Application No. 22-05-006
Exhibit PAC/1200
Witness: Allen Berreth

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

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# Supplemental Testimony of Allen Berreth

## Risk-Based Decision Making, Wildfire Mitigation Capital and Expense, Vegetation Management

September 2022

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## ATTACHED EXHIBIT

**Q. Are you the same Allen Berreth who previously submitted direct testimony in this proceeding on behalf of PacifiCorp d/b/a Pacific Power (PacifiCorp or the Company)?**

A. Yes.

## I. PURPOSE OF TESTIMONY

**Q. What is the purpose of your supplemental testimony?**

A. On August 9, 2022, the California Public Utilities Commission (Commission) issued an assigned Commissioner's Scoping Memo and Ruling requesting supplemental testimony on PacifiCorp's risk-based analysis and investment decisions. This testimony is specifically focused on the areas of distribution physical security, wildfire mitigation, and vegetation management.

## II. PACIFICORP'S RISK-BASED DECISION-MAKING FRAMEWORK

**Q. Please review how PacifiCorp evaluates risk-based investment as described in your direct testimony.**

A. The transition to a risk-based decision-making framework was first introduced in PacifiCorp's last general rate case, Application (A.)18-04-002 (2019 Rate Case), and approved by the Commission in that proceeding.[1] This testimony and methodology focused on a six-step investment planning process including:

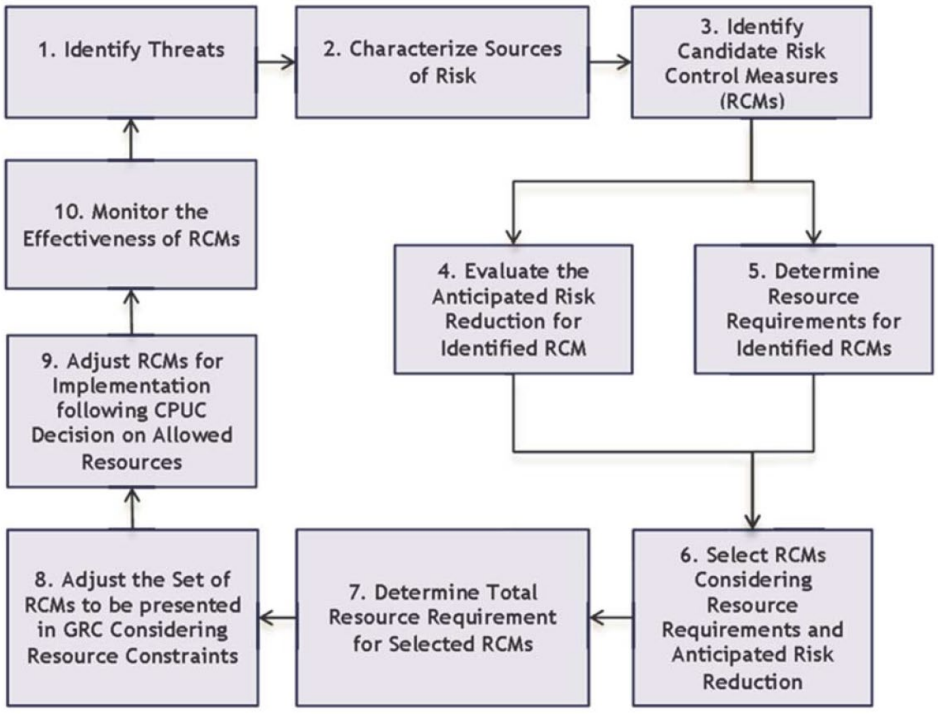
- Risk identification
- Risk analysis
- Risk evaluation and prioritization

[1] *In the Matter of the Application of PacifiCorp (U901E), an Oregon Company, for an Order Authorizing a General Increase Effective January 1, 2019,* A. 18-04-001, D. 20-02-025 at 39-40 (Feb. 18, 2020).

- Mitigation plan development
- Risk-informed investment decision and risk mitigation implementation; and
- Risk monitoring

Similar to the large Investor-Owned Utilities (IOUs), PacifiCorp included some of the basic principles of the International Standardization Organizations "Risk Management – Principles and Guidelines" (ISO 31000)[2] into its six-step methodology as well as the basic principles and processes developed by Cycla Corporation (Cycla), which was introduced in earlier proceedings and endorsed by the Commission.[3]

**Figure 1: Cycla's 10-Step Process Overview**




[2] ISO 31000 is an internationally recognized standard for risk management. Adopting the principles and guidelines of ISO 31000 positions an organization to be able to achieve objectives, improve the identification of risks, and more effectively allocate resources for risk reduction.

[3] *Application of San Diego Gas & Electric Company (U902M) for Review of its Safety Model Assessment Proceeding Pursuant to Decision 14-12-025*, A.15-05-005, D.16-08-018 at 18 (Aug 29, 2016) (The Commission approved the 10-step Cycla model as a "common yardstick of the maturity" of risk assessment and mitigation models).

PacifiCorp leveraged this methodology to identify top risks, evaluate existing controls, and quantify the need for additional risk-based investment.

**Q. Please provide additional details and an overview of PacifiCorp's risk-based decision-making framework. Please include descriptions of any algorithms, methodologies or tools employed to evaluate risk.**

A. PacifiCorp's algorithms, methodologies and tools employed to implement its risk-based decision-making framework were outlined in Exhibit PAC/1000 submitted as a part of the 2019 Rate Case.

**Q. Please describe the top ten risks that were identified.**

A. The top ten risk events identified, which included mainly equipment failures or mis-operations, such as substation transformers, circuit breakers, relays, poles, and overhead pole equipment, were:

1. Substation Transformer Failure
2. Substation Circuit Breaker Failure
3. Substation Transformer Bushing Failure
4. Substation Circuit Breaker Oil/SF6 Gas Leak
5. Transformer Radiator Failure
6. Relay Failure or Mis-operation
7. Distribution Underground Conductor Failure
8. Distribution Overhead Pole Failure
9. Distribution Overhead Conductor Failure
10. Distribution Overhead Pole Mounted Equipment Failure – Aging Infrastructure

**Q. Please describe how the risk-based decision-making framework was used to determine this list of top ten risk events. Provide an explanation of how each step was applied.**

A. As described in Exhibit PAC/1000 included in the 2019 Rate Case, PacifiCorp's risk-based decision-making framework consists of a six-step investment planning process that integrates an algorithm known as the risk evaluation tool (RET). Specifically, PacifiCorp's investment planning process includes the following six steps:

- Risk identification (Step 1);
- Risk analysis (Step 2);
- Risk evaluation and prioritization (Step 3);
- Mitigation plan development (Step 4);
- Risk-informed investment decisions and risk mitigation implementation (Step 5); and
- Risk monitoring (Step 6).

PacifiCorp's six steps map back to the Cycle Process as described in table 1 below.

**Table 1: Mapping PacifiCorp Process to Cycla Process**

| PacifiCorp Process | Cycla Process |
|---|---|
| 1. Risk Identification | Step 1 |
| 2. Risk Analysis | Step 2 |
| 3. Risk Evaluation and Prioritization | Step 2 |
| 4. Mitigation Plan Development and Documentation | Steps 3, 4, and 5 |
| 5. Risk-informed Investment Decisions and Risk Mitigation Implementation | Steps 6, 7, 8, and 9 |
| 6. Risk Monitoring | Step 10 |

The RET, applied in PacifiCorp's Step 3, uses frequency and impact scores for each specific risk event or scenario, *e.g.*, a substation transformer failure, etc. (Risk Event) to calculate an overall risk score for the Risk Event (Risk Score). PacifiCorp then focuses on its Risk Events with the highest Risk Scores in Steps 4 through 6.

