2022 Wildfire Mitigation Plan Independent Evaluator Annual Report on Compliance

Utility:

PacifiCorp

Submitted by:

NV5, Inc.
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Executive Summary

The Executive Summary should contain key takeaways from the Independent Evaluator's evaluation, including key findings from the Independent Evaluator's audit of Wildfire Mitigation Plan (WMP) activity completion, verification of funding, and verification of QA/QC programs.

PacifiCorp is a small multi-jurisdictional utility serving approximately 45,000 customers in northern California. PacifiCorp's service area covers a vast stretch of forested wildlife habitats encompassing dense vegetation and sparsely populated community centers with an average of approximately four customers served per square mile. Accordingly, PacifiCorp's service territory stretches across numerous expanses of the California Public Utilities Commission (CPUC)-defined High Fire Threat Districts (HFTDs) including Tier 2 elevated and Tier 3 extreme risk areas.

PacifiCorp has undertaken considerable efforts to prevent ignitions and mitigate the impact of wildfire across its substantial service territory. Through emerging technologies, enhanced mitigation practices, and refined Quality Assurance/Quality Control (QA/QC) processes, PacifiCorp is working to achieve risk reduction benefits for their communities in the face of growing threat of increased wildfire events and potential proactive de-energization activations as a measure of last resort. To achieve these risk reduction results, PacifiCorp tracks and monitors activities as they are executed to maintain conditional awareness of controllable risk drivers, which may lead to a catastrophic ignition event.

This report demonstrates a review of the wildfire mitigation initiatives that PacifiCorp implemented in 2022 and an accounting of whether PacifiCorp met its performance objective targets, whether it is underfunding any of those initiatives, and whether PacifiCorp is following its QA/QC processes. The Independent Evaluator (IE) review of these elements determined that PacifiCorp is largely achieving the reviewed initiative objectives, is not failing to fund the portfolio of its initiatives and appears to be following its QA/QC processes, to the degree that they are documented.

PacifiCorp California Wildfire Mitigation Plan 2022[1] identified 21 quantitative targets. Utilizing the fourth quarter update to the Quarterly Data Report workbook provided in response to *DR 1*, an additional quantitative initiative was identified that did not have a target but did have progress reported (small diameter conductor), 11 financial targets separate from the 21 mentioned above, and two qualitative targets for a total of 35 initiatives. Of the 35 initiatives, 17 were found to be insufficient. **Table 1-1** below illustrates the IE findings for those initiatives that were not deemed sufficient due to insufficient evidence to completely validate the reporting during the review period, a lack or insufficiency of evidence, or funding/work below the planned 2022 targets set forth by the PacifiCorp's 2022 WMP and the fourth quarter update to Table 1 the **Quarterly Data Report**.[2] The reporting in the Q4 QDR was also used as a base for

[1] Referred to throughout the document as "PAC's 2022 WMP" or "2022 WMP"

[2] Document: "PAC_Q4_QDR_2022.xlsx" – referred to throughout the document as "Q4 QDR"

verifying work completed, based on reported progress in columns “Quant Actual Progress Q1-Q4,” “Qual Actual Progress Q1-Q4,” and “Status.” Occasionally, the evidence provided showed different results than what was reported; this difference was noted where this occurred and the verification reflects the actuals, whether over or under.

Table 1-1 - Summary of Findings

2022 Initiative Number	Initiative Name	Finding	Detail on Finding
AH-2	Distribution Pole Replacement and Reinforcement, Including with Composite Poles	The IE verified 1,101 of 2,158 poles were replaced or reinforced.	The shortage was due to material delays and constraints related to supply chain disruptions. It was further noted that PacifiCorp plans to address these as supplies become available in 2023.
AH-5	Covered Conductor Installation	The IE verified completions of 62 line-miles out of 112 were replaced.	The shortage due to delays in material, permitting, and construction labor. The delays have been addressed through process adjustments and sourcing changes.
AH-7	Expulsion Fuse Replacement	The IE verified that 2,112 of the targeted 2,269 expulsion fuses were replaced. It was further noted through field verification that one of the reported replacements was not compliant. This count adjusts for that noncompliance.	PacifiCorp stated the underage was due to supply shortages as well as inclement weather impacting project work in December. They also noted that the remaining 156 units were replaced in 2023, but the IE did not include this in the scope of this review.
VM-4	Fuel Management and Reduction of “Slash” From Vegetation Management Activities	Field verification of this initiative found a 74% failure rate during inspections following the PacifiCorp VM program standards.	Please see VM-4 write up in section 2.1.2.1 below for additional details.

2022 Initiative Number	Initiative Name	Finding	Detail on Finding
AH-1	Circuit Breaker Maintenance and Installation to De-energize Lines Upon Detecting a Fault	The IE was able to verify $123,526 of the targeted $402,000.	The explanation provided for the underspend is that the work performed depends on the results of inspections and less work was needed than was anticipated.
DG-1	Centralized repository for data	The IE was able to verify spend of $51,660 out of a targeted spend of $400,000.	PacifiCorp reports that the shortage is due primarily to an error in tracking spend toward this initiative and that significant progress was made and resources provided to this initiative and has stated that they will work to improve this reporting for 2023.
IN-1	Detailed inspections of distribution electric lines and equipment	The IE was able to verify 8,466 detailed inspections of distribution lines and equipment out of a target of 8,777.	No additional explanation was provided by PacifiCorp on the shortage.
IN-2	Detailed inspections of transmission electric lines and equipment	The IE was able to verify 2,541 inspections of transmission lines and equipment out of a target of 2,545.	No additional explanation was provided by PacifiCorp on the shortage. It is noted that the shortage is <1% of the target.
IN-6	Intrusive pole inspections	The IE was able to verify 4,576 intrusive pole inspections out of a target of 4,759.	No additional explanation was provided by PacifiCorp on the shortage.
IN-11	Patrol Inspections of Distribution Electric Lines and Equipment	The IE was able to verify 46,314 patrol inspections of distribution lines and equipment out of a target of 46,338.	No additional explanation was provided by PacifiCorp on the shortage. It is noted that this shortage is ~.05% of the total target and is a negligible amount.
IN-12	Patrol Inspections of Transmission Electric Lines and Equipment	The IE was able to verify 12,355 patrol inspections of distribution lines and equipment out of a target of 12,367.	No additional explanation was provided by PacifiCorp on the shortage. It is noted that this shortage is <1% of the total target.

2022 Initiative Number	Initiative Name	Finding	Detail on Finding
IN-14	Quality assurance / quality control of inspections	The IE was unable to verify the reported spend amount based on the evidence provided.	See IN-14 in Section 2.1.3.1 below for additional details.
RA-1	Risk Assessment and Mapping	The IE was only able to verify $58,043 out of a target of $186,000.	The reason noted for this underspend was difficulty in personnel recruiting to achieve this goal.
SA-4	Forecast of a fire risk index, fire potential index, or similar	The IE was only able to verify $118,306 out of a target of $163,782.	The reasons stated for this underspend were cost savings due to efficiencies gained in technology and subscriptions as well as some project delays.
VM-3	Detailed inspections of vegetation around transmission electric lines and equipment	The IE was only able to verify 374.4 line-miles out of 386 of vegetation inspections around transmission lines and equipment.	The shortage was reported as due to timing constraints on a single line in Crescent City, which was impacted by environmental restrictions and weather.
VM-7/VM-8	LiDAR inspections of vegetation around distribution / transmission electric lines and equipment	The IE was not able to corroborate the reported spend on these initiatives.	These initiatives were carry-overs from a pilot that was ultimately not continued. See VM-7 and VM-8 write ups in Section 2.1.3.1 for more detail.

1. Introduction

The Introduction should state the date the IE contract was executed with the Electric Corporation (EC). It should contain upfront context and a high-level summary of the work performed by the Independent Evaluator.

The state of California has seen an increase of disastrous wildfires in recent years. In the last decade, the California Department of Forestry and Fire Protection (CAL FIRE) reports that larger and more aggressive fires are occurring year over year resulting from prolonged drought conditions, a hotter climate, historic fire suppression, forest management, and bark beetle infestations. Several of the most damaging fires were ignited by utility equipment and operations. This spurred California to pass legislation and supporting regulations requiring ECs to develop and implement an annual WMP, submit periodic filings on the implementation of initiatives under the WMP, and submit to an Independent Evaluation to review and assess the EC's compliance with their WMP[3] by a qualified independent evaluator (IE).[4] NV5, Inc. entered into an agreement with PacifiCorp to provide IE services on May 14, 2021. The purchase order to evaluate compliance with PacifiCorp's 2022 objectives was received on April 11, 2023

Wildfire Mitigation Plan Independent Evaluation Engagement

This report serves as the IE Annual Report on Compliance ("Report") that aligns with the scope set forth by Energy Safety on March 3, 2023.[5] All California ECs are required to engage and contract with a qualified IE to perform the assessment and deliver a report before July 1, 2023. The IE was contracted to complete this assessment and began work on March 23, 2023.

This IE report aims to verify WMP activities of PacifiCorp for its 2022 performance as it corresponds to the initiatives the IOU planned to accomplish in 2022 compared to actual performance, whether those activities were funded appropriately, and validate and describe the EC's QA/QC programs to a degree of reasonable assurance that these efforts were completed as described and reported.

1.1 Methodology and Approach

The Report is the product of the IE's assessments of the EC's WMP, publicly available documentation submitted to the Office of Energy Infrastructure Safety (OEIS or Energy Safety), data request responses, field visits, and interviews with the EC's subject matter experts (SMEs). The Report scope includes an assessment of the successful

[3] Public Utilities Code (PUC) § 8386.3.

[4] NV5 and Guidehouse were designated as an eligible Qualified Independent Evaluator on March 17, 2023 as part of the *2022 WMP: Revised 2023 IE Enlistment Announcement* available at **https://efiling.energysafety.ca.gov/Search.aspx?docket=2023-IE**

[5] Office of Energy Infrastructure Safety Request for Qualifications RFQ#22-132565 available at **https://efiling.energysafety.ca.gov/Search.aspx?docket=2023-IE**

implementation of the EC's WMP initiative activities, funding, and QA/QC efforts executed in 2022.
To perform this assessment, the IE adopted the following approach:

- **Review publicly available information, including the WMP:** The IE reviewed publicly available information to prepare for the assessment including the subject utility's WMP, and other publicly released or submitted documents. Review publicly available documents, which should include, at minimum, the WMP initiatives.
- **Prepare initiative and subsequent data requests:** The first data request focused on programmatic level documentation such as the utility's vegetation management program, inspection program, grid hardening program(s), etc. Additional information to request includes any of the WMP submissions that are not on public websites or not available in useful formats and supplemental geographic information system (GIS) spatial data. This provides the IE a baseline understanding of available documentation apart from publicly available sources.
- **Document discovery review:** Review the supplemental information about the WMP initiatives in the Quarterly Data Reports (QDRs), Annual Report on Compliance (ARC), and the Quarterly Initiative Update (QIU). Review each data request response for completeness, responsiveness, and thoroughness. These materials should address all three subject areas addressed in the report – implementation of initiatives, initiative funding and QA/QC material.
- **Perform risk assessment for field inspections:** Using GIS maps provided by the EC, the IE identified areas where there is a substantial intersection between risk areas, including HFTDs and Wildland Urban Interface populations and WMP initiative activities across the utility's service territory to select meaningful locations for possible site visits to verify initiative activities performed in 2022.
- **Conduct field inspection survey:** This includes a visual patrol assessment of identified circuits and electrical assets within the selected areas. Results are captured on site and incorporated with other findings of the document discovery tasks.
- **Interpret document and field inspection results:** Utilizing the WMP and other related compliance documents submitted to the WSD, the IE reviews the field inspection site notes, data request responses, and other evidence of the performed WMP activities and prepared findings surrounding each scoped initiative activity. The IE also conducts interviews, as needed, with SME personnel to gain additional details and clarify questions on program and project targets and QA/QC performance.

2. Independent Evaluator Review of Compliance

The Independent Evaluator Review of Compliance section is for the Independent Evaluator to provide an overview of its process for review and assessment of the electrical corporation's compliance with its WMP. In the sections below, provide a review of the electrical corporation's WMP activity completion, verification of funding and verification of QA/QC programs.

2.1 WMP Activity Completion

The WMP Activity Completion section should detail the Independent Evaluator's review and verification of compliance for all WMP activities that have specific quantifiable or qualitative performance goals/targets set forth in the electrical corporation's 2022 WMP. In-scope WMP activities have been broken out into four categories:

1. *Large volume (≥100 units) + quantifiable goal/target + field verifiable WMP activities*
2. *Large volume (≥100 units) + quantifiable goal/target + non-field verifiable WMP activities*
3. *Small volume (<100 units) + quantifiable goal/target WMP activities*
4. *Qualitative goal/target WMP activities*

Energy Safety expects Independent Evaluators to assess compliance via multiple dimensions, including work completion, work quality, and adherence to applicable protocols and procedures. For Field Verifiable WMP activities, the Independent Evaluator must verify work quality in addition to completion of initiative installation and adherence to applicable protocols and procedures. For all other WMP activities, the Independent Evaluator must verify initiative installation and adherence to applicable protocols and procedures.

2.1.1 Sampling Methodology and Discussion

In this section, the Independent Evaluator should describe its sampling methodology, the samples that were chosen, and areas of focus. The Independent Evaluator may include the samples that were chosen in the Appendix instead of this section. The Independent Evaluator should also include a discussion of how results of the sampled assessment are indicative of the electrical corporation's broader implementation of WMP initiatives, to give the Energy Safety an understanding of the process the Independent Evaluator used to estimate full completion.

IE Evidence Sampling Methodology

The IE approach to sampling initiatives attempted to formalize a strategy to achieve a statistically valid representative sample of project initiatives in a manner that is objective.

The IE conducted a random sample of the data for each initiative requiring it. The sample size is based upon the North American Electric Reliability Corporation (NERC) ***ERO Sampling Handbook Revision 1.0.***[6]This methodology is recognized by the Generally Accepted Government Auditing Standards (GAGAS or "the Yellow Book" which is the US federal government's General Accounting Office's auditing guidebook) and the Institute of Internal Auditors (IIA).[7] This handbook sets forth the statistically valid sample size for different populations as can be seen below. This method is used to sample populations of tens of thousands of relays and cyber devices, among other things, in accordance with NERC's obligations mandated by FERC as part of the Federal Power Act Sec 215.[8]

Table 2-1 - Sampling Methodology

Population Description	Sample Selection
Independent Population of Elements (Examples: Facilities, Line Miles, Financial Spend, etc.)	Using Statistical or Judgmental Sampling
1-9	All Elements
10-19	9 Samples
20-40	16 Samples
41-100	23 Samples
101-1000	29 Samples
1001+	33 Samples

Once a sample size is generated, the IE developed and utilized a random sampling tool developed in Excel, to automatically select the sample from the list based on the table above. The IE applied that methodology to the populations of identified elements in the selected areas.

The IE used the same sampling methodology for initiatives that were and were not field verifiable.

[6] ERO Sampling Handbook, Revision 1.0, North American Electric Reliability Corp. (2015). Available at **https://www.nerc.com/pa/comp/Documents/Sampling_Handbook_Final_05292015.pdf**.

[7] *Id.* at p. 1.

[8] 16 U.S.C. § 824o.

Review of Discovery & Field Inspection Results

Field inspection findings contributed to the documentation discovery process by validating whether activities were executed in accordance with the WMP description of activities. The IE compared these results with documentation produced by the electrical corporation to verify accuracy in reporting.

The IE identified sample areas with conditions illustrating high fire risk and ignition potential within the electrical corporation's service territory. The field inspection location boundaries were layered over the service territory of the utility, along with owned and operated assets, and other geological factors to determine the location of the evaluation. As the principal map, the IE layered the three Tiers within the CPUC's HFTD map.

