

# ELECTRIC SYSTEM RELIABILITY ANNUAL REPORT

2005



Prepared for California Public Utilities Commission

**February 27, 2006** 

#### **EXECUTIVE SUMMARY**

This Electric System Reliability Annual Report for 2005 has been prepared in response to CPUC Decision 96-09-045. This Decision established additional reliability recording, calculation, and reporting requirements for SDG&E.

The data in this report is presented in tabular form. All statistics and calculations include forced transmission, substation, and distribution outages, and exclude planned outages. Forced outages are those that are not prearranged. For the purposes of this report, sustained outages are those outages that lasted 5 minutes or more in duration, while momentary outages are those outages that lasted less than 5 minutes in duration.

The reliability indicators that are tracked are as follows:

- 1. SAIDI (System Average Interruption Duration Index) minutes of sustained outages per customer per year.
- 2. SAIFI (System Average Interruption Frequency Index) number of sustained outages per customer per year.
- 3. MAIFI (Momentary Average Interruption Frequency Index) number of momentary outages per customer per year.

The measurement of each reliability performance indicator excludes CPUC major events and events that are the direct result of failures in the ISO-controlled bulk power market, or non-SDG&E owned transmission and distribution facilities. A Major Event is defined in CPUC Decision 96-09-045 as an event that meets at least one of the following criteria:

- (a) The event is caused by earthquake, fire, or storms of sufficient intensity to give rise to a state of emergency being declared by the government, or
- (b) Any other disaster not in (a) that affects more than 15% of the system facilities or 10% of the utility's customers, whichever is less for each event.

A summary of 2005 performance follows:

CRITERIA	SAIDI	SAIFI	MAIFI
Including CPUC Major Events (2005)	61.99	0.64	0.60
Excluding CPUC Major Events (2005)	58.46	0.57	0.57
10-Year Average (1996-2005) Including CPUC Major Events	103.70	0.84	0.91
10-Year Average (1996-2005) Excluding CPUC Major Events	72.33	0.75	0.91

The CPUC Major Events that were declared in 2005 are shown in the following table.

			Sustained Customer		Momentary Customer	
Month/Day	SAIDI	SAIFI	Impact	MAIFI	Impact	Reason for Outage
January 3	0.75	0.0054	7,156	0.0113	28,647	January Storm - Declaration of State of Emergency
January 9	0.01	0.0000	33	ı	1	SCE Outage - Non-SDGE Facilities
February 18	1.35	0.0240	31,885	0.0226	42,852	February Storm - Declaration of State of Emergency
February 28	0.00	0.0000	33	1	-	SCE Outage - Non-SDGE Facilities
May 7	0.00	0.0000	32	-	-	SCE Outage - Non-SDGE Facilities
August 25	1.36	0.0387	51,411	-	-	ISO ordered mandatory load curtailment
September 29	0.03	0.0002	237	-	-	Valley Center Fire - Request by CDF
October 30	0.00	0.0000	16	-	-	San Marcos Customer Fire - Request by CDF
November 20	0.02	0.0013	1,757	-	-	San Ysidro Fire - Request by CDF
December 14	-	-	- -	0.0000	28	Vista Fire - Request by CDF

In 2005, no customers within SDG&E's service territory experienced more than one 5 minute (or longer) outage per month on a rolling annual average basis, after exclusion of CPUC Major Events.

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# HISTORICAL SYSTEM RELIABILITY DATA

	All Inte	erruptions In	cluded			CPUC Majo	or Events E	xcluded
Year	SAIDI	SAIFI	MAIFI	SAIDI	SAIFI	MAIFI	No. of Events	Event Cause(s)
1996	133.9	1.48	1.53	81.9	1.04	1.53	1	Underfrequency condition (1)
1997	89.3	0.93	1.41	89.3	0.93	1.41	0	
1998	91.6	0.94	1.09	91.6	0.94	1.09	0	
1999	65.2	0.67	0.80	65.2	0.67	0.80	0	
2000	51.9	0.57	0.75	51.9	0.57	0.75	0	
2001	68.5	0.87	0.87	52.9	0.64	0.86	7	Fires (2), Load Curtailment (4), and Interruptions Due to Non-SDG&E Facilities (1)
2002	82.5	0.81	0.61	77.2	0.81	0.61	4	Fires (2), Interruptions Due to Non- SDG&E Facilities (2)
2003	298.9	0.86	0.87	76.1	0.72	0.84	2	Firestorm 2003 (1), Wind Storm Affecting >15% of Facilities (1)
2004	93.2	0.67	0.61	78.8	0.62	0.61	5	Fires (3), Interruptions Due to Non- SDG&E Facilities (1), December Storm (1)
2005	62.0	0.64	0.60	58.5	0.57	0.57	10	Fires (4), Interruptions Due to Non- SDG&E Facilities (4), Storms (2)

