

Independent Evaluator Report on Wildfire  
Mitigation Plan Compliance  
Bureau Veritas North America, Inc.  
Portland General Electric



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This report has been compiled through the process of observation and the review of provided documents. The report is intended to serve only as a guide to assist with achieving compliance with regulatory requirements instituted by the Oregon Public Utility Commission (OPUC) for an independent evaluation of Investor-Owned Utility providers Wildfire Mitigation Practices. Bureau Veritas North America, Inc. (BVNA) is not the designer, implementer, or owner of the Wildfire Mitigation Plan (WMP) and is not responsible for its content, implementation and/or any liabilities, obligations or responsibilities arising therein.

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## EXECUTIVE SUMMARY

### BACKGROUND

Under Senate Bill 762 (2021) and Oregon Administrative Rules (OAR) 860-300-0002 effective November 30, 2021, per Order No. 21-440, public utilities in the State of Oregon must adopt and operate in compliance with a risk-based Wildfire Mitigation Plan (WMP) that is filed with the Oregon Public Utility Commission (OPUC). The WMP will be evaluated by the OPUC and Bureau Veritas North America, Inc. (BVNA), who has been selected as an Independent Evaluator (IE) by the OPUC to serve as an Expert Witness to provide written testimony on the plan’s conformance to the State’s requirements.

### SCOPE

Pursuant to the OPUC’s Final IE Scope of Work (SOW) for the Utility Expert Witness, BVNA, in partnership with C2 Group, has reviewed Portland General Electric’s 2022 Wildfire Mitigation Plan to verify compliance with the minimum requirements outlined in OAR 860-300-0002 as summarized in Table 1 below.

**Table 1: Wildfire Mitigation Plans and Updates**  
**Minimum Requirements as set forth in Section 3(2)(a)-(h), chapter 592, Oregon Laws 2021**  
**Senate Bill 762 (2021) and OAR 860-300**

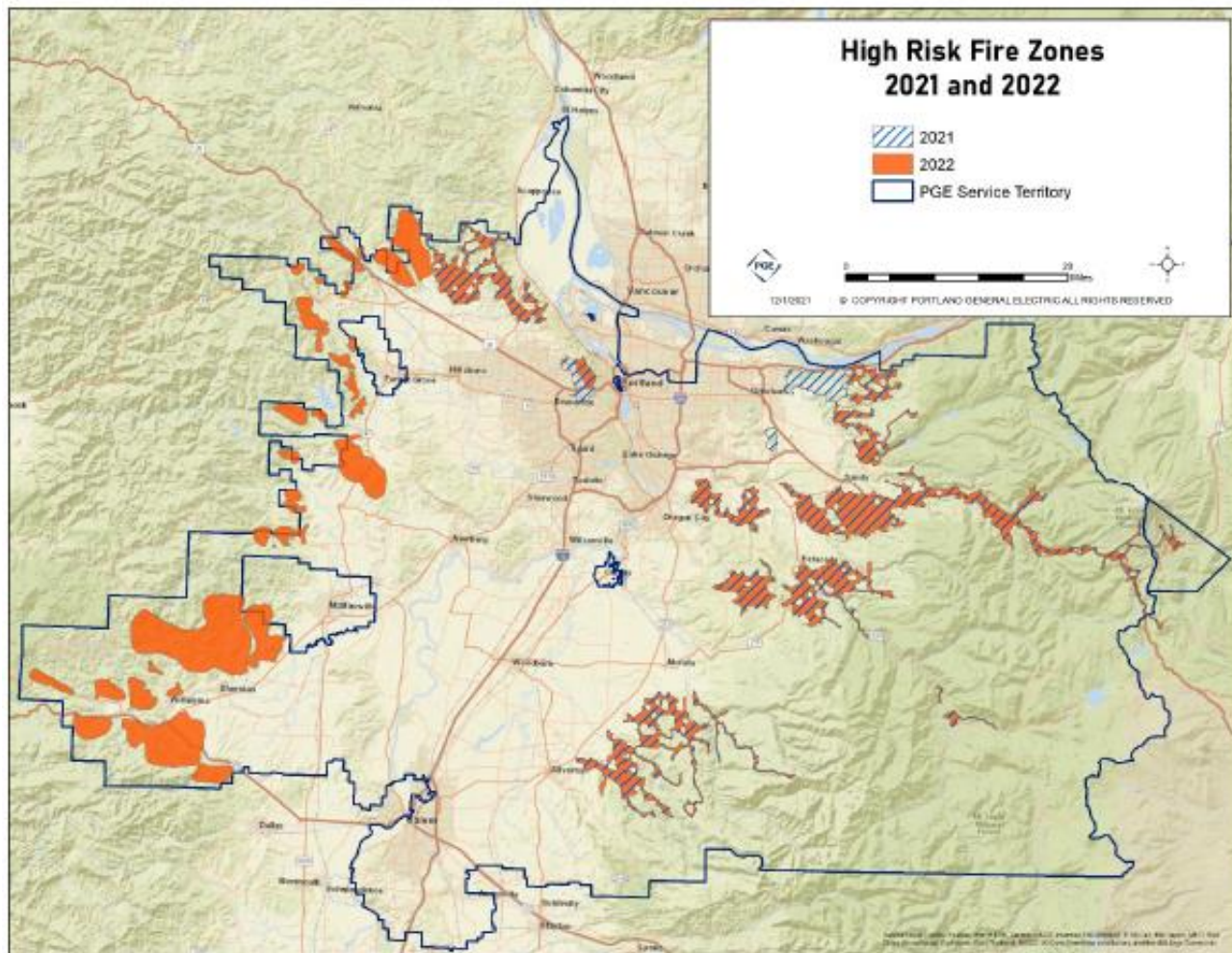
AR 860-300-0002	ID	Wildfire Mitigation Plan Requirements
(1)(a)(A) & (B)	1	Identified areas that are subject to a heightened risk of wildfire, including determinations for such conclusions, and are: (A) Within the service territory of the Public Utility, and (B) Outside the service territory of the Public Utility but within the Public Utility's right-of-way for generation and transmission assets.
(1)(b)	2	Identified means of mitigating wildfire risk that reflects a reasonable balancing of mitigation costs with the resulting reduction of wildfire risk.
(1)(c)	3	Identified preventative actions and programs that the Public Utility will carry out to minimize the risk of utility facilities causing wildfire.
(1)(d)	4	Discussion of outreach efforts to regional, state, and local entities, including municipalities regarding a protocol for the de-energization of power lines and adjusting power system operations to mitigate wildfires, promote the safety of the

