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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of San Diego Gas & Electric Company (U-902-E) for Review of its Proactive De-Energization Measures and Approval of Proposed Tariff Revisions	)))))	Application No. 08-12-021 Filed December 22, 2008

OPENING COMMENTS OF SAN DIEGO GAS & ELECTRIC COMPANY (U-902-E) IN RESPONSE TO DIRECTION OF ADMINISTRATIVE LAW JUDGE'S RULING DENYING MOTION TO STRIKE, PROHIBITING EX PARTE COMMUNICATIONS, AND DIRECTING PARTIES TO FILE COMMENTS

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July 25, 2011
San Diego, California

#257388

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OF THE STATE OF CALIFORNIA

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Applicant San Diego Gas & Electric Company ("SDG&E") provides its Opening Comments in response to the matters specified in the *Administrative Law Judge's Ruling Denying the Motion to Strike, Prohibiting* Ex Parte *Communications, and Directing Parties to File Comments ("Ruling")* issued in Application 08-12-021 on June 3, 2011. The matters to which SDG&E is responding are shown in italics and SDG&E's responses immediately follow in plain text.

1. Putting aside legal requirements, the question of whether SDG&E's overhead power-line facilities are designed to withstand maximum wind speeds of 56 mph as SDG&E contends, or higher wind speeds as CPSD/DRA contend, appears to be a factual issue that can be resolved with empirical information. To this end, SDG&E shall:

i. List every known incident since January 1, 2000, where SDG&E's overhead power-line facilities have failed due to strong winds. SDG&E shall provide the following information for each incident:

a. The date of the incident.

b. A description of the failure and the facilities that failed.

c. The actual or estimated wind speed at the time of the failure, if known, and the source of the data for the wind speed.

d. Whether a fire was ignited and, if so, the approximate size of the fire and any damage caused by the fire.

RESPONSE:

Table 1 below lists every known incident dating from January 1, 2000, to present, where an electrical or mechanical failure occurred on SDG&E's overhead power-line system due to strong winds. The table includes the time and date of each incident, a description of the incident, the equipment that failed in each incident, the contemporaneous estimated and/or recorded wind gusts, sustained winds and estimated maximum wind gusts experienced during or prior to each incident, and the source of the wind data provided. The subset of those known incidents where a fire was ignited due to a failure on SDG&E's overhead power-line system is shown in Table 2 below.

In developing Tables 1 and 2, SDG&E conducted an extensive survey of available weather data and its records of failures, both electrical and mechanical. The rules and principles SDG&E followed in determining which incidents should be shown in the tables are described later in this response. As an introduction to the tables, SDG&E would highlight a few key points:

- Incidences of failure were attributed to strong winds if the failure occurred during or within twenty-four (24) hours of a recorded wind gust reaching or exceeding a speed of thirty-five (35) miles-per-hour, the threshold wind speed SDG&E defined as "strong". SDG&E used thirty-five (35) miles-per-hour as the definition of "strong winds" to be consistent with the definitions used by and practices of the National Weather Service. SDG&E used the twenty-four (24) hour window based on its experience that failures may not always occur coincident with the strongest wind gusts or highest sustained wind speeds. Rather, equipment suffering damage at some point during high winds may not fail until several hours, or even days, later;
- SDG&E estimated winds for the relevant failure locations by using data from various weather stations situated throughout the SDG&E service territory. Weather data were used to calculate four data points for each failure: 1) the most recent wind-gust measurement from the weather station closest to the location of the failure; 2) the most recent sustained wind measurement from the weather station closest to the location of the failure; 3) the highest wind gust measured by the weather station closest to the location of the failure over the preceding twenty-four (24) hours; and, 4) the highest wind gust recorded by any weather station in the SDG&E service territory at the time of the outage. All four of these data points are shown in Table 1 below;