# **TEN LARGEST OUTAGE EVENTS IN 2005\***

Rank	Date	Description	SAIDI Impact	SAIFI Impact	CPUC Major Event?	Total Number of Customers Affected	Longest Customer Interruption (minutes)	Number of People Used to Restore Service
1	September 19	September Storm	2.78	0.015	No	19,399	1,447	Not Available
2	July 28	Laguna Niguel Transmission Event	1.57	0.028	No	37,267	72	Not Available
3	August 25	Poway, Escondido, Cannon Sub - Load Curtailment	1.36	0.039	Yes	51,411	51	Not Available
4	February 18	February Storms	1.35	0.024	Yes	31,885	2,495	Not Available
5	July 23	Lightning Storm July	1.20	0.013	No	17,309	1,450	Not Available
6	October 6	Damaged OH Switch	0.89	0.004	No	5,226	468	Not Available
7	April 22	Poway Sub	0.89	0.008	No	10,896	108	Not Available
8	February 22	Vehicle Contact	0.82	0.003	No	4,143	310	Not Available
9	February 2	Feb 2nd storm	0.77	0.005	No	6,361	904	Not Available
10	January 3	January Storms	0.75	0.005	Yes	7,156	2,146	Not Available

<sup>\*</sup>Based on SAIDI impact.

# **TEN LARGEST OUTAGE EVENTS IN 2004\***

Rank	Date	Description	SAIDI Impact	SAIFI Impact	CPUC Major Event?	Total Number of Customers Affected	Longest Customer Interruption (minutes)	Number of People Used to Restore Service
1	Dec. 28 - 31	December 2004 Storm	14.41	0.056	Yes	74,000	2,074	Not Available
2	Dec. 1	Substation - Equipment Failure	2.88	0.017	No	22,716	393	Not Available
3	Jun. 12	Substation - Animal Contact	2.16	0.011	No	14,708	204	Not Available
4	Jan. 23 - 24	Conductor Failure	1.88	0.003	No	3,951	625	Not Available
5	Sep. 30 - Oct. 1	Private Vehicle Contact	1.51	0.003	No	4,322	459	Not Available
6	Oct. 17 - 21	Storm / Winds	1.24	0.013	No	16,833	1,026	Not Available
7	Dec. 5	Private Vehicle Contact	1.14	0.005	No	6,292	276	Not Available
8	Dec. 5	Connector Failure	1.10	0.004	No	5,824	502	Not Available
9	Nov. 10	Transmission Equipment Failure	0.82	0.004	No	5,095	414	Not Available
10	Dec. 5 - 6	Storm / Winds	0.78	0.001	No	1,265	808	Not Available

<sup>\*</sup>Based on SAIDI impact.

# **TEN LARGEST OUTAGE EVENTS IN 2003\***

Rank	Date	Description	SAIDI Impact	SAIFI Impact	CPUC Major Event?	Total Number of Customers Affected	Longest Customer Interruption (minutes)	Number of People Used to Restore Service
1	Oct. 26 - Nov. 25	Firestorm 2003	193.33	0.071	Yes	91,443	43,032	Not Available
2	Jan. 6 - 8	Storm / Winds	28.98	0.072	Yes	92,715	2,548	Not Available
3	Oct. 27 - 28	Substation - Animal Contact	3.10	0.017	No	22,285	227	Not Available
4	Dec. 25 - 26	Storm / Winds	3.00	0.017	No	21,611	1,303	Not Available
5	May 14 - 15	Transmission Line - Heavy Equipment Contact (Crane)	1.47	0.002	No	2,900	1,832	Not Available
6	Mar. 28 - 30	Storm / Winds	1.25	0.003	No	3,767	1,440	Not Available
7	Sep. 2 - 3	Storm / Winds	1.06	0.014	No	18,025	678	Not Available
8	Oct. 5 - 6	Underground Cable Failure	0.97	0.004	No	5,255	841	Not Available
9	Jan. 12	Substation - Animal Contact	0.97	0.014	No	17,990	73	Not Available
10	Sep. 19 - 20	Underground Cable Failure	0.88	0.004	No	5,334	1,010	Not Available

<sup>\*</sup>Based on SAIDI impact.

