State of California – A Natural Resources Agency
Gavin Newsom, Governor

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Caroline Thomas Jacobs, Director

October 1, 2024

Dear Stakeholders,

Enclosed is the Office of Energy Infrastructure Safety's (Energy Safety's) Annual Report on Compliance regarding PacifiCorp's execution of its 2022 Wildfire Mitigation Plan.

This Annual Report on Compliance is hereby published as of the date of this letter. PacifiCorp may, if it wishes to do so, file a public response to this Annual Report on Compliance within 14 calendar days of the date of publication. Comments must be submitted to the Office of Energy Infrastructure Safety's E-Filing system in the 2022 Annual Report on Compliance docket.

Sincerely,

Patrick Doherty

Patrick Doherty
Program Manager | Compliance Assurance Division
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Office of Energy Infrastructure Safety

OFFICE OF ENERGY INFRASTRUCTURE SAFETY

2022 ANNUAL REPORT ON COMPLIANCE

PACIFICORP

October 2024

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Executive Summary

The Office of Energy Infrastructure Safety (Energy Safety) is tasked with evaluating and either approving or denying Wildfire Mitigation Plans (WMP) annually filed by electrical corporations pursuant to Public Utilities Code section 8386 *et seq*. The law also directs Energy Safety to ensure that the electrical corporations have complied with their plans.

PacifiCorp's inconsistent WMP initiative reporting created a challenge for Energy Safety's assessment of compliance. Ultimately, Energy Safety found that PacifiCorp completed 46 of 58 (or 79%) of its 2022 WMP Update initiatives, including six of the 10 initiatives with the largest allocated expenditure. However, the 12 initiatives where PacifiCorp either missed its targets or where Energy Safety could not make a conclusion about compliance represented 77% of PacifiCorp's planned expenditure in its 2022 WMP Update. These 12 initiatives included critical grid hardening and situational awareness initiatives such as covered conductor installation, pole replacement, and fire threat modeling.

PacifiCorp's High Fire Threat District areas saw increases in normalized ignitions in 2022. Normalized outages increased across PacifiCorp's service territory in 2022, particularly those due to vegetation contact.

Energy Safety conducted its compliance review process through a variety of means including audits, field inspections, and analysis of data submitted by PacifiCorp to Energy Safety. Energy Safety also evaluated several performance metrics, including metrics that reveal the risk on PacifiCorp's system. Energy Safety additionally reviewed PacifiCorp's self-assessment in its Electrical Corporation Annual Report on Compliance and the findings of its independent evaluator (IE).

Energy Safety acknowledges that in 2022 PacifiCorp undertook efforts to reduce its wildfire risk, and in many instances, achieved its WMP initiative activity targets. However, on balance, PacifiCorp was largely unsuccessful in executing its plan for wildfire risk mitigation. This is primarily due to PacifiCorp's failure to: 1) achieve targets related to covered conductor installation (62 of 112 targeted miles installed) and pole replacement and reinforcement (1,101 of 2,158 poles replaced or reinforced), 2) create a central data repository, and 3) fully implement its advanced risk modelling tool, Firesight. Collectively, 77% of PacifiCorp's planned expenditure in its 2022 WMP Update was dedicated to initiatives that were not met.

1. Introduction

This Annual Report on Compliance presents the Office of Energy Infrastructure Safety's (Energy Safety's) statutorily mandated assessment of PacifiCorp's compliance with its 2022 Wildfire Mitigation Plan (WMP) Update. (Pub. Util. Code § 8386.)

In the sections that follow, Energy Safety describes the statutory and regulatory basis for its reporting, the information supplied by the electrical corporation, and the independent analysis conducted by Energy Safety to examine PacifiCorp's execution of its 2022 WMP Update and how its infrastructure performed in 2022 relative to wildfire risk. Finally, Energy Safety provides its conclusions, observations, and recommendations for further actions by PacifiCorp.

1.1 Compliance Process

The statutory objective of electrical corporation wildfire mitigation planning efforts is to ensure that electrical corporations are constructing, maintaining, and operating their infrastructure in a manner that will minimize the risk of catastrophic wildfire. (Pub. Util. Code § 8386.) The objective of a WMP, and consequently the focus of Energy Safety's assessment of compliance, is wildfire risk reduction. An electrical corporation's obligations extend beyond meeting WMP targets.

Energy Safety's 2022 Compliance Process establishes the parameters for this Annual Report on Compliance. Consistent with the 2022 Compliance Process, this report considers the totality of all compliance assessments completed with respect to PacifiCorp's 2022 WMP Update. This includes all inspection, audit, investigation, and data analysis work performed by Energy Safety, as well as separate electrical corporation and independent third-party evaluations of compliance. (Compliance Process, p. 6.)

Energy Safety evaluated whether the electrical corporation implemented the initiatives in its 2022 WMP Update, looking specifically at whether the electrical corporation funded and performed the work stated for each initiative (Compliance Process, p. 7.)

Energy Safety also considered the electrical corporation's stated goals and objectives of its plan, its performance of initiatives essential to reducing wildfire risk and achieving its objectives, and the ultimate performance of its infrastructure relative to its wildfire risk, as measured by changes in the occurrence of events that correlate to wildfire risk (Compliance Process, p. 7.)

2. PacifiCorp's 2022 Wildfire Mitigation Plan Update

PacifiCorp submitted a comprehensive WMP in 2020 covering a three-year term from 2020 through the end of 2022. PacifiCorp submitted annual updates to the original 2020 WMP, including a 2022 Update to its 2020 WMP that is the subject of this Annual Report on Compliance.

Energy Safety approved PacifiCorp's 2022 WMP Update (hereinafter 2022 WMP Update) to its 2020 WMP on December 9, 2022. Among other things, PacifiCorp's key objectives for 2022 included:

- Continued implementation of baseline programs,
- Initiation of new programs such as expulsion fuse replacements and installation of fault indicators,
- Development of new technology pilots in the areas of distribution inspections and wildfire detection,
- Significant investment and advancement of situational awareness through procurement and implementation of several modules of Technosylva (a wildfire risk analysis platform), and
- Implementation of a wildfire detection program pilot for enhanced situational awareness and an enhanced overhang reduction pilot.

PacifiCorp claimed that investments in these objectives would advance the maturity of multiple initiatives including risk mapping, resource allocation, and the development of a quantitative risk-spend efficiency (RSE). Furthermore, the investments were intended to advance operational decision-making, while allowing for more precision in the application of mitigation efforts, such as Public Safety Power Shutoff (PSPS) events. (2022 WMP Update, p. ix.)

Section 5.1 provides a table that describes the 58 activities of the varied initiatives contained in PacifiCorp's 2022 WMP Update and evaluated by Energy Safety in this ARC. Please refer to Section 5.1 for more detail on those 58 initiative activities.

3. PacifiCorp's Annual Report on Compliance

Public Utilities Code section 8386.3(c)(1) directs electrical corporations to file a report addressing the electrical corporation's compliance with their WMP during a compliance year. This document is known as the Electrical Corporation Annual Report on Compliance (EC ARC).

Energy Safety's 2022 Compliance Process outlines the requirements for an EC ARC. The EC ARC must detail the electrical corporation's self-assessment of its compliance with the 2022 WMP Update during the 2022 compliance period. Energy Safety's 2021 Compliance Operational Protocols also apply to EC ARCs for the 2022 compliance period. These Protocols outline the requirements for EC ARCs, including an assessment by the electrical corporation of whether it met its intended risk reduction by implementing all of its approved WMP initiatives (i.e., the degree to which initiative activities have reduced ignition probabilities), descriptions of all planned WMP initiative spending versus actual WMP initiative spending, and an explanation of any differentials between the planned and actual spending. (Ops Protocols, pp. 10-12.)

PacifiCorp submitted its EC ARC to Energy Safety on March 31, 2023. The following is a narrative summary of the EC ARC.

In general, PacifiCorp asserted that it "worked diligently to implement the measures set forth in the 2022 WMP Update" but did not assess its intended risk reduction through completion of all its approved WMP initiatives and activities. (EC ARC, pp. 1-2.)

However, PacifiCorp stated that it leveraged a combination of California's High Fire Threat District (HFTD) map and its internal Localized Risk Assessment Model (LRAM) to qualitatively evaluate risk within its territory and inform its programs and strategies for four initiatives. Using this risk evaluation, it assigned a composite wildfire risk score based on outage data, vegetation data, and historical climatological data for sections of the electric grid that can be isolated by protective devices, and this assessment guided the implementation of the following grid hardening projects in 2022:

- Completion of 62 miles of grid hardening under the covered conductor program.
- Replacement of 2,113 expulsion fuses with non-expulsion fuses to reduce the potential for ignition associated with fuse operations.
- Replacement of 1,101 distribution poles.
- Upgrade of 44 line reclosers and substation relays to enable advanced protection and control schemes, incorporate greater customization and more complex logic, and provide additional event data.

PacifiCorp provided only general statements and indicated that it believes that wildfire risk reduction is achieved through cumulative implementation of all WMP initiatives. PacifiCorp noted that "…it is extremely difficult to assign quantitative risk reduction values to one individual initiative or initiatives." (EC ARC, p. 3.) PacifiCorp did not consistently report on whether the projects it implemented in 2022 met or exceeded its planned initiative targets.

3.1 EC ARC Information on Initiative Completion

PacifiCorp's self-assessment of its compliance with its 2022 WMP Update initiatives within the EC ARC was limited to a generalized narrative discussed above, along with an analysis of planned versus actual initiative expenditures. Section B of the EC ARC provides PacifiCorp's brief narrative discussion, while Section C of the EC ARC contains information on expenditures toward certain WMP initiative activities. A summary of PacifiCorp's self-reported compliance with its WMP initiatives is provided below, with additional details available in Appendix B of this ARC.

Information contained in the EC ARC revealed that there were missed WMP initiative targets in 2022, including:

- Plans to hire data scientist personnel to develop risk models did not materialize due to challenges with recruiting.
- 112 line miles of covered conductor installation were not fully completed, as only 62 line miles of covered conductor installation occurred.
- Advancements to PacifiCorp's Public Safety Partner portal (as part of its customer support activities) were delayed due to contractor resource constraints, with the project shifted to the 2023-2025 WMP cycle.

Additionally, PacifiCorp did not describe or account for a significant number of the activities from its 2022 WMP Update in its EC ARC. Unaccounted activities appear below in Table , and illustrate the failure to adequately report initiatives in PacifiCorp's EC ARC in spite of the requirement for PacifiCorp to do so as described in the 2022 Compliance Process.

Table 1: PacifiCorp's Unaccounted WMP Initiative Activities

2022 WMP Update Initiative	2022 Activity as described in 2022 WMP Update
Covered conductor maintenance (7.3.3.4)	Update inspection methodology and condition assessment criteria to ensure adequate inclusion of covered conductor.
Other corrective action (7.3.3.12)	Complete six-line miles of small diameter copper replacement.
Undergrounding of electric lines and/or	PacifiCorp identified two projects where

2022 WMP Update Initiative	2022 Activity as described in 2022 WMP Update
equipment (7.3.3.16)	undergrounding provided benefits. PacifiCorp plans to complete the current line rebuild plan, which includes the select installation of undergrounded lines in the HFTD areas and then explore the expansion of the initiative outside of the highest fire-risk areas.
Infrared inspections of distribution electric lines and equipment (7.3.4.4)	PacifiCorp intended to develop a specific action plan for the field to begin collection information for the associated pilot.
Additional efforts to manage community and environmental impacts (7.3.5.1)	Complete the Operations and Maintenance Plans (O&M Plan) with the Klamath National Forest (KNF), continue to engage land managing agencies to initiative O&M Plan development, and explore other opportunities like letters to notify customers of upcoming vegetation management work.
Emergency response vegetation management due to red flag warning or other urgent weather conditions (7.3.5.4)	Continue performing risk-based PSPS patrols in 2022.
Fuel management (including all wood management) and management of "slash" from vegetation management activities (7.3.5.5)	Manage 3,047 poles. Continue to seek opportunities for fuel reduction projects and implement integrated vegetation management (IVM) to minimize ignition risks.
Quality assurance / quality control of vegetation management (7.3.5.13)	Complete 1,169 line miles of inspections. Expand Quality Control (QC) capabilities by increasing internal staff resources to conduct post-audits and other Quality Assurance/Quality Control (QA/QC) functions (i.e. a QA/QC supervisor) in 2022.
Recruiting and training of vegetation management personnel (7.3.5.14)	Provide training and discussion of the WMP to both internal and external vegetation management personnel.

2022 WMP Update Initiative	2022 Activity as described in 2022 WMP Update
Vegetation management activities post-fire (7.3.5.21)	Leverage QA/QC supervisor to be hired in 2022 (under initiative 7.3.5.13) to further develop and refine a post-fire response strategy.
Protocols for PSPS re-energization (7.3.6.5)	Continue to explore the use of aerial patrols to expedite patrols prior to re-energization.
Allocation methodology development and application (7.3.8.1)	Perform a series of presentations and meetings to ensure prioritization of wildfire mitigation activities throughout the organization.
Risk-spend efficiency analysis – not to include PSPS (7.3.8.3)	Refine risk spend efficiency (RSE) methodology and calculation parameters throughout 2022. Develop a verification process that will enable the assessment of factors that influence the estimated RSE values. Leverage Technosylva's Wildfire Risk Reduction Model to expand upon existing capabilities of RSE.
Community outreach, public awareness, and communications efforts (7.3.9.2)	Increase outreach to all customers to identify more customers relying on medical equipment and to broaden the scope of customers who self-identify as Access and Functional Needs (AFN). Offer a Spanish version of the medical baseline application this year.
Protocols in place to learn from wildfire events (7.3.9.6)	Conduct an annual exercise to ensure individuals not involved in incident management on a regular basis are practiced in responding.

3.2 EC ARC Information on Initiative Funding

Information supplied by PacifiCorp on its initiative funding appears in Appendix C. While a narrative description appears below, please refer to Appendix C for more detail.

In general, PacifiCorp underspent on its 2022 WMP Update initiatives by a significant amount of more than $7 million (approximately eight percent of total planned expenditure). PacifiCorp pointed to delays in procuring material, labor, and permits as the primary reasons for underspending.

4. Independent Evalutor ARC for PacifiCorp

Energy Safety, in consultation with the Office of the State Fire Marshal, annually publishes a list of entities qualified to serve as independent evaluators of WMP compliance. (Pub. Util. Code § 8386.) Each electrical corporation is then required to hire an independent evaluator from the list to perform an independent WMP compliance assessment. (Pub. Util. Code § 8386.)

The independent evaluator reviews and assesses the electrical corporation's compliance with its approved WMP. As part of its evaluation, the independent evaluator must determine whether the electrical corporation failed to fund any activities included in its plan.

On July 1st of each year, the independent evaluator issues its Independent Evaluator's Annual Report on Compliance (IE ARC) for a given electrical corporation. (Pub. Util. Code § 8386.)

The 2022 IE ARC for PacifiCorp was prepared by NV5, Inc. and Guidehouse, Inc. The IE ARC reviewed the wildfire mitigation initiatives and activities implemented in 2022 and accounted for whether PacifiCorp met its performance objective targets, has underfunded any of those initiatives, and followed its QA/QC processes. The Independent Evaluator (IE) review of these elements determined that PacifiCorp largely achieved the reviewed initiative objectives, did not fail to fund the portfolio of its initiatives, and appears to be following its QA/QC processes. However, the IE ARC also noted several concerns regarding initiative objectives that were not achieved as described below. (IE ARC, p. 1.)

- In Table 1-1 Summary of Findings, with respect to large volume quantifiable targets, the IE noted several incomplete targets, most of which were tied to material delays, permitting issues, and supply shortages. (IE ARC, p. 2.) These included:
    - 7.3.3.6 Distribution pole replacement and reinforcements – IE verified 1,101 of 2,158 targeted poles were replaced or reinforced.
    - 7.3.3.3 Covered conductor installation - IE verified 62 out of 112 targeted line miles were installed.
    - 7.3.3.7 Expulsion fuse replacement - IE verified 2,112 out of 2,269 targeted expulsion fuses were replaced.
- In Table 1-1 Summery of Findings, the IE identified several missed targets for 2022 WMP Update initiatives that were short by margins of less than 5%. (IE ARC, p. 3.) These included:

  - 7.3.4.1 Detailed inspections of distribution electric lines and equipment - IE verified 8,466 out of 8,777 targeted detailed inspections of distribution lines and equipment.
  - 7.3.4.2 Detailed inspections of transmission electric lines and equipment - IE verified 2,541 out of 2,545 targeted detailed inspections of transmission lines and equipment.
  - 7.3.4.6 Intrusive pole inspections - IE verified 4,576 out of 4,759 targeted intrusive pole inspections.
  - 7.3.4.11 Patrol inspections of distribution electric lines and equipment - IE verified 46,314 out of 46,338 targeted patrol inspections of distribution lines and equipment.
  - 7.3.4.12 Patrol inspections of transmission electric lines and equipment - IE verified 12,355 out of 12,367 targeted patrol inspections of distribution lines and equipment.
  - 7.3.5.3 Detailed inspections of vegetation around transmission electric lines and equipment - IE verified 374.4 out of 386 targeted line-miles of vegetation inspections around transmission lines and equipment.
- The IE identified several WMP initiatives where it was unable to verify expenditure, or where PacifiCorp did not expend as much as planned. In most cases, the IE noted that PacifiCorp provided a sufficient level of detail as to why the expenditure target was not met. (IE ARC, p. 1.)
- While the IE believed that PacifiCorp maintained a robust QA/QC program for its asset inspection activities, it determined that PacifiCorp's vegetation management QA/QC program should use more structure and follow guidelines similar to those developed for asset inspections. (IE ARC, p. 57.)
- The IE believed PacifiCorp's wildfire risk mitigation program lacked centralized oversight and a comprehensive view of WMP activities. (IE ARC, p. 57.)

In general, the IE found that of the 35[1] 2022 WMP Update initiative activities evaluated, 17 were found to be either not met or insufficiently supported. For these initiatives, the IE found that PacifiCorp either did not meet the 2022 WMP Update targets, or did not provide evidence sufficient to support a conclusion on completion of an initiative target. (IE ARC, pp. 14-15.)

[1] Energy Safety evaluated a larger number of 58 initiative activities. Although the IE determined that 17 initiative activities were not met or insufficiently reported, Energy Safety determined that only 12 initiative activities were either not met or insufficiently reported due to a review of information received from PacifiCorp subsequent to the IE ARC.

5. Energy Safety Evaluation of WMP Initiative Completion

Energy Safety's evaluation of PacifiCorp's performance in 2022 indicates that PacifiCorp attained 46 of its 58 initiative activities, did not meet targets for 11 initiative activities, and did not provide information regarding one initiative activity sufficient to allow Energy Safety to make a determination.

The subsections below describe Energy Safety's evaluation of PacifiCorp's execution of its WMP in 2022.

5.1 PacifiCorp's 2022 WMP Update Inititaive Activities Assessed by Energy Safety

As noted above, PacifiCorp, the IE, and Energy Safety all reported different figures on the total number of initiative activities and their targets that appear in PacifiCorp's 2022 WMP Update. Energy Safety evaluated the totality of the compliance data available including PacifiCorp's 2022 WMP Update, the EC ARC, the IE ARC, PacifiCorp's Quarterly Data Reports (QDRs), and responses to data requests received from PacifiCorp. The table below, Table 2: PacifiCorp's WMP Update Initiative Activities, itemizes each of the 58 initiative activities that Energy Safety assesses in this ARC.

Table 2: PacifiCorp's WMP Update Initiative Activities

2022 WMP Update Initiative	2022 PacifiCorp Activity Assessed by Energy Safety
A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment (7.3.1.1)	PacifiCorp expects to continuously improve the LRAM as the individual layers are updated or new layers are added. The company will also archive and evaluate the model annually — updating all the layers at that time.
Advanced weather monitoring and weather stations (7.3.2.1)	Install 50 weather monitors and weather stations.
Continuous monitoring sensors - Distribution Fault Anticipation (7.3.2.2.1)	Record data as per the Distribution Fault Anticipation (DFA) pilot.

2022 WMP Update Initiative	2022 PacifiCorp Activity Assessed by Energy Safety
Continuous monitoring sensors - Wildfire Cameras (7.3.2.2.2)	Install two continuous monitoring sensor units.
Fault indicators for detecting faults on electric lines and equipment (7.3.2.3)	Install 500 fault indicators.
Forecast of a fire risk index, fire potential index, or similar (7.3.2.4)	Implement the full suite of Techno sylva's WFAE software throughout the California service territory. Continue enhancement of situational awareness websites.
Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions (7.3.2.5)	Continue deployment of personnel when there is elevated fire risk and initiate a separate tracking mechanism so field personnel can document spend and activities for wildfire mitigation patrols separate from other activities.
Weather forecasting and estimating impacts on electric lines and equipment (7.3.2.6)	Continue to further develop and expand meteorology team hired during 2021 if necessary.
Circuit breaker maintenance and installation to de-energize lines upon detecting a fault (7.3.3.2)	Install 137 circuit breakers.[2]
Covered conductor installation (7.3.3.3)	Complete 112-line miles.
Covered Conductor Maintenance (7.3.3.4)	Update inspection methodology and condition assessment criteria to ensure adequate inclusion of covered conductor.

[2] PacifiCorp's 2021 WMP Update did not specify the units as circuit breakers, but it is implied as the proper unit type for this initiative 7.3.3.2.

2022 WMP Update Initiative	2022 PacifiCorp Activity Assessed by Energy Safety
Crossarm maintenance, repair and replacement (7.3.3.5)	Install, maintain, or replace 136 crossarms.[3]
Distribution pole replacement and reinforcement, including with composite poles (7.3.3.6)	Replace or reinforce 2,158 poles.[4]
Expulsion fuse replacement (7.3.3.7)	Replace 2,269 expulsion fuses.
Installation of system automation equipment (7.3.3.9)	Install 51 pieces of equipment.
Mitigation of impact on customers and other residents affected during PSPS event - Free portable battery program (7.3.3.11.1)	Deliver 50 batteries to customers by May 31, 2022.
Mitigation of impact on customers and other residents affected during PSPS event - Generator Rebate Program (7.3.3.11.2)	Increase awareness of programs that mitigate impacts of PSPS events on customers.
Other corrective action (7.3.3.12)	Complete six-line miles of small diameter copper replacement.
Pole loading infrastructure hardening**,** and replacement program based on pole loading assessment program (7.3.3.13)	Replace poles identified through the pilot as part of the covered conductor work.
Detailed inspections of distribution electric lines and equipment (7.3.4.1)	Complete 8,777 inspections.