		public and first responders and preserve health and communication infrastructure.
(1)(e)	5	Identified protocol for the de-energization of power lines and adjusting of power system operations to mitigate wildfires, promote the safety of the public and first responders and preserve health and communication infrastructure.
(1)(f)	6	Identification of the community outreach and public awareness efforts that the Public Utility will use before, during and after a wildfire season.
(1)(g)	7	Description of procedures, standards, and time frames that the Public Utility will use to inspect utility infrastructure in areas the Public Utility identified as heightened risk of wildfire.
(1)(h)	8	Description of the procedures, standards, and time frames that the Public Utility will use to carry out vegetation management in in areas the Public Utility identified as heightened risk of wildfire.
(1)(i)	9	Identification of the development, implementation, and administrative costs for the plan, which includes discussion of risk-based cost and benefit analysis, including consideration of technologies that offer co-benefits to the utility's system.
(1)(j)	10	Description of participation in national and international forums, including workshops identified in section 2, chapter 592, Oregon Laws 2021, as well as research and analysis the Public Utility has undertaken to maintain expertise in leading edge technologies and operational practices, as well as how such technologies and operational practices have been used develop implement cost effective wildfire mitigation solutions.

Portland General Electric (PGE) provides electric service to over 900,000 customers throughout a 4,000 square mile area in northwestern Oregon. The service territory is continuous. PGE’s overhead electric assets in total include:

- 1,269 circuit-miles of overhead transmission lines
- 27,939 circuit-miles of overhead distribution circuits

PGE has designated portions of their service territory as High Risk Fire Zones (HRFZ), locations with a heightened relative risk of catastrophic wildfires and started the implementation of wildfire mitigation measures for those areas as outlined in their WMP. PGE did not provide line-miles of overhead electric assets in HRFZs in the WMP.



**Figure 1:** Map of Portland General Electric's Service Territory and 2021 and 2022 High Fire Risk Zones

In part, driven by climate change, the Western United States continues to experience an unprecedented number of catastrophic wildfires, many reaching higher and typically wetter elevations, and climate forecasts suggest this to be a continuing trend. These effects and trends have affected PGE's service area and they developed the 2022 Oregon WMP to outline and guide mitigation strategies to reduce the probability of utility-related wildfires. The plan's timeline, specific objectives, and key deliverables are covered within PGE's WMP. The following includes a comprehensive review and assessment of PGE's 2022 Oregon WMP by the OPUC's IE.

### Key Recommendations

The IE conducted a compliance review of PGE's 2022 WMP by examining the information provided in the plan and comparing it to the plan requirements set forth in Senate Bill 762 and OAR 860-300. Additionally, the IE conducted interviews with Emergency Management officials to evaluate PGE's outreach efforts regarding communication and operational protocols for the de-energization of power lines and adjusting power system operations to mitigate wildfires, along with demonstration of community outreach efforts as it relates to Public Safety Power Shutoff (PSPS).

Assessments of the WMP sections were made following the Utility Expert Witness final SOW and further guided by BVNA's "Expectation of Demonstrated Compliance" matrix, which identifies detailed criteria for each plan required topic to guide the WMP evaluation.

