers to alleviate the consequence of the power shutoff (e.g., providing backup generators, supplies, batteries, etc.), and vii) fewer than 0.25 hrs. of PSPS per customer per year, viii) utility has developed resources to mitigate PSPS consequence, including providing water, phone charging, and other resources to all affected by PSPS	specific resources provided to customers to alleviate the consequence of the power shutoff (e.g., providing backup generators, supplies, batteries, etc.), and vii) and fewer than 0.1 hrs. of PSPS per customer per year
	**30. Protocols for PSPS initiation**	Utility has no well-defined and clearly explained threshold for PSPS activation	Utility has i) explicit policies and explanation for the thresholds above which PSPS is activated as a measure of last resort, ii) SME opinion is used as an input into PSPS decisions.	Utility has i) explicit, objective policies and explanation for the thresholds above which PSPS is activated as a measure of last resort, ii) PSPS decisions are supported by a partially automated system that recommends circuits for which PSPS should be activated, which is validated by SMEs.	Utility i) de-energizes circuits only upon detection of damaged condition of electric lines and equipment or contact with foreign objects ~~or when~~, during suppression or when the circuit presents a safety risk to suppression and other personnel.	Utility i) maintains grid in sufficiently low risk condition to not require any PSPS events and ii) the only circuits de-energized are those with sufficient redundancy to create no disruption in energy supply to customers, iii) utility may de-energize specific circuits upon detection of damaged condition of electric lines and equipment or contact with foreign objects.

	**31. Protocols for PSPS re-energization**	Inadequate process for inspecting de-energized sections of the grid prior to re-energization	i) Manual process to accurately inspect de-energized sections of the grid prior to re-energization, ii) ensure grid is returned to service within 24 hours after weather has returned to below utility's PSPS threshold.	i) Partially automated process (e.g., using drones, LiDAR, etc.) to accurately inspect de-energized sections of the grid prior to re-energization, ii) ensure grid is returned to service within 18 hours after de-energization weather has returned to below utility's PSPS threshold iii) and ~~causing 0~~some probability estimates exist for after-event ignitions~~.~~	i) Mostly automated process (e.g., using drones, LiDAR, etc.) augmented ii) with sensors and aerial tools to accurately inspect de-energized sections of the grid prior to re-energization to iii) ensure grid is returned to service within 12 hours after de-energization weather has returned to below utility's PSPS threshold, iv) ~~and causing 0~~some probability estimates exist for after-event ignitions	i) Primarily automated process (e.g., using drones, LiDAR, etc.) augmented ii) with sensors and aerial tools to accurately inspect de-energized sections of the grid prior to re-energization to iii) ensure grid is returned to service within 8 hours after de-energization weather has returned to below utility's PSPS threshold, iv) ~~and causing 0 after-event ignitions~~utility has accurate quantitative understanding of ignition risk following re-energization, by asset, validated by historical data and near misses
	**32. Ignition prevention and suppression**	Utility has no policies governing what personnel roles are in suppressing ignitions, and personnel are untrained	Utilities have i) explicit policies about the role of personnel at the site of ignition, ii) including providing training and communication tools to immediately report ignitions caused by workers or in immediate vicinity of	Utilities have i) explicit policies about the role of personnel, including contractors and subcontractors at the site of ignition, ii) including providing training, suppression tools, and communication tools,	Utilities have i) explicit policies about the role of personnel, including contractors and subcontractors at the site of ignition, ii) including providing training provided by suppression professionals, a variety of suppression tools, and	Utilities have i) explicit policies about the role of personnel, including contractors and subcontractors at the site of ignition, ii) including providing training provided by suppression professionals, a variety

		workers, iii) with no major injuries or fatalities to workers	iii) to suppress ignitions caused by workers or in immediate vicinity of workers, iv) with no OSHA reportable injuries or fatalities to workers	robust communication tools that function without cell reception, iii) to suppress ignitions caused by workers or in immediate vicinity of workers, iv) with no major injuries or fatalities to workers	of suppression tools, and robust communication tools that function without cell reception, and requiring contractors to provide the same, iii) to suppress small ignitions caused by workers or in immediate vicinity of workers, iv) with no major injuries or fatalities to workers; v) and share risk reduction and suppression training materials and techniques with other utilities

