

Application No. 22-05-____
Exhibit PAC/800
Witness: Allen Berreth

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

Direct Testimony of Allen Berreth
Risk-Based Decision Making, Wildfire Mitigation Capital and Expense, Vegetation
Management

May 2022

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ATTACHED EXHIBIT

Exhibit PAC/801—PacifiCorp Service Territory with High Fire Threat Districts (HFTD)

1 **I. INTRODUCTION AND QUALIFICATIONS**

2 **Q. Please state your name, business address, and present position with PacifiCorp**
3 **d/b/a Pacific Power (PacifiCorp or the Company).**

4 A. My name is Allen Berreth. My business address is 825 NE Multnomah Street, Suite
5 1700, Portland, Oregon 97232. My present position is Vice President of
6 Transmission and Distribution Operations for PacifiCorp. I am responsible for the
7 departments that support the operations, maintenance, and construction of
8 PacifiCorp’s transmission and distribution systems. These include Asset
9 Management, Investment Delivery, Finance, Real Estate, Geographic Information
10 System, Facilities, Vegetation Management, and Wildfire Mitigation Planning.

11 **Q. Briefly describe your education and professional experience.**

12 A. I have a Bachelor of Science degree in Electrical Engineering with a focus in electric
13 power systems from the University of Idaho and a Master of Business Administration
14 from Utah State University. I have been Vice President of Transmission and
15 Distribution Operations since October 2020. Prior to my current position, I held
16 positions in delivery assurance, asset management, work planning, business
17 improvement, and field engineering since joining PacifiCorp in 1998.

18 **Q. Have you testified in previous regulatory proceedings?**

19 A. Yes. I have previously sponsored testimony in Oregon and Washington.

20 **II. PURPOSE OF TESTIMONY**

21 **Q. What is the purpose of your direct testimony?**

22 A. The purpose of my testimony is to describe PacifiCorp’s risk-based investment in

1 certain transmission and distribution investments including the distribution physical
2 security enhancement and wildfire mitigation investment.

3 **Q. What specific transmission and distribution system investments are you**
4 **addressing in this case?**

5 A. This case addresses updated risk-based investments in the areas of distribution
6 physical security and wildfire mitigation. My testimony supports the Company's
7 incremental investments in distribution physical security and wildfire mitigation to
8 address the risks posed by the increased frequency, severity and costs of physical
9 security breaches and wildfires to customers, employees, and Company facilities. My
10 testimony also supports the Company's investments in the specific programs
11 described above as prudent and in the public interest.

12 III. BACKGROUND ON RISK IN CALIFORNIA

13 **Q. Has the California Public Utilities Commission (Commission) rulemaking**
14 **influenced PacifiCorp's understanding of risk-based investment in California?**

15 A. Yes. Decision (D.)14.12-025, issued December 4, 2014, directed the large investor-
16 owned utilities (IOUs)¹ in California to develop and implement a risk-based decision-
17 making framework to support the identification of incremental spend to reduce
18 utility-related risks in California beginning February 1, 2015. The small and multi-
19 jurisdictional utilities (SMJUs)² including PacifiCorp, were directed to include a risk-
20 based decision-making framework into future general rate case application filings, as
21 described in the Voluntary Agreement on a Risk-Based Decision-Making Framework

¹ Large IOUs in this context include Pacific Gas and Electric, San Diego Gas and Electric, Southern California Gas Company, and Southern California Edison.

² SMJUs in this context includes Bear Valley Electric Service, Liberty Utilities, PacifiCorp doing business as Pacific Power, and Southwest Gas Corporation.

1 between the Safety and Enforcement Division and the SMJUs (Voluntary Agreement)
2 following the issuance of D.19-04-020.³

3 **Q. How does PacifiCorp evaluate risk-based investment under this Voluntary**
4 **Agreement?**

5 A. The transition to a risk-based decision-making framework was first introduced in
6 PacifiCorp’s last general rate case, Application (A.)18-04-002 (2019 Rate Case), and
7 approved by the Commission in that proceeding.⁴ This testimony and methodology
8 focused on a six-step investment planning process including:

- 9 • Risk identification
- 10 • Risk analysis
- 11 • Risk evaluation and prioritization
- 12 • Mitigation plan development
- 13 • Risk-informed investment decision and risk mitigation implementation; and
- 14 • Risk monitoring

15 Similar to the large IOUs, PacifiCorp included some of the basic principles of
16 the International Standardization Organizations “Risk Management – Principles and
17 Guidelines” (ISO 31000)⁵ into its six-step methodology as well as the basic principles

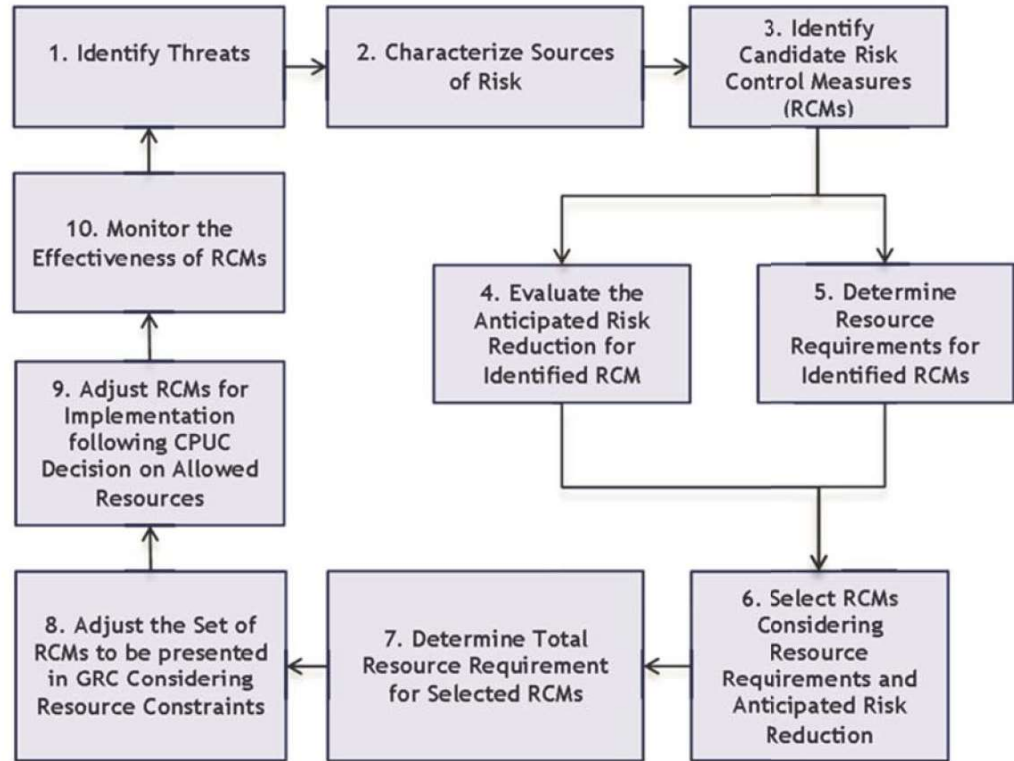
³ *Application of San Diego Gas & Electric Company (U902M) for Review of its Safety Model Assessment Proceeding Pursuant to Decision 14-12-025, A.15-05-005, D.19-04-020 at 68 (May 6, 2019).*

⁴ *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).*

⁵ 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.

1 and processes developed by Cycla Corporation (Cycla), which was introduced in
2 earlier proceedings and endorsed by the Commission.⁶

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



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

6 **Q. How did PacifiCorp’s risk-informed process compare to Cycla’s process**
7 **mentioned above?**

8 A. PacifiCorp’s risk-based investment decision making-process is substantially similar to
9 the Cycla process; however, PacifiCorp collapsed several of the Cycla steps into

⁶ *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).*

1 single processes reducing the total number of steps from ten to six. Table 1 below
 2 maps the steps in the PacifiCorp model to the applicable steps in Cycla’s model.

