



e-FILING REPORT COVER SHEET

COMPANY NAME: PacifiCorp d/b/a Pacific Power

DOES REPORT CONTAIN CONFIDENTIAL INFORMATION?  No  Yes If yes, submit a redacted public version (or a cover letter) by email. Submit the confidential information as directed in OAR 860-001-0070 or the terms of an applicable protective order.

Select report type:  RE (Electric)  RG (Gas)  RW (Water)  RT (Telecommunications)  
 RO (Other, for example, industry safety information)

Did you previously file a similar report?  No  Yes, report docket number: RE 107

Report is required by:  OAR 860-023-0161

Statute

Order

Note: A one-time submission required by an order is a compliance filing and not a report (file compliance in the applicable docket)

Other

(For example, federal regulations, or requested by Staff)

Is this report associated with a specific docket/case?  No  Yes, docket number: RE 107

List Key Words for this report. We use these to improve search results.

Major Event Report

Send the completed Cover Sheet and the Report in an email addressed to [PUC.FilingCenter@state.or.us](mailto:PUC.FilingCenter@state.or.us)

Send confidential information, voluminous reports, or energy utility Results of Operations Reports to PUC Filing Center, PO Box 1088, Salem, OR 97308-1088 or by delivery service to 201 High Street SE Suite 100, Salem, OR 97301.



825 NE Multnomah, Suite 2000  
Portland, Oregon 97232

February 8, 2022

***VIA ELECTRONIC FILING***

Public Utility Commission of Oregon  
Attn: Filing Center  
201 High Street SE, Suite 100  
Salem, OR 97301-3398

**RE: RE 107—PacifiCorp Major Event Report**

In compliance with OAR 860-023-0161, PacifiCorp d/b/a Pacific Power (PacifiCorp or Company) submits the enclosed report describing a major event that occurred December 25-29, 2021, due by a large-scale weather system that affected a large portion of the state, most significantly the southern portion.

PacifiCorp requests to exclude the outage information for this event from both its network performance reporting and customer guarantee failure payments.

If you require further information regarding this report, please contact Heide Caswell, Director, Asset Performance and Wildfire Mitigation, at (503) 813-6216.

Sincerely,

Shelley McCoy  
Director, Regulation

Enclosure

cc: Lori Koho/Administrator, Safety, Reliability, and Security Division

**Report to the Oregon Public Utility Commission**  
**Electric Service Reliability - Major Event Report**

Event Date: December 25-29, 2021

Date Submitted: February 8, 2022

Primary Affected Locations: Oregon

Primary Cause: Winter storm

Exclude from Reporting Status: Yes

Report Prepared by: April Brewer

Report Approved by: Heide Caswell, Carrie Laird

**Event Customer Impact and Outage Summary**

Event Outage Summary	
<b># Interruptions (sustained)</b>	524
<b>Total Customer Interrupted (sustained)</b>	30,152
<b>Total Customer Minutes Lost</b>	11,134,281
<b>State Event SAIDI</b>	17.86 Minutes
<b>CAIDI</b>	369
<b>Major Event Start</b>	12/25/21 12:00 AM
<b>Major Event End</b>	12/29/21 4:38 PM

From December 25–29, 2021, Oregon experienced a major event as the result of series of storms with impacted service across the state. While a large portion of the state experienced extreme weather, the most significantly impacted area was the southern portion. Medford was the first to experience widespread outages accounting for 25 percent of the customer minutes lost and 16% of all customer outages during the major event. The following day outages began to accumulate in Roseburg and Grants Pass. During the event Roseburg outages accounted for 36% of all customer minutes lost and 29% of all customer interruptions, while Grants Pass outages accounted for 25% of all customer minutes lost and 25% of all customer interruptions. Figure 1 below shows the impact of the storm across the state, which demonstrates the impact experienced by southern Oregon customers. The following information highlights the weather, as well as area outages and restoration details during the major event.