The majority of the WMP sections appeared to comply with and adhere to requirements listed above in Table 1: Wildfire Mitigation Plans and Updates, Minimum Requirements as set forth in Section 3(2)(a)-(h), chapter 592, Oregon Laws 2021. A summarization of the IE's key recommendations are demonstrated below:

- More information on the analysis completed to identify the relative risk of overhead asset components, such as specific wire types and equipment, and how that information is being used to guide programmatic decisions, including budgets.
- Details of the analysis of comparing measured risk reduction of plan activities to their costs.
- Include details of how the objectives of key preventative actions have been met or not met, from the prior year of system operation, and further demonstrates to what degree the preventable measure has reduced the risk of the utility's infrastructure from the cause of fire, as well as adjustments made to programming included in the WMP to reduce wildfire risk.
- Detail regarding results of the outreach with Public Safety Partners. It is also recommended to include input received from Public Safety Partners and how their feedback has impacted the WMP.
- Details of the individual positions and departments included in the Corporate Incident Management Team (CIMT) during PSPS events and their roles and responsibilities.
- Analysis completed to make programmatic decisions of modifying system operations, such as limiting reclosing to one attempt during fire season, and no reclosing on Red Flag Warning days.
- The anticipated timelines and estimated customer reach for the dynamic outreach activities including but not limited to media campaigns, distribution of collateral to Community-Based Organizations and Public Safety Partners, and webinar or live wildfire safety and preparedness forums.
- Conditions that drive the activation of Community Resource Centers (CRC) and how the placement of the Community Resource Centers is determined.
- Clearly identify inspection and correction procedures for distribution assets, for non-wildfire risk zones and HRFZs, along with the impacted line-miles and structure counts for transmission and distribution assets in HRFZs.
- Clarify if the enhanced inspection and correction protocols are planned only for the WMP year, or if they are forecasted to expand beyond the plan year
- Analysis of historical events regarding PGE's power lines, vegetation, and wildfires that informed the vegetation management program's design.
- Logic and details of analysis completed for programming decisions in HRFZs regarding vegetation management practices and protocols.
- Impacted line-miles and structure counts for transmission and distribution assets that are included in the Advanced Wildfire Risk Reduction (AWRR) program.
- Provide details of the cost-benefit analysis completed to support decisions of program strategy and scale.
- Program level forecasted costs, for the WMP year, as well as a forecast of costs at a minimum of three years out.

- Continue to provide highlights of collaboration with industry channels, both information and knowledge shared from Portland General Electric, and valuable information learned through the engagements.

The following paragraphs provide a comparative analysis of PGE's WMP, and the minimum requirements set forth in Section 3(2)(a)-(h), chapter 592, Oregon Laws 2021. This report considers all information demonstrated in PGE's WMP, industry practices and depicted regulation and further contains IE recommendations for future WMPs.

## INDEPENDENT EVALUATOR REVIEW OF COMPLIANCE

Each report section hereafter contains an evaluation of the WMP requirements, organized by subject, as listed in the order in Table 1. Note, PGE's WMP does not follow the order of items as demonstrated in Table 1.

Furthermore, the following terms are used in each table of compliance to illustrate the plans completeness. These definitions are provided for the reader to understand the level of demonstrated compliance found within the plan:

**Met:** The term acknowledges that the utility has adequately demonstrated information in the plan that meets the requirements of the identified rule.

**Substantially Met:** The term indicates that the utility has largely but not wholly met the requirements of the rule.

**Partially Met:** The term indicates that the utility has to some extent, or some degree provided information within the plan that partially met or partially demonstrated the plans compliance with the rule. More information, clarity or detail is required to demonstrate the plans compliance with the rule.

**Not Met:** The term indicates that the utility has not provided any information or detail that addresses the requirements of the rule or is grossly understated.

### Wildfire Mitigation Plan Adherence to Requirements

**Subject Area 1:** *Identified areas that are subject to a heightened risk of wildfire, including determinations for such conclusions both within and outside the service territory but within the utility right-of-way.*

The IE utilized the following "Expectation of Demonstrated Compliance" descriptions to evaluate Subject Area 1 of the plan, which covers wildfire area risk mapping in Portland General Electric's service territory and rights-of-way.

- Describe the approach, data inputs, analysis completed, quantitative risk asset tools and techniques, and industry standards utilized to identify areas subject to heightened risk of wildfire.

- Describe analysis to both evaluate risk from the environment and specific utility asset types (if considered).
- Describe process that will be followed to evaluate areas on an annual basis.

### Review of Initiatives

PGE in 2019 began a multi-phase wildfire risk assessment and modeling program to evaluate industry best practices; identify the highest risk zones within the PGE service territory; quantify the likelihood that PGE assets could contribute to the ignition of large wildfires; map the locations, and apply a consequence model to determine where a potential wildfire ignition would be most significant.

Continued assessment in 2021 of variables in the model informed PGE’s decision to add new High Fire Risk Zones (HRFZs) in the 2022 WMP and assess existing boundaries of previously identified HRFZs. In the 2022 WMP there are ten distinct HRFZs. HRFZs are areas that could be subject to Public Safety Power Shutoff (PSPS) events.

PGE calculates baseline equipment risk in terms of ignition probability, given its type, age, condition, and location. Probability values vary with age and condition, increasing as equipment ages.

