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Re: CA 2023-WMPs
OEIS-P-WMP_2023-PC-007

Please find enclosed PacifiCorp's response to OEIS data request 7.1.

If you have any questions, please call me at (503) 813-7314.

Sincerely,

 /s/
Pooja Kishore
Manager, Regulation

OEIS Data Request 7.1

Regarding PacifiCorp’s wildfire consequence calculation: PacifiCorp provides the following formula for its wildfire consequence calculation (PacifiCorp’s Revised 2023-2025 Base WMP – Clean, p 83):

The Wildfire Consequence calculation:

$$WC=(\text{SUM}((\text{Att}_1(\text{Percentile}*\text{Weighting})), (\text{Att}_2(\text{Percentile}*\text{Weighting})), (\text{Att}_3(\text{Percentile}*\text{Weighting})), (\text{Att}_4(\text{Percentile}*\text{Weighting})), (\text{Att}_5(\text{Percentile}*\text{Weighting}))))$$

Where:

WC=Wildfire Consequence

Att=Selected Attribute

Percentile=The selected percentile

Weighting=Weighting assigned to the attribute

- i. How many ignition points are in PacifiCorp’s territory?
- ii. Are mitigations made at the ignition point level or aggregated to a higher level (e.g., sub-segment, segment, circuit)?
- iii. How are variables (weather days) defined and how many are used in this calculation?
- iv. Explain how the percentiles are used and provide a simple supporting numerical explanation if necessary.
- v. What are the attributes used and how many are there in total?
- vi. What are the weights for each attribute and how is the weighting determined?

Response to OEIS Data Request 7.1

- i. The risk model includes 47,742 simulated ignition points in PacifiCorp’s service territory.
- ii. PacifiCorp currently applies mitigations at the sub-circuit level which may result in mitigations being applied to an entire circuit depending on risk model outputs and the scope of individual projects.
- iii. As discussed on page 77 of PacifiCorp’s Revised 2023-2025 Base Wildfire Mitigation Plan (WMP) – Clean:

“The historical weather days to best represent days when and where the weather and fuel conditions will most likely lead to increased risk of ignition. The possible historical weather days are between May 1-October 31, representing typical and/or statutory fire days in Pacific Power’s multistate operating areas. The model used to select the fire weather days is probabilistic and is not intended to provide a deterministic weather forecast.

- The worst weather days are selected using the following inputs:
- The Hot, Dry, Windy (HDW) Index
- Energy Release Component (ERC) for fuel conditions
- Wind Gusts Percentile (Gust)”.

There are 5,400 possible weather days, of these 300 were selected as the days used for the risk model calculation.

- iv. The 95th percentile was used to determine the severity of the weather days for the wildfire simulation (higher percentile = worse weather).
- v. Please refer to Table 1 below which provides the FireSight Attributes and the attributes selected for use in the Composite Risk score discussed beginning on page 75 of PacifiCorp’s Revised 2023-2025 Base WMP: – Clean:

Table 1: FireSight Attributes

Attribute	Description:	Used in the Composite Risk Score
Acres Burned	Number of Acres Burned	-
Population Impacted	Population Count Impacted	Yes
Buildings Threatened	Number of Buildings Threatened	-
Buildings Destroyed	Number of Buildings Destroyed	Yes
Fire Behavior Index	Fire Behavior Index	Yes
Rate of Spread	66 Feet/Hour	Yes
Flame Length	Feet	Yes
Total Road Miles	Total Miles (Major + Minor)	-
Fuel Model Majority	Majority Fuel in Each P[lexel]	Yes
Building Density	Building Density per P[lexel]	-
Number of Buildings	Number of Building per P[lexel]	-
Population Count	Population Count per P[lexel]	-
Fire Station Density	Density of Fire Stations	Yes
Terrain Difficulty Index	Terrain Difficulty per P[lexel]	Yes
Disability Population	Disability Population Ratio	Yes
Poverty Population	Poverty Population Ratio	Yes
Senior Population	Senior Population Ratio	-
Years Since Last Fire	Years Since Last Fire per P[lexel]	-

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.

- vi. Pacific Power models and calculates separate composite risk scores for wind-driven and fuel/terrain-driven wildfires to account for the unique characteristics of its service territory that spans both steep forested areas as well as high desert areas.

Please refer to Table 2 below which shows the inputs and weightings for the composite risk for wind-driven and fuel/terrain-driven wildfires. The column on the left shows the Risk Associated with Ignition Locations (RAIL) inputs with the selected input for the type of wildfire, the percentile selected and the weighting for each variable. The column on the right shows Risk Associated with Value Exposure (RAVE) inputs with the weightings for each variable, there are no percentiles for these inputs as they relatively static values, i.e. the number of fire stations or the number of disabled people in geographic area. RAIL and RAVE are discussed beginning on page 73 of PacifiCorp’s Revised 2023-2025 Base WMP – Clean:

Table 2 Inputs and Weightings for Composite Risk Calculation

RAIL Inputs and Weightings			RAVE Inputs and Weightings		
Input	Percentile	Weight (%)	Input	Percentile	Weight (%)
Wind-Driven Wildfires					
Fire Behavior Index	95	20%	Terrain Difficulty Index	N/A	25%
Fire Size Potential	95	20%	Fire Station Density	N/A	10%
Flame Length	95	20%	Fuel Model Majority	N/A	5%
Total RAIL Wind-Driven Weightings		60%	Total RAVE Wind-Driven Weightings		40%
Terrain-Driven Wildfires					
Rate of Spread	95	30%	Terrain Difficulty Index	N/A	10%
Population Impacted	95	25%	Disability Population	N/A	5%
Buildings Destroyed	95	25%	Poverty Population	N/A	5%
Total RAIL Fuel/Terrain-Driven Weightings		80%	Total RAVE Fuel/Terrain-Driven Weightings		20%

The inputs and percentages were selected based on inputs from internal subject matter experts and reviews of publicly available information about other utility wildfire risk models. Sensitivity analysis was performed to validate that the selected percentiles and weightings resulted in wildfire consequence score outputs that reflected location specific characteristics across the PacifiCorp service territory.

The composite score is calculated for each circuit segment using an equation that calculates a wind-driven and fuel/terrain-driven composite risk as shown below. The calculation for the combined risk score for each circuit segment, each composite score is on a scale of 0-1:

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2023-WMPs/ PacifiCorp
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Wind Driven Composite Risk + Terrain Driven Composite Risk
Largest Composite Score All Circuits

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