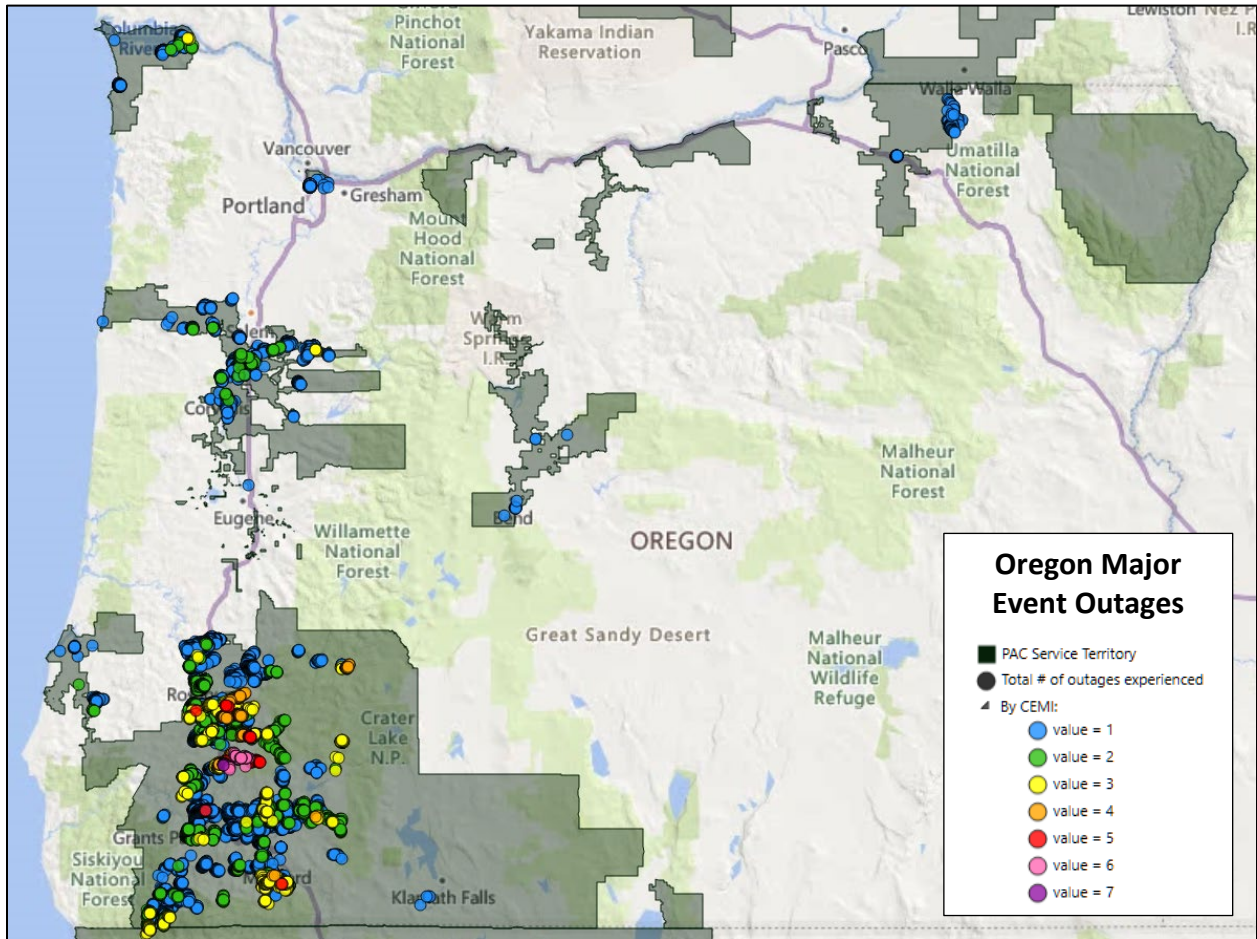
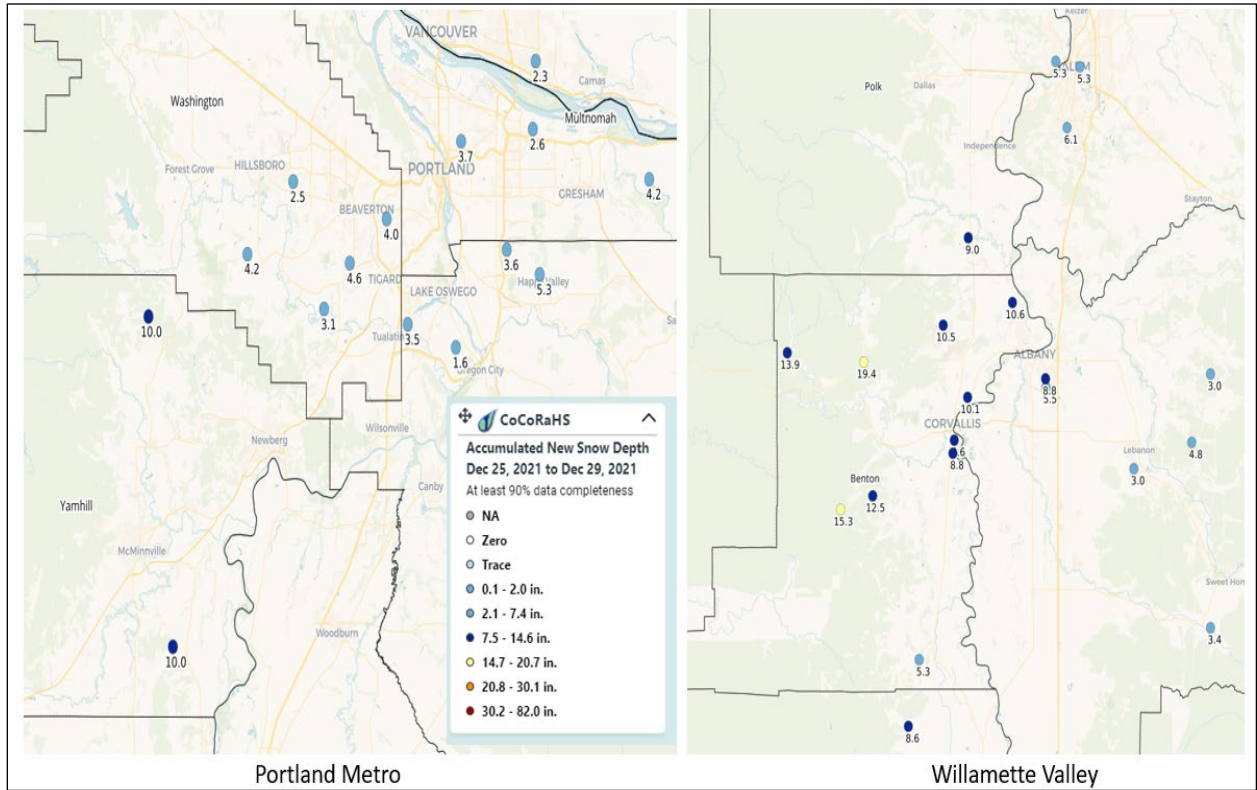


Figure 1: Oregon major event outages by number of outages experienced by a customer