Table 1 in the WMP lists data sources, inputs, and the planned cadence of updates for maintaining key modeling inputs. Table 2 in the WMP lists data sources, inputs, and the planned cadence of updates for georisk modeling data sources and inputs, such as meteorological data and burn probability.

### Demonstrated Compliance

Table 2 summarizes the findings of demonstrated compliance for Subject Area 1.

**Table 2: Subject Area 1 Summary of Demonstrated Compliance**

Description No.	Expectation of Demonstrated Compliance	Demonstrated Compliance
1	Describe the approach, data inputs, analysis completed, quantitative risk asset tools and techniques, and industry standards utilized to identify areas subject to heightened risk of wildfire.	Met
2	Describe analysis to both evaluate risk from the environment and specific utility asset types.	Met
3	Describe process that will be followed to evaluate areas on an annual basis.	Met

### Recommendations for Future WMPs

The IE recommends that for future WMPs PGE include more information on the analysis completed to identify the relative risk of overhead asset components, such as specific wire types and equipment, and how that information is being used to guide programmatic decisions, including budgets.

**Subject Area 2: *Identify means of mitigating wildfire risk that reflects a reasonable balancing of mitigation cost with the resulting reduction of wildfire risk.***



The IE utilized the following “Expectation of Demonstrated Compliance” descriptions to evaluate Subject Area 2 of the plan, which covers wildfire risk mitigation and the balance of cost with wildfire risk reduction.

- Describe the main activities being utilized to reduce wildfire risk, how they reduce risk, and how the utility's planned chosen activities balance costs with effectiveness of reducing wildfire risk.
- Describe how the effectiveness of the activities will be measured or have been measured.

### Review of Initiatives

Throughout the WMP PGE identifies multiple activities utilized to reduce fire risk. In 2021 PGE created an ignition management tracking database and process. The information collected allows PGE to base the system hardening investments on the risk drivers that deliver optimized risk/spend efficiencies. Over time the ignition probability values database can be refined to create more accurate risk projections.

PGE’s wildfire investment strategy ranks system hardening, and situational awareness projects identified as the highest value risk mitigation projects per dollar of investment.

The WMP does not provide a history of wildfires in PGE’s service territory, and the subset of those wildfires that were identified as being caused by PGE utility assets. A complete baseline description of recent wildfire history is not included to provide context to assist in measuring the value of the risk reduction investments.

### Demonstrated Compliance

Table 3 summarizes the findings of demonstrated compliance for Subject Area 2.

**Table 3: Subject Area 2 Summary of Demonstrated Compliance**

Description No.	Expectation of Demonstrated Compliance	Demonstrated Compliance
1	Describe the main activities being utilized to reduce wildfire risk, how they reduce risk, and how the utility's planned chosen activities balance costs with effectiveness of reducing wildfire risk.	Met
2	Describe how the effectiveness of the activities will be measured or have been measured.	Met

### Recommendations for Future WMPs

The IE recommends that for future WMPs PGE include the details of the analysis of comparing measured risk reduction of plan activities to their costs.

The IE also recommends that for future WMPs PGE information on wildfires in the service territory for the prior year.

**Subject Area 3: *Identify preventative actions and programs that the utility will carry out to minimize the risk of utility facilities causing a wildfire.***

The IE utilized the following “Expectation of Demonstrated Compliance” description to evaluate Subject Area 3 of the plan, which covers preventative actions and programs utilized to reduce the risk of utility infrastructure causing a wildfire.

- What falls out of the risk assessment as high-level risk, priorities and quantitative results from the preventative actions or programs.

### Review of Initiatives

PGE outlines in the WMP key preventative actions: asset inspections and vegetation management, system hardening, situational and conditional awareness, system operations, field operations, and PSPS implementation. Each action is described in how it will be executed, and how it will minimize the risk of utility facilities causing a wildfire.

### Demonstrated Compliance

Table 4 summarizes the findings of demonstrated compliance for Subject Area 3.

**Table 4: Subject Area 3 Summary of Demonstrated Compliance**

Description No.	Expectation of Demonstrated Compliance	Demonstrated Compliance
1	What falls out of the risk assessment as high-level risk, priorities and quantitative results from the preventative actions or programs.	Met

### Recommendations for Future WMPs

The IE recommends that for future WMPs PGE include details of how the objectives of key preventative actions have been met or not met, from the prior year of system operation, and further demonstrates to what degree the preventable measure has reduced the risk of the utility’s infrastructure from the cause of fire, as well as adjustments made to programming included in the WMP to reduce wildfire risk.

**Subject Area 4: *Demonstration of outreach efforts to regional, state, and local entities, including municipalities regarding a protocol for the de-energization of power lines and adjusting power system operations to mitigate wildfire, promote the safety of the public and first responders and preserve health and communication infrastructure.***

The IE utilized the following “Expectation of Demonstrated Compliance” descriptions to evaluate Subject Area 4 of the plan, which covers outreach to regional, state, and local entities regarding protocols for de-energizing power lines and adjusting power system operations.

