

## **SED Data Request 1**

Regarding inspections of overhead conductor:

- a. At what frequency is PacifiCorp planning to enact for more in-depth inspections of overhead conductors in HFTD? Describe how these inspections are conducted, and include any supporting documentation, procedures, and protocols. This would include use of infrared, drones, etc.
- b. How does PacifiCorp inspect conductor degradation due to fault events?
- c. How does PacifiCorp use fault record data when determining the in-service condition of existing conductors?
- d. What equipment does PacifiCorp utilize to detect and record fault data? What data is recorded by this equipment (such as fault length, ampacity, etc.)?
- e. If annealing effects from fault conditions are detected on a line, how does PacifiCorp determine whether repairs are needed? Provide any supporting documentation, procedures and protocols.
- f. What kinds of corrective action does PacifiCorp implement for overhead conductors that were determined to have been annealed?

## **Response to SED Data Request 1**

- a. PacifiCorp proposes to perform more in-depth inspections of overhead conductors in the high fire threat district (HFTD)—above and beyond existing compliance-based and legacy programs described in Section IV.B of the company's California Wildfire Mitigation Plan (WMP)—through the implementation of enhanced transmission line inspections, enhanced line equipment inspections, and feeder zone inspections as described in Table 17 on page 38 of the company's California WMP. These inspections would include, among other measures described in the table, additional visual inspection of overhead conductor. The proposed programs will be conducted in the manner and at the frequency specified in the table below.

Program/Inspection Name	Description	Preferred Method for Completing	Proposed Frequency <sup>1</sup>
Enhanced Transmission Line Inspections	Additional inspection performed via either helicopter or UAS technology to collect Infrared (IR) and Radio Frequency (RF) data along transmission lines to identify sub-standard or loose connections and additional hot spots.	Helicopter	Annually
Enhanced Line Equipment Inspection	Detailed inspection of line capacitors, line regulators, line capacitors, and line reclosers, specifically focused on assessing leaks, bulging tanks, open fuse(s), and missing or incorrectly installed avian protector. Data collected, such as counter operations, will be used to identify potential system or equipment problems that could present fire risk.	Visual inspection performed by trained personnel on foot or inside a vehicle	Annually – Tier 2/3 HFTD Every 2 Years – Other Locations
Feeder Zone Inspections	Additional proactive patrol inspection of feeder zones with known system conditions, such as limited access and outage history, focused on identification and eradication of fire threats in Tier 2 and 3 geographic locations	Visual inspection performed by trained personnel on foot or inside a vehicle	Annual – Spring

PacifiCorp proposed performing this additional feeder zone patrol inspection once annually in the spring, with the intent of completing the inspection prior to the beginning of fire season each year. Should the industry or PacifiCorp's understanding of the start of fire season change, PacifiCorp may alter the timing of this additional patrol inspection to ensure it is performed before the start of fire season.

The frequency proposed for performing these programs/inspections is informed by industry knowledge and prudent utility practices currently known by PacifiCorp. PacifiCorp will use data collected during these new inspections to determine whether to changing the frequency of these inspections in the future will have material impact on further reducing fire risk. In addition, the method and technology used to complete each inspection, such as helicopter or foot patrol, may be evaluated and modified over time to maximize the effectiveness of these inspections.

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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.

- b. Excessive heat as a result of fault events can result in annealing and permanent deformation of small diameter copper and iron conductor. Field engineers are trained to visually identify this effect and, upon discovery, will work with both local operations and corporate staff to facilitate replacement as part of the company's reliability based programs. Proactive replacement is contemplated in section IV.C of PacifiCorp's California WMP.
- c. PacifiCorp does not use fault recorder data to specially influence the theoretical in-service condition of the company's conductors. Alternatively, PacifiCorp uses visual inspection to identify physical signs of actual damage or permanent deformation.
- d. PacifiCorp uses a combination of relays and reclosers within the company's California service territory to detect and record faults. Generally, these devices, depending on the make, model, and configuration, have the capability to record the relay state, current, time/date stamp, duration, voltage, and wave form characteristics to provide insight into the potential cause of the fault. However, not all transmission and distribution lines have equipment with data recording capability, and data is not always easily accessible.
- e. Please refer to the response to subpar (b), above.
- f. Depending on the nature and magnitude of the deformation, the overhead conductor may be replaced or repaired as part of the company's reliability programs. Proactive replacement has been contemplated in section IV.C of PacifiCorp's California WMP.

Responder: Amy McCluskey

R.18-10-007/ PacifiCorp

March 8, 2019

SED Data Request 2

## **SED Data Request 2**

Why is PacifiCorp not intending to deploy any HD cameras?