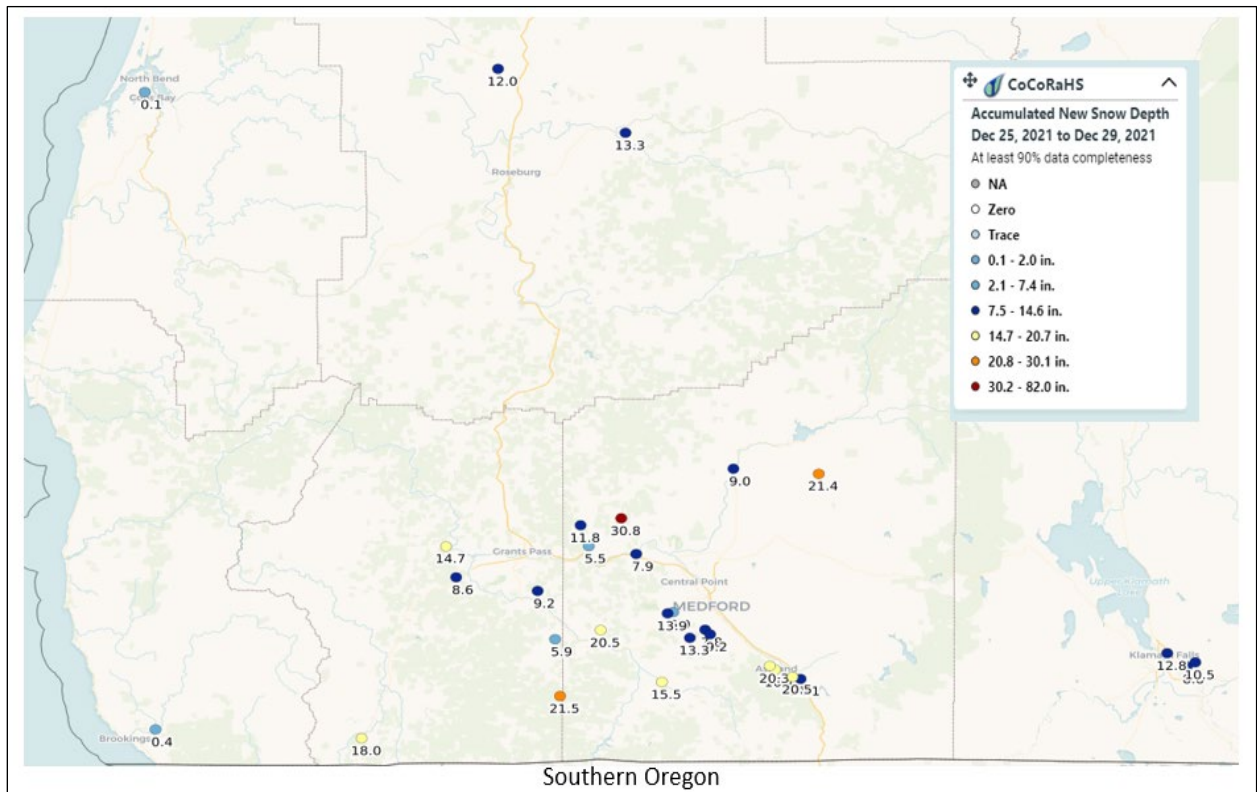
## Weather

A large-scale weather system impacted the state of Oregon beginning on December 25, 2021, when unusually cold air combined with Pacific moisture to yield snowfall over most of the state, even accumulating down to valley floors west of the Cascades. Snow levels quickly dropped from the lower foothill elevations on Christmas Eve to valley floors by late Christmas night. This snowfall event continued through December 29, 2021, with a persistent flow regime that provided optimal conditions for continued snowfall at lower elevations.

The focus of the most persistent snow showers was the I-5 corridor from Albany to the Oregon/California border. Storm total snowfall amounts ranged from about 1-4" on the valley floor in Grants Pass and Medford, 4-6" in the central and southern Willamette Valley, 6-10" in Roseburg, 8-14" in the Illinois Valley, and 10-18" in Ashland. The I-5 passes, as well as all mountain locations received 1-3 feet of snow. Much of the snow that fell in the lowest elevations was heavy and wet, which resulted in numerous vegetation-related impacts. Figures 2 and 3 show four-day snowfall totals for locations in Oregon. Wind was not deemed to be a significant factor in the number of outages that occurred with most stations west of the Cascades reporting gusts well below 25 mph, however it's possible the combination of the various environmental variables (i.e., moist snow in combination with relatively low wind speeds) played a role in the extent of the outages.



**Figure 2. December 25-29, 2021 Snowfall totals for the Portland Metro and Willamette Valley**



**Figure 3. December 25-29, 2021 snowfall totals for Southern Oregon**



## Area Outages and Restoration Details

On December 24, 2021, Medford, Oregon, began seeing snowfall in the area. At the time the snow had minimal impact on reliability, however after continued snowfall the situation changed dramatically and on December 25, 2021, the effects of the heavy snow began damaging vegetation, and impacting electric infrastructure. The heavy wet snow accumulated on trees and caused branches and trees to give way, downing lines across the area. As the weather continued, further and continual impacts to electric infrastructure was experienced. During the first day of the major event Medford experienced 38 outage events, the majority of which impacted smaller customer counts in the outskirts of the Medford operating area, shown in figure 4. Given the expanse of outages in the rural areas, compounded with heavy snow accumulation on roads, it became very difficult for crews to access and patrol lines with their service vehicles, therefore many areas were patrolled by foot to determine where repairs were needed. The company also utilized the two district utility terrain vehicles fitted with snow tracks to locate and deliver replacement equipment to damaged facilities. During the event, tree crews cleared interfering vegetation while line crews followed, making repairs and restoring customers. As snow continued to fall, trees along other sections of the circuit fell creating multiple trips to the same areas where downed vegetation had just been cleared and outages restored. Figure 4 shows the frequency of outages experienced at each transformer during the storm. Crews from the northern portion of the state were called in to assist with the restoration activities, as crews continued to restore power throughout the storm.

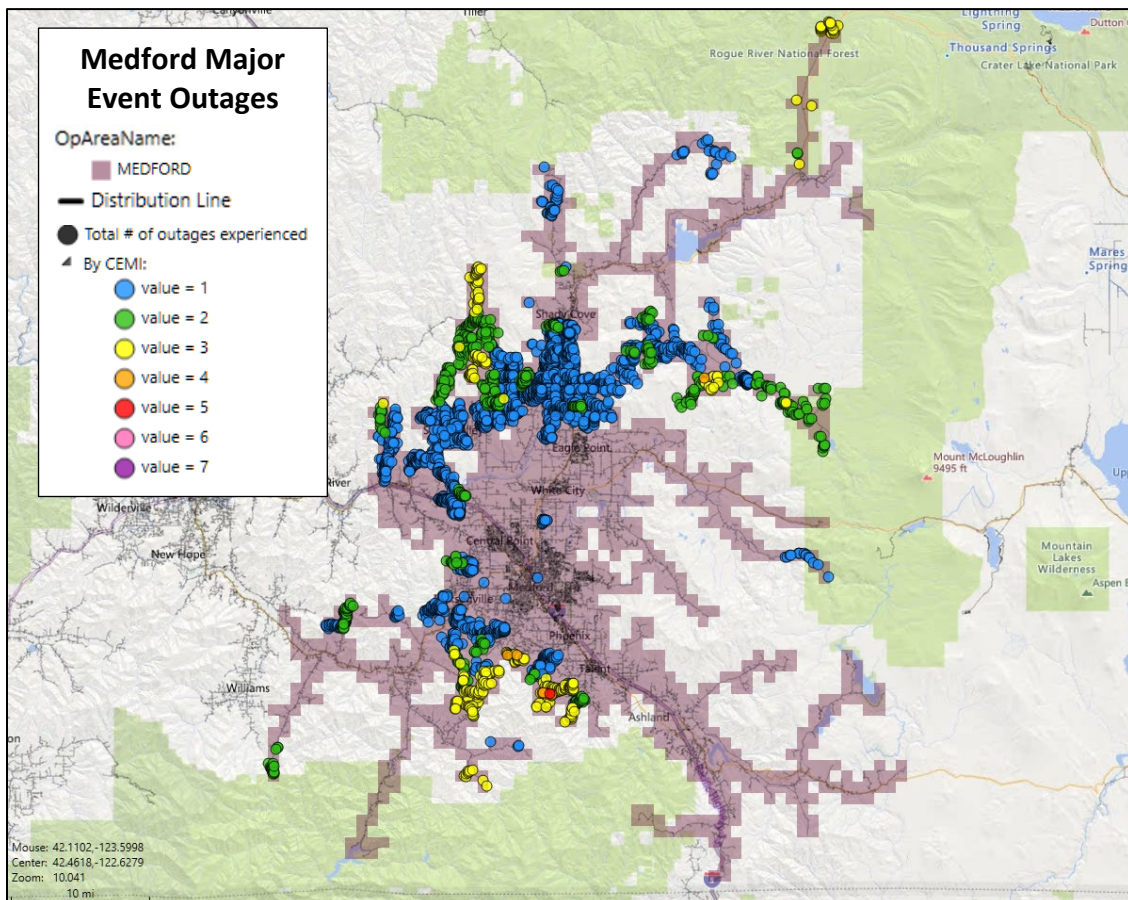


Figure 4: Medford major event outages by number of outages experienced by a customer

While Medford experienced the first wave of the storm, Roseburg and Grants Pass operating areas began experiencing similar issues beginning on the evening of December 25 with a significant progress of damage occurring on December 26 and 27. Figure 5 shows the sustained outage count per day by operating area. It is important to note that Medford, Roseburg, and Grants Pass, which are single operating areas, still greatly surpassed the outage totals of combined operating areas, which were also dealing with their own outage events due to weather.

