EXH. CAK-8
DOCKETS UE-22___/UG-22___
2022 PSE GENERAL RATE CASE
WITNESS: CATHERINE A. KOCH

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**Docket UE-22____** **Docket UG-22____**

SEVENTH EXHIBIT (NONCONFIDENTIAL) TO THE PREFILED DIRECT TESTIMONY OF

CATHERINE A. KOCH

ON BEHALF OF PUGET SOUND ENERGY

JANUARY 31, 2022

PUGET SOUND ENERGY

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I. STORM DEFERRAL

Emergency outage response activations occur each year. Puget Sound Energy ("PSE") prepares to respond to these events through annual training as well as an electric outage exercise. More than 800 employees have unique emergency roles to assist in this effort so outages are managed and restored in an efficient manner. Widespread outages are caused by high windstorm systems, heavy snow and ice, and can also be caused by wide area flooding, wildfires, or earthquakes.

Major storm events cause significant disruption in service and require PSE to focus substantial resources on timely storm repair. Timely storm response, repair, and resolution of outages are very important to customers and PSE. In PSE's service territory, storm events are not a theoretical concern. PSE's service territory is located in the Puget Sound Convergence Zone and is subject to frequent severe weather. Restoration efforts result in significant costs that PSE should be allowed to recover to further its goal of providing safe and reliable service to its customers. The events are beyond PSE's control and create variability and volatility in rates for customers if not deferred.

PSE is allowed to defer storm costs associated with days that exceed the IEEE Standard 1366 ("IEEE1366") definition of a major event day threshold value, T_{MED}, which is based on values of daily SAIDI for the previous five years. The major event day threshold is defined as 2.5 standard deviations from the average daily SAIDI.

Only incremental transmission and distribution electric system repair costs incurred by PSE during qualifying storm events may be deferred such as overtime pay for employees, outside contractor costs, and materials and material overheads to name a few. Straight-time labor costs associated with professional engineers that normally do not charge time to work orders, straight-time labor costs for material management personnel or fleet services personnel are all examples of costs that are not deferred.

II. 2019 WEATHER EVENTS

PSE and its customers experienced three IEEE1366 qualifying storm events during 2019.

A. January 6–10, 2019

High winds followed by snowfall impacted all PSE electric service regions in western Washington. The National Weather Service reported gusts in some locations of 60 miles per hour, with snowfall ranging from one to ten inches. PSE restored power to 346,766 customers as a result of 1,415 outage locations. The storm damaged 32 transmission line segments and 20 substations.[1] Seventy crews were actively working at the peak of the storm event. The event SAIDI was 241.62 with January 7 experiencing a daily SAIDI of 237.09, exceeding PSE's 2019 T_{MED} of 6.91 minutes for a qualifying event.

[1] Transmission and substation impacts are noted in this testimony understanding that the distribution infrastructure tied to the substation infrastructure was also damaged and repaired.

B. February 4–5, 2019

High winds followed by snow and continued cold temperatures impacted customers in PSE's northern regions of Whatcom, Skagit and Island counties. The National Weather Service issued a Winter Storm Warning for areas north of Everett. PSE restored power to 32,653 customers as a result of 211 outages. The storm damaged four substations. The event SAIDI was 6.98 with February 4 experiencing a daily SAIDI of 7.56, exceeding PSE's 2019 T_{MED} of 6.91 minutes for a qualifying event.

C. February 8–15, 2019

Western Washington experienced back-to-back winter storm events over this February period. The Washington State Governor, Jay Inslee, declared a state of emergency on February 8, citing a "severe winter storm forecast to produce extensive snowfall and ice." According to Jay Albrecht of the National Weather Service, this snowstorm was one of the most difficult weather events to forecast in his 32 years of experience. During this unprecedented storm event, PSE restored service to over 357,500 customers which caused 2,268 outages. There were 13 transmission lines and four substations that were impacted. Ninety crews were working to restore service. The event SAIDI was 172.30 with a daily SAIDI on February 9 of 61.23, exceeding PSE's 2019 T_{MED} of 6.91 minutes for a qualifying event.

III. 2020 WEATHER EVENTS

PSE and its customers experienced seven IEEE1366 qualifying storm events during 2020.