**Q. Have you attached the scoring sheets used for each of the risk events?**

A. The scoring sheets have been attached to this testimony as Exhibit PAC/1201.

**Q. How often does PacifiCorp conduct the type of risk assessment that resulted in the top ten risk events previously identified in Exhibit PAC/800?**

A. PacifiCorp performed the risk assessment referenced in 2018. Beginning in 2019, PacifiCorp shifted focus to understand and evaluate wildfire risks consistent with the wildfire mitigation plan (WMP) ratemaking and proceedings.

**Q. When was the risk assessment that resulted in the top ten risk events previously identified in Exhibit PAC/800 conducted?**

A. The risk assessment was conducted in 2018 in preparation for the 2019 Rate Case.

**Q. Please describe whether the top ten risk events are listed in order of significance. If they are not listed in order of significance, describe what guided the order.**

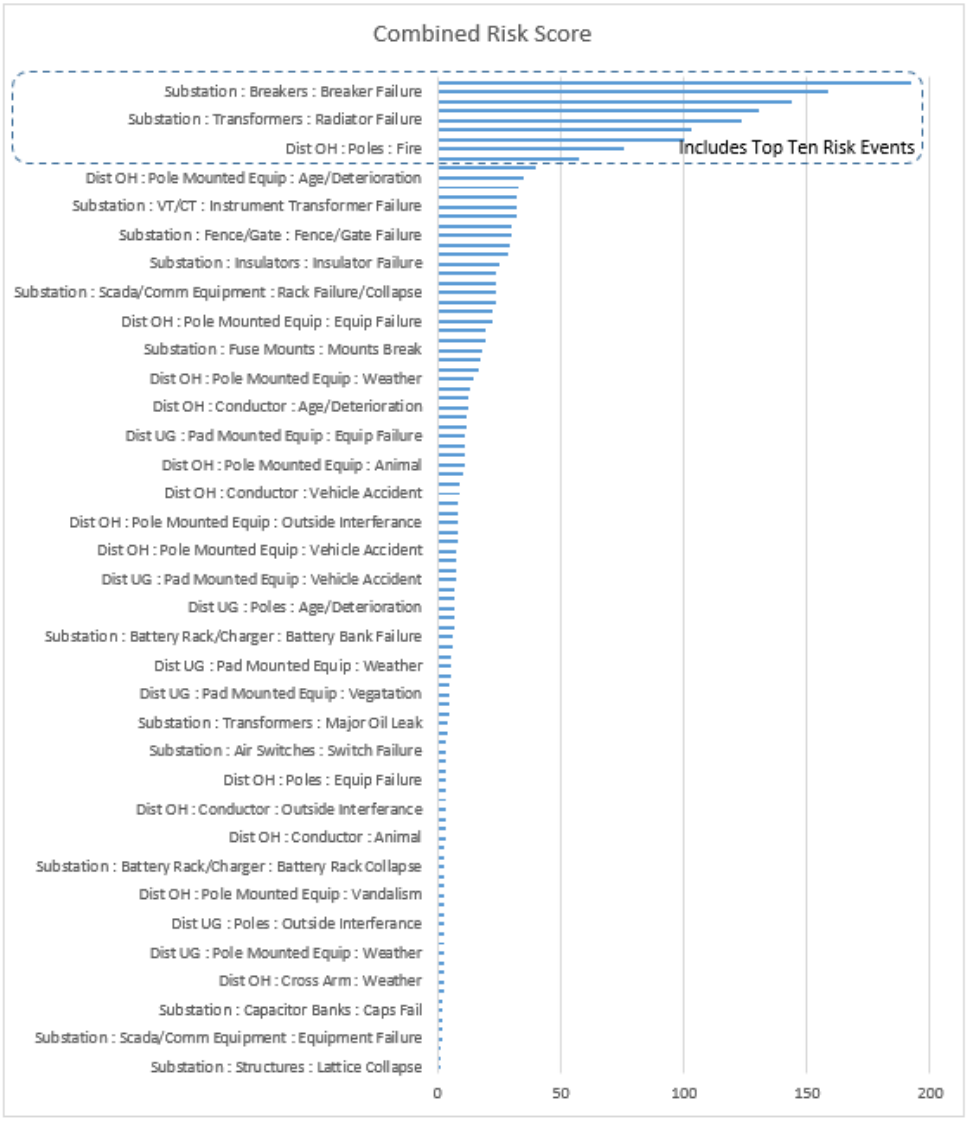
A. The top risk events are listed in order of significance.

**Q. Please list the number of risk events that were identified and the total scores, and describe how closely risk events that were not in the top ten scored to the top ten.**

A. As a part of this evaluation in 2018, 104 risks were evaluated which included top ten risks described above. Examples of other risk events evaluated included animal

impacts to conductor, fencing deterioration and damage, insulator failure, and weather-related conductor damage. The top ten risks carried a risk score ranging from approximately 192 on the high end to 40 on the low end. The scores associated with the other risk events ranged from approximately 35 on the high end to 1 on the low end. The plot below visually depicts the range of risk event scoring and highlights many of the risk events evaluated for simplicity of plotting. The plot also depicts the scores of the top ten risks relative to the other risks evaluated.

**Figure 2: Combined Risk Score Plot**



**Q. Please explain why wildfires are not listed as one of the risk events.**

A. At the time the risk assessment was conducted in 2018, PacifiCorp was beginning to learn more about wildfire risks and had yet to develop its first WMP, which included a wildfire risk assessment methodology and framework. Through the development of this wildfire risk assessment methodology and framework, PacifiCorp was able to appropriately develop plans for investments to meet the requirements of the WMP.

**Q. Please provide additional information on the controls in place to address each top scoring risk event.**

A. PacifiCorp's legacy and existing inspection and maintenance programs are in place to address each top scoring event. For example, substation inspections are performed on a routine basis consistent with California General Order 174 requirements. As a part of this program, qualified personnel inspect PacifiCorp substations in California, which includes the assessment of physical components, identification of safety hazards, and minor housekeeping tasks to ensure safe and reliable service. These inspections are considered standard operations that provide incremental reduction of risk to control many of the top events identified.

Similarly, PacifiCorp's asset inspection and correction programs are tailored to identify potential nonconformance to code, such as the National Electric Safety Code (NESC) or California General Orders and facilitate corrective work. These standard programs are performed consistent with California requirements and Company-specific policies and also incrementally mitigate risk by controlling many of the top events identified.

Other programs or practices such as the procurement of pre-capitalized

emergency spare equipment or the Spill Prevention, Control and Countermeasure (SPCC) program are designed to mitigate the potential impacts should an event occur, incrementally controlling the risk.

Additionally, many of the programs work to control top risks collectively, and there is not always a 1:1 ratio of risk to program.

**Q. Please provide and explain additional controls or mitigations for each top scoring risk event as well as plans for improving mitigation of each risk event.**

A. The table below generally maps some of the programs identified in Figure 7 of Exhibit PAC/1000 submitted in the 2019 Rate Case in relation to each top risk event that it most directly controls as an example.[4]

**Table 2: Mitigation Program and Risk Event Map**

| Top Risk | Example Programs & Controls | | | | | | |
|---|---|---|---|---|---|---|---|
| | Substation Inspections | Substation Equipment Maintenance | SPCC | Pre-Capitalized Spares | OH Inspections | UG Conductor Replacement | Outage Response Practices |
| 1. Substation Transformer Failure | X | X | X | X | | | |
| 2. Substation Circuit Breaker Failure | X | X | X | X | | | |
| 3. Substation Transformer Bushing Failure | X | X | X | X | | | |
| 4. Substation Circuit Breaker Oil/SF6 Gas Leak | X | X | X | X | | | |
| 5. Transformer Radiator Failure | X | X | X | X | | | |
| 6. Relay Failure or Mis-operation | X | X | X | X | | | |
| 7. Distribution Underground Conductor Failure | | | | | X | X | X |
| 8. Distribution Overhead Pole Failure | | | | | X | | X |
| 9. Distribution Overhead Conductor Failure | | | | | X | | X |
| 10. Distribution Overhead Pole Mounted Equipment Failure – Aging Infrastructure | | | | | X | | X |

[4] The full list of programs evaluated was included on page 30 of Exhibit PAC/1000 in the 2019 Rate Case.