- In the earliest years for which incidences are shown in Table 1, data were available from a limited number of weather stations, and weather data were limited in quantity, quality and resolution. Over time, additional weather stations have been installed, including those proprietary weather stations owned and operated by SDG&E. The addition of more weather stations and the installation of those stations at locations considered strategic for SDG&E's purposes have significantly improved the quantity of data points available and the quality of the data provided, resulting in a more precise depiction of localized weather conditions;
- Although Table 1 includes data from Remote Automated Weather Stations (RAWS) operated by the National Weather Service, various data indicate RAWS measurements can be as much as thirty to fifty percent (30% to 50%) lower than the actual wind gusts recorded by SDG&E's weather stations;
- As shown in the later Table 2, the empirical information demonstrates that the incidence and probability of overhead failures significantly increase as wind speeds increase. As will be discussed later in this response, the probability that the SDG&E overhead power-line system will suffer a "wire failure", as an example, is more than 2,000 times higher when wind speeds reach or exceed fifty-six (56) miles-per-hour than would be the case when wind speeds are at or below five (5) miles-per-hour; and,
- Although there are almost 1,000 entries in Table 1, failures due to strong winds are relatively rare. The period covered by Table 1 included some 4,170 days, and nearly 4,000 of those days showed no failures due to strong winds. Half of the entries in Table 1 were reported during seven (7) wind events encompassing just twelve (12) days. As will be discussed later in the response to Question 3, this indicates the SDG&E overhead power-line system has historically performed reliably until wind conditions approached design limits (fifty-six (56) miles-per-hour) of the system facilities and components.