A. January 13–18, 2020

Winds, coupled with trees weighed down by wet, heavy snow, caused branches and limbs to snap and fall into power lines with the hardest hit areas in PSE's Northern, King and Thurston areas. The area of Skykomish in north King County experienced heavy snow with more than thirty fallen trees across the only east/west access road for the towns of Skykomish and Baring resulting in the longest outage time. PSE restored power to 103,018 customers as a result of 573 outage locations. There were 24 transmission line segments and 17 substations that were impacted. Twenty-five crews were working to restore power. The event SAIDI was 18.69 with a daily SAIDI on January 13 of 10.25, exceeding PSE's 2020 T_{MED} of 6.31 minutes for a qualifying event.

B. January 31–February 2, 2020

The January 31 qualifying event followed several back-to-back storm systems producing several weeks of heavy rains, with the National Weather Service predicting river flooding on several rivers in our northern service territory. As a result of the heavy rains, three transmission poles were damaged from a landslide. In total, four transmission line segments and two substations were damaged. The storm left 72,852 customers without power and a total of 411 outages. Twenty-eight crews were brought in to restore power. The event SAIDI was 26.95 with a daily SAIDI on January 31 of 22.22, exceeding PSE's 2020 T_{MED} of 6.31 minutes for a qualifying event.

C. February 7–8, 2020

Winter storms continued to wreak havoc in western Washington into the early part of February 2020 producing a series of wet weather systems, snow, high winds, and

river flooding. Snow and rain coupled with windy conditions resulted in 45,259 customers losing power during this storm event. A total of 37 crews worked to restore service of 219 outage locations. There were ten transmission line segments and two substations impacted. The event SAIDI was 9.75 with a daily SAIDI on February 7 of 9.82, exceeding PSE's 2020 T_{MED} of 6.31 minutes for a qualifying event.

D. February 23–24, 2020

A strong and wet weather system brought down trees and power lines across western Washington, leaving 41,117 customers in PSE's King County region without power as a result of 241 outages. PSE had 30 line crews working to restore power to customers. Damage was related to distribution lines only with no damage to transmission lines or substations. The event SAIDI was 7.26 with a daily SAIDI on February 23 of 8.42, exceeding PSE's 2020 T_{MED} of 6.31 minutes for a qualifying event.

E. September 7–10, 2020

There were 182,911 customers without power in this September event due to strong winds in PSE's western and southern regions, where wind gusts reached 50 miles per hour in some locations. High winds also helped to spread two brush fires in Pierce County, which damaged some of PSE's infrastructure in these locations. This event resulted in damage to 11 transmission line segments and eight substations. PSE had 53 crews working to restore power to 537 outage locations. The event SAIDI was 102.78 with a daily SAIDI on September 7 of 73.21, exceeding PSE's 2020 T_{MED} of 6.31 minutes for a qualifying event.

F. October 13–16, 2020

Strong wind gusts whipped through the Puget Sound region and down the coast, snapping branches and taking down utility poles resulting in outages to customers throughout PSE's service regions. Wind gusts ranged from 30 to 40 miles per hour throughout most of the region, with peak gusts at 48 miles per hour. PSE had 73 crews working to restore power to 213,091 customers. The storm resulted in 739 outages with 20 transmission line segments and four substations impacted. The event SAIDI was 44.10 with a daily SAIDI on October 13 of 44.02, exceeding PSE's 2020 T_{MED} of 6.31 minutes for a qualifying event.

G. December 21–23, 2020

The last in a series of December frontal systems brought heavy rain and a brief period of strong winds with gusts up to 40 miles per hour in some locations. The storm left 44,864 customers without power with one transmission line segment and five substations impacted. Approximately 30 crews worked to restore power for 195 outages. The event SAIDI was 5.93 with a daily SAIDI on December 21 of 7.18, exceeding PSE's 2020 T_{MED} of 6.31 minutes for a qualifying event.

IV. 2021 WEATHER EVENTS

PSE and its customers experienced seven IEEE1366 qualifying storm events between January 2021 and November 2021.

A. January 12–17, 2021

The first storm of 2021 started the year off with a bang, leaving 418,239 customers without power due to an atmospheric river that brought high winds, rain, and some snow throughout western Washington. The storm resulted in 1,871 outages with 72 transmission line segments and 33 substations sustaining damage. Wind gusts ranged from 40 to 70 miles per hour with the highest gust in Ferndale. Heavy rains caused flooding that downed trees and left debris-blocked roads in several areas. PSE had 118 line crews and 40 tree crews working around the clock to restore power. The event SAIDI was 338.20 with a daily SAIDI on January 12 of 54.72, exceeding PSE's 2021 T_{MED} of 6.38 minutes for a qualifying event.