#### **TEN LARGEST OUTAGE EVENTS IN 2002\***

Rank	Date	Description	SAIDI Impact	SAIFI Impact	CPUC Major Event?	Total Number of Customers Affected **	Longest Customer Interruption (minutes)	Number of People Used to Restore Service
1	Feb. 27	Accidental Trip of Circuit Breaker	6.00	0.173	No	219,522	62	Not Available
2	Feb. 9 - 11	Storm / Winds	3.41	0.023	No	28,987	1,587	Not Available
3	Feb. 10 - 13	Fallbrook (Gavilan) Fire - Request by CDF	2.99	0.003	Yes	3,732	4,107	Not Available
4	Aug. 31 - Sep. 3	Storm / Heat	2.94	0.023	No	28,836	775	Not Available
5	July 29 - Aug. 12	Pines Wildland Fire - State of Emergency	2.34	0.003	Yes	3,498	10,227	Not Available
6	Nov. 25 - 30	Storm / Winds	2.16	0.014	No	18,108	1,493	Not Available
7	Apr. 5	Circuit Breaker Failure	1.79	0.008	No	10,591	306	Not Available
8	Apr. 22 - 23	Crossarm Failure	1.35	0.004	No	5,219	603	Not Available
9	Dec. 16 - 18	Storm / Winds	1.23	0.008	No	10,078	1,106	Not Available
10	July 23 - 24	Switch Faulted / Mechanical	1.07	0.006	No	7,284	586	Not Available

<sup>\*</sup> Based on SAIDI impact.

<sup>\*\*</sup> Total Number of Customers Affected were reported incorrectly in 2002. These values have been updated for 2003; the adjustment had no affect on the reported SAIDI and SAIFI Impacts for these events.

# **TEN LARGEST OUTAGE EVENTS IN 2001\***

Rank	Date	Description	SAIDI Impact	SAIFI Impact	CPUC	Total Number of Customers Affected	Longest Customer Interruption Duration	Number of People Used to Restore Service
1	March 19	Load curtailment - ISO request	10.91	0.153	Yes	191,146	164	Not Available
2	March 20	Load curtailment - ISO request	3.74	0.063	Yes	78,446	71	Not Available
3	July 17	Remedial Action Scheme inadvertently interrupted customers	1.21	0.121	No	150,959	40	Not Available
4	May 22	Substation - Animal contact	0.79	0.009		11,238		
5	January 11	Storm/winds	0.73	0.006	No	6,988	1,886	Not Available
6	February 13	Storm/winds	0.70	0.003	No	3,541	728	Not Available
7	April 07	Private vehicle contact	0.69	0.002	No	1,939	874	Not Available
8	May 29	Transmission Line - Bird contact	0.66	0.012	No	14,996	120	Not Available
9	May 08	Load curtailment - ISO request	0.64	0.012	Yes	14,730	81	Not Available
10	January 10	Underground cable failure	0.64	0.002	No	2,330	501	Not Available

<sup>\*</sup>Based on SAIDI impact.

# **TEN LARGEST OUTAGE EVENTS IN 2000\***

Rank	Date	Description	SAIDI Impact	SAIFI Impact	CPUC Major Event?	Total Number of Customers Affected	Longest Customer Interruption (minutes)	Number of People Used to Restore Service
1	Sept. 7-8	Lightning/Storm	2.59	0.011	No	13,258	925	Not available
2	Aug. 29	Transmission poles down due to storm	2.33	0.004	No	4,363	1,301	Not available
3	Aug. 20	Underground cable failure	1.55	0.004	No	4,624	823	Not available
4	Oct. 30	Substation animal contact	1.36	0.009	No	11,240	149	Not available
5	Feb. 20-21	Storm/winds	1.13	0.012	No	15,092	648	Not available
6	Mar. 5	Storm/winds	0.72	0.007	No	8,593	393	Not available
7	Apr. 17	Storm/winds	0.69	0.007	No	8,769	690	Not available
8	Apr. 4	Circuit breaker faulted	0.69	0.017	No	20,544	41	Not available
9	Sept. 15	Underground cable failure	0.68	0.003	No	4,223	364	Not available
10	Oct. 5	Underground cable failure	0.68	0.002	No	2,798	558	Not available

<sup>\*</sup>Based on SAIDI impact.

# **TEN LARGEST OUTAGE EVENTS IN 1999\***

Rank	Date	Description	SAIDI Impact	SAIFI Impact	CPUC Major Event?	Total Number of Customers Affected	Longest Customer Interruption (minutes)	Number of People Used to Restore Service
1	Sept. 27	Circuit breaker failure	4.29	0.02	No	22,658	375	Not available
2	Aug. 6	Underground cable	1.71	0.01	No	6,965	822	Not available
3	Oct. 21	Animal contact	1.29	0.01	No	12,520	158	Not available
4	Jan. 29	Private vehicle contact	1.00	0.01	No	6,312	1,215	Not available
5	Apr. 1	Switch faulted/mechanical	0.96	0.01	No	6,402	304	Not available
6	Apr. 4	Capacitor failure	0.92	0.00	No	4,555	269	Not available
7	Apr. 6-7	Storm/winds	0.84	0.01	No	7,000	1,719	Not available
8	Jun. 12	Animal contact	0.75	0.00	No	5,642	163	Not available
9	Nov. 11	Relay malfunction	0.72	0.01	No	15,391	57	Not available
10	Sept. 26	Underground cable failure	0.69	0.00	No	2,800	365	Not available

<sup>\*</sup>Based on SAIDI impact.