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

PacifiCorp	Cycla
1. Risk Identification	Step 1
2. Risk Analysis	Step 2
3. Risk Evaluation and Prioritization	Step 2
4. Mitigation Plan Development & 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

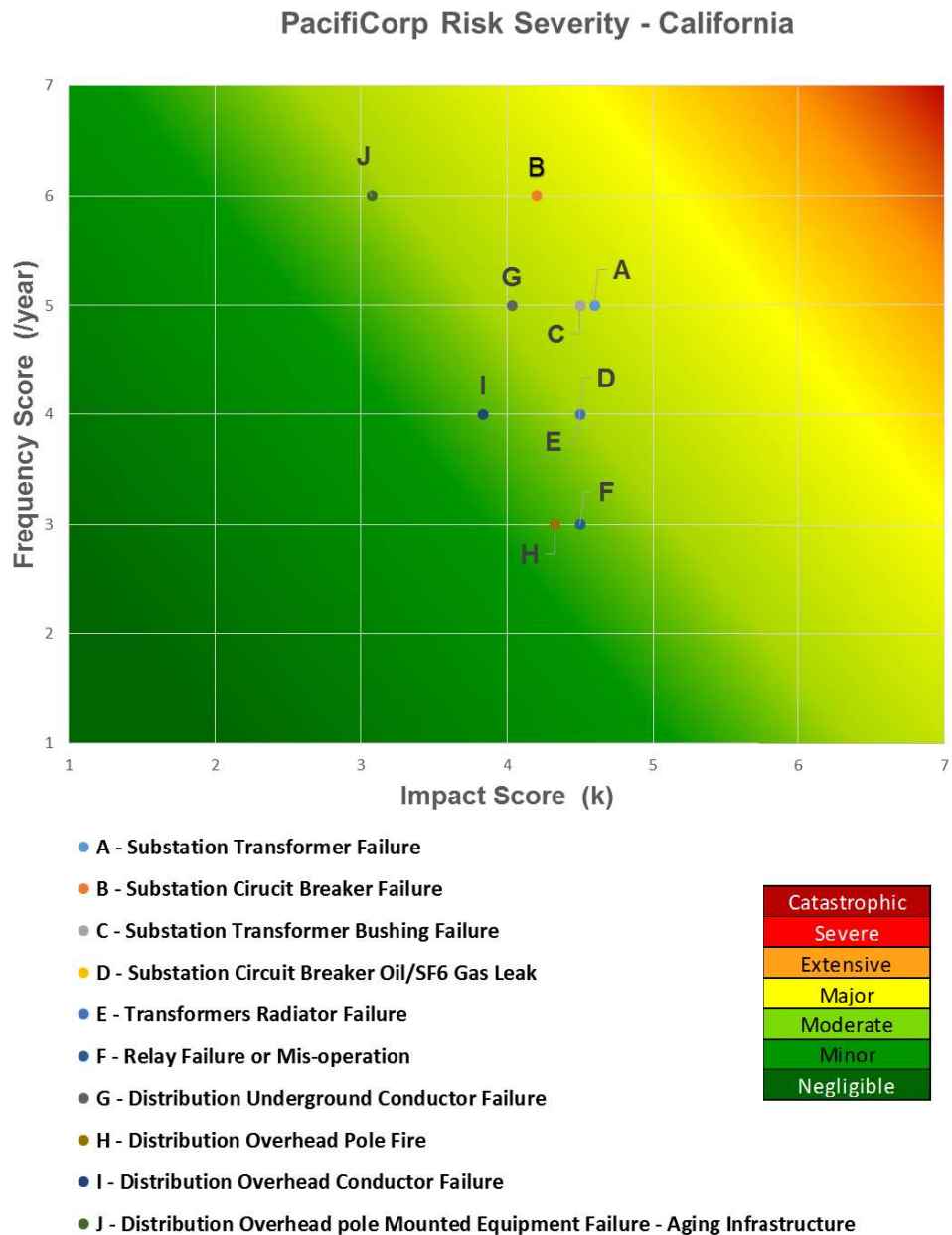
4 **Q. Using this process, what were the top risks previously identified?**

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

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

1 These top ten risks were then evaluated and plotted on the heat map in Figure 2 below
 2 where the y-axis on the heat map represents the frequency score and the x-axis
 3 represents the weighted impact score. The upper right-hand corner of the heat map
 4 represents the highest risks, and the lower left-hand corner represents the lowest risks.

Figure 2: PacifiCorp Risk Heat Map



1 **Q. What controls does PacifiCorp currently have in place to mitigate the impacts of**
2 **its top scoring Risk Event?**

3 A. The primary controls that the Company has in place to mitigate the impact of a
4 substation transformer failure that could result in all its oil being released are the
5 inspection and maintenance programs that include preventative maintenance
6 monitoring of transformer conditions, the Spill Prevention, Control and
7 Countermeasure (SPCC) program that assess adequacy of SPCC plans and installs
8 and maintains preventative systems and devices, and the purchase or pre-capitalized
9 spare transformers.

10 **Q. What additional mitigation measures were considered, should the current**
11 **control measures prove to be insufficient?**

12 A. The additional mitigation measures that were considered are:
13 • Develop emergency generator deployment contract with service suppliers;
14 • Increase the number of mobile substations to minimize outage times; and
15 • Add redundant transformers at substations.

16 **Q. Did PacifiCorp propose an increase in revenue requirement in its 2019 Rate**
17 **Case based on the outcome of its risk-based investment decision-making**
18 **process?**

19 A. No. PacifiCorp did not propose an increase to revenue requirement in its 2019 Rate
20 Case based on the outcome of its risk-based investment decision-making process.
21 Previous controls and legacy programs were deemed sufficient to manage the risk.
22 These programs (which are still in place today) included, but were not limited to,
23 programs to perform transmission and distribution inspections and maintenance, pole

1 test and treat, vegetation management, asset replacements, planned capital
2 construction, and targeted reliability improvements.

3 **Q. What has changed since the 2019 Rate Case?**

4 A. The risk assessment process is an iterative process. Since the 2019 Rate Case,
5 PacifiCorp has worked to monitor top risks and incorporate new information
6 consistent with the rulemaking, particularly in the areas of distribution physical
7 security and wildfire mitigation, resulting in a proposal for additional, risk-based
8 spending. Additionally, the Company is actively engaged in Track 4 of the
9 Commission’s Rulemaking (R.)20-07-013, aimed at refinements and improvements to
10 the Small and Multijurisdictional Utilities’ (SMJU) incorporation of the risk-based
11 decision-making framework into utility rate cases.

12 This proposed incremental risk-based spend is included in Table 2 below.

13 **Table 2: Proposed Incremental Risk-Based Spend**

Risk to be Mitigated	Type of Spend	Time Period	Total Spend Proposed
Distribution Physical Security	Capital	2022-2023	\$105,000 ⁷
Wildfire Risk	Capital	2022-2023	\$74,291,752
Wildfire Risk	Expense	2023	\$6,633,400

14 The rest of my testimony will address the new, additional top risks and proposed
15 incremental spend identified in this Application.

16 **IV. BACKGROUND ON DISTRIBUTION PHYSICAL SECURITY RISK**

17 **Q. How have the risks associated with distribution physical security changed?**

18 A. Between 2013 and 2014, Pacific Gas and Electric’s Metcalf Substation south of San

⁷ A portion of the \$105,000 spend identified here may not be in service until 2024, pending project completion date.

1 Jose suffered multiple attacks resulting in significant damage and loss of equipment
2 and tools. These attacks highlighted the potential impact and risk associated with
3 physical security attacks of electric supply stations. Changes to Public Utilities (Pub.
4 Util.) Code §364(a) were made as a direct result of the Metcalf incident, addressing
5 the vulnerability of electrical supply facilities to physical security threats.