Due to the size of PacifiCorp's territory the IE concentrated its field verification efforts within a specific region. The selected area was identified through both risk and practical considerations. Risk was determined by selecting areas in High Fire Threat areas, prioritizing Tiers 2 and 3 first. The practical element focused on the accessibility of the locations for both physical, ground-based inspections and possible UAV operations as well as the observability of the work completed. The final regions were selected in consultation with Energy Safety and focused on areas that (1) Energy Safety had not done its own verifications, (2) had significant levels of field verifiable activities completed, (3) provided the ability to perform the greatest number of verifications given the time frame allowed, and (4) had conditions that present high fire risk and ignition potential. The IE then developed and utilized a random sampling tool developed within our proprietary mapping and auditing tool, INSITE, to randomly select assets for field verification within the chosen zones. INSITE is separate from the Excel sampling methodology and was used only for field verification.

Figure 1 and **Figure 2** below illustrate the territory for PacifiCorp's field verifiable initiatives and the identified population selected from in consultation with Energy Safety.

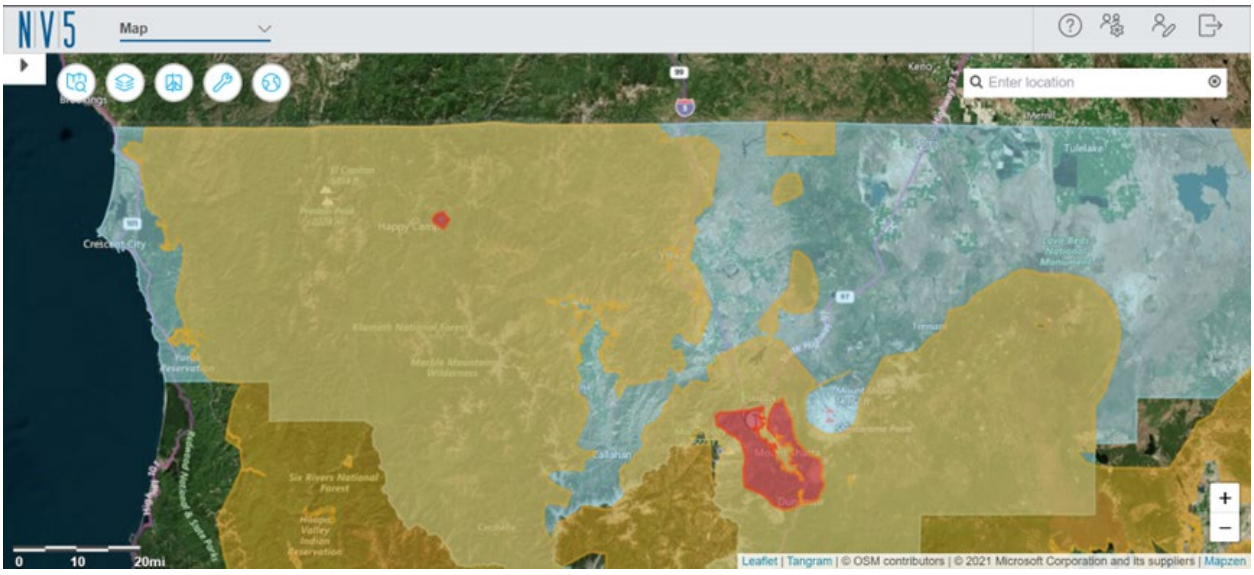

Figure 1

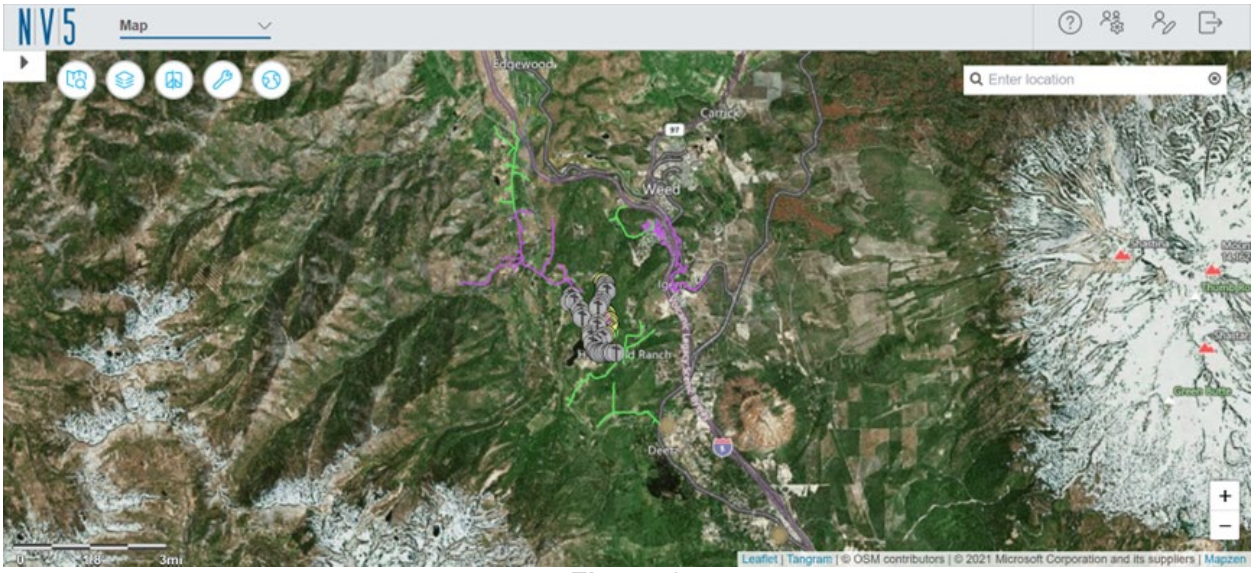

Figure 2

2.1.2 Large Volume Quantifiable Goal/Target – Field Verifiable

2.1.2.1 Review of Initiatives

This section should include the Independent Evaluator's findings and assessment of electrical corporation compliance with activities that fall into the Large Volume Quantifiable Goal/Target – Field Verifiable category. Independent Evaluators shall conduct field verification to confirm installation, work quality, and adherence to applicable electrical corporation protocols and standards for such work. Include the electrical corporation's list of initiatives that fall into the Large Volume Quantifiable

Goal/Target – Field Verifiable category, including respective goals/targets for each, in the Appendix or within the body of this subsection.

Table 2-2 - Large Volume Quantifiable Goal/Target – Field Verifiable Summary

Program Category	WMP Identifier	Initiative / Activity	Utility Initiative Name	2022 Target	Completed
Grid Design & System Hardening	AH-2	Distribution pole replacement and reinforcement, including with composite poles	Targeted Pole Replacement	2,158 Poles*	1,101 Poles
Grid Design & System Hardening	AH-5	Covered conductor installation	Covered Conductor	112 Line Miles	62 Line Miles
Grid Design & System Hardening	AH-7	Expulsion fuse replacement	Expulsion fuse replacement	2,269 Devices / Projects	2,113 Devices / Projects
Vegetation Management	VM-4	Fuel management and reduction of “slash” from vegetation management activities	Expanded Pole Clearing	3,047 Poles	3,080 Poles
Vegetation Management	VM-20	Vegetation management to achieve clearances around electric lines and equipment	Vegetation Cycle Clearing / Pruning / Corrective Work	$5,171,000	$8,696,210

*Target in 2022 WMP was 2020 Poles. 2,158 was pulled from the Q4 QDR and was used as the benchmark, per direction from Energy Safety. The findings are detailed further in the write up below

Distribution Pole Replacement and Reinforcement, Including with Composite Poles (AH-2)

Section 7.3.3.6 of PacifiCorp's 2022 WMP describes the pole replacement and reinforcement program as one way to increase resiliency through updating susceptible material to more fire-resistant material. The WMP states a target of 2,020 replacements of distribution poles; however, Table 1 of the Q4 QDR states the target at 2,158. The Q4 QDR also states that only 1,101 poles were replaced, falling short of both targets by 919 and 1,057, respectively. In response to *DR 2*, PacifiCorp stated that this shortage was due to delays from "material constraints related to covered conductor and pole hardware, including covered ground conductor." The Q4 QDR also noted that this was due to disruptions in the supply chain and that they intend to address the shortage in 2023 as supply chain effects resolve and material is available.[9]

To verify the 1,101 poles that were replaced, the IE requested population data. In *DR 1* PacifiCorp provided spatial data with the locations where pole work was completed. From this data, the IE selected a subset of samples to verify as described in section 2.1.1 of this report. These poles were inspected for completeness and as a secondary review, desktop information was requested as well. The field inspection showed that all poles were compliant and showed that they had been replaced with fire-resistant material. A desktop review of evidence was requested in *DR 5* and contained project level notes on the dates of removal and energization of the lines being replaced (***5-9-2023 Putnam WO 08003692 5G83 North Old Stage Road 3 pulling section tracker.xlsx*** and ***9-15-22 WO 08003691 5G83 Weed North Old Stage Road 2 Pulling section tracker.xlsx***) as well as construction sketches showing the work requested and completed (***WO 08003691 5G83 Weed North Old Stage Road Pt 2 OMS REV 2*** and ***WO 08003692 5G83 Weed North Old Stage Road Pt 3 OMS Rev 0***). Also included were an email and a Word document containing screenshots of the construction completion screen from PacifiCorp's system showing dates of completion for the projects sampled (***8003691 5G83 Weed N. Old Stage Road P2.msg*** and **8316286 5G83 Weed N Old Stage Road p3.docx**).

Finding: While PacifiCorp was short of their target for 2022, based on the evidence provided and the field verification inspections, the IE has reasonable assurance that the reported 1,101 poles were replaced to a standard consistent with what is described in their 2022 WMP.

Covered Conductor Installation (AH-5)

PacifiCorp's 2022 WMP states a goal to complete 112 line-miles of covered conductor installation. Table 1 of the Q4 QDR reports only 62 line-miles were completed in 2022. In response to *DR 2*, PacifiCorp stated that this shortage was due to "constraints in 2022 [which] included materials, permitting, and construction labor. Permits have been delayed and in some instances portions of projects have required complete re-design to

[9] PAC_Q4_QDR_2022.xlsx

meet permit specifications." In the same DR response, PacifiCorp notes that they addressed these constraints through moving "the order point to an earlier milestone within projects to provide additional time for material procurement," and that "construction labor is being addressed through sourcing a contract partner rather than seeking contractors per project."

To validate the 62 line-miles that were completed, the IE reviewed geolocation data provided in *DR 1* for the work performed and selected a subset of line-miles following the methodology described in section 2.1.1 of this report to perform a field verification of the covered conductors installed. All covered conductors inspected in the field were deemed to be compliant to the standards described in the WMP. To further verify the work completed, the IE requested desktop evidence of the devices being inspected in the form of work orders, signoffs, or similar in *DR 5*. In response, PacifiCorp provided trackers (e.g., ***5-9-2023 Putnam WO 08003692 5G83 North Old Stage Road 3 pulling section tracker.xlsx***) for the requested projects that show the dates each section of conductor was pulled in and energized, construction sketches for the requested projects, emails and ***8316286 5G83 Weed N Old Stage Road p3.docx*** that shows the construction completion documentation through screenshots of the internal tracking system.

Finding: The IE confirmed that PacifiCorp did not meet their target of 112 line-miles of covered conductor installation in 2022. However, based on the evidence provided and the field verification, the IE has reasonable assurance that PacifiCorp completed 62 line-miles of covered conductor installation in line with the number of line-miles replaced reported in the QDR.

Expulsion Fuse Replacement (AH-7)

PacifiCorp's 2022 WMP reports PacifiCorp's annual target for expulsion fuse replacements in 2022 as 2,269 units. PacifiCorp indicated in the Q4 QDR that only 2,113 devices/ projects were completed in 2022, short of their target by 156. PacifiCorp stated the shortage was due to a supply shortage as well as poor weather in December of 2022 which affected construction and delivery and that the remaining 156 units were completed by 2/28/2023, but these were not included in the review for 2022 work.[10]

To validate the completed projects, the IE requested population level evidence of all expulsion fuse replacements, which PacifiCorp provided via spatial QDR information. From this evidence, the IE identified a sample set using the methodology described in section 2.1.1 of this report to verify in the field. The field inspection looked at 35 fuses (33 was the sample size, plus two as contingency). 34 fuses were compliant, with one reported replacement that had missing fuses. As part of the field verification, the IE noted quality control issues unrelated to the initiative AH-7 (loose guy wires and a missing pole plate), both issues were reported to and resolved by PacifiCorp before the

[10] Data Request 2 response

issuing of this report, as demonstrated via photos and work update, see **Appendix C** for documentation of the completed work.

As a secondary review, the IE also requested desktop evidence to compare against the field sample in *DR 5.* PacifiCorp provided project level notes on the dates of removal and energization of the lines being replaced (***5-9-2023 Putnam WO 08003692 5G83 North Old Stage Road 3 pulling section tracker.xlsx*** and ***9-15-22 WO 08003691 5G83 Weed North Old Stage Road 2 Pulling section tracker.xlsx***) as well as construction sketches showing the work requested and completed (***WO 08003691 5G83 Weed North Old Stage Road 2 OMS REV 2.pdf*** and ***WO 08003692 5G83 Weed North Old Stage Road 2 OMS Rev 0.pdf***). Also included was an email containing screenshots of the construction completion screen from PacifiCorp's system showing dates of completion for the projects sampled (***8003691 5G83 Weed N. Old Stage Road P2.msg***).

Finding: While PacifiCorp did not meet their target of 2,269 in 2022, the IE has determined with reasonable assurance that PacifiCorp completed 2,112 expulsion fuse replacements, noting the one exception of the pole with missing fuses (the original reporting on this was 2,113).

Fuel Management and Reduction of "Slash" From Vegetation Management Activities (VM-4)

PacifiCorp's 2022 WMP states that "PacifiCorp manages slash through a combination of chipping, log and scatter and hauling off site. Pole clearing involves the removal of all vegetation within a ten-foot radius cylinder of clear space around a subject pole and the application of herbicides to prevent any vegetation regrowth (unless prohibited by law or the property owner)." Consistent with California Public Resource Code (PRC) § 4292, PacifiCorp addresses vegetation adjacent to "subject" poles in state-regulated areas to further reduce wildfire ignition risks and increase wildfire resiliency.

PacifiCorp's 2022 WMP states that it planned to clear vegetation at 3,047 poles as part of the expanded pole clearing project. Table 1 of the Q4 QDR reports that 3,079 poles were cleared. To verify the completion of the clearing of slash, the IE requested population level information on the poles cleared in 2022 in *DR 2*, to which the Utility provided ***DR 2_VM-4_Statistics_History_Report_2022_LRA_PoleClearing***. This document listed 3,080 poles that were cleared, which is one higher than was reported, but still above target for 2022. The IE conducted interviews with PacifiCorp SMEs to corroborate and match the number reported.

Additionally, the IE selected a sample of 37 poles from the population following the methodology in section 2.1.1 of this report to conduct a field survey of treated lines in the Mt. Shasta area between May 14, 2023, and May 17, 2023. The field survey assessed adherence with Public Resources Code (PRC) § 4292, whereas all poles should be maintained with 10 feet of clearance of high-risk vegetation in a circumference around the pole or tower. The IE field inspector verified California Code

of Regulations (CCR) § 1254 for minimum clearance provisions regarding flammable materials, which includes vegetation and other combustible sources within 8 feet of the ground level and dead and dying vegetation from the 8-foot level to the horizontal plane of highest point of the conductor/attachment. A total of 35 pole locations were selected to inspect for adequate clearing as described in the 2022 WMP, which states that PacifiCorp will clear poles consistent with PRC § 4292 and the CCR § 1254.

Finding: Of the 37 locations inspected, two[11] were excluded from the report and a total of 26 locations were identified as not meeting the requirements stated in the 2022 WMP, resulting in a 74% failure rate. This leads the IE to believe that PacifiCorp did not fully meet their program targets for 2022.

Many of the failures resulted from branches located within the 10-foot radius below the 8-foot level. It must be noted that these failures are not out of compliance with the minimum code requirements, but they do not meet the requirements stated in the 2022 WMP.

The desktop verification and SME interviews indicate that pole clearing work did indeed take place, but it does not appear to be to the standard laid out in the VM program.

Vegetation Management to Achieve Clearances Around Electric Lines and Equipment (VM-20)

PacifiCorp's 2022 WMP states that "to minimize wildfire risk, PacifiCorp's vegetation management program uses multiple methods to maintain vegetation clearances including identification and removal of hazard trees, line patrols, expanded clearance distances, spatial pruning distinctions and natural target pruning."