Category G: Data collection and reporting

Illustrative descriptions that may represent typical grades—not comprehensive

Capability	Maturity level 0	1	2	3	4
33. Data collection and curation	Situational, operational, and risk data not collected in a centralized database	Utility has i) centralized repository of accurate situational, operational, and risk data, ii) but does not use them to make short-term/operational and long-term/ investment decisions	Utility has centralized repository of i) accurate situational, operational, and other data relevant to wildfire risk and PSPS, ii) collects data from all sensored portions of electric lines and equipment, weather stations, etc., and iii) is able to utilize advanced analytics to drive decision-making in short term	Utility has centralized repository of i) accurate situational, operational, and risk data, ii) collects data from all sensored portions of electric lines and equipment, weather stations, etc., iii) is able to utilize advanced analytics to drive decision-making in short and long-term, iv) is able to ingest and share data using real-time API protocols with a wide variety of stakeholders	Utility has centralized repository of i) accurate situational, operational, and risk data, and ii) collects data from all sensored portions of electric lines and equipment, weather stations, etc. iii) is able to utilize advanced analytics to drive decision-making in short and long-term, iv) identify new sources of data needed for decision making, v) and to share best practices with other utilities in California and beyond, vi) is able to ingest and share data using real-time API protocols with a wide variety of stakeholders
34. Data transparency and analytics	No central catalogue of all wildfire-related data and algorithms, analyses, and data processes	All wildfire-related data and algorithms used by utilities i) catalogued in a single document, ii)	All wildfire-related data and algorithms used by utilities i) catalogued in a single document, ii)	All wildfire-related data and algorithms used by utilities i) catalogued in a single document, ii)	All wildfire-related data and algorithms used by utilities i) catalogued in a single document, ii)

	Maturity level				
Capability	**0**	**1**	**2**	**3**	**4**
		including an explanation of the sources, and assumptions made; and iii) all analysis and algorithms documented	including an explanation of the sources and assumptions made; iii) all wildfire-related analyses, algorithms, and data processing explained and documented; and iv) an IT system for sharing data in real time across at least two levels of permissions, including a. utility-regulator permissions, b. first responder permissions.	including an explanation of the sources and assumptions made, cleaning processes, and assumptions made in the data; iii) all analyses, algorithms, and data processing explained and documented, iv) most relevant wildfire related data and algorithms disclosed to regulators and other relevant stakeholders, v) an IT system for sharing data in real time across at least three levels of permissions, including a. utility-regulator permissions, b. first responder permissions, and c. public data sharing.	including an explanation of the sources and assumptions made, cleaning processes, and assumptions made in the data; iii) all analyses, algorithms, and data processing explained and documented, with iv) sensitivities disclosed for each type of analysis and data to at least the regulator; v) most relevant wildfire related data and algorithms disclosed publicly in WMP; and vi) an IT system for sharing data in real time across at least three levels of permissions, including a. utility-regulator permissions, b. first responder permissions, and c. public data sharing.
 **35. Near-miss tracking**	No tracking of near miss data	Tracking of near miss data for all near misses with wildfire ignition potential and associated event characteristics,	Tracking of i) near miss data for all near misses with wildfire ignition potential, ii) event characteristics and fuel	Tracking of i) near miss data for all near misses with wildfire ignition potential, ii) event characteristics to enable	Tracking of i) near miss data for all near misses with wildfire ignition potential, ii) event characteristics to enable

Capability	Maturity level 0	1	2	3	4
		including capturing data related to the specific mode of failure	loads and moisture to enable simulation of wildfire potential given an ignition, iii) including capturing data related to the specific mode of failure	simulation of wildfire potential given an ignition, iii) and predicting the probability of such a near miss in causing an ignition, iv) including capturing data related to the specific mode of failure	simulation of wildfire potential given an ignition, iii) and predicting the probability of such a near miss in causing an ignition, iv) using data from near misses to change grid operation protocols in real time, v) including capturing data related to the specific mode of failure
 **36. Data sharing with research community**	Utility fails to share data or participate in research	Utility does not share data beyond disclosures required by rules and regulations, nor does it participate in collaborative research	Utility participates in i) collaborative research that ii) addresses utility-ignited wildfires	Utility i) funds and ii) participates in both independent and collaborative research that iii) addresses utility-ignited wildfires, and risk reduction initiatives	Utility i) funds and ii) participates in both independent and collaborative research that iii) addresses utility-ignited wildfires, and risk reduction initiatives, iv) and promotes best practices, based on the latest independent scientific and operational research, and v) ensures that research, where possible, is abstracted to apply to other utilities