**Q. Please describe any alternative risk mitigation measures that were considered for each risk event.**

A. No alternative risk mitigation measures were considered for each risk event.

**Q. Please provide an analysis of risk mitigated to cost ratio and/or risk reduction for dollar spent for each mitigation for each risk identified. Please describe how this analysis informed the determination of which mitigation measures were selected.**

A. As the assessment did not identify any incremental spend or specific programs, no specific cost ratio or risk reduction for dollar spent exercise was performed. A general ranking of cost versus effectiveness was included in Exhibit PAC/1000 in the 2019 Rate Case.

**Q. Please describe how the results of this analysis have changed since PacifiCorp's 2019 Rate Case.**

A. The result of this particular analysis has not changed since PacifiCorp's 2019 Rate Case. The Company has focused efforts on understanding and evaluating wildfire risk in its service territory. As this multi-year, iterative and collaborative effort involving stakeholders, other utilities, and the Office of Energy Infrastructure Safety (OEIS) is still on-going, PacifiCorp's risk-based decision-making framework has yet to be updated to fully incorporate wildfire risks.

**Q. Please explain if there are new mitigation measures since PacifiCorp's previous general rate case cycle.**

A. The new mitigation measures identified since the previous general rate case are described in PacifiCorp's 2022 WMP Update, available at

https://www.pacificorp.com/community/safety/wildfire-mitigation-plans.html, as well as generally described below.

## III. WILDFIRE MITIGATION COSTS

**Q. Please provide additional detail for how the scope and timeline of the wildfire mitigation and vegetation management expenses and investments that were originally identified in your direct testimony were determined and why they are reasonable.**

A. The scope and timeline of the wildfire mitigation and vegetation management expenses and investments originally identified in my direct testimony were determined as a result of a multi-year, iterative planning process in California consistent with regulatory requirements, Senate Bill 901, and Cal Pub,. Util. Code §8386(a).

This law required that all electric utilities develop and implement WMPs, that include means for mitigating wildfire risk, balancing costs with the resulting reduction of risk, and preventive actions and programs to minimize risk of utility facilities causing a wildfire.[5] PacifiCorp's first WMP was filed and approved in 2019. In 2020, PacifiCorp filed a revised WMP consistent with statute[6] reflecting a three-year term, which was updated and approved in 2021.[7] PacifiCorp filed its next WMP Update on May 6, 2022.

The scope and timeline of the wildfire mitigation and vegetation management

[5] *See* Cal. Pub. Util. Code §8386(b).
[6] *See* Cal. Pub. Util Code §8386(a).
[7] *See* Resolution Ratifying Action of the Wildfire Safety Division on PacifiCorp's 2021 Wildfire Mitigation Plan Pursuant to Public Utilities Code Section 8386, CPUC Resolution WSD-017 (Jul. 15, 2021).

expenses and investments are aligned with the programs outlined in PacifiCorp's 2022 WMP Update. Examples of vegetation management programs outlined include leveraging expanded clearances for vegetation management consistent with the Appendix E Guidelines of General Order 95, Rule 35 as described in Section 7.3.5.19 of the 2022 WMP Update, completing annual pole clearing or LRA and SRA poles as described in Section 7.3.5.5 of the 2022 WMP Update, and performing annual vegetation management patrols within the High Fire Threat District (HFTD) as described in Section 7.3.5.11 and Section 7.3.5.12 of the 2022 WMP Update. Examples of other investments include line rebuilds, also referred to as the installation of covered conductor as outlined in Section 7.3.3.3 of the 2022 WMP Update, the installation of advanced protection and control equipment described in Section 7.3.3.9 of the 2022 WMP Update, the replacement of overhead fuses and other overvoltage or overcurrent devices described in Section 7.3.3.7 of the 2022 WMP Update, and the installation of weather stations included in Section 7.3.2.1 of the 2022 WMP Update. Furthermore, other more system wide investments in tools, data, and software to improve dynamic situational awareness are discussed generally in Section 4.5.1.1 of the 2022 WMP Update.

**Q. How do the wildfire mitigation and vegetation management expenses relate to PacifiCorp's 2022 WMP and the forthcoming 2023 WMP?**

A. The wildfire mitigation and vegetation management expenses included in Exhibit PAC/800 align with the incremental portions of the wildfire mitigation and vegetation management programs included in the 2022 WMP Update and, if known at the time Exhibit PAC/800 was developed, align with the 2023 WMP costs. While the costs

align, they are not identical. The planning cycle and horizon for the WMP are different than the Rate Case. As PacifiCorp strives to use the most up-to-date information in its plans and forecasts, the WMP may often include more up-to-date information than the Rate Case. Additionally, the WMP includes budget values to help express expenditures in a given calendar year. The general rate case includes costs based on the time they are placed in service. For multi-year projects, which includes most of the capital expenditure in the WMP, there will almost always be a "lag" between the WMP costs and the rate case costs where a cost recorded in a given year in the WMP will be placed in service in the following year or years in a general rate case.

**Q. Was a risk-based approach used to determine the mitigation measures that were selected?**

A. Yes. Initially outlined in PacifiCorp's 2019 Fire Mitigation Plan, the Company's risk-based approach to determine mitigation measures has evolved over time to align with the WMP requirements, stakeholder feedback, and Staff recommendations. In 2019, building upon the statewide fire threat mapping activity, PacifiCorp evaluated historical outage data during fire season within the HFTD and the Company's California service territory as a proxy to identify potential risk events. As a result, PacifiCorp identified the top fire threats, evaluated existing mitigation programs, and identified new mitigation measures to be put in place. The table below, reproduced from PacifiCorp's 2019 Fire Protection Plan[8] generally summarizes the top events identified and the proposed additional mitigation programs.

[8] See Table 6 PacifiCorp's initial WMP filed 2/6/2019 at https://energysafety.ca.gov/wp-content/uploads/docs/misc/docket/263658393.pdf.

