

## 2008 Qualifying Storm Events

December 24, 2008

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## **Event Description**

#### Date of event

December 24, 2008

## **Event Type**

Wind and snow storm.

#### **Service Areas Affected**

This weather event impacted primarily King and Kitsap counties.

#### **Number of Customers Affected**

Approximately 44,565 customers were affected during over the course of this outage event.

## **Summary of System Impacts**

Total Number of Outages	421
Distribution Circuits Totally Out	20
Distribution Circuits Partially Out	401

Transmission Circuits Affected	2
Substations Totally Off-line	1

## **Mobilization Summary**

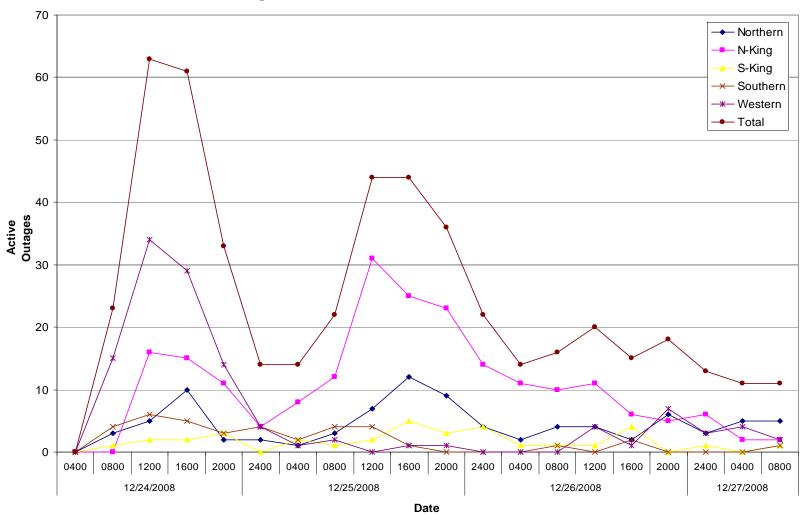
#### **Operating bases**

Base	Date Opened	Time Opened	Date Closed	Time Closed
N King	12/24/2008	14:30	12/26/2008	22:30
Kitsap	12/24/2008	08:00	12/24/2008	23:59

#### **Emergency Operations Center**

EOC	Date Opened	Time Opened	Date Closed	Time Closed	
EOC					

## Outage Events - Dec. 24, 2008 to Dec. 27, 2008



## Major Event Day - Qualification

#### IEEE 1366 Method

IEEE 1366 was established to present a set of terms and definitions which can be used to foster uniformity in the development of distribution service reliability indices, to identify factors which affect the indices, and to aid in consistent reporting practices among utilities. Also, it provides guidance for new personnel in the reliability area, and tools for internal as well as external comparisons. The Major Event Day definition was created as part of IEEE 1366 to allow for consistent calculation of reliability metrics between utilities, and enable more valid comparisons with other utility reliability metrics.

#### **IEEE Major Event Day Calculation (2.5 BETA METHOD)**

- 1. A threshold on daily SAIDI is computed once a year, following year end.
- 2. Assemble the 5 most recent years of historical values of SAIDI/day.
- 3. Discard any days in the data set that has a SAIDI/day of zero.
- 4. Find the natural logarithm of each value in the data set.
- 5. Compute the average Alpha and the standard deviation (Beta) of the natural logarithms computed in step 3.
- 6. Compute the threshold Tmed where Tmed = exp(Alpha + 2.5 \* Beta)
- 7. Any day in the next year with SAIDI > Tmed is a major event day.

Puget Sound Energy's Major Event Threshold for 2008: 7.36 Minutes

#### Qualified Events - 2008

#### **Current Event - Calculation Detail**

			Daily SAIDI -
	Total Customer	Average Customer	<b>Customer Minutes</b>
<b>Event Date</b>	Minutes	Count	/Customer Count
12/24/2008	7,927,806	1,074,461	7.38

#### Cumulative list of events that have qualified

Date(s)	T-med Score	O&M – Deferrable Accumulation
06/09/2008	10.54	\$764,542
12/20/2008	28.93	\$6,235,458
12/24/2008	7.38	\$0