Category H: Resource allocation methodology, business case, and sensitivities

Illustrative descriptions that may represent typical grades—not comprehensive

Capability	Maturity level 0	1	2	3	4
37. Scenario analysis across different risk levels	Utility does not project proposed initiatives or costs across different levels of risk scenarios	Utility i) provides at least an accurate high-risk reduction and a low risk reduction scenario and ii) projected cost and total risk reduction potential for each region	Utility i) provides at least an accurate high-risk reduction and a low risk reduction scenario in addition to ii) their proposed scenario and iii) shows the projected cost and total risk reduction iv) potential for each circuit	Utility i) provides at least an accurate high-risk reduction and a low risk reduction scenario in addition to ii) their proposed scenario and iii) shows the projected cost and total risk reduction iv) potential for each scenario within each span	Utility i) provides at least an accurate high risk reduction and a low risk reduction scenario in addition to ii) their proposed scenario and iii) shows the projected cost and total risk reduction iv) potential for each scenario at each asset, v) and includes a long-term (e.g. 6-10 year) risk estimate taking into account macro factors (climate change, etc.) as well as planned risk reduction initiatives, and vi) utility includes estimate of impact on reliability factors
38. Presentation of relative risk spend efficiency for portfolio of initiatives	Utility does not present relative risk spend efficiency figures across initiatives	Utility provides i) accurate qualitative ranking of ii) common commercial initiatives by risk spend efficiency, and iii) includes figures for estimated cost and projected risk reduction	Utility provides i) accurate qualitative ranking of ii) all commercial initiatives by risk spend efficiency, and iii) includes figures for estimated cost and	Utility provides i) accurate qualitative ranking of ii) all commercial initiatives by risk spend efficiency, and iii) includes figures for estimated PV cost and projected risk reduction	Utility provides i) accurate qualitative ranking of ii) all commercial initiatives and emerging initiatives by risk spend efficiency, and iii) includes figures for estimated cost and

Capability	Maturity level 0	1	2	3	4
		impact of each initiative, iv) for each region, and v) explanation of their investment in each initiative	projected risk reduction impact of each initiative, iv) in each circuit of their grid, and v) explanation of their investment in each particular initiative	impact of each initiative, iv) in each span, and v) explanation of their investment in each particular initiative, and vi) the expected overall reduction in risk	projected risk reduction impact of each initiative, iv) for each asset, and v) explanation of their investment in each particular initiative and vi) the expected overall reduction in risk from each asset and the grid overall and vii) utility includes estimate of impact on SAIDI factors
 **39. Process for determining risk spend efficiency of vegetation management initiatives**	Utility has no clear understanding of the relative risk spend efficiency of various clearances and types of vegetation management initiatives	Utility has i) accurate relative understanding of the ii) cost, and iii) effectiveness to produce a iv) reliable risk spend efficiency estimate of v) commonly-deployed vegetation management initiatives vi) in each area of the utility's grid	Utility has i) accurate relative understanding of the ii) cost, and iii) effectiveness to produce a iv) reliable risk spend efficiency estimate of v) all vegetation management initiatives deployed in California vi) for each circuit of the utility's grid vii) updated on an annual basis	Utility has i) accurate quantitative understanding of the ii) cost, including sensitivities, and iii) effectiveness to produce a iv) accurate risk spend efficiency estimate of v) all feasible vegetation management initiatives vi) for each span along the utility's grid vii) updated on an annual basis	Utility has i) accurate quantitative understanding of the ii) cost, including sensitivities, and iii) effectiveness to produce a iv) accurate risk spend efficiency estimate of v) all feasible vegetation management initiatives, vi) supported by independent testing, vii) around each asset along the utility's grid viii) updated on an annual basis, ix) including risk reduction effect from the combination of various initiatives