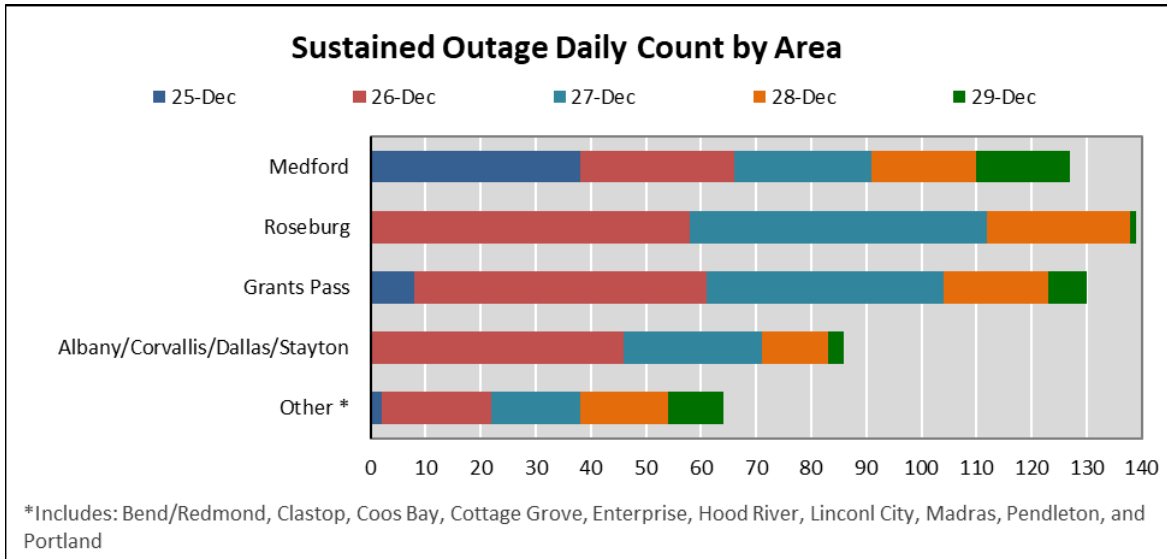


Figure 5: Sustained daily outage count by operating area

Both Roseburg and Grants Pass areas experienced a similar trend in the damages as occurred in Medford. Outages tended to occur in the rural location of the districts where high elevation had a greater accumulation of snow and less accessibility and clearing of roads. This required more foot patrols of areas which slowed restoration response times. Tree crews were dispatched in areas hardest hit to remove vegetation and clear the area for line crews, who spliced lines back together, and repaired damaged crossarms and insulators. While working during the ongoing storm Roseburg and Grants Pass also dealt with areas continuing to experience damage after restorations occurred. Figures 6 and 7 show separately the operating areas of Grants Pass and Roseburg outages and the frequency of reoccurring events.



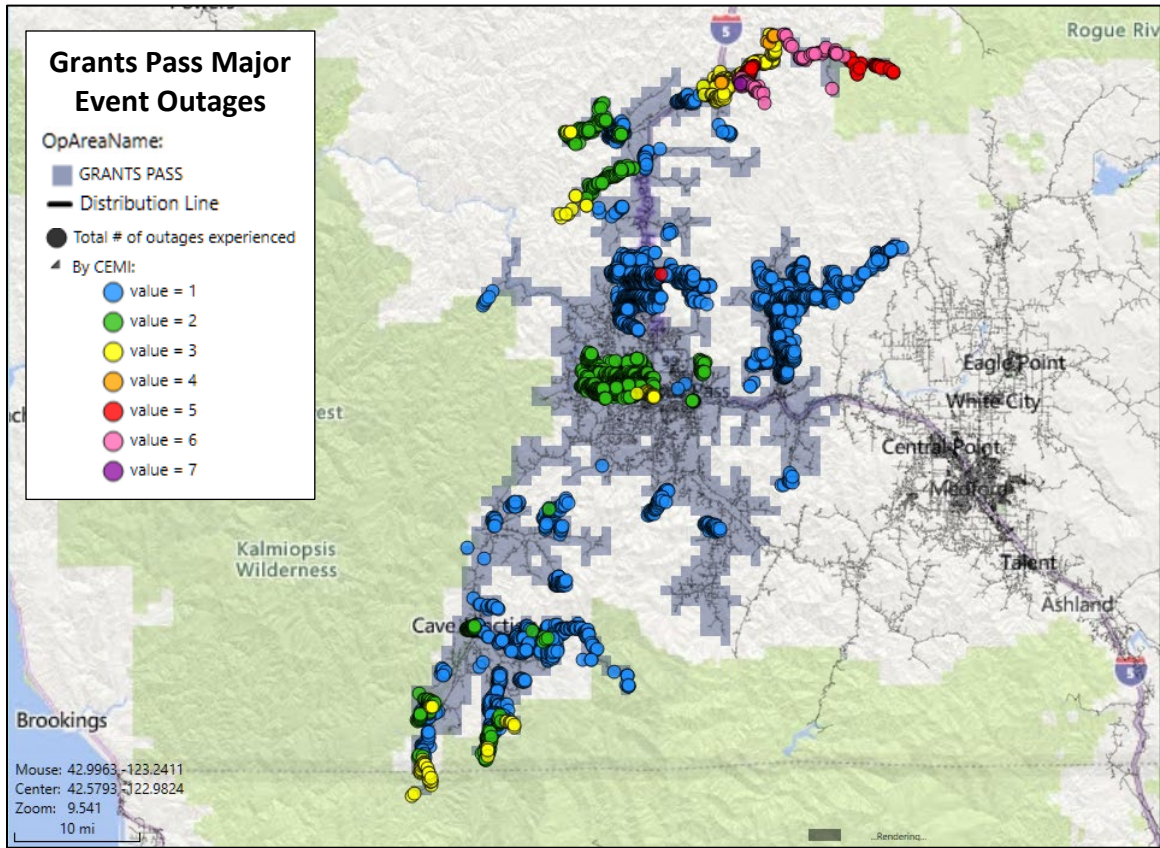


Figure 6: Grants Pass major event outages by number of outages experienced by a customer