- Provide geographical boundary of impacted areas of the service territory that may be affected by a PSPS event or modified power system operations.
- Provide list of specific regional, state, and local entities, including municipalities, who have been reached out to, when are they reached out to, who will be reached out to, and the results of the outreach. Provide detail of topics covered, and input from agencies that have impacted utility wildfire risk reduction planned activities.

## Review of Initiatives

PGE engages with Public Safety Partners for a variety of purposes. One focus area is to elicit feedback from Public Safety Partners to ensure PGE’s community outreach is consistent and effective across the service territory and is responsive to the needs of each community. This feedback is received during an interactive workshop prior to fire season. A second focus area is to partner with Public Safety Partners to obtain equitable outcomes in its wildfire outreach activities.

The third focus area is coordination strategy prior to, during and after fire season. Prior to fire season, PGE will engage in preparedness coordination forums, quarterly summits, and host at least one tabletop exercise. During fire season, PGE will inform Public Safety Partners of operational modifications to the PGE system, communicate to the appropriate points of contact during a fire or fire threatening PGE infrastructure, and following a wildfire incident, invite feedback from Public Safety Partners through an After-Action Review (AAR) process. After fire season, Public Safety Partners will have the opportunity to participate in PGE’s post-season review process.

Prior to PSPS events, PGE will, to the extent practical, provide priority notifications to Public Safety Partners.

## Demonstrated Compliance

Table 5 summarizes the findings of demonstrated compliance for Subject Area 4.

**Table 5: Subject Area 4 Summary of Demonstrated Compliance**

Description No.	Expectation of Demonstrated Compliance	Demonstrated Compliance
1	Provide geographical boundary of impacted areas of the service territory that may be affected by a PSPS event or modified power system operations.	Met
2	Provide a list of specific regional, state, and local entities, including municipalities, who have been reached out to, when are they reached out to, who will be reached out to, and the results of the outreach. Provide detail of topics covered, and input from agencies that have impacted utility wildfire risk reduction planned activities.	Substantially Met

## Recommendations for Future WMPs

The IE recommends that for future WMPs PGE provide more detail regarding results of Public Safety Partner outreach and how input received has influenced the WMP. Information collected in After Action Reports of exercises or events should be narrated in the WMP, and the obtained feedback points should depict how the lessons learned have influenced or confirmed assumptions in the plan.

Due to commentary from Emergency Managers (EM) and staff interviews, operational meetings, exercises, and coordination meetings must occur timely and planning these efforts should be made prior to the upcoming fire season and that notification of these meetings be sent to the stakeholders weeks in advance to ensure attendance. The WMP should illustrate the time of the year that these meetings are

planned. Coordination or planning meetings should occur pre, during and post events. Timelines should be demonstrated in the WMP to provide deadlines when the subject meetings or communications will occur.

**Subject Area 5: *Identified protocol for the de-energization of power lines and adjusting of power system operations to mitigate wildfires, promote the safety of the public and first responders and preserve health and communication infrastructure.***

The IE utilized the following “Expectation of Demonstrated Compliance” descriptions to evaluate Subject Area 5 of the plan, which covers protocols for de-energizing power lines and adjusting power system operations.

- Overview of steps completed by the utility leading up to a PSPS and closing a PSPS event.
- Detailed descriptions of each step of the process, including: information used, and analysis completed to make decisions for the steps, utility staff involved in the steps and the utility decision-maker(s), interaction with entities outside of the utility that impact decisions, communication protocols (internal and external), typical duration of each step.
- Description of adjusted power system operations to mitigate wildfire, and description of operations in non-wildfire threat conditions. Include details of: information used, and analysis completed before adjusting operations, utility staff involved with adjusting operations, reasoning/logic to specific operational choices.
- Describe vulnerabilities to stakeholders such as emergency responders and public safety officials when de-energizing of the system occurs and what is necessary to communicate when a re-energization occurs due to an emergent situation and how they are defined.

### **Review of Initiatives**

PGE has a series of defined steps and decision points documented to follow for deciding when to initiate a Public Safety Power Shutoff (PSPS), including teams who are involved with the steps and decisions. Standard notification timelines have also been established for de-energization warnings and re-energization estimated completion.

PGE is modifying some of its existing system operations for distribution lines in HRFZs to mitigate wildfire risk during wildfire season. Modifications to distribution lines include limiting electronic reclosers to one attempt of reclosing during fire season, and on Red Flag Warning days during fire season blocking reclosing.

The WMP also notes that two transmission lines that traverse the HRFZs block reclosing during fire season and Red Flag Warning days, however it is unclear if other transmission lines exist in the HRFZ and if they have reclosers.

### **Demonstrated Compliance**

Table 6 summarizes the findings of demonstrated compliance for Subject Area 5.

PGE does not provide information of the analysis completed to make the programmatic decisions included in the WMP for adjusted power system operations.