**Table 3: Top Event and Mitigation Summary**

| Outage Category/Potential Ignition Source | Fire Risk Ranking | Do Legacy Programs Exist Included in GRC? | Need for Change or Expansion | Proposed Additional Mitigation Programs |
|---|---|---|---|---|
| EQUIPMENT DETERIORATION/FAILURE | HIGH | YES | YES | - Enhanced Inspect/Correct Programs<br>- Asset Health Indexing and risk- based decision-making |
| NOT CLASSIFIABLE | HIGH | YES | YES | - Asset Hardening: Structural<br>- Operational Programs |
| WEATHER/WIND | HIGH | YES | YES | - Public Safety Power Shut-Off (PSPS) |
| ANIMALS | HIGH | YES | YES | - Asset Hardening: Enhanced Wildlife Protection Plan |
| TREE-NONPREVENTABLE | MIN | NO | YES | - Asset Hardening: Structural<br>- Operational Programs |
| NON-UTILITY CAUSE | MID | YES | YES | - Asset Hardening: Structural<br>- Enhanced Emergency Response Plan |
| ENVIRONMENT | MID | NO | YES | - Wildlife Assessment Program (not-protected species) |
| OPERATIONAL | MID | NO | YES | - Enhanced Operations Wildfire Mitigation Plan |
| VEGETATION | MID | YES | YES | - Enhanced Vegetation Management |
| EQUIPMENT MIS-OPERATION | LOW | YES | YES | - Enhanced Inspect/Correct Programs |
| LIGHTNING | LOW | YES | YES | - Lightning Detection for Situational Awareness<br>- Lightning-Resilient Infrastructure Modifications |

This initial risk assessment and plan laid the foundation for the 2020, 2021 and 2022 plans. Since initial development in 2019, PacifiCorp's WMP has grown and evolved. The initial risk assessment in the 2019 Fire Mitigation Plan[9] laid the

[9] As used this this testimony, the 2019 Fire Mitigation Plan is synonymous with the 2019 Wildfire Mitigation Plan or 2019 WMP.

foundation for many of the programs and elements. While the top risks and themes have remained generally the same, additional program development has taken place and the Company is now investing in additional tools, datasets, and software to continuously improve PacifiCorp's risk assessment capabilities. These additional advancements are described in Section 4.5 of the 2022 WMP Update.

**Q. How does PacifiCorp assess wildfire risk in its service territory?**

A. PacifiCorp recognizes that if certain weather and fuel conditions are present, a disruption of normal operations on the electrical network, called a "fault," can result in the ignition of a fire. Under certain weather conditions and in the vicinity of wildland fuels, such an ignition can grow into a harmful wildfire, potentially even growing into a catastrophic wildfire causing great harm to people and property. PacifiCorp's risk analysis, which aligned with the state led effort to develop a fire map, reviews fire history, the recorded causes of the fires, the acreage impact of the fires, and when in the year the fires typically occur. Using that information, the risk analysis identifies the logic for a risk-informed method to strategically address utility wildfire risks.

While this initial mapping effort laid the groundwork for 1) identifying PSPS areas, 2) developing first phase mitigation plans and 3) outlining priorities, it was insufficient for the level of risk analysis contemplated by either the Wildfire Safety Division (WSD) or the Company. As a result, the Company leveraged its legacy reliability management tools, and in combination with many previously untapped weather and land-based resources, began the development of its Localized Risk Assessment Model (LRAM), which it first described in the 2021 WMP Update and

further outlines in the 2022 WMP Update. This new tool combined various datasets and risk factors to identify, at the zone of protection level, a combined utility risk score and inform investment and prioritization. This tool and the Company's methodology are being further refined through the OEIS led working group, which aims to develop consistency in wildfire risk modeling across the utilities. Additional updates and progress are planned through the Company's continued WMP filings and progress reports.

Outside of California, PacifiCorp patterned its wildfire risk modeling on the methodology developed through the iterative process in California, with a goal of identifying high risk locations within other states that would generally map to the HFTD in California. PacifiCorp engaged REAX Engineering Inc., a fire-science engineering firm, to identify areas of elevated wildfire risk, designated as Fire High Consequence Areas (FHCA).

The data and process used in PacifiCorp's analysis are as follows:

1) Topography of the land, including elevation, slope, and aspect;

2) Fuel data which quantify fuel loading, fuel particle size, and other quantities needed by fire models to calculate the rate of spread;

3) Weather Research and Forecasting, which is a hybrid of weather modeling and surface weather observations (including temperature, relative humidity, wind speed/direction, and precipitation);

4) Historical fire weather days spanning the period from January 1, 1979, through December 31, 2017;

5) Estimated live fuel moisture;

6) Ignition modeling, using Monte Carlo simulated ignition scenarios; and

7) Fire spread modeling.

A final confirmation exercise was completed by evaluating the FHCA against historical fire perimeters (which are the final recorded footprint for any given fire), existing Company facility equipment, and the Company's service territories. The resulting FHCA, with wildfire perimeters, and PacifiCorp's service territories are shown in Exhibit PAC/801. In general, if population density did not correlate to fuel and fire weather history, it was not considered a candidate for FHCA designation.

**Q. How does PacifiCorp assess the consequences of wildfire spread in its service territory?**

A. Generally, the statewide map incorporates potential consequences of wildfire spread in PacifiCorp's service territory. As described in Section 4.5.1.1 of PacifiCorp's 2022 WMP Update, the Company also recently began procuring Technosylva's Wildfire Analyst-Enterprise (WFA-E) to take advantage of already established modeling software in use at other utilities and fire agencies to support real-time operations and long-term planning. While still in development for full operational use at PacifiCorp, the WFA-E modeling solution includes a suite of wildfire risk analysis products, including FireCast, FireSim and the Wildfire Risk Reduction Model (WRRM).

FireCast leverages Technosylva's fire spread prediction modeling capabilities through integration with PacifiCorp's Weather Research and Forecast (WRF) model to derive daily territory-wide and utility asset wildfire risk ratings. This information is critical to operations throughout fire season and especially on the days leading up to

an extreme fire weather event and potential PSPS. FireSim provides on-demand capability to simulate the potential spread and consequence of a reported fire, which critically supports decision-making for real-time operations and infrastructure protection. FireSim can also simulate the potential consequence of fires that were prevented due to operational actions such as PSPS. WRRM combines millions of fire behavior simulations with proprietary asset data to quantify risk from each asset and calculate potential risk reduction for wildfire hardening projects.

PacifiCorp's goal for WFA-E is to leverage cutting-edge fire science technology to better anticipate, prepare for, respond to, and recover from extreme fire weather events and long-term wildfire risk. This includes PSPS decision-making and the prioritization of fire-hardening projects. Procurement of the WFA-A software suite is also a key component of the situational awareness expenditures and program described in both the 2022 WMP Update and Exhibit PAC/800.

**Q. Please address whether each of the mitigation measures prioritizes locations for application of the measure based on highest wildfire risk, and how this analysis was conducted and applied.**

A. Based on existing models and assessment capabilities, PacifiCorp prioritizes locations for application of the measures based on highest wildfire risk, with the exception of where measures are applied broadly and, therefore, no prioritization can occur. The prioritization for each program is described in PacifiCorp's 2022 WMP Update. Examples include the installation of covered conductor and other grid hardening programs, which are prioritized based on risk as determined by the Company's Localized Risk Assessment Model (LRAM) described in Section 4.5.1.4 of the 2022

WMP Update. Other programs such as the annual vegetation management inspections are performed through the HFTD. These inspections are prioritized based on risk to include the HFTD but are not further prioritized within the HFTD. Finally, programs such as situational awareness, are applied more broadly.

**Q. Do you have a revised Table 3 from your direct testimony that includes a more detailed breakdown of forecasted costs for each separate distribution mitigation program?**

A. The table below further breaks down the forecasted costs for each separate distribution mitigation program included in Table 3 of Exhibit PAC/800.

**Table 4: Expanded Cost Detail of Distribution Mitigation Program Forecast**

| Distribution Program | CY2022 | CY2023 | Total |
|---|---|---|---|
| System Hardening: Line Rebuild | $27,967,865 | $32,309,930 | $60,277,795 |
| System Hardening: Advanced Protection & Control | $3,520,000 | $2,480,000 | $6,000,000 |
| System Hardening: Pole mounted overcurrent and overvoltage equipment replacement | $2,644,000 | $360,000 | $3,004,000 |
| Installation of Weather Stations | $1,250,000 | $1,000,000 | $2,250,000 |
| **Total Distribution** | **$35,381,865** | **$36,149,930** | **$71,531,795** |

**Q. Do you have a revised Table 4 from your direct testimony that includes a more detailed breakdown of forecasted costs for each separate distribution mitigation program?**

A. The table below further breaks down the forecasted costs for each separate distribution mitigation program included in Table 4 of Exhibit PAC/800.

