

## **CPUC Data Request 1**

How does PacifiCorp prioritize and identify poles that need replacement? Please provide any supporting documentation, protocols, procedures, analysis and work papers.

### **Response to CPUC Data Request 1**

Please refer to Confidential Attachment CPUC 1.

As described in Table 12 and Table 13 on pages 34 and 35 of the company's California Wildfire Mitigation Plan (WMP), PacifiCorp performs a detailed inspection every five years and a pole test and treat inspection every 10 years on the company's overhead distribution and transmission assets within its California service territory, compliant with California General Order (GO) 95 and California GO 165.

#### Detailed Inspections (five year cycle)

Detailed overhead inspections, which include poles, are performed to identify conditions that do not conform with GO 95, GO 165, or any other applicable electric utility code, including conditions involving visible pole damage or decay. Any non-conformance identified during these inspections is recorded and subsequently classified and prioritized for correction consistent with GO 95 Appendix I, pages 1-6. Specifically, conditions involving damaged poles in need of replacement or repair are corrected within a timeframe consistent with GO 95, as described in Tables 14 and 15 on pages 36 and 37 of PacifiCorp's WMP. See PacifiCorp's Asset Management Policy Nos. 192 and 297, provided as part of Confidential Attachment CPUC 1.

#### Pole Test and Treat (10 year cycle)

Pole test and treat inspections are conducted on each transmission or distribution wooden pole to determine shell thickness and strength, identify potential non-conformance with GO 95 requirements, complete any required preservation treatment, and otherwise to identify poles in need of replacement or repair. Any condition identified during the pole test and treat inspection is corrected within 90 days of discovery. See PacifiCorp's Asset Management Policy No. 298, provided as part of Confidential Attachment CPUC 1.

The confidential information is submitted as confidential in accordance with GO 66-D.

Responder(s): Amy McCluskey

## CPUC Data Request 2

Regarding butt-cladding:

- a. What sort of material is PacifiCorp planning on utilizing for butt-cladding?
- b. What is the process for installing butt-cladding?
- c. Provide a photo of the butt-cladding PacifiCorp is planning on utilizing.
- d. How many poles does PacifiCorp anticipate on butt-cladding?
- e. How did PacifiCorp determine and prioritize which poles to butt-clad?  
Provide supporting documentation, work papers and analysis.

## Response to CPUC Data Request 2

- a. The company has an approved standard for creating fire resistance, which it titled “butt-cladding” in its standard EB331. See Attachment CPUC 2.

PacifiCorp has used Osmose’s Fire-Guard product which is a latex product, generally in combination with an aluminum shield (which is why it was titled butt-cladding). Recently, PacifiCorp has trialed the use of a product named Genics WFS Net, wherein an intumescent coated steel mesh product is installed which when exposed to high heat changes to protect the pole against the wood losing structural integrity. A video demonstrating the product can be seen at the weblink <https://www.youtube.com/watch?v=g8IW3uDwpxU>.

While the company has seen benefits with Fire-Guard in combination with butt-cladding, the company believes the Genics WFS Net mesh product reduces the potential for moisture being retained against the pole, which could result in groundline decay.

- b. PacifiCorp’s process for installing butt-cladding is reactive based on imminent fire threat conditions. Installation of butt-cladding involves close coordination with CalFIRE, the US Forest Service and the Oregon Department of Fire who help PacifiCorp identify the individual (mostly transmission) poles that are good candidates for butt-cladding based on active fire conditions posing an imminent threat to certain line sections.

As part of its Wildfire Mitigation Plan, the company plans to install butt-cladding on a proactive basis within certain corridors (either transmission or distribution) at risk within the high fire threat district. In implementing the proactive program, PacifiCorp intends to prioritize transmission lines, remote corridors, poles with key equipment attachments, and underbuilt poles (i.e., poles on which both transmission and distribution are collocated). PacifiCorp is in the process of completing a wide-scale deployment (across its six state service territory) of the Genics product. Further, PacifiCorp is in the process

of aligning its butt-cladding and pole replacement programs to ensure that long-term and short-term actions are taken appropriately.

- c. Below are photos of Genics WFS Net, the butt-cladding product PacifiCorp will use.