[3] PacifiCorp's 2021 WMP Update did not specify the units as crossarms, but it is implied as the proper unit type for this initiative 7.3.3.5.

[4] While the Q1 2022 QDR (that the 2022 WMP Update is based on) states this target as 2,158 poles, Table 5-2 of the WMP states a target of 2,020 poles. Energy Safety relied on the target of 2,158 poles in this ARC, which aligns with the IE's determination in the IE ARC.

2022 WMP Update Initiative	2022 PacifiCorp Activity Assessed by Energy Safety
Detailed inspections of transmission electric lines and equipment (7.3.4.2)	Complete 2,545 inspections.
Infrared inspections of distribution electric lines and equipment (7.3.4.4)	Develop a specific action plan for the field to begin collection information for this pilot.
Infrared inspections of transmission electric lines and equipment (7.3.4.5)	Complete 700 line miles of inspections.
Intrusive pole inspections (7.3.4.6)	Complete 4,759 inspections.
Patrol inspections of distribution electric lines and equipment (7.3.4.11)	Complete 46,338 inspections.
Patrol inspections of transmission electric lines and equipment (7.3.4.12)	Complete 12,367 inspections.
Quality assurance / quality control of inspections (7.3.4.14)	Complete QA/QC work regarding inspections comprised of four components (physical audits, software controls, quarterly desktop reviews, and annual training). Incrementally improve the QA/QC of inspection results by evaluation of audit results and root cause analysis of how to best address issues. Evaluate if further additional spend or inspector training is needed.
Substation inspections (7.3.4.15)	Complete 444 inspections.
Additional efforts to manage community and environmental impacts (7.3.5.1)	Complete the O&M Plan with the KNF, continue to engage land managing agencies to initiative O&M Plan development, and explore other opportunities like letters to notify customers of upcoming vegetation management work.

2022 WMP Update Initiative	2022 PacifiCorp Activity Assessed by Energy Safety
Detailed inspections and management practices for vegetation clearances around distribution electrical lines and equipment (7.3.5.2)	Complete 1,158 line miles of inspections.
Detailed inspections and management practices for vegetation clearances around transmission electrical lines and equipment (7.3.5.3)	Complete 354 line miles of inspections.
Emergency response vegetation management due to red flag warning or other urgent weather conditions (7.3.5.4)	Continue performing risk-based PSPS patrols in 2022.
Fuel management (including all wood management) and management of “slash” from vegetation management activities (7.3.5.5)	Manage 3,047 poles. Continue to seek opportunities for fuel reduction projects and implement integrated vegetation management (IVM) to minimize ignition risks.
Improvement of inspections (7.3.5.6)	Increase incremental inspections before height of fire season, conduct post-audit inspections of completed work and addresses noncompliant conditions, and improve data capabilities.
Remote sensing inspections of vegetation around distribution electric lines and equipment (7.3.5.7)	Complete 685 line miles of inspections.
Remote sensing inspections of vegetation around transmission electric lines and equipment (7.3.5.8)	Complete 341 line miles of inspections.

2022 WMP Update Initiative	2022 PacifiCorp Activity Assessed by Energy Safety
Other discretionary inspections of vegetation around distribution electric lines and equipment, beyond inspections mandated by rules and regulations (7.3.5.9)	To inspect distribution rights-of-ways and adjacent vegetation for potential hazards.
Other discretionary inspections of vegetation around transmission electric lines and equipment, beyond inspections mandated by rules and regulations (7.3.5.10)	To inspect transmission rights-of-ways and adjacent vegetation for potential hazards.
Patrol inspections of vegetation around distribution electric lines and equipment (7.3.5.11)	Complete 1,007 line miles of inspections.
Patrol inspections of vegetation around transmission electric lines and equipment (7.3.5.12)	Complete 163 line miles of inspections.
Quality assurance / quality control of vegetation management (7.3.5.13)	Complete 1,169 line miles of inspections. Expand QC capabilities by increasing internal staff resources to conduct post-audits and other QA/QC functions (i.e. a QA/QC supervisor) in 2022.
Recruiting and training of vegetation management personnel (7.3.5.14)	Provide training and discussion of the WMP to both internal and external vegetation management personnel.
Identification and remediation of “at-risk species” (7.3.5.15)	Ensure that plants do not encroach within a 4-foot clearance within a year.
Removal and remediation of trees with strike potential to electric lines and equipment (7.3.5.16)	Inspect HFTD areas annually for hazard trees and mitigate hazard trees during detailed inspections.
Substation inspections (7.3.5.17)	Complete 66 substation inspections.

2022 WMP Update Initiative	2022 PacifiCorp Activity Assessed by Energy Safety
Substation vegetation management (7.3.5.18)	Removes or prunes any vegetation found during the substation inspection in line with the scheduled maintenance cycle.
Vegetation management system (7.3.5.19)	Updated the forms and information collected for 2022. Began characterizing vegetation location and volume near assets using publicly available tree canopy data and more detailed insights from remote sensing pilot programs.
Vegetation management to achieve clearances around electric lines and equipment (7.3.5.20)	Complete 1,159 line miles of vegetation management. Identify a distribution circuit or potion of a distribution circuit to implement enhanced overhang clearances to identify resources needed to execute this enhance practice in the future.
Vegetation management activities post-fire (7.3.5.21)	Leverage QA/QC supervisor to be hired in 2022 (under initiative 7.3.5.13) to further develop and refine a post-fire response strategy.
Protocols for PSPS re-energization (7.3.6.5)	Continue to explore the use of aerial patrols to expedite patrols prior to re-energization.
Centralized repository for data (7.3.7.1)	Add resources specifically to manage and deliver complex geographic information system (GIS) datasets on a quarterly basis.
Allocation methodology development and application (7.3.8.1)	Perform a series of presentations and meetings to ensure prioritization of wildfire mitigation activities throughout the organization.
Risk-spend efficiency analysis – not to include PSPS (7.3.8.3)	Refine risk spend efficiency (RSE) methodology and calculation parameters throughout 2022. Develop a verification process that will enable the assessment of factors that influence the estimated RSE values. Leverage Technosylva's Wildfire Risk Reduction Model to expand upon existing capabilities of RSE.

2022 WMP Update Initiative	2022 PacifiCorp Activity Assessed by Energy Safety
Community outreach, public awareness, and communications efforts (7.3.9.2)	Increase outreach to all customers to identify more customers relying on medical equipment and to broaden the scope of customers who self-identify as AFN. Offer a Spanish version of the medical baseline application this year.
Customer support in emergencies (7.3.9.3)	Despite planned expenditure of $200,000, PacifiCorp did not establish clear targets or activities relating to this initiative.
Disaster and emergency preparedness plan (7.3.9.4)	Continue to host Practice Emergency Coordination Center (ECC), as well as include important lessons from 2021 related to tracking and reporting.
Protocols in place to learn from wildfire events (7.3.9.6)	Conduct an annual exercise to ensure individuals not involved in incident management on a regular basis are practiced in responding.
Community engagement (7.3.10.1)	Update survey to include an evaluation of PSPS impact reduction programs. Expand effort to raise awareness and action on wildfire safety through paid media campaigns.

5.2 Energy Safety Analysis of Substantial Vegetation Management Audits

Public Utilities Code section 8386.3(c)(5) requires Energy Safety to perform an audit to determine whether the electrical corporation "substantially complied with the substantial portion" of its vegetation management requirements in its WMP. (Pub. Util. Code § 8386.) Energy Safety refers to this audit as the Substantial Vegetation Management (SVM) audit. Pursuant to section 8386(c)(5), Energy Safety conducted an audit of PacifiCorp's compliance with the vegetation management requirements in its 2022 WMP Update.

On July 17, 2024, Energy Safety issued its SVM Audit for PacifiCorp. The purpose of the SVM Audit is to assesses whether PacifiCorp met its quantitative commitments and verifiable statements in its 2022 WMP Update related to vegetation management activities.

In the SVM Audit, Energy Safety found two instances where PacifiCorp did not perform all required work and required PacifiCorp to provide a response in its Corrective Action Plan. (SVM Corrective Action Plan.)

After reviewing PacifiCorp's Corrective Action Plan, filed on August 6, 2024, Energy Safety issued its SVM Audit Report on September 25, 2024, finding that PacifiCorp sufficiently addressed the issues identified for Corrective Actions, and therefore that PacifiCorp substantially complied with the substantial portion of the vegetation management requirements in its 2022 WMP Update.

The specific findings from Energy Safety's SVM Audit Report are included as a part of the detailed findings described in Appendix D.

5.3 Energy Safety Field Inspection Analysis

Energy Safety performs inspections utilizing an electrical corporation's initiative activity data applicable to the WMP year compliance period. Energy Safety conducts two types of inspections: 1) inspections of grid hardening and other work related to WMP initiatives related to physical infrastructure, and 2) inspections of general wildfire safety conditions at an inspection site. The second category of general wildfire safety conditions is not strictly related to WMP initiatives, and these inspections are additional to Energy Safety's WMP initiative-related inspection work.[5]

In the tables below, Energy Safety distinguishes its inspection activities related to WMP initiatives on grid hardening and physical infrastructure (WMP Inspections) and inspection activities related to general wildfire safety conditions (GWS Inspections).

For the 2022 compliance period, Energy Safety conducted 4,893 GWS inspection activities and 1,485 WMP inspection activities in PacifiCorp's territory. The results of these inspection activities are described in the tables below.[6]

[5] If Energy Safety observes a general wildfire safety concern during an inspection activity, then that is recorded as a "defect" or "Wildfire Safety Concern (WSC)." If Energy Safety observes non-compliance with a WMP initiative during an inspection activity that an electrical corporation claimed to have occurred at a site, then that is recorded as a "violation."

[6] Energy Safety uses the term "inspection activity" to refer to a specific question or condition assessed during an inspection. For example, if Energy Safety is inspecting a particular utility pole and looking for eight different conditions associated with a WMP initiative, then that would count as eight WMP inspection activities. If a general wildfire safety inspection occurs at the same time at that utility pole, and 20 general wildfire safety conditions are assessed, then that would count as 20 general wildfire safety inspection activities. In this example, a single utility pole inspection would lead to 28 inspection activities.

Table 3: Energy Safety's 2022 Observations of General Wildfire Safety Concerns in PacifiCorp's Territory in 2022

GWS Inspection Metrics for 2022 in PacifiCorp's Territory	Totals
Total GWS Inspection Activities	4,893
Total Defects or Wildfire Safety Concerns Observed	47
Rate of Defects or Wildfire Safety Concerns	0.96%
Defects Overdue for Correction	0
Defect Timely Correction Rate	100%

Table 4: Energy Safety's Observations of Wildfire Mitigation Plan Violations in PacifiCorp's Territory in 2022

WMP Inspection Metrics for 2022 in PacifiCorp's Territory	Totals
Total WMP Inspection Activities	1,485
Total Violations Observed	4
Violation Rate	0.27%
Violations Overdue for Correction	0
Violation Timely Correction Rate	100%

5.4 PacifiCorp's WMP Initiative Activity Attainment in 2022

As noted previously, Energy Safety's evaluation of PacifiCorp's performance in 2022 indicates that PacifiCorp attained 46 of its 58 initiative activities, did not attain 11 initiative activities, and did not provide information regarding one initiative activity sufficient to allow Energy Safety to make a determination: 7.3.2.6 weather forecasting and estimating impacts on electric lines and equipment.

The table below, Table 5, summarizes all of the 2022 WMP Update initiative activity targets that PacifiCorp did not meet in 2022, or for which insufficient information was provided by PacifiCorp. This is based on the analysis of PacifiCorp's EC ARC, the IE ARC, Energy Safety's independent examination of PacifiCorp's transmission and distribution system, as well as data submitted by PacifiCorp for the 2022 compliance year. Based on its analysis, Energy Safety believes that any activity not described in the table below is met for the 2022 compliance year.

Table 5: PacifiCorp's Non-Attainment of WMP Initiative Activities

2022 WMP Update Initiative	2022 Initiative Activity	Details of Non-Attainment and Rationale
A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment (7.3.1.1)	PacifiCorp expects to continuously improve the LRAM as the individual layers are updated or new layers are added. The company will also archive and evaluate the model annually — updating all the layers at that time.	PacifiCorp did not report any progress on the initiative activities of improving layers and archiving and evaluating the LRAM model. PacifiCorp's Q4 QDR noted that resource constraints had been resolved, however results would appear in 2023. The IE ARC noted this initiative was underfunded. (Q4 QDR; IE ARC, p. 45.)
Continuous monitoring sensors - Distribution Fault Anticipation (DFA) (7.3.2.2.1)	Record data as per the DFA pilot.	DFA devices were physically installed but did not begin transmitting data until 2023. (IE ARC, p. 42.)
Weather forecasting and estimating impacts on electric lines and equipment (7.3.2.6)	Continue to further develop and expand meteorology team hired during 2021 if necessary.	This is the sole initiative activity where Energy Safety was unable to determine if compliance was achieved or not. PacifiCorp did not report any progress on the initiative activities of further development and expansion of the meteorology team. The EC ARC and IE ARC both noted this initiative as underfunded but did not provide an explanation. (EC

2022 WMP Update Initiative	2022 Initiative Activity	Details of Non-Attainment and Rationale
		ARC, p. 4; IE ARC, p. 48.)
Forecast of a fire risk index, fire potential index, or similar (7.3.2.4)	Implement the full suite of Technosylva's software throughout the California service territory. Continue enhancement of situational awareness websites.	This initiative activity was underfunded. Technosylva capabilities were executed between the end of 2022 and into the next annual compliance period. (IE ARC, p. 34.)
Covered conductor installation (7.3.3.3)	Complete 112 line miles.	This initiative was underfunded. PacifiCorp completed 62 miles only in 2022. (IE ARC, p. 13.)
Distribution pole replacement and reinforcement, including with composite poles (7.3.3.6)	Replace or reinforce 2,158 poles.	No planned expenditure. PacifiCorp replaced or reinforced 1,101 poles only in 2022. (IE ARC, p. 12.)
Expulsion fuse replacement (7.3.3.7)	Replace 2,269 expulsion fuses.	Exceeded planned expenditure, but only completed 2,112 expulsion fuse replacements (93% of the target). (IE ARC, p. 14.)
Pole loading infrastructure hardening, and replacement program based on pole loading assessment program (7.3.3.13)	Replace poles identified through the pilot as part of the covered conductor work.	Pole hardening and replacements were implemented simultaneously with covered conductor installations. Because the covered conductor program was off target by about 45%, the pole work was as well. This initiative activity was underfunded, and expenditure was moved to the covered conductor installation initiative that did not meet its target. (EC ARC, p. 5.)
Centralized repository for data (7.3.7.1)	Add resources specifically to manage and deliver	This initiative activity was underfunded. Due to resource

2022 WMP Update Initiative	2022 Initiative Activity	Details of Non-Attainment and Rationale
	complex GIS datasets on a quarterly basis.	constraint delays, the work was rescheduled for completion in 2023. (2022 Q4 QDR.)
Allocation methodology development and application (7.3.8.1)	Perform a series of presentations and meetings to ensure prioritization of wildfire mitigation activities throughout the organization.	No planned expenditure. Only one example presentation from April 2022 was provided to Energy Safety. This does not meet the activity reference for a series of presentations and meetings. (PC DR 232.)
Risk-spend efficiency analysis- not to include PSPS (7.3.8.3)	Develop a verification process that will enable the assessment of factors that influence the estimated RSE values. Leverage Technosylva's Wildfire Risk Reduction Model (WRRM) to expand upon existing capabilities of Risk Spend Efficiency (RSE).	No planned expenditure. A verification process was not developed and the expansion of WRRM capabilities was executed between the end of 2022 and into the next annual compliance period. (PC DR 232.)
Customer support in emergencies (7.3.9.3)	Gather customer feedback and take lessons learned from experiences and integrate them into future programs and plans.	PacifiCorp did not report any progress on the initiative activities of integrating lessons learned into future programs and plans. This initiative had a planned expenditure of $200,000 and was noted in the EC ARC as underfunded due to delays with contracting resources. This work was being targeted to be completed in the 2023-2025 WMP cycle instead. (EC ARC, p. 6.)

The information in Table 5 above leads Energy Safety to conclude that PacifiCorp did not complete two of its key objectives from its 2022 WMP Update. Among other things, PacifiCorp's key objectives for 2022 included:

- Continued implementation of baseline programs,
- Initiation of new programs such as expulsion fuse replacements and installation of fault indicators,
- Development of new technology pilots in the areas of distribution inspections and wildfire detection,
- Significant investment and advancement of situational awareness through procurement and implementation of several modules of Technosylva (a wildfire risk analysis platform), and
- Implementation of a wildfire detection program pilot for enhanced situational awareness and an enhanced overhang reduction pilot. (2022 WMP Update, p. ix.)

With respect to the key objective to implement expulsion fuse replacements (initiative 7.3.3.7), PacifiCorp missed its activity target by 7%. This leads Energy Safety to conclude that this key objective was not met.

Another key objective was to implement enhanced situational awareness through certain risk modelling initiatives (7.3.1.1 – Summarized Risk Map, 7.3.2.4 – Forecast of a Fire Risk Index, and 7.3.8.3 – Risk-Spend Efficiency Analysis). None of these initiatives met their qualitative targets in full, as described in Table 5 above, and this leads Energy Safety to conclude that this key objective was not met.

6. Wildfire Risk Reduction: Performance Metrics and Overall WMP Execution

The Compliance Process applicable to the 2022 WMP Update compliance year defines goals for Energy Safety that extend beyond assessing compliance with WMP initiatives. Specifically, Energy Safety examines the ultimate performance of an electrical corporation's infrastructure relative to its wildfire risk, as measured by changes in the occurrence of events that correlate to wildfire risk. Energy Safety also considers whether the electrical corporation exhibited issues related to its execution, management, or documentation in the implementation of its WMP.

Below, this report outlines the metrics chosen by Energy Safety to evaluate the performance of an electrical corporation's infrastructure relative to risk. These metrics include data on ignitions and PSPS events in the territory of the electrical corporation. The data utilized by Energy Safety were provided by PacifiCorp in its QDR submissions; but were analyzed and

presented here using Energy Safety's own methodology. Where necessary, explanations of Energy Safety's methodology are provided.

This section also contains a discussion of any issues exhibited by PacifiCorp with respect to its execution, management, or documentation in the implementation of its WMP, if applicable.

6.1 Ignition Risk Metrics and Outcomes Metrics

Energy Safety assessed the performance of PacifiCorp infrastructure relative to its wildfire risk, as measured by changes in the occurrence of events that correlate to wildfire risk.

Energy Safety requires electrical corporations to report data, such as ignitions in the HFTD, that help Energy Safety assess whether an electrical corporation reduced its wildfire risk while also reducing its reliance on PSPS. In 2022, Energy Safety assessed each electrical corporation's infrastructure performance for the calendar years 2015 through 2022 with particular attention on the 2022 outcomes.

The collection of metrics evaluated are grouped into two categories: Ignition Risk Metrics, and Outcome Metrics. A list of all the metrics in each category is described fully in their respective following sections. For these sections, Energy Safety relied on data reported in the fourth quarter 2023 QDR for the year 2022 values and third quarter 2022 QDR for all prior year values. (2023 Q4 QDR, 2022 Q3 QDR.)[7]

Normalizing Metrics:

For applicable performance metrics, the normalizing metrics Energy Safety uses are: "Overhead Circuit Miles" (OCM), "Circuit Miles" (CM), "High Wind Warning Overhead Circuit Mile Days (High Wind Warning Days or HWWOCMD), and "Red Flag Warning Overhead Circuit Mile Days" (Red Flag Warning Days or RFWOCMD). To see the values for each year used, see Appendix E, (Figure 25 through Figure 27). (2023 Q4 QDR, Tables 4 and 7; 2022 Q3 QDR, Tables 6 and 8.)

Energy Safety uses these normalizing metrics to ensure a more nuanced interpretation of wildfire risk outcomes. For example, the outcome metric of "acres burned" is impacted directly by the presence of hot dry winds and, thus, this metric is presented in both raw counts and normalized by RFWOCMD. In this way, the acres burned are presented "accounting for" year by year variances in weather conditions that directly influence the outcome.

[7] Since the format of the required data reporting of all electrical corporations changed near the end of 2022, all data for 2015-2021 are gained from the Q3 2022 reporting (old format) and all data for 2022 are gained from the Q4 2023 reporting (new format).

6.1.1 Ignitions Risk Metrics

Energy Safety reviewed the following metrics associated with ignition risk:

1. **Ignitions** – Incidents in which electrical corporation infrastructure was involved,
2. **Wire Down Events** – Incidents in which overhead electrical lines fall to the ground, land on objects, or become disconnected from their moors,
3. **Unplanned Outages** – All unplanned outages experienced,
4. **Vegetation-Caused Outages** – A subset of unplanned outages experienced in which the cause was determined to be vegetation contact with electrical lines,
5. **PSPS Events** – Planned outages called public safety power shutoff (PSPS) events.

6.1.1.1 Ignitions Data Analysis

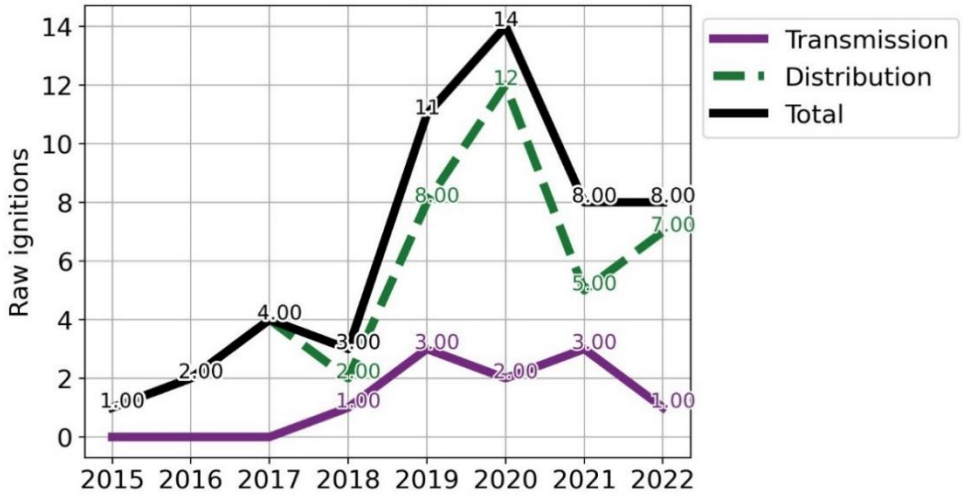
The Ignition Data Analysis section examines ignitions stemming from distribution and transmission lines located in Tier 2 and 3 HFTD areas. (2023 Q4 QDR, Table 6; 2022 Q3, Table 7.2.) In addition to showing raw ignition counts, ignitions are normalized by OCM, CM, HWWOCMD, and RFWOCMD. PacifiCorp's service territory is divided into three primary area designations: Non-HFTD, HFTD Tier 2, and HFTD Tier 3. For a sense of scale, the percent of each territory type is as follows: Non-HFTD = 64%, HFTD Tier 2 = 34%, and HFTD Tier 3 = 2%. (2022 PC QDR.)