# **TEN LARGEST OUTAGE EVENTS IN 1998\***

Rank	Date	Description	SAIDI Impact	SAIFI Impact	CPUC Major Event?	Total Number of Customers Affected	Longest Customer Interruption (minutes)	Number of People Used to Restore Service
	Aug. 31-	Storm/lightning/winds/heat	C 20	0 00	Na	20.007	4 577	Net evelleble
	Sept. 1	Storm	6.29	0.02		28,987		Not available
	Feb. 23-24	Storm/winds	4.63	0.04		51,540		Not available
3	Aug. 29-30	Heat Storm	3.69	0.03	No	35,526	889	Not available
4	Feb. 7-8	Storm/winds	3.10	0.02	No	22,680	946	Not available
5	Feb. 14-15	Storm/winds	2.69	0.03	No	35.851	1.025	Not available
6	Dec. 6	Storm/winds	2.59	0.03	No	31.208	966	Not available
7	Sept. 2-3	Storm/lightning/winds	2.10	0.02	No	24,793	1,172	Not available
8	Mar. 28-29	Storm/winds	2.09	0.01	No	17,450	1,557	Not available
9	Feb. 3-4	Storm/winds	1.36	0.02	No	22,303	456	Not available
10	Feb. 6	Storm/winds	1.25	0.02	No	18,443	1,512	Not available

<sup>\*</sup>Based on SAIDI impact.

# **TEN LARGEST OUTAGE EVENTS IN 1997\***

Rank	Date	Description	SAIDI Impact	SAIFI Impact	CPUC Major Event?	Total Number of Customers Affected	Longest Customer Interruption (minutes)	Number of People Used to Restore Service
1	Sept. 24-25	Storm/winds	5.75	0.06	No	67,036	4,413	Not available
2	Dec. 10	Storm/winds	4.23	0.03	No	31,909	773	Not available
3	Dec. 11	Storm/winds	2.91	0.03	No	35,698	814	Not available
4	Nov. 26	Storm/winds	2.85	0.02	No	27,486	1,224	Not available
5	Jan. 6-7	Storm/winds	2.77	0.04	No	42,307	803	Not available
6	Jan. 12-13	Storm/winds	2.04	0.01	No	17,033	1,134	Not available
7	Jan. 26	Storm/winds	1.99	0.03	No	29,612	589	Not available
8	Nov. 10	Storm/winds	1.67	0.03	No	34,685	765	Not available
9	July 6	Hardware failure - substation	1.54	0.02	No	18,948	508	Not available
10	Dec. 6	Storm/winds	1.07	0.01	No	14,310	656	Not available

<sup>\*</sup>Based on SAIDI impact.

# **TEN LARGEST OUTAGE EVENTS IN 1996\***

Rank	Date	Description	SAIDI Impact	SAIFI Impact	CPUC Major Event?	Total Number of Customers Affected	Longest Customer Interruption (minutes)	Number of People Used to Restore Service
1	Aug. 10	Underfrequency load shed condition	51.93	0.44	Yes	517,884	428	35
2	Oct. 21-22	Storm/high winds	7.47	0.04	No	51,708	2,172	Not available
3	Dec. 15-18	Storm/high winds	5.84	0.06	No	72,492	1,609	Not available
4	Feb. 25-26	Storm/high winds	3.69	0.04	No	49,455	2,243	Not available
5	Jan. 1-2	Storm/high winds	2.94	0.03	No	39,892	1,168	Not available
6	July 4	Faulted transmission cable	2.90	0.03	No	40,297	435	Not available
7	Nov. 21-22	Storm/high winds	2.36	0.02	No	28,368	647	Not available
8	July 2	Underfrequency load shed condition	2.19	0.08	No	96,019	57	Not available
9	Oct. 30	Storm/high winds	1.72	0.02	No	26,699	416	Not available
10	Dec. 28	Transformer faulted - substation	1.47	0.02	No	19,635	115	Not available

<sup>\*</sup>Based on SAIDI impact.