6 **Q. Please describe the resulting legislation that was passed in California and how it**
7 **addresses these risks.**

8 A. In response to these physical security breaches of electric supply substations in the
9 state of California, the Commission issued an Order Instituting Rulemaking (R.15-06-
10 009) on June 11, 2015 and initiated a multi-phase effort. Phase I aimed to establish
11 policies, procedures, and rules for the regulation of physical security risks consistent
12 with Pub. Util. Code §364⁸ while Phase II focused on establishing standards for
13 disaster and emergency preparedness plans for electrical corporations and regulated
14 water companies consistent with Pub. Util. Code §768.6. To address Phase I
15 referenced above, Senate Bill 699 amended Pub. Util. Code §364 and required that
16 the Commission develop rules for addressing physical security risks to the
17 distribution systems of electrical corporations. Through working groups, workshops,
18 and public engagement, a joint utility proposal (Joint Utility Proposal) was developed
19 and adopted by the Commission in D.19-01-018. This Proposal described how a

⁸ *Order Instituting Rulemaking Regarding Policies, Procedures and Rules for Regulation of Physical Security for the Electric Supply Facilities of Electrical Corporations Consistent with Public Utilities Code Section 364 and to Establish Standards for Disaster and Emergency Preparedness Plans for Electrical Corporations and Regulated Water Companies Pursuant to Public Utilities Code Section 768.6, R15-06-009, D.19-01-018 at 4, n.3 (Jan 22, 2019) (“Pub. Util. Code §364 was subsequently amended by SB 697, effective January 1, 2016”).*

1 utility should establish a Distribution Security Program⁹ consisting of the following:
2 (1) Identification of distribution facilities, 2) Assessment of physical security risk on
3 distribution facilities, 3) Development and implementation of security plans, 4)
4 Verification, 5) Record keeping, 6) Timelines, and 7) Cost recovery. After being
5 reviewed by a third-party verifier in Q3 of 2020 and Q1 of 2021, PacifiCorp's final
6 Distribution Security Plan was filed on July 12, 2021, and received acknowledgment
7 of compliance from the Commission's Safety Policy Division on December 14, 2021.

8 **Q. How did PacifiCorp evaluate risk and potential risk-based spending in this**
9 **Distribution Security Plan?**

10 A. As detailed in the Company's Final Distribution Security Plan (Plan), PacifiCorp first
11 applied the methodology outlined in D.19-01-018 and the Joint Utility Proposal to
12 identify critical loads and designate each corresponding substation as a Covered
13 Facility.¹⁰ As a result, PacifiCorp identified 22 loads served by 13 substations
14 considered to be critical for either regional drinking and wastewater services or
15 regional public safety establishments such as state level penitentiaries, state level
16 emergency response offices, and multi-county level fire protection offices/facilities.
17 The 13 substations serving these 22 loads were then designated as Covered Facilities

⁹ *Id.* at 23, n.47 (“The Joint Utility Proposal defines Distribution Substation as an electric power substation associated with the distribution system and the primary feeders for supply to residential, commercial and/or industrial loads. A Distribution Control Center is defined as a facility that has responsibility for monitoring and directing operational activity on distribution power lines and Distribution substations”).

¹⁰ *Order Instituting Rulemaking Regarding Policies, Procedures and Rules for Regulation of Physical Security for the Electric Supply Facilities of Electrical Corporations Consistent with Public Utilities Code Section 364 and to Establish Standards for Disaster and Emergency Preparedness Plans for Electrical Corporations and Regulated Water Companies Pursuant to Public Utilities Code Section 768.6, R15-06-009, D.19-01-018 at 26, n.50 (Jan 22, 2019)* (“‘Covered’ is the utility working group term employed to describe those assets that are applicable, or that should be subject to physical security”. Covered Facilities are also considered assets that require a subsequent assessment).

1 and considered in scope for additional assessments and potential mitigation measures.

2 Next, PacifiCorp applied a general risk assessment methodology including the

3 assessment of both the likelihood and consequences of a top event occurring.

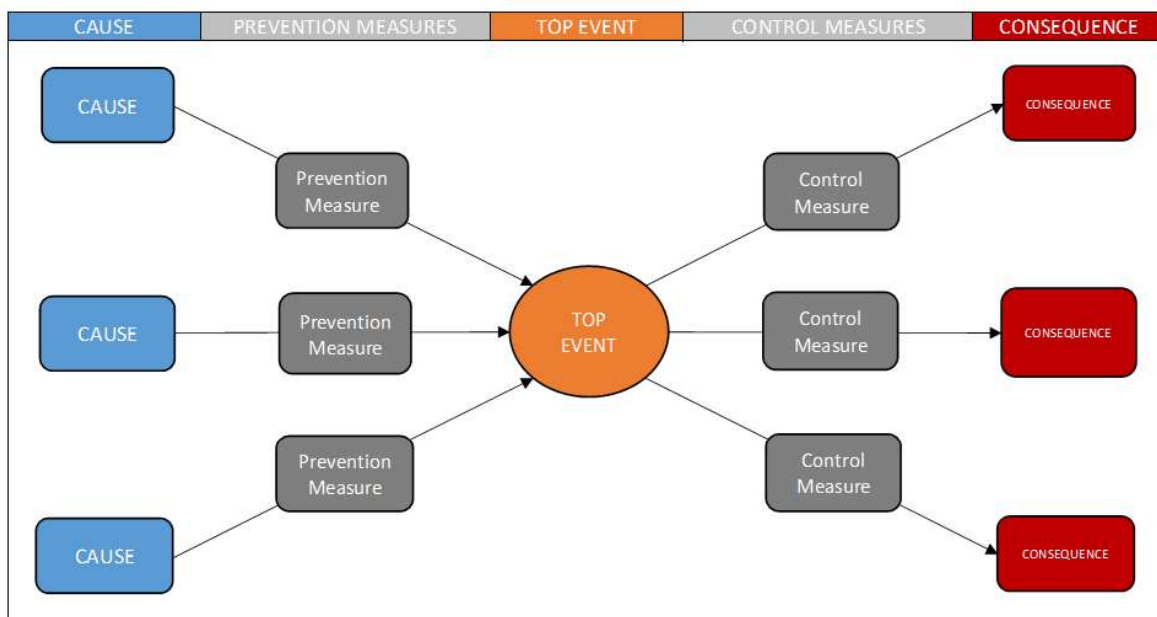
4 PacifiCorp grouped each criterion included in the Joint Utility Proposal¹¹ into either

5 being indicative of a prevention or a control mitigation measure and then evaluated

6 the effectiveness of each measure at the 13 Covered Facilities, consistent with the

7 general bowtie approach depicted below.

8 **Figure 3: Visualization of Standard Bow-Tie Approach**



9 After evaluating the existing protection and control mitigation measures in

10 place, 10 of the 13 Covered Facilities were assessed to have a LOW effective risk

11 level. As it is PacifiCorp's goal to operate the grid at a risk level as low as practical,

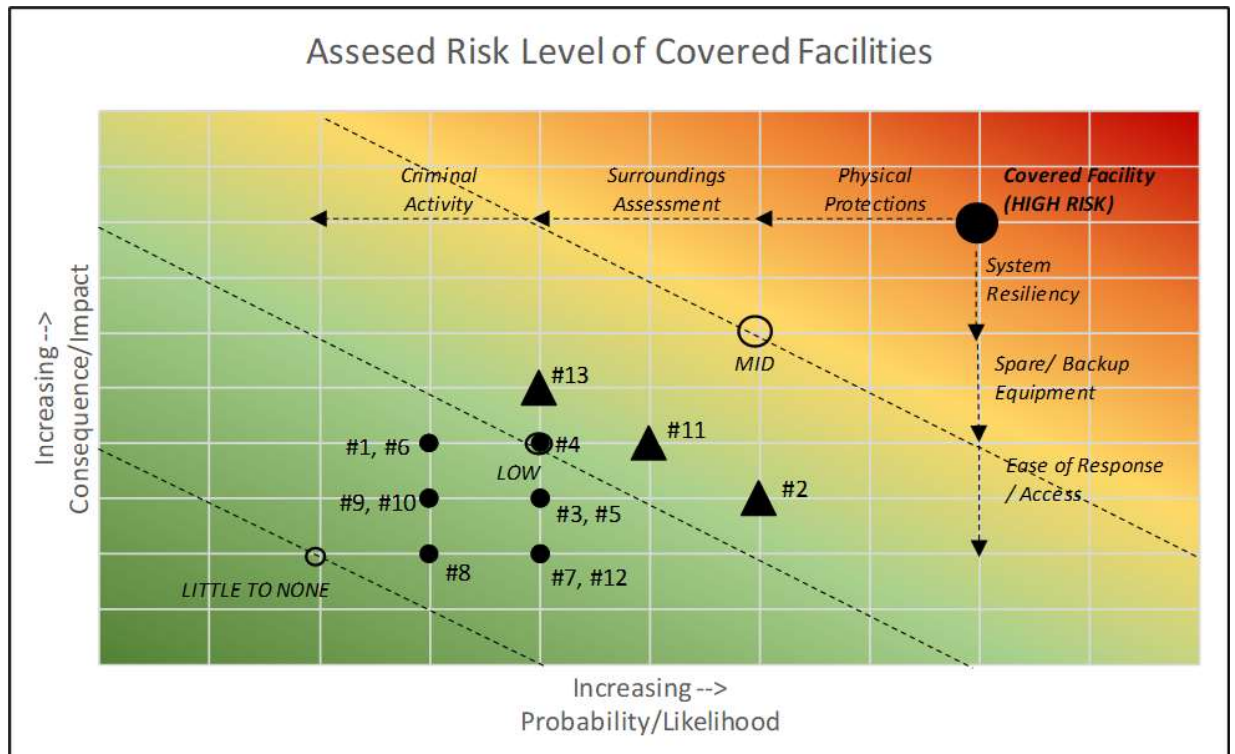
12 the risk of a successful physical security breach on these Covered Facilities was

13 determined to be properly mitigated at these 10 locations. However, three Covered

¹¹ See *id.* at 25-26.