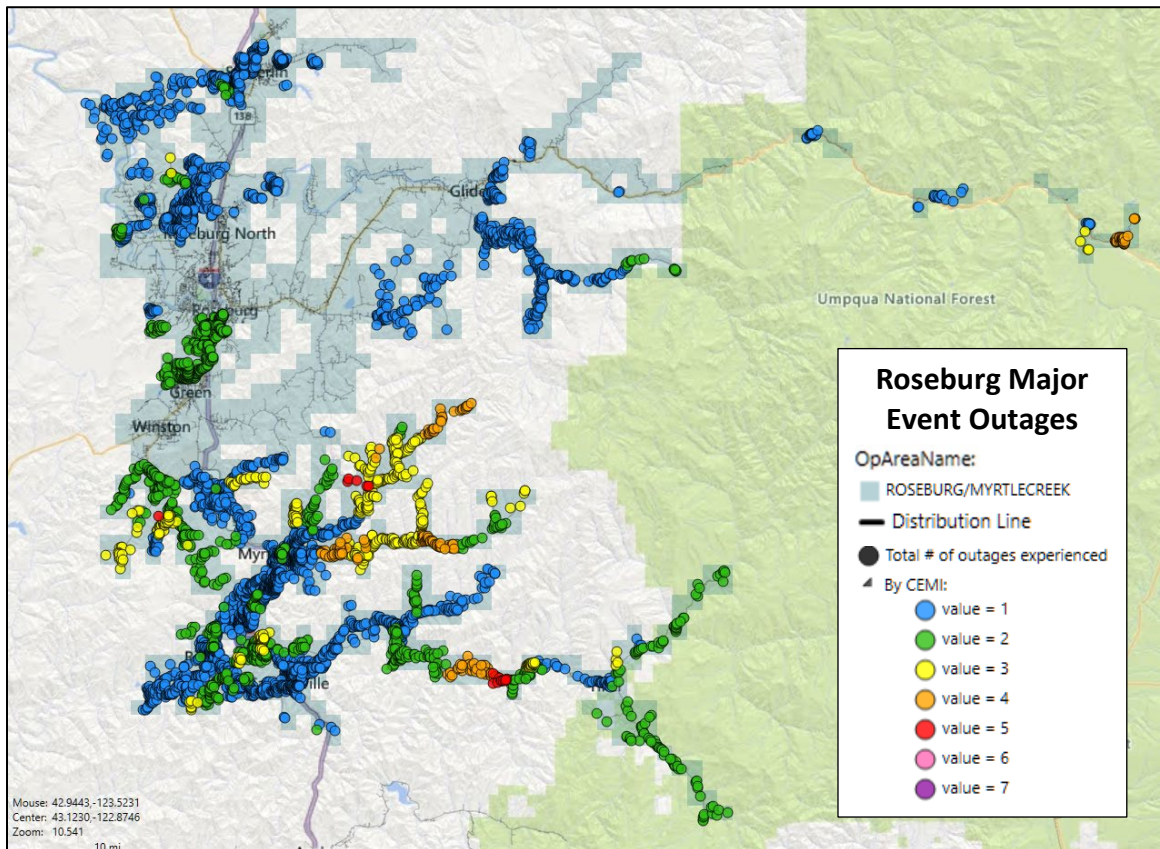


Figure 7: Roseburg major event outages by number of outages experienced by a customer



Overall, during the event 525 outages were experienced, affecting over 30,000 customers. In addition to the actual outages, crews also dealt with other trouble calls from customers where outages may not have occurred but warranted response. Crews worked to clear and patrol any reported trouble area. The number of customer outages peaked on December 26, 2021, at 8:85 a.m. with 5,632 customers out. Concurrent outage events peaked at 123 outages on December 27, 2021, at 12:16 p.m.

During the event, approximately 78% customers experienced one interruption, while 17% experienced two interruptions and the remaining 5% experienced three or more interruptions. These outages ranged in duration from just a few minutes to four days 12 hours, with an average event outage duration of six hours nine minutes. Figure 8 below outlines the percentage of customer minutes interrupted and customer outages experienced by operating areas.

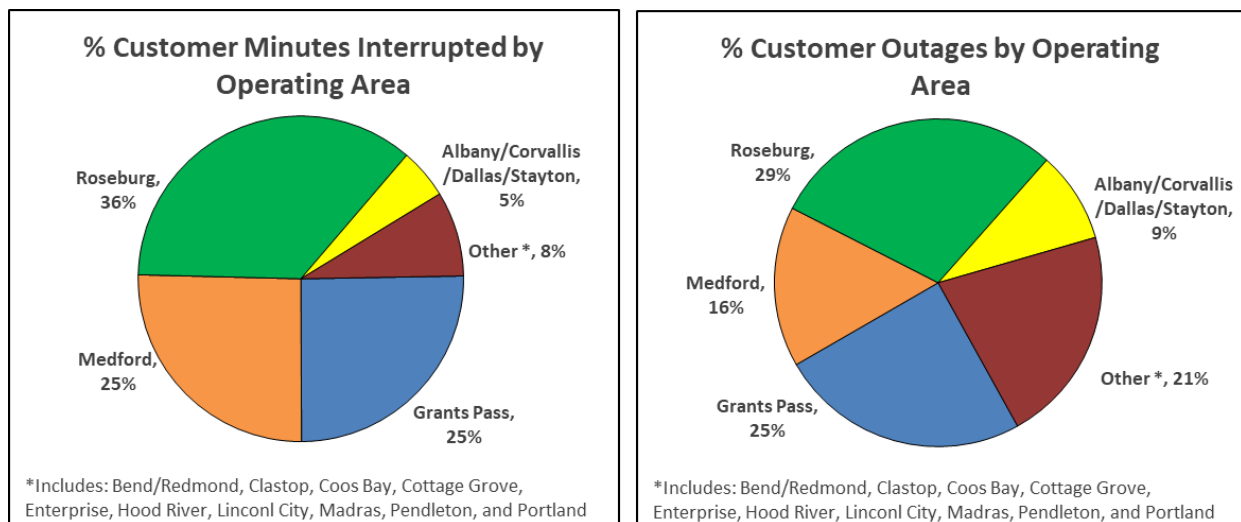


Figure 8: percent of customer minutes interrupted, and customer outages experienced by operating areas.