		Total Number		Cu	stomers I	nterrupte	ed - Hour	s Into the	Event D	ay*	
Date of Outage	Description of Outage	of Customers Out of Service	2	4	6	8	10	28	30	32	34
January 3	January Storms - Declaration of State	7,156	80	68	43	123	25	194	183	183	25
				Custome	ers Interru	ipted - H	ours Into	the Eve	nt Day (c	ontinued)	
			100	102	104	106	108	110	120	122	124
			1,899	1,762	165	110	55	55	55	55	55
				Custome	ers Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	
			126	156	158	160	162	164	166	176	184
			12	55	70	70	70	110	820	55	25
				Custome	ers Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	
			186	188	190	192	194	196	198	200	202
			1179	577	258	215	211	208	135	135	110
				Custome	ers Interru	ipted - H	ours Into	the Eve	nt Day (c	ontinued	
			204	206	208	210	212	214	216	218	220
			122	110	110	110	110	110	110	110	110
				Custome	ers Interru	ipted - H	ours Into	the Eve	nt Day (c	ontinued	
			222	224	226	228	230	232	234	236	238
			110	110	110	110	110	110	110	0	0

		Total Number		Cu	stomers I	nterrupte	ed - Hour	s Into the	e Event D	ay*	
Date of Outage	Description of Outage	of Customers Out of Service	2	4	6	18	20	28	30	32	34
February 18	February Storms - Declaration of State	31,885	155	2,117	575	25	25	36	1,506	608	295
	of Emergency			Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	
			36	38	40	42	44	46	48	50	52
			204	1,032	37	31	31	19	19	129	239
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	
			54	56	58	60	62	64	66	68	70
			129	19	226	19	19	19	19	19	19
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	
			72	74	76	78	80	82	84	86	88
			19	19	19	19	110	199	78	72	41
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	)
			90	92	94	100	104	106	108	110	112
			63	63	1	25	8	8	152	62	62
						ıpted - H		the Eve	<u> </u>	ontinued	)
			120	122	124	126	128	130	156	158	160
			5067	191	690	577	154	38	84	358	860
										ontinued	
			162	164	166	168	170	172	174	176	178
			695	460	237	251	87	31	31	7	7

<sup>\*</sup>Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

		Total Number		Cu	stomers I	nterrupte	ed - Hour	s Into the	Event D	ay*	
Date of Outage	Description of Outage	of Customers Out of Service	2	4	6	8	10	12	14	16	18
August 25	ISO ordered mandatory load curtailment	51,411	51,411	0	0	0	0	0	0	0	0

<sup>\*</sup>Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

		Total Number of Customers		Cu	stomers I	nterrupte	ed - Hour	s Into the	Event D	ay*	
Date of Outage	Description of Outage	of Customers Out of Service	2	4	6	8	10	12	14	16	18
December 28 - 31	December Storm - Declaration of	74,000	0	0	0	31	3,725	5	30	1,381	48,480
	State of Emergency			Custome	rs Interru	ipted - H	ours Into	the Eve	nt Day (c	ontinued	)
			20	22	24	26	28	30	32	34	36
		_	36,187	26,037	18,190	11,941	7,393	5,017	3,093	1,372	709
		3		Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	)
			38	40	42	44	46	48	50	52	54
			411	159	91	36	36	50	34	7	6
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	)
			56	58	60	62	64	66	68	70	72
			6	110	0	0	0	0	0	0	0

<sup>\*</sup>Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

		Total Number		Cus	stomers I	nterrupte	ed - Hour	s Into the	Event D	ay*	
Date of Outage	Description of Outage	of Customers Out of Service	2	4	6	8	10	12	14	16	18
January 6 - 8	January Storm - >15% of System	92,715	0	165	2,374	3,500	5,231	4,985	2,916	4,272	33
	Facilities Affected			Custome	rs Interru	ipted - H	ours Into	the Eve	nt Day (c		)
			20	22	24	26	28	30	32	34	36
			2,908	2,875	299	8,799	42,386	62,337	44,408	34,801	29,472
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	)
			38	40	42	44	46	48	50	52	54
			23,942	18,661	7,533	4,709	3,687	3,391	2,489	1,563	1,077
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	)
			56	58	60	62	64	66	68	70	72
			1,021	648	581	92	94	69	69	37	37
				Custome	rs Interru	ipted - H	ours Into	the Eve	nt Day (c	ontinued	)
			74	76	78	80	82	84	86	88	90
			25	25	0	0	0	0	0	0	0