TABLE 1
SDG&E Overhead Powerline Failures
2000 to Present

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/2/00 2:10 AM	Undetermined	Unknown	36	17	36	43	DENC1 (RAWS)	
1/2/00 6:36 AM	Pole	Unknown	25	7	36	30	DENC1 (RAWS)	
4/8/00 6:52 PM	Undetermined	Unknown	35	11	45	35	CMNC1 (RAWS)	
6/4/00 4:00 PM	Undetermined	Unknown	34	14	38	34	CMNC1 (RAWS)	
9/22/00 9:51 AM	Pole	Unknown	40	22	43	40	RCHC1 (RAWS)	
9/22/00 9:14 PM	Wire	Conductor	36	19	41	39	JULC1 (RAWS)	
9/23/00 6:46 AM	Wire	Conductor	27	15	41	35	JULC1 (RAWS)	
10/11/00 12:47 AM	Wire	Conductor	29	15	45	32	JULC1 (RAWS)	
10/11/00 1:23 PM	Wire	Conductor	20	9	45	23	JULC1 (RAWS)	
11/8/00 5:55 AM	Undetermined	Unknown	7	4	38	12	RCHC1 (RAWS)	
12/18/00 3:34 AM	Vegetation	Unknown	35	19	36	36	DENC1 (RAWS)	
12/18/00 7:49 AM	Undetermined	Unknown	28	12	36	40	VLCC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/18/00 8:41 AM	Vegetation	Unknown	27	9	36	45	VLCC1 (RAWS)	
12/18/00 8:56 AM	Vegetation	Unknown	27	9	36	45	VLCC1 (RAWS)	
12/18/00 9:13 AM	Pole	Unknown	27	9	36	42	VLCC1 (RAWS)	
12/18/00 9:58 AM	Undetermined	Unknown	25	10	36	42	VLCC1 (RAWS)	
1/2/01 7:50 PM	Vegetation	Lightning Arrestor	37	14	42	42	DENC1 (RAWS)	
1/3/01 1:07 PM	Vegetation	Unknown	17	7	37	35	VLCC1 (RAWS)	
1/4/01 5:40 AM	Wire	Conductor	21	8	39	25	DENC1 (RAWS)	
2/7/01 3:19 AM	Undetermined	Unknown	44	25	45	44	RCHC1 (RAWS)	
2/7/01 9:55 PM	Undetermined	Unknown	7	4	39	15	JULC1 (RAWS)	
4/21/01 11:12 PM	Undetermined	Unknown	8	1	36	27	DENC1 (RAWS)	
6/24/01 8:05 AM	Wire	Conductor	10	5	57	10	CAPC1 (RAWS)	
1/23/02 3:37 PM	Undetermined	Unknown	39	24	39	39	AMOC1 (RAWS)	
2/9/02 9:52 AM	Vegetation	Conductor	35	18	35	39	ANEC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
2/9/02 11:22 AM	Undetermined	Unknown	33	17	36	43	JULC1 (RAWS)	
2/9/02 11:44 AM	Vegetation	Conductor	36	15	36	43	ANEC1 (RAWS)	
2/9/02 12:04 PM	Vegetation	Conductor	22	11	40	44	GOSC1 (RAWS)	
2/9/02 7:32 PM	Vegetation	Unknown	30	17	36	44	ANEC1 (RAWS)	
2/9/02 7:38 PM	Wire	Conductor	37	18	45	44	JULC1 (RAWS)	
2/9/02 8:12 PM	Undetermined	Unknown	41	21	48	41	CMNC1 (RAWS)	
2/9/02 8:16 PM	Wire	Conductor	36	17	40	41	DENC1 (RAWS)	
2/9/02 8:35 PM	Undetermined	Unknown	41	21	48	44	CMNC1 (RAWS)	
2/9/02 8:45 PM	Undetermined	Unknown	41	21	48	44	CMNC1 (RAWS)	
2/9/02 8:48 PM	Wire	Conductor	44	26	44	44	DENC1 (RAWS)	
2/9/02 8:50 PM	Pole	Pole	44	26	44	44	DENC1 (RAWS)	
2/9/02 8:57 PM	Pole	Conductor	41	21	48	44	CMNC1 (RAWS)	
2/9/02 9:09 PM	Pole	Pole	55	29	55	55	CMNC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
2/9/02 9:44 PM	Undetermined	Unknown	55	29	55	55	CMNC1 (RAWS)	
2/9/02 10:10 PM	Wire	Conductor	39	20	45	54	JULC1 (RAWS)	
2/9/02 10:14 PM	Undetermined	Unknown	54	30	55	54	CMNC1 (RAWS)	
2/9/02 10:28 PM	Undetermined	Unknown	54	30	55	54	CMNC1 (RAWS)	