Table 1 in the Q4 QDR states that PacifiCorp's financial target amount committed for vegetation management to achieve clearances around electric lines and equipment in 2022 was $5,171,000. According to Table 1 in the Q4 QDR, PacifiCorp spent $8,696,210. As part of a data request PacificCorp provided file ***DR6_VM-20_2022_Statistics_History_Report_-_for_Excel*** which shows a breakdown of the costs per work ID with a total of $8,696,208.60 spent, which aligns with the amount stated was spent. The IE compared this breakdown against invoices and work orders and invoices of a subset of the dollars spent to further confirm and validate the dollar amount spent on vegetation clearance. As noted in the ARC, the actual spend in any given year can fluctuate depending on inspection results and cost variation from previous years. The overspend in 2022 was reportedly due primarily to increased labor costs.

In addition to the desktop validation, the IE performed a field survey of a subset of treated lines in the Yreka District the week of May 15, 2023, to assess the adherence

[11] One pole was not located (Report Sequence 6) and photos were corrupted (Report Sequence 23).

with Public Resources Code § 4293 and General Order 95, Rule 35, whereas clearances between vegetation and energized lines are to be maintained at certain distances as described below. A total of 33 locations were selected to inspect for adequate clearing.

The criteria for inspections can be found in Appendix B.

Of the 33 locations inspected, a total of two locations were identified as not compliant, resulting in a 6% failure rate. The two failures resulted from a reduced clearance, less than 4 feet between vegetation and energized conductors.

The results of the inspections are in **Table 2-3** below. Compliant/Not Compliant was determined through the Standard of both PRC 4293 and WMP descriptions of minimum standards.

Table 2-3 - Field Inspection Results

Report Seq.	Object ID	District	Latitude	Longitude	Inspection Results
1	9d2ef7d6-860e-4a32-a4ff-fa7e868b4ef0	Yreka	41.365258	-122.385855	Compliant
2	2b8ba9c5-4742-4aeb-ab43-fff86feb1772	Yreka	41.367956	-122.39043	Compliant
3	cd657a67-53ec-4d75-807e-7affb0e7e297	Yreka	41.368092	-122.401353	Compliant
4	4fb7474a-0f7f-45e6-922c-cd6e991bac93	Yreka	41.388986	-122.391607	Compliant
5	c4b7f3b8-c8db-49a9-b946-33e553b866f0	Yreka	41.390743	-122.391602	Not Compliant
6	2c147b6d-d6e0-47fa-afcf-918347e6c0bf	Yreka	41.383623	-122.403404	Compliant
7	b8097787-a3f8-488f-b312-7b1566bfd89a	Yreka	41.379776	-122.401697	Compliant
8	0c805e2d-de43-4ed8-8156-aceb12a90117	Yreka	41.384465	-122.407906	Compliant
9	8903875e-4330-41b1-8c8e-8b77369b2d38	Yreka	41.386491	-122.408961	Compliant
10	be17c910-c195-4f18-af03-4070a787d2b8	Yreka	41.399561	-122.404087	Compliant

Report Seq.	Object ID	District	Latitude	Longitude	Inspection Results
11	3b289898-aee8-427d-aeca-b3e35b731e6b	Yreka	41.39411	-122.404677	Compliant
12	a960f9ee-0a62-4363-8e89-4ea9e062fcc7	Yreka	41.412194	-122.382848	Compliant
13	cee42d70-8f72-4e71-a00f-4ac771733b18	Yreka	41.417636	-122.389011	Compliant
14	556c91c7-8b02-461d-adb0-c40adca92fe5	Yreka	41.421806	-122.398119	Compliant
15	82093f75-7275-4ee5-a207-a3be24d567d4	Yreka	41.365828	-122.386848	Not Compliant
16	4dce9c64-6844-4fc8-aa9b-f19b6f186543	Yreka	41.416537	-122.387281	Compliant
17	d4267b50-0ffb-46e8-8d8b-f5ecc58b7668	Yreka	41.417829	-122.386073	Compliant
18	6b06355e-4095-4f59-aab0-2fee0a0dc88d	Yreka	41.415741	-122.383831	Compliant
19	962fc719-5978-4419-965c-c86d29709068	Yreka	41.39649	-122.413996	Compliant
20	2c15b4fb-52f4-489e-8e10-2e0ec375b0cc	Yreka	41.440073	-122.440574	Compliant
21	6336a803-ceed-4087-a817-b221fd1647eb	Yreka	41.436913	-122.437155	Compliant
22	88bcc027-4f9e-4cef-89b3-4961edaf5f37	Yreka	41.432917	-122.438449	Compliant
23	0bfc6877-de3a-4809-819f-534a44f32ee0	Yreka	41.426757	-122.437644	Compliant
24	330d01ba-91e0-4b35-b1b3-53b6e5c25308	Yreka	41.426534	-122.438354	Compliant
25	9ff49398-298c-4c19-b146-ff93a5a6deb8	Yreka	41.415818	-122.434418	Compliant
26	b55f7fcf-2982-40ca-a486-63dd9dc7a155	Yreka	41.415545	-122.434491	Compliant
27	6f1cdc8b-d5b9-4e6f-a592-7b0261f864f0	Yreka	41.415133	-122.434465	Compliant
28	d08dc689-c372-4a81-b2bf-d89b3242e6c0	Yreka	41.41271	-122.434283	Compliant

Report Seq.	Object ID	District	Latitude	Longitude	Inspection Results
29	d7071db6-556e-47bc-a359-5a873cde16fc	Yreka	41.409889	-122.435022	Compliant
30	33d37145-2e31-4ada-832b-5b5195c35cae	Yreka	41.409651	-122.433949	Compliant
31	6cfe0cde-6674-403c-b6c9-270f44620cd9	Yreka	41.408972	-122.433812	Compliant
32	794319b9-0a28-4723-80a9-3160e7dab130	Yreka	41.408461	-122.433593	Compliant
33	054501cb-e32b-4c69-bb18-2649857aeecb	Yreka	41.40167	-122.451232	Compliant

Finding: Based on a review of the financial data, the IE has reasonable assurance that PacifiCorp exceeded its target of $5,171,000 set for 2022. The results of the field verification provide reasonable assurance that the work completed largely followed the standards set forth in the 2022 WMP, with a roughly 6% variation.

2.1.2.2 Trends and Themes

Include any trends or recurring themes that the Independent Evaluator found while assessing electrical corporation compliance to Large Volume Quantifiable Goal/Target – Field Verifiable initiatives.

PacifiCorp noted that three of the initiatives and goals were delayed due to supply chain disruptions, a trend that affected several industries throughout 2022. Where possible, the IE noted instances where these were reported to have been completed in 2023; however, it was not in scope to include these later completions in the review of evidence. The reporting is based on attestation only. It does appear that efforts were made to track the delays and complete when possible.

PacifiCorp identified financial reporting goals for multiple initiatives. It is noted that many of these are projections based on unknown results of inspections and are often using past trends to forecast future needs; however, financial goals can be misleading and do not necessarily indicate the actual amount of work forecasted to be done. Additionally, the fluctuation in supply and demand and inflation recently can result in higher costs despite reduced work and does not allow for tracking year over year. The IE attempted to compare work completed against the initiative description, but in many cases were only able to verify if the money was spent on parts and/or labor toward the stated initiative. The IE recommends that PacifiCorp identify work goals for all initiatives rather than financial goals.

2.1.3 Large Volume Quantifiable – Not Field Verifiable

2.1.3.1 Review of Initiatives

This section should include the Independent Evaluator's findings and assessment of electrical corporation compliance with activities that fall into the Large Volume Quantifiable Goal/Target – Not Field Verifiable category. Independent Evaluators shall select a sample to seek additional documentation and conduct SME interviews, as needed, to verify that the activity was completed and executed in accordance with all applicable work procedures and protocols. Include the electrical corporation's list of initiatives that fall into the Large Volume Quantifiable Goal/Target – Not Field Verifiable category, including respective goals/targets for each, in the Appendix or within the body of this subsection.

Table 2-4 - Large Volume Quantifiable Goal/Target – Not Field Verifiable Summary

Program Category	WMP Identifier	Initiative / Activity	Utility Initiative Name	2022 Target	Completed
Grid Design & System Hardening	AH-1	Circuit breaker maintenance and installation to de-energize lines upon detecting a fault	Circuit Breaker Maintenance & Replacement	$402,000	$123,526
Grid Design & System Hardening	AH-3	Crossarm maintenance, repair, and replacement	Standard Crossarm Replacement	$272,000	$425,396
Grid Design & System Hardening	AH-11	Free Battery and Generator Rebate	Free Battery and Generator Rebate programs	$325,000	$355,709
Stakeholder Cooperation & Community Engagement	CE-1	Multi-Pronged Community Engagement	Community engagement	$60,000	$101,386
Data Governance	DG-1	Data Governance	Centralized repository for data	$400,000	$51,660
Asset Management & Inspections	IN-1	Detailed inspections of distribution electric lines and equipment	Standard Distribution Detailed Inspections	8,777 Facilities	8,466 Facilities
Asset Management & Inspections	IN-2	Detailed inspections of transmission electric lines and equipment	Standard Transmission Detailed Inspections	2,545 Facilities	2,541 Facilities
Asset Management & Inspections	IN-5	Infrared inspections of transmission electric lines and equipment	Enhanced Inspections (IR Inspections – Transmission)	700 Line Miles	705 Line Miles

Program Category	WMP Identifier	Initiative / Activity	Utility Initiative Name	2022 Target	Completed
Asset Management & Inspections	IN-6	Intrusive pole inspections	Standard Intrusive Pole Inspections	4,759 Facilities	4,576 Facilities
Asset Management & Inspections	IN-11	Patrol inspections of distribution electric lines and equipment	Standard Distribution Patrol Inspections	46,338 Facilities	46,314 Facilities
Asset Management & Inspections	IN-12	Patrol inspections of transmission electric lines and equipment	Standard Transmission Patrol Inspections	12,367 Facilities	12,355 Facilities
Asset Management & Inspections	IN-14	Quality assurance / quality control of inspections	Inspection QA/QC	$36,000	See write up
Asset Management & Inspections	IN-15	Substation inspections	Standard Substation Inspections	444 Inspections	444 Inspections
Situational Awareness & Forecasting	PS-5	Personnel monitoring areas of electric lines and equipment in elevated fire risk conditions	Fire Risk Monitoring (Patrols)	$0	$580,493
Risk Assessment and Mapping	RA-1	A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment	Risk Modelling Platform	$186,000	$58,043.42
Situational Awareness and Forecasting	SA-3b	Installation and maintenance of fault indicators	Fault Indicator Installation	500 Devices / Projects	684 Devices / Projects
Situational Awareness and Forecasting	SA-4	Forecast of a fire risk index, fire potential index, or similar	Situational Awareness Modelling (Technosylva)	$163,782	$118,306

Program Category	WMP Identifier	Initiative / Activity	Utility Initiative Name	2022 Target	Completed
Vegetation Management	VM-2	Detailed inspections of vegetation around distribution electric lines and equipment	Distribution Detailed Inspections of Vegetation	1,158 Line Miles	1,158 Line Miles
Vegetation Management	VM-3	Detailed inspections of vegetation around transmission electric lines and equipment	Transmission Detailed Inspections of Vegetation	386* Line Miles	374.4 Line Miles
Vegetation Management	VM-7	LiDAR inspections of vegetation around distribution electric lines and equipment	Remote Sensing Inspections – Distribution	$34,000	See write up
Vegetation Management	VM-8	LiDAR inspections of vegetation around transmission electric lines and equipment	Remote Sensing Inspections – Transmission	$10,000	See write up
Vegetation Management	VM-11	Patrol inspections of vegetation around distribution electric lines and equipment	Augmented Distribution Readiness Patrol	1,007 Line Miles	1,007 Line Miles
Vegetation Management	VM-12	Patrol inspections of vegetation around transmission electric lines and equipment	Augmented Transmission Readiness Patrol	163 Line Miles	168 Line Miles
Vegetation Management	VM-13	Quality assurance / quality control of vegetation inspections	Vegetation QA/QC	1,169 Line Miles	1,169 Line Miles

*Target in 2022 WMP was 354 line-miles. 386 was pulled from the Q4 QDR and was used as the benchmark, per direction from Energy Safety. The findings are detailed further in the write up below.

Circuit Breaker Maintenance and Installation to De-energize Lines Upon Detecting a Fault (AH-1)

PacifiCorp's 2022 WMP states that PacifiCorp performs maintenance on breakers under the company's existing substation inspection and circuit breaker maintenance standard programs. This includes a visual inspection of the circuit breakers and corrective work consistent with substation inspections. Additionally, circuit breaker maintenance activities are performed on either an annual to bi-annual basis, depending on the type and operating voltage. PacifiCorp's breaker maintenance program is a standard program implemented across PacifiCorp's system.

PacifiCorp estimated a spend of $402,000 specific to circuit breaker maintenance and replacement in 2022. According to Table 1 of the Q4 QDR, PacifiCorp reported spending $109,517 in 2022 on this initiative. To validate the spend, the IE requested that PacifiCorp provide detailed transactions in *DR 2*. In response to the data request, PacifiCorp provided two workbooks (***2022 CA Breaker Maintenance orders.xlsx*** and ***2022 CA R1 YTD – Highlights.xlsx***) that demonstrated an actual spend of $123,526. PacifiCorp noted that any maintenance is dependent on the results of yearly inspections and the underspend is a result of less work required than was anticipated during planning.

Additionally, PacifiCorp provided the explanation that there was an error in the Q2 reporting that omitted $11,065 – resulting in the discrepancy at year end. The Breaker Maintenance spreadsheet listed the individual work orders, location being worked on, and the cost. The second workbook listed total progress by quarter. In an interview, it was confirmed that the maintenance orders are a direct pull from PacifiCorp's SAP system and the line items are correlated to the work orders for the work performed.

Finding: Based on evidence provided and interviews with PacifiCorp SMEs, the IE confirmed that PacifiCorp underspent on this initiative, funding only $123,526 out of $402,000. For the amount spent, the IE has reasonable assurance that the work on circuit breaker maintenance and installations was indeed performed as stated in the Q4 QDR and described in the 2022 WMP.

Crossarm Maintenance, Repair, and Replacement (AH-3)

PacifiCorp's 2022 WMP states that "crossarm maintenance, repair, and replacement are included as a part of [inspection of overhead distribution and transmission line] maintenance programs" (172). The 2022 WMP explains that these maintenance programs are critical for PacifiCorp to "maintain regulatory compliance with California GO 165 and 95. These inspections also mitigate some wildfire risk by identifying and correcting conditions which, if uncorrected could potentially ignite a fire."

Table 1 of the Q4 QDR states that PacifiCorp's 2022 annual financial target for crossarm maintenance, repair, and replacement was $272,000. In the Q4 QDR, PacifiCorp reported exceeding this goal in 2022, spending $696,831. However, in

response to *DR 5*, it was discovered that the original reported amount included work that was not on crossarms. The corrected amount was $425,396 and was provided in workbook ***Data Request – Independent Evaluator DR4 item 3_Crossarms_v2.xlsx***,[12] this number still exceeds the initial 2022 target. To validate the spend, the IE requested documentation/evidence such as work orders, a tracking sheet of equipment costs, number of completed projects, etc. for the amount spent. PacifiCorp provided ***Data Request – Independent Evaluator DR4 item 3_Crossarms.xlsx*** and noted that actual spend each year depends on inspection results, and the targets are estimates for what that will be. From what was provided, IE requested a sample of work orders or other documentation that can demonstrate the completion of the replacements for the population provided. In response, PacifiCorp provided an output of line items from their SAP system showing the spend and associated date posted associated with the work orders sampled.

Finding: Based on the evidence provided, the IE has reasonable assurance that PacifiCorp spent $425,396 on crossarm maintenance, repair, and replacement, exceeding their target of $272,000.

Free Battery and Generator Rebate (AH-11)

Section 7.3.3.11.2 of PacifiCorp's 2022 WMP describes the generator rebate program as one way to mitigate risk to customers during a Public Safety Power Shutoff (PSPS) event. Table 1 of the Q4 QDR states that PacifiCorp's annual financial target for the free battery and generator rebate programs in 2022 was $325,000. PacifiCorp indicated in the Q4 QDR that $355,709 was spent in 2022.