- d. PacifiCorp expects to butt-clad a relatively small number of poles proactively during 2019. The quantity of poles that PacifiCorp will butt-clad on a reactive basis depends on the number of imminent threat poles identified during the 2019 fire season.
- e. PacifiCorp has not yet identified which poles will be proactively butt-clad. As stated in its response to subpart (b), the company has rapidly clad those structures for an imminent threat as it coordinated fire response with suppression teams. PacifiCorp anticipates that during the 2019 fire season similar actions will be taken, but some amount of high priority proactive butt-cladding will occur. PacifiCorp is in the process of integrating pole replacement (wood-to-steel or other fire-resistant materials) with butt-cladding. The company expects to have these policies completed near the end of 2019's fire season and expects to update its October 2019 Fire Prevention

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CPUC Data Request 2

Plan submitted with the company's annual GO-166 filing with such details, as well as the company's 2020 wildfire mitigation plan.

Responder(s): Heide Caswell

Despite PacifiCorp's diligent efforts, certain information protected from disclosure by the attorney-client privilege or other applicable privileges or law may have been included in its responses to these data requests. PacifiCorp did not intend to waive any applicable privileges or rights by the inadvertent disclosure of protected information, and PacifiCorp reserves its right to request the return or destruction of any privileged or protected materials that may have been inadvertently disclosed. Please inform PacifiCorp immediately if you become aware of any inadvertently disclosed information.

### **CPUC Data Request 3**

Regarding PacifiCorp's proposal for reconductoring with insulated wire:

- a. Provide a copy of the Asset Hardening/Reconductor Plan, and all supporting documents and work papers.
- b. Does PacifiCorp plan on reconductoring all circuits to spacer cable in Tier 3 areas?
- c. How did PacifiCorp determine the areas to be reconducted as outlined in Table 18? Provide supporting documentation, work papers, and analysis.
- d. Does PacifiCorp plan on utilizing the same spacer cable tested in the pilot for all miles outlined in Table 18? Provide the specifications for this spacer cable, or any identified conductor PacifiCorp is planning on utilizing, including cost per circuit mile.
- e. How many miles of spacer cable did the 2011 pilot installation consist of? How much did this cost?
- f. In determining that the spacer cable pilot at the Tulelake area (page 41 of the WMP) was a success, what metrics did PacifiCorp use to make that assessment?
- g. Provide any outage data associated with circuits that have had spacer cable installed as part of PacifiCorp's pilot project, per page 41 of the WMP.
- h. Describe the other subsequent projects in which PacifiCorp has utilized spacer cable.
- i. How many miles of spacer cable does PacifiCorp have in operation within its California territory?
- j. Does PacifiCorp currently utilize any sort of insulated wire other than spacer cable? Does PacifiCorp plan on utilizing other insulated wire in future reconductoring projects? Provide the specifications for any other identified insulated wire.
- k. When does PacifiCorp plan on reconductoring? Provide an approximate timeline that includes the number and location of circuit miles planned by month.

### **Response to CPUC Data Request 3**

- a. PacifiCorp's Wildfire Mitigation Plan included unit costs by unit of measure and unit of measure quantities to support its high level plan.

In order to estimate costs for reconductoring with spacer cable, the company extracted overhead conductors that were in Tier 3 as well as any electrically-connected distribution circuits from Tier 3. See Attachment CPUC 3-1, which identifies those conductors and distances. The attachment includes Distribution-Tier 3, Distribution-EC (Electrically-Connected) and Transmission-Tier 3, which is designated in the first column of the spreadsheet.

- b. Yes. In addition, any circuits which are electrically-connected to Tier 3 circuits which are not able to be excised from the risks of Tier 3 will also be reconnected with spacer cable; these circuits are largely identical to the circuits identified in the company's Proactive De-Energization Zones (PDZs) depicted in PacifiCorp's Public Safety Power Shutoff plans.
- c. To determine the areas to be reconnected as outlined in Table 18, PacifiCorp did conductor traces for all circuits in the PDZs, which included those circuits within the PDZs as well as those circuits outside the PDZs served from substations located within the PDZs.
- d. Yes. Please see the attached specifications included as Attachment CPUC 3-2. The company has standardized on two sizes of covered conductor, 4/0 and 795. In Tulelake, the company installed 4/0, which was consistent with the ampacity of the conductor it replaced. The company's budgetary estimates are based on a cost estimate of \$200,000/mile plus the estimated cost of necessary pole replacements required to support the loading for the cable system.
- e. The Tulelake project was approximately six miles and cost approximately \$450,000. In this instance construction costs were reduced due to limited pole replacements and the fact that the company had the ability to construct the new pole line in a de-energized manner (as outage arrangements were made with the applicable irrigation customers). Spacer cable projects PacifiCorp has constructed since the Tulelake project was completed involved live line construction and averaged approximately \$200,000/mile, not including pole replacements.
- f. PacifiCorp evaluated the fault performance on this circuit prior to its reconnectoring against fault performance after the reconnector work was completed.
- g. Please see Attachment CPUC 3-3. The company includes a column to identify whether the outage occurred before or after the spacer cable project was completed. No circuit was completely reconnected, so no direct assessment of effectiveness can be concluded solely from this data.
- h. Other projects utilizing spacer cable have been completed in Portland, Pendleton, Astoria, Hood River, and Enterprise, Oregon and Walla Walla, Washington. Additional projects are being readied for construction in Roseburg, Oregon.