Raw Ignition Counts:

Transmission ignitions remained below four total ignitions from 2015 to 2022. In contrast, distribution ignitions fluctuated, starting at one in 2015, peaking at 12 in 2020, declining to five in 2021, then increasing again to seven in 2022.[8] Overall, total ignition counts were comparable from 2021 to 2022 (Figure 1).

[8] Per PC DR 237, PacifiCorp clarified the raw ignition counts for 2022 should have been documented in the QDR as eight for distribution and zero for transmission.

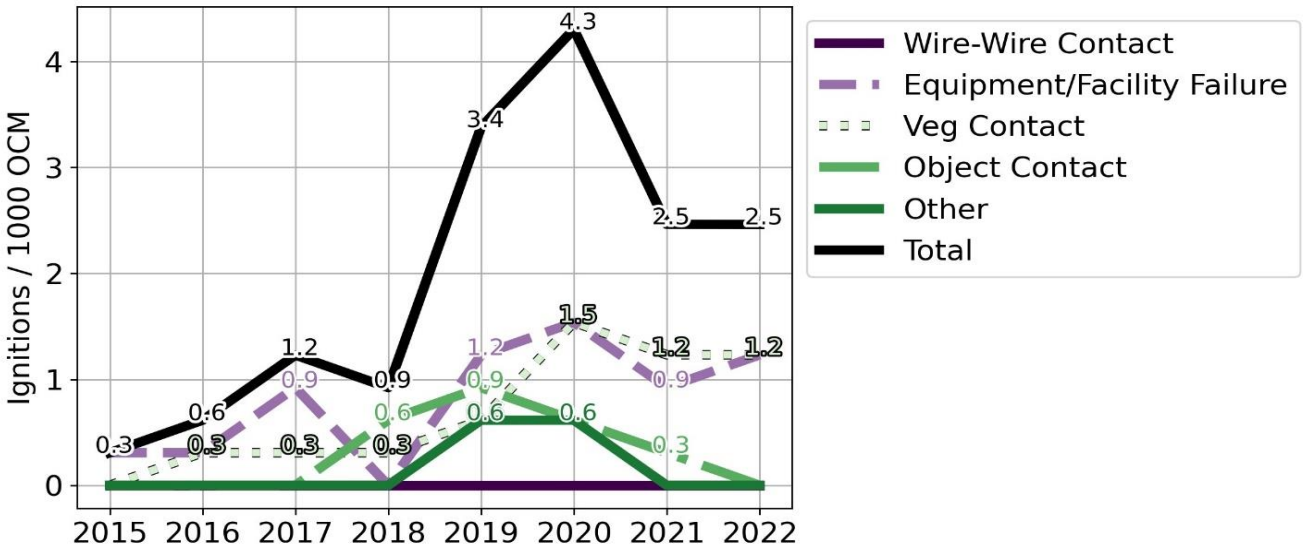
Figure 1: PacifiCorp Count of Utility Related Ignitions (2015-2022) by Distribution and Transmission Lines



Ignitions Normalized by Overhead Circuit Miles Delineated by Risk Driver:

To understand the basis of the increasing trend of normalized ignitions by OCM, Energy Safety analyzed the ignitions delineated by Risk Driver (Figure 2).The largest contributors to ignitions were equipment failures, facility failures, and vegetation contact.

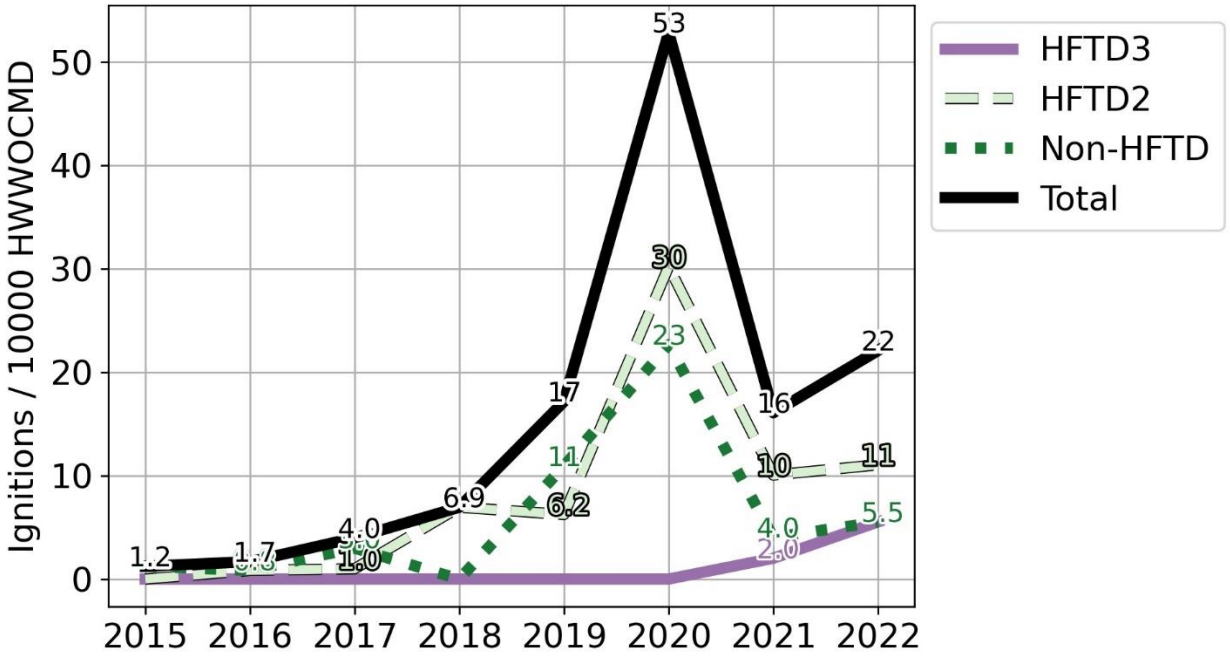
Figure 2: PacifiCorp Ignitions Normalized by Overhead Circuit Miles (2015-2022) by Risk Drivers



Ignitions Normalized by High Wind Warning Days:

To account for year-by-year variations in weather, ignitions were normalized by HWWOCMD. Areas considered as HFTD Tier 3 did not have any documented ignitions until 2021, and again in 2022. The trend shows an increase from 2015 to its highest point in 2020 for the areas considered as HFTD Tier 2. The spike in 2020 was caused comparatively by HFTD Tier 2 and Non-HFTD areas. Normalized ignitions in both HFTD Tier 3 and HFTD Tier 2 areas decreased for a short period from 2020 to 2021 but increased again in 2022 (Figure 3). This plot shows that the large peak in 2020 that appears in the raw counts (Figure 1), cannot be explained by the weather. Even after adjusting for weather conditions, there is still a large increase in ignitions for 2020. Further, the parity between 2021 and 2022 raw ignition counts does not exist when accounting for the weather, and there is a higher normalized ignition count in 2022.

Figure 3: *PacifiCorp Ignitions Normalized by HWWOCMD (2015-2022) Delineated by HFTD*



Ignitions by HFTD Detail and normalized by Red Flag Warning Days:

For additional details on ignitions by Risk Driver for each HFTD level for distribution lines and then transmission lines as well as all ignition analyses normalized by red flag warning days, see Appendix E (Figure 23 through Figure 37).

6.1.1.2 Wire Down Events Data Analysis

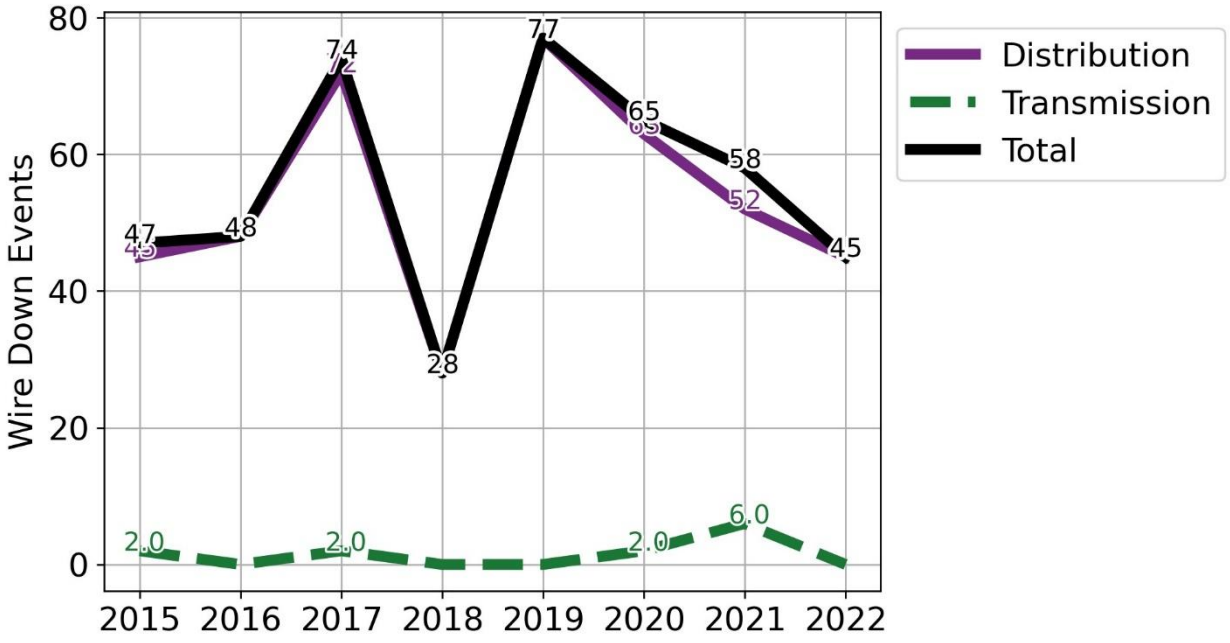
Wire down events are wildfire risks where a wire is touching the ground, an object, or has become disconnected from its mooring. This type of event poses a risk of ignition or a dang

er to people if the down wire is energized with electricity. The data source for wire down information is the QDR. (2023 Q4 QDR, Table 5; 2022 Q3 QDR, Table 7.1.)

Raw Wire Down Events:

The PacifiCorp wire down event counts data showed the lowest occurrences (from 2015-2022) in 2018. Wire down events were highly variable between 2016 and 2019, but may be on a downward trend since 2019. The majority of wire down events occurred on the distribution system (Figure 4). Understanding these variations can help improve infrastructure reliability and reduce such incidents in the future.

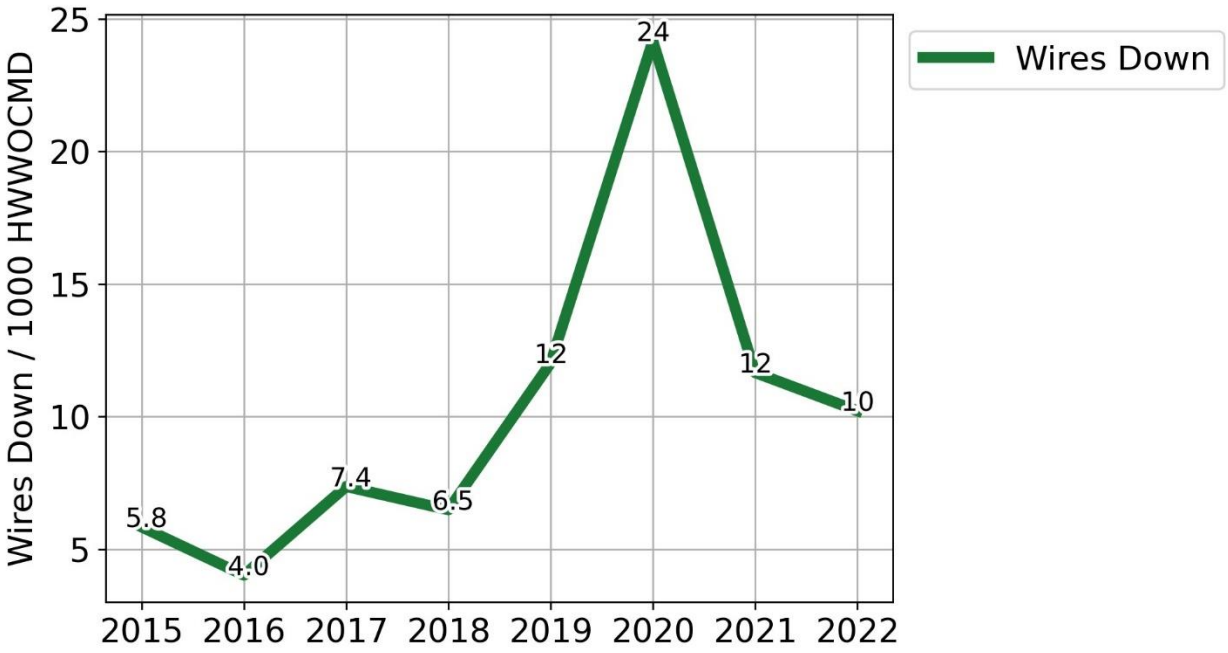
Figure 4: PacifiCorp Count Wire Down Event Counts (2015-2022) by Distribution and Transmission



Wire Down Events Normalized by High Wind Warnings:

When accounting for weather, the number of wire down events normalized by HWWOCMD peaked in 2020 (Figure 5). The normalized trend is more consistent with the spike in ignitions seen in 2020.

Figure 5: PacifiCorp Total Wire Down Events Normalized by HWWOCMD (2015-2022)



Wire Down Events Normalized by Red Flag Warning Days:

Please see Appendix E (Figure 35) for wire down events normalized by RFWOCMD.

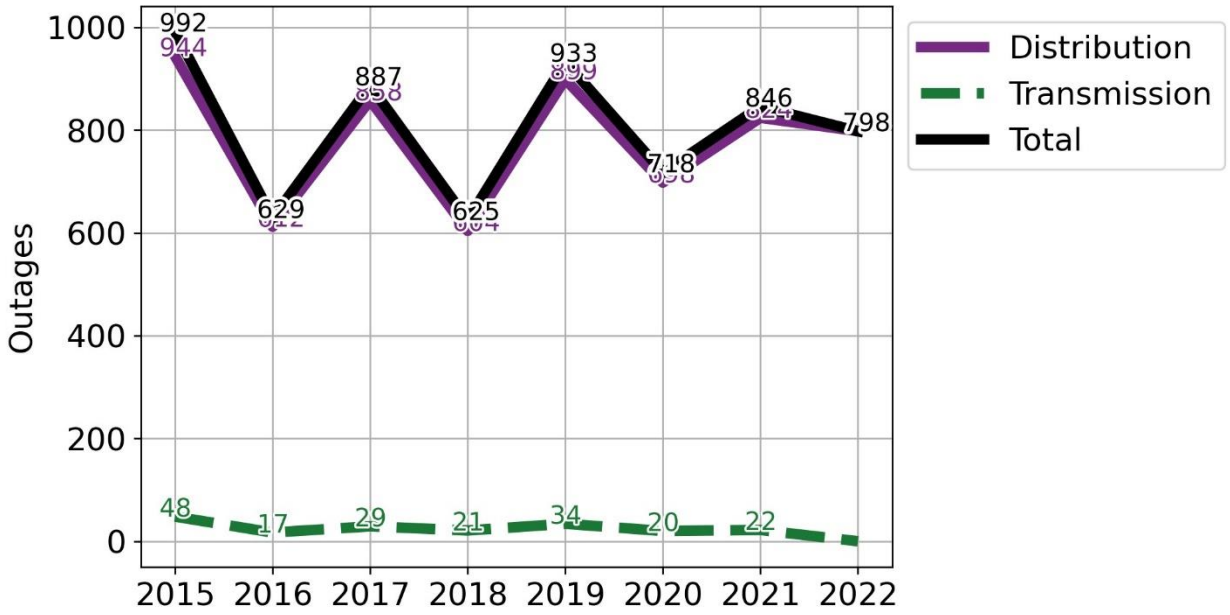
6.1.1.3 Outage Event Data Analysis

Power outages (outages) are unplanned outage events (not including PSPS events) tabulated by circuit counts. Outage events are tracked as outcomes that may cause ignitions and impact customers' quality of life. As some customers are dependent upon access to electricity for their survival and health, ideally unplanned outages should decrease over time. The data source for outage event information is the QDR. (2023 Q4 QDR, Table 5; 2022 Q3 QDR, Table 7.1.)

Raw Outage Event Counts:

Total unplanned outage event counts have generally held constant except for a significant decrease in 2022 to zero for transmission outages. In contrast, the number of unplanned distribution outages from 2015 through 2021 has been consistent, with the number of outages in 2022 aligning with this historical average (Figure 6).

Figure 6: PacifiCorp Count Outage Events (2015-2022) by Distribution and Transmission Lines

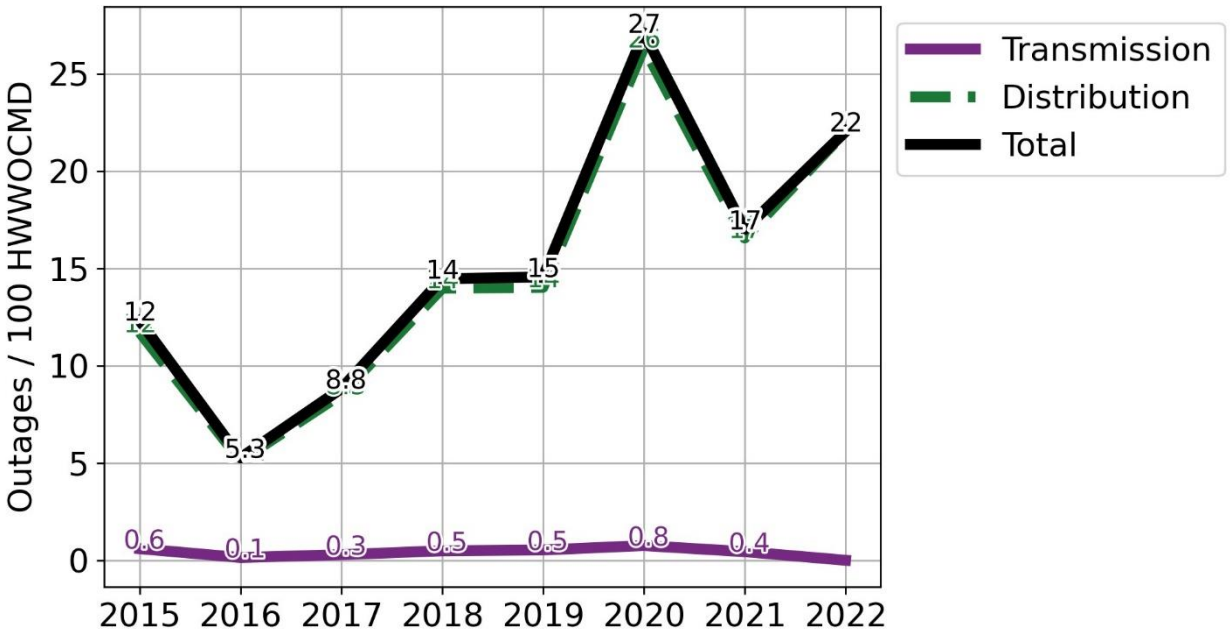


Outage Events Normalized by High Wind Warning Days:

To view the outage event data with respect to weather patterns that often cause them, outage event counts have been normalized by HWWOCMD.

Once the outage event counts are adjusted for year-to-year variances in weather, there is a peak in normalized outage events in 2020 like normalized ignitions and wires down. The data for 2022 continues a general trend of increased outage events when accounting for weather as a variable (Figure 7).

Figure 7: PacifiCorp Outages Normalized by HWWOCMD (2015-2022) by Distribution and Transmission Lines



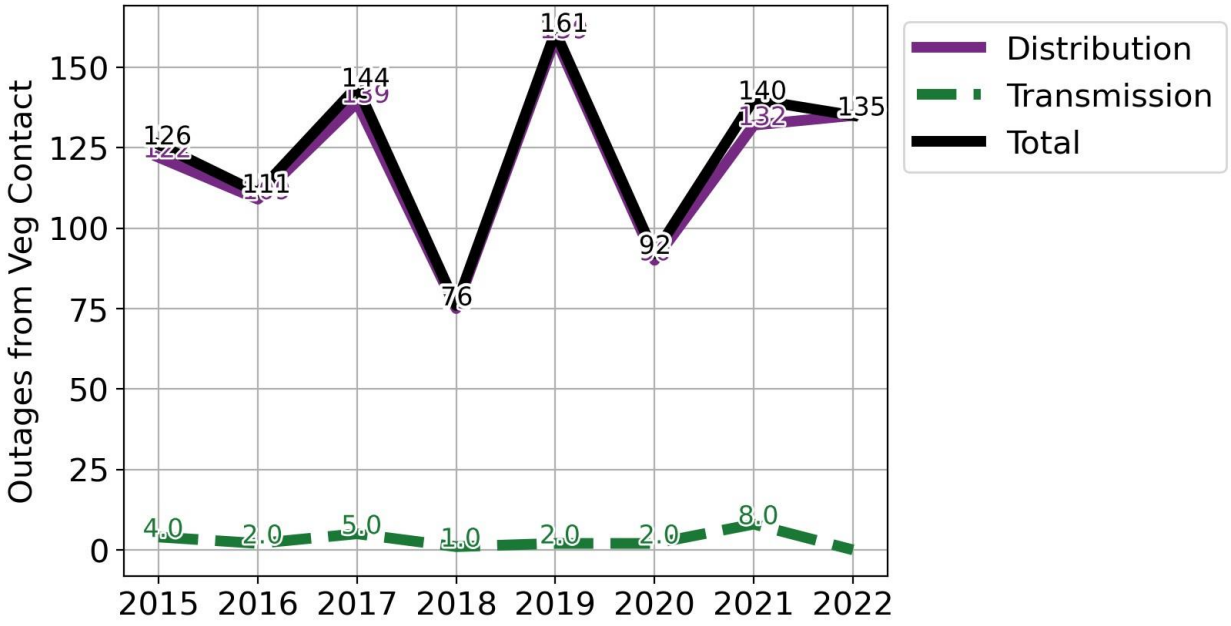
Outage Events Normalized by Red Flag Warning Days:

Please see Appendix E (Figure 36) for outage events normalized by RFWOCMD.