## Event Restoration – Cost Summary

## **Restoration Cost Detail by Qualifying Event**

Date	Qualified Events Deferred Account	Capital	C&D Costs Recoverable from Direct Billings (Costs Not Yet Billed)	O&M – Not Deferrable	O&M – Deferrable Accumulation	Total O&M	Total
06/09/2008	\$0	\$26,585	\$0	\$58,475	\$764,542	\$823,017	\$849,601
12/20/2008	\$638,128	\$279,670	\$0	\$204,908	\$6,235,458	\$6,440,366	\$7,358,164
12/24/2008	\$1,594,831	\$79,049	\$0	\$55,476	\$0	\$55,476	\$1,729,356

## YTD Storm Restoration Cost Detail - Through December 24, 2008

Qualified Events Deferred Account	Capital	C&D Costs Recoverable from Direct Billings (Costs Not Yet Billed)	O&M – Not Deferrable	O&M Deferrable Accumulation	Total O&M	Total
\$2,232,959	\$385,304	\$0	\$318,859	\$7,000,000	\$7,318,859	\$9,937,122

## **Detail Documents**

Restoration Cost Detail – Current Event

Detailed List of Distribution Circuits with Outages

Terms, Codes & Definitions Used on Detail Reports

Newsprint Media Coverage

## **Restoration Cost Detail – Current Event**

				Puget Sou									
			Dece	ember 24, 2008 Stor	m D	amage R	epai	r Costs					
	ifying Events rred Account	Capital				C&D Recoverable from Direct Billings (Costs Not Yet O&M - Not Billed) Deferrable			O&M - Deferrable Accumulation				Total
Labor													
ST		\$	261				\$	4,667		\$4,667	\$4,928		
OT							\$	130,351		\$130,351	\$130,351		
Total Labor	\$0	\$	261	\$0		\$0	\$	135,018		\$135,018	\$135,279		
Labor OH		\$	157				\$	57,532		\$57,532	\$57,688		
Materials		\$ 1	6,166				\$	28,753		\$28,753	\$44,918		
Contractors Other Direct		\$ 5	52,921				\$	1,328,672	9	\$1,328,672	\$1,381,593		
Charges							\$	12,979		\$12,979	\$12,979		
Fleet		\$	27				\$	31,878.19		\$31,878	\$31,906		
Other Assessments		\$	9,518		\$	55,476		\$ (0)	\$	55,476	\$ 64,993.65		
Deferred Expenses	\$ 1,594,831							(\$1,594,831)	(\$	1,594,831)	\$ -		
	\$ 1,594,831	¢	79,049	\$0		\$55,476	\$			\$55,476	\$1,729,356		