<sup>\*</sup>Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

		Total Number		Cu	stomers I	nterrupte	ed - Hour	s Into the	Event D	ay*	
Date of Outage	Description of Outage	of Customers Out of Service	0	5	10	15	20	25	30	35	40
October 26 - November 25	Firestorm 2003 - Declaration of State	91,443	0	697	12,087	25,599	33,856	33,575	35,317	43,272	44,623
November 25	of Emergency			Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	)
			45	50	55	60	65	70	75	80	85
			43,523	38,774	28,412	26,932	24,552	24,157	21,108	20,628	17,709
					rs Interru				nt Day (c		
			90	95	100	105	110	115	120	125	130
			16,330	17,074	17,074	16,013	14,356	12,195	11,878	11,878	11,878
					rs Interru						
			135	140	145	150	155	160	165	170	175
			11,214	6,643	1,050	833	813	379	635	820	820
					rs Interru						
			180	185	190	195	200	205	210	215	220
			820	820	777	777	777	635	2,357	2,563	2,563
					rs Interru						
			225	230	235	240	245	250	255	260	265
			2,563	2,835	2,149	2,149	2,149	1,166	1,089	890	873
					rs Interru						
			270	275	280	285	290	295	300	305	310
			849	827	867	948	948	948	795	738	566
			315	320	rs Interru 325		ours Into	340	18 Day (c 345		355
						330				350	
			535	535	432 ers Interru	432	432	432	432	324	312
			360	365	370	лртеа - н 375	380	385	390	395	400
			312	312	312	82	68	68	68	51	52

<sup>\*</sup>Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	
		Total Number									
Data of Outama	December of Outers	of Customers	405	440	445	400	405	400	405	440	4.45
Date of Outage	Description of Outage	Out of Service	405	410	415	420	425	430	435	440	445
October 26 - November 25	Firestorm 2003 - Declaration of State of Emergency	91,443	49	49	49	49	49	49	49	49	49
	er Errer gerre,			Custome	rs Interru	ipted - H	ours Into	the Eve	nt Day (c	ontinued	)
			450	455	460	465	470	475	480	485	490
			49	49	49	49	48	48	48	48	48
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	
			495	500	505	510	515	520	525	530	535
			48	48	48	48	48	48	48	48	48
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	
			540	545	550	555	560	565	570	575	580
			47	47	47	47	47	47	47	47	47
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	)
			585	590	595	600	605	610	615	620	625
			48	40	40	40	40	40	40	40	40
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	)
			630	635	640	645	650	655	660	665	670
			40	40	40	40	40	40	40	9	9
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	)
			675	680	685	690	695	700	705	710	715
			9	9	9	9	9	9	9	9	9
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	
			720	725	730	735	740	745	750	755	760
			9	9	9	9	0	0	0	0	0

<sup>\*</sup>Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

		Total Number		Cu	stomers I	nterrupte	ed - Hour	s Into the	e Event D	ay*	
Date of Outage	Description of Outage	of Customers Out of Service	2	4	6	8	10	12	14	16	18
February 10 - 13	Fallbrook (Gavilan) Fire - Request by	3,732	0	0	0	0	0	0	2,083	3,732	2,592
	CDF			Custome	rs Interru	ipted - H	ours Into	the Eve	nt Day (c	ontinued	
			20	22	24	26	28	30	32	34	36
			2,083	1,008	1,008	1,008	1,008	1,008	1,008	1,008	1,008
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	)
			38	40	42	44	46	48	50	52	54
			871	871	871	762	762	762	762	762	762
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	)
			56	58	60	62	64	66	68	70	72
			762	762	762	762	762	728	728	728	728
				Custome	rs Interru	ipted - H	ours Into	the Eve	nt Day (c	ontinued	)
			74	76	78	80	82	84	86	88	90
			19	19	19	19	0	0	0	0	0

<sup>\*</sup>Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

		Total Number		Cu	stomers I	nterrupte	ed - Hour	s Into the	e Event C	ay*	
Date of Outage	Description of Outage	of Customers Out of Service	2	4	6	8	10	12	14	16	18
July 29 -	Pines Wildland Fire - State of	3,498	0	0	0	0	0	0	0	3	3
August 12	Emergency			Custome	rs Interru	ipted - H	ours Into	the Eve	nt Day (c	ontinued	
			20	22	24	26	28	30	32	34	36
			338	338	338	338	338	338	338	338	866
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	)
			38	40	42	44	46	48	50	52	54
			794	794	338	338	338	338	338	338	338
				Custome	rs Interru	upted - H	ours Into	the Eve	nt Day (c	ontinued	)
			56	58	60	62	64	66	68	70	72
			338	338	338	338	338	338	338	338	338
				Custome	rs Interru	upted - H	ours Into	the Eve	nt Day (c	ontinued	)
			74	76	78	80	82	84	86	88	90
			338	338	338	338	338	338	338	338	3
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued	)
			92	94	96	98	100	102	104	106	108
			3	3	3	3	3	3	3	0	0