1 Facilities were assessed to be a MID level of risk, indicative that additional mitigation
2 measures may be needed to properly reduce the effective risk level to low. See the
3 final results plotted in figure four below.

Figure 4: Assessed Risk Level of Covered Facilities



4 **Q. What distribution projects were then identified?**

5 A. To mitigate the mid-level of risk associated with the three covered facilities identified
6 to low, improvements to physical security barriers at each of the covered facilities is
7 underway to reduce the probability of an event as well as substation improvements to
8 enhance accessibility and limit seasonal access constraints to improve response times
9 and limit the impact to customers.

10 **V. DISTRIBUTION PHYSICAL SECURITY RISK-BASED COSTS**

11 **Q. What level of spend is proposed to implement these projects?**

12 A. Approximately, \$105,000 incremental risk-based spend identified in the Company's

1 approved Distribution Security Plan is planned to improve the physical security of
2 distribution substations in California consistent with D.19-01-018 and the Joint Utility
3 Proposal.

4 **VI. BACKGROUND ON WILDFIRE RISK IN CALIFORNIA**

5 **Q. How have the risks associated with wildfires evolved in PacifiCorp's service**
6 **territories?**

7 A. There has always been some degree of wildfire risk across PacifiCorp's territories,
8 including in California. While electric utilities have always needed to mitigate
9 against the potential of wildfire, the continuing growth of wildland urban interface,
10 climate change, and a host of other variables require even greater focus to prevent
11 wildfires. For decades the Commission has worked to address the specific risks
12 created by operation of an electric grid through regulations and programs, with even
13 more substantial and targeted efforts over the past several years. PacifiCorp has been
14 an active participant as these efforts have evolved.

15 **Q. Please describe the legislation that was passed in California and how it addresses**
16 **these risks.**

17 A. Senate Bill 901, signed on September 21, 2018, required that all electric utilities
18 develop and implement Wildfire Mitigation Plans (WMPs), which include the
19 utility's means for mitigating wildfire risk, balancing costs with the resulting
20 reduction of risk, and preventive actions and programs to minimize the risk of utility
21 facilities causing a wildfire.¹² PacifiCorp's first WMP was filed and approved in
22 2019. In 2020, PacifiCorp filed a revised WMP consistent with statutes¹³ reflecting a

¹² See Senate Bill 901 [Bill Text - SB-901 Wildfires. \(ca.gov\)](#).

¹³ See CA Public Utilities Code 8386(a) [Law section \(ca.gov\)](#).

1 three-year term, which was updated and approved in 2021.¹⁴ PacifiCorp is filing its
2 next WMP Update on May 6, 2022.

3 **Q. What are the elements of PacifiCorp's WMP?**

4 A. PacifiCorp is adapting to the changes in wildfire risk through the adoption of
5 accelerated and enhanced wildfire mitigation measures. These measures meet the new
6 industry best practices, and are largely derived from years of experience in
7 California's utility wildfire mitigation process. The WMP elements align with the
8 requirements in statutes and conform to the template requirements set forth by the
9 Office of Energy and Infrastructure Safety (OEIS). In the WMP, PacifiCorp
10 identified key goals to help inform its wildfire mitigation approach:

- 11 1) minimize the risk of wildfires from PacifiCorp equipment;
- 12 2) promptly address any problems attributed to PacifiCorp equipment if
13 they do occur;
- 14 3) be prepared to address wildfires from other sources; and
- 15 4) respond when a wildfire puts utility equipment at risk.

16 PacifiCorp took these goals and engaged in an extensive modeling process to
17 develop a risk-based approach to achieving them. This risk-based approach facilitates
18 smart investments targeted to places on PacifiCorp's system where they will have the
19 most impact and ensures that PacifiCorp's human capital is also deployed in areas
20 where they will have the greatest impact. These targeted investments are incremental
21 to PacifiCorp's investment in the ordinary course of its business and will
22 meaningfully reduce the wildfire risk on the Company's system.

¹⁴ See PacifiCorp's 2021 WMP Update approved on 7/15/2021 in WSD-017.

1 **Q. Please describe how the risk of wildfire has been modeled in PacifiCorp’s**
2 **California service territory.**

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

13 While this initial mapping effort laid the groundwork for 1) identifying Public
14 Safety Power Shutoff (PSPS) areas, 2) developing first phase mitigation plans and
15 3) outlining priorities, it was insufficient for the level of risk analysis contemplated by
16 either the Wildfire Safety Division¹⁵ (WSD) or the Company. As a result, the
17 Company leveraged its legacy reliability management tools, and in combination with
18 many previously untapped weather and land-based resources, began the development
19 of its Localized Risk Assessment Model which is outlined in the 2021 Wildfire
20 Mitigation Plan Update (WMP Update). This new tool combined various datasets
21 and risk factors to identify, at the zone of protection level, a combined utility risk
22 score and inform investment and prioritization. This tool and the Company’s

¹⁵ The California Public Utilities Commission’s Wildfire Safety Division (WSD) transitioned to the Office of Energy and Infrastructure Safety on July 1, 2021.

1 methodology are being further refined through an OEIS-led working group, which
2 aims to develop consistency in wildfire risk modeling across the utilities. Additional
3 updates and progress are planned through the Company's continued WMP filings and
4 progress reports.

5 **Q. How did PacifiCorp evaluate the risk of wildfire in the remainder of its service**
6 **territory?**

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

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

- 14 1) Topography of the land, including elevation, slope, and aspect;
- 15 2) Fuel data which quantify fuel loading, fuel particle size, and other
16 quantities needed by fire models to calculate the rate of spread;
- 17 3) Weather Research and Forecasting, which is a hybrid of weather
18 modeling and surface weather observations (including temperature,
19 relative humidity, wind speed/direction, and precipitation);
- 20 4) Historical fire weather days spanning the period from January 1,
21 1979, through December 31, 2017;
- 22 5) Estimated live fuel moisture;
- 23 6) Ignition modeling, using Monte Carlo simulated ignition scenarios;
24 and
- 25 7) Fire spread modeling.

26 A final confirmation exercise was completed by evaluating the FHCA against

1 historical fire perimeters (which are the final recorded footprint for any given fire),
2 existing Company facility equipment, and the Company's service territories. In
3 general, if population density does not correspond with fuel and fire weather history,
4 it would not be considered a candidate for FHCA designation. The resulting FHCA,
5 with wildfire perimeters, and PacifiCorp's service territories are shown in Exhibit
6 PAC/801.

7 **VII. WILDFIRE MITIGATION RISK-BASED CAPITAL INVESTMENT**

8 **Q. What are the costs for the wildfire mitigation projects in 2022 and 2023?**

9 **A.** Table 3 below describes the specific wildfire mitigation costs by breakdown of activity.