### **Response to SED Data Request 2**

PacifiCorp is collaborating with the Oregon Department of Forestry to pilot placement of HD cameras to support fire spotting activities. As the company gains experience with this pilot and gains understanding of key locations that may benefit other fire agencies, it will reevaluate the use of HD cameras in its Wildfire Mitigation Plan.

Responder: Heide Caswell

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### **SED Data Request 3**

Regarding weather stations:

- a. How many weather monitoring points does PacifiCorp intend to install before the next annual WMP filing?
- b. How many weather monitoring points does PacifiCorp intend to install before the 2019 wildfire season?
- c. Where is PacifiCorp planning on installing weather monitoring points before the next annual WMP filing?
- d. How did PacifiCorp analyze placement of the weather monitoring points mentioned in part (c)? Please include any supporting documentation and workpapers.
- e. What data will these points collect and monitor?

### **Response to SED Data Request 3**

- a. As indicated in subpart (b) below, the company plans to install nine weather stations (one for each circuit part that is included within the public safety power shut-off (PSPS) program) before the next annual Wildfire Mitigation Plan filing.
- b. At this time the company plans to place all nine weather monitoring stations into service by or around the beginning of the 2019 wildfire season.
- c. As indicated in subpart (a) above, PacifiCorp plans to install one weather station in each of the circuits included within the company's PSPS program.
- d. PacifiCorp is still in the placement study process to determine the exact location of each weather station.
- e. These stations are intended to collect basic weather data including temperature, relative humidity, wind speed and direction, and fuel moisture. At a minimum, these inputs will be used to calculate in near real-time Fosberg Fire Weather Index (FFWI) and Keetch-Byram Drought Index (KBDI), which are inputs in PacifiCorp's formula for determining when fire weather conditions weigh in favor of a PSPS event.

Responder: Heide Caswell

R.18-10-007/ PacifiCorp

March 8, 2019

SED Data Request 4

#### **SED Data Request 4**

How many reclosers within PacifiCorp's California system are enabled with SCADA (please include both number and percentage of total reclosers in PacifiCorp's California system)?

#### **Response to SED Data Request 4**

PacifiCorp interprets this question to address line devices. The company has 82 distribution line reclosers in its California service territory, and currently none of these reclosers are enabled with SCADA.

However, PacifiCorp is implementing communication and control technology on 16 distribution line reclosers (19.5%) and 15 distribution feeder breaker relays in select areas during 2019.

Responder: David Boese

### **SED Data Request 5**

Regarding the table labeled “Operational Response/Vegetation Management” on pages 11:

- a. What does “Fire risk tools & personnel” entail? Please provide supporting documentation and procedures.
- b. Please provide PacifiCorp’s procedures for live line restrictions.
- c. Please provide PacifiCorp’s procedures for remote construction fuel reduction/fire suppression tactics.

### **Response to SED Data Request 5**

- a. Pacific Power’s Emergency Management and system operation’s personnel monitor fire risks through the use of National Weather Service forecasts, watches, and warnings combined with the National Fire Predictive Services Agency and the National Geographic Area Coordination Center. Please refer to the Fire Preparedness and Response Plan included as Attachment E to PacifiCorp’s Wildfire Mitigation Plan (WMP).
- b. Live line restrictions are discussed in PacifiCorp’s Policy PCC-200, included as Attachment SED 5.
- c. Fire suppression is conducted through both physical mitigation (such as vehicle undercarriage cleaning) and operational mitigation (such as adhering to the Industrial Fire Protection Levels throughout our service territory). Please refer to PacifiCorp’s Fire Preparedness and Response Plan included as Attachment E to PacifiCorp’s WMP.

Responder: Jeff Bolton

R.18-10-007/ PacifiCorp

March 8, 2019

SED Data Request 6

### **SED Data Request 6**

Regarding Table 7 on page 29 of PacifiCorp's WMP, what is the difference between "Vegetation Clearance" and "Expanded vegetation management"?

### **Response to SED Data Request 6**

"Vegetation Clearance" is the required clearance consistent with California General Order (GO) 95, Rule 35. "Enhanced Vegetation Management" are steps the company is taking to go above and beyond Rule 35, including annual inspections on every line in Tiers two and three of the High Fire Threat District, expanded removal of certain overhanging vegetation on off-cycle years, and expanding removal of potential hazard trees within the rights of way.

Responder: Kerry Favero

R.18-10-007/ PacifiCorp

March 8, 2019

SED Data Request 7

### **SED Data Request 7**

What sort of lightning resilient infrastructure modifications is PacifiCorp planning on adopting?