**Table 5: Expanded Cost Detail of Incremental Distribution Mitigation Expense**

| Distribution Program | 2023 Planned Spend Total Co.($) | 2023 Planned Spend CA Alloc. ($) |
|---|---|---|
| Situational Awareness | $1,397,000 | $1,397,000 |
| Stakeholder & Community Engagement | $268,400 | $268,400 |
| Plan Monitoring | $440,000 | $440,000 |
| Customer Impact Mitigation Programs | $150,000 | $150,000 |
| TOTAL | $2,255,400 | $2,255,400 |

**Q. How do the 2022 and 2023 wildfire mitigation investments in this case compare to the investments in PacifiCorp's 2022 WMP in terms of overall type of investments and timing of deployment? Please explain any instances where costs are not aligned and explain any differences.**

A. As described above, the wildfire mitigation and vegetation management expenses included in Exhibit PAC/800 align with the incremental portions of the wildfire mitigation and vegetation management programs included in the 2022 WMP Update and, if known at the time Exhibit PAC/800 was developed, align with the 2023 WMP costs. While the costs align, they are not identical. The planning cycle and horizon for the WMP are different than this rate case filing. As PacifiCorp strives to use the most up-to-date information in its plans and forecasts, the WMP may often include more up-to-date information than this rate case.

Additionally, the WMP includes budget values to help express expenditures in a given calendar year. The instant rate case includes costs based on the time they are placed in service. For multi-year projects, which includes most of the capital expenditure in the WMP, there will almost always be a "lag" between the WMP costs and the rate case costs where a cost recorded in a given year in the WMP will be

placed in service in the following year or years in a rate case. For example, the 2022 WMP Update identifies approximately $176 million of capital expenditure from 2022-2023. However, not all of that capital will be placed in service during that time period, especially with regard to multi-year projects such as the implementation of covered conductor which reflects a large percentage of the planned strategic capital. Therefore, this rate case only forecasts approximately $74 million as identified in Table 3 of Exhibit PAC/800 at 17 to be placed in service between 2022-2023.

Furthermore, the WMP includes both standard programs as well as incremental programs. Therefore, the WMP may include added spend not included in this case. For example, the 2022 WMP Update identified approximately $16.4 million of planned expense in 2023 as compared to the $7.9 identified in Table 4 of Exhibit PAC/800 at page 26. While the costs align to accomplish the programs outlined in the 2022 WMP update, the costs in this rate case only include incremental costs required to accomplish those programs. The 2022 WMP Update reflects the total annual costs associated with wildfire mitigation, which includes standard or legacy programs.

**Q. Does PacifiCorp intend to update its testimony on wildfire mitigation and costs following disposition of its 2022 WMP by the OEIS?**

A. While PacifiCorp is waiting for OEIS' disposition of its 2022 WMP, the Company does not anticipate updating its testimony on wildfire mitigation costs.

**Q. Does PacifiCorp intend to update how it assesses wildfire risk?**

A. Yes. PacifiCorp's wildfire risk assessment methodology has been and will continue to be an iterative process consistent with the development and evolution of the

company's wildfire mitigation plans which are based on lessons learned, stakeholder feedback, and guidance from OEIS. For example, PacifiCorp is currently procuring and implementing the WFA-E modeling tools to advance the company's risk assessment capabilities based on feedback from stakeholders and lessons learned from other utilities through workshops. Additionally, as a result of these workshops, OEIS is currently working to develop risk assessment guidelines for all utilities to incorporate into their WMPs. PacifiCorp anticipates those guidelines will be released sometime in 2022. Once released, PacifiCorp intends to develop a plan and incorporate the new OEIS requirements and guidelines into the company's tools beginning in 2023. PacifiCorp anticipates that the combination of these new tools and OEIS guidelines could change how the company assesses wildfire risk beginning in 2023.

**Q. Has PacifiCorp included any recommended measures to reduce the need to deploy PSPS?**

A. Yes. As described in Section 8.3 of PacifiCorp's 2022 WMP Update, reducing the impact of PSPS is a significant goal of PacifiCorp's WMP and PacifiCorp perceives the best way to reduce PSPS impacts is to reduce the number, geographic scope, and duration of PSPS events. While recognizing that the general application of all mitigation initiatives in its 2022 WMP Update will reduce the number, geographic scope, and duration of PSPS events. PacifiCorp also acknowledges that certain initiatives are more directly tied to the PSPS Program. Examples of these specific programs include situational awareness, deployment of covered conductor, and implementation of customer backup generation programs.

**Q. How will the deployment of these specific programs reduce the scale and scope of a PSPS?**

A. Above all, improved situational awareness reflects a category of initiatives closely related to the PSPS decision-making process. Like other utilities, PacifiCorp's situational awareness plans include the installation of additional weather stations to access localized weather risk data and inform decision making. Additionally, to better leverage this weather data and other key information, PacifiCorp is investing in range of new data processing and modeling capabilities.

This includes key investment and the development of an operational weather forecast model that leverages fully redundant High Performance Computing Clusters (HPCC) capabilities to process and deliver a twice daily 96-hour forecast as described in Section 7.3.2.4 on page 156 of the 2022 WMP Update. Furthermore, PacifiCorp is procuring Technosylva's WFE-A modeling suite as described in Section 4.5.1.1 on page 66 of the 2022 WMP Update, including FireCast, to model fire spread risk daily across PacifiCorp's service territory, FireSim to model on demand fire spread potential, and WRRM to quantify asset risk and inform planning.

This additional data and more sophisticated situational awareness model will continue to better inform decision making, which reduces PSPS impacts by (i) reducing the likelihood that a PSPS will be implemented unnecessarily and (ii) facilitating a more surgical application of PSPS, thereby reducing its scope. This effort is further described in Section 7.3.2.4 on page 156 of the 2022 WMP Update.

Other initiatives have less direct involvement in the PSPS decision-making process. But those initiatives can still have a dramatic influence on reducing PSPS

impacts by reducing the likelihood of PSPS. Many of PacifiCorp's initiatives are specifically geared to reduce wildfire ignition risk with the most notable being covered conductor. PacifiCorp's covered conductor will materially reduce PSPS impacts by (a) making PSPS substantially less likely and (b) helping PacifiCorp surgically reduce the size and areas of impact. Above all, the mechanical properties of a covered conductor design physically prevent the initiation of a flash-over due to vegetation on the line. Notably, while data continues to be gathered to better understand specific relationships, the general correlation between wind, vegetation contacts, and wildfire spread is well-understood. Installing covered conductor will increase the grid's resiliency against wind-driven vegetation contacts, which can lead to devasting wildfire ignitions. High winds are, of course, a critical factor in the assessment of risk and considered in any PSPS decision-making process. The mitigation benefits of covered conductor, especially when combined with other grid hardening efforts implemented as part of a rebuild effort, will significantly decrease PSPS impacts by significantly decreasing the likelihood of a PSPS. If the powerlines can withstand higher wind speeds, it will decrease the occurrence of PSPS events. Covered conductor projects also give PacifiCorp flexibility to take a more surgical approach to PSPS.

Other initiatives specifically address reducing the impact of a PSPS that has been implemented. Examples include the new portable battery program and generator rebate program discussed in Section 7.3.3.11 on page 168 of the 2022 WMP Update. Additionally, PacifiCorp continues improving its readiness to open Community Resource Centers in any community impacted by a PSPS as described in

Section 7.3.9.3 on page 219 of the 2022 WMP Update.