<sup>\*</sup>Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

		Total Number of Customers		Cus	stomers I	nterrupte	ed - Hour	s Into the	e Event D	ay*		
Date of Outage	Description of Outage	Out of Service	110	112	114	116	118	120	122	124	126	
July 29 -	Pines Wildland Fire - State of	3,498	0	0	0	0	0	0	10	10	10	
August 12	Emergency			Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (co	ontinued)		
			128	130	132	134	136	138	140	142	144	
			10	10	10	10	10	10	10	10	10	
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (co	ontinued)		
			146	148	150	152	154	156	158	160	162	
			10	10	10	10	10	10	10	10	10	
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (co	ontinued)		
			164	166	168	170	172	174	176	178	180	
			10	10	10	258	258	258	258	258	258	
			Customers Interrupted - Hours Into the Event Day (continued)									
			182	184	186	188	190	192	194	196	198	
			258	258	258	258	258	258	258	258	258	
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (c	ontinued)		
			200	202	204	206	208	210	212	214	216	
			258	258	258	258	258	258	258	258	258	
				Custome	rs Interru	ıpted - H	ours Into	the Eve	nt Day (co	ontinued)		
			218	220	222	224	226	228	230	232	234	
			258	258	258	258	224	224	224	224	224	

<sup>\*</sup>Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

Date of Outage	Description of Outage	Total Number of Customers Out of Service		Custome	rs Interru	ıpted - H	ours Into	the Ever	nt Day (c	ontinued)	
g			236	238	240	242	244	246	248	250	252
July 29 - August 12	Pines Wildland Fire - State of Emergency	3,498	224	224	224	224	217	122	122	122	122
August 12	Emergency			Custome	rs Interru	upted - H	ours Into	the Ever	nt Day (c	ontinued)	
			254	256	258	260	262	264	266	268	270
			122	122	122	122	122	122	122	122	122
				Custome	rs Interru	ıpted - H	ours Into	the Ever	nt Day (c	ontinued)	
			272	274	276	278	280	282	284	286	288
			122	12	12	12	12	12	12	12	12
			Customers Interrupted - Hours Into the Event Day (continued)								
			290	292	294	296	298	300	302	304	306
			0	0	0	0	0	0	0	0	0
			308	310	312	314	316	318	320	322	324
			0	0	0	0	0	0	0	0	0
				Custome	rs Interru	ıpted - H	ours Into	the Ever	nt Day (c	ontinued)	
			326	328	330	332	334	336	338	340	342
			0	0	0	0	0	0	0	0	0
				Custome	rs Interru	ıpted - H	ours Into	the Ever	nt Day (c	ontinued)	
			344	346	348	350	352	354	356	358	360
			0	0	0	0	0	0	0	0	0

<sup>\*</sup>Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

				Cu	stomers I	nterrupto	ed - Hour	s Into the	e Event D	ay*	
Date of Outage	Description of Outage	Total Number of Customers Out of Service	2	4	6	8	10	12	14	16	18
3/19/2001	Load curtailment - ISO request	191,146	0	0	0	0	0	30,590	68,143	28,067	0
				Custome	rs Interru	upted - H	ours Into	the Ever	nt Day (c	ontinued)	)
			20	22	24	26	28	30	32	34	36
			0	0	0	0	0	0	0	0	0

<sup>\*</sup>Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

				Cu	stomers	Interrupt	ed - Hour	s Into the	e Event D	ay*	
Date of Outage	Description of Outage	Total Number of Customers Out of Service	2	4	6	8	10	12	14	16	18
3/20/2001	Load curtailment - ISO request	78,446	0	0	0	0	11,181	10,189	10,838	0	0
				Custome	rs Interru	upted - H	ours Into	the Ever	nt Day (co	ontinued)	
			20	22	24	26	28	30	32	34	36
			20	ZZ	24	20	20	30	32	34	30
			0	0	0	0	0	0	0	0	0

<sup>\*</sup>Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

				Cu	stomers I	Interrupte	ed - Hour	s Into the	e Event D	ay*	
Date of Outage	Description of Outage	Total Number of Customers Out of Service	2	4	6	8	10	12	14	16	18
5/8/2001	Load curtailment - ISO request	14,730	0	0	0	0	0	0	0	7,409	0
	·			Custome	rs Interri	upted - H	ours Into	the Eve	nt Day (c	ontinued)	
			20	22	24	26	28	30	32	34	36
			0	0	0	0	0	0	0	0	0

<sup>\*</sup>Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

# **EXCLUDABLE CPUC MAJOR EVENT DETAILS FOR 1997 through 2000**

#### **EXTRACTED FROM THE TEN LARGEST OUTAGE EVENTS**

There were no CPUC Major Events from 1997 through 2000.