Outage Events from Vegetation Contact Counts:

Unplanned outage events caused by vegetation contact is one of the most common and informative regarding wildfire mitigation opportunities, so it is presented separately from other risk drivers. Outage events on the transmission system caused by vegetation contact are very infrequent compared to outage events on the distribution system caused by vegetation contact (Figure 8). In total, outage events caused by vegetation contact have gone up and down, without a clear trend, from 2015 to 2022. The 2022 number of 135 is close to the seven-year average of 123.

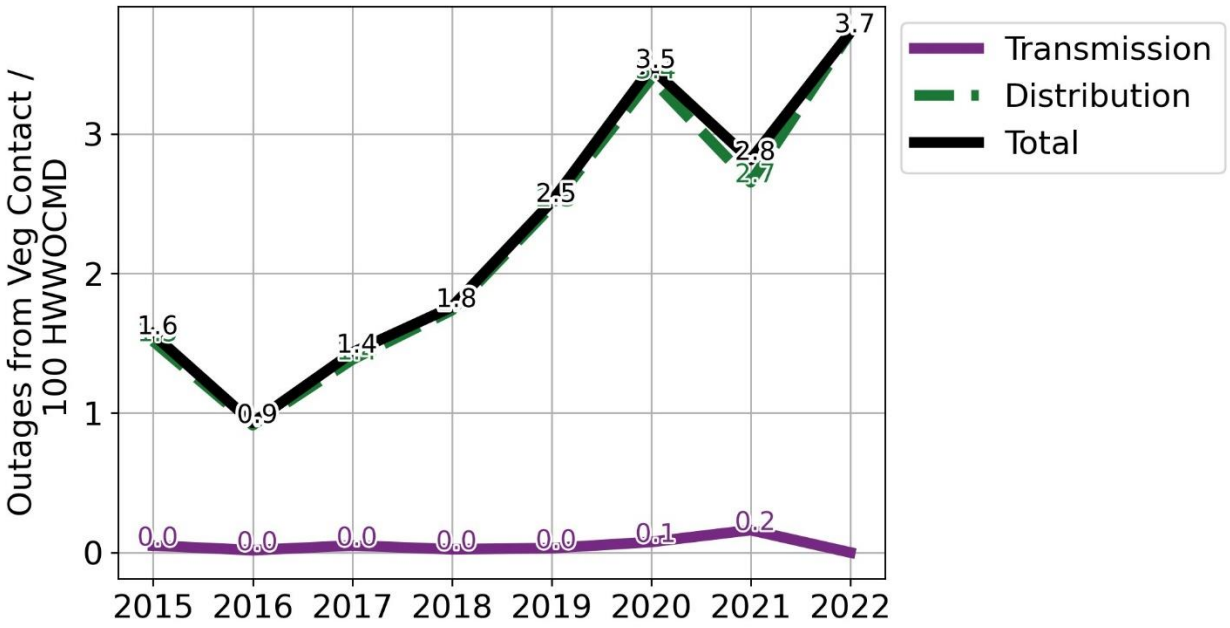
Figure 8: PacifiCorp Count of Outages from Vegetation Contact (2015-2022) by Distribution and Transmission Lines



Outage Events from Vegetation Contact Counts Normalized by High Wind Warning Days:

As outage events caused by vegetation contact may correlate with weather conditions, the raw counts were normalized by HWWOCMD. There is a clear increasing trend from 2016 to 2022 (Figure 9).

Figure 9: PacifiCorp Outages from Vegetation Contacts Normalized by HWWOCMD (2015-2022) by Distribution and Transmission Lines



Outage Events from Vegetation Contact Counts Normalized by Red Flag Warning Days:

Please see Appendix E (Figure 37) for outage events caused by vegetation contact normalized by RFWOCMD.

6.1.1.4 PSPS Event Data Analysis

PSPS events are planned outages used as a wildfire mitigation tool during extreme fire conditions such as hot, dry, windy days. While useful as a wildfire mitigation measure, PSPS events carry their own risks and adverse impacts on customers – particularly vulnerable customers who need electricity to survive. As such, electrical corporations take mitigating actions to reduce the frequency, scope, duration, and impacts of PSPS events.

As PSPS events are typically issued during extreme fire conditions, the PSPS outcomes are presented first in raw count form, and then normalized by RFWOCMD to account for variances in weather across years.

The following four PSPS event parameters are presented for each year and comprise the PSPS event data analysis:

- *Frequency* is measured as the number or count of all PSPS events,
- *Scope* is measured as the total number of utility circuits impacted because of all PSPS events,
- *Duration* is measured by the total number of customer-hours because of all PSPS events, and

- *Impacts* are measured by the number of critical infrastructure locations-hours impacted by all PSPS events.

The data source for PSPS event information is PacifiCorp's 2023 Q4 QDR, Table 10 and 2022 Q3 QDR, Table 11.

Frequency of PSPS Events:

PacifiCorp had two PSPS events from 2015 to 2022 – one in 2020 and another in 2021. (Figure 10). The weather-normalized version shows a peak in 2021, but a significant decrease to zero in 2022 (Figure 11).

Figure 10: PacifiCorp PSPS Events Frequency (2015-2022)

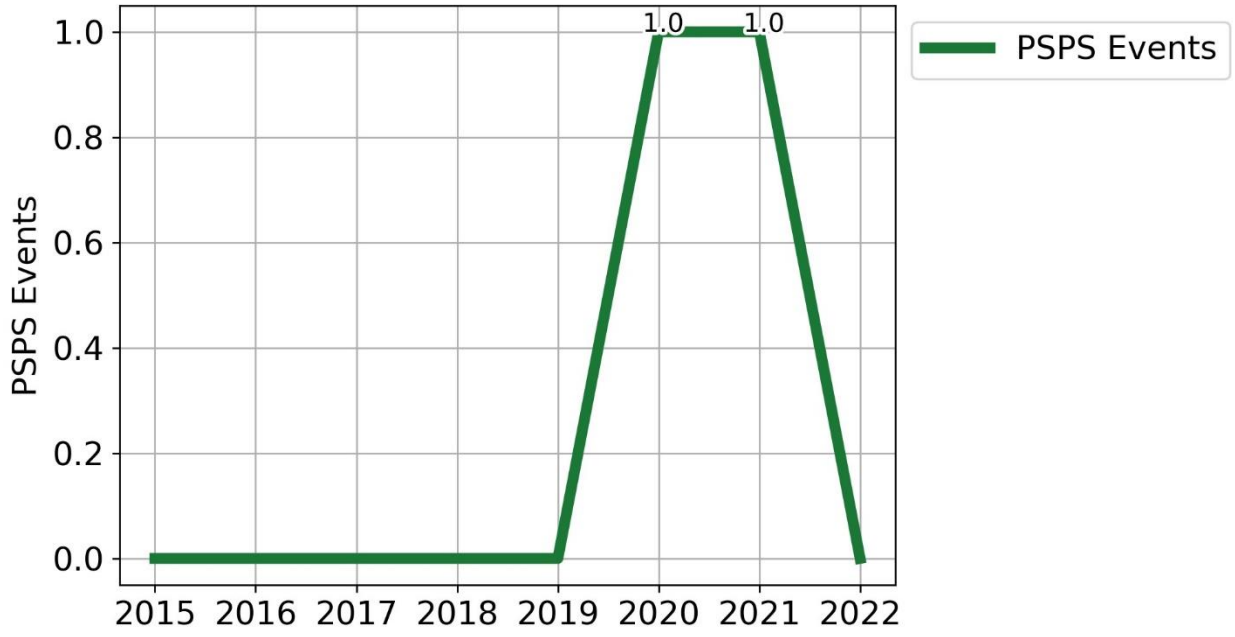
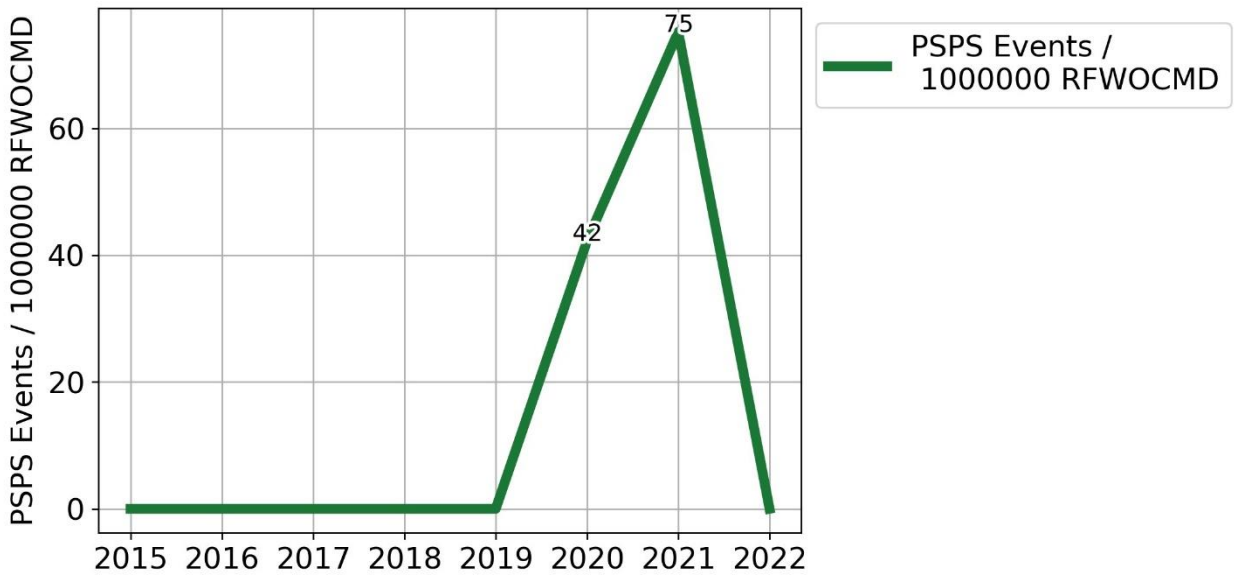


Figure 11: PacifiCorp PSPS Events Frequency Normalized by RFWOCMD (2015-2022)



Scope of PSPS Events:

The number of utility circuits impacted by PSPS events is similarly at a maximum of six circuits in 2021, with zero in 2022 (Figure 12). When accounting for variances by year in weather, the maximum is again in 2021 (Figure 13).

Figure 12: PacifiCorp PSPS Events Scope (2015-2022)

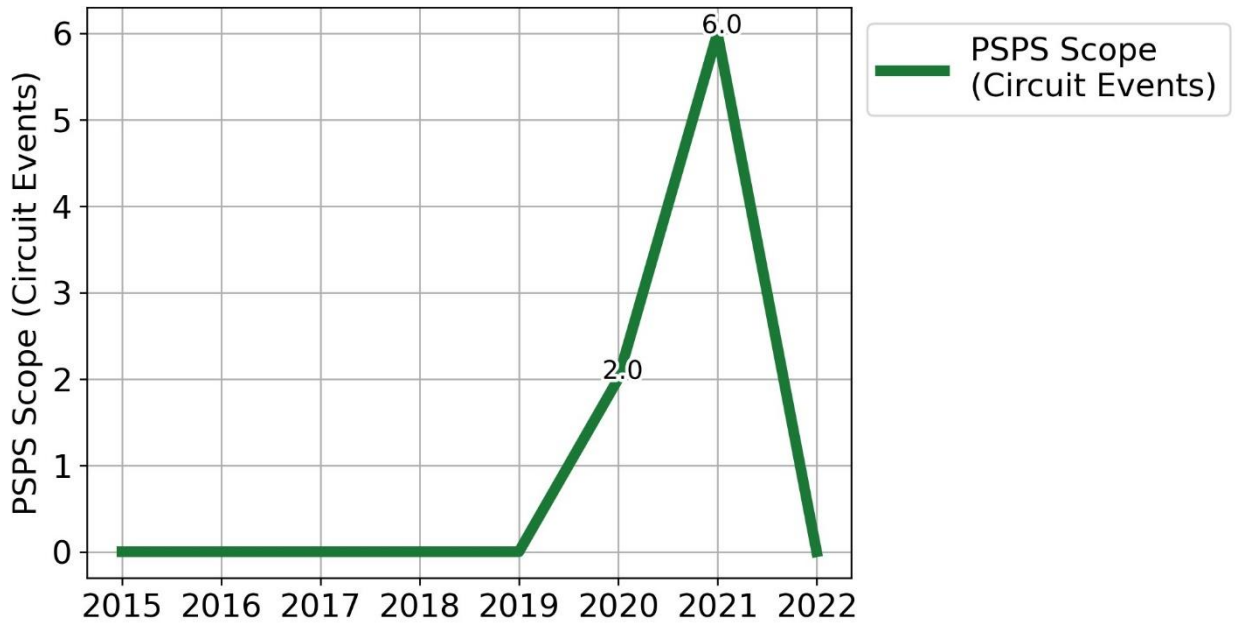
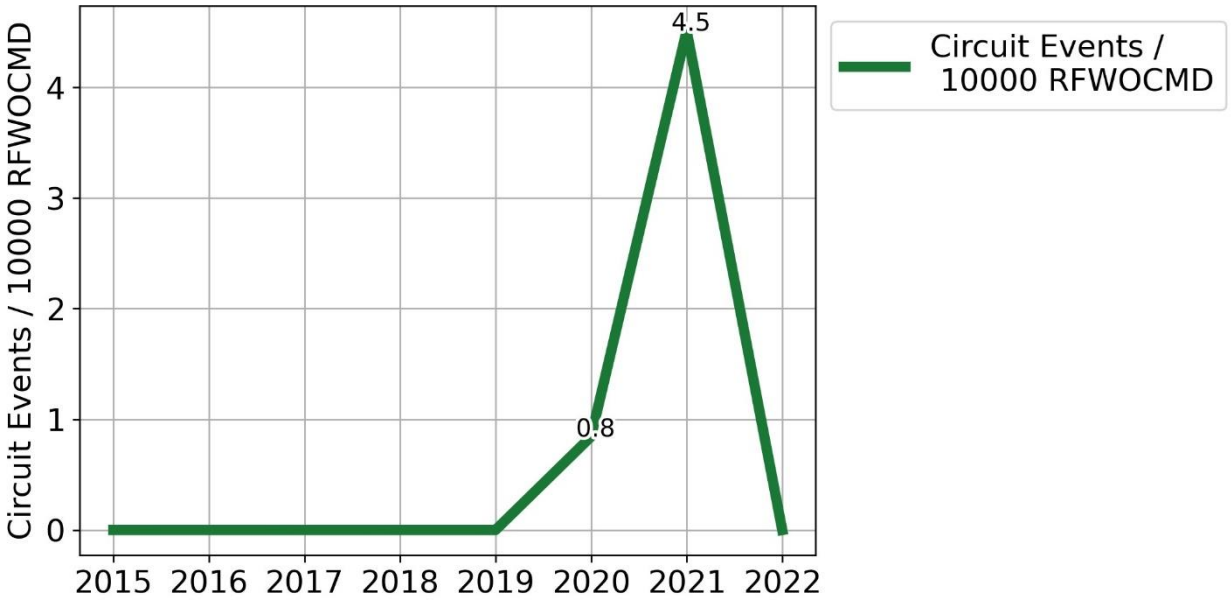


Figure 13: PacifiCorp PSPS Events Scope Normalized by RFWOCMD (2015-2022)



Duration of PSPS Events:

The total number of customer-hours impacted by all PSPS events for each year has a maximum of almost 21,000 in 2020, 15,000 in 2021, and zero in 2022 (Figure 14). When accounting for yearly changes in weather, the normalized customer-hours show the peak in 2021 (Figure 15).

Figure 14: PacifiCorp PSPS Events Duration (2015-2022)

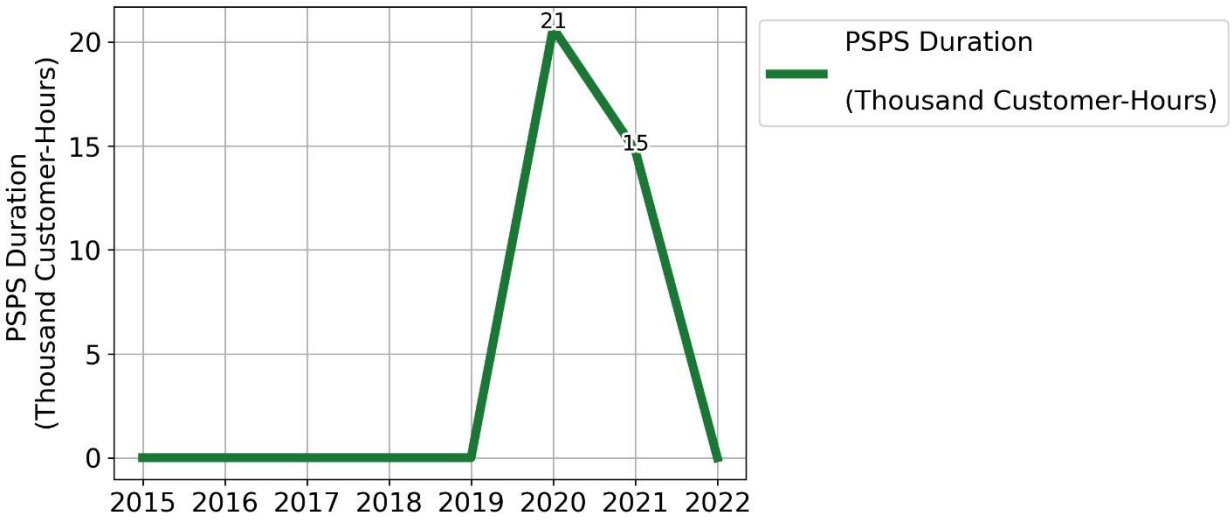
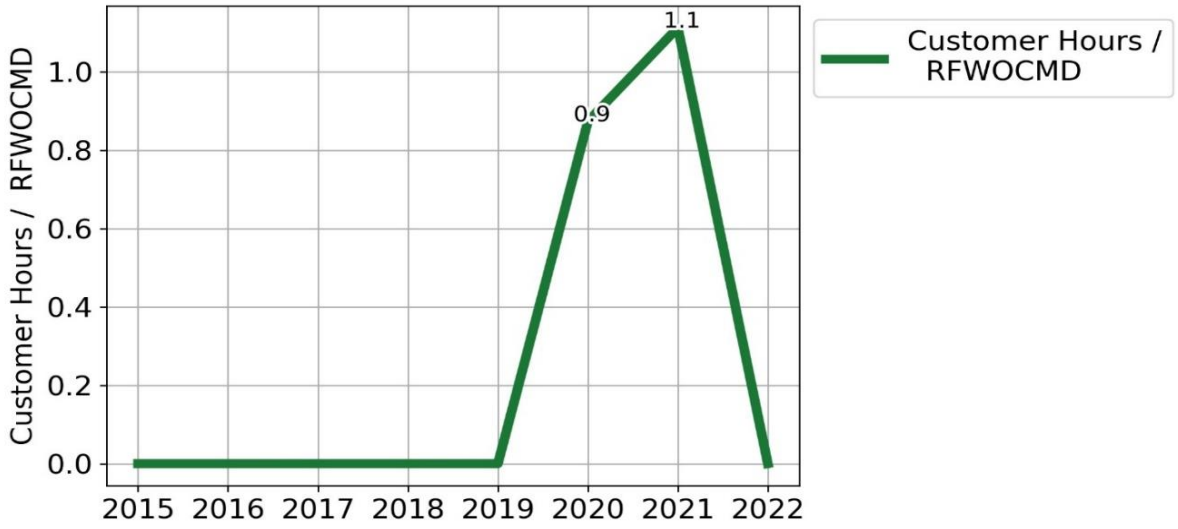


Figure 15: PacifiCorp PSPS Events Duration Normalized by RFWOCMD (2015-2022)



Impacts of PSPS Events:

The number of critical infrastructure location-hours have a maximum impact in 2020 that decreased in 2021 and was zero in 2022 (Figure 16). When accounting for yearly changes in weather, the normalized impacts of PSPS events also show the peak in 2021 (Figure 17).