**Q. With regards to the power lines that have received covered conductors, please provide a comparison of the number of faults on the line since the time of installation and the number of faults on the line before the treatment over a similar time period.**

A. Through collaboration with other utilities in California, PacifiCorp is working to determine the effectiveness of covered conductor which generally relies on outage data comparisons that are indicative of faults. To date, PacifiCorp's experience with covered conductor remains limited and PacifiCorp believes that the long-term effectiveness of covered conductor, both in its ability to reduce wildfire risk and PSPS impacts (and in comparison, to alternatives), requires multiple sets of information. The data will need to be compiled, assessed, discerned and updated over time. Because widespread installation of covered conductor in the utilities' service areas is relatively recent, recorded events alone are not appropriate to discern the effectiveness of covered conductor. To date, PacifiCorp, like other utilities, have used estimated effectiveness percentages in developing the risk reduction of covered conductor. These estimates have been informed by expert judgment, testing, benchmarking/research, and/or historical recorded results.

Based on previous deployment of covered conductor in 2007 as a part of targeted reliability pilot projects on circuits with elevated outage rates, PacifiCorp has experienced a 90 percent reduction in outage rate. PacifiCorp does not have enough data to begin characterizing before and after fault rates to discern a trend on circuits where covered conductor has been deployed.

## IV. MEMORANDUM ACCOUNTS

**Q. For the Fire Risk Mitigation Memorandum Account (FRMMA), please explain in which proceeding this account was authorized and the purpose of the account.**

A. PacifiCorp received approval for the creation of the FRMMA through Advice Letter 574-E-A, which became effective on January 1, 2019.[10]

The purpose of the FRMMA is to record incremental costs of fire risk mitigation work that is not otherwise recovered in PacifiCorp's adopted revenue requirement. Such costs shall include, but are not limited to, expense and capital expenditures for: advanced system hardening and resiliency; expanded automation and protection; improved wildfire detection; enhanced event response capacity, and vegetation management activities.

**Q. Please provide a breakdown (including detail) of the specific costs (with descriptions and dollar amounts) recorded in this memorandum account.**

A. Table 6 below provides a breakdown of the specific costs recorded in this memorandum account.

**Table 6: FRMMA Detail**

| Description | Recorded Cost |
|---|---|
| California FRMMA Interest | $1,748 |
| Direct Charges related to Technology Updates | $4,701 |
| Generator Rebate Program | $3,164 |
| Portable Battery Program | $278,592 |
| **Total** | **$288,204** |

[10] *PacifiCorp (U-901E) Advice Letter No. 574-E, To Establish Fire Risk Mitigation Memorandum Account in Accordance with Senate Bill 901 and Pub. Util. Code 8386(j),* Nov. 14, 2018.

**Q. For each of the costs identified above please explain why they were incurred and why they are reasonable.**

A. The Commission ordered utilities, including PacifiCorp, to administer a program to support resiliency for customers that rely on electricity to maintain necessary life functions, including for example, free backup batteries that energize necessary equipment.[11] In response to these guidelines, PacifiCorp developed a free-to-the-customer portable battery program and a generator rebate program in 2021. The costs included in the FRMMA above reflect the administrative costs to setup and implement these programs as required by D. 21-06-034.

**Q. For the Wildfire Mitigation Plan Memorandum Account (WMPMA), please explain in which proceeding this account was authorized and the purpose of the account.**

A. D.19-05-040 approves PacifiCorp's 2019 WMP[12] and directs the Company to open this memorandum account to implement SB 901, Assembly Bill (AB) 1054, and Cal. Pub. Util Code §8386.4(a) which states "At the time of approval of an electric corporation's wildfire mitigation plan, the commission shall authorize the electrical corporation to establish a memorandum account to track costs incurred to implement the plan."

The purpose of the WMPMA is to record incremental costs of fire risk mitigation work incurred to implement the Commission-approved PacifiCorp WMP that are not otherwise recovered in PacifiCorp's revenue requirement. Such costs

[11] *Order Instituting Rulemaking to Examine Electric Utility De-Energization of Power Lines in Dangerous Conditions*, R. 18-12-005, D. 21-06-034 at 170 & Appendix A at A10 (Jun. 29, 2021).
[12] *Order Instituting Rulemaking to Implement Electric Utility Wildfire Mitigation Plans Pursuant to Senate Bill 901 (2018)*, R. 18-10-007, D. 19-05-040 at 81, Ordering Para. 53-54 (Jun 4. 2019).

shall include, but are not limited to, expense and capital expenditures for: increased inspections and patrols; system hardening and resiliency; expanded automation and protection; improved situational awareness and wildfire detection; enhanced event response capacity, and vegetation management activities.

**Q. Please provide a breakdown (including detail) of the specific costs (with descriptions and dollar amounts) recorded in this memorandum account.**

A. Table 7 below details the costs recorded in this account.

**Table 7: WMPMA Detail**

| | Balance as of 8/31/2022 |
|---|---|
| California WMPMA Interest | $ 246,833 |
| **T&D WMP Activity** | **$ 29,697,571** |
| Not T&D Operations | $ 59,929 |
| Residential Generator Rebate Pgm- Admin Costs | $ 9,163 |
| **Total WMPMA Deferral Balance** | **$ 30,013,495** |

| | |
|---|---|
| Vegetation Management Distribution | $ 23,417,347 |
| Vegetation Management Transmission | $ 39,474 |
| Distribution - PSPS Events | $ 2,452,684 |
| Transmission - PSPS Events | $ 4,363 |
| Environmental survey work in Tier 3 zones | $ 151,221 |
| Enhanced distribution line equipment inspection | $ 188,140 |
| Enhanced transmission line equipment inspection | $ 23,382 |
| Fire Preparedness Equipment | $ 19,775 |
| Data Scientist / Fire Specialist | $ 922,169 |
| Weather Monitoring Service | $ 351,757 |
| Vegetation Analytics and Mapping | $ 124,960 |
| Independent Evaluator | $ 350,784 |
| Generator Rebate Program | $ 3,164 |
| Grid Hardening PMO | $ 302,404 |
| Expense Components of Capital Projects | $ 43,257 |
| Pole Strength | $ 3,000 |
| Portable Battery Program | $ 278,592 |
| Community Engagement | $ 87,622 |
| California Wildfire Program Delivery | $ 465,587 |
| Relay consulting data | $ 365,385 |
| Emergency Management and Meteorology | $ 102,505 |
| **T&D WMP Activity** | **$ 29,697,571** |

**Q. For each of the costs identified above please explain why they were incurred and why they are reasonable.**

A. The costs above reflect the incremental costs of fire risk mitigation work incurred to implement the Commission-approved PacifiCorp WMP that are not otherwise recovered in PacifiCorp's revenue requirement. Key programs include vegetation management asset inspections which address the incorporation of new regulations, PSPS implementation, the enhancement of risk modeling capabilities, and the development of a meteorology, emergency management, and plan monitoring department. The above costs are prudent and reasonable as they were incurred to implement the Company's Commission-approved WMP and allow the Company to reduce the risk of wildfires caused by its facilities in its service territory.

**Q. For the Fire Hazard Prevention Memorandum Account (FHPMA), please explain in which proceeding this account was authorized and the purpose of the account.**

A. The FHPMA was authorized with D. 09-08-029.[13] This account was effective August 20, 2009, until the effective date of PacifiCorp's 2019 general rate case, or February 5, 2020.