Capability	Maturity level 0	1	2	3	4
40. Process for determining risk spend efficiency of system hardening initiatives	Utility has no clear understanding of the relative risk spend efficiency of hardening initiatives	Utility has i) accurate relative understanding of the ii) cost, and iii) effectiveness to produce a iv) reliable risk spend efficiency estimate of v) commonly-deployed and commercially available grid hardening initiatives vi) in each area of the utility's grid	Utility has i) accurate relative understanding of the ii) cost, and iii) effectiveness to produce a iv) reliable risk spend efficiency estimate of v) commonly-deployed and commercially available grid hardening initiatives vi) for each **circuit** of the utility's grid vii) updated on an annual basis	Utility has i) accurate quantitative understanding of the ii) cost, including sensitivities, and iii) effectiveness to produce a iv) reliable risk spend efficiency estimate of v) all commercially available grid hardening initiatives vi) for each **span** along the utility's grid vii) updated on an annual basis	Utility has i) accurate quantitative understanding of the ii) cost, including sensitivities, and iii) effectiveness to produce a iv) reliable risk spend efficiency estimate of v) all commercially available grid hardening initiatives, vi) and those initiatives that are lab-tested, vii) for each **asset** along the utility's grid viii) updated on an annual basis, ix) including risk reduction effect from the combination of various initiatives
41. Portfolio-wide initiative allocation methodology	Utility does not allocate capital to wildfire risk reduction initiatives based on wildfire risk spend efficiency	Utility i) allocates spend within each category of wildfire risk reduction initiative ii) by accurate risk spend efficiency estimates iii) but does not allocate spend across categories of initiatives (e.g. prioritizing between vegetation management and grid hardening)	Utility i) allocates spend across all categories of wildfire risk reduction initiatives ii) by accurate risk spend efficiency estimates iii) across various categories using an average estimate of risk spend efficiency for each initiative across the entire grid	Utility i) allocates spend across all categories of wildfire risk reduction initiatives ii) by accurate risk spend efficiency estimates iii) based on the current state of the utility’s equipment and the specific location or area of grid where the initiative is to be	Utility i) allocates spend across all categories of wildfire risk reduction initiatives ii) by accurate risk spend efficiency estimates iii) based on the current state of the utility’s equipment at the asset level where the initiative is to be implemented and iv)

Capability	Maturity level 0	1	2	3	4
				implemented; iv) which is verified by experimental data confirmed by experts and other utilities in CA	utility includes estimate of impact on reliability factors; v) which is verified by experimental data confirmed by experts and by other utilities in California or abroad
42. Portfolio-wide innovation in new wildfire initiatives	No established program for evaluating the wildfire risk and risk spend efficiency of new wildfire initiatives	New initiatives developed and evaluated based on i) piloting and ii) measuring direct reduction in ignition events	New initiatives developed and evaluated based on i) piloting initiatives and ii) measuring direct reduction in ignition events and iii) measuring reduction impact on near-miss metrics; iv) including an evaluation of the total cost of the initiative	New initiatives i) developed and independently evaluated using lab facilities by a trained team of innovation specialists, followed by ii) in-field testing based on piloting and iii) measuring direct reduction in ignition events at a span level and iv) measuring reduction in impact on near-miss metrics; v) including an evaluation of the total cost of the initiative	New initiatives i) developed and independently evaluated using lab facilities by a trained team of innovation specialists, ii) field testing done by piloting, and iii) measuring direct reduction in ignition events and iv) measuring reduction impact on near-miss metrics v) independent auditing of performance; vi) extensive data sharing with industry, academia, and other utilities utilizing the same initiatives to share results; vii) including an evaluation of the total cost of initiative

Category I: Emergency planning and preparedness

Illustrative descriptions that may represent typical grades—not comprehensive

Capability	Maturity level 0	1	2	3	4
43. Wildfire plan integrated with overall disaster / emergency plan	Wildfire plan not integrated with overall disaster and emergency preparedness plan	Wildfire plan i) a component of overall disaster and emergency preparedness plan; ii) running in drills to audit the viability and execution of plans	Wildfire plan i) an integrated component of overall disaster and emergency preparedness plan, with ii) consequence of confounding events or multiple simultaneous disasters considered in planning process, iii) running in drills to audit the viability and execution of plans across incident types	Wildfire plan i) an integrated component of overall disaster and emergency preparedness plan, with ii) consequence of confounding events or multiple simultaneous disasters considered in planning process, and iii) plan integrated with disaster and emergency preparedness plan of other relevant stakeholders (e.g. Cal Fire, Fire Safe Councils, etc.) iv) coordinating planning and integrating plans across stakeholders; and v) participating in drills to audit the viability and execution of plans across stakeholders	Wildfire plan i) an integrated component of overall disaster and emergency preparedness plan, with ii) consequence of confounding events or multiple simultaneous disasters considered in planning process, and iii) plan integrated with disaster and emergency preparedness plan of other relevant stakeholders (e.g. Cal Fire, Fire Safe Councils, etc.), iv) with utility taking a leading role in planning, coordinating, and integrating plans across stakeholders, and leading efforts to run drills to audit the viability and execution of plans across stakeholders