### **Table 6: Subject Area 5 Summary of Demonstrated Compliance**

Description No.	Expectation of Demonstrated Compliance	Demonstrated Compliance
1	Overview of steps completed by the utility leading up to a PSPS and closing a PSPS event.	Met
2	Detailed descriptions of each step of the process, including: information used and analysis completed to make decisions for the steps, utility staff involved in the steps and the utility decision-maker(s), interaction with entities outside of the utility that impact decisions, communication protocols (internal and external), typical duration of each step.	Met
3	Description of adjusted power system operations to mitigate wildfire, and description of operations in non-wildfire threat conditions. Include details of: information used, and analysis completed before adjusting operations, utility staff involved with adjusting operations, reasoning/logic to specific operational choices.	Substantially Met
4	Describe vulnerabilities to stakeholders such as emergency responders and public safety officials when de-energizing of the system occurs and what is necessary to communicate when a re-energization occurs due to an emergent situation and how they are defined.	Met

### Recommendations for Future WMPs

The IE recommends that for future WMPs PGE include details of the individual positions and departments included in the Corporate Incident Management Team (CIMT) during PSPS events and their roles and responsibilities.

The IE also recommends that for future WMPs PGE include more information about the analysis completed to make their programmatic decisions of modifying system operations, such as limiting reclosing to one attempt during fire season, and no reclosing on Red Flag Warning days. Without specific information included in the WMP, it is difficult to measure successes and procedure adjustments in future WMPs.

### **Subject Area 6: Identification of the community outreach and public awareness efforts that the Public Utility will use before, during, and after a wildfire season.**

The IE utilized the following “Expectation of Demonstrated Compliance” descriptions to evaluate Subject Area 6 of the plan, which covers community outreach and public awareness efforts before, during, and after wildfire season.

- Comprehensive list of completed community outreach and public awareness effort types and planned (new or repeat type of engagement and outreach) effort types in 2022.

- Detailed description of each activity: content and messaging of outreach and communication, why it was chosen, its expected audience, its expected impact, measures to ensure communication techniques are successful in reaching the target audience, who from the utility supports the effort, outside organizations who support the effort, and when it is planned (before, during and after wildfire season).

## Review of Initiatives

PGE’s WMP includes avenues for a multi-faceted three-phased approach to its community outreach and public awareness efforts. PGE’s approach to outreach includes leveraging Public Safety Partners, Priority Partners, and Local Communities to increase overall footprint of outreach. PGE’s communication strategy outlines the utilization of Public Safety Partners, development of education and awareness materials, multi-lingual communications, and use of designated PGE staff for outreach and capturing of key learnings from pre, during, and post-event activities.

## Demonstrated Compliance

Table 7 summarizes the findings of demonstrated compliance for Subject Area 6. Expectations of demonstrated compliance for task 1 and task 2 have been met.

PGE outlines their multi-pronged approach to community outreach and public awareness, including WMP Engagement Strategy, Wildfire Information and Awareness Strategy, Public Safety Partner Coordination and Public Safety Power Shutoff Notification Strategies. PGE also indicates that that assessment of gaps in reach and prioritization of functional needs population will be integrated into the outreach strategy. The inclusion of high-level messaging content framework, target audience for various methods of outreach, planned availability of checklists and toolkits, and three-phased Public Safety Partner Coordination demonstrates expected compliance of community outreach and engagement efforts. PGE’s website currently hosts a robust library of safety resources online for continuous customer accessibility.

**Table 7: Subject Area 6 Summary of Demonstrated Compliance**

Description No.	Expectation of Demonstrated Compliance	Demonstrated Compliance
1	Comprehensive list of completed community outreach and public awareness effort types and planned (new or repeat type of engagement and outreach) effort types in 2022.	Met
2	Detailed descriptions of each activity: content and messaging of outreach and communication, why it was chosen, its expected audience, it's expected impact, measures to ensure communication techniques are successful in reaching the target audience, who from the utility supports the effort, outside organizations who support the effort, and when it is planned (before, during and after wildfire season).	Met

## Recommendations for Future WMPs

The IE recommends that for future WMPs PGE include the anticipated timelines and estimated customer reach for the dynamic outreach activities including but not limited to media campaigns, distribution of collateral to Community-Based Organizations and Public Safety Partners, and webinar or live wildfire safety and preparedness forums.

Further information should be included that identifies the conditions that drive the activation of Community Resource Centers (CRC) and how the placement of the Community Resource Centers is determined.

***Subject Area 7: Description of procedures, standards, and time frames that the Public Utility will use to inspect utility infrastructure in areas the Public Utility identified as heightened risk of wildfire.***

The IE utilized the following “Expectation of Demonstrated Compliance” descriptions to evaluate Subject Area 7 of the plan, which covers utility infrastructure inspections and corrections in the areas Portland General Electric identified as high wildfire risk.

- Description of inspection activities in non-high wildfire risk areas, separated by distribution and transmission (inspection types, frequencies, correction protocols).
- Description of procedures and standards utilized to guide inspection activities in wildfire risk areas.
- Description of inspection activities in wildfire risk areas, detailed by miles and structures of impacted distribution and transmission assets, inspection types and methods, frequency, infraction categorization, infraction protocol.
- Explanation of logic/reasoning in selected inspection practices in wildfire risk areas.