The purpose of this account is to record costs associated with fire hazard prevention measures adopted in R. 08-11-005 and its successor proceeding, R.15-05-006 that have not been previously authorized for recovery in a GRC or other regulatory proceeding. These costs may include expenses related to the

[13] *Order Instituting Rulemaking to Revise and Clarify Commission Regulations Relating to the Safety of Electric Utility and Communications Infrastructure Provider Facilities,* R. 08-11-005, D. 09-08-029 at 43-44, Ordering Paragraph 7, Conclusion of Law 21 (Oct. 2, 2009).

implementation of fire hazard prevention measures governed by General Order (GO) 95, GO 165, and any other expenses incurred in implementing fire hazard prevention measures adopted in R.08-11-005 and R.15-05-006.

**Q. Please provide a breakdown (including detail) of the specific costs (with descriptions and dollar amounts) recorded in this memorandum account.**

A. The table 8 below details the costs recorded in this account.

**Table 8: FHPMA Detail**

| Description | Recorded Cost |
|---|---|
| California FHPMA Interest | $27,226.39 |
| Vegetation Management | $3,052,856.55 |
| Line Inspection Interval change due to GO165 | $101,477.78 |
| **Total** | **$3,181,560.72** |

**Q. For each of the costs identified above please explain why they were incurred and why they are reasonable.**

A. The costs incurred above reflect expenditures to implement new programs or augment existing programs to comply with new regulations. Specifically, California General Order 95 Rule 35 was amended and further outlines in Appendix E, requiring modifications to PacifiCorp's vegetation management programs. General Order 95 Rule 18 and General Order 165 were also amended, resulting in modifications to PacifiCorp's asset management inspection programs. The above costs are prudent and reasonable as they were incurred to meet new regulatory requirements and also reduce the risk of wildfires in the Company's service territory.

**Q. For the FRMMA, WMPMA, and the FHPMA, please explain why it is reasonable to grant cost recovery for costs that have been forecast but not yet incurred in certain memorandum accounts from the period of July 2021 through December 2022 versus submitting these costs for recovery after they have been incurred.**

A. At the time of PacifiCorp's initial filing, actual costs recorded in the three memorandum accounts were included through January 31, 2022, with forecasted costs for the remainder of 2022 included only for the WMPMA. Based on the procedural schedule for the Company's general rate case, final costs through December 31, 2022, will be known prior to the Company's rebuttal filing and PacifiCorp will update the balances included for recovery at that time.

The 2022 costs to be recorded in the WMPMA are reasonably forecast based on prior experience and PacifiCorp's current wildfire mitigation plan. Additionally, including forecasted costs is not inconsistent with a general rate case which includes forecasted, or expected, costs and capital additions.

**Q. Does this conclude your supplemental testimony?**

A. Yes.

Application No. 22-05-006
Exhibit PAC/1201
Witness: Allen Berreth

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

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Exhibit Accompanying Supplemental Testimony of

Allen Berreth

Risk Event Scoring Sheets

September 2022

| **Risk Event:** | **Substation Transformer Failure** | | **Risk Plot Key:** | **A** |
|---|---|---|---|---|
| **Reasonable Worst Case:** | Substation transformer fails, releasing all oil in the transformer, resulting in a prolonged outage to all customers that requires the transformer to be replaced. | | | |
| **Controls:** | • Preventive maintenance monitoring of the condition of transformers.<br>• Install and maintain spill prevention devices.<br>• Purchase spare transformers. | | | |
| **Risk Scoring** | | | | |
| **Frequency Score** | **Impact Scores** | | | |
| 5 | **Safety** | 4 | | |
| | **Environmental** | 4 | | |
| | **Compliance** | 4 | | |
| **Frequency Factor** | **Reliability** | 5 | | |
| 1 | **Trust** | 5 | | |
| | **Financial** | 4 | | |
| **Total Risk Score:** | 192.35 | | | |
| **Additional Mitigations Considered:** | • Develop emergency generator deployment contract with service suppliers.<br>• Increase number of mobile substations to minimize outage times.<br>• Add redundant transformers at stations. | | | |

| **Risk Event:** | **Substation Circuit Breaker Failure** | | **Risk Plot Key:** | **B** |
|---|---|---|---|---|
| **Reasonable Worst Case:** | Substation circuit breaker failure causes damage to other substation equipment, resulting in prolonged outage. | | | |
| **Controls:** | • Use preventive maintenance activities to monitor the condition of circuit breakers.<br>• Increase ratio of spare to in-service circuit breakers. | | | |
| **Risk Scoring** | | | | |
| **Frequency Score** | **Impact Scores** | | | |
| 6 | **Safety** | 4 | | |
| | **Environmental** | 4 | | |
| | **Compliance** | 4 | | |
| **Frequency Factor** | **Reliability** | 4 | | |
| 3 | **Trust** | 5 | | |
| | **Financial** | 4 | | |
| **Total Risk Score:** | 158.50 | | | |
| **Additional Mitigations Considered:** | • Increase number of mobile substations to minimize outage times.<br>• Develop emergency generator deployment contract with service suppliers. | | | |

| **Risk Event:** | **Substation Transformer Bushing Failure** | | **Risk Plot Key:** | **C** |
|---|---|---|---|---|
| **Reasonable Worst Case:** | Substation transformer bushing failure destroys the transformer, resulting in a prolonged outage to all customers. | | | |
| **Controls:** | • Preventive maintenance monitoring of the condition of transformer and bushings.<br>• Install and maintain spill prevention devices. | | | |
| **Risk Scoring** | | | | |
| **Frequency Score** | **Impact Scores** | | | |
| 5 | **Safety** | 3 | | |
| | **Environmental** | 4 | | |
| | **Compliance** | 3 | | |
| **Frequency Factor** | **Reliability** | 5 | | |
| 0.50 | **Trust** | 4 | | |
| | **Financial** | 4 | | |
| **Total Risk Score:** | 144.10 | | | |
| **Additional Mitigations Considered:** | • Develop emergency generator deployment contract with service suppliers.<br>• Implement a bushing testing/replacement program.<br>• Increase number of mobile substations to minimize outage times.<br>• Add redundant transformers at substations. | | | |

| **Risk Event:** | **Substation Circuit Breaker Oil/SF6 Gas Leak** | | **Risk Plot Key:** | **D** |
|---|---|---|---|---|
| **Reasonable Worst Case:** | Substation circuit breaker oil/SF6 gas release results in the destruction of the circuit breaker, further resulting in a prolonged outage to all customers and an off-site release of oil or SF6 gas. | | | |
| **Controls:** | • Preventive maintenance monitoring of the condition of transformer.<br>• Install and maintain spill prevention devices. | | | |
| **Risk Scoring** | | | | |
| **Frequency Score** | **Impact Scores** | | | |
| 4 | **Safety** | 3 | | |
| | **Environmental** | 4 | | |
| | **Compliance** | 3 | | |
| **Frequency Factor** | **Reliability** | 5 | | |
| 0.33 | **Trust** | 4 | | |
| | **Financial** | 4 | | |
| **Total Risk Score:** | 130.20 | | | |
| **Additional Mitigations Considered:** | • Develop emergency generator deployment contract with service suppliers.<br>• Increase number of mobile substations to minimize outage times.<br>• Add redundant transformers at substations. | | | |