**IEEE-1366 - Detailed List of Distribution Circuits with Outages** 

						Equip-	Cust	Cust
Notification	Date	Time	Circuit	Area	Cause	ment	Outs	Mins
E993294237	12/25/2008	0:41:00	HOB-15	EBI	EF	000	65	16,510
E116604757	12/25/2008	0:51:00	GWR-16	EBI	TO	000	406	120,203
E761632935	12/25/2008	0:53:00	FAL-15	EBF	TO	000	1,315	473,876
E315934044	12/25/2008	1:18:00	LLT-16	EBD	ТО	000	1,048	180,256
E230895410	12/25/2008	2:02:00	LMC-23	EBF	TO	OCO	127	30,480
E476948186	12/25/2008	2:12:00	COT-13	EBD	TF	OCO	2	336
E113362643	12/25/2008	2:24:00	SBE-26	EBE	TO	OCO	6	1,338
E637602524	12/25/2008	2:48:00	BAR-15	ECC	EF	OTF	1	451
E688082449	12/25/2008	3:03:00	MIR-17	EBF	TO	OCO	5	1,485
E121695588	12/25/2008	3:38:00	DUV-13	EBD	TF	OCO	66	13,332
E277246921	12/25/2008	3:40:00	DUV-12	EBD	TF	OCO	20	3,960
E823721334	12/25/2008	3:58:00	HAM-15	EAC	TF	OCO	1	1,892
E787853731	12/25/2008	4:09:00	LLT-17	EBD	TO	OCO	963	790,623
E194536010	12/25/2008	4:22:00	PET-16	EAC	EF	OTF	1	82
E310683037	12/25/2008	4:32:00	ROC-17	ECC	TO	OCO	41	22,058
E371937502	12/25/2008	5:09:00	ROC-16	ECC	EF	OCO	15	11,174
E127190246	12/25/2008	5:13:00	BRS-24	EAC	TO	OCO	11	6,104
E380693497	12/25/2008	5:44:00	KIN-24	ECE	TF	OCO	102	15,606
E351369188	12/25/2008	6:13:00	PET-16	EAC	TO	OFU	8	1,048
E823674071	12/25/2008	6:50:00	HWD-25	EBD	TO	OCO	1,341	974,907
E020325826	12/25/2008	6:56:00	LLT-15	EBD	TO	OCO	1,550	238,700
E531031551	12/25/2008	7:12:00	LLT-13	EBD	EF	OCO	224	74,816
E832188836	12/25/2008	7:29:00	NBO-22	EBD	РО	OAT	33	12,078
E402723419	12/25/2008	7:35:00	LLT-16	EBD	TO	OCO	1,037	582,236
E995337151	12/25/2008	7:35:00	COT-16	EBD	TO	OPO	950	454,100
E310714044	12/25/2008	7:40:00	SMR-26	ECA	EF	USV	1	315
E290508291	12/25/2008	7:50:00	DUV-12	EBD	TO	OPO	1,828	630,560
E967715015	12/25/2008	8:01:00	PRI-13	ECC	TF	OFU	30	7,357
E755799379	12/25/2008	8:21:00	COT-13	EBD	TO	CDH	77	27,643
E923912433	12/25/2008	8:30:00	DUV-13	EBD	TF	OCO	65	27,300
E658979609	12/25/2008	8:38:00	TOL-15	EBD	TO	OCO	42	15,792
E397712182	12/25/2008	8:40:00	LMC-23	EBF	TO	OCO	246	124,722
E340078335	12/25/2008	8:56:00	HKX-12	EAC	EF	OFC	23	3,419
E615992212	12/25/2008	8:56:00	FAL-15	EBF	PO	000	188	217,704
E147167610	12/25/2008	9:09:00	HAM-13	EAC	TO	OFU	5	1,574
E673606960	12/25/2008	9:09:00	MAP-15	EBF	PO	OSV	3	504
E416459693	12/25/2008	9:11:00	PAT-17	ECC	TF	OFU	17	1,878
E541739571	12/25/2008	9:11:00	HAP-16	EAA	TO	OCO	7	3,654
E725103818	12/25/2008	9:19:00	ING-13	EBD	TO	OCO	, 252	209,412
E504303504	12/25/2008	9:21:00	BIG-15	EAC	TO	000	71	77,855
E615524893	12/25/2008	9:22:00	SLA-15	EAA	EO	OCO	3	296
E604298769	12/25/2008	9:24:00	MCA-13	ECC	EF EF	OTF	3 1	137
E224894818		9:24:00		EAA	TO	OFU	59	
	12/25/2008		LYN-23					6,771 14,940
E325930739	12/25/2008	9:37:00	LLT-15	EBD	TO	OCO	35	14,840