Capability	Maturity level 0	1	2	3	4
44. Plan to restore service after wildfire related outage	~~Wildfire plan not integrated with overall disaster and emergency preparedness plan~~No detailed or actionable procedures in place to restore service after a wildfire related outage	~~Wildfire plan~~ i) ~~a component of overall disaster~~Detailed and ~~emergency preparedness plan; ii) running~~actionable procedures in ~~drills~~place to ~~audit the viability~~restore service after a wildfire related outage, with ii) employee and ~~execution of~~subcontractor crews trained in, and aware of, plans	~~Wildfire plan~~ i) ~~an~~ Detailed and actionable procedures in place to restore service after a wildfire related outage, with ii) employee and subcontractor crews trained in, and aware of, plans, and iii) procedures an integrated component of overall disaster and emergency ~~preparedness plan, with ii) consequence of confounding events or multiple simultaneous disasters considered in planning process, iii) running in drills to audit the viability and execution~~plans as part of wildfire plans ~~across incident types~~	~~Wildfire plan i) an integrated component of overall disaster and emergency preparedness plan, with ii) consequence of confounding events or multiple simultaneous disasters considered in planning process, and iii) plan integrated with disaster and emergency preparedness plan of other relevant stakeholders (e.g. Cal Fire, Fire Safe Councils, etc.) iv) coordinating planning and integrating plans across stakeholders; and v) participating in drills to audit the viability and execution of plans across stakeholders~~i) Detailed and actionable procedures in place to restore service after a wildfire related outage, with ii) employee and	~~Wildfire plan i) an integrated component of overall disaster and emergency preparedness plan, with ii) consequence of confounding events or multiple simultaneous disasters considered in planning process, and iii) plan integrated with disaster and emergency preparedness plan of other relevant stakeholders (e.g. Cal Fire, Fire Safe Councils, etc.), iv) with utility taking a leading role in planning, coordinating, and integrating plans across stakeholders, and leading efforts to run drills to audit the viability and execution of plans across stakeholders~~i) Detailed and actionable procedures in place to restore service after a wildfire related

Capability	Maturity level 0	1	2	3	4
				subcontractor crews trained in, and aware of, plans, iii) procedures in wildfire plan an integrated component of overall disaster and emergency plans, iv) with high risk spend efficiency resources available for repairs	outage, with ii) employee and subcontractor crews trained in, and aware of, plans, iii) procedures in wildfire plan an integrated component of overall disaster and emergency plans, iv) with high risk spend efficiency resources available for repairs, v) customized based on topography, vegetation and community needs
 **45. Emergency community engagement during and after wildfire**	Little community engagement or poor communication during and after wildfire	i) Clear and substantially complete communication of available utility-related information ii) to >95% of affected customers, and iii) >99% of affected medical baseline customers, as well as referral to other agencies, iv) links to relevant evacuation information prominently	i) Clear and substantially complete communication of available utility-related information ii) to >98% of affected customers, and iii) >99.5% of affected medical baseline customers, as well as referral to other agencies, iv) availability of relevant evacuation information and links	Clear and substantially complete communication of utility-related information to >99% of affected customers ii) and >99.9% of affected medical baseline customers iii) has detailed and actionable established protocols for cooperation with emergency management	Utility i) communicates to >99.9% of affected customers ii) and 100% of affected medical baseline customers, iii) has detailed and actionable established protocols for cooperation with emergency management organizations iv) availability of relevant evacuation information

	Maturity level				
Capability	**0**	**1**	**2**	**3**	**4**
		on website and via toll-free phone number	prominently on website and via toll-free phone number	organizations iv) availability of relevant evacuation information and links prominently on website and via toll-free phone number, v) and assists where helpful with communication of information related to power outages to customers, as well as partnering with other agencies to refer those affected to relevant assistance and resources	and links prominently on website and via toll-free phone number and v) assists where helpful with communication of information related to power outages to customers, and vi) communicates and coordinates resources to communities during emergencies (e.g., shelters, supplies, transportation etc.)
	46. Protocols in place to learn from wildfire events	No defined protocols established to learn from wildfire events	Protocols in place to i) record outcome of emergency events and to ii) clearly and actionably document learnings and potential process improvements, iii) including a defined process and staff responsible for incorporating learnings into emergency plan	Protocols in place to i) record outcome of emergency events and to ii) clearly and actionably document learnings and potential process improvements, iii) including a defined process and staff responsible for incorporating learnings into emergency plan, and iv) having subject matter experts assess the effectiveness of the updated plan	Protocols in place to i) record outcome of emergency events and to ii) clearly and actionably document learnings and potential process improvements, iii) including a defined process and staff responsible for incorporating learnings into emergency plan, and iv) testing updated plan using “dry runs” and subject matter experts to confirm	Protocols in place to i) record outcome of emergency events and to ii) clearly and actionably document learnings and potential process improvements, iii) including a defined process and staff responsible for incorporating learnings into emergency plan, and iv) testing updated plan using “dry runs” and subject matter experts to confirm