| **Risk Event:** | **Transformer Radiator Failure** | | **Risk Plot Key:** | **E** |
|---|---|---|---|---|
| **Reasonable Worst Case:** | Substation transformer radiator failure results in oil release that also damages the transformer, resulting in a prolonged outage to all customers and an off-site release of oil. | | | |
| **Controls:** | • Preventive maintenance monitoring of the condition of transformer.<br>• Install and maintain spill prevention devices. | | | |
| **Risk Scoring** | | | | |
| **Frequency Score** | **Impact Scores** | | | |
| 4 | **Safety** | 2 | | |
| | **Environmental** | 5 | | |
| | **Compliance** | 4 | | |
| **Frequency Factor** | **Reliability** | 5 | | |
| 0.22 | **Trust** | 4 | | |
| | **Financial** | 4 | | |
| **Total Risk Score:** | 123.40 | | | |
| **Additional Mitigations Considered:** | • Develop emergency generator deployment contract with service suppliers.<br>• Increase number of mobile substations to minimize outage times.<br>• Add redundant transformers at substations. | | | |

| **Risk Event:** | **Relay Failure or Mis-operation** | | **Risk Plot Key:** | **F** |
|---|---|---|---|---|
| **Reasonable Worst Case:** | Relay fail or mis-operate, resulting in prolonged outages to all customers. | | | |
| **Controls:** | • Current spare relay inventory.<br>• Leverage donor relays from impacted substation or other substations. | | | |
| **Leverage donor relays .** | | | | |
| **Frequency Score** | **Impact Scores** | | | |
| 3 | **Safety** | 3 | | |
| | **Environmental** | 2 | | |
| | **Compliance** | 4 | | |
| **Frequency Factor** | **Reliability** | 5 | | |
| 0.10 | **Trust** | 5 | | |
| | **Financial** | 4 | | |
| **Total Risk Score:** | 103.40 | | | |
| **Additional Mitigations Considered:** | • Develop emergency generator deployment contract with service suppliers.<br>• Increase spare relay inventory. | | | |

<table>
<tr><td>Risk Event:</td><td colspan="2">Distribution Underground Conductor Failure</td><td>Risk Plot Key:</td><td>G</td></tr>
<tr><td>Reasonable Worst Case:</td><td colspan="4">Public contact with underground wire resulting in multiple, permanent or serious injuries.</td></tr>
<tr><td>Controls:</td><td colspan="4">• Conduct current construction, maintenance and repairs per governing/company standards.</td></tr>
<tr><td colspan="5">Risk Scoring</td></tr>
<tr><td>Frequency Score</td><td colspan="4">Impact Scores</td></tr>
<tr><td rowspan="3">5</td><td>Safety</td><td colspan="3">4</td></tr>
<tr><td>Environmental</td><td colspan="3">2</td></tr>
<tr><td>Compliance</td><td colspan="3">3</td></tr>
<tr><td>Frequency Factor</td><td>Reliability</td><td colspan="3">4</td></tr>
<tr><td rowspan="2">0.86</td><td>Trust</td><td colspan="3">5</td></tr>
<tr><td>Financial</td><td colspan="3">3</td></tr>
<tr><td>Total Risk Score:</td><td colspan="4">100.30</td></tr>
<tr><td>Additional Mitigations Considered:</td><td colspan="4">• Provide a program to test and identify underground conductor needing repair or replacement.<br>• Increase the number of underground conductor replacement projects.<br>• Initiate program to repair underground conductor.</td></tr>
</table>

| **Risk Event:** | **Distribution Overhead Pole Failure** | | **Risk Plot Key:** | **H** |
|---|---|---|---|---|
| **Reasonable Worst Case:** | Excessive pole failures due to weather/fire resulting in 50% of customers losing power and an extended outage. | | | |
| **Controls:** | • Perform current pole inspection program.<br>• Perform current intrusive pole inspection program<br>• Perform current maintenance programs<br>• Maintain existing mutual assistance agreements for line crews from other utilities<br>• Maintain existing emergency support contracts for contractor line crews | | | |
| **Risk Scoring** | | | | |
| **Frequency Score** | **Impact Scores** | | | |
| 3 | **Safety** | 4 | | |
| | **Environmental** | 5 | | |
| | **Compliance** | 5 | | |
| **Frequency Factor** | **Reliability** | 3 | | |
| 0.0733 | **Trust** | 5 | | |
| | **Financial** | 4 | | |
| **Total Risk Score:** | 75.86 | | | |
| **Additional Mitigations Considered:** | • Make necessary adjustments to pole inspection and maintenance programs. | | | |

| **Risk Event:** | **Distribution Overhead Conductor Failure** | **Risk Plot Key:** | **I** |
|---|---|---|---|
| **Reasonable Worst Case:** | Sustained outages resulting in significant degradation in reliability and quality of service delivered, triggering widespread customer dissatisfaction, and increased regulatory and political scrutiny. | | |
| **Controls:** | • Perform current vegetation management program.<br>• Perform current inspection and maintenance programs<br>• Conduct current construction, maintenance and repairs per governing standards<br>• Maintain existing circuits with reclosing capable switches/breakers<br>• Maintain existing mutual assistance agreements for line crews from other utilities<br>• Maintain existing emergency support contracts for contractor line crews<br>• Execute approved capital improvement projects | | |

| **Risk Scoring** | | |
|---|---|---|
| **Frequency Score** | **Impact Scores** | |
| 4 | **Safety** | 4 |
| | **Environmental** | 3 |
| | **Compliance** | 4 |
| **Frequency Factor** | **Reliability** | 4 |
| 0.2347 | **Trust** | 4 |
| | **Financial** | 3 |
| **Total Risk Score:** | 57.60 | |
| **Additional Mitigations Considered:** | • Make necessary adjustments to pole inspection and maintenance programs.<br>• Make necessary adjustments to the current vegetation management program. | |

| **Risk Event:** | **Distribution Overhead Pole Mounted Equipment Failure - Aging Infrastructure** | **Risk Plot Key:** | **J** |
|---|---|---|---|
| **Reasonable Worst Case:** | Frequent outages due to aging infrastructure resulting in 50% of customers losing power and an extended outage. | | |
| **Controls:** | • Perform current inspection and maintenance programs.<br>• Conduct current construction, maintenance and repairs per governing standards<br>• Maintain existing circuits with reclosing capable switches/breakers<br>• Maintain existing mutual assistance agreements for line crews from other utilities<br>• Maintain existing emergency support contracts for contractor line crews<br>• Execute approved capital improvement projects | | |

| **Risk Scoring** | | |
|---|---|---|
| **Frequency Score** | **Impact Scores** | |
| 6 | **Safety** | 2 |
| | **Environmental** | 3 |
| | **Compliance** | 3 |
| **Frequency Factor** | **Reliability** | 3 |
| 1.81 | **Trust** | 4 |
| | **Financial** | 3 |
| **Total Risk Score:** | 39.84 | |
| **Additional Mitigations Considered:** | • Make necessary adjustments to pole inspection and maintenance programs.<br>• Increase the number of overhead equipment replacement projects. | |

**BEFORE THE PUBLIC UTILITIES COMMISSION**

**OF THE STATE OF CALIFORNIA**

| | |
|---|---|
| In the Matter of the Application of PACIFICORP (U-901-E), for an Order Authorizing a General Rate Increase Effective January 1, 2023. | Application No. 22-05-006<br>(Filed May 5, 2022) |

## CERTIFICATE OF SERVICE

I hereby certify that I have this day served a copy of **PACIFICORP'S SUPPLEMENTAL TESTIMONY** on all known parties to A.22-05-006 by transmitting an e-mail message with the document attached to each person named in the official service list.

Executed on September 23, 2022, at Portland, Oregon.

Carrie Meyer
Adviser, Regulatory Operations

CPUC Home

# CALIFORNIA PUBLIC UTILITIES COMMISSION
## Service Lists

**PROCEEDING: A2205006 - IN THE MATTER OF THE**
**FILER: PACIFICORP**
**LIST NAME: LIST**
**LAST CHANGED: SEPTEMBER 22, 2022**

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