Table 3: Wildfire Mitigation System Hardening Program Capital Costs*¹⁶					
Investment Category	Mitigation Program(s) Included	Description of Program	Purpose/Risk Being Mitigated	2022 Planned Capital In-service	2023 Planned Capital In-service
California Distribution	System Hardening: Line Rebuild	Distribution line rebuilds including all or parts of the following: installation of covered conductor, transition to underground, pole replacements, and conductor replacements	Reduce equipment failure that may ignite a wildfire along with increased resiliency to a wildfire occurrence	\$35,381,865	\$36,149,930
	System Hardening: Advanced Protection & Control	Replace electromechanical relays protecting distribution lines in HFTD with modern microprocessor relays that provide more accurate data and faster relaying	Increasing ability to locate where a fault occurred on a line which could result in increased patrol time		
	System Hardening: Pole mounted overcurrent and overvoltage protection replacement	Replacement of fuses, lightning arrestors and cutouts throughout the HFTD with non-expulsion type equipment	Reduce equipment failure that may ignite a wildfire along with increased resiliency to a wildfire occurrence		
	Installation of Weather Stations	Installation of PacifiCorp owned weather station network to collect data and inform situational awareness	Collect local, granular, real time data to inform situational awareness		
Transmission ¹⁷	System Hardening: Line Rebuild	Transmission line rebuilds including all or parts of the following: installation of covered conductor, tree wire, pole replacement, and conductor replacements	Reduce equipment failure that may ignite a wildfire along with increased resiliency to a wildfire occurrence	\$393,798	\$486,019
California Situs	Situational Awareness	Invest in tools, software, and hardware to incorporate real time weather data, implement a risk forecasting and impact-based fire weather model, and inform key decision making and protocols	Develop a dynamic risk assessment tool to inform investment scenarios, initiative prioritization, and overall decision making to manage risk	\$1,324,140	\$556,000
Total				\$37,099,803	\$37,191,949

- 1 I discuss these mitigation programs included in system hardening and situational
- 2 awareness in more detail below.

¹⁶ When reconciling to approved Wildfire Mitigation Plans, this capital reflects plant placed in service, while Wildfire Mitigation Plans capture forecasted and actual annual spend, regardless of when the capital project is placed in service. Additionally, not all costs in the WMP are included in this rate case. Additional costs will be recovered through future requests.

¹⁷ Transmission capital dollars reflected on a California-allocated basis.

1 **A. System Hardening**

2 **Q. Please explain what system hardening is in the context of the Company's wildfire**
3 **mitigation efforts.**

4 A. System hardening is an engineered response to an identified risk to the electrical
5 system. System hardening includes retrofitting specific devices or components within
6 the system to make it more resilient and may also include the wholesale replacement
7 of legacy equipment when retrofitting is not a viable solution. I will describe some of
8 the system hardening that PacifiCorp is currently engaging in to mitigate wildfire
9 risks in more detail below.

10 **Q. How do these system hardening projects reduce the threat of wildfire?**

11 A. PacifiCorp's system hardening projects focus on reducing the potential that the power
12 system is the source of ignition for a catastrophic fire by creating a spark during a
13 fault event. A significant ignition driver on electrical systems is contact from foreign
14 objects (trees, wildlife, mylar balloons, etc.). These contacts can result in high-energy
15 and high temperature arcing between two conductors or between one conductor and
16 the ground.

17 **Q. What hardening efforts on distribution systems reduce potential ignitions?**

18 A. All of the Company's wildfire mitigation programs are applied to distribution systems
19 in order to either prevent ignitions or control the potential events and limit overall
20 impact. The key programs included in system hardening of distribution systems
21 include the line rebuild project, implementation of advanced protection and control
22 schemes through equipment upgrades, and the replacement of pole mounted
23 overcurrent and overvoltage protection equipment such as expulsion fuses.

1 **B. Line Rebuild Program**

2 **Q. Please explain what the line rebuild program is in the context of wildfire**
3 **mitigation.**

4 A. A key hardening effort for wildfire mitigation is the line rebuild program where
5 targeted lines or portions of lines are either moved, removed, transitioned
6 underground, or retrofitted with more resilient materials such as covered conductor to
7 mitigate the risk of contact related faults on overhead conductor. Currently, the
8 majority of the program includes retrofitting existing lines with covered conductor.
9 Covered conductor, unlike bare conductor, is designed to withstand incidental contact
10 with vegetation, other debris, and even the ground in a wire down event. The
11 program will involve more than replacing existing bare conductor with covered
12 conductor. Poles will be replaced as necessary based on loading assessments of
13 existing poles where covered conductor is to be installed. This is because, covered
14 conductor is heavier than bare conductor, and under the combination of ice and wind
15 has a larger diameter which results in further additional pole loading. A secondary
16 benefit to covered conductor is an improvement in reliability. In certain applications,
17 standard pole mounted overcurrent and overvoltage protection equipment, such as
18 fuses, lightning arrestors, and cutouts, will be replaced within the HFTD with non-
19 expulsion type equipment to eliminate any melted fuse material from falling to the
20 ground when operated.

21 **Q. Is it standard practice for PacifiCorp to install covered conductor, non-expulsion**
22 **fuses, or composite material distribution poles?**

23 A. No. Standard overhead circuit construction uses bare conductor and wood poles that

1 balance safety, reliability, and costs. The installation of covered conductor, non-
2 expulsion fuses, and composite material poles are in direct response to increased
3 wildfire risk and are specifically designed to accelerate and improve mitigation of
4 catastrophic wildfires associated with PacifiCorp's system.

5 **Q. How do transmission line rebuilds help mitigate and protect against wildfire**
6 **risk?**

7 A. Rebuilding transmission lines helps to reduce equipment failures and incidental
8 contacts that pose a risk of wildfire ignition. Such equipment failures, while
9 infrequent occurrences, could result in substantial arc energy that can result in
10 wildfire ignition. Due to the rural nature of many portions of PacifiCorp's system
11 (particularly on the local transmission network) the risk of ignition sources is
12 heightened. For example, in California, trees outside of the vegetation managed
13 corridors that are particularly tall, or located on slopes, result in increased risk of fall-
14 in contacts. Rebuilding transmission lines in areas where this risk is heightened
15 allows PacifiCorp to install covered conductor and improve structures. Respectively,
16 such measures will reduce the probability of a fault event and improve resiliency to
17 the extent rebuilt structures can better withstand localized wildfire events.

18 **Q. What criteria did the Company use to select areas in the HFTD to replace**
19 **existing conductor with covered conductor?**

20 A. PacifiCorp targeted areas within the HFTD to determine what areas in its system were
21 at elevated risk based on proximity to population centers, historic weather patterns,
22 and vegetation. Covered conductor was selected for use where there is risk of
23 incidental contacts, such as large branches or trees striking the phase conductors.

1 **Q. Are there reliable measurements or metrics the Company can use to determine**
2 **how successful the use of covered conductor is in mitigating wildfire risks over**
3 **time?**

4 A. Yes, though such measurements will not be immediately informative. Over time, the
5 Company anticipates that comparisons of fault rates resulting from incidental tree
6 contacts for the areas where covered conductor is employed versus the same areas
7 before replacement with covered conductor, will demonstrate the effectiveness of this
8 measure. Additionally, PacifiCorp is actively participating in a state-wide, joint
9 utility effort to further the advancement and understanding of covered conductor
10 effectiveness. This effort includes workstreams to perform benchmarking and testing,
11 assess the estimated effectiveness, recorded effectiveness, and PSPS reduction
12 potential, and evaluate alternatives and costs. In addition to continued participation in
13 this effort, PacifiCorp plans to continue tracking and reporting on key metrics along
14 with the other electric utilities to the OEIS through its WMP submissions and filings.

15 **C. Advanced Protection and Control**

16 **Q. Please explain what advanced protection and control measures are, in the**
17 **context of wildfire mitigation.**

18 A. Advanced protection involves the deployment of sophisticated protection control
19 strategies, particularly advanced relay technologies on distribution and transmission
20 lines. In the context of wildfire risk mitigation, these protection control strategies
21 involve the device operations that take place when fault events occur. In contrast to
22 the wildfire mitigation strategies discussed above, which relate to limiting the
23 occurrence of fault events, advanced protection and control strategies relate to

1 limiting the length and magnitude of a fault event. Specifically, the window of time
2 after fault events represents the time when electrical system facilities pose the highest
3 risk of igniting adjacent fuel, which could result in a wildfire. Reducing the time
4 between when a fault occurs and that fault condition is cleared, reduces the risk of
5 igniting adjacent fuel, and therefore also reduces wildfire risk.

6 **Q. Please explain how the modern microprocessor relays improve upon the**
7 **previously used electro-mechanical relays.**

8 A. Unlike an electro-mechanical relay, microprocessor relays exercise programmed
9 functions nearly immediately (near the speed of light), which results in much faster
10 device response during fault conditions. Microprocessor relays also allow for greater
11 customization to address environmental conditions through multiple settings groups;
12 they are also better able to incorporate complex logic to execute specific operations.
13 Also, in contrast to electro-mechanical relays, microprocessor relays retain event logs
14 that provide data for fault location and later analysis.