						Fauto	Count	Const
Notification	Date	Time	Circuit	Area	Cause	Equip- ment	Cust Outs	Cust Mins
E082577090	12/25/2008	9:56:00	NHL-17	EBD	TO	OCR	598	458,068
E435680869	12/25/2008	10:04:00	ING-16	EBD	TO	OCO	1,741	386,502
E345647966	12/25/2008	10:10:00	MIR-15	EBF	TO	OCO	1	348
E151046489	12/25/2008	10:10:00	MIR-15	EBF	TO	OCO	7	1,001
10863495	12/25/2008	10:26:00	WAY-12	EBD	EF	OTR	8	336
10865352	12/25/2008	10:33:00	LLT-13	EBD	TF	OCO	559	16,211
E509193245	12/25/2008	10:48:00	HWD-01	EBD	TO	OCO	2,809	306,181
E481510320	12/25/2008	10:55:00	NHL-15	EBD	TO	OCO	27	6,885
E961315548	12/25/2008	10:56:00	MIR-17	EBF	TO	OCO	2	2,058
E325366610	12/25/2008	10:59:00	TOL-17	EBD	TO	OJU	3	1,881
E205456053	12/25/2008	11:52:00	HAP-13	EAA	EF	USV	1	305
E835500012	12/25/2008	11:54:00	ROS-15	EBD	TF	OSV	2	252
E256870454	12/25/2008	11:55:00	BIG-12	EAC	TO	OFU	11	1,793
E744736567	12/25/2008	12:06:00	ZEN-24	EBJ	EF	OTR	3	801
E873704556	12/25/2008	12:10:00	NOR-23	EBD	TO	OCO	7	4,690
E476975677	12/25/2008	12:14:00	ZEN-25	EBJ	EF	USE	3	1,221
E587936094	12/25/2008	12:55:00	LLT-13	EBD	TO	000	224	162,848
E835240426	12/25/2008	13:14:00	GBK-15	EAD	EF	OTF	3	319
E758922751	12/25/2008	13:16:00	KNM-27	EBD	TO	OTR	9	5,391
10863474	12/25/2008	13:26:00	DUV-12	EBD	TF	OCO	25	8,475
E452689556	12/25/2008	13:37:00	LYO-15	EBJ	TF	000	26	16,933
E462357434	12/25/2008	13:41:00	HWD-22	EBD	TO	000	27	3,699
E178962129	12/25/2008	13:50:00	BRO-15	EAD	EF	OTF	3	704
E881942248	12/25/2008	14:03:00	CPV-13	EAD	EF	OTF	2	447
E852000117	12/25/2008	14:05:00	SCH-15	EAA	TO	OFU	50	11,439
E925375961	12/25/2008	14:17:00	SIN-24	ECD	EF	OCN	1	65
E637039598	12/25/2008	14:35:00	SKY-25	EBD	TF	OPO	7	8,890
10863473	12/25/2008	14:41:00	COT-16	EBD	TF	OPO	30	6,930
E631259182	12/25/2008	14:48:00	DUV-15	EBD	TO	000	18	6,696
E119826669	12/25/2008	14:50:00	DUV-13	EBD	TF	OPO	1,828	158,280
E727408432	12/25/2008	14:55:00	COT-13	EBD	TF	000	47	31,302
E757208594	12/25/2008	14:58:00	BRS-24	EAC	TO	000	30	20,025
E893523349	12/25/2008	14:59:00	HAM-13	EAC	EF	OFC	1	762
E873251976	12/25/2008	15:08:00	DUV-12	EBD	TO	OPO	41	6,396
E941507585	12/25/2008	15:29:00	HOB-16	EBI	TO	000	25	15,918
E365828179	12/25/2008	15:33:00	TOL-15	EBD	TO	000	5	410
10863472	12/25/2008	15:43:00	DUV-13	EBD	TO	000	25	1,400
E611964793	12/25/2008	15:56:00	HLC-25	EAD	EF	UEL	39	15,618
E286935689	12/25/2008	15:59:00	MIL-17		EF	OTF	3	280
10863471	12/25/2008	16:11:00	TOL-17	ECE	EF	OFU	3 15	
				EBD				615
E146645752	12/25/2008	16:35:00	COT-16	EBD	TO	000	57 421	21,375
E920768040	12/25/2008	16:44:00	SOM-15	EBE	EF	UPC	431	499,426
E280981542	12/25/2008	17:01:00	NBO-22	EBD	TF	000	2	58
E564345371	12/25/2008	17:48:00	PHA-15	EBE	TF	OTF	8	2,816
E267583045	12/25/2008	17:51:00	KCR-16	EBK	EF	UPC	4	2,896
E781663728	12/25/2008	18:13:00	LLT-17	EBD	TO	000	10	6,460
E235121379	12/25/2008	18:35:00	NBE-12	EBF	EF	UPC	1	895
E815686161	12/25/2008	18:57:00	HWD-25	EBD	TO	OCO	57	86,241

Notification	Date	Time	Circuit	Area	Cause	Equip- ment	Cust Outs	Cust Mins
E624699822	12/25/2008	19:27:00	FLD-15	EAD	EF	OJU	15	2,217
E739290648	12/25/2008	19:56:00	LMC-23	EBF	TF	OCO	102	75,888
E931181346	12/25/2008	20:01:00	HWD-26	EBD	TO	OCO	1	551
10863462	12/25/2008	20:31:00	LMC-23	EBE	TO	OCO	50	30,400
E769747806	12/25/2008	20:35:00	PHA-16	EBE	TF	OSV	1	185
E275066130	12/25/2008	20:39:00	NBE-13	EBF	EF	UPC	1	1,872
E437071225	12/25/2008	20:39:00	LYO-12	EBJ	TF	OCO	1,172	119,550
E655817855	12/25/2008	20:54:00	LMC-27	EBF	TO	OCO	15	4,830
E468980903	12/25/2008	21:39:00	SWA-13	EAD	EF	OTF	3	387