**Review of Initiatives**

PGE is supplementing its existing overhead electric asset inspection and corrections program in the HRFZs. Additional primary elements are: 1. Annually inspecting all overhead assets in the HRFZs, 2. Transitioning to an Inspect-Correct approach using two-person crews to inspect and repair most corrections and mitigate risk in a single visit to the pole, and 3. Reducing correction timeframes to no more than 30 days for infractions that pose a hazard.

Additionally, PGE is hiring dedicated wildfire inspection resources, including a project manager and QA/QC field personnel, and building a technology tool to enable mobile inspections and track inspection progress with a dashboard.

**Demonstrated Compliance**

Table 8 summarizes the findings of demonstrated compliance for Subject Area 7.

It is not clear in PGE’s WMP if the plan includes inspecting all overhead assets in the HRFZs annually going forward after 2022, or if it will be just in 2022. It is also not clear if the July 31 inspection deadline is only for 2022, or if it is planned to be enacted in future years.

Table 6 in the WMP lists transmission overhead asset types and the inspection and patrol frequency, but distribution assets are not included in the table. Additionally, there is no inventory of the line-miles and structures included in the enhanced inspection practices for HRFZs.

**Table 8: Subject Area 7 Summary of Demonstrated Compliance**

Description No.	Expectation of Demonstrated Compliance	Demonstrated Compliance
1	Description of inspection activities in non-high wildfire risk areas, separated by distribution and transmission (inspection types, frequencies, correction protocols).	Met
2	Description of procedures and standards utilized to guide inspection activities in wildfire risk areas.	Met
3	Description of inspection activities in wildfire risk areas, detailed by miles and structures of impacted distribution and transmission assets, inspection types and methods, frequency, infraction categorization, infraction protocol.	Substantially Met
4	Explanation of logic/reasoning in selected inspection practices in wildfire risk areas.	Met

**Recommendations for Future WMPs**

The IE recommends that for future WMPs PGE clearly identify inspection and correction procedures for distribution assets, for non-wildfire risk zones and HRFZs, along with the impacted line-miles and structure counts for transmission and distribution assets in HRFZs.

The IE also recommends that for future WMPs PGE clarify if the enhanced inspection and correction protocols are planned only for the WMP year, or if they are forecasted to expand beyond the plan year.

**Subject Area 8: *Description of the procedures, standards, and time frames that the Public Utility will use to carry out vegetation management in areas the Public Utility identified as heightened risk of wildfire.***

The IE utilized the following “Expectation of Demonstrated Compliance” descriptions to evaluate Subject Area 8 of the plan, which covers vegetation management procedures, standards and timeframes in the areas Portland General Electric identified as high wildfire risk.

- Description of vegetation management activities in non-high wildfire risk areas (trimming and clearing protocol and frequency, inspection frequency, QA/QC program, separated by transmission and distribution).
- Description of vegetation management activities in wildfire risk areas, detailed by miles and structures of impacted distribution and transmission assets, trimming, and clearing protocol and frequency, inspections, QA/QC program (separated clearly between distribution and transmission activities).
- Explanation of logic/reasoning in selected vegetation management practices in wildfire risk areas.
- Description of the process for reviewing practices and methods to ensure effectiveness with plan procedures.



## Review of Initiatives

PGE is supplementing its existing vegetation management program in the HRFZs, calling it the Advanced Wildfire Risk Reduction (AWRR) Vegetation Management Program for High-Risk Areas. Additional elements are 1. Completing annual vegetation inspections for all overhead lines that fall with HRFZ areas, with a goal of completing inspections prior to fire season declaration, 2. Completing “cycle buster” tree trimming annually for vegetation identified in the inspection process, with a goal of completing the trimming prior to fire season declaration, and 3. Completing annual prescribed vegetation control techniques for locations that exceed standard line-clearance specifications.

## Demonstrated Compliance

Table 9 summarizes the findings of demonstrated compliance for Subject Area 8.

**Table 9: Subject Area 8 Summary of Demonstrated Compliance**

Description No.	Expectation of Demonstrated Compliance	Demonstrated Compliance
1	Description of vegetation management activities in non-high wildfire risk areas (trimming and clearing protocol and frequency, inspection frequency, QA/QC program, separated by transmission and distribution).	Met
2	Description of vegetation management activities in wildfire risk areas, detailed by miles and structures of impacted distribution and transmission assets, trimming, and clearing protocol and frequency, inspections, QA/QC program (separated clearly between distribution and transmission activities).	Substantially Met
3	Explanation of logic/reasoning in selected vegetation management practices in wildfire risk areas.	Substantially Met
4	Description of the process for reviewing practices and methods to ensure effectiveness with plan procedures.	Met

## Recommendations for Future WMPs

The IE recommends that for future WMPs PGE provide any analysis of historical events pertaining to PGE’s power lines, specific equipment type, vegetation and wildfires be provided that informed the program’s design and its success factors, as well as logic and details of analysis completed for their programming decisions in HRFZs regarding vegetation management practices and protocols.