- i. PacifiCorp has piloted approximately six miles of spacer cable in its California territory.
- j. At this time PacifiCorp only uses insulated/coated conductor, also known as tree wire, where legacy installations in a few locations within PacifiCorp's service territory where only incidental contact is typical.

Because most of PacifiCorp's conductors within its service territory can experience both incidental contact (such as from hay, Mylar balloons or animals) and more substantial vegetation contact (such flying limbs or branches as well as fall-in or risk trees), the weak-link design method that is part of the aerial spacer cable system tends to be a better overall solution for PacifiCorp than tree wire. However, specific areas where, based on local conditions, only light incidental contact is expected, tree wire can be a sufficient mitigating measure.

- k. PacifiCorp intends to complete its first 10 miles of spacer cable installation late in the third quarter of 2019. During this time additional design engineering will be completed to accommodate more substantial mileages over the following years.

Responder(s): Heide Caswell

## CPUC Data Request 4

Regarding vegetation management:

- a. Provide any documents outlining PacifiCorp's procedures and protocols for vegetation management.
- b. Provide a timeline of the current vegetation management cycles and a timeline of proposed changes to these cycles.
- c. How does PacifiCorp maintain information about trees in their service area? What sort of database(s) does PacifiCorp use? Please provide an example of tree information stored in PacifiCorp's vegetation database.
- d. How does PacifiCorp utilize GIS for vegetation management practices?
- e. How does PacifiCorp share or plan to share this information to other entities?

## Response to CPUC Data Request 4

- a. As described in PacifiCorp's Transmission and Distribution Vegetation Management Program Standard Operating Procedures Manual (SOP Manual), provided as Attachment CPUC 4-1 (which is currently undergoing revision to reflect the enhanced vegetation management practices in California), the company's vegetation management efforts focus on two primary objectives: 1) pruning vegetation to maintain a safe distance between tree limbs and power lines, and 2) identifying and removing hazard trees. Like other utilities, PacifiCorp contracts with vegetation management service providers to perform pruning and tree removal work. PacifiCorp's existing vegetation management program is consistent with California General Order (GO) 95, Rule 35 (amended 12-21-2017) and Cal Fire Public Resource Codes 4292 and 4293.

To supplement existing programs, as described in PacifiCorp's wildfire mitigation plan (WMP), PacifiCorp's vegetation department will now remove additional overhang during off-cycle years, conduct annual inspections on every line, and expand clearing of potential hazard trees in and adjacent to the rights of way to enhance fire mitigation. These practices exceed current regulatory requirements and are being implemented to minimize vegetation related faults, including any faults which could be a source of fire ignition.

PacifiCorp's SOP Manual is currently being revised to reflect these recent enhancements. The company is targeting mid-year for these revisions to be complete.

- b. PacifiCorp has determined that, given the species within PacifiCorp's California service territory, vegetation management should be performed in four-year cycles, with mid-cycle assessments for fast-growing trees. In its enhanced vegetation management program described in its WMP, PacifiCorp

does not propose to modify these cycles. Rather, under its enhanced plans, PacifiCorp 1) adds an annual patrol within the high fire threat district (or any circuit electrically connected to a circuit in the high fire threat district), 2) expands removal of certain overhanging vegetation, and 3) provides for more substantial removal of potential high risk trees in high density vegetation areas within rights of ways (e.g., hazard trees and trees with the potential to grow into the facilities).