To validate the spend, the IE requested documentation, such as work orders/receipts in *DR 2*. PacifiCorp provided the workbook ***Free Portable Battery Program_2023-04-14_DR 2.xlsx*** showing the breakdown of the costs according to area, date, phase, and line items.

Finding: Based on the evidence provided, the IE has reasonable assurance that PacifiCorp spent $355,709 on the free battery and generator rebate in 2022, exceeding their target of $325,000.

Community Engagement (CE-1)

Section 7.3.10.1 of PacifiCorp's 2022 WMP describes community engagement through a variety of channels and tactics with the goal of accessibility and to maximize its customer reach. Table 1 of the Q4 QDR shows a target spend of $60,000 and reported $102,811 was funded in 2022. In response to *DR 2*, PacifiCorp provided the following breakdown of spend:

[12] The funding issue was discovered in response to DR5, the updated amount was provided via filtering the data provided in DR 4 – which is why the worksheet name references an earlier data request.

Channel	Cost
Annual Customer Survey	$20,324
Bill Msgs / Mailers in FHCA	$1,803
WF Sfty Social Media Ads, Radio	$50,499
WF Safety Website Upgrades	$143
Video Production	$28,617
Total	**$101,296**

In response to *DR 5*, PacifiCorp provided ***PP_Wildfire_CA (05-30-2022-10-02-2022)v2.pdf***. This document showed the results of the outreach, including that social media campaigns produced 3.1 million views/impressions and over 6,000 clicks, the video elicited 398,227 impressions and 189,236 completed views, website upgrades included Spanish language translation.

The following documents were submitted to the IE in *DR 8* for review as evidence of the above spend:

- ***PP_Wildfire_CA_ (05-30-2022-10-02-2022)v2***
- ***Pacific Power Wildfire Messaging Awareness Survey – Nov 2022 Summary Report***
- ***PP_Wildfire_Safety_Letter_2022***

Finding: Based on the evidence provided, the IE has reasonable assurance that PacifiCorp met their target spend of $60,000, spending $101,296 on community engagement.

Data Governance – Centralized Repository for Data (DG-1)

Section 7.3.7.1 of PacifiCorp's 2022 WMP states that PacifiCorp recognizes the value of having a central location for storing data related to 2022 WMP filings and data requests. As of 2021, a single location had not yet been identified, but in 2022 a Wildfire Mitigation Program Delivery group had been established. PacifiCorp plans to allocate additional resources including hiring a program manager and development of dashboards and reports. Table 1 of the Q4 QDR workbook states the 2022 projected goal for this effort was $400,000. PacifiCorp indicated in the Q4 QDR that $51,660 was spent in calendar year 2022. The 2022 WMP and the Q4 QDR report an underestimation of effort and resources constraints contributed to the underspend on this initiative and that PacifiCorp plans to address these in 2023.

To validate the spend, the IE requested documentation to demonstrate how the money was spent (work orders, project plans, etc.) in *DR 2*. The Utility provided the workbook

PacifiCorp_CA WMP_PC_Data Governance_Centralized repository for data _2022 Support.xlsx which was extracted from the SAP system and showed line items for the spend on this initiative that appear to be primarily employee time to build the repository. The Utility also noted that other work contributed to this effort but was not tracked directly to the initiative and that improvements to this tracking will be developed in 2023.

Finding: Based on the evidence provided, the IE confirmed that this initiative was underfunded. Based on the evidence reviewed, the IE has reasonable assurance that at least $51,660 was spent. It is noted that PacifiCorp asserts that more funding went towards this than was captured, but no additional funding could be verified.

Detailed inspections of distribution electric lines and equipment (IN-1)

PacifiCorp's 2022 WMP states that PacifiCorp's target number of inspections to complete in 2022 was 8,777. According to Table 1 of the Q4 QDR, PacifiCorp completed 8,466 detailed inspections of distribution electric lines and equipment, 311 inspections below their target.

To validate the 8,466 inspections completed, the IE requested supporting documentation, such as a list demonstrating tracking of inspections, in *DR 2*. In response, PacifiCorp provided ***IE_DR2_QUESTION_13_IN01_DIST_DETAIL.xlsx***, which contained the 8,466 facilities inspected. *DR 4* included a random sample of 33 inspections selected from the population to verify with further documentation of completed through work orders, inspections sign offs, or similar.

Included in the response to *DR 4* was PDF documentation for each sample showing Inspections, Conditions Open, Conditions Corrected[13] along with documentation describing the annotation and how to understand the Conditions and Inspections documents[14]. The Inspections PDF included inspection dates, inspection type, name of inspector, facility point, and more for each inspection sampled. The IE reviewed the provided documentation against the sample set requested to confirm that the work was completed as described and within the noted timeframe.

Finding: The evidence provided confirms that PacifiCorp was short of their target by 311 facilities. However, based on the evidence provided, the IE has reasonable assurance that PacifiCorp completed 8,466 detailed inspections of distribution electric lines and equipment.

Detailed inspections of transmission electric lines and equipment (IN-2)

PacifiCorp's 2022 WMP states that the target number of inspections to complete in 2022 was 2,545. According to Table 1 of the Q4 QDR, PacifiCorp completed 2,541

[13] Example documents: INSPECTIONS-06242005.0-365202.pdf, CONDITIONS_OPEN-06242005.0-365202.pdf, CONDITIONS_CORRECTED-06242005.0-365202.pdf

[14] Documents: UNDERSTANDING_THE_FP22_INSPECTION_SCREEN.pdf, UNDERSTANDING_THE_FP11_CONDITION_SCREEN.pdf

detailed inspections of transmission electric lines and equipment, 4 inspections below their target.

To validate the 2,541 inspections completed, the IE requested evidence of the inspections completed, such as a list of inspections or other similar documentation demonstrating tracking of inspections in *DR 2*. In response PacifiCorp provided ***IE_DR2_QUESTION_14_IN02_TRANS_DETAIL.xlsx***, which contained the 2,541 facilities inspected. *DR 4* included a random sample of 33 inspections selected from the population to verify with further documentation of completed through work orders, inspections sign offs, or similar.

Included in the response to *DR 4* was PDF documentation for each sample showing Inspections, Conditions Open, Conditions Corrected[15] along with documentation describing the annotation and how to understand the Inspections and Conditions documents.[16] The Inspections PDF included inspection dates, inspection type, name of inspector, facility point, and more for each inspection sampled. The IE reviewed the provided documentation against the sample set requested to confirm that the work was completed as described and within the noted timeframe.

Finding: PacifiCorp was short of their target of 2,545 by four facilities. Based on the evidence provided, the IE has reasonable assurance that PacifiCorp completed the 2,541 detailed inspections of transmission electric lines and equipment reported.

Infrared inspections of transmission electric lines and equipment (IN-5)

The 2022 WMP states the goal for 2022 was to complete 700 line-miles of inspections with IR technology. Table 1 of the Q4 QDR reports the completion of 701 line-miles of IR inspections.

To validate this, the IE requested population data in *DR 2* to which PacifiCorp provided ***IE_DR2_QUESTION_15_IN05_ENHANCED.xlsx***. This document listed the work completed, which included a tab with a filter to show length for each section and a total length. The corrected amount in this population was 705, a few miles up from the reported 701. *DR 5* included a random sample of 29 inspections selected from the population to verify with further documentation of completed through work orders, inspections sign offs, or similar.

Included in the response to *DR 4* was PDF documentation for each sample showing Inspections, Conditions Open, Conditions Corrected.[17] This package was accompanied with marked up records to clearly explain any fields and how to interpret them.[18] The

[15] Example document: INSPECTIONS-668014-00-5-034.pdf

[16] Example document: UNDERSTANDING_THE_FP22_INSPECTION_SCREEN.pdf

[17] Example document: INSPECTIONS-668001-00-3-027.pdf, CONDITIONS_OPEN-668001-00-3-027.pdf, CONDITIONS_CORRECTED-668001-00-3-027.pdf

[18] UNDERSTANDING_THE_FP11_CONDITION_SCREEN.pdf and UNDERSTANDING_THE_FP22_INSPECTION_SCREEN.pdf

Inspections PDF included inspection dates, inspection type, name of inspector, facility point, and more for each inspection sampled. The IE reviewed the provided documentation against the sample set requested to confirm that the work was completed as described and within the noted timeframe.

This evidence was reviewed for each of the samples and demonstrated an alignment of the dates and types of inspection ("enhanced" for the IR). No anomalies were noted.

Finding: Based on the review of evidence provided, the IE has reasonable assurance that PacifiCorp met and exceeded its target for infrared inspections in 2022 by completing 705 line-miles of enhanced inspections.

Intrusive Pole Inspections (IN-6)

PacifiCorp's 2022 WMP states that PacifiCorp's target number of inspections to complete in 2022 was 4,759. According to Table 1 of the Q4 QDR, PacifiCorp completed 4,576 intrusive pole inspections, 183 inspections below target.

To validate the 4,576 inspections reported, the IE requested evidence of the inspections completed, such as a list of inspections demonstrating tracking in *DR 2*. In response, PacifiCorp provided ***IE_DR2_QUESTION_16_IN06_PTT.xlsx***, which contained the 4,576 facilities inspected. *DR 4* included a random sample of 33 inspections selected from the population to verify with further documentation of completed through work orders, inspections sign offs, or similar.

Included in the response to *DR 4* was PDF documentation for each sample showing Inspections, Conditions Open, Conditions Corrected[19] along with documentation describing the annotation and how to understand the Inspections documents.[20] The Inspections PDF included inspection dates, inspection type, name of inspector, facility point, and more for each inspection sampled. The IE reviewed the provided documentation against the sample set requested to confirm that the work was completed as described and within the noted timeframe.

The IE reviewed the provided documentation against the sample set requested to confirm that the work was completed as described and within the noted timeframe. Most of the inspection evidence matched what was reported on the population list in date and inspection type; however, one instance showed the inspection type listed as something different than reported. The Inspection list did show the correct type of inspection on a different date, which seems in line with the initiative as described.

Finding: Upon review of the evidence provided, the IE confirmed that PacifiCorp was under their target for 2022, but has reasonable assurance that PacifiCorp completed the

[19] Example documents: INSPECTIONS-06243005.0-170902 .pdf, CONDITIONS_OPEN-06243005.0-170902 .pdf, and CONDITIONS_CORRECTED-06243005.0-170902 .pdf

[20] UNDERSTANDING_THE_FP11_CONDITION_SCREEN.pdf and UNDERSTANDING_THE_FP22_INSPECTION_SCREEN.pdf

4,576 intrusive pole inspections reported. The anomaly identified does not appear to be a breach of process, but rather an error in reporting.

Patrol Inspections of Distribution Electric Lines and Equipment (IN-11)

PacifiCorp's 2022 WMP states that PacifiCorp's target number of inspections to complete in 2022 was 46,338. According to Table 1 of the Q4 QDR, PacifiCorp completed 46,314 inspections of distribution electric lines and equipment, 24 inspections below their target.

To validate the 46,314 inspections reported, the IE requested evidence of the inspections completed, such as a list of inspections demonstrating tracking in *DR 2*. In response, PAC provided ***IE_DR2_QUESTION_17_IN11_DIST_SAFETY.xlsx*** which contained the 46,314 facilities inspected. *DR 4* included a random sample of 36[21] inspections selected from the population to verify with further documentation of completed through work orders, inspections sign offs, or similar.

Included in the response to *DR 4* was PDF documentation for each sample showing Inspections, Conditions Open, Conditions Corrected[22] along with documentation describing the annotation and how to understand the Inspections and Conditions documents.[23] The Inspections PDF included inspection dates, inspection type, name of inspector, facility point, and more for each inspection sampled. The IE reviewed the provided documentation against the sample set requested to confirm that the work was completed as described and within the noted timeframe.

Finding: The IE confirmed that PacifiCorp was below the overall target of 46,338 by 14. Based on the evidence provided, the IE has reasonable assurance that the 46,314 inspections reported were indeed completed to the standard reported in the 2022 WMP.

Additionally, it is noted that the IE found four instances where the listed Inspection Type in the population did not match the Inspection Type provided in the Inspections PDF. However, the full list of inspections completed within the calendar year included the listed type of inspection on a separate date. Thus, the IE has no reason to believe the discrepancy found will lead to additional risk nor is this an indicator that PacifiCorp is not meeting its targets to an acceptable standard, only that there are occasional errors in reporting.

Patrol Inspections of Transmission Electric Lines and Equipment (IN-12)

PacifiCorp's 2022 WMP states that PacifiCorp's target number of inspections to complete in 2022 was 12,367. According to Table 1 of the Q4 QDR, PacifiCorp

[21] A larger sample was included for contingency because of the larger population

[22] Example documents: INSPECTIONS-06247005.0-284001.pdf, CONDITIONS_OPEN-06247005.0-284001.pdf, and CONDITIONS_CORRECTED-06247005.0-284001pdf

[23] UNDERSTANDING_THE_FP11_CONDITION_SCREEN.pdf and UNDERSTANDING_THE_FP22_INSPECTION_SCREEN.pdf

completed 12,355 inspections of transmission electric lines and equipment, 12 inspections below their target.

To validate the 12,355 inspections reported, the IE requested evidence of the inspections completed, such as a list of inspections demonstrating tracking in *DR 2*. In response, PacifiCorp provided ***IE_DR2_QUESTION_18_IN12_TRANS_ SAFETY.xlsx*** which contained which contained the 12,355 facilities inspected. *DR 4* included a random sample of 33 inspections selected from the population to verify with further documentation of completed through work orders, inspections sign offs, or similar.

Included in the response to *DR 4* was PDF documentation for each sample showing Inspections, Conditions Open, Conditions Corrected[24] along with documentation describing the annotation and how to understand the Inspections and Conditions documents.[25] The Inspections PDF included inspection dates, inspection type, name of inspector, facility point, and more for each inspection sampled. The IE reviewed the provided documentation against the sample set requested to confirm that the work was completed as described and within the noted timeframe.

Finding: The IE confirmed PacifiCorp was below the overall target of 12,367 by 12. However, based on the evidence reviewed, the IE has reasonable assurance that 12,355 inspections were indeed completed to the standard reported in the 2022 WMP.

Additionally, it is noted that the IE found three instances where the population Inspection Type listed did not match the Inspection Type provided in the Inspections PDF. However, the full list of inspections completed within the calendar year included the listed type of inspection on a separate date. Thus, the IE has no reason to believe the discrepancy found will lead to additional risk nor is this an indicator that PacifiCorp is not meeting its targets to an acceptable standard, only that there are occasional errors in reporting.

Quality Assurance / Quality Control of Inspections (IN-14)

Per section 7.3.4.14 of PacifiCorp's 2022 WMP, PacifiCorp uses QA/QC checks of inspections as a "cost-effective means to minimize the risk that inspection results are inaccurate or unreliable." Their QA/QC program is made up of the following components:

- Physical audits of at least 5% of planned inspections of facilities with a focus on fire threats and Tier 2 and Tier 3 prioritization
- Software controls that prohibit freeform condition assignment, allowing for result controls, minimizing the amount of human error capable

[24] Example documents: INSPECTIONS-668041-00-16-029.pdf, CONDITIONS_OPEN-668041-00-16-029.pdf, and CONDITIONS_CORRECTED-668041-00-16-029.pdf

[25] UNDERSTANDING_THE_FP11_CONDITION_SCREEN.pdf and UNDERSTANDING_THE_FP22_INSPECTION_SCREEN.pdf

- A quarterly review of already audited results as a secondary check, including desktop audits
- Annual training with inspectors

The 2022 target set for this initiative was an estimated spend of $36,000, noting in the 2022 WMP that this was based on the previous year's spend and a review would be completed at the end of 2022 to adjust spending goals for future if needed (pg. 192).

Table 1 of the Q4 QDR reports PacifiCorp spent $37,445 on Inspection QA/QC in 2022. To validate this number, the IE requested documentation to show evidence of spend on QA/QC activities in *DR 2*. This data could look like a list of activities and their associated costs, work orders showing completed work, or other financial tracking of the initiative. In response to the request, the utility provided the document ***CA QA_QC Audit Activities Q4.xlsx***, which lists completed QA/QC work, but no financial tracking. *DR 4* was sent to request further documentation of the reported spend, which returned additional documentation on the work completed, but no work orders. The 2022 WMP states that in 2021, the funding was spent on physical audits, desktop audits and updating inspector training. It is presumed that this is the same for 2022, and based on the evidence provided, the majority of the spend seems to have been performed on physical inspections of the work completed.