15 **Q. Will these modern microprocessor relays provide the Company more data**
16 **regarding line contacts and other faults on the system than the electro-**
17 **mechanical relays currently used on PacifiCorp's system?**

18 A. Yes. These new relays will capture a variety of event logs, including waveforms
19 during fault events.

20 **Q. How will the additional data provided by these new relays help the Company in**
21 **its wildfire mitigation efforts?**

22 A. In addition to faster fault clearing schemes, these relays improve response times since
23 they can identify locations where disturbances emanate from, which will be used by

1 field and office teams to assess these situations. PacifiCorp will also use this data
2 during investigations of events to ensure that the devices performed consistent with
3 the programmed settings and to evaluate other wildfire mitigation technologies.

4 **D. Replacement of Pole Mounted Overcurrent and Overvoltage Protection**
5 **Equipment**

6 **Q. Please explain what the replacement of pole mounted overcurrent and**
7 **overvoltage protection equipment means in the context of wildfire mitigation.**

8 A. The replacement of pole mounted overcurrent and overvoltage protection equipment
9 includes the proactive replacement of all expulsion type fuses, lightning arrestors, and
10 cutouts in the HFTD.

11 **Q. Is it standard practice to use non-expulsion type fuses and lightning arrestors?**

12 A. No. Non-expulsion type fuses and lightning arrestors are not standard practice.

13 **Q. How does the replacement of expulsion type fuses and lightning arrestors help**
14 **mitigate and protect against wildfire risk?**

15 A. Overhead expulsion fuses serve as one of the primary system protection devices on
16 the overhead system. The expulsion fuse has a small metal element within the fuse
17 body that is designed to melt when excessive current passes through the fuse body,
18 interrupting the flow of electricity to the downstream distribution system. Under
19 certain conditions, the melting action and interruption technique will expel an arc out
20 of the bottom of the fuse tab. To reduce the potential for ignition from fuse operation,
21 Pacific Power has identified alternate methodologies and equipment that do not expel
22 an arc for installation within the HFTD.

1 **E. Situational Awareness**

2 **Q. Please explain what situational awareness is in the context of the Company's**
3 **wildfire mitigation efforts.**

4 A. Having a sophisticated, dynamic risk model grounded in situational awareness is
5 pertinent to ensure electric utilities know when, where, how, and why to take action
6 to mitigate the risk of wildfire. PacifiCorp's approach to situational awareness
7 includes the acquisition of data to run real time, daily simulations, forecast and assess
8 the risk of potential or active events to inform operational strategies, response to local
9 conditions, and influence decision making. Decision making could include the
10 implementation of augmented protection and control schemes or activation of
11 additional resources for supplemental patrols to assess local conditions.

12 **Q. What key investments need to be made to support this approach toward**
13 **situational awareness?**

14 A. To support the development of a robust, repeatable, dynamic risk assessment tool, a
15 combination of investments must be made including the installation of a weather
16 station network, the acquisition of data, collection of Company-owned data through
17 new devices, storage and processing of data, and mapping or visualization of data into
18 dashboards and tools. Software, hardware, data storage, data management, and data
19 processing tools must be purchased to move forward an enterprise type solution with
20 built in redundancy.

1 **Q. What capital expenditures overall will the Company make in 2022 and what**
2 **does the Company forecast for 2023 with respect to system hardening and**
3 **situational awareness?**

4 A. As shown in Table 3, in 2022, PacifiCorp will make capital expenditures of
5 approximately \$36,706,000 in its California distribution system and \$394,000
6 California-allocated in its transmission system on system hardening and situational
7 awareness. PacifiCorp expenditures will continue into 2023, when approximately
8 \$36,706,000 will be spent on system hardening the California distribution system and
9 \$486,000 California-allocated on hardening the transmission system.

10 **Q. Please describe the benefits of PacifiCorp's wildfire mitigation investments.**

11 A. Proactively investing in wildfire mitigation projects in identified HFTDs reduces the
12 risk of catastrophic fire caused by PacifiCorp's facilities, directly benefiting
13 PacifiCorp customers. In addition, reducing the risk of catastrophic fire benefits fire
14 response agencies, preserves customer property and Company facilities, and
15 minimizes the cost of rebuilding.

16 **Q. How do PacifiCorp's wildfire mitigation efforts relate to the Company's**
17 **standard safety and compliance activities?**

18 A. Many of the wildfire mitigation strategies I discuss above go beyond standard utility
19 practice. For example, PacifiCorp in the normal course does not install covered
20 conductor. These measures are in direct response to changing best practices for
21 mitigating wildfire and are incremental to work PacifiCorp would do in the ordinary
22 course of its business. Similarly, activities such as replacement of existing equipment
23 (replacing distribution poles with composite material poles, replacing

1 electromechanical relays, etc.) are now informed by the potential for the replacement
2 to mitigate wildfire risk, location of the existing equipment within the HFTD, and
3 may involve accelerated replacements.

4 **VIII. WILDFIRE MITIGATION RISK-BASED INCREMENTAL EXPENSE**

5 **Q. Are the capital investments described above the only type of investments being**
6 **made in California to mitigate wildfire risk?**

7 A. No. PacifiCorp's WMPs reflect a comprehensive approach to mitigating the risk of
8 wildfires and includes increased capital investment as well as operating expense to
9 move forward critical maintenance programs. Table 4 below describes the specific
10 incremental wildfire mitigation operating expense planned in 2023 by breakdown of
11 activity due to an increase in scope above legacy programs. Each of these categories
12 listed in the table is described in further detail below.

1

Table 4: Wildfire Mitigation Test Year Annual Expense

Investment Category	Programs / Incremental Scope Included	2023 Planned Spend Total Co. (\$)	2023 Planned Spend CA Alloc. (\$)
WMP Transmission (Non-Vegetation Management)	<ul style="list-style-type: none"> • Annual Enhanced Inspections (Infra-red) inspections in the HFTD) 	\$90,000	\$1,321
WMP Distribution (Non-Vegetation Management)	<ul style="list-style-type: none"> • Situational awareness (Described above in testimony) • Stakeholder and community engagement • Plan monitoring • Customer Impact Mitigation Programs (Medical Baseline Portable Battery Program & Generator Rebate Program) • Plan Monitoring 	\$2,345,400	\$2,345,400
WMP Vegetation Management - Transmission	<ul style="list-style-type: none"> • Annual vegetation management inspections in the HFTD 	\$479,000	\$7,028
WMP Vegetation Management - Distribution ¹⁸	<ul style="list-style-type: none"> • Annual vegetation management inspections in the HFTD • Radial pole clearing of subject poles in the HFTD 	\$3,719,000	\$3,719,000
TOTAL		\$6,633,400	\$6,072,749

2

A. Asset Inspections

3

Q. How do asset inspections mitigate wildfire risk?

4

A. Inspection and correction programs are the cornerstone of a resilient system. These programs are tailored to identify conditions that could result in premature failure or potential fault scenarios, including situations in which the infrastructure may no longer be able to operate per code or engineered design, or may become susceptible to external factors, such as weather conditions. Legacy inspection and correction programs are effective at maintaining regulatory compliance and managing routine operational risk. They also mitigate some wildfire risk by identifying and correcting

10

¹⁸ This spend is not due to escalation of existing vegetation management costs but is incremental spend due to increased scope and activities.

1 conditions which, if uncorrected, could potentially ignite a fire. Recognizing the
2 growing risk of wildfire, PacifiCorp is supplementing its existing programs to further
3 mitigate the growing wildfire specific operational risks and create greater resiliency
4 against wildfires. These changes are meant to increase the frequency of inspections
5 or how assets are inspected to accelerate identification and correction of conditions.

6 **Q. What are these specific changes?**

7 A. PacifiCorp's asset inspection program involves three primary types of inspections: (1)
8 visual assurance inspection; (2) detailed inspection, and (3) pole test & treat. Legacy
9 inspection cycles, which dictate the frequency of inspections, are set by PacifiCorp
10 asset management to align with state specific compliance requirements. In general,
11 visual assurance inspections are conducted more frequently, to quickly identify any
12 obvious damage or defects that could affect safety or reliability. Detailed inspections
13 have a more detailed scope of work, so they are performed less frequently than visual
14 assurance inspections. The frequency of pole test & treat is based on the age of wood
15 poles, and such inspections are typically scheduled in conjunction with certain
16 detailed inspections. Consistent with General Order 165, PacifiCorp transitioned
17 from a 2-year cycle to an annual frequency for visual assurance inspection in the
18 HFTD and from a 10-year cycle to a 5-year cycle for detailed inspections in the
19 HFTD, effectively increasing the number of each type of inspection annually in the
20 FHCA by 100 percent over legacy programs. The incremental cost associated with
21 this change was included in the 2019 Rate Case to meet new regulations. PacifiCorp
22 also plans to introduce new, annual enhanced inspections on overhead transmission in
23 the HFTD.