Figure 9 outlines the percent of customer minutes interrupted and customer outages experienced by outage cause. For the most part the percent of customer minutes interrupted verse the percent of customer outages align closely to each other, however loss of supply events which often may only result in an outage for a short period of time can have a significant impact on the volume of customers affected, as shown below.

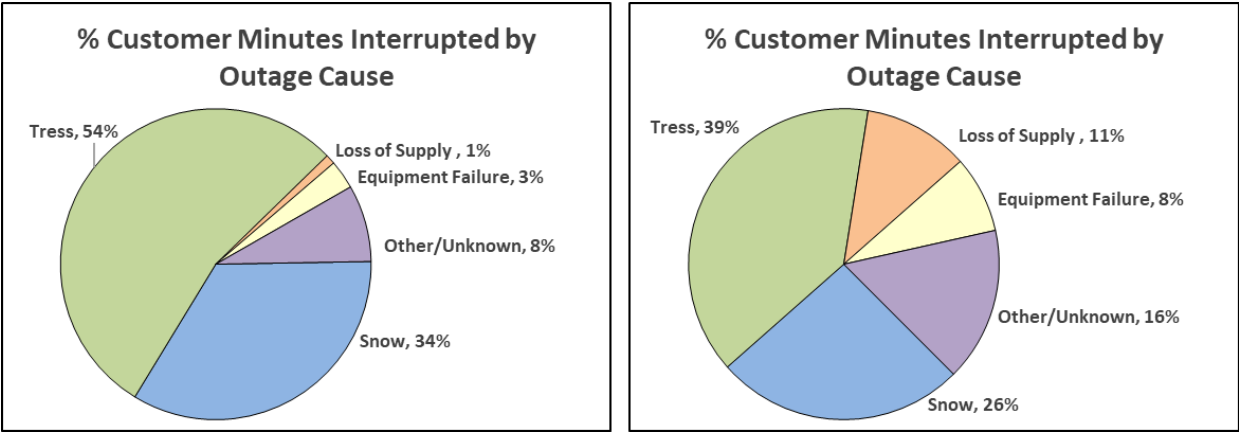


Figure 9: percent of customer minutes interrupted, and customer outages experienced by outage cause.

To date, there has been one commission complaint made regarding this major event. There have been no company complaints concerning this event.

The following table shows the amount of total customer outages experienced (separated as individual outage events), and the restoration duration intervals.

Table 1: Restoration Intervals by customer count

Restoration Intervals						
Total Customers Sustained	< 3 Hrs.	3 - 24 Hrs.	1-2 Days	2-3 Days	3-4 Days	4-5 Days
30,152	14,548	13,548	1,479	173	26	3

**Restoration Resources, Cost, and Damaged Equipment <sup>1</sup>**

Restoration work during the event was challenging due to the volume of outages, trouble calls, and weather conditions. Restoration efforts were slowed down due to heavy snow accumulation and having to patrol circuits by foot in addition to repeat patrols after restorations due to addition subsequent outages occurring on the repeat circuits. Figure 10 are photos taken during the event, which show some of the damages and access issue experienced during the event.

<sup>1</sup> Data provided represents specific system records for personnel, resources, and costs; and is specific to the event, inclusive of state delineation. However additional resources whose participation did not get individually captured in transaction recording systems were utilized during the event, thus the data presented here effectively understates the resources, including cost, involved in restoring the system to normal.



**Figure 10: Photos of damages and conditions experienced during the event.**

Over 492 personnel worked to clear downed trees and lines, and to make repairs following the winter storm, including Pacific Power linemen, tree trimmers, support staff, and contractors. In addition to personnel, over 25 poles, 71 crossarms, 2,182 line splices, 23 transformers, 549 insulators, and over 36,515 conductor feet were needed to restore power. Tables 2 through 4 outline the personnel, equipment and costs accrued during the event.



Table 2: Personnel resources during event

Personnel Resources			
Collector	3	Contract crewman	130
Estimator	16	Tree crewman	193
Estimator	16	Foreman	8
Substation crewmembers	2	Administrative	1
Flagging Crewmembers	6	Transmission	1
# Support staff	10	Transportation	9
Line crewman	97	Warehouseman	15
Field Manager	1	<b>Total</b>	<b>492</b>

Table 3: Materials used during event

Materials			
# Poles (D)	25	Line fuses	158
Cutouts	81	Line splices	2,182
Approx. Conductor Line (feet)	36,515	Guy wire	1,000
# Transformers	23	Arrester	10
# Crossarms	75	Bird Guard	30
Insulators	549	Helicopters	1

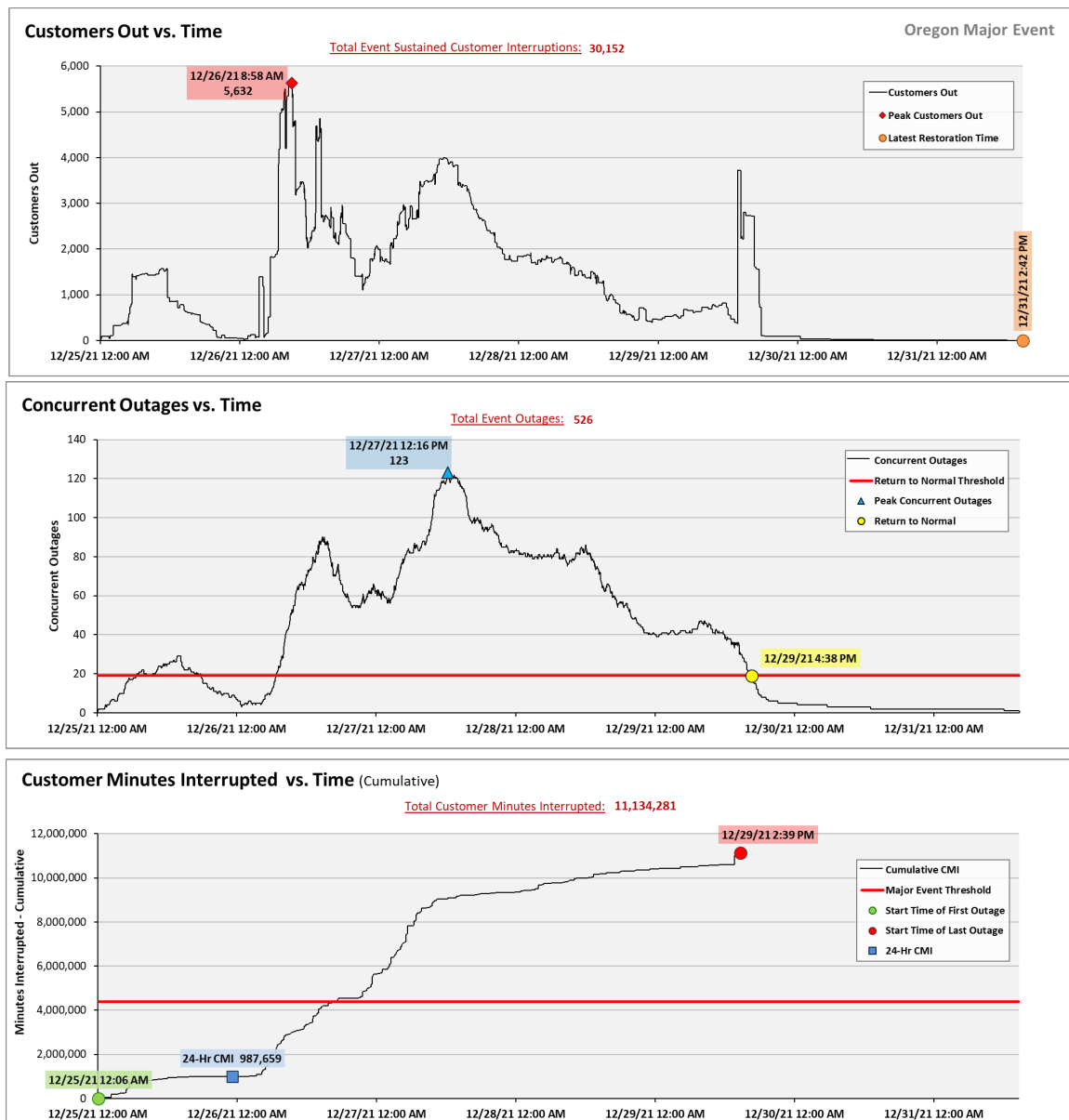
Table 4: Capital and expense cost accrued from the event