Finding: Based on the evidence provided, the IE has reasonable assurance that QA/QC work was completed in the 2022 year and some of that was on physical audits of work complete; however, without financial tracking documentation, the IE cannot confirm that the dollars reported match the work complete or that all aspects of the QA/QC program were met.

Substation Inspections (IN-15)

As stated in section 7.3.4.15 of PacifiCorp's 2022 WMP, substation inspections are intended to "assess security and key equipment condition" and "any potential correction work or maintenance needed." Substations are inspected on either an annual (Transmission) or biennial (Distribution) basis. Security inspections are scheduled to occur monthly for bulk Transmission and least eight times per year for "other" Transmission and Distribution. These inspections are expected to be consistent with GO 174 requirements.

Based on the frequency noted above, the number of planned inspections for 2022 was set at 444, per the 2022 WMP. Table 1 of PacifiCorp's Q4 QDR states that 444 inspections were completed in 2022. To verify this report, the IE requested population data showing the dates of each inspection in *DR 2.* In response, PacifiCorp provided in ***CAL Advocate_Sub Inspections CY22.xlsx***, which contained a list of the 444 inspections. From this document, the IE randomly sampled 29 inspections to request work orders to verify the completion of the inspection. 31 work orders were provided in response to *DR 4*, each was titled with the Substation name and the date inspection occurred (e.g., **Belmont 05-01-22.pdf**) and contained (among other things) the start

date for the inspection (the beginning of the month the inspection should be performed in), date performed, the inspector's name, and the results of the inspection (e.g., visual inspection, voltage readings, alarm status, etc.). The forms each contained a manager sign off as well.

The IE reviewed each work order provided against the population data to verify accuracy and findings within. All documents provided aligned with what was reported in the population data and no anomalies noted.

Finding: Based on the evidence and documentation provided, the IE has a reasonable assurance that PacifiCorp is performing its inspections at the level and frequency reported and that they completed the reported 444 inspections, meeting their 2022 target.

Personnel Monitoring Areas of Electric Lines and Equipment in Elevated Fire Risk Conditions (PS-5)

As stated in PacifiCorp's 2022 WMP, "PacifiCorp trains and deploys personnel when there is elevated fire risk, activating 'watches' or 'activations' depending on how much fire climatology indicates elevated fire risk. These personnel go on readiness patrols and may modify system protection settings and monitor the network during the elevated fire risk period" (pg. 166). Table 1 of the Q4 QDR states a target of $0 for this initiative, but reports spending $580,494 by the end of 2022. Despite no target for the initiative, the IE requested documentation to validate the money reported spent in *DR 2*. In response, the IE provided ***PacifiCorp_DR 2_PS-5.xlsx*** which contained the detail for nine work orders against which the funding for this initiative were billed. In *DR 5* additional work order documentation was requested, but it was reported that the SAP system (internal accounting) is the primary tracker for this type of billing and that PacifiCorp does not track physical work orders. The provided workbook noted above lists the individual costs for each type of spend (e.g., labor, parts, patrol charters, etc.). The total spend in the workbook rounds down to $580,493.

Finding: The IE did not set a target for this initiative. Based on the evidence and documentation provided, the IE has reasonable assurance that $580,493 was spent on monitoring.

Risk Assessment and Mapping (RA-1)

PacifiCorp's 2022 WMP indicated that PacifiCorp would complete phase 1 of its LRAM and spend approximately $186,000 in 2022. Table 1 of the Q4 QDR reports that $58,043.42 was spent, which is below the target spend goal by $127,956.58. In PacifiCorp's 2022 Annual Report on Compliance, PacifiCorp stated that the underspend is due to "Resource recruiting challenges [which] impacted actuals," and that the costs "included data scientist personnel time to develop risk models" (pg. 4).

The IE submitted *Data Request 2* for documentation to support the reported spend of $58,043.42, to which PacifiCorp provided ***252168 WO# Charges for 2022.xlsx*** as evidence. This document includes the posting date, document date, order number, cost element name (e.g., job title/type), and the value (cost). The value column totaled $58,043.42, which is aligns with reported spend in 2022.

Finding: The IE confirmed PacifiCorp did not meet their initiative target for 2022 of $186,000. Based on the evidence provided, the IE has reasonable assurance that PacifiCorp spent $58,043.42, $127,956.58 less than their target of $186,000.

Fault Indicators for Detecting Faults on Electric Lines and Equipment (SA-3b)

PacifiCorp's 2022 WMP set a target of installing 500 fault detection devices on electric lines and equipment in 2022. PacifiCorp reported the 2022 goal was met by completing 684 installations in Table 1 of the Q4 QDR.

The IE requested PacifiCorp provide evidence of all fault detection devices installed in 2022 in the form of invoices or work orders in *DR 2*. In response, PacifiCorp provided ***IE DR 2 2023 Item 25 materials.xlsx***, a spreadsheet with line items for 946 fault detection device activities. Although the spreadsheet provided details for 946 items, the evidence lacked unique work order numbers, fault detection installation dates, and associated electric line receiving the installation. The IE sent *DR 5* requesting PacifiCorp provide a detailed spreadsheet with work order numbers and completion dates for each of the 684 reported installations. PacifiCorp provided ***SA-3b_2022 Fault Indicators_ Population.xlsx*** a spreadsheet with 265 items pertaining to grid hardening activities which took place on various overhead assets. PacifiCorp further clarified that 1 to 6 fault indicators were installed per pole during a phone interview. Additionally, PacifiCorp declared an average of 2.6 installations for each of the 265 locations took place resulting in 684 total installations in 2022 in a written response.

The IE conducted a desktop review of the fault detection installations provided by requesting detailed invoices for 29 overhead assets which received fault indicator installations during 2022, in *DR 7*. The IE requested a specific set of work orders based on the asset IDs provided in ***SA-3b_2022 Fault Indicators_Population.xlsx***. In response, PacifiCorp provided detailed PDFs and photos pertaining to fault detection installation work orders which took place during 2022.

Finding: Based on a review of the evidence provided, the IE has reasonable assurance PacifiCorp installed 684 fault detection devices in 2022.

Forecast of a Fire Risk Index, Fire Potential Index, or Similar (SA-4)

As reported in Table 1 of the Q4 QDR, PacifiCorp targeted a goal of spending $163,782 toward implementing Technosylva's fire potential indexing (FPI) and forecasting

capabilities into its situational awareness modelling practices. The Q4 QDR reports actual spend at $118,306, also noting that the goal was complete. In the 2022 ARC, it is noted that this reduction in spend is related to PacifiCorp expanding "the software component of the situational awareness program system-wide to include the company's service territory outside of California" (pg. 4). The result is that the overall spend has decreased without affecting the work and scope of this initiative. They further explained in a written response to *DR 2* that some of the work expected to occur in 2022 will now take place in 2023 and that they were further able to save money by updating their subscriptions package for weather station data management.

The IE requested PacifiCorp provide evidence of the total amount spent during 2022 on Technosylva FPI software installations in the form of invoices or work orders in *DR 2*. In response, PacifiCorp provided ***Situational Awareness Modelling (Technosylva Etal) 2023-04-13_DR 2.xlsx***, a spreadsheet pulled from their SAP system showing work orders and spend amounts by supplier. The spreadsheet also provides the individual line items of spend and the date they posted, all showing within the 2022 year.

Finding: Based on the evidence provided, PacifiCorp did not meet its goal of spending $163,782 on FPI models via Technosylva in 2022. However, the IE has reasonable assurance PacifiCorp did spend $118,306 on Technosylva FPI technology, as reported and notes that underspend was due to delayed project work and overall cost savings.

Detailed inspections of vegetation around distribution electric lines and equipment (VM-2)

PacifiCorp's 2022 WMP states that "PacificCorp's detailed inspections of distribution electric lines and equipment is a critical program required to maintain regulatory compliance within California GO 165 and 95." Furthermore, its states that the inspection program, "includes a careful visual inspection accomplished by visiting each structure, as well as inspecting spans between structures."

The 2022 WMP reported the target number for inspection of vegetation around Distribution lines in 2022 was 1,158 line-miles. According to Table 1 of the Q4 QDR, PacifiCorp completed 1,158 line-miles. To validate this number, the IE requested evidence of line miles inspected, to which PacifiCorp provided ***DR 2_2022_VM-2_ Detail Inspections (Cycle) Spreadsheet_psb.xlsx.*** The IE conducted interviews with PacifiCorp SMEs to review the data and were able to verify that 1,157.42 line-miles were inspected.

To further validate these inspections, the IE submitted a request for 33 miles in *Data Request 6* to provide work orders, work sign off, or similar to demonstrate the work completed. PacificCorp provided the below documentation showing grid numbers that

match the detailed inspection file, matching miles, completion dates in 2022 and approval authority signature.

1. ***SAMPLING DR6_VM2_5R152 CHS Wright Completed wr 2021 and 2022 .pdf***
2. ***SAMPLING DR6_VM2_5R171 DNT DHS Wright Completed Work Release 2022.pdf***
3. ***SAMPLING DR6_VM2_7G73 DNT ACRT WR and checklist 2022.pdf***
4. ***SAMPLING DR6_VM2_7G75 DNT ACRT WR and checklist 2022.pdf***
5. ***SAMPLING DR6_VM2_8G27 DNT ACRT WR and checklist 2022.pdf***
6. ***SAMPLING DR6_VM2_8G95 DNT ACRT WR and checklist 2022.pdf***

Finding: Based on a review of the evidence provided along with interviews with the SMEs, the IE has reasonable assurance that PAC achieved its target of 1,158 line-miles.

Detailed Inspections of Vegetation Around Transmission Electric Lines and Equipment (VM-3)

PacifiCorp's 2022 WMP states that PacifiCorp's target number committed for inspection of vegetation around Transmission lines in 2022 was 354 line-miles. However, according to Table 1 of the Q4 QDR, the target and reported completion is shown as 386 line-miles. In response to *DR 2* and follow up interviews around the workbook ***DR 2_2022 Patrol Inspections (Fcode) Spreadsheet_psb.xlsx***, it was reported that only 374.4 line-miles were completed, 11.6 miles short of the Q4 QDR target, but above the 2022 WMP stated target. Per feedback provided in an interview, the shortage of total planned miles was reportedly due to timing constraints associated with a line in Crescent City. The line was impacted by environmental restrictions as well as weather "windows" which dictate the timing of the work (provided via email follow up from the interview). Due to these reasons, crews were unable to conduct inspections on all line miles and associated correction work. PacifiCorp has taken this into consideration for future tasks and have adjusted plans to inspect this specific line frequently (i.e., smaller portions of the line inspected on an annual basis) to ensure work is conducted in small window of time accounting for timing restrictions.

From the population in the workbook mentioned above, the IE selected a random sample of 29 line-miles and submitted a request for additional evidence of work completed in *Data Request 7*. In response, PacifiCorp provided ***DR7_VM3 SAMPLING_YRE668033 TNT_THS Trees Completed Work Release 2022.pdf*** showing dates, authorizing signatures, supervisory approvals, and additional clarification/comments.

Finding: Based on a review of the evidence and interviews with SMEs, the IE determined PacifiCorp did not meet their target of 386 line-miles as stated in the Q4

QDR, falling short by 11.4 miles. The completion did meet the 2022 WMP goal. Based on the evidence provided and interviews with the SMEs, the IE has reasonable assurance that completed 374 line-miles in accordance with the standards identified in the 2022 WMP.

LiDAR Inspections of Vegetation Around Distribution Electric Lines and Equipment (VM-7)

Section 7.3.4.7 of PacifiCorp's 2022 WMP states that "PacifiCorp does not intend to initiate LiDAR inspections of distribution lines and equipment. Generally, LiDAR was proven to be more expensive method of line inspection."

No target is set for this in the 2022 WMP; however, Table 1 in the Q4 QDR states that PacifiCorp set a target for financial spend of $34,000 on LiDAR inspection of vegetation around distribution electric lines and equipment in 2022. According to the Q4 QDR, PacifiCorp spent $33,753. In response to *Data Request 4,* PacifiCorp gave the following reason for its inability to provide evidence: "The past LiDAR and satellite imagery work were pilot studies managed by people who are no longer with the company. We do not have access to any of their old files and communications with the vendors. There is no additional documentation other than the provided pilot review PDF. The pilot studies have been discontinued and we do not use LiDAR of satellite imagery for any vegetation management inspections at this time." The Utility did provide a presentation of the pilot with a timeline that extends into Q1 of 2022 as well as invoices from the company performing the pilot that demonstrated amounts more than $33,753.

Finding: The IE was unable to obtain enough documentation to confirm the spend on this initiative or if the amount was residual from the pilot and the target was set prior to the decision not to utilize the technology. Ultimately, it does seem that a significant amount of work and money were put into piloting this technology, but the exact amount cannot be confirmed for 2022.

LiDAR Inspections of Vegetation Around Transmission Electric Lines and Equipment (VM-8)

Section 7.3.4.8 of PacifiCorp's 2022 WMP states that "LiDAR inspections provide measurements that can be analyzed to identify safety concerns with equipment when analyzed against current engineering standards." Additionally, PacificCorp stated in the prioritization section, "LiDAR inspections took place on lines with higher fault rates that had an increased fire risk potential." Furthermore, PacificCorp stated, "The program identified multiple poles that would need to be replaced. The poles identified have been scheduled to be replaced as part of the reconductoring initiative or other endeavors. PacifiCorp does not intend to pursue this initiative further" (pg. 178).

No target is set for this in the 2022 WMP; however, Table 1 in the Q4 QDR states that PacifiCorp's target amount committed for LiDAR inspection of vegetation around transmission electric lines and equipment in 2022 was $10,000. According to the Q4 QDR, PacifiCorp spent $9,912. According to *Data Request 4,* PacifiCorp gave the following reason for its inability to provide evidence "The past LiDAR and satellite imagery work were pilot studies managed by people who are no longer with the company. We do not have access to any of their old files and communications with the vendors. There is no additional documentation other than the provided pilot review pdf. The pilot studies have been discontinued and we do not use LiDAR of satellite imagery for any vegetation management inspections at this time." The Utility did provide a presentation of the pilot with a timeline that extends into Q1 of 2022 as well as invoices from the company performing the pilot that demonstrated amounts more than $9,912.

Finding: The IE was unable to obtain enough documentation to confirm the spend on this initiative or if the amount was residual from the pilot and the target was set prior to the decision not to utilize the technology. Ultimately, it does seem that a significant amount of work and money were put into piloting this technology, but the exact amount cannot be confirmed for 2022.

Patrol Inspections of Vegetation Around Distribution Electric Lines and Equipment (VM-11)

PacifiCorp's 2022 WMP states that PacifiCorp's target number committed for patrol inspections around distribution electric lines in 2022 was 1,007 line-miles. According to Table 1 of the Q4 QDR, PacifiCorp completed 1,194 line-miles. However, during an interview with SMEs, PacificCorp stated that the correct number that should have been reported was 1,007 line-miles. To validate this, IE reviewed ***DR 2_VM-11_VM-12_2022 Detail Inspections (Fcode) Spreadsheet_psb.xlsx*** with the SME in an interview and was able to corroborate and match the line-miles reported.

From the evidence in the above-mentioned workbook, the IE sampled 33 line-miles to request additional evidence of completed work in *Data Request 6*. In response, PacifiCorp provided the below documentation showing dates of work completed, grid numbers aligning with area inspected, total miles, and approval authority signoffs for each section sampled.

SAMPLING DR6_VM11_5G2 FIN WR and checklist 2022.pdf
SAMPLING DR6_VM11_5G83 FIN_FPD Trees Completed Work Release 2022.pdf
SAMPLING DR6_VM11_5G7 FIN ACRT WR and checklist 2022.pdf

Finding: Based on the evidence reviewed and interviews conducted with SMEs, the IE has reasonable assurance that PacifiCorp met its target of 1,007 line-miles of patrol inspections around distribution lines.