The IE also recommends that for future WMPs PGE provide the impacted line-miles and structure counts for transmission and distribution assets that are included in the AWRR program.

**Subject Area 9: Identification of the development, implementation, and administrative costs for the plan, which includes a discussion of risk-based cost and benefit analysis, including consideration of technologies that offer co-benefits to the utility's system.**

The IE utilized the following “Expectation of Demonstrated Compliance” descriptions to evaluate Subject Area 9 of the plan, which covers the cost to develop, implement and administer the WMP, risk-based cost and benefit analysis, and consideration of technologies that offer co-benefits.

- Summary of plan activities that are incremental costs to "baseline" utility operations.
- Two detailed tables, one for capital costs and one for expense (O&M) costs, with annual costs for each plan activity, and a forecast of costs for the activities described in the plan that are anticipated to go beyond 2022.
- Summary discussion of decision-making process on planned expenditures, based on risk-based cost and benefit analysis, and co-benefits to the utility's system.

**Review of Initiatives**

PGE identifies two main cost categories, operations and maintenance and capital costs in their WMP that require an increase in investment in 2022. Programs are listed under one of the two cost categories, but not itemized as individual program forecasted costs.

Figure 6 in the WMP identifies various system hardening project types and situational awareness project types with their expected investment timelines, varying in duration between 2020 and 2025. Table 3 in the WMP lists five different planned capital investment projects, and their estimated quantities of scale for 2022.

The guiding principle for PGE’s investment strategy is to prioritize programs that deliver the most mitigation value to customers and the region through a comparative risk mitigation value analysis using the ISO-31000 framework.

**Demonstrated Compliance**

Table 10 summarizes the findings of demonstrated compliance for Subject Area 9.

**Table 10: Subject Area 9 Summary of Demonstrated Compliance**

Description No.	Expectation of Demonstrated Compliance	Demonstrated Compliance
1	Summary of plan activities that are incremental costs to "baseline" utility operations.	Met
2	Two detailed tables, one for capital costs and one for expense (O&M) costs, with annual costs for each plan activity, and a forecast of costs for the activities described in the plan that are anticipated to go beyond 2022.	Substantially Met
3	Summary discussion of decision making	Substantially Met

	process on planned expenditures, based on risk-based cost and benefit analysis, and co-benefits to the utility's system.	
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### Recommendations for Future WMPs

The IE recommends that for future WMPs PGE provide details of the cost-benefit analysis completed to support decisions of program strategy and scale. The programs are consistent with emerging industry best practices, however, there is little information provided of the cost-benefit assessments that were made to make budgeting decisions, and if any initial budgets were modified based on cost-benefit analysis completed.

The IE also recommends that for future WMPs PGE provide program level forecasted costs, for the WMP year, as well as a forecast of costs at minimum three years out.

**Subject Area 10: *Description of participation in national and international forums, including workshops identified in section 2, chapter 592, Oregon Laws 2021, as well as research and analysis the Public Utility has undertaken to maintain expertise in leading edge technologies and operational practices, as well as how such technologies and operational practices have been used develop implement cost effective wildfire mitigation solutions.***

The IE utilized the following “Expectation of Demonstrated Compliance” descriptions to evaluate Subject Area 10 of the plan, which covers participation in workshops and forums, research, and analysis to maintain expertise in leading edge technologies and operational practices, and the application of the technologies and practices.

- Comprehensive list of national and international forums and state workshops attended by utility staff, and nature of participation in the forums and workshops (who attended from the utility, who presented from the utility).
- Research and analysis the utility is doing or has completed regarding leading edge technology and operational practices.
- Results of research and analysis of technology and operational practices that have been implemented into cost-effective wildfire mitigation solutions.

### Review of Initiatives

PGE is an active member and participates in regional, national, and international industry collaboration channels around wildfire risk mitigation for utilities. Collaboration channels are listed in the WMP, as well as details of the focus of the forums, and PGE’s role in the forums.

Details of research and development (R&D) are provided for partnerships with the Electric Power Research Institute (EPRI), as well as special R&D projects in the areas of remote sensing data acquisition, artificial intelligence-driven analysis, intelligent fault circuit indicators, smart reclosers, and an early fault detection system.

### Demonstrated Compliance

Table 11 summarizes the findings of demonstrated compliance for Subject Area 10.

**Table 11: Subject Area 10 Summary of Demonstrated Compliance**

Description No.	Expectation of Demonstrated Compliance	Demonstrated Compliance
1	Comprehensive list of national and international forums and state workshops attended by utility staff, and nature of participation in the forums and workshops (who attended from the utility, who presented from the utility).	Met
2	Research and analysis the utility is doing or has completed regarding leading edge technology and operational practices.	Met
3	Results of research and analysis of technology and operational practices that have been implemented into cost-effective wildfire mitigation solutions.	Met

**Recommendations for Future WMPs**

The IE recommends that for future WMPs PGE continue to provide highlights of collaboration with industry channels, both information and knowledge shared from PGE, and valuable information learned through the engagements.

## APPENDIX