- c. PacifiCorp maintains records of trees it has managed in its vegetation management database. These records include trees pruned, trees removed and tree diameter, work codes, feeders, man hours, districts, states, foresters, and power companies. Information is tracked for each circuit for historical and payment purposes by week-ending dates and by years. PacifiCorp does not maintain a separate database of tree species and trees along its power lines. However, GIS databases augment the current vegetation database. Included as Attachment CPUC 4-2 is an example of the tree data that is recorded for vegetation management purposes.
- d. PacifiCorp currently uses GIS and supporting databases with regard to vegetation in a couple of different forms. First, vegetation cycles are provided geospatially to all operational staff using a company-developed map viewer. These cycles depict when and where work is scheduled to be conducted (including work performed by vegetation management personnel during annual vegetation/risk tree training exercises). Second, when outages occur that involve trees, whether deemed non-preventable (like a fall-in or risk tree) or preventable, an outage notification, provided geospatially, automatically routes to the appropriate forester for a site inspection to be completed. In addition, the company is exploring whether to use one or more of several federal vegetation databases currently available to support optimization of vegetation management work.
- e. Currently, local foresters collaborate with the US Forest Service and Cal Fire as inspections of vegetation are conducted throughout the system. With respect to its enhanced vegetation management practices set forth in the WMP, the company expects to share its findings with those stakeholders. Generally, a meeting with these agencies is held annually. PacifiCorp currently is evaluating the use of additional inspection technologies (such as the use of drones or LiDAR) and whether they can provide meaningful input to action plans. PacifiCorp is willing to provide insights related to these evaluations with those stakeholders, as well as its findings in connection with the eventual use of any of those technologies.

Responder(s): Kerry Favero

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CPUC Data Request 5

### **CPUC Data Request 5**

Have criteria for selecting assets to be replaced from wood to steel (p. 42) been developed? If so, provide documentation of that criteria.

### **Response to CPUC Data Request 5**

The criteria for selecting assets to be replaced from wood to steel have not been developed. That criteria is under development and according to the plan outlined in the company's Wildfire Mitigation Plan (WMP) would be completed during 2019, in time for inclusion in the next WMP. Concurrently PacifiCorp will align its butt-cladding plan with its wood-to fire resilient material plans to ensure these plans are executed in an optimal manner.

Responder(s): Heide Caswell

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CPUC Data Request 6

### **CPUC Data Request 6**

What pole restoration processes would PacifiCorp pursue per page 43 of the WMP?

### **Response to CPUC Data Request 6**

The company believes a variety of methods for pole restoration are appropriate, depending on pole condition. For example, phase raisers or pole stubbing measures can be taken (if groundline strength is diminished) or pole hole filling techniques can be used (where strength has been reduced in the communication worker zone).

Responder(s): Heide Caswell

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CPUC Data Request 7

### **CPUC Data Request 7**

Provide all outage data, in excel format, used to formulate Figures 12, 13, and 14 of the WMP.

### **Response to CPUC Data Request 7**

Please see Confidential Attachment CPUC 7.

The confidential information is submitted as confidential consistent with D.16-01-008, California Public Utilities Code Section 583, General Order 66-D, and D. 16-08-024.

Responder(s): Amy McCluskey

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CPUC Data Request 8

### **CPUC Data Request 8**

Did PacifiCorp consider replacing wood poles with composite poles? If so, why does PacifiCorp recommend selecting steel as its preferred replacement material?

### **Response to CPUC Data Request 8**

PacifiCorp is interested in the other California investor owned utilities' experience with using various types of non-wood poles for fire resistance. If better alternatives than steel exist, PacifiCorp will pursue those materials. PacifiCorp's experience with non-traditional materials has been limited to the use of fiberglass poles, which generally have been installed to prevent pole damage that otherwise would be caused by woodpecker feeding or nesting activities.

Responder(s): Heide Caswell

**CPUC Data Request 9**

List of names and contact information for program owners and personnel accountable for the plan.

**Confidential Response to CPUC Data Request 9**

See expanded table below to supplement Table 31 on page 79 of PacifiCorp’s Wildfire Mitigation Plan.

Program	Program Owner	Name	Contact
Wildfire Mitigation Plan	Vice President of Transmission and Distribution	[REDACTED]	[REDACTED]
Risk Management/Inspect & Correct Programs	Director of Asset Management	[REDACTED]	[REDACTED]
Operational Response	Director of South-West Wires	[REDACTED]	[REDACTED]
Asset Hardening/Fault Reduction/PSPS	Director of Transmission & Distribution Asset Performance	[REDACTED]	[REDACTED]
Vegetation Management	Director of Vegetation Management	[REDACTED]	[REDACTED]
Wildlife Programs	Manager of Environmental	[REDACTED]	[REDACTED]
Emergency Response/Situational Awareness	Manager of Disaster and Risk Planning	[REDACTED]	[REDACTED]
Communications	Vice President of Corporate Communications, Learning and Culture	[REDACTED]	[REDACTED]
	VP of System Operations	[REDACTED]	[REDACTED]
	VP Regulation	[REDACTED]	[REDACTED]
	Director, GIS, Mapping & Data	[REDACTED]	[REDACTED]

The confidential information is submitted as confidential consistent with California Public Utilities Code Section 583, General Order 66-D, and D. 16-08-024.

Responder(s): Amy McCluskey and Heide Caswell

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