### **Response to SED Data Request 7**

PacifiCorp is planning to use distribution lightning arrestors and additional system grounding to enhance system resilience to lightning strikes. The company is in the early stages of outlining options and methods to prioritize the placement of such equipment.

Responder: Heide Caswell

## **SED Data Request 8**

Please provide the procedures and supporting documents for the following, as outlined in Table 6 on page 28 of PacifiCorp's WMP:

- a. Enhanced Wildlife Protection Plan
- b. Wildlife Assessment Program
- c. Enhanced Operations Wildfire Mitigation Plan (assuming it is different from this WMP)

## **Response to SED Data Request 8**

- a. As described in its Wildfire Mitigation Plan (WMP), PacifiCorp proposes, to develop and implement a Wildlife Protection Plan (WPP) modeled after PacifiCorp's Avian Protection Plan (APP). A public version of the APP is provided as Attachment SED 8. PacifiCorp's APP is focused on compliance with applicable regulations pertaining to protected avian species and is provided as supporting documentation. The WPP would apply applicable practices and methodologies that are outlined in the APP to non-avian wildlife and non-protected avian species that may be a possible ignition source. These practices and methodologies are described at a high-level within the WMP and include tracking of wildlife incidents with PacifiCorp transmission and distribution infrastructure within the High Fire Threat District (HFTD), implementing corrective actions in response to wildlife incidents, identifying and prioritizing high risk infrastructure based on historical and ongoing collection of wildlife incident data, and implementing proactive retrofitting activities to minimize and/or eliminate risk of wildlife incidents over time within the HFTD.
- b. The wildlife assessment program is a component of the proposed WPP intended to identify infrastructure where there is a high risk for wildlife incidents based upon historical data, field risk assessment surveys, and analysis of other pertinent influencing factors, similar to what is currently conducted and described in the APP for protected avian species. Once identified, proactive retrofitting activities would be planned to be conducted in these focal areas. In addition, through tracking ongoing wildlife incidents, PacifiCorp would identify emerging focal areas or areas where there has been an increase in wildlife incident activity at a level warranting proactive retrofitting activities to be implemented. This would mean shifting resources from an area where proactive retrofitting activities are planned in the focal areas to the emerging focal area. This would help address the dynamic nature of wildlife incidents.
- c. The Enhanced Operations Wildfire Mitigation discussed further in PacifiCorp's California WMP on Table 8, page 30, addresses the need for the company to augment its tools, teams and practices as outlined in the plan. The plans are in

their infancy and no additional procedures have yet been developed. Cost estimates shown below are based on preliminary calculations.

Program	Description	Estimated Incremental Spend
Equipment	Tools/trailers/Skid-steer mower/drones/pulaskis/spark arrester installations on vehicles	\$300k
Personnel	3 FTE's (1 fire specialist, 2 line patrol inspectors)	\$450k
Procedures and Practices	Additional inspections/added patrols for fault or switching/helicopter flights/OT and stand-by implementation	\$500k
Documentation and Data Collection	Develop inspection/new construction and maintenance documentation and compliance	\$250k

Responders: Brian King and Larry Young

R.18-10-007/ PacifiCorp

March 8, 2019

SED Data Request 9

### **SED Data Request 9**

In Table 6, what are the “Operational Programs” in the “Not Classifiable” Outage Category? Please provide procedures and supporting documents.

### **Response to SED Data Request 9**

As described in Table 4 on page 25 of PacifiCorp’s California Wildfire Mitigation Plan (WMP), the “Not Classifiable” outage category includes outage events with unknown causes or multiple potential causes. This could include the circumstance where a fault is caused or escalated by temporary interference or external influences where, upon investigation and restoration, no physical evidence remains.

The operational programs which mitigate this risk include operational blocking of reclosers and fast curve sensitive relays as described in Section IV.A.1 of the WMP, the additional procedures and practices include in Table 8 on page 30 of Section IV.A.2 of the WMP, and both legacy and enhanced inspection and maintenance programs included in Section IV.B of the WMP.

Responder: Amy McCluskey

R.18-10-007/ PacifiCorp

March 8, 2019

SED Data Request 10

### **SED Data Request 10**

Is PacifiCorp aware of any studies to assess the effectiveness of the ten feet of defensible space required in PRC 4292 in protecting wooden poles from outside fire damage?

### **Response to SED Data Request 10**

PacifiCorp is unaware of scientific studies to explicitly identify the impact of defensible space; however, since 2007 the company has performed pole clearing on transmission poles in a portion of its system where range fires had historically occurred. The company has seen post-wildfire photographs of poles that successfully withstood range fires where ten feet of defensible space existed around these poles.

Responders: Heide Caswell and Kerry Favero

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