Notification	[Notification Number] A number assigned by SAP, identifying the outage record					
Date	The date of the outage					
Time	The time of the outage					
Circuit	[Reference Circuit] The circuit identifier for the affected circuit					
F/LOC	[Functional Location] The grid number where the outage occurred. If the grid number is not available, the Reference Circuit identifier occupies this field					
EQT NBR	[Equipment Number] A number used to tie the equipment involved in the outage to the related information in SAP. This number does not represent the physical number of the equipment					
Area	[Maintenance Planner Group] A service center	code representing the energy, region and				
	EAA – Bellingham	EBJ – South King				
	EAB – Lynden	EBK – Southwest King				
	EAC – Skagit	EBL – Vashon				
	EAD – Whidbey	ECA – Puyallup				
	EBD – Redmond	ECC – Olympia				
	EBE – Factoria	ECD – Port Orchard				
	EBF – Snoqualmie	ECE – Poulsbo				
	EBI – Enumclaw	ECF – Port Townsend				
Cause	Cause of Outage					
	AO – Accident Other	EF – Equipment Failure				
	BA – Bird or Animal	EO – Electrical Overload				
	CP – Car Pole	FI – Faulty Installation				
	CR – Customer Request	TF – Tree Off Right-of-Way				
	DU – Dig-up Underground	TO - Tree On Right-of-Way				
	SO – Scheduled Outage	UN – Unknown				
Equipment	Affected by, or involved in the outag	je				
	OCN – Connector	OSW – Overhead Switch				
	OCO – Overhead Conductor	OTF – Overhead Transformer Fuse				
	OCR – Crossarm	OTR – Overhead Transformer				
	OFC – Overhead Cut-out	OUP – OH to UG Primary				
	OFS – Overhead Fire Signal	OUS – OH to UG Secondary Service				
	OFU – Fuse Link/OH Line Fuse	SBF – High-side Bank Fuse				
	OGS – Span Guy	SCB – Power Circuit Breaker				
	OHR – Overhead Recloser	UOT – Underground Outdoor Term				
	OIN – Insulator	UPC – Underground Primary Cable				
	OJU- Jump Wire	UPT – Padmount Transformer				
	OPI – Overhead Pin Insulator	USV – Underground Service				
	OPO – Pole	UTC – Underground Terminal Fuse				
	OSV – Overhead Service	UTR – Submersible Transformer				

ORE - Regulator

## Codes, Definitions - Continued

CUST OUT	[Customer Out] The number of customers without power for any given outage record
CUST MIN	[Customer Minutes] The total number of minutes customers were without power for any given record

CODE	[Storm Code] An event descriptor	
	NON – Non Storm / Normal Conditions	
	WTH - Weather Related (eg: wind storm, showers, etc)	
	MAJ – Major event	

## **Media Coverage**

# From PSE Web: PSE restores power to more than 613,000 customers during Christmas week

(Dec. 26, 2008) Since Saturday, Dec. 20, it's been a round-the-clock effort by PSE employees and electric-service and tree crews to respond to snow-caused power outages as well as to prevent possible outages.



From the time Saturday's storm hit the region, followed by additional snow storms throughout Christmas week, until this morning, PSE had restored power to more than 613,000 customers at over 7,500 locations.

Each batch of snow that fell made the roads even more treacherous and contributed to new power outages. Hard-hit areas such as Kitsap and Thurston counties, as well as parts of northeast King County, had considerable snow accumulation topped with ice and more snow. These conditions made it difficult for crews to reach each outage.

Snow-laden tree limbs broke off into power lines and caused the outages. Unlike a wind storm which blows through and makes its damage and needed repair work apparent, the snow accumulations created ongoing, unpredictable outages.

PSE and tree crews helped prevent possible new outages in nearly 80 locations by identifying and removing dozens of drooping tree limbs in danger of falling into the power lines.

Electric-repair crews from Washington state, Oregon and British Columbia joined PSE's 81 electric first responder employees, 50 line crews and two dozen tree crews in the nearly week-long restoration effort.

More than 170 Access Center agents responded to nearly 56,000 customer calls since Dec. 20. To ensure adequate staffing in the face of treacherous travel conditions, the Access Center secured hotel space near the Bothell office and provided limited transportation for all employees. Several agents walked miles after being stranded without vehicles.

On Christmas Day, more than 150 personnel—from 35 PSE Access Center agents to more than 100 line workers and office employees —worked to restore power and stay in touch with customers.