2/9/02 11:44 PM	Undetermined	Unknown	60	31	60	60	CMNC1 (RAWS)	
2/10/02 12:10 AM	Wire	Conductor	46	17	46	56	JULC1 (RAWS)	
2/10/02 12:17 AM	Wire	Conductor	56	29	60	56	CMNC1 (RAWS)	
2/10/02 12:30 AM	Undetermined	Unknown	56	29	60	56	CMNC1 (RAWS)	
2/10/02 12:36 AM	Wire	Conductor	46	17	46	56	JULC1 (RAWS)	
2/10/02 12:42 AM	Pole	Pole	46	17	46	56	JULC1 (RAWS)	
2/10/02 1:43 AM	Pole	Pole	57	28	60	57	CMNC1 (RAWS)	
2/10/02 1:48 AM	Wire	Conductor	57	28	60	57	CMNC1 (RAWS)	
2/10/02 2:45 AM	Wire	Conductor	40	25	40	56	AMOC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
2/10/02 3:08 AM	Wire	Conductor	40	25	40	52	AMOC1 (RAWS)	
2/10/02 3:21 AM	Wire	Conductor	49	26	56	52	ANEC1 (RAWS)	
2/10/02 4:04 AM	Wire	Conductor	47	30	56	50	ANEC1 (RAWS)	
2/10/02 4:09 AM	Wire	Conductor	49	25	60	50	CMNC1 (RAWS)	
2/10/02 4:14 AM	Wire	Conductor	49	25	60	53	CMNC1 (RAWS)	
2/10/02 4:19 AM	Wire	Conductor	49	25	60	53	CMNC1 (RAWS)	
2/10/02 4:23 AM	Wire	Conductor	49	25	60	53	CMNC1 (RAWS)	
2/10/02 4:32 AM	Wire	Conductor	49	25	60	53	CMNC1 (RAWS)	
2/10/02 4:52 AM	Wire	Conductor	49	25	60	53	CMNC1 (RAWS)	
2/10/02 5:18 AM	Wire	Conductor	53	25	60	53	CMNC1 (RAWS)	
2/10/02 5:31 AM	Wire	Conductor	53	25	60	53	CMNC1 (RAWS)	
2/10/02 5:40 AM	Wire	Conductor	21	9	40	53	GOSC1 (RAWS)	
2/10/02 5:53 AM	Wire	Conductor	53	25	60	54	CMNC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
2/10/02 6:15 AM	Wire	Conductor	48	24	60	60	CMNC1 (RAWS)	
2/10/02 6:21 AM	Wire	Conductor	48	24	60	60	CMNC1 (RAWS)	
2/10/02 6:47 AM	Wire	Conductor	20	19	40	60	AMOC1 (RAWS)	
2/10/02 6:53 AM	Vegetation	Conductor	22	10	40	60	GOSC1 (RAWS)	
2/10/02 7:12 AM	Wire	Conductor	49	28	56	56	ANEC1 (RAWS)	
2/10/02 7:21 AM	Pole	Pole	22	9	40	56	GOSC1 (RAWS)	
2/10/02 7:32 AM	Vegetation	Conductor	22	9	40	56	GOSC1 (RAWS)	
2/10/02 7:40 AM	Wire	Conductor	22	9	40	56	GOSC1 (RAWS)	
2/10/02 7:41 AM	Pole	Pole	40	14	53	56	PIHC1 (RAWS)	
2/10/02 7:42 AM	Wire	Conductor	22	9	40	56	GOSC1 (RAWS)	
2/10/02 7:44 AM	Vegetation	Conductor	49	23	59	56	DENC1 (RAWS)	
2/10/02 7:45 AM	Wire	Conductor	35	24	40	56	AMOC1 (RAWS)	
2/10/02 8:16 AM	Vegetation	Conductor	34	14	40	63	GOSC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
2/10/02 8:39 AM	Vegetation	Conductor	50	28	60	63	CMNC1 (RAWS)	
2/10/02 8:41 AM	Vegetation	Conductor	34	14	40	63	GOSC1 (RAWS)	
2/10/02 8:58 AM	Pole	Pole	61	28	61	61	POTC1 (RAWS)	
2/10/02 9:02 AM	Wire	Conductor	26	24	40	61	AMOC1 (RAWS)	
2/10/02 9:09 AM	Wire	Conductor	34	13	40	61	GOSC1 (RAWS)	
2/10/02 9:55 AM	Pole	Conductor	47	18	47	61	GOSC1 (RAWS)	
2/10/02 10:00 AM	Pole	Pole	47	18	47	59	GOSC1 (RAWS)	
2/10/02 10:07 AM	Wire	Conductor	59	26	63	59	ANEC1 (RAWS)	
2/10/02 10:10 AM	Wire	Conductor	47	18	47	59	GOSC1 (RAWS)	
2/10/02 10:12 AM	Vegetation	Conductor	47	18	47	59	GOSC1 (RAWS)	
2/10/02 10:23 AM	Pole	Crossarm	47	18	47	59	GOSC1 (RAWS)	