Figure 16: PacifiCorp PSPS Event Impacts (2015-2022)

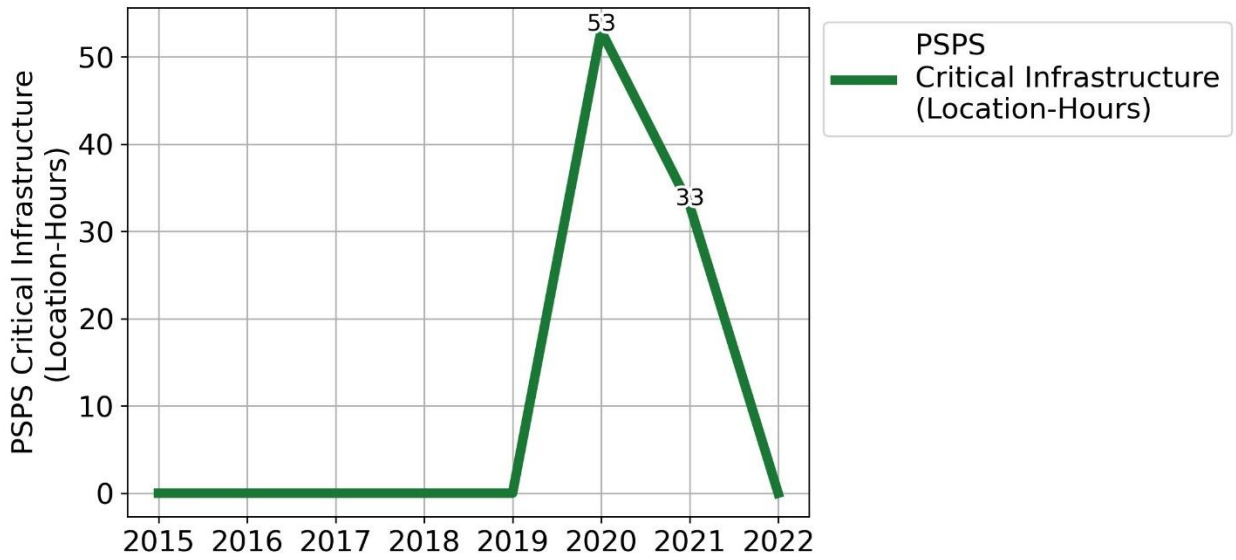
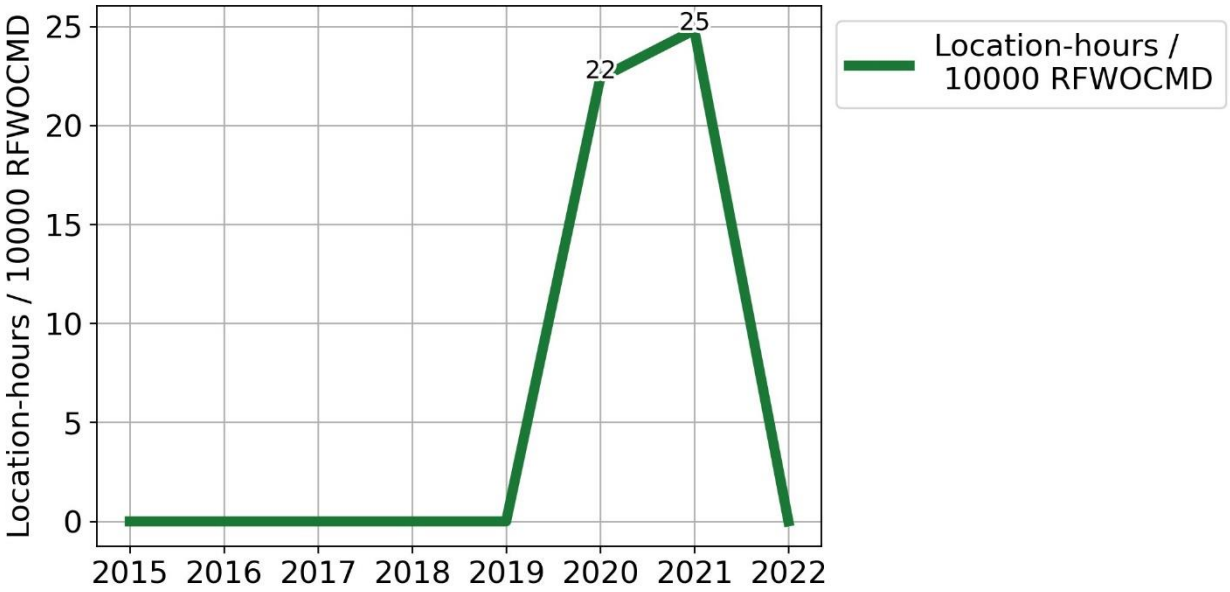


Figure 17: PacifiCorp Impacts PSPS Event Impacts Normalized by RFWOCMD (2015-2022)



6.1.2 Outcome Metrics

This section presents outcome metrics on electrical corporation-related wildfires including:

- **Acres burned –** The total number of acres burned due to electrical corporation caused fires,
- **Structures damaged/destroyed -** The total number of structures damaged or destroyed due to electrical corporation caused fires,
- **Injuries/fatalities -** The total number of injuries and fatalities due to electrical corporation caused fires.

The data source for outcome metrics information is PacifiCorp's QDR, as well as PacifiCorp's 2025 WMP Update for data related to the Slater fire. (2023 Q4 QDR, Table 2; 2022 Q3 QDR, Table 2; 2025 WMP Update, p. 40.)

The analysis below does not include the McKinney fire, which occurred in PacifiCorp service territory in 2022. The McKinney fire resulted in 60,138 acres burned, four fatalities, and 196 structures damaged or destroyed. The McKinney fire and its corresponding outcome metrics were noted by PacifiCorp itself in its 2023-2025 Base WMP, qualified by the statement that the McKinney fire is "under investigation." (2025 WMP Update, p. 40.) The analysis below may change in subsequent ARCs prepared by Energy Safety if PacifiCorp is ultimately found to be responsible for the McKinney fire.

The figures below include outcomes related to the Slater fire of 2020, which occurred in PacifiCorp service territory and resulted in 157,220 acres burned, two fatalities, and 451

structures damaged or destroyed. (2025 WMP Update, p. 40.) On June 24, 2024, PacifiCorp announced that it settled claims related to the Slater fire for $150 million. (PC 8-K.)

Acres Burned:

The total number of acres burned by PacifiCorp-ignited wildfires reached the maximum in 2020 due to the Slater fire (Figure 18). When accounting for yearly variance in the weather, the normalized acres burned showed a similar trend (Figure 19).

Figure 18: PacifiCorp Total Acres Burned (2015-2022)

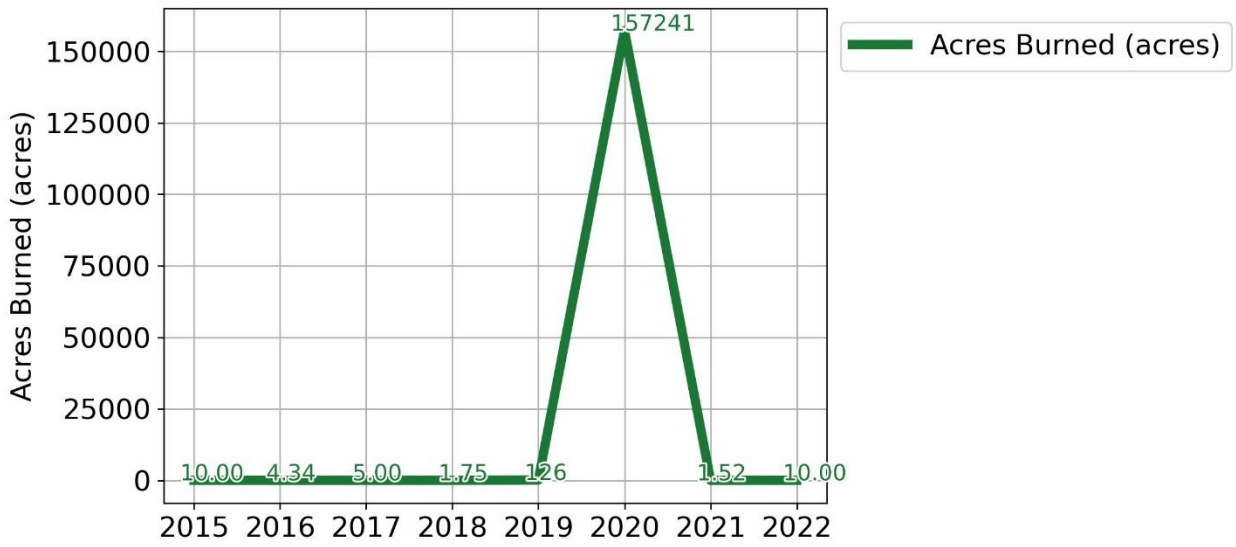
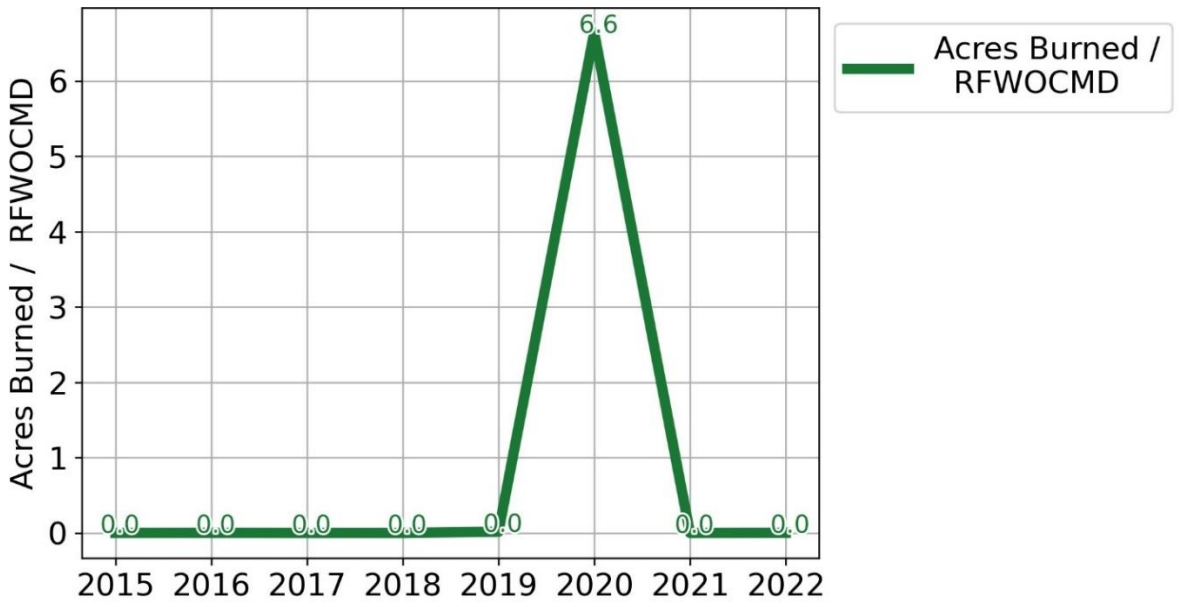


Figure 19: PacifiCorp Total Acres Burned Normalized by RFWOCMD (2015-2022)



Structures Damaged:

The number of structures damaged or destroyed by PacifiCorp-ignited wildfires between 2015 and 2022 is zero, with the exception of 2020 when the Slater fire damaged or destroyed 451 structures (Figure 20). When accounting for variances in yearly weather by normalizing by RFWOCMD, the same pattern is observed (Figure 21).

Figure 20: PacifiCorp Structures Damaged or Destroyed (2015-2022)

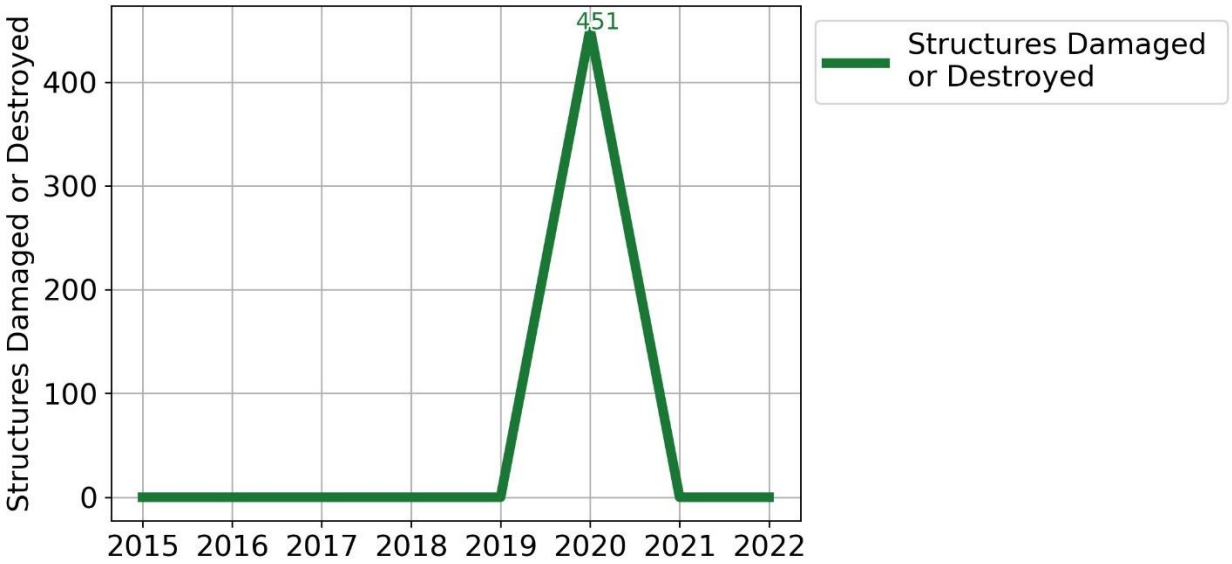
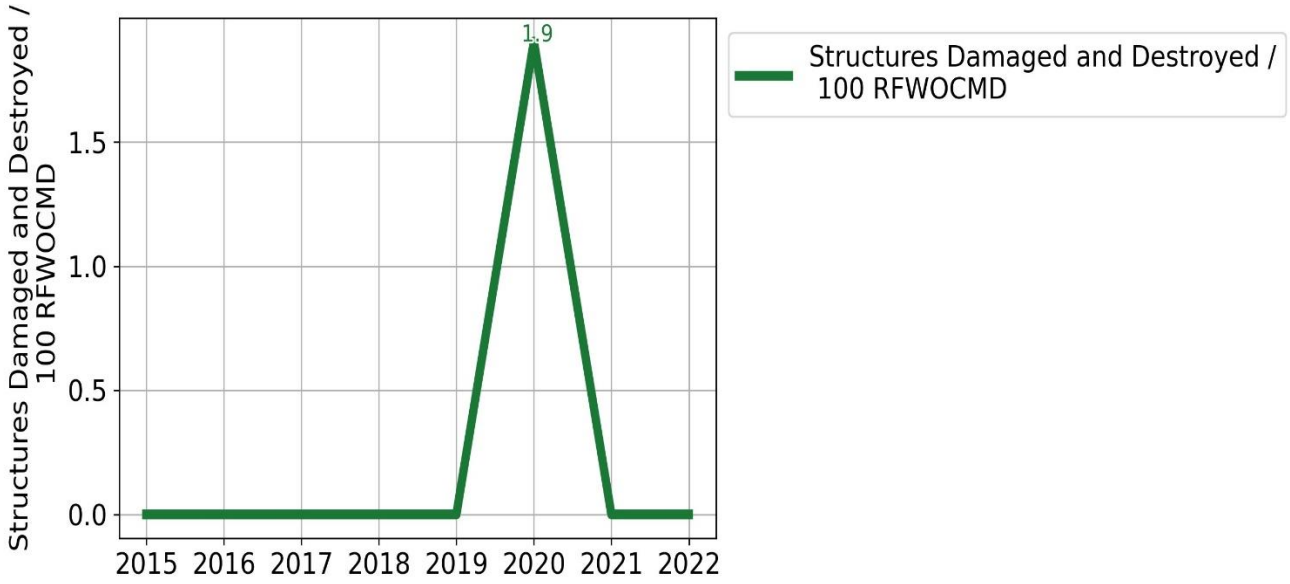


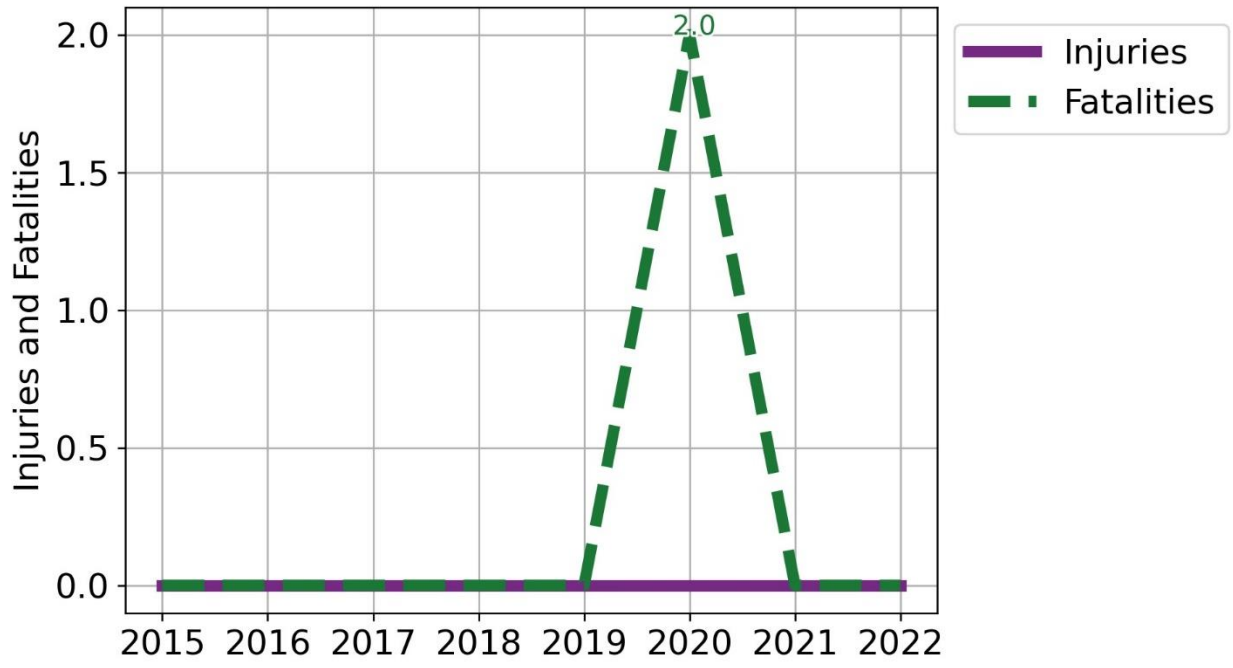
Figure 21: PacifiCorp Structures Damaged or Destroyed Normalized by RFWOCMD (2015-2022)



Injuries and Fatalities:

The Slater fire resulted in two fatalities in 2020 (Figure 22).

Figure 22: PacifiCorp Injuries and Fatalities (2015-2022)



6.2 Issues Related to PacifiCorp's Execution, Management, or Documentation of its WMP Implementation

PacifiCorp was required to submit reports to Energy Safety, per Energy Safety's Compliance Operational Protocols, to inform Energy Safety's evaluation of PacifiCorp's compliance with its 2022 WMP Update initiative activities. PacifiCorp's documentation was inadequate to demonstrate compliance with several initiative activities, as detailed in Table 1 of Section 3.1 of this report, and therefore Energy Safety needed to seek more information from PacifiCorp or review other source documentation to determine PacifiCorp's compliance with these WMP initiative activities.

For 20 of its 2022 WMP Update initiatives, the reporting provided by PacifiCorp contained dissonances such as EC ARC targets not matching 2022 WMP Update targets, and EC ARC information that lacked targets and/or documentation toward those initiative targets. This lack of transparency and accuracy impaired Energy Safety's ability to clearly understand if initiative activities had been completed or not, and to what extent. A list of these initiatives with dissonant reporting in included in Appendix A.

Taken together, this demonstrates inadequate documentation by PacifiCorp of its WMP implementation. PacifiCorp should improve its WMP implementation documentation going forward.

Additionally, issues with PacifiCorp's planning and execution of the 2022 WMP Update are apparent when considering the 12 initiatives with missed targets, as described in Table 5 above. Specifically:

- Three of the 12 initiatives did not have planned expenditure.
- The remaining nine initiatives comprised 77% of PacifiCorp's planned expenditure on its 2022 WMP Update. This means that $70.5 million of PacifiCorp's planned expenditure of $91.9 million were allocated to initiatives that either did not meet their targets or for which there is insufficient information to determine whether targets were met.
- The largest contributor to this issue was the $67,200,000 in planned expenditure on covered conductor installation. This single initiative activity represented 73% of PacifiCorp's planned expenditure in 2022, and ultimately only 55% of the targeted line miles of covered conductor were installed, with an under expenditure of $14,700,000.
- Seven of the nine initiatives in Table 5 with a planned expenditure were underfunded by a total of 21% ($14.9 million).
- Two of the nine initiatives in Table 5 with a planned expenditure were overfunded. (EC ARC, pp. 2-6.)

7. Conclusion

PacifiCorp completed 46 of 58 (or 79%) of its 2022 WMP Update initiatives, including six of the top 10 initiatives with the largest allocated expenditure. However, PacifiCorp failed to: 1) achieve targets related to covered conductor installation and pole repair and replacement, 2) create a central data repository, and 3) fully implement its advanced risk modelling tool, Firesight.

Energy Safety acknowledges that in 2022 PacifiCorp undertook efforts to reduce its wildfire risk, and in many instances achieved its WMP initiative activity targets. However, on balance, PacifiCorp was largely unsuccessful in executing its plan for wildfire risk mitigation due to 1) the failure to achieve the critical grid hardening and situational awareness WMP initiative activity targets described above, and 2) the fact that 77% of PacifiCorp's planned expenditure for its 2022 WMP Update was directed toward initiatives where targets were not met.

PacifiCorp's High Fire Threat District areas saw increases in normalized ignitions in 2022 as compared to 2021. Normalized outages increased across PacifiCorp's service territory in 2022 as compared to 2021, particularly those due to vegetation contact. Given PacifiCorp's unsuccessful execution of grid hardening work, the increased normalized ignitions and outages, and the potential that the electrical corporation caused one or more catastrophic wildfires in 2022, Energy Safety urges PacifiCorp to evaluate the strengths and weaknesses of its WMP planned and execution, and inform its future WMPs based on that evaluation.

Energy Safety will continue to monitor PacifiCorp's implementation of its ongoing wildfire mitigation activities and push PacifiCorp to improve its ability to ultimately achieve the elimination of utility-caused catastrophic wildfires in California.

8. References

Reference	Citation
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Reference	Citation
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SVM Corrective Action Plan	PacifiCorp, "Corrective Action Plan on Substantial Vegetation Management Work in 2022," Aug. 6, 2024. [Online.] Available: https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=57187&shareable=true.
Pub. Util. Code § 8386	Public Utilities Code Section 8386.
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APPENDICES

9. Appendices

Appendix A: PacifiCorp Reporting Inconsistencies

Energy Safety receives data from the electrical corporations in the form of Quarterly Data Reports (QDR). These QDR submissions include information on the electrical corporation's progress toward meeting quantitative WMP initiatives. By analyzing the entire QDR dataset for 2022, Energy Safety can determine if the electrical corporation's data reflect attainment or non-attainment of quantitative WMP initiatives. Qualitative WMP initiatives are not considered in this analysis.

Where there is dissonance between the assertions of an electrical corporation in its Annual Report on Compliance and Energy Safety's analysis of the QDR data, Energy Safety requests information from the electrical corporation to explain non-attainment of a quantitative WMP initiative. Where there is agreement between the electrical corporation's Annual Report on Compliance and the QDR data on attainment of quantitative WMP initiatives, no information related to the QDR analysis is requested.