Cost					
Estimate \$	Labor	Contract Resources	Materials	Overheads	Total
<b>Capital</b>	\$53,711	\$172,494	\$52,668	\$31,247	<b>\$310,120</b>
<b>Expense</b>	\$1,478,081	\$2,162,055	\$34,599	\$20,620	<b>\$3,695,356</b>
<b>Total</b>	<b>\$1,531,792</b>	<b>\$2,334,549</b>	<b>\$87,267</b>	<b>\$51,868</b>	<b>\$4,005,475</b>

## Major Event Declaration

PacifiCorp designates these events and the consequences thereof a major event in accordance with OAR 860-023-0161. This is a major event because it exceeded the design or operating limits of the system, and the Major Event Threshold for Oregon as calculated annually by the company according to IEEE 1366-2003 methodology (commonly referred to as the 2.5 beta method). The company's 2021 Oregon reliability threshold is 4,375,975 customer minutes lost (7.02 Oregon SAIDI minutes) in a 24-hour period.

## Event Details



## SAIDI, SAIFI, CAIDI by Reliability Reporting Region

Please see the attached system-generated reports.

**PacifiCorp Major Event Report**  
Customer Analysis

	Oregon	Customer Analysis 12/25/21 through 12/29/21					Customers Restored by Intervals								Major Event Only - metric by operating area customer counts		
		Sustained Customers Off	% Sustained Customers Off	CML	Number of Sustained Interruptions	Customer Count	< 5 min	5 min - 3 hrs	3 hrs - 24 hrs	24 hrs - 48 hrs	48 hrs - 72 hrs	72 hrs - 96 hrs	96 + hrs	% Sustained Customers Restored in 3 Hours PS4	SAIDI	SAIFI	CAIDI
PC	PACIFICORP	30,152	1%	11,134,281	524	2,019,764	19,559	14,548	13,923	1,479	173	26	3	48%	5.51	0.015	369
PP	Pacific Power	30,152	4%	11,134,281	524	807,241	19,559	14,548	13,923	1,479	173	26	3	48%	13.79	0.037	369
OR	Oregon	30,152	5%	11,134,281	524	623,412	19,559	14,548	13,923	1,479	173	26	3	48%	17.86	0.048	369
OR	ALBANY	1,547	5%	260,761	34	32,925	-	1,115	432	-	-	-	-	72%	7.92	0.047	169
OR	BEND/REDMOND	60	0%	13,897	4	69,733	1	5	55	-	-	-	-	8%	0.20	0.001	232
OR	CLATSOP (ASTORIA)	1,921	8%	282,622	18	25,251	-	1,138	773	10	-	-	-	59%	11.19	0.076	147
OR	COOS BAY/COQUILLE	193	1%	38,894	14	26,382	-	116	77	-	-	-	-	60%	1.47	0.007	202
OR	CORVALLIS	618	2%	176,928	16	30,457	-	158	460	-	-	-	-	26%	5.81	0.020	286
OR	COTTAGE GROVE/J.CITY	7	0%	2,808	2	11,390	-	-	7	-	-	-	-	0%	0.25	0.001	401
OR	DALLAS/INDEPENDENCE	225	1%	82,029	16	15,858	-	57	168	-	-	-	-	25%	5.17	0.014	365
OR	ENTERPRISE	1	0%	93	1	5,531	-	1	-	-	-	-	-	100%	0.02	0.000	93
OR	GRANTS PASS	7,455	14%	2,807,418	126	52,543	3,764	3,125	3,940	330	58	2	-	42%	53.43	0.142	377
OR	HOOD RIVER	27	0%	9,078	3	9,595	-	2	25	-	-	-	-	7%	0.95	0.003	336
OR	KLAMATH FALLS	3,456	9%	439,616	7	38,015	-	2,599	857	-	-	-	-	75%	11.56	0.091	127
OR	LEBANON	54	0%	7,732	4	21,085	-	53	1	-	-	-	-	98%	0.37	0.003	143
OR	LINCOLN CITY	7	0%	1,242	2	12,080	-	1	6	-	-	-	-	14%	0.10	0.001	177
OR	MADRAS	5	0%	252	2	17,692	-	5	-	-	-	-	-	100%	0.01	0.000	50
OR	MEDFORD	4,777	5%	2,834,749	125	89,893	2,965	404	4,037	323	-	13	-	8%	31.53	0.053	593
OR	PENDELTON	698	5%	122,013	2	13,036	-	317	381	-	-	-	-	45%	9.36	0.054	175
OR	PORTLAND	32	0%	4,753	7	85,630	1,794	28	4	-	-	-	-	88%	0.06	0.000	149
OR	ROSEBURG/MYRTLECREEK	8,752	20%	3,994,562	126	42,940	10,111	5,153	2,654	816	115	11	3	59%	93.03	0.204	456
OR	STAYTON	317	2%	54,835	15	13,707	924	271	46	-	-	-	-	85%	4.00	0.023	173

\*Only current event specific metric impact shown. Does not include values from other events which may have occurred in other regions during the same time period.