B. February 13–14, 2021

A series of cold fronts moved across western Washington in the first part of February. The February 13 storm saw temperatures drop near or below freezing. The front brought with it freezing rain, snow, and wind. The National Weather Service issued a Wind Advisory for Snohomish and Skagit counties noting gusts up to 50 miles per hour. Snow levels ranged from 4 to 12 inches, with the heaviest snowfall in our southern regions. Forty-four crews worked to restore power to 32,904 customers. Six transmission line segments were impacted with no substation outages. The event SAIDI was 9.41 with a daily SAIDI on February 13 of 10.33, exceeding PSE's 2021 T_{MED} of 6.38 minutes for a qualifying event.

C. June 26–29, 2021

The weekend of June 25 saw hot and dry weather throughout the Pacific Northwest. The National Weather Service issued Extreme Heat warnings, with the hottest day predicted for Monday, June 28. Record temperatures broke throughout the day with the hottest temperature being recorded at 109 degrees in Olympia. The high temperatures on both Sunday and Monday brought strain to power lines and substations. Over the course of this event, 90,428 customers were without power associated with 629 total outage locations. Ten transmission line segments and seven substations were impacted over the course of the event. The event SAIDI was 16.00 with a daily SAIDI on June 27 of 7.60, exceeding PSE's 2021 T_{MED} of 6.38 minutes for a qualifying event.

D. September 17–19, 2021

September brought the first fall-like weather to western Washington bringing heavy rain, a high wind warning in northern areas, and wind advisories further south. Gusts ranged from 55 miles per hour in northern areas and 35 to 45 miles per hour in other areas. With much of the foliage still on trees, power outages are typical with fall storms. PSE sustained damage to lines due to tree limbs as well as some pole damage due to falling trees in some areas. During the course of this storm, power was restored to over 155,000 customers associated with 366 outage locations. Twenty transmission lines and four substations were impacted. Thirty-seven crews worked to restore power. The event SAIDI was 73.04 with the daily SAIDI on September 17 of 63.86, exceeding PSE's 2021 T_{MED} of 6.38 minutes.

E. October 24–27, 2021

October brought our second damaging fall storm to western Washington, bringing strong wind, heavy rain, river flooding, and thunderstorms to the area through the weekend. The National Weather Service issued high wind warnings and advisories across our service territory. Gusts ranged from 35 to 60 miles per hour. Over 170,000 customers were impacted over the course of this event through approximately 400 outage locations. Fifty-eight crews were activated to restore power for customers. The event SAIDI for this storm was 70.91 minutes with the daily SAIDI on October 24 of 53.89, exceeding the 2021 T_{MED} of 6.38 minutes.

F. November 9–10, 2021

The first damaging storm of November brought high winds and rain causing numerous outages system wide. November 9 would be the beginning of a series or heavy rain periods throughout western Washington which brought an atmospheric river to the area just five days later, leading into yet another damaging outage event. Two Operations bases were activated to respond to this storm including the Western and North King bases. The Emergency Coordination Center was not activated. Damage was focused on distribution wires due to tree branches in lines with no impact to transmission lines or substations. The event SAIDI was 8.23 minutes with a Daily SAIDI on November 9 of 9.96, exceeding the 2021 T_{MED} of 6.38 minutes.

G. November 14–18, 2021

An atmospheric river brought heavy rains, river flooding and gusty winds again to western Washington. Subsequently, Governor Inslee issued a Major Disaster Declaration

due to widespread flooding. Most of November brought prolonged periods of heavy, widespread rainfall during a 27-day period resulting in 8 to 16 inches of rain above average, with some areas getting as much as 45 inches. This persistent and abundant accumulation of rainfall led to severe and sustained flooding, overly saturated soils, and water-logged trees, resulting in landslides. Periods of strong wind gusts during this period led to the falling of now vulnerable trees. Flood waters remained pooled for weeks in portions of northwest Washington. In all, 20 rivers exceeded flood stage, with many reaching major flood stage levels multiple times. More than 230,000 customers were impacted associate with over 600 outage locations. Seventy-three line crews were activated for this event as a result of 29 transmission line segments and ten substations that were damaged during this event. The event SAIDI was 110.50 with a daily SAIDI on November 15 of 99.8 minutes, exceeding the 2021 T_{MED} of 6.38 minutes.

V. CONCLUSION

Q. Does this conclude your testimony?

A. Yes, it does.