Below illustrates where there are differences in how PacifiCorp's initiative performance is reported in its QDR, EC ARC, and in the IE ARC.

Table 6 : PacifiCorp's Quantitative WMP Initiative Activities

2022 WMP Update Initiative Activity	QDR Attainment Status	EC ARC Attainment Status	IE ARC Attainment Status	Dissonance
Advanced weather monitoring and weather stations (7.3.2.1) Target: 50	Met Target: 50 Actuals: 50	Met Target: 50 Actuals: Missing	Met Target: 50 Actuals: 50	Conflicting Actuals between EC ARC and QDR
Continuous monitoring sensors - Wildfire Cameras (7.3.2.2.2) Target: 2	Not Met Target: 2 Actuals: 0	Met Target: 2 Actuals: Missing	Met Target: 2 Actuals: 2	Conflicting Actuals between EC ARC and QDR
Circuit breaker maintenance and installation to de-energize lines upon detecting a fault (7.3.3.2) Target: 137	Met Target: Missing Actuals: Missing	Met Target: Missing Actuals: Missing	Met Target: Missing Actuals: Missing	Conflicting target between EC ARC and WMP

2022 WMP Update Initiative Activity	QDR Attainment Status	EC ARC Attainment Status	IE ARC Attainment Status	Dissonance
Covered conductor installation (7.3.3.3) Target: 112	Not Met Target: 112 Actuals: 62	Met Target: 112 Actuals: Missing	Not Met Target: 112 Actuals: 62	Conflicting Actuals between EC ARC and QDR
Distribution pole replacement and reinforcement, including with composite poles (7.3.3.6) Target: 2,158	Not Met Target: 2,158 Actuals: 1,101	Missing Target: Missing Actuals: Missing	Not Met Target: 2,158 Actuals: 1,101	Conflicting Target between EC ARC and QDR
Expulsion fuse replacement (7.3.3.7) Target: 2,269	Not Met Target: 2,269 Actuals: 2,113	Met Target: 2,269 Actuals: Missing	Not Met Target: 2,269 Actuals: 2,113	Conflicting Actuals between EC ARC and QDR
Installation of system automation equipment (7.3.3.9) Target: 51	Met Target: 51 Actuals: 57	Met Target: 51 Actuals: Missing	Met Target: 51 Actuals: 57	Conflicting Actuals between EC ARC and QDR
Other corrective action (7.3.3.12) Target: 6	Met Target: 6 Actuals: 9	Not Met Target: Missing Actuals: Missing	Met Target: 6 Actuals: 6	Conflicting Actuals between EC ARC and QDR
Detailed inspections of distribution electric lines and equipment (7.3.4.1) Target: 8,777	Met[9] Target: 8,777 Actuals: 8,466	Met Target: 8,777 Actuals: Missing	Met Target: 8,777 Actuals: 8,466	Conflicting Actuals between EC ARC and QDR

[9] If PacifiCorp's 2022 WMP Update initiatives were short by small margins of less than 5%, those initiatives are noted as "Met."

2022 WMP Update Initiative Activity	QDR Attainment Status	EC ARC Attainment Status	IE ARC Attainment Status	Dissonance
Detailed inspections of transmission electric lines and equipment (7.3.4.2) Target: 2,545	Met Target: 2,545 Actuals: 2,541	Met Target: 2,545 Actuals: Missing	Met Target: 2,545 Actuals: 2,541	Conflicting Actuals between EC ARC and QDR
Infrared inspections of transmission electric lines and equipment (7.3.4.5) Target: 700	Met Target: 700 Actuals: 701	Met Target: 700 Actuals: Missing	Met Target: 700 Actuals: 705	Conflicting Actuals between EC ARC and QDR
Intrusive pole inspections (7.3.4.6) Target: 4,759	Met Target: 4,759 Actuals: 4,576	Met Target: 4,759 Actuals: Missing	Met Target:4,759 Actuals: 4,576	Conflicting Actuals between EC ARC and QDR
Patrol inspections of distribution electric lines and equipment (7.3.4.11) Target: 46,338	Met Target: 46,338 Actuals: 46,314	Met Target: Missing Actuals: Missing	Met Target: 46,338 Actuals: 46,314	Conflicting Actuals and Targets between EC ARC and QDR
Patrol inspections of transmission electric lines and equipment (7.3.4.12) Target: 12,367	Met Target: 12,367 Actuals: 12,355	Met Target: 12,367 Actuals: Missing	Met Target: 12,367 Actuals: 12,355	Conflicting Actuals between EC ARC and QDR
Substation inspections (7.3.4.15) Target: 444	Met Target: 444 Actuals: 444	Met Target: 444 Actuals: Missing	Met Target: 444 Actuals: 444	Conflicting Actuals between EC ARC and QDR

2022 WMP Update Initiative Activity	QDR Attainment Status	EC ARC Attainment Status	IE ARC Attainment Status	Dissonance
Detailed inspections and management practices for vegetation clearances around distribution electrical lines and equipment (7.3.5.2) Target: 1,158	Met Target: 1,158 Actuals: 1,158	Met Target: 1,158 Actuals: Missing	Met Target: 1,158 Actuals: 1,158	Conflicting Actuals between EC ARC and QDR
Detailed inspections and management practices for vegetation clearances around transmission electrical lines and equipment (7.3.5.3) Target: 386	Met Target: 386 Actuals: 386	Met Target:354 Actuals: Missing	Met Target: 386 Actuals: 374	Conflicting Target and Actuals between EC ARC and QDR
Remote sensing inspections of vegetation around distribution electric lines and equipment (7.3.5.7) Target: 685	Not Met Target: Missing Actuals: Missing	Met Target: Missing Actuals: Missing	Not Met Target: Missing Actuals: Missing	Targets and Actuals not reported.[10]
Patrol inspections of vegetation around distribution electric lines and equipment (7.3.5.11) Target: 1,007	Met Target: 1,007 Actuals: 1194	Met Target: 1,007 Actuals: Missing	Met Target: 1,007 Actuals: 1,007	Conflicting Actuals between EC ARC and QDR
Patrol inspections of vegetation around transmission electric lines and equipment (7.3.5.12) Target: 163	Met Target: 163 Actuals: 163	Met Target: 163 Actuals: Missing	Met Target: 163 Actuals: 163	Conflicting Actuals between EC ARC and QDR

[10] While PacifiCorp did not clearly report on its targets or actual activity for this initiative in the QDR, EC ARC, or IE ARC, the Substantial Vegetation Management (SVM) Audit was able to confirm work completed via data requests.

As shown in the table above, reporting on many of PacifiCorp's quantitative initiative activities have the following types of discrepancies:

1) Reporting sources do not agree with the WMP.
2) Reporting sources do not agree with each other regarding the same initiative and its applicable targets.
3) Reporting sources do not agree with each other regarding the same initiative and its actual completion values.
4) Reporting sources do not document targets or actuals for tracking purposes.

The majority of PacifiCorp's 2022 WMP Update initiative activities are accounted for in PacifiCorp's EC ARC, IE ARC, and QDR submissions. However, PacifiCorp's approved 2022 WMP Update proposed several WMP initiative activities for the 2022 compliance year that were not described in its EC ARC, IE ARC, or in the QDR submissions reviewed by Energy Safety. Each activity outlined in PacifiCorp's WMP must be accounted for by PacifiCorp in its EC ARC and QDR submissions. In cases where this accounting did not occur, Energy Safety requested further data from PacifiCorp on those activities that were unaccounted for, including a description of the work completed in 2022. (PC DR 232.) The table below describes the result of that analysis.[11]

Table 7:PacifiCorp's WMP Initiative Activity Attainment and Data Requests

2022 WMP Update Initiative	Unaccounted 2022 WMP Update Activity	PacifiCorp Description of 2022 Work in Response to Data Request 232
Covered conductor maintenance (7.3.3.4)	Update inspection methodology and condition assessment criteria (and training materials) to ensure adequate inclusion of covered conductors	Condition Codes were revised to include three new codes addressing issues related to covered conductors.
Infrared inspections	Develop a specific action	A vendor held training on the

[11] This table only describes seven of the 15 unaccounted initiatives listed in Section 3 of this ARC that required further information in the form of a data request response. Energy Safety was able to assess performance of the other eight initiative activities listed in Section 3 through other means.

2022 WMP Update Initiative	Unaccounted 2022 WMP Update Activity	PacifiCorp Description of 2022 Work in Response to Data Request 232
of distribution electric lines and equipment (7.3.4.4)	plan for the field to begin collecting information for this pilot.	infrared (IR) equipment for crews likely to use it. A copy of the Handheld IR – Program Plan was provided to Energy Safety.
Protocols for PSPS re-energization (7.3.6.5)	Continue to explore the use of aerial patrols to expedite patrols prior to re-energization.	Aerial patrols were conducted by helicopter or by drone during daylight hours for visibility and safety. If aerial inspections could not be completed for safety or visibility reasons, ground patrols were conducted instead.
Allocation methodology development and application (7.3.8.1)	Perform a series of presentations and meetings to ensure prioritization of wildfire mitigation activities throughout the organization.	A single presentation was provided, including: the wildfire mitigation plan objectives, and the need to prioritize wildfire mitigation activities throughout the organization. The single presentation included an internal stakeholder engagement plan and described the approach for implementing the FireSight Model.
Risk-spend efficiency analysis- not to include PSPS (7.3.8.3)	Develop a verification process that will enable the assessment of factors that influence the estimated RSE values. Leverage Technosylva's Wildfire Risk Reduction Model (WRRM) to expand upon existing capabilities of Risk Spend Efficiency (RSE).	A verification process was not developed in 2022. Additionally, FireSight (previously known as WRRM), was implemented in late 2022. The application of the risk model data was implemented in 2023.
Community outreach, public awareness, and communications efforts (7.3.9.2)	Increase outreach to all customers to identify more customers relying on medical equipment and to broaden the scope of customers who self-identify as Access and Functional	PacifiCorp provided residential customers a brochure with information regarding customer rights and ability to request necessary information. Another outreach method was a preparedness email which notified

2022 WMP Update Initiative	Unaccounted 2022 WMP Update Activity	PacifiCorp Description of 2022 Work in Response to Data Request 232
	Need (AFN) customers. Offer a Spanish version of the medical baseline application this year.	customers about how to prepare for wildfire season and informed them on how to receive alerts from the company regarding wildfire. PacifiCorp updated its website to include a downloadable Spanish version of the medical baseline program application.
Protocols in place to learn from wildfire events (7.3.9.6)	Conduct an annual exercise to ensure individuals not involved in incident management on a regular basis are practiced in responding.	PacifiCorp activated the Emergency Coordination Center (ECC) twice during its annual PSPS exercise. The PSPS exercise plans specify the role for observers and stakeholders in attendance is for the purpose of providing opinions to Operations personnel.

Appendix B: EC ARC Information on WMP Initiative Activity Attainment

Table 8:PacifiCorp's WMP Initiative Activity Attainment

2022 WMP Update Initiative	2022 Activity Target	2022 Actual (EC ARC, pp. 2-6)
A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment (7.3.1.1)	Continuously improve the LRAM as the individual layers are updated or new layers are added. Archive and evaluate the model annually — updating all the layers at that time.	PacifiCorp underspent on this activity, claims it was unable to hire a data scientist to develop risk models due to recruiting challenges.

2022 WMP Update Initiative	2022 Activity Target	2022 Actual (EC ARC, pp. 2-6)
Advanced weather monitoring and weather stations (7.3.2.1)	Install 50 weather monitors and weather stations.	Although there was an underspend related to this activity, PacifiCorp claims it was able to complete the program scope for less than the plan.
Continuous monitoring sensors (7.3.2.2.1 & 7.3.2.2.2)	Record data as per the DFA pilot. Install two continuous monitoring sensor units.	PacifiCorp claims it overspent on this activity due to cost increases but did not state whether it met its targets.
Fault indicators for detecting faults on electric lines and equipment (7.3.2.3)	Install 500 fault indicators.	Although there was an underspend related to this activity, PacifiCorp claims it was able to install 184 more units than original plan.
Forecast of a fire risk index, fire potential index, or similar (7.3.2.4)	Implement the full suite of Technosylva's software throughout the California service territory. Continue enhancement of situational awareness websites.	PacifiCorp claims it underspent on this activity due to a revision in its planned expenditures to exclude territories outside of California and align with other software projects in use across the company. Though PacifiCorp reported the scope of work has not changed, it did not state whether it met its targets.
Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions (7.3.2.5)	Continue deployment of personnel when there is elevated fire risk and initiate a separate tracking mechanism so field personnel can document spend and activities for wildfire mitigation patrols	PacifiCorp overspent on this activity as it does not traditionally budget for it but did not state whether it met its targets.

2022 WMP Update Initiative	2022 Activity Target	2022 Actual (EC ARC, pp. 2-6)
	separate from other activities.	
Weather forecasting and estimating impacts on electric lines and equipment (7.3.2.6)	Continue to further develop and expand meteorology team hired during 2021 if necessary.	PacifiCorp claims it underspent on this activity due to a revision in its planned expenditures to exclude territories outside of California and align with other software projects in use across the company. Though PacifiCorp reported the scope of work has not changed, its explanation does not align with its 2022 activity target and does not clarify whether it met its target.
Circuit breaker maintenance and installation to de-energize lines upon detecting a fault (7.3.3.2)	Install 137 circuit breakers.	PacifiCorp underspent on this initiative, claiming fewer than expected circuit breaker maintenances were required.
Covered conductor installation (7.3.3.3)	Complete 112 line miles.	PacifiCorp underspent on this initiative, notes it completed 62 of the 112 planned miles. Material, construction labor, and permit delays were the primary reasons for delays.
Crossarm maintenance, repair, and replacement (7.3.3.5)	Install, maintain, or replace 136 crossarms.	PacifiCorp overspent on this initiative, claiming crossarm repair and maintenance is dependent on inspection results. Incremental expenditure was needed to implement the program in 2022. PacifiCorp did not state whether it met its targets.

2022 WMP Update Initiative	2022 Activity Target	2022 Actual (EC ARC, pp. 2-6)
Expulsion fuse replacement (7.3.3.7)	Replace 2,269 expulsion fuses.	PacifiCorp claims it overspent on this activity due to cost increases but did not state whether it met its targets.
Installation of system automation equipment (7.3.3.9)	Install 51 pieces of equipment.	PacifiCorp claims it overspent on this activity due to cost increases but did not state whether it met its targets.
Mitigation of impact on customers and other residents affected during PSPS event (7.3.3.11.1)	Deliver 50 batteries to customers by May 31, 2022.	PacifiCorp did not state whether it met its targets.
Mitigation of impact on customers and other residents affected during PSPS event (7.3.3.11.2)	Increase awareness of programs that mitigate impacts of PSPS events on customers.	PacifiCorp did not state whether it met its targets.
Pole loading infrastructure hardening**,** and replacement program based on pole loading assessment program (7.3.3.13)	Replace poles identified through the pilot as part of the covered conductor work.	Despite no planned activity targets, PacifiCorp assigned $150,000 in planned expenditure for this activity. PacifiCorp claims it underspent on this activity because it shifted related costs to the covered conductor installation program.
Detailed inspections of distribution electric lines and equipment (7.3.4.1)	Complete 8,777 inspections.	PacifiCorp did not state whether it met its targets.

2022 WMP Update Initiative	2022 Activity Target	2022 Actual (EC ARC, pp. 2-6)
Detailed inspections of transmission electric lines and equipment (7.3.4.2)	Complete 2,545 inspections.	PacifiCorp claims it overspent on this activity due to cost increases but did not state whether it met its targets.
Infrared inspections of transmission electric lines and equipment (7.3.4.5)	Complete 700-line miles of inspections.	PacifiCorp did not state whether it met its targets.
Intrusive pole inspections (7.3.4.6)	Complete 4,579 inspections.	Although there was an underspend related to this activity, PacifiCorp claims it was able to complete its inspections for less cost than planned.
Patrol inspections of distribution electric lines and equipment (7.3.4.11)	Complete 46,338 inspections.	PacifiCorp did not state whether it met its targets.
Patrol inspections of transmission electric lines and equipment (7.3.4.12)	Complete 12,367 inspections.	PacifiCorp claims it overspent on this activity due to cost increases but did not state whether it met its targets.
Quality assurance / quality control of inspections (7.3.4.14)	Complete QA/QC work regarding inspections comprised of four components (physical audits, software controls, quarterly desktop reviews, and annual training). Incrementally improve the QA/QC of inspection results by evaluation of audit results and root cause analysis of how to best address issues. Evaluate if further	PacifiCorp did not state whether it met its targets.

2022 WMP Update Initiative	2022 Activity Target	2022 Actual (EC ARC, pp. 2-6)
	additional spend or inspector training is needed.	
Substation inspections (7.3.4.15)	Complete 444 inspections.	PacifiCorp did not state whether it met its targets.
Detailed inspections and management practices for vegetation clearances around distribution electrical lines and equipment (7.3.5.2)	Complete 1,158 line miles of inspections.	PacifiCorp did not state whether it met its targets.
Detailed inspections and management practices for vegetation clearances around transmission electrical lines and equipment (7.3.5.3)	Complete 354 line miles of inspections.	PacifiCorp claims it overspent on this activity due to cost increases but did not state whether it met its targets.
Remote sensing inspections of vegetation around distribution electric lines and equipment (7.3.5.7)	Complete 685 line miles of inspections.	PacifiCorp did not state whether it met its targets.
Remote sensing inspections of vegetation around transmission electric lines and equipment (7.3.5.8)	Complete 341 line miles of inspections.	PacifiCorp did not state whether it met its targets.
Patrol inspections of vegetation around distribution electric lines and equipment (7.3.5.11)	Complete 1,007 line miles of inspections.	PacifiCorp claims it overspent on this activity due to cost increases but did not state whether it met its targets.

2022 WMP Update Initiative	2022 Activity Target	2022 Actual (EC ARC, pp. 2-6)
Patrol inspections of vegetation around transmission electric lines and equipment (7.3.5.12)	Complete 163 line miles of inspections.	Although there was an underspend related to this activity, PacifiCorp claims it was able to deliver the full scope of patrol inspections for less than the plan.
Vegetation management to achieve clearances around electric lines and equipment (7.3.5.20)	Complete 1,159 line miles of vegetation management. Identify a distribution circuit or potion of a distribution circuit to implement enhanced overhang clearances to identify resources needed to execute this enhance practice in the future.	PacifiCorp claims it overspent on this activity due to cost increases but did not state whether it met its targets.
Centralized repository for data (7.3.7.1)	Add resources specifically to manage and deliver complex GIS datasets on a quarterly basis.	PacifiCorp underspent on this activity, claims this was due to a lack of proper tracking where only a portion of the costs were captured under the related work orders. Despite this, PacifiCorp claims the work was completed as planned.
Customer support in emergencies (7.3.9.3)	PacifiCorp did not establish clear targets or activities relating to this initiative.	PacifiCorp underspent on this activity, claims this was delayed and shifted into 2023-2025 WMP cycle due to contractor resource constraints.
Disaster and emergency preparedness plan (7.3.9.4)	Continue to host the practice ECC and include	PacifiCorp noted it had higher than anticipated costs to

2022 WMP Update Initiative	2022 Activity Target	2022 Actual (EC ARC, pp. 2-6)
	important lessons learned from 2021 related to tracking and reporting.	complete planned tabletop and emergency management exercises in 2022.
Community engagement (7.3.10.1)	Update survey to include an evaluation of PSPS impact reduction programs. Expand media campaign to raise awareness on and action on wildfire safety through radio, newspaper, digital, and social media ads.	PacifiCorp noted it had higher than anticipated costs to complete planned external outreach and customer engagement in 2022.

Appendix C: EC ARC Information on WMP Initiative Expenditures

Table 9: PacifiCorp's Initiative Expenditures

2022 WMP Update Initiative Activity	Initiative Number	2022 Expense Planned	2022 Expense Actual	2022 Expense (Over)/Under Spend
A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment.	7.3.1.1	$186,000	$58,000	$128,000
Advanced weather monitoring and weather stations.	7.3.2.1	$1,349,000	$1,021,000	$328,000

2022 WMP Update Initiative Activity	Initiative Number	2022 Expense Planned	2022 Expense Actual	2022 Expense (Over)/Under Spend
Continuous monitoring sensors.	7.3.2.2.1 & 7.3.2.2.2	$166,000	$193,000	$(27,000)
Fault indicators for detecting faults on electric lines and equipment.	7.3.2.3	$1,000,000	$1,067,000	$(67,000)
Forecast of a fire risk index, fire potential index, or similar.	7.3.2.4	$164,000	$118,000	$46,000
Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions.	7.3.2.5	$-	$580,000	$(580,000)
Weather forecasting and estimating impacts on electric lines and equipment.	7.3.2.6	$375,000	$99,000	$276,000
Circuit breaker maintenance and installation to de-energize lines upon detecting a fault.	7.3.3.2	$402,000	$110,000	$292,000
Covered conductor installation.	7.3.3.3	$67,200,000	$52,500,000	$14,700,000
Crossarm maintenance, repair, and replacement.	7.3.3.5	$272,000	$697,000	$(425,000)

2022 WMP Update Initiative Activity	Initiative Number	2022 Expense Planned	2022 Expense Actual	2022 Expense (Over)/Under Spend
Expulsion fuse replacement.	7.3.3.7	$1,644,000	$2,516,000	$(872,000)
Installation of system automation equipment.	7.3.3.9	$4,610,000	$7,184,000	$(2,574,000)
Mitigation of impact on customers and other residents affected during PSPS event.	7.3.3.11.1 & 7.3.3.11.2	$325,000	$356,000	$(31,000)
Pole loading infrastructure hardening, and replacement program based on pole loading assessment program.	7.3.3.13	$150,000	$-	$150,000
Detailed inspections of distribution electric lines and equipment.	7.3.4.1	$188,000	$204,000	$(16,000)
Detailed inspections of transmission electric lines and equipment.	7.3.4.2	$9,000	$53,000	$(44,000)
Infrared inspections of transmission electric lines and equipment.	7.3.4.5	$80,000	$73,000	$7,000
Intrusive pole inspections.	7.3.4.6	$174,000	$125,000	$49,000

2022 WMP Update Initiative Activity	Initiative Number	2022 Expense Planned	2022 Expense Actual	2022 Expense (Over)/Under Spend
Patrol inspections of distribution electric lines and equipment.	7.3.4.11	$264,000	$289,000	$(25,000)
Patrol inspections of transmission electric lines and equipment.	7.3.4.12	$37,000	$144,000	$(107,000)
Quality assurance / quality control of inspections.	7.3.4.14	$36,000	$37,000	$(1,000)
Substation inspections.	7.3.4.15	$186,000	$188,000	$(2,000)
Detailed inspections and management practices for vegetation clearances around distribution electrical lines and equipment.	7.3.5.2	$6,848,000	$6,881,000	$(33,000)
Detailed inspections and management practices for vegetation clearances around transmission electrical lines and equipment.	7.3.5.3	$67,000	$840,000	$(773,000)
Remote sensing inspections of vegetation around distribution electric lines and equipment.	7.3.5.7	$34,000	$34,000	$-

2022 WMP Update Initiative Activity	Initiative Number	2022 Expense Planned	2022 Expense Actual	2022 Expense (Over)/Under Spend
Remote sensing inspections of vegetation around transmission electric lines and equipment.	7.3.5.8	$10,000	$10,000	$-
Patrol inspections of vegetation around distribution electric lines and equipment.	7.3.5.11	$244,000	$374,000	$(130,000)
Patrol inspections of vegetation around transmission electric lines and equipment.	7.3.5.12	$39,000	$23,000	$16,000
Vegetation management to achieve clearances around electric lines and equipment.	7.3.5.20	$5,171,000	$8,696,000	$(3,525,000)
Centralized repository for data.	7.3.7.1	$400,000	$52,000	$348,000
Customer support in emergencies.	7.3.9.3	$200,000	$1,000	$199,000
Disaster and emergency.	7.3.9.4	$10,000	$31,000	$(21,000)
Community engagement.	7.3.10.1	$60,000	$103,000	$(43,000)
Total	**N/A**	**$91,900,000**	**$84,657,000**	**$7,243,000**

Appendix D: Substantial Vegetation Management Audit of PacifiCorp

On July 17, 2024, Energy Safety issued its SVM Audit for PacifiCorp. The purpose of the SVM Audit is to assesses whether PacifiCorp met its quantitative commitments and verifiable statements in its 2022 WMP Update related to vegetation management.