Patrol Inspections of Vegetation Around Transmission Electric Lines and Equipment (VM-12)

PacifiCorp's 2022 WMP states that the target number committed for patrol inspections around transmission electric lines in 2022 was 163 line-miles. According to Table 1 of the Q4 QDR, PacifiCorp completed 163 line-miles. However, during an interview PacificCorp stated 168 line-miles were completed. To verify the 168 line-miles completed, the IE requested population evidence of the inspections, to which PacifiCorp provided ***DR 2_VM-11_VM-12_2022 Detail Inspections (Fcode) Spreadsheet_ psb.xlsx***. This file was reviewed during an interview with PacifiCorp SMEs to corroborate and match the line-miles reported.

From the evidence in the above-mentioned workbook, the IE sampled 33 line-miles to request additional evidence of completed work in *Data Request 6*. In response, PacifiCorp provided ***SAMPLING DR6_VM12_KFC668004 FIN Trees Completed Work Release 2022.pdf*** showing dates of work completed, grid numbers aligning with area inspected, total miles, and approval authority signoffs for each section sampled.

Finding: Based on the evidence reviewed and interviews conducted with SMEs, the IE has reasonable assurance that PAC met its target of completing 163 line-miles of patrol inspections around vegetation.

Quality Assurance / Quality Control of Vegetation Inspections (VM-13)

PacifiCorp's 2022 WMP states, "Quality control actions such as audits are critical to ensure vegetation requiring work (pruning and/or removal) is properly identified and the work is subsequently conducted in accordance with vegetation program standards/specifications," and lists the target for this initiative as 1,169 line-miles

According to Table 1 of the Q4 QDR, PacifiCorp completed 1,169 line-miles. To validate the QA/QC inspections completed, the IE requested population evidence of lines inspected in *Data Request 6*, to which PacifiCorp provided file ***2022 Post Audits_Forester_CA.xlsx***, which contained records of line work inspected, dates of inspection, and results of inspection for 1,169 miles reviewed. IE conducted interviews with PacifiCorp SMEs to corroborate and match the miles reported. Also provided was a ***PpAuditException2022_CA.xlsx*** with exceptions found during inspections, their specific findings, and the resulting actions taken along with the dates for each inspection.

From the evidence in the above-mentioned workbook, the IE sampled 33 line-miles to request additional evidence of completed work in *Data Request 6*. In response, the IE provided inspection reports from the forester of the line miles requested which included

the dates of the inspections, the notes from the exceptions found (if any) and the signoff from inspector.[26]

Finding: Based on the evidence reviewed and interviews with the SMEs, the IE has reasonable assurance that PacifiCorp was able to achieve its target of 1,169 line-miles for QA/QC.

2.1.3.2 Trends and Themes

Include any trends or recurring themes that the Independent Evaluator found while assessing electrical corporation compliance to Large Volume Quantifiable Goal/Target – Not Field Verifiable initiatives.

Several of the initiatives and goals were marked as "complete" in Table 1 of the Q4 QDR while coming in under target. Most of these instances were negligible and did not have any additional explanation. In these instances, considerable work was demonstrated, and the IE did not find discrepancies in the work product or evidence to indicate any improvements are needed in efforts to complete wildfire mitigation activities. Specific details around what improvements were noted or needed were identified by PacifiCorp and noted on the applicable initiative.

PacifiCorp identified financial reporting goals for multiple initiatives. It is noted that many of these are projections based on unknown results of inspections and are often using past trends to forecast future needs; however, financial goals can be misleading and do not necessarily indicate the actual amount of work forecasted to be done. Additionally, the fluctuation in supply and demand and inflation recently can result in higher costs despite reduced work and does not allow for tracking year over year. The IE attempted to compare work completed against the initiative description, but in many cases were only able to verify if the money was spent on parts and/or labor toward the stated initiative. The IE recommends that PacifiCorp identify work goals for all initiatives rather than financial goals.

2.1.4 Small (less than 100 times) Volume Quantifiable Goal/Target

2.1.4.1 Review of Initiatives

This section should include the Independent Evaluator's findings and assessment of electrical corporation compliance with activities that fall into the Small Volume Quantifiable Goal/Target category. Independent Evaluators shall perform data/documentation review and conduct SME interviews, as needed, to verify completion of these activities and adherence to all applicable work procedures and protocols. Include the electrical corporation's list of initiatives that fall into the Small

[26] Documents provided: SAMPLING_DR6_VM13_5G19_FIN_FMD_2022_PP_Forester_Audit_Form.pdf, SAMPLING_DR6_VM13_5G41 PpAuditException2022.xlsx, SAMPLING_DR6_VM13_5G83, FIN_FPD_2022_PP_Forester_Audit_Form.pdf, and SAMPLING_DR6_VM13_YRE668026_FIN_FMT_2022_PP_Forester_Audit_Form.pdf

Volume Quantifiable Goal/Target category, including respective goals/targets for each, in the Appendix or within the body of this subsection.

Table 2-5 - Small Volume Quantifiable Summary

Program Category	WMP Identifier	Initiative / Activity	Utility Initiative Name	2022 Target*	Completed
Grid Design & System Hardening	AH-4	Installation of system automation equipment	Relay / Recloser Replacements / Upgrade	51 Devices / Projects	57 Devices / Projects
Grid Design & System Hardening	AH-6	Other corrective action	Small Diameter Conductor	6 Facilities	6 Facilities
Situational Awareness and Forecasting	SA-1	Advanced weather monitoring and weather stations	Weather Station Installation and PM	50 Weather Stations	50 Weather Stations
Situational Awareness and Forecasting	SA-3	Continuous monitoring sensors	Pilot 1: DFA	2 Devices / Projects	2 Devices / Projects

Installation of System Automation Equipment (AH-4)

PacifiCorp's 2022 WMP set a target to complete 51 projects in 2022 to replace relay and recloser equipment with automation equipment.

Table 1 of the Q4 QDR reports that 44 projects were completed, seven fewer than the stated goal. In response to *Data Request 2*, PacifiCorp noted that the total count for the year should have included 13 breaker replacements that also fall under this initiative, bringing the total for the year to 57.

The IE requested documentation to support the completion of the 57 replacement projects in *Data Request 4*. In response, PacifiCorp provided ***IE_DR4_Item 4.xlsx***, an Excel file with a list of all completed projects as well as PDFs of relay replacement and circuit breaker work orders corresponding to the list.[27] Of the 57 completed projects, the

[27] Example document: 8015152.pdf

IE sampled 23 items to review the provided work order documentation. The relay work orders provided equipment identification information – such as Substation Name, Work Order #, Line Protected, Physical Location, and more – as well as Relay Equipment Installed, Relay Equipment Removed, and Routable Portable Information. The Circuit Breaker Work Orders also provided Equipment Information – including Position Number in substation, serial number, PacifiCorp equipment/SAP number, and more – as well as General Inspection Information, Inspect Operating Mechanism information, Vacuum Bottle Integrity Tests, Contact Resistance Tests, Insulation Resistance Tests, Final Test Reports and Installation Forms, and Comments. The IE reviewed this evidence for the 23 items sampled to ensure the work matched the description and was completed within the stated timeframe.

Finding: Based on the evidence reviewed, the IE has reasonable assurance that PacifiCorp met their 2022 target, completing 57 projects.

Small Diameter Conductor (AH-6)

PacifiCorp's 2022 WMP states that the 2022 target for this initiative was to complete replacement of copper wire at six facilities. Table 1 of the Q4 QDR states that this target was met with a final completion of nine facilities. To validate this, the IE requested documentation for all nine facilities to verify the completion (*DR 1*). Initially, a geolocation file was sent showing the circuit trace for the line replaced, *DR 4* resulted in annotated construction drawings of the nine sites (e.g., ***8260180 Map 1.pdf***) along with a table showing the total length of wire replaced (***Item 5 Table.xlsx***). These drawings do not contain completion date information; however, in a follow up interview, the drawings were described as the final output of the work completed and the PacifiCorp SME provided a walkthrough of the construction database which stores the record of projects, equipment and material codes, and dates of completion. The item codes and their corresponding materials for both what was removed as well as what was installed were described and demonstrated in the system and it was further described that the work completion fields are not able to be edited, once entered.

Finding: From the evidence provided for the nine facilities, along with the interview to review the data tracking, the IE has reasonable assurance that PacifiCorp met their target of replacing copper wire at six facilities.

Advanced Weather Monitoring and Weather Stations (SA-1)

PacifiCorp's 2022 WMP set a target for installing 50 weather stations in 2022. Table 1 of the Q4 QDR reports 50 weather station installations took place in 2022.

To validate this number, the IE requested evidence of the 50 installations in the form of invoices or work orders in *DR 2*. In response, PacifiCorp provided three PDFs of purchase orders.[28] The purchase orders provided details such as the order number,

[28] 10075770.pdf, 10075824.pdf, and 10077761.pdf

order type, plant number, cost element, materials, location, and purchased quantities. Upon review, the IE has reasonable assurance the PDFs provided data pertaining to weather station installations in Crescent City, Alturas, and Yreka. Although PacifiCorp provided evidence in which the IE had reasonable assurance pertained to weather installations, the purchase order PDFs did not provide dates for the reported installations.

The IE requested PacifiCorp provide a detailed spreadsheet with GIS location data and installation dates for the 50 reported weather station installations reported in ***PAC_Q4_QDR_2022.xlsx,*** in *DR 6.* PacifiCorp provided ***PacifiCorp-California 2021 and 2022.xlsx***, a spreadsheet detailing weather station installations which took place in 2021 and 2022. Additionally, the spreadsheet provided the serial number, installation date, station name, and GIS coordinates for the installations. Upon review, the IE has reasonable assurance PacifiCorp performed 49 weather station installations in 2022. Although 49 weather stations were installed in 2022, a single installation which took place in 2021 was not accounted for in the 2021 ARC and subsequently was included in the actuals for the 2022 SA-1 initiative, totaling 50 weather station installations in 2022.

Finding: The IE has reasonable assurance PacifiCorp met its 2022 goal by installing 50 weather stations throughout its service territory.

Continuous Monitoring Sensors (SA-3)

PacifiCorp's 2022 WMP states a target of installing two distribution fault anticipation (DFA) devices. Table 1 of the Q4 QDR reported the initiative status as delayed and states "Device[s] physically installed, but not communicating as of December 31, 2022."

The IE requested evidence of installing DFA devices in the form of invoices or work orders in *DR 2*. In response, PacifiCorp provided ***Lassen DFA Communication Status.png***, a graphic detailing the communication status of two DFA devices at the Lassen substation. Upon review, the IE has reasonable assurance the two DFA devices have been installed and last communicated 4/18/2023 at 11:35am PDT.

Finding: Based on the evidence provided, the IE determined that while there is reasonable assurance that PacifiCorp installed two DFA devices in 2022, these devices were not operational DFA devices in 2022. It is also noted that these devices have since become operational and seem to be operating as intended.

2.1.4.2 Trends and Themes

Include any trends or recurring themes that the Independent Evaluator found while assessing electrical corporation compliance to Small Volume Quantifiable Goal/Target initiatives.

The IE did not note any significant trends or themes with respect to PacifiCorp's small volume quantifiable goal/target initiatives.

2.1.5 Qualitative Goal/Target

2.1.5.1 Review of Initiatives

This section should include the Independent Evaluator's findings and assessment of electrical corporation compliance with activities that fall into the Qualitative category. Independent Evaluators shall perform data/documentation review and conduct SME interviews, as needed, to verify completion of these activities and adherence to all applicable work procedures and protocols. Include the electrical corporation's list of initiatives that fall into the Qualitative, including respective goals/targets for each, in the Appendix or within the body of this subsection.

Table 2-6 - Qualitative Goal/Target Summary

Program Category	WMP Identifier	Initiative / Activity	Utility Initiative Name	2022 Target
Emergency Planning & Preparedness	EP-3	Customer support in emergencies	PSP Portal	Complete implementation of the full solution
Emergency Planning & Preparedness	EP-4	Disaster and emergency preparedness plan	Tabletop Exercises	Complete two tabletop exercises and one functional exercise in Q2

Customer Support in Emergencies (EP-3)

PacifiCorp's 2022 WMP states that creating a Public Safety Partner portal was a direct response/solution to several lessons learned from previous PSPS events (see section 8.1).

Though no specific target was stated in the 2022 WMP, Table 1 in the Q4 QDR noted a Qualitative goal to implement this solution in 2022. The stated progress is that development of the full solution is in progress. To validate this progress, the IE requested documentation or evidence of the development to date and received **PSP Portal Screenshots.pdf** with images from the portal in progress.

Finding: The IE has reasonable assurance that PacifiCorp completed this initiative. The screenshots demonstrate that a webpage is in progress to provide updates on current outages and their status as well as information on critical facilities that can be sorted once downloaded allowing each user to determine the information most relevant to their needs.

Disaster and Emergency Preparedness Plan (EP-4)

PacifiCorp utilizes tabletop exercises to prepare for emergency situations during the wildfire season. For the 2022 year, PacifiCorp had a goal to complete two of these tabletop exercises and one functional exercise in Q2, ahead of the wildfire season. PacifiCorp reported completing this initiative, so to validate the completion of these exercises, the IE requested documentation of the exercises which can include meeting minutes, meeting agenda, list of attendees, audio/video records, lessons learned, or other outputs from the activities performed.

In response to *Data Request 2*, the utility provided 1-5 of the following documents. PacifiCorp provided documents 6-10 in *Data Request 5*.

1. **Exhibit B2 2022 PSPS TTX -Siskiyou County.pdf**
2. **Exhibit B6 Siskiyou County TTX Sign-In Sheet.pdf**
3. **Exhibit B7meetingAttendanceReport(Siskiyou County CA Tabletop Exercise) (1).xlsx**
4. **Exhibit B13 PacifiCorp CA PSPS TTX EXPLAN.doc**
5. **Exhibit B16 Siskiyou County TTX Facilitator Guide.doc**
6. **2022 PSPS FX -Siskiyou County.pdf**
7. **meetingAttendanceReport(PacifiCorp Functional PSPS Exercise).csv**
8. **meetingAttendanceReport(PSPS Functional Exercise PacifiCorp ECC)**
9. **Post-Exercise Review_Siskiyou County FX 05262022**
10. **PSPS_State_Executive_PacifiCorp Siskiyou Exercise**

Combined, files 1-5 show a presentation and worksheet that make up the Tabletop Exercise as well as a facilitator guide and sign-in sheets and contact information for an event held on April 28, 2022, between PacifiCorp and its partners and stakeholders responsible for facilitating an emergency response. Files 6-10 show the attendance, plan, facilitation, and post-exercise review of a functional exercise on May 26, 2022.

Finding: Based on the evidence provided, PacifiCorp did not meet the stated goal to complete two tabletop exercises and one functional exercise in Q2 of 2022. The IE has reasonable assurance that PacifiCorp performed at least one Tabletop Exercise in 2022 and at least one functional exercise in Q2. Evidence has not been provided to demonstrate an additional tabletop in 2022.

2.1.5.2 Trends and Themes

Include any trends or recurring themes that the Independent Evaluator found while assessing electrical corporation compliance to Qualitative initiatives.

The IE did not note any significant trends or themes with respect to PacifiCorp's qualitative initiatives. As shown above, only two items fell into this category this year and it appears both made appropriate progress toward intended wildfire preparation and mitigation efforts.

2.2 Verification of Funding

The Verification of Funding section should document all instances in which WMP activities were funded less than 100 percent. For all such instances, the Independent Evaluator shall request and document electrical corporation explanation. The IE shall determine if targets have been met for underfunded initiatives. For all such instances, where the targets were unmet, the IE shall determine if the electrical corporation met the risk reduction intent for the initiative.

Fill out the table below containing initiatives which the Independent Evaluator found to be funded less than 100 percent.

Table 2-7 - Verification of Funding Summary

Initiative Category	2022 Initiative Number	Initiative Name	2022 WMP Page Number	Planned ($ Thousands)	Actual ($ Thousands)	Variance ($ Thousands)	Detail on Funding Discrepancy
Risk Assessment and Mapping	7.3.1.1	A summarized risk map that shows the overall ignition probability and estimated wildfire consequence along the electric lines and equipment	153	$186	$58	($128)	Planned program cost included data scientist personnel time to develop risk models. Resource recruiting challenges impacted actuals.