2/10/02 10:26 AM	Pole	Pole	47	18	47	59	GOSC1 (RAWS)	
2/10/02 10:36 AM	Wire	Conductor	47	18	47	59	GOSC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
2/10/02 10:37 AM	Undetermined	Unknown	29	28	40	59	AMOC1 (RAWS)	
2/10/02 10:37 AM	Vegetation	Pole	47	18	47	59	GOSC1 (RAWS)	
2/10/02 10:40 AM	Vegetation	Conductor	53	29	59	59	DENC1 (RAWS)	
2/10/02 10:42 AM	Vegetation	Conductor	47	18	47	59	GOSC1 (RAWS)	
2/10/02 10:50 AM	Wire	Conductor	57	32	61	57	CMNC1 (RAWS)	
2/10/02 10:51 AM	Vegetation	Conductor	56	22	63	57	ANEC1 (RAWS)	
2/10/02 10:52 AM	Vegetation	Conductor	39	17	53	57	PIHC1 (RAWS)	
2/10/02 11:18 AM	Pole	Pole	45	20	47	57	GOSC1 (RAWS)	
2/10/02 11:42 AM	Undetermined	Unknown	56	22	63	57	ANEC1 (RAWS)	
2/10/02 11:46 AM	Wire	Conductor	45	20	47	57	GOSC1 (RAWS)	
2/10/02 12:27 PM	Wire	Conductor	54	24	61	55	CMNC1 (RAWS)	
2/10/02 12:31 PM	Wire	Conductor	40	21	47	54	GOSC1 (RAWS)	
2/10/02 12:34 PM	Vegetation	Conductor	40	21	47	54	GOSC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
2/10/02 12:39 PM	Vegetation	Conductor	40	21	47	54	GOSC1 (RAWS)	
2/10/02 12:53 PM	Wire	Conductor	40	21	47	54	GOSC1 (RAWS)	
2/10/02 1:08 PM	Pole	Insulator	49	18	61	49	POTC1 (RAWS)	
2/10/02 2:16 PM	Vegetation	Conductor	43	20	47	53	GOSC1 (RAWS)	
2/10/02 2:39 PM	Pole	Pole	37	15	61	53	CMNC1 (RAWS)	
2/10/02 3:47 PM	Wire	Conductor	38	19	47	47	GOSC1 (RAWS)	
2/10/02 3:53 PM	Wire	Conductor	38	19	47	53	GOSC1 (RAWS)	
2/10/02 4:19 PM	Wire	Conductor	46	21	59	53	DENC1 (RAWS)	
2/10/02 5:00 PM	Wire	Conductor	32	16	47	45	GOSC1 (RAWS)	
2/10/02 6:30 PM	Undetermined	Unknown	34	16	47	43	GOSC1 (RAWS)	
2/10/02 10:10 PM	Wire	Conductor	32	14	63	44	ANEC1 (RAWS)	
2/10/02 10:14 PM	Wire	Conductor	30	13	47	44	GOSC1 (RAWS)	
2/11/02 4:20 AM	Wire	Conductor	31	11	61	31	CMNC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
2/11/02 1:53 PM	Undetermined	Unknown	23	13	46	23	CMNC1 (RAWS)	
2/22/02 4:30 PM	Vegetation	Conductor	13	2	35	19	ANEC1 (RAWS)	
3/18/02 1:57 AM	Undetermined	Unknown	23	14	36	28	RCHC1 (RAWS)	
11/12/02 3:21 PM	Wire	Conductor	6	0	35	20	ANEC1 (RAWS)	
11/15/02 3:59 PM	Pole	Conductor	34	15	38	34	CMNC1 (RAWS)	
11/25/02 4:26 PM	Vegetation	Conductor	34	31	48	49	TLGC1 (RAWS)	
11/25/02 4:31 PM	Wire	Unknown	34	31	48	61	TLGC1 (RAWS)	
11/25/02 4:50 PM	Wire	Unknown	34	31	48	61	TLGC1 (RAWS)	
11/27/02 3:02 AM	Wire	Conductor	25	11	43	37	DENC1 (RAWS)	
11/27/02 6:34 AM	Pole	Pole	22	2	37	41	VLCC1 (RAWS)	
11/27/02 6:35 AM	Wire	Conductor	22	2	37	41	VLCC1 (RAWS)	
11/27/02 7:03 AM	Wire	Conductor	22	2	37	41	VLCC1 (RAWS)	
11/27/02 11:59 AM	Undetermined	Unknown	22	7	37	28	VLCC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
11/27/02 11:59 AM	Undetermined	Unknown	22	7	37	28	VLCC1 (RAWS)	
11/27/02 11:59 AM	Undetermined	Unknown	22	7	37	28	VLCC1 (RAWS)	