In the SVM Audit, Energy Safety found two instances where PacifiCorp did not perform all required work and required PacifiCorp to provide a response in its Corrective Action Plan.

After reviewing PacifiCorp's Corrective Action Plan, filed on August 6, 2024, Energy Safety issued its SVM Audit Report on September 25, 2024, finding that PacifiCorp sufficiently addressed the issues raised in the Corrective Actions and therefore substantially complied with the substantial portion of the vegetation management requirements in its 2022 WMP Update. The specific findings from Energy Safety's SVM Audit Report are detailed in the table below.

Table 10: PacifiCorp's WMP Vegetation Management Initiatives

2022 WMP Update Initiative Number	2022 WMP Update Initiative Name	Determination
7.3.5.1	Additional Efforts to Manage Community and Environmental Impacts	Performed Required Work
7.3.5.2	Detailed Inspections and Management Practices or Vegetation Clearances around Distribution Electrical Lines and Equipment	Performed Required Work
7.3.5.3	Detailed Inspections and Management Practices for Vegetation Clearances Around Transmission Electrical Lines and Equipment	Performed Required Work
7.3.5.4	Emergency Response Vegetation Management due to Red Flag Warning or Other Urgent Weather Conditions	Performed Required Work

2022 WMP Update Initiative Number	2022 WMP Update Initiative Name	Determination
7.3.5.5	Fuel Management (including all wood management) and Reduction of “slash” from Vegetation Management Activities	Performed Required Work
7.3.5.6	Improvement of Inspections	Performed Required Work
7.3.5.7	Remote Sensing Inspections of Vegetation Around Distribution Electric Lines and Equipment	Performed Required Work
7.3.5.8	Remote Sensing Inspections of Vegetation Around Transmission Electric Lines and Equipment	Performed Required Work
7.3.5.9	Other Discretionary Inspections of Vegetation Around Distribution Electric Lines and Equipment, Beyond Inspections Mandated by Rules and Regulations	Not Applicable Per Approved WMP Update
7.3.5.10	Other Discretionary Inspections of Vegetation Around Transmission Electric Lines and Equipment, Beyond Inspections Mandated by Rules and Regulations	Not Applicable per approved WMP Update
7.3.5.11	Patrol Inspections of Vegetation Around Distribution Electric Lines and Equipment	Performed Required Work
7.3.5.12	Patrol Inspections of Vegetation Around Transmission Electric Lines and Equipment	Performed Required Work
7.3.5.13	Quality Assurance / Quality Control of Vegetation Management	Performed Required Work
7.3.5.14	Recruiting and Training of Vegetation Management Personnel	Performed Required Work

2022 WMP Update Initiative Number	2022 WMP Update Initiative Name	Determination
7.3.5.15	Identification and Remediation of “At-Risk Species	Performed Required Work
7.3.5.16	Removal and Remediation of Trees with Strike Potential to Electric Lines and Equipment	Performed Required Work
7.3.5.17	Substation Inspection	Performed Required Work
7.3.5.18	Substation Vegetation Management	Performed Required Work
7.3.5.19	Vegetation Management System	Performed Required Work
7.3.5.20	Vegetation Management to Achieve Clearances Around Electric Lines and Equipment	Performed Required Work
7.3.5.21	Vegetation Management Activities Post-Fire	Performed Required Work

Appendix E: Performance Metrics Appendix Figures

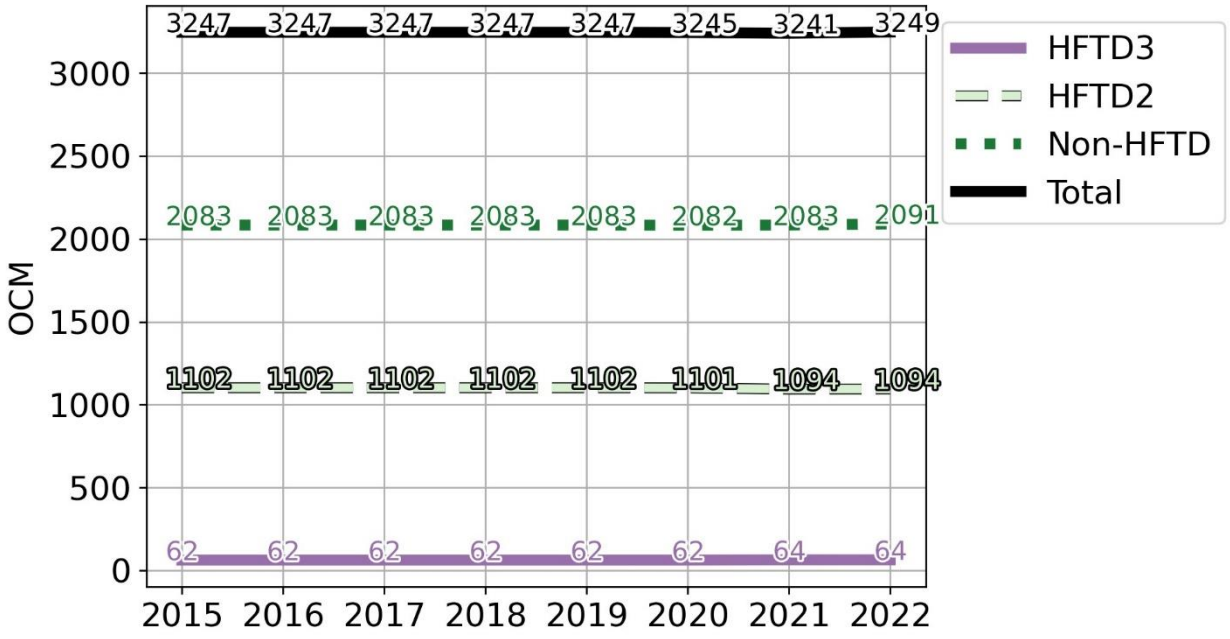
The data source for outcome metrics information is PacifiCorp’s 2023 Q4 QDR, Tables 4, 5, 6, & 7, and its 2022 Q3 QDR, Tables 6, 7.1, 7.2, & 8.

9.1.1 Normalizing Metrics

Overhead Circuit Miles:

The number of OCMs have only subtle differences from 2021 to 2022. The slight increase in total OCM is due to a recent increase of Non-HFTD miles of lines added to the network more recently (Figure 23).

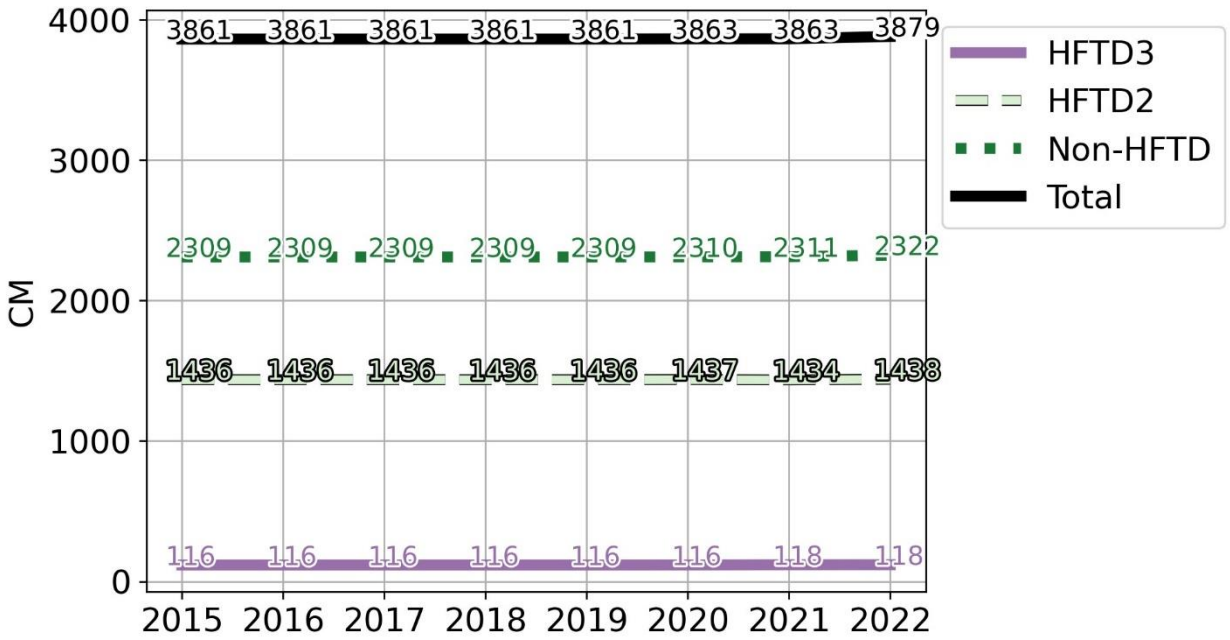
Figure 23: PacifiCorp Overhead Circuit Miles



Circuit Miles:

The number of CMs are fairly constant for the years from 2015- 2021 with a slight increase mostly in the Non-HFTD areas (Figure 24).

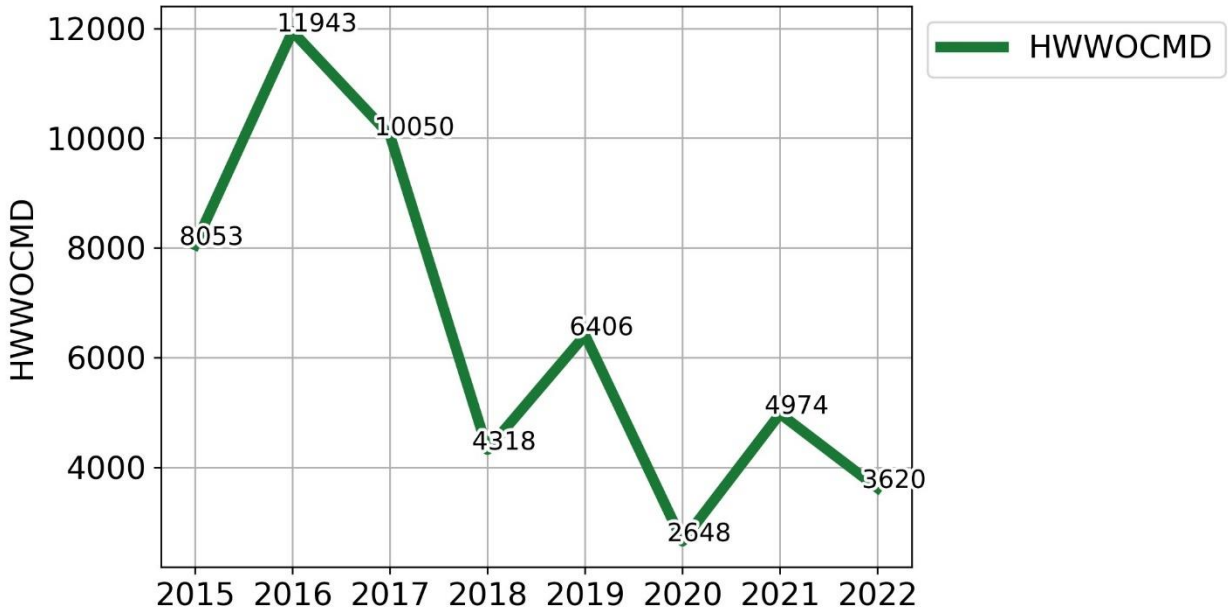
Figure 24: PacifiCorp Circuit Miles



High Wind Warning Overhead Circuit Mile Days:

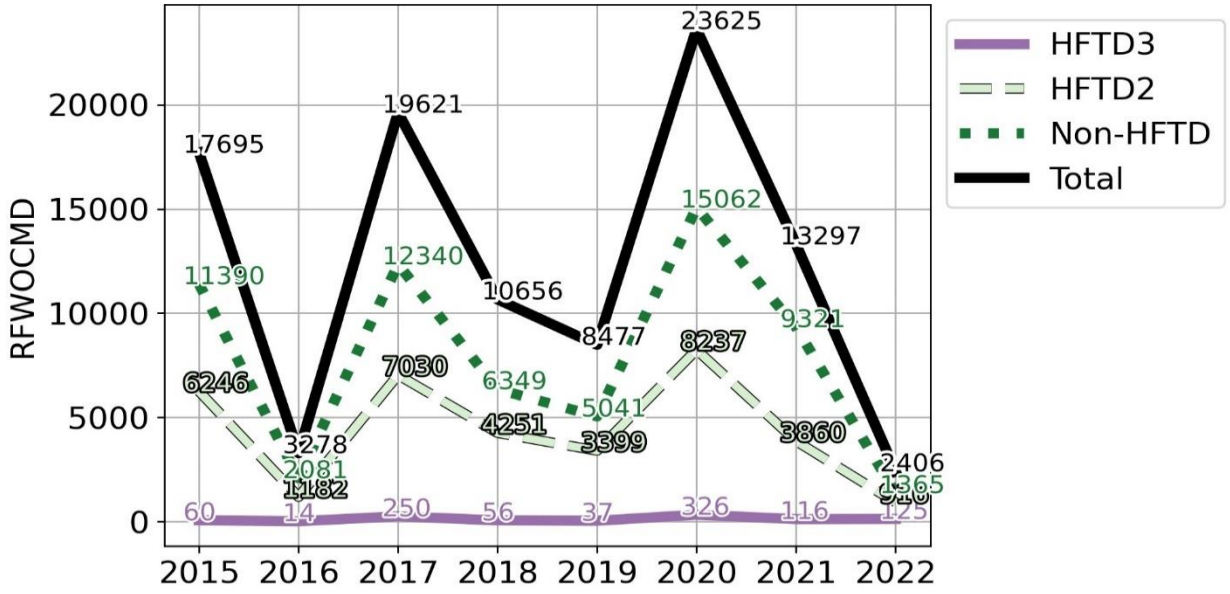
There has been a general decrease in the frequency of HWWOCMD from 2015 to 2022 (Figure 25).

Figure 25: PacifiCorp High Wind Warning Overhead Circuit Mile Days



Red Flag Warning Overhead Circuit Mile Days: Red Flag Warning Overhead Circuit Mile Days have been highly variable in PacifiCorp territory since 2015 (Figure 26).

Figure 26: PacifiCorp Red Flag Warning Overhead Circuit Mile Days (2015 - 2022) by HFTD Tiers

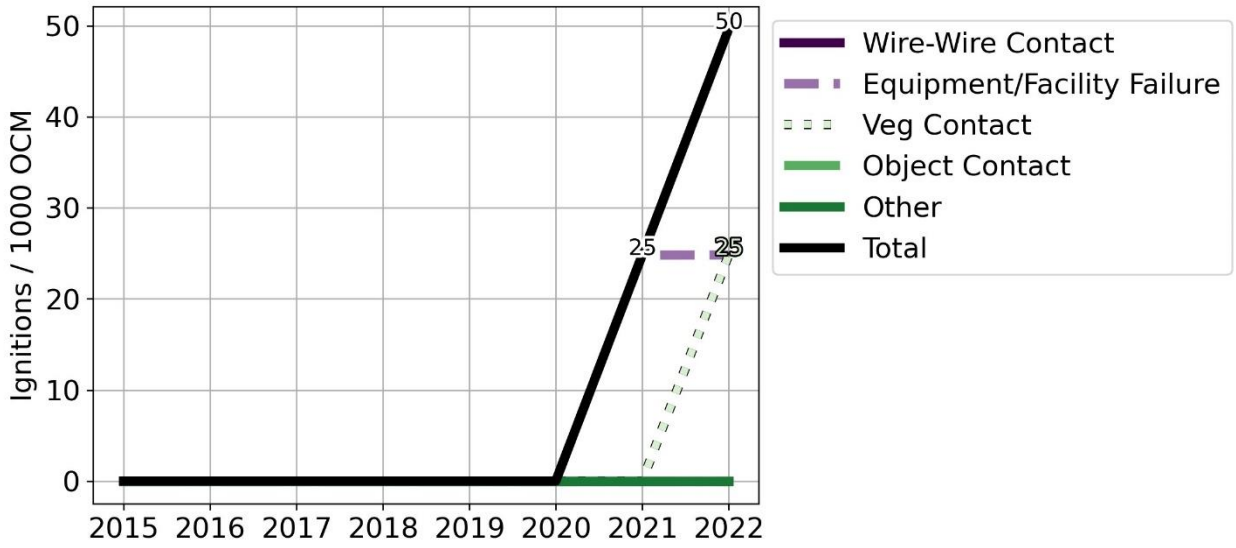


9.1.2 More Detailed Ignition Risk Findings

Distribution Ignitions Normalized by OCM in Tier 3 HFTD Delineated by Risk Driver:

Ignitions normalized by OCM for distribution lines showed no ignitions in HFTD Tier 3 areas from 2015 to 2020. For 2021 and 2022, the raw counts are actually only one ignition due to equipment or facility failure with one additional raw count in 2022 for vegetation contact. However, when the raw counts are normalized by the relatively small number of HFTD Tier 3 OCMs, this single instance increase for each of the two later years looks dramatic (Figure 27). The normalization is important for comparison to other utilities and for comparison to HFTD Tier 2.

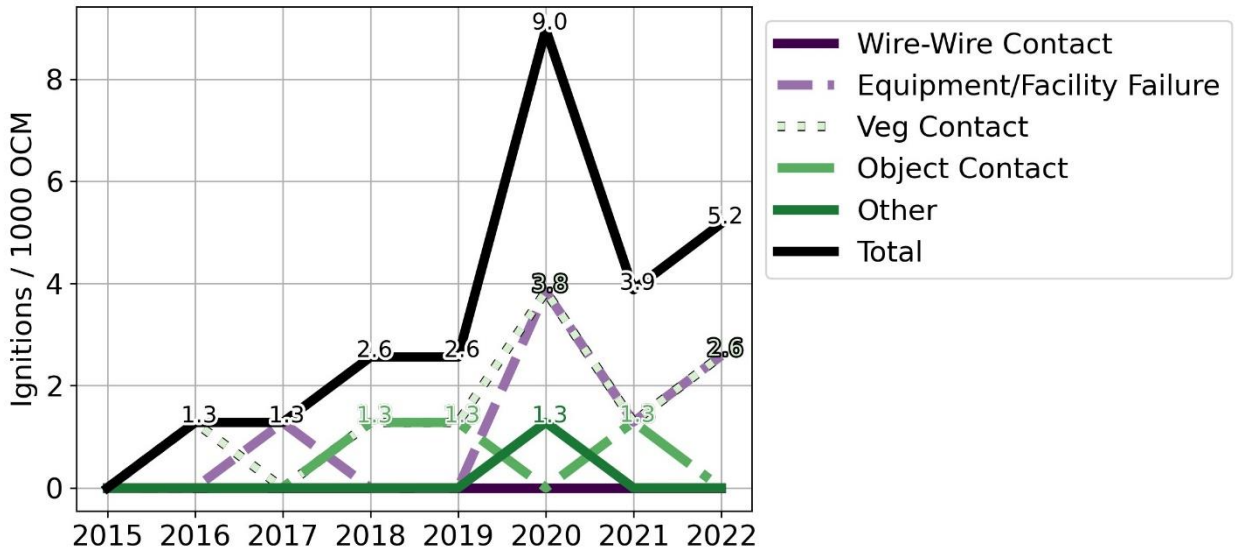
Figure 27: PacifiCorp Distribution Ignitions in HFTD Tier 3 Areas Normalized by Overhead Circuit Miles (2015-2022) by Risk Drivers



Distribution Ignitions Normalized by OCM in Tier 2 HFTD Delineated by Risk Driver:

In HFTD Tier 2 Areas, distribution ignitions normalized by overhead circuit miles show an increase in overall distributions ignitions from 2015 to 2022. Vegetation and object contacts show steady occurrences, but equipment/facility failure occurrences were most notable over the years including most recently from 2021 to 2022. Wire to wire contact has maintained at zero (Figure 28).