			Custor	ners Inte	rrupted -	Hours In	to the Ev	ent Day	for 8/10 L	Jnderfreq	uency*
Date of Outage	Description of Outage	Total Number of Customers Out of Service	2	4	6	8	10	12	14	16	18
August 10	Underfrequency load shed condition	517,884	55	319	202	12	12	0	0	483,510	116,846
				Custome	ers Interri	upted - H	ours Into	the Eve	nt Day (c	ontinued)	
			20	22	24	26	28	30	32	34	36
			759	600	6	6	0	0	0	0	0

<sup>\*</sup>Customers reflected in the time increments include all customers experiencing outages at that point in time. The event day begins at midnight.

Month	District	Circuit	Number of Customers Experiencing >12 Sustained Outages
January	N/A	N/A	None
February	N/A	N/A	None
March	N/A	N/A	None
April	N/A	N/A	None
May	N/A	N/A	None
June	N/A	N/A	None
July	N/A	N/A	None
August	NE	170	21
September	N/A	N/A	None
October	N/A	N/A	None
November	N/A	N/A	None
December	N/A	N/A	None

Month	District	Circuit	Number of Customers Experiencing >12 Sustained Outages
January	N/A	N/A	None
February	N/A	N/A	None
March	N/A	N/A	None
April	N/A	N/A	None
May	N/A	N/A	None
June	N/A	N/A	None
July	N/A	N/A	None
August	N/A	N/A	None
September	N/A	N/A	None
October	N/A	N/A	None
November	N/A	N/A	None
December	N/A	N/A	None

Month	District	Circuit	Number of Customers Experiencing >12 Sustained Outages
January	Northeast	212	62
February	Northeast	212	60
March	Northeast	212	60
April	Northeast	212	60
May	Northeast	212	60
June	Northeast	212	60
July	Northeast	212	60
August	Northeast	212	62
September	Northeast	212	62
October	Northeast	212	60
November	Northeast	212	60
December	N/A	N/A	None

Month	District	Circuit	Number of Customers Experiencing >12 Sustained Outages
January	N/A	N/A	None
February	N/A	N/A	None
March	N/A	N/A	None
April	N/A	N/A	None
May	N/A	N/A	None
June	N/A	N/A	None
July	N/A	N/A	None
August	N/A	N/A	None
September	N/A	N/A	None
October	N/A	N/A	None
November	N/A	N/A	None
December	N/A	N/A	None

Month	District	Circuit	Number of Customers Experiencing >12 Sustained Outages
January	N/A	N/A	None
February	N/A	N/A	None
March	N/A	N/A	None
April	N/A	N/A	None
May	N/A	N/A	None
June	N/A	N/A	None
July	N/A	N/A	None
August	N/A	N/A	None
September	N/A	N/A	None
October	N/A	N/A	None
November	N/A	N/A	None
December	N/A	N/A	None

Month	District	Circuit	Number of Customers Experiencing >12 Sustained Outages
January	N/A	N/A	None
February	N/A	N/A	None
March	N/A	N/A	None
April	N/A	N/A	None
Мау	N/A	N/A	None
June	N/A	N/A	None
July	N/A	N/A	None
August	N/A	N/A	None
September	N/A	N/A	None
October	N/A	N/A	None
November	N/A	N/A	None
December	N/A	N/A	None

Month	District	Circuit	Number of Customers Experiencing >12 Sustained Outages
January	Northeast	296	101
February	N/A	N/A	None
March	Northeast	221	111
April	Northeast	221	112
May	Northeast	221	112
June	Northeast	221	112
July	Northeast	221	112
August	Northeast	221	112
September	Northeast	221	112
October	N/A	N/A	None
November	N/A	N/A	None
December	N/A	N/A	None

Month	District	Circuit	Number of Customers Experiencing >12 Sustained Outages
January	N/A	N/A	None
February	N/A	N/A	None
March	N/A	N/A	None
April	N/A	N/A	None
Мау	N/A	N/A	None
June	N/A	N/A	None
July	N/A	N/A	None
August	N/A	N/A	None
September	Northeast	296	457
October	Northeast	296	64
November	N/A	N/A	None
December	N/A	N/A	None

Month	District	Circuit	Number of Customers Experiencing >12 Sustained Outages
January	Northeast	CTL1	184
February	N/A	N/A	None
March	N/A	N/A	None
April	N/A	N/A	None
Мау	N/A	N/A	None
June	N/A	N/A	None
July	N/A	N/A	None
August	N/A	N/A	None
September	Orange County	766	545
October	Orange County	766	545
November	N/A	N/A	None
December	N/A	N/A	None

Year	District	Circuit Number	Number of Customers Experiencing >12 Sustained Outages
1996	N/A	N/A	None