Date*	Customer Interrupted by Date 12/25/21 through 12/29/21					Customers Restored by Intervals								Major Event Only - metric by state customer counts		
	Sustained Customers Off	% Sustained Customers Off	CML	Number of Sustained Interruptions	Average Customer Count	< 5 min	5 min - 3 hrs	3 hrs - 24 hrs	24 hrs - 48 hrs	48 hrs - 72 hrs	72 hrs - 96 hrs	96 + hrs	% Sustained Customers Restored in 3 Hours PS4	SAIDI	SAIFI	CAIDI
12/25/21	2,104	0%	987,659	46	623,412	2,918	250	1,841	-	-	13	-	12%	1.58	0.003	469
12/26/21	16,204	3%	4,644,009	199	623,412	4,891	9,379	6,312	414	85	11	3	58%	7.45	0.026	287
12/27/21	5,130	1%	3,734,413	151	623,412	9,955	1,385	2,758	921	66	-	-	27%	5.99	0.008	728
12/28/21	2,092	0%	1,046,258	90	623,412	1,795	761	1,163	144	22	2	-	36%	1.68	0.003	500
12/29/21	4,622	1%	721,943	38	623,412	-	2,773	1,849	-	-	-	-	60%	1.16	0.007	156

Data as of 1/24/22
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## PacifiCorp Major Event Report

### SSC by State Analysis

	Oregon	Event 12/25/21 through 12/29/21						Month 12/01/21 through 12/31/21						YTD FY2021 01/01/21 through 12/31/21					
		Major Events Included			Major Event Excluded			Major Events Included			Major Events Excluded*			Major Events Included			Major Events Excluded*		
		SAIDI	SAIFI	CAIDI	SAIDI	SAIFI	CAIDI	SAIDI	SAIFI	CAIDI	SAIDI	SAIFI	CAIDI	SAIDI	SAIFI	CAIDI	SAIDI	SAIFI	CAIDI
	<b>PacifiCorp</b>																		
	<b>PacifiCorp Major Events Report SSC by State</b>																		
PC	PacifiCorp	6.91	0.025	277	1.40	0.010	140	22.92	0.131	175	8.66	0.065	133	239.32	1.335	179	109.87	0.967	114
Comp	Power Company	14.76	0.040	371	0.97	0.002	402	35.17	0.174	202	10.74	0.064	167	397.92	1.711	233	103.68	0.916	113
ST	State	17.91	0.049	369	-	-	-	32.11	0.135	238	11.02	0.070	157	452.34	1.688	268	106.47	0.927	115
OR	ALBANY	0.42	0.002	169	-	-	-	0.53	0.003	161	0.11	0.001	137	58.38	0.146	399	7.38	0.078	95
OR	BEND/REDMOND	0.02	0.000	232	-	-	-	0.31	0.002	202	0.29	0.001	200	15.07	0.071	213	3.37	0.023	147
OR	CLATSOP (ASTORIA)	0.45	0.003	147	-	-	-	3.93	0.023	171	1.42	0.011	123	22.80	0.144	159	9.15	0.081	113
OR	COOS BAY/COQUILLE	0.06	0.000	201	-	-	-	0.29	0.002	160	0.21	0.001	149	9.50	0.055	172	4.30	0.034	125
OR	CORVALLIS	0.28	0.001	286	-	-	-	0.82	0.007	121	0.54	0.006	93	9.35	0.067	139	4.03	0.048	83
OR	COTTAGE GROVE/J.CITY	0.00	0.000	401	-	-	-	0.07	0.001	133	0.06	0.001	127	1.72	0.023	74	1.59	0.023	70
OR	DALLAS/INDEPENDENCE	0.13	0.000	365	-	-	-	0.30	0.003	110	0.17	0.002	71	67.85	0.081	843	2.21	0.043	51
OR	ENTERPRISE	0.00	0.000	93	-	-	-	0.36	0.001	307	0.36	0.001	307	0.88	0.005	185	0.82	0.005	180
OR	GRANTS PASS	4.52	0.012	375	-	-	-	6.72	0.023	295	2.22	0.011	205	27.23	0.324	84	13.60	0.137	100
OR	HERMISTON	-	-	-	-	-	-	0.63	0.002	287	0.63	0.002	287	1.34	0.011	124	1.29	0.011	121
OR	HOOD RIVER	0.01	0.000	336	-	-	-	0.33	0.001	271	0.32	0.001	269	1.63	0.009	186	1.53	0.008	182
OR	KLAMATH FALLS	0.71	0.006	127	-	-	-	1.74	0.011	165	1.04	0.005	208	9.41	0.068	138	8.11	0.059	137
OR	LAKEVIEW	-	-	-	-	-	-	0.00	0.000	79	0.00	0.000	79	0.60	0.004	149	0.60	0.004	149
OR	LEBANON	0.01	0.000	143	-	-	-	0.25	0.004	63	0.24	0.004	61	14.00	0.057	244	7.15	0.042	172
OR	LINCOLN CITY	0.00	0.000	177	-	-	-	1.25	0.013	99	0.65	0.008	82	7.37	0.065	114	5.07	0.054	94
OR	MADRAS	0.00	0.000	50	-	-	-	0.34	0.002	207	0.34	0.002	208	4.93	0.045	110	4.14	0.042	98
OR	MEDFORD	4.57	0.008	589	-	-	-	5.42	0.011	481	0.87	0.004	242	20.06	0.143	141	9.41	0.064	147
OR	PENDLETON	0.20	0.001	175	-	-	-	0.20	0.001	165	0.01	0.000	66	3.25	0.023	144	1.55	0.015	104
OR	PORTLAND	0.01	0.000	149	-	-	-	1.27	0.006	213	0.71	0.003	266	72.28	0.178	406	8.21	0.047	176
OR	ROSEBURG/MYRTLECREEK	6.41	0.014	456	-	-	-	6.88	0.018	389	0.47	0.004	129	13.52	0.089	151	6.93	0.074	94
OR	STAYTON	0.09	0.001	173	-	-	-	0.47	0.003	155	0.38	0.003	152	90.91	0.079	1,145	5.85	0.035	169
OR	WALLA WALLA	-	-	-	-	-	-	0.00	0.000	89	0.00	0.000	89	0.24	0.001	215	0.20	0.001	209

\*may include other regional major event exclusions during the same period. Operating areas are calculated by the state frozen customer count metrics.

Data as/of
<b>1/24/22</b>