Initiative Category	2022 Initiative Number	Initiative Name	2022 WMP Page Number	Planned ($ Thousands)	Actual ($ Thousands)	Variance ($ Thousands)	Detail on Funding Discrepancy
Situational Awareness and Forecasting	7.3.2.1	Advanced weather monitoring and weather stations	162	$1,349	$1,021	($328)	2022 planned spend assumed weather station installations also required pole replacements. 2022 actuals reflect that weather station installations did not always require pole replacements and the program scope was successfully delivered for less than the plan.

Initiative Category	2022 Initiative Number	Initiative Name	2022 WMP Page Number	Planned ($ Thousands)	Actual ($ Thousands)	Variance ($ Thousands)	Detail on Funding Discrepancy
Situational Awareness and Forecasting	7.3.2.4	Forecast of a fire risk index, fire potential index, or similar	166	$164	$118	($46)	Since implementing the California WMP, Pacific Power has expanded the software component of the situational awareness program system-wide to include the company's service territory outside of California. As a result, Pacific Power has revised its California allocation to align with other software projects in use across the company. While the work and scope has not changed, California's allocation of spend has reduced.

Initiative Category	2022 Initiative Number	Initiative Name	2022 WMP Page Number	Planned ($ Thousands)	Actual ($ Thousands)	Variance ($ Thousands)	Detail on Funding Discrepancy
Situational Awareness and Forecasting	7.3.2.6	Weather forecasting and estimating impacts on electric lines and equipment	170	$375	$99	($276)	Since implementing the California WMP, Pacific Power has expanded the software component of the situational awareness program system-wide to include the company's service territory outside of California. As a result, Pacific Power has revised its California allocation to align with other software projects in use across the company. While the work and scope has not changed, California's allocation of spend has reduced.

Initiative Category	2022 Initiative Number	Initiative Name	2022 WMP Page Number	Planned ($ Thousands)	Actual ($ Thousands)	Variance ($ Thousands)	Detail on Funding Discrepancy
Grid Design and System Hardening	7.3.3.2	Circuit breaker maintenance and installation to de-energize lines upon detecting a fault	172	$402	$124	($278)	Actual spend on circuit breaker replacement in 2022 depends on inspection results and equipment performance. Fewer than expected circuit breakers related work required in 2022 than planned.
Grid Design and System Hardening	7.3.3.3	Covered conductor installation	172	$67,200	$52,500	($14,700)	2022 scope of 112 planned miles not fully constructed. Material, construction labor, and permit delays were the primary reasons for delays.
Grid Design and System Hardening	7.3.3.13	Pole loading infrastructure hardening and replacement program based on pole loading assessment program	181	$150	$0	($150)	Pole replacement shifted under the covered conductor installation program and, therefore, costs with engineering reported under line rebuild (covered conductor installation) program.

Initiative Category	2022 Initiative Number	Initiative Name	2022 WMP Page Number	Planned ($ Thousands)	Actual ($ Thousands)	Variance ($ Thousands)	Detail on Funding Discrepancy
Asset Management and Inspection	7.3.4.5	Infrared inspections of transmission electric lines and equipment	187	$80	$73	($7)	Within 10% of plan
Asset Management and Inspection	7.3.4.6	Intrusive pole inspections	188	$174	$125	($49)	Intrusive pole inspections were completed for a lower unit cost than planned.
Vegetation Management and Inspection	7.3.5.12	Patrol inspections of vegetation around transmission electric lines and equipment	210	$39	$23	($16)	Pacific Power was able to deliver the full scope of patrol inspections for less than planned cost.

Initiative Category	2022 Initiative Number	Initiative Name	2022 WMP Page Number	Planned ($ Thousands)	Actual ($ Thousands)	Variance ($ Thousands)	Detail on Funding Discrepancy
Data Governance	7.3.7.1	Centralized repository for data	229	$400	$52	($348)	Spending in this program includes expenditures associated with a centralized team to manage program delivery. Work orders and tracking were set up in 2022 and only a portion of the costs were captured under these new work orders. While the work was completed as planned, only a fraction of the costs were captured for reporting in this way. Moving forward, Pacific Power intends to fully capture these costs throughout the year to better reflect actuals.

Initiative Category	2022 Initiative Number	Initiative Name	2022 WMP Page Number	Planned ($ Thousands)	Actual ($ Thousands)	Variance ($ Thousands)	Detail on Funding Discrepancy
Emergency Planning and Preparedness	7.3.9.3	Customer support in emergencies	242	$200	$1	($199)	Advancements to Pacific Power's existing Public Safety Partner portal were delayed due to contractor resource constraints. Project scope is still expected to occur and will be shifted into the new 2023-2025 WMP.

Below the table, provide more detail on the Independent Evaluator's findings regarding these initiatives that were funded less than 100 percent, including the electrical corporation's explanation.

The IE used PacifiCorp's ARC as its baseline for financial evaluation. Given the updated format of the ARC provided by Energy Safety and the requirement to include detail pertaining to under or overspend the IE felt that the ARC was a sufficient source of evidence in evaluating PacifiCorp's underspend initiatives, and whether those underspend initiatives met the initiative target for 2022. From the ARC the IE was able to determine that 12 initiatives from PacifiCorp's 2022 WMP received less funding than projected. Of these initiatives only one was within the 10% limit as outlined by Energy Safety. For the remaining 11 initiatives PacifiCorp provided an appropriate level of detail as to why the spending target was not met. The IE was able to do a financial review of two of the underspent initiatives as the PacifiCorp metric target was "Spend ($)."[29] For 7.3.1.1 the IE was able to verify the reported spend value of $58k based off evidence provided by PacifiCorp SMEs. For initiative 7.3.3.2, the IE was able to determine through data requests and SME interviews that the reported ARC value was inaccurate due to an entry error discovered after ARC submission. The correct spend value is reflected in the table above.

Based off the financial data provided by PacifiCorp, and the discussions conducted on the weekly status calls as well as on SME interviews, the IE verified that the funding presented in the table above is being tracked appropriately. The IE also believes that the above table is reflective of the underspent initiatives in PacifiCorp's 2022 initiative portfolio.

[29] Table 1 - Q4 Quarterly Data Report

2.3 Verification of QA/QC Programs

This section should include a detailed description of all QA and QC programs that the Independent Evaluator validated during its compliance review. Independent Evaluators shall review all documentation and perform interviews to validate an electrical corporation's QA and QC programs for WMP compliance.

The following assessment is based on the IE's review of PacifiCorp's QA/QC programs through a review of the PacifiCorp's 2022 WMP, and data previously submitted to Energy Safety along with information obtained through data requests.

PacifiCorp indicated that it does not have an overarching QA/QC program but rather separate QA/QC programs for its Asset Inspection and Vegetation Management programs. These programs are each administered independently under the asset inspection and VM teams.

Asset Inspections

For QA/QC of asset inspections, PacifiCorp identified the following key program components which are described in the response to *Data Request 1* Questions 12 and 13 which provided PacifiCorp's ***Overhead Detailed Inspection Program Quality Assurance Process***, and ***Policy No. 123-PP Pacific Power Facility Inspection Audit Policy for Transmission & Distribution Lines for California, Oregon, and Washington*** documents. The QA/QC program consists of the following:

- PacifiCorp runs a 2-tier QA process described in their *Overhead Detailed Inspection Program Quality Assurance Process* that requires:
  - Tier 1 requires contractors to audit a minimum of 5% of the poles inspected for the calendar year. The audits are performed on a computer-generated random sample performed on a weekly basis. These QCs must meet 90% conformance for urban areas and 80% for rural areas.
  - Tier 2 of the process is run by PacifiCorp staff that reviews an additional 2-3% of inspections on top of the 5% performed in Tier 1. Approximately half of the audit sample comes from those reviewed in Tier 1 and half are randomly chosen.
- The targeted physical audits of at least 5% of planned inspections of facilities with a focus on HFTD Tier II and Tier III prioritization was exceeded in 2022. The results of this activity, showing 7.9% activity audited are captured in the ***CA_2022_DETAILED_INSPECTIONS_AUDITS*** spreadsheet.[30]
- Annual training with inspectors to address audit findings and improve inspection reliability and accuracy.

[30] Data Request 6

- Evidence showing whether the inspections were passed was not provided, so the IE was unable to verify if PacifiCorp is meeting its target of 90% conformance for urban areas and 80% for rural areas.

Vegetation Management Inspections

The following review is based on PacifiCorp's response to data requests regarding its vegetation management QA/QC program. The EC's QA/QC program includes some, but not all, of the elements expected to be included in a comprehensive QA/QC program. Therefore, as noted in last year's IE ARC, PacifiCorp does not appear to have a robust vegetation management QA/QC program.

In follow ups to *DR 1* question 12, which asked the QA/QC review of PACs VM processes, PacifiCorp provided the same program document that has been reviewed in years past for this effort and noted that no additional program or other QA/QC updates have occurred in the past year. They did not indicate how or if a review of the program processes had been conducted. PacifiCorp further indicates it conducts audits of all, or as much as possible, completed work, including Hazard Tree Work, but that most QA/QC occurs in real time with the project lead or Forester signing off work as it is complete.

PacifiCorp notes it reviews pre-inspections (prescriptions) at the time of conducting audits of completed work. PacifiCorp stated that it identifies work missed by the pre-inspection contractor during the audit of completed work. Although this is an acceptable practice, PacifiCorp did not provide any additional attributes, other than missed trees, reviewed during these audits (e.g., site and access information, accurate inventory, appropriate work categories, etc.).

A review of PacifiCorp's 2022 VM Audit Exception Report and associated evidence which was reviewed as part of the VM-13 and VM-3 verification, confirms that these audits are being performed and by whom. Although likely captured elsewhere, the report does not indicate whether or when the exception was resolved. The PacifiCorp VM SOP states that "All work including work identification, transmission, TGR, post-inspection, and pole clearing will be subject to audit at any time," and while there does not seem to be a process for random sampling and review of the work completed, work release documents as provided in response to DR6 sampling demonstrate that work is reviewed and signed off as it is completed.

Finally, PacifiCorp appears to complete a comprehensive desktop review of all planned and completed work. The review is conducted by internal VM staff.

Finding: During a review of the ***Overhead Detailed Inspection Program Quality Assurance Process.doc*** and the ***Pacific Power Facility Inspection Audit Policy for T&D Lines.pdf***[31], it was noted that some QA/QC attributes are being implemented for line inspections and line construction. Although not a comprehensive guide, these could

[31] Both documents provided in Data Request 1

be used to assist in the further development of PacifiCorp's VM QA/QC program. The evidence provided gives reasonable assurance that PacifiCorp is following its Asset Inspection QA/QC program as described and exceeding their goal of 5% by completing audits on 7.9% of all work completed.

To date, PacifiCorp has not determined a statistically valid sample size that would result in an acceptable confidence level or margin of error for its VM QA/QC work.

3. Conclusions

The Conclusion section shall summarize all findings that the Independent Evaluator detailed in the sections above. All findings must be supported by documented evidence which could be in the body of the report or in the Appendix section.

The IE reviewed and assessed all of PacifiCorp's listed initiative activities and conducted a thorough review of evidence through documentation review and field assessments. Many of these detailed reviews and assessments were bolstered by interviews with PacifiCorp staff responsible for the management, oversight, and implementation of the EC's wildfire mitigation programs as well as SMEs responsible for technical guidance and implementation. The IE also worked with PacifiCorp and Energy Safety staff to determine relevant materials critical to produce a statistically significant, where possible, and concrete review of PacifiCorp's WMP work performance.

The table below presents the IE findings supported by desktop and field inspection reviews of PacifiCorp evidence. Results and interpretations from the verification of QA/QC programs are found in Section 2.3 above. Findings associated with verification of funding are presented within Section 2.2.

The IE determined PacifiCorp is following its WMP in a substantial way. Except as otherwise noted, PacifiCorp is implementing its WMP initiatives as described in its WMP. Additionally, PacifiCorp is largely funding its programs appropriately, with some noted exceptions. Finally, PacifiCorp maintains a robust QA/QC program for its asset inspection activities, but the vegetation management QA/QC program could use more structure, similar to that developed for asset inspections. Additionally, the IE believes this program could be enhanced with a more comprehensive view of the WMP and centralized oversight of such programs, something that is currently in progress through initiatives to create a central database and other efforts noted during the review process to streamline and track progress toward WMP initiatives specifically.

Reviewed initiative findings are presented in **Table 1-1** in the Executive Summary above.

Appendix A. Data Requests

DR	Item No.	Item Requested	Initiative Identifier or "N/A"
1	1	2022 **Quarterly Data Reports Non-Spatial Data** (the non-public version, if applicable)	N/A
1	2	2022 **Quarterly Data Reports Spatial Data** (the non-public version, if applicable)	N/A
1	3	2022 **Annual Report on Compliance** (the non-public version, if applicable)	N/A
1	4	2022 **Quarterly Initiative Updates (QIU)** (the non-public version, if applicable)	N/A
1	5	2022 **Quarterly Advice Letters/Notification Letters** (the non-public version, if applicable)	N/A
1	6	Accounting of **Cost Data for Wildfire Mitigation Activities** • may come from any of the following WMP projected, actual, and recovered financials can be found in: General Rate Case work papers, Wildfire Mitigation Plan Memorandum Account (WMPMA), Fire Risk Mitigation Memorandum Account (FRMMA), Fire Hazard Prevention Memorandum Account (FHPMA), Catastrophic Event Memorandum Account (CEMA), the WMP, and associated quarterly reports (Quarterly Data Reports).	N/A
1	7	Vegetation Management clearance specification (i.e., GO 95).	N/A
1	8	Vegetation Management Plan/Program	N/A
1	9	Vegetation Management Plan supporting documentation (e.g., supporting procedures, processes, guidance, etc.)	N/A
1	10	Asset Management & Inspection Plan/Program	N/A
1	11	Asset Management & Inspection Plan supporting documentation (e.g., supporting procedures, processes, guidance, etc.)	N/A
1	12	Provide all vegetation management QA/QC program documentation that sets forth the parameters for QA/QC activities for vegetation management (e.g., policy, plan, programs, procedures, guidance documents, etc.)	N/A
1	13	Provide all asset inspection QA/QC program documentation that sets forth the parameters for QA/QC activities for vegetation management (e.g., policy, plan, programs, procedures, guidance documents, etc.)	N/A
2	1	Per the Q4 QDR the projected spend was $402,000 and actual spend is reported as $109,517. Is this correct, if so, please explain the underspend. For the reported spend, please provide documentation/evidence (list of projects/installations/etc. and their associated costs).	AH-01
2	2	Per the QDR, projected poles to be replaced was 2,158 and only 1,101 poles were reported as replaced. It is noted that there were supply chain constraints - please provide any additional information relating to the delayed pole replacements and any updates to timeline for 2023.	AH-02
2	3	Projected spend was reported at $272,000 and actual reports show $696,831 - can you provide documentation/evidence for the amount spent (project list/installations/etc. and associated costs)?	AH-03