1 **Q. What are enhanced inspections?**

2 A. PacifiCorp's enhanced inspection utilizes alternate technologies to identify hot spots,
3 equipment degradation, and potentially substandard connections that are not
4 detectable through a visual inspection. Infrared data is gathered using a helicopter
5 flying over the designated lines within the FHCA near peak loading intervals and is
6 performed incrementally to existing inspection programs.

7 **Q. How do these enhanced inspections mitigate wildfire risk?**

8 A. Hot spots on power lines identified through infrared data gathering can be indicative
9 of loose connections, deterioration and/or potential future fault locations. Therefore,
10 identification and removal of hot spots on overhead transmission lines can prevent
11 further deterioration, reduce the potential for equipment failure and faults, and reduce
12 ignition probability related to equipment failure.

13 **Q. Are asset inspections the only proposed change to mitigate wildfire risk?**

14 A. No. PacifiCorp is also proposing enhancing programs in the areas of situational
15 awareness, which is already described above in my testimony, stakeholder and
16 community engagement, customer support programs, plan monitoring, and vegetation
17 management.

18 **B. Stakeholder and Community Engagement**

19 **Q. What is stakeholder and community engagement in the context of wildfire**
20 **mitigation?**

21 A. PacifiCorp plans to employ a multi-pronged approach for community engagement
22 and outreach with the goal of providing clear, actionable, and timely information to
23 customers, community stakeholders, public safety partners, and regulators. Over the

1 past several years, the Company has engaged customers and the general public on the
2 topic of wildfire safety and preparedness through a variety of tactics and intends to
3 continue enhancing this outreach including webinars, in-person forums, targeted paid
4 media campaigns, press engagement, distributed print materials, social media
5 updates, and communication through owned channels such as bill messages and
6 website content, among others. The Company will also continue to gauge the
7 effectiveness of its community engagement and outreach through surveys. Regarding
8 coordination with public safety partners, PacifiCorp plans to continue implementing
9 tabletop and functional exercises to enhance collaboration and prepare for
10 emergencies.

11 Overall, the wildfire safety and preparedness community and stakeholder
12 engagement plan will continue to mature year-over-year as additional feedback and
13 regulatory guidance is incorporated to broaden engagement and outreach outside of
14 traditional engagement methods.

15 **C. Customer Resiliency Programs**

16 **Q. What other investment does PacifiCorp propose to support customer resiliency**
17 **and mitigate the impacts of wildfires to customers?**

18 A. Consistent with the PSPS Phase 3 Guidelines adopted on June 24, 2021 in D.21-06-
19 034, PacifiCorp began expanding its PSPS mitigation initiatives in 2021 with two
20 new programs: (1) The California Generator Rebate Program and (2) The Medical
21 Baseline Portable Battery Program. The Generator Rebate Program provides a
22 mechanism by which customers living in a HFTD can apply for a rebate after
23 purchasing products from a qualified list of backup generators and batteries. The

1 program also offers a tiered rebate with incremental incentives available for Access of
2 Functional Needs or Medical Baseline customers living in a HFTD. The Medical
3 Baseline Portable Battery Program separately provides free-to-the-customer portable
4 batteries to qualifying Medical Baseline customers for use to power critical medical
5 equipment during PSPS events or other service interruptions. This program also
6 includes individual technical assessments to ensure devices are compatible and
7 properly sized as well as customer training to prepare customers to operate and
8 maintain the device.

9 Different than other programs included in PacifiCorp's WMP which aim to
10 reduce the potential for a utility-related wildfire event, these customer resiliency
11 programs focus on mitigating cascading impacts to customers that may occur because
12 of wildfire related events. These programs facilitate backup power options consistent
13 with the PSPS Phase 3 Guidelines.

14 **D. Plan Monitoring**

15 **Q. How does incremental plan monitoring reduce the risk of wildfires?**

16 A. As previously stated in my testimony, PacifiCorp's WMP reflects a comprehensive
17 approach to mitigating the risk of wildfires and impacts many programs and
18 departments across the Company. To successfully deliver the plan and obtain the
19 plan objectives of reducing wildfire risk, additional resources are needed to develop,
20 implement, and monitor the plan and the various programs or projects included.
21 Specific examples include meteorologists, emergency managers, program managers,
22 program controllers, and analysts to name a few. These key resources are critical to
23 ensuring the timely and quality completion of the program elements such as

1 community outreach, public safety partner coordination and planning, situational
2 awareness, asset inspections, and vegetation management.

3 **E. Wildfire Mitigation Vegetation Management**

4 **Q. How does vegetation management relate to reducing wildfire risks?**

5 A. Vegetation management is generally recognized as a significant strategy in any
6 WMP. Vegetation contacting a power line is a potential source of fire ignition. Thus,
7 reducing vegetation contacts reduces the potential of an ignition originating from
8 electrical facilities. While it is impossible to eliminate vegetation contacts
9 completely, at least without radically altering the landscape near power lines, a
10 primary objective of PacifiCorp's existing vegetation management program is to
11 minimize contact between vegetation and power lines by addressing grow-in and fall-
12 in risks. This objective is in alignment with core WMP efforts, and continuing
13 dedication to administering existing programs is a solid foundation for PacifiCorp's
14 WMP efforts. To supplement the existing program, PacifiCorp vegetation
15 management is implementing additional WMP strategies in California.

16 **Q. What are the strategies being implemented?**

17 A. The focus of PacifiCorp's vegetation management efforts generally includes pruning
18 and tree removals. PacifiCorp prunes trees to maintain a safe distance between tree
19 limbs and power lines. PacifiCorp also removes trees that pose an elevated risk of
20 falling into a power line.

21 PacifiCorp's vegetation management specifically targets risk reduction in the
22 HFTD with three distinct strategies. First, PacifiCorp vegetation management will
23 conduct annual vegetation inspections on all lines in the HFTD, with correction work

1 also completed based on inspection results. Second, PacifiCorp will use increased
2 minimum clearance distances for distribution cycle work completed in the HFTD.
3 Third, PacifiCorp plans to complete annual pole clearing on subject equipment poles
4 located in the FHCA.

5 **Q. How does this compare to PacifiCorp's existing or legacy vegetation**
6 **management program?**

7 A. Prior to the development of WMPs, PacifiCorp did already have a vegetation
8 management program in place. While the legacy program contained similar elements
9 and objectives, the incremental efforts to reduce wildfire risk of the new program,
10 reflect a strategy change with additional costs due to the increase in tasks and work
11 needed to meet the objectives of the new program. These additional costs should be
12 viewed as incremental to baseline or legacy vegetation management programs.

13 IX. VEGETATION MANAGEMENT

14 **Q. Is PacifiCorp proposing an increase in baseline vegetation management costs?**

15 A. Yes. Additional spending has been identified for legacy vegetation management due
16 to cost escalation and change in program activities. Different than the wildfire
17 mitigation spending, which reflects an increase in scope to accomplish additional
18 work within the HFTD and reduce the risk of wildfire, this spend has been identified
19 due to the increase in costs experienced to accomplish the core work of the program.
20 PacifiCorp's forecast costs in this case reflect updates to the expenses PacifiCorp has
21 seen over the past year to meet its vegetation management goals and reflect the
22 ongoing cost to implement PacifiCorp's vegetation management program outside the
23 scope of the wildfire mitigation spending covered previously in testimony.

1 **Q. Can you provide some examples of what is driving the increased costs for**
2 **PacifiCorp's vegetation program?**

3 A. Similar to the wildfire vegetation management discussion above, the focus of
4 PacifiCorp's vegetation management efforts generally includes pruning and tree
5 removals. PacifiCorp prunes trees to maintain a safe distance between tree limbs and
6 power lines. PacifiCorp also removes trees that pose an elevated risk of falling into a
7 power line. The volume of tree removals that pose an elevated risk of falling into a
8 power line has also increased in recent years which has increased the associated costs.
9 In addition, labor costs have also increased as the market for vegetation management
10 workers has become more competitive. This has not only increased the base labor
11 costs for the vegetation management program as a whole but has also increased costs
12 for labor premiums to attract additional travel crews to the area.