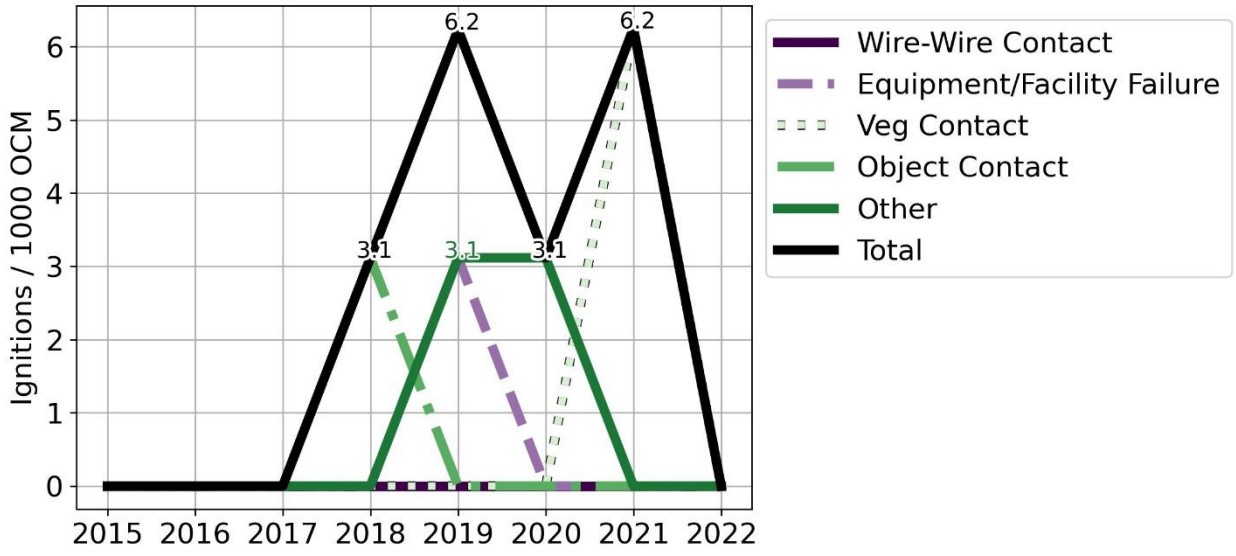
Figure 28: PacifiCorp Distribution Ignitions in HFTD Tier 2 Areas Normalized by Overhead Circuit Miles (2015-2022) by Risk Drivers



Transmission Ignitions Normalized by OCM in Tier 2 HFTD Delineated by Risk Driver:

In HFTD Tier 2 Areas, transmission ignitions normalized by overhead circuit miles show some occurrences of vegetation and object contacts, and equipment/facility failure between 2015 and 2022. No transmission ignitions were reported in 2022 (Figure 29).

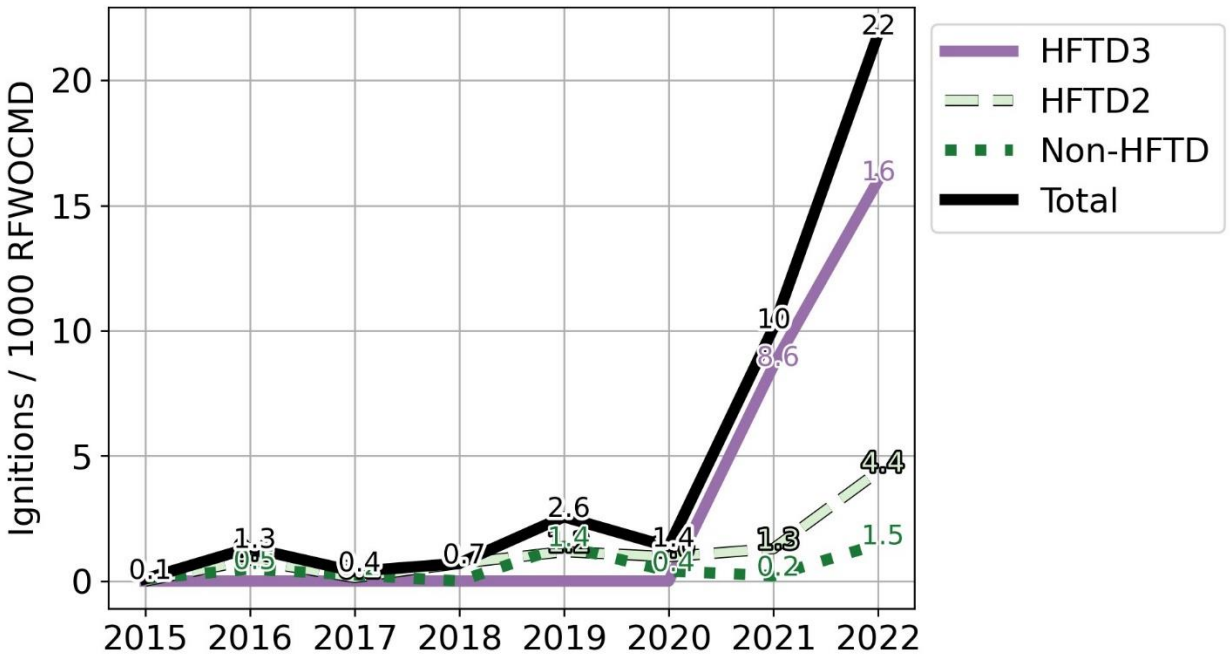
Figure 29: PacifiCorp Transmission Ignitions in HFTD Tier 2 Areas Normalized by Overhead Circuit Miles (2015-2022) by Risk Drivers



Ignitions Normalized by Red Flag Warning Overhead Circuit Mile Days by HFTD Tiers:

The total number of ignitions normalized by RFWOCMD increased significantly from 2021 to 2022, primarily driven by an increase in ignitions for HFTD Tier 3 areas from zero in the most recent two years (Figure 30).

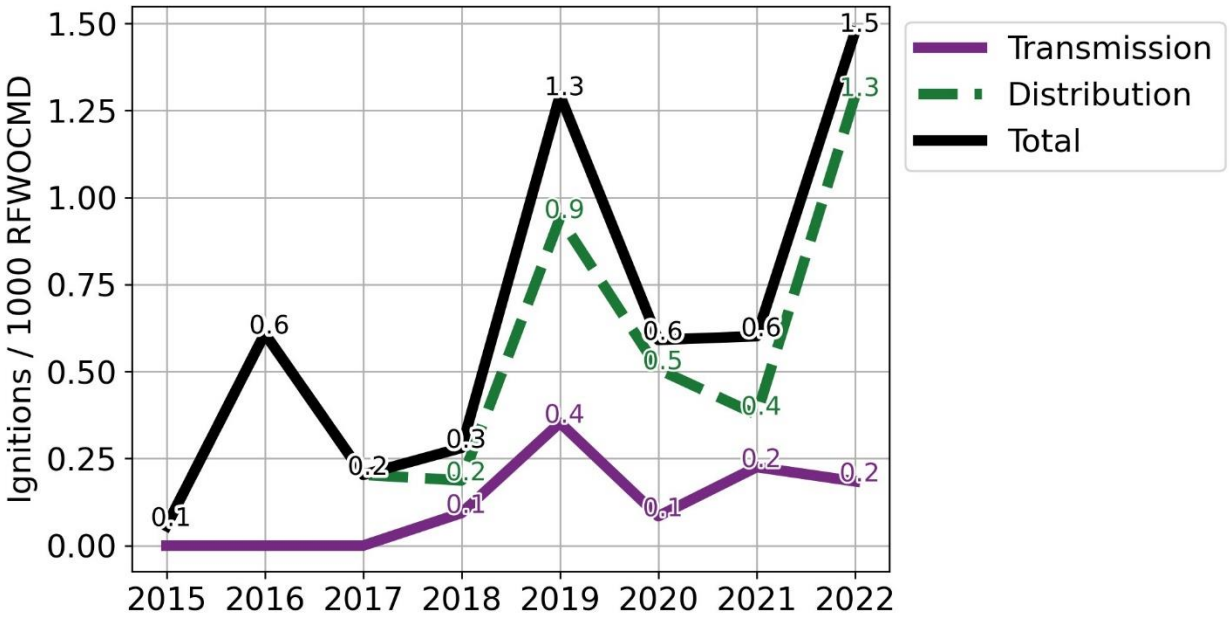
Figure 30: PacifiCorp Ignitions Normalized by RFWOCMD (2015-2022) by HFTD Tiers



Ignitions Normalized by Red Flag Warning Overhead Circuit Mile Days by Line Type:

Ignitions normalized by RFWOCMD by line type decreased from 2019 to 2020 but increased between 2021 and 2022 (Figure 31).

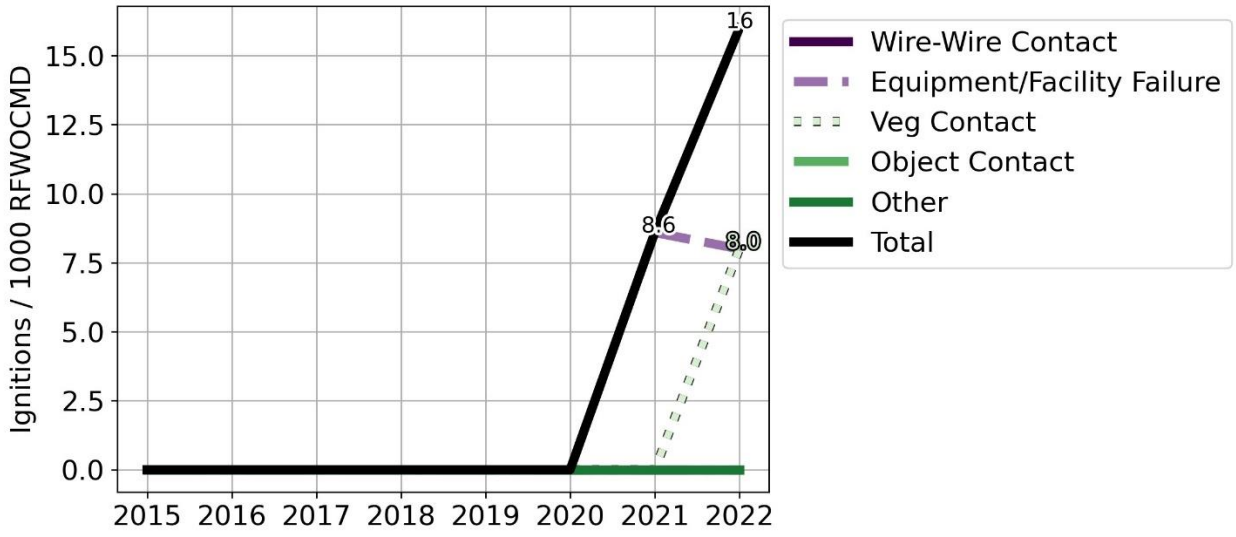
Figure 31: PacifiCorp Ignitions Normalized by RFWOCMD (2015-2022) by Distribution and Transmission Lines



Distribution Ignitions Normalized by Red Flag Warning Overhead Circuit Mile Days in Tier 3 HFTD Delineated by Risk Driver:

Distribution ignitions in HFTD Tier 3 Areas during RFWOCMD increased from 2021 to 2022 due to a vegetation contact and Equipment/Facility Failure (Figure 32).

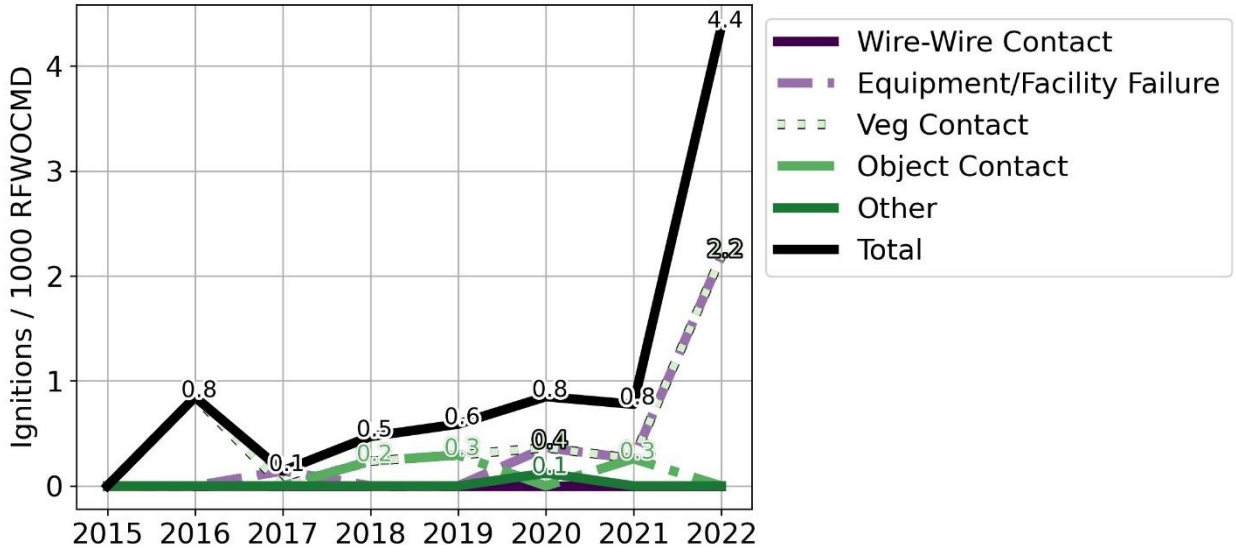
Figure 32: PacifiCorp Distribution Ignitions Normalized by RFWOCMD (2015-2022) by Risk Driver



Distribution Ignitions Normalized by Red Flag Warning Overhead Circuit Mile Days in Tier 2 HFTD Delineated by Risk Driver:

For HFTD Tier 2 Areas normalized by RFWOCMD, there was an increase in distribution ignitions from 2021 to 2022. The prominent risk drivers were equipment/facility failures and vegetation contact (Figure 33).

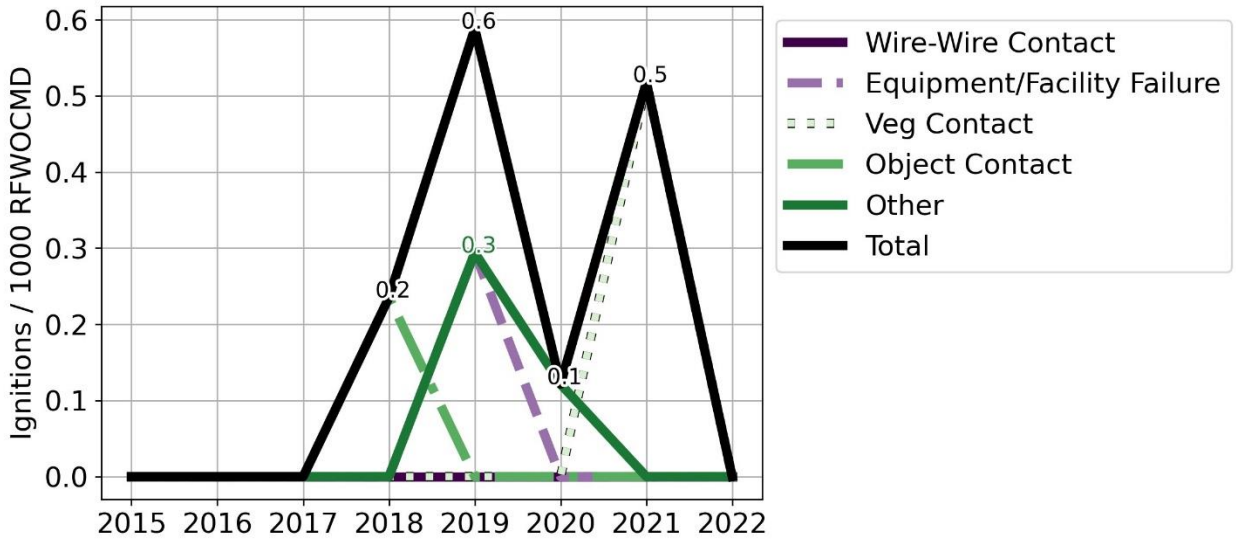
Figure 33: PacifiCorp Distribution Ignitions in HFTD Tier 2 Areas Normalized by RFWOCMD (2015-2022) by Risk Driver



Transmission Ignitions Normalized by Red Flag Warning Overhead Circuit Mile Days in Tier 2 HFTD Delineated by Risk Driver:

For HFTD Tier 2 Areas normalized by RFWOCMD, there was a decrease in overall transmission ignitions from 2021 to 2022 (Figure 34).

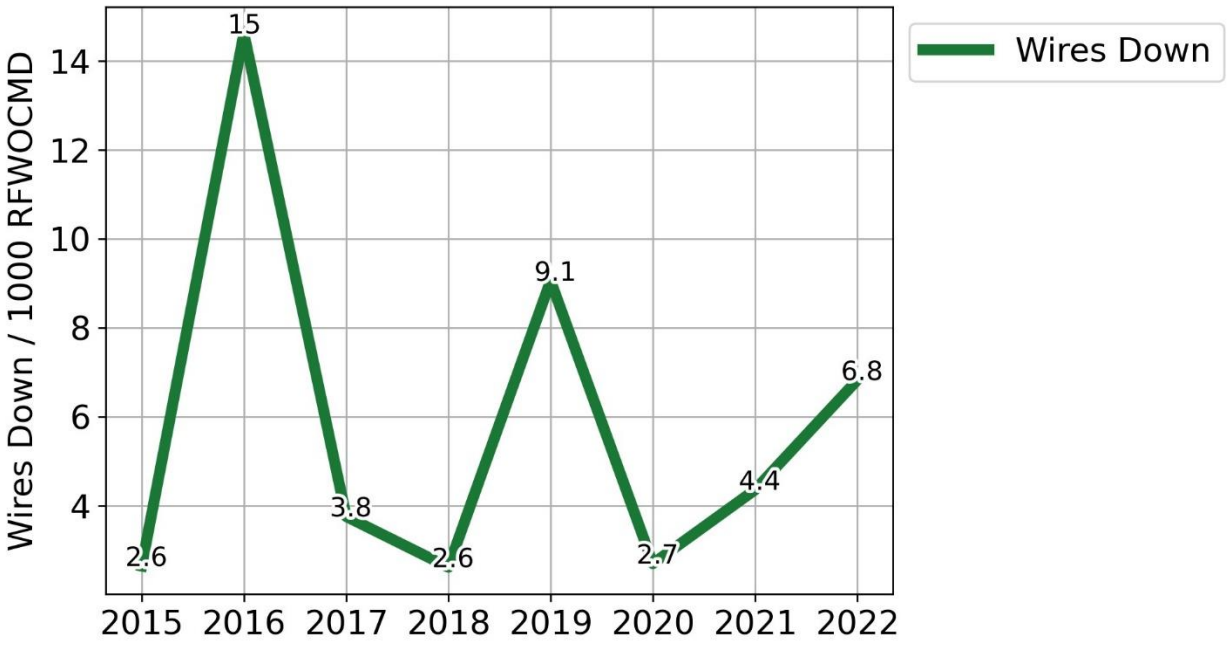
Figure 34: PacifiCorp Transmission Ignitions in HFTD Tier 2 Areas Normalized by RFWOCMD (2015-2022) by Risk Driver



Wire Down Events Normalized by Red Flag Warning Days:

Wire down events normalized by RFWOCMD have been highly variable since 2016 (Figure 35).

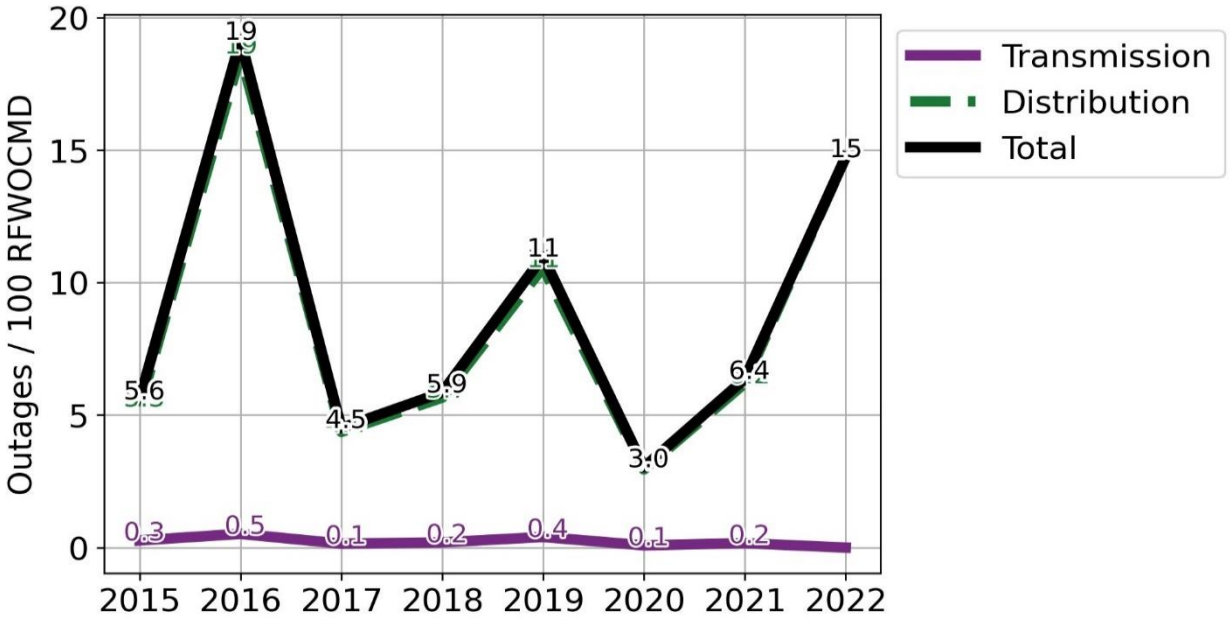
Figure 35: PacifiCorp Wire Down Events Normalized by RFWOCMD (2015 to 2022)



Outage Events Normalized by Red Flag Warning Overhead Circuit Mile Days:

The count of unplanned outage events normalized by RFWOCMD has been highly variable since 2015. In 2022, the high increase is caused by events related to the distribution lines (Figure 36).

Figure 36: PacifiCorp Total Outages Normalized by RFWOCMD (2015-2022) by Distribution and Transmission Lines



Outages Due to Vegetation Contact Normalized by Red Flag Warning Overhead Circuit Mile Days :

After 2016, outages from vegetation contact normalized by RFWOCMD were generally consistent with an increase in distribution but a decrease in transmission from 2021 to 2022 (Figure 37).

Figure 37: PacifiCorp Outages from Vegetation Contacts Normalized by RFWOCMD (2015-2022) by Distribution and Transmission Lines