DR	Item No.	Item Requested	Initiative Identifier or "N/A"
2	4	Projected installations were reported at 51 and only 44 relay/recloser replacements that were reported competed. It is noted that there were resource constraints on these projects - please provide any additional information relating to the delays and updated timelines for 2023, if available. For the 44 that were replaced, please provide project lists or installations.	AH-04
2	5	112 miles were projected to be completed in 2022, but only 62 miles of covered conductors were reported replaced. Please provide documentation (project list, location data, etc.) of the 62 miles replaced. Please provide any additional information regarding constraints in 2022 and updated timelines, if applicable.	AH-05
2	6	Please provide documentation or other evidence (work orders etc.) for the 9 facilities completed in 2022.	AH-06
2	7	It was projected that 2,269 projects would occur in 2022 and only 2,113 were completed. Please provide population data (project list/installations/etc.) for the completed projects. Please also provide any additional information regarding the delays and updated timelines, if applicable.	AH-07
2	8	Projected was $325,000 and actual spend was $355,709. Please provide evidence or other documentation of projects/list of activities for dollars spent on these programs.	AH-11
2	9	The QDR reports that the spend was over the projected amount - please provide any documentation or evidence of the dollars spent (e.g., list of projects, third party consultation, etc.).	CE-01
2	10	It is noted there was a delay related to resource constraints resulting in underspend on this project. Please provide additional information and updated timelines for the central repository. Please also provide information on the $51,660 that did occur in 2022 (e.g., list of activities, list of work orders, etc.).	DG-01
2	11	Please provide evidence of the PSP portal completion (e.g., screen shots, completed project sheet, work order, etc.).	EP-03
2	12	Please provide evidence of the Tabletop exercises held in 2022 (e.g., meeting minutes, attendance records, agenda, etc.)	EP-04
2	13	Please provide a list of the 8,466 distribution facilities inspected. This initiative is listed as "complete" in the Q4 QDR, please also provide description or attestation for the delta compared to a target of 8,777.	IN-01
2	14	Please provide a list of the 2,541 transmission facilities inspected. This initiative is listed as "complete" in the Q4 QDR, please also provide description or attestation for the delta compared to a target of 2,545.	IN-02
2	15	Please provide documentation or other evidence of the line miles inspected with IR technology (reported 701 miles).	IN-05
2	16	Please provide documentation or other evidence of the 4,576 poles/facilities inspected in 2022. This initiative is listed as "complete" in the Q4 QDR but is under the original target of 4,759 - please provide any additional detail for the delta.	IN-06

DR	Item No.	Item Requested	Initiative Identifier or "N/A"
2	17	Please provide any documentation or other evidence of the reported 46,314 distribution facilities inspected in 2022. This initiative is listed as "complete" in the Q4 QDR but is 24 facilities short of the target - please provide any additional information on this delta, if applicable.	IN-11
2	18	Please provide any documentation or other evidence of the reported 12,355 transmission facilities inspected in 2022. This initiative is listed as "complete" in the Q4 QDR but is 12 facilities short of the target - please provide any additional information on this delta, if applicable.	IN-12
2	19	Please provide a list of projects or programs utilized in the QA/QC to verify the reported spend of $37,445.	IN-14
2	20	Please provide a list of the 444 substations that were inspected in 2022.	IN-15
2	21	Please provide any documentation or evidence to show the projects/work performed/allocation for the spend of $580,494 (e.g., any watches or activations that were made during 2022).	PS-05
2	22	Please provide any documentation listing the 2022 total reported spend of $58,044 (e.g., projects, work order lists, etc.) Please provide details pertaining to the 2022 resource constraints which effected the total spend Please provide details pertaining to how the resource constraints have been resolved	RA-01
2	23	Please provide documentation of purchasing and installing 50 advanced weather stations in 2022 (e.g., projects, invoice, work order lists, etc.).	SA-01
2	24	Please provide documentation of purchasing and installing 2 (DFA) continuous monitoring sensors in 2022 (e.g., projects, invoice, work order lists, etc.).	SA-03
2	25	Please provide documentation of purchasing and installing 684 fault indicators for detecting faults on electric lines in 2022 (e.g., projects, invoice, work order lists, etc.).	SA-03b
2	26	Please provide any documentation listing the 2022 total reported spend of $118,306 (e.g., projects, work order lists, etc.) Please provide explanation/justification for 2022 total reported spend compared to the 2022 total projected spend (manufacturer discrepancy, supply chain issues, etc.) Please provide documentation/proof of fully installing Technosylva's WFA-E software in 2022 (e.g., projects, work orders, invoices, etc.) Please provide documentation/proof of PacifiCorp's completed 30-year historical data re-analysis (e.g., spreadsheets, graphics, and figures of 30-year data analysis).	SA-4
2	27	Please confirm if PacifiCorp identified technology to support and streamline vegetation inspection processes and if technology was implemented in 2022. Please provide explanation for underspend of $9,912 compared to target of $10,000 ($88 delta).	VM-08
2	28	Please provide a spreadsheet list of patrol inspections of vegetation around distribution electric lines and equipment activities for 2022.	VM-11

DR	Item No.	Item Requested	Initiative Identifier or "N/A"
2	29	Please provide us a spreadsheet list of patrol inspections of vegetation around transmission electric lines and equipment activities for 2022.	VM-12
2	30	Please provide us a spreadsheet list of the detailed inspections of vegetation around distribution electric lines and equipment for 2022.	VM-2
2	31	Please provide us a spreadsheet list of vegetation management activities or programs to achieve clearances around electric lines and equipment. If available, please provide the location data associated with the poles or line miles cleared.	VM-20
2	32	Please provide us a spreadsheet list of the detailed inspections of vegetation around distribution electric lines and equipment for 2022.	VM-3
2	33	Please provide a spreadsheet list of the reported 3,079 poles cleared of slash and vegetation.	VM-4
2	34	Please provide explanation of the underspend of $33,753 compared to target of $34,000.	VM-7
3	1	Confirm that no crossarm replacement (AH-3) was completed as part of this program in 2022.	N/A
3	2	Please provide spatial/location data for expanded pole clearing activities (VM-4) completed in 2022.	N/A
3	3	In location data received please verify that all locations listed show completed work. Multiple entries show a status of “planned”.	N/A
4	1	The Vegetation Management SOP document was reviewed but does not contain a detailed QA/QC program. Previous years noted that a formal program was in development - is there any documentation or other program available that has been developed since 2019? Or any other documentation or reference to QA/QC processes outside of the previously provide SOP?	NA
4	2	Request an interview with Jeff Keyser and Scott Liedtke to review evidence at earliest availability.	AH-01
4	3	It is noted that the actual crossarm replacement was higher than expected in 2022. In order to validate the spend, please provide some type of documentation/evidence for the reported spend in 2022. Examples can include a list of work orders or tracking sheet showing equipment costs and number of completed projects, etc.	AH-03
4	4	It is noted that the 2022 Target was 58, not 51 as the QDR and QIU have listed. Please provide documentation or other evidence (such as work orders) that 58 installations were completed.	AH-04
4	5	It is noted that a .kmz file was provided, however, this only shows where the facilities were completed. Please provide documentation, such as work orders, that shows evidence for the 9 facilities completed in 2022.	AH-06
4	6	Please provide documentation for the identified samples - evidence could include work orders, completed reports documenting work done, dated photos, or other documentation to demonstrate completion of the task.	IN-01
4	7	Please provide documentation for the identified samples in the sampling workbook - evidence could include work orders, completed reports documenting work done, dated photos, or other documentation to demonstrate completion of the task.	IN-02

DR	Item No.	Item Requested	Initiative Identifier or "N/A"
4	8	Please provide documentation for the identified samples in the sampling workbook - evidence could include work orders, completed reports documenting work done, dated photos, or other documentation to demonstrate completion of the task.	IN-06
4	9	Please provide documentation for the identified samples in the sampling workbook - evidence could include work orders, completed reports documenting work done, dated photos, or other documentation to demonstrate completion of the task.	IN-11
4	10	Please provide documentation for the identified samples in the sampling workbook - evidence could include work orders, completed reports documenting work done, dated photos, or other documentation to demonstrate completion of the task.	IN-12
4	11	DR 2 response provided a list of projects, but no associated spend. If available, please provide mapping or other documentation to show where/how the $37,445 was spent.	IN-14
4	12	Please provide documentation for the identified samples in the sampling workbook - evidence could include work orders, completed reports documenting work done, dated photos, or other documentation to demonstrate completion of the task.	IN-15
4	13	Please provide proof of materially delivering Phase 1 of the LRAM with Combined Scores at the ZOP level (Utility Risk Layer and Environmental Risk Layer)	RA-01
4	14	Please provide documentation of purchasing and installing 50 advanced weather stations in 2022 (e.g., projects, invoice, work order lists, etc.)	SA-01
4	15	Please provide a list of work orders or other project documentation to map the reported spend to work completed.	VM-08
4	16	Please provide documentation that demonstrates the 1169 miles of QA/QC completed in 2022. Please provide this in either spreadsheet (excel format). Please also provide results of QA/QC results and outputs (if separate from documentation of miles completed).	VM-13
4	17	Request a 30-minute interview with Brian King and Patricia Backlund to walk through tables provided and how to filter to find the necessary information. Preferably 5/4, or 5/5 - depending on availability. For VM-3: Unable to locate the spreadsheet DR 2_2022 Patrol Inspections (Fcode) Spreadsheet_psb.xlsx (no folder for item 32 and this does not seem to match the other spreadsheets provided). Will also discuss during interview.	VM-2, VM-3, VM-4, VM-11, VM-12, VM-20
4	18	Please provide a list of work orders or other project documentation to map the spend to work completed.	VM-7
5	1	Please provide any desktop evidence, if available, for the identified field sample. This can include work orders, signoff, etc.	AH-02
5	2	Please provide work orders or other documentation demonstrating the completion of the replacements for the sample set provided.	AH-03
5	3	Please provide any desktop evidence, if available, for the identified field sample. This can include work orders, signoff, etc.	AH-05
5	4	The maps provided do not show a completed date. Can you provide the associated work orders or documentation with a completion date?	AH-06

DR	Item No.	Item Requested	Initiative Identifier or "N/A"
5	5	Please provide any desktop evidence, if available, for the identified field sample. This can include work orders, signoff, etc.	AH-07
5	6	We do note the breakdown. Can you provide an example of an output corroborating the work?	CE-01
5	7	The evidence provided all seems to be from a single Tabletop Exercise on 4/28/22. Were any additional events held in 2022? If so, please provide that documentation as well.	EP-04
5	8	Please provide work orders or other documentation demonstrating the completion of the inspections in the sample set provided.	IN-05
5	9	If available, please provide the work orders in the attached DR. It is noted that there are several line items on a single work order, each unique order only needs to be submitted once.	PS-05
5	10	If available, can you provide a list of installations documentation that can be pulled from the DoForms collected for cFCIs and Field Maps (FCIs) from which we can sample a subset of the actual installation documents.	SA-03b
5	11	Please provide any desktop evidence, if available, for the identified field sample. This can include work orders, signoff, etc.	VM-20
5	12	Please provide any desktop evidence, if available, for the identified field sample. This can include work orders, signoff, etc.	VM-4
6	1	Received weather station purchase order documentation. Looking for further validation that the purchased weather stations were installed during 2022. If available, can you provide a spreadsheet of the 57 weather stations installed in 2022 that show lat/long location and date?	SA-01
6	2	Please provide the most recent SALO presentation for 2022 demonstrating the LiDAR studies were taking place and additional supporting documentation (e.g., invoices, work orders etc.) that demonstrates the amount PAC spent on the studies in 2022.	VM-08
6	3	For sampled list, provide supporting documentation (work orders etc.) that demonstrates that distribution patrol inspections were completed.	VM-11
6	4	For sampled list, provide supporting documentation (work orders etc.) that demonstrates that transmission patrol inspections were completed.	VM-12
6	5	For sampled list, provide supporting documentation (work orders etc.) that demonstrates that QA/QC was completed/performed in 2022.	VM-13
6	6	For sampled list, provide supporting documentation (work orders etc.) that demonstrates the acceptance and signed completion forms - same or equivalent to what was displayed during the interview on 05/23/2023.	VM-2
6	7	As per the interview on 05/23/2023 - please send us the "Statistics History Report" showing financials for 2022.	VM-20
6	8	Please provide the most recent SALO presentation for 2022 demonstrating the LiDAR studies were taking place and additional supporting documentation (e.g., invoices, work orders etc.) that demonstrates the amount PAC spent on the studies in 2022.	VM-7
7	1	Please provide associated work orders for the identified sample population in the sample workbook. If possible, please also provide the associated count of installations for each line item within SA-3b_2022 Fault Indicators_Population.xlsx so that we may verify the total reported count.	SA-3b

DR	Item No.	Item Requested	Initiative Identifier or "N/A"
7	2	For sampled list, provide supporting documentation (work orders etc.) that demonstrates the acceptance and signed completion forms - same or equivalent to what was displayed during the interview on 05/23/2023.	VM-3
7	3	Request a meeting between NV5 reps, Guidehouse, and SME contact(s) related to QA/QC for Grid Design and System Hardening to follow up on findings in the field verification.	AH-2, AH-5, AH-7
8	1	If available, please provide results of the customer survey conducted in 2022 and sample mailer for the following as described in the spend breakdown.	CE-01
8	2	Please provide documentation of audits performed in 2022 as entered into the Facility Point Inspection System and any other documentation to demonstrate that these inspections equate to 5% of the total inspections completed.	N/A

Appendix B. Line Clearing Criteria

VM-4 Criteria

1. PRC § 4292 – Clearing of not less than 10 feet in each direction from the outer circumference of pole or tower
2. CCR § 1254 – Minimum Clearance Provisions

   (a) At ground level - remove flammable materials, including but not limited to, ground litter, duff and dead or desiccated vegetation that will allow fire to spread, and.
   (b) From 0-8 feet above ground level remove flammable trash, debris or other materials, grass, herbaceous and brush vegetation. All limbs and foliage of living trees shall be removed up to a height of 8 feet.
   (c) From 8 feet to horizontal plane of highest point of conductor attachment remove dead, diseased or dying limbs and foliage from living sound trees and any dead, diseased or dying trees in their entirety.

Public Resources Codes and California Code of Regulations (VM-20)

1. PRC 4293 - Clearance in all directions between all vegetation and all conductors which are carrying electric current:

   a. For any line which is operating at 2,400 or more volts, but less than 72,000 volts, four feet.
   b. For any line which is operating at 72,000 or more volts, but less than 110,000 volts, six feet.
   c. For any line which is operating at 110,000 or more volts, 10 feet.

2. PRC 4294 – Clearing to obtain line clearance is ***NOT*** required if self-supporting aerial cable is used. Forked trees, leaning trees, and any other growth which may fall across the line and break it shall, however, be removed.

3. CCR 1256 – Minimum Clearance Provisions

   a. Minimum clearance required by PRC 4293 shall be maintained with the specified distances measured at a right angle to the conductor axis at any location outward throughout an arc of 360 degrees.

   b. Minimum clearance shall include:
      i. Any position through which the conductor may move, considering, among other things, the size and material of the conductor and its span length
      ii. Any position through which the vegetation may sway, considering, among other things, the climatic conditions, including such things as

foreseeable wind velocities and temperature, and location, height, and species of the vegetation.

4. CCR 1257 – Minimum Clearance Provisions

    a. The minimum clearance provisions of PRC 4293 are *NOT* required:
        i. Where conductors are:
            1. Insulated tree wire, maintained with the high density, abrasion resistant outer covering intact, or,
            2. Insulated self-supporting aerial cable, maintained with the insulation intact.
        ii. Except:
            1. Dead and decadent or rotten trees, trees weakened by decay or disease, leaning trees and portions thereof that are leaning toward conductor(s) and any other growth which may fall across the conductor and break it are removed or trimmed to remove such hazard.
            2. The trunk of any tree is not required to be removed when sound and living and is the supporting structure to which conductor(s) are attached.

General Order 95, Rule 35

Where overhead conductors traverse trees and vegetation, safety and reliability of service demand that certain vegetation management activities be performed in order to establish necessary and reasonable clearances the minimum clearances set forth in **Table 1, Cases 13 and 14**, measured between line conductors and vegetation under normal conditions, shall be maintained.

Case	**Nature of Clearance**	**Supply Conductors and Supply Cables, 750 - 22,500 Volts**	**Supply Conductors and Supply Cables, 22.5 - 300 kV**	**Supply Conductors and Supply Cables, 300 - 550 kV**
13	Radial clearance of bare line conductors from tree branches or foliage	18 inches	Calculated for these voltages	Calculated for these voltages
14	Radial clearance of bare line conductors from vegetation in Extreme and Very High Fire Threat Zones	48 inches	48 inches	120 inches

Appendix C. Quality Control Update

As noted in the write up for section AH-8, while doing field inspections for the initiative additional quality control issues were surfaced. These findings were reported to staff at PacifiCorp who took action to correct and provided follow-up evidence. The first issue was a pole that did not have an ID plate – see **Figure 3** for update. The second issue were two loose guy wires that had not been removed (these did appear to be needed and simply had been left attached to the pole, but not secured to the ground) – see **Figure 4** for the “before” and **Figure 5** showing condition after the removal.

Figure 3

Figure 4

Figure 5