Capability	Maturity level 0	1	2	3	4
				effectiveness of updated plan	effectiveness of updated plan; v) including a defined process to solicit input from variety of other stakeholders and defined process to incorporate learnings from other stakeholders into emergency plan
47. Processes for continuous improvement after wildfire and PSPS	Utility does not conduct an evaluation or debrief process after a wildfire event.	Utility i) conducts a customer survey and utilized partners to disseminate ii) utility also debriefs with partners about what can be improved, iii) feedback and recommendations on potential improvements are made public.	Utility i) conducts a customer survey and utilized partners to disseminate ii) conducts proactive outreach to local agencies and organizations to solicit additional feedback on what can be improved iii) feedback and recommendations on potential improvements are made public.	Utility has i) a clear plan for post-event listening and incorporating lessons learned from all stakeholders, ii) activities include debriefs, public listening sessions, surveys, and additional measures available to the public, iii) feedback is compiled, written, and recommended actions are made public. Implementation of recommendations is tracked and reported on	Utility has i) a clear plan for post-event listening and incorporating lessons learned from all stakeholders, ii) activities include debriefs, public listening sessions, surveys, and additional measures available to the public, iii) feedback is compiled, written, and recommended actions are made public, implementation of recommendations is reported on and tracked, iv) utility further has an established process to conduct reviews after wildfires in other the territory of other utilities and states to identify

	Maturity level				
Capability	**0**	**1**	**2**	**3**	**4**
					and address areas of improvement

Category J: Stakeholder cooperation and community engagement

Illustrative descriptions that may represent typical grades—not comprehensive

Capability	Maturity level 0	1	2	3	4
48. Cooperation and best practice sharing with other utilities	Utility does not adopt lessons learned from other utilities	Utility has a i) clearly defined operational process in place to ii) exchange best practices with other California utilities iii) tests lessons learned from other utilities to ensure local applicability	Utility i) actively seeks best practices from utilities, ii) successfully implements relevant best practices, and iii) seeks to share best practices and lessons learned in a consistent format iv) tests lessons learned from other utilities to ensure local applicability	Utility i) actively seeks best practices from utilities, ii) successfully implements relevant best practices, and iii) seeks to share best practices and lessons learned in a consistent format, and iv) via a consistent and predictable set of venues/media, v) and participates in annual benchmarking exercises with other utilities to find areas for improvement vi) implement a process for testing lessons learned from other utilities to ensure local applicability	Utility i) actively seeks best practices from utilities, ii) successfully implements relevant best practices, and iii) seeks to share best practices and lessons learned in a consistent format, and iv) via a consistent and predictable set of venues/media, v) and participates in annual benchmarking exercises with other utilities to find areas for improvement and vi) implement a defined process for testing and adapting lessons learned from other utilities to ensure local applicability
49. Engagement with communities on utility	Utility has poor relationship with local communities, impairing ability to implement initiatives	Utility has i) clear and actionable plan to develop or maintain a collaborative relationship with local	Utility has i) clear and actionable plan to develop or maintain a collaborative relationship with local	Utility has i) clear and actionable plan to develop or maintain a collaborative relationship with local	Utility has demonstrably cooperative relationship with local communities, and i) clear and actionable plan to