13 **Q. What is the impact of these increased costs on the operation and maintenance**
14 **(O&M) included for vegetation management in base rates?**

15 A. PacifiCorp is proposing to increase baseline O&M for vegetation management from
16 \$4.9 million to \$9.7 million, or a \$4.8 million increase, independent of any proposed
17 increase to support wildfire mitigation programs.

18 **Q. Despite this cost increase, what steps is the Company taking to control costs**
19 **while still achieving the goals of the program?**

20 A. PacifiCorp is implementing two strategies for cost control and delivering on the goals
21 of the vegetation management program as described above. The first strategy is
22 increasing the number of internal Company foresters that coordinate the vegetation
23 management activity within a geographic area. This will increase oversight of both

1 program efficiencies and deliverables. The second strategy is implementing an
2 internal vegetation management audit team that will bolster the quality assurance
3 reviews of the program. This will also help drive program performance in terms of
4 productivity, efficiency, and cost of program deliverables.

5 **X. CONCLUSION**

6 **Q. Please summarize your recommendation to the Commission.**

7 A. My testimony demonstrates that there can be significant costs and impacts to the
8 Company and its customers associated with reducing risk, specifically the risk of
9 wildfires. Therefore, it is prudent for PacifiCorp to make incremental investments in
10 wildfire mitigation projects to reduce the risk of wildfires caused by its facilities in its
11 service territories, especially as wildfires have grown in frequency and severity in the
12 West. My testimony outlines the methodology that PacifiCorp has used to identify
13 locations and specific projects or programs to help mitigate the risk of catastrophic
14 wildfires in the HFTD.

15 **Q. Does this conclude your direct testimony?**

16 A. Yes.

Application No. 22-05-____
Exhibit PAC/801
Witness: Allen Berreth

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

Exhibit Accompanying Direct Testimony of

Allen Berreth

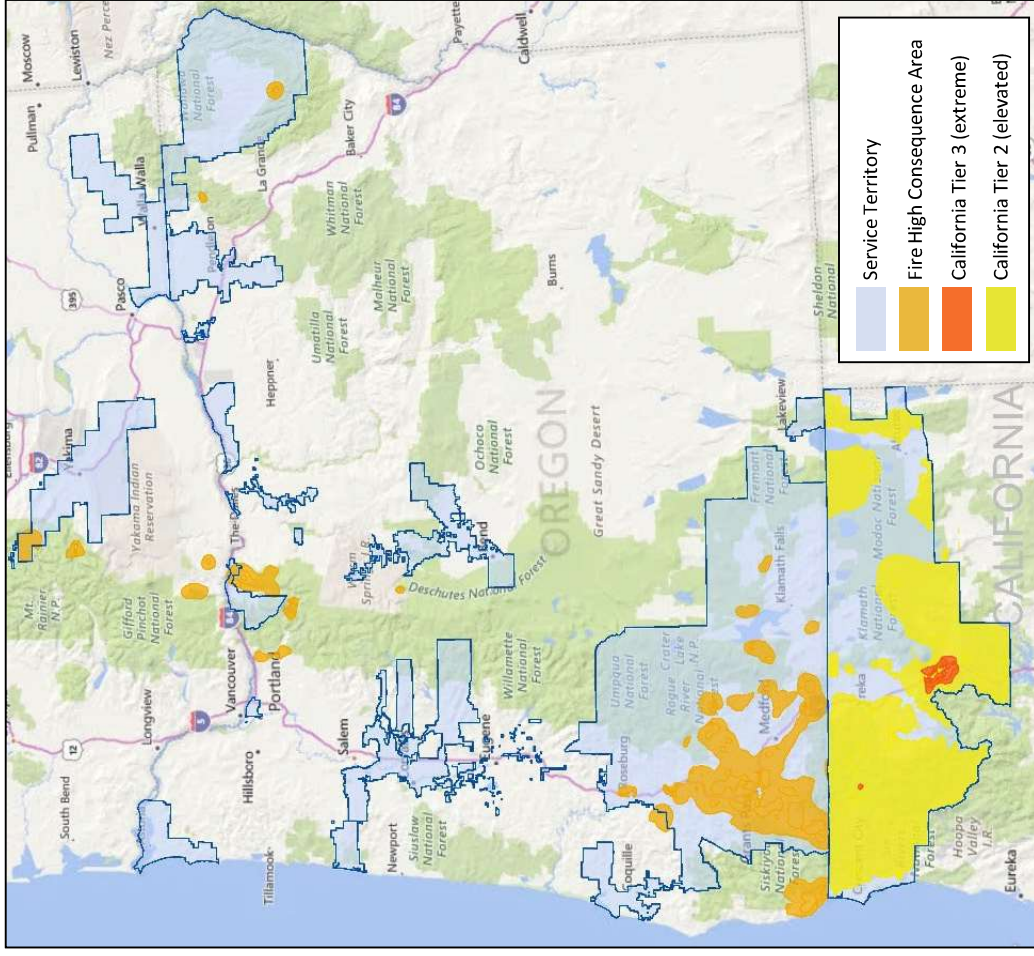
PacifiCorp Service Territory with High Fire Threat Districts (HFTD)

May 2022

RISK-BASED APPROACH: Fire High Consequence Areas (FHCA)

- Utilizing the same modeling concepts used in California, areas were identified in the remaining PacifiCorp service territory where there is an elevated risk of utility-associated wildfires to **occur** and **spread rapidly**, and where communities face an elevated risk of damage or harm from wildfires
- Per state requirement in California, Tier 3 and Tier 2 are shown regardless if facilities exist in the area; making the impact of Tier 2 seem larger than it is
- A similar methodology was used to identify FHCAs
- FHCAs are used to prioritize wildfire mitigation initiatives, such as, increased inspections, system hardening and proactive de-energization

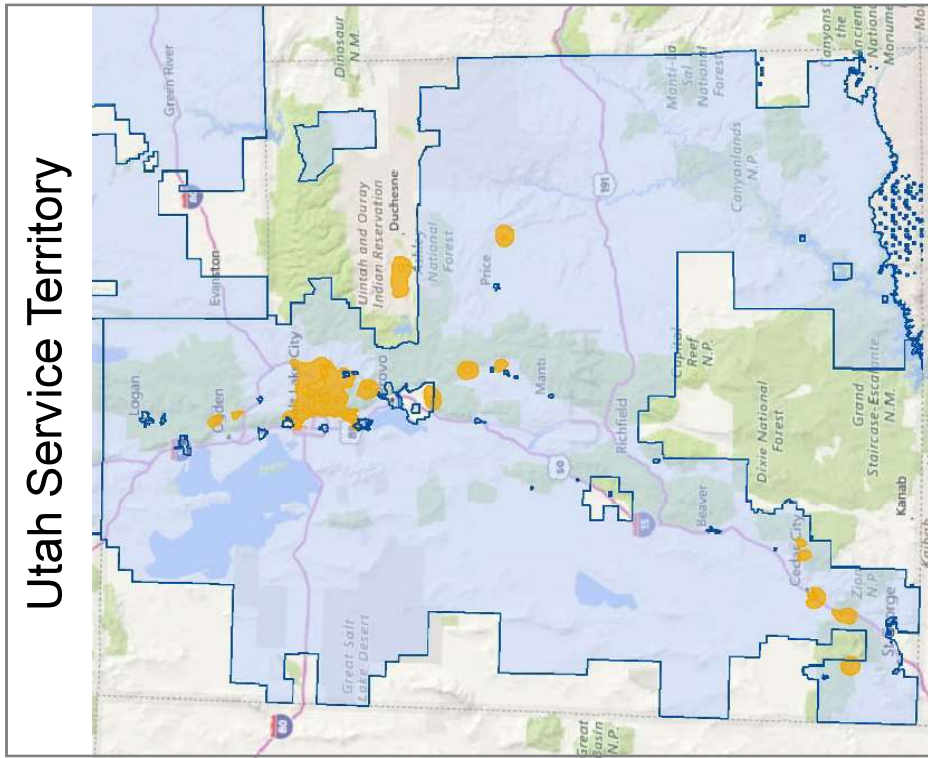
Washington, Oregon, California Service Territory





RISK-BASED APPROACH: Fire High Consequence Areas (FHCA)

Utah Service Territory



Wyoming / Idaho Service Territory