Capability	Maturity level 0	1	2	3	4
wildfire mitigation initiatives		communities, ii) enables utility to implement initiatives (e.g., conduct vegetation management) iii) with fewer than 10% of land owners in utility territory preventing or significantly hindering the utility's performance of reasonable vegetation work, and iv) complaints from fewer than 5% of landowners	communities, ii) enables utility to implement initiatives (e.g., conduct vegetation management) iii) with fewer than 3% of land owners in utility territory preventing or significantly hindering the utility's performance of reasonable vegetation work, and iv) complaints from fewer than 2% of landowners	communities, ii) enables utility to implement initiatives (e.g., conduct vegetation management) iii) with fewer than 2% of land owners in utility territory preventing or significantly hindering the utility's performance of reasonable vegetation work, and iv) complaints from fewer than 1% of landowners	develop or maintain a collaborative relationship with local communities, ii) enables utility to implement initiatives (e.g., conduct vegetation management) iii) with fewer than 1% of land owners in utility territory preventing or significantly hindering the utility's performance of reasonable vegetation work, and iv) complaints from fewer than 1% of landowners; and v) landowners periodically reach out to utility to notify of risks, dangers, or issues
50. Engagement with LEP and AFN populations	Utility has poor relationships with key organizations representing LEP and AFN communities, impairing ability to implement initiatives.	Utility has i) a plan for partnering with organizations representing LEP and AFN communities, and ii) is able to provide information about the nature of these partnerships	Utility has i) a clear and actionable plan to develop and maintain collaborative relationships with organizations representing LEP and AFN communities, with ii) pathways for implementing suggested	Utility has i) a clear and actionable plan to develop and maintain ii) demonstrably cooperative and codified relationships with organizations representing LEP and AFN communities, and iii) can point to clear examples of how those	Utility has i) a clear and actionable plan to develop and maintain ii) demonstrably cooperative and codified relationships with organizations representing LEP and AFN communities, and iii) can point to clear examples of how those

Capability	Maturity level 0	1	2	3	4
			activities to address population needs	relationships have driven the utility's ability to interact with and prepare these populations for wildfire mitigation activities.	relationships have driven the utility's ability to interact with and prepare these populations for wildfire mitigation activities, and has a specific annually-updated action plan further reduce wildfire and PSPS risk to these communities
51. Collaboration with emergency response agencies	Utility does not sufficiently cooperate with suppression agencies	Utility cooperates with suppression agencies by i) calling in ignitions detected along length of grid for ii) high risk areas	Utility cooperates with suppression agencies by i) calling in ignitions detected along length of grid ii) for all areas under utility control	i) Utility works cooperatively with suppression agencies to detect wildfires in the utility's service area, ii) alerts suppression resources, and iii) accurately predict and communicates the forecasted fire propagation path using available analytics resources and weather data	i) Utility works cooperatively with suppression agencies to detect wildfires in the utility's service area, ii) alerts suppression resources, and iii) accurately predict and communicates the forecasted fire propagation path using available analytics resources and weather data, iv) communicates fire path to community if requested, and v) utility works to assist suppression personnel logistically where possible

Capability	Maturity level				
	0	1	2	3	4
52. Collaboration on wildfire planning with stakeholders	Utility does not collaborate with other agencies conducting non-emergency wildfire planning and initiatives to reduce wildfire risk.	Utility i) coordinates on a regular basis with other agencies including all Fire Safe Councils within its territory and ii) conduct fuel management along right of ways but iii) is not coordinating with broader fuel management efforts by other stakeholders	Utility i) coordinates on a regular basis with other agencies including all Fire Safe Councils within its territory and ii) conducts substantial fuel management along right of ways and iii) shares fuel management plans with other stakeholders, iv) works with other stakeholders conducting fuel management concurrently	Utility i) coordinates on a regular basis with other agencies including all Fire Safe Councils within its territory and ii) conducts substantial fuel management along right of ways, iii) shares fuel management plans and iv) coordinates fuel management activities, including adjusting plans, to cooperate with other stakeholders state-wide to focus on areas that would have the biggest impact in reducing wildfire risk, v) cultivates a native vegetative ecosystem along right of ways that is consistent with lower fire risk, and work with stakeholders across its territory to cultivate a native vegetative ecosystem	Utility i) coordinates on a regular basis with other agencies including all Fire Safe Councils within its territory and ii) conducts substantial fuel management in service area, iii) shares fuel management plans and iv) pro-actively coordinates fuel management initiatives with other stakeholders to encourage state-wide to collaborate to focus on areas that would have the biggest impact in reducing wildfire risk, v) utility funds local groups (e.g. fire safe councils) to support fuel management, vi) cultivates a native vegetative ecosystem along right of ways that is consistent with lower fire risk and work with stakeholders across its territory to cultivate a native vegetative ecosystem