11/27/02 1:20 PM	Wire	Conductor	40	16	40	40	ANEC1 (RAWS)	
11/27/02 2:06 PM	Wire	Conductor	38	19	38	40	GOSC1 (RAWS)	
11/27/02 2:32 PM	Undetermined	Unknown	25	11	37	49	VLCC1 (RAWS)	
11/27/02 3:43 PM	Vegetation	Conductor	38	7	38	40	VLCC1 (RAWS)	
11/27/02 6:42 PM	Undetermined	Unknown	29	8	38	31	VLCC1 (RAWS)	
11/28/02 5:02 AM	Undetermined	Fuse	19	6	38	26	VLCC1 (RAWS)	
11/28/02 2:24 PM	Pole	Pole	28	7	38	38	VLCC1 (RAWS)	
11/28/02 3:38 PM	Wire	Conductor	34	10	36	34	VLCC1 (RAWS)	
11/28/02 3:57 PM	Undetermined	Fuse	34	10	36	36	VLCC1 (RAWS)	
11/28/02 4:03 PM	Wire	Conductor	34	10	36	36	VLCC1 (RAWS)	
11/28/02 4:05 PM	Undetermined	Unknown	36	16	36	36	GOSC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
11/28/02 4:24 PM	Undetermined	Unknown	36	16	36	36	GOSC1 (RAWS)	
11/28/02 4:42 PM	Undetermined	Unknown	36	16	36	36	GOSC1 (RAWS)	
11/28/02 4:48 PM	Undetermined	Unknown	36	16	36	36	GOSC1 (RAWS)	
11/28/02 5:11 PM	Wire	Conductor	38	15	38	47	ANEC1 (RAWS)	
11/28/02 5:16 PM	Wire	Conductor	47	8	47	47	VLCC1 (RAWS)	
11/28/02 5:17 PM	Undetermined	Unknown	27	16	36	47	GOSC1 (RAWS)	
11/28/02 5:20 PM	Vegetation	Conductor	38	15	38	47	ANEC1 (RAWS)	
11/28/02 5:21 PM	Undetermined	Unknown	27	16	36	47	GOSC1 (RAWS)	
11/28/02 5:26 PM	Vegetation	Conductor	38	15	38	47	ANEC1 (RAWS)	
11/28/02 5:32 PM	Undetermined	Fuse	47	8	47	52	VLCC1 (RAWS)	
11/28/02 5:38 PM	Vegetation	Conductor	38	15	38	52	ANEC1 (RAWS)	
11/28/02 5:42 PM	Wire	Conductor	47	8	47	52	VLCC1 (RAWS)	
11/28/02 5:44 PM	Vegetation	Conductor	38	15	38	52	ANEC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
11/28/02 7:31 PM	Undetermined	Unknown	20	8	36	51	GOSC1 (RAWS)	
11/28/02 7:49 PM	Vegetation	Fuse	28	10	37	51	CMNC1 (RAWS)	
11/28/02 8:01 PM	Undetermined	Unknown	28	18	36	51	GOSC1 (RAWS)	
11/28/02 8:05 PM	Undetermined	Unknown	28	18	36	51	GOSC1 (RAWS)	
11/28/02 8:25 PM	Undetermined	Unknown	28	18	36	51	GOSC1 (RAWS)	
11/28/02 8:35 PM	Wire	Fuse	21	15	39	40	ANEC1 (RAWS)	
11/28/02 8:39 PM	Wire	Conductor	24	8	47	40	VLCC1 (RAWS)	
11/28/02 8:45 PM	Undetermined	Unknown	28	18	36	40	GOSC1 (RAWS)	
11/28/02 8:51 PM	Undetermined	Unknown	28	18	36	40	GOSC1 (RAWS)	
11/28/02 9:03 PM	Undetermined	Unknown	41	20	41	41	GOSC1 (RAWS)	
11/28/02 10:15 PM	Undetermined	Unknown	41	5	47	41	VLCC1 (RAWS)	
11/29/02 2:18 AM	Wire	Conductor	15	3	47	23	VLCC1 (RAWS)	
11/29/02 4:33 AM	Undetermined	Unknown	7	1	47	27	VLCC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
11/29/02 6:10 AM	Wire	Conductor	3	1	47	25	VLCC1 (RAWS)	
11/29/02 7:10 AM	Undetermined	Unknown	2	0	41	16	GOSC1 (RAWS)	
11/29/02 1:46 PM	Undetermined	Unknown	6	0	39	22	ANEC1 (RAWS)	
11/29/02 4:34 PM	Undetermined	Unknown	5	0	41	16	GOSC1 (RAWS)	
11/29/02 4:34 PM	Undetermined	Unknown	5	0	41	16	GOSC1 (RAWS)	
11/29/02 4:39 PM	Undetermined	Unknown	6	0	39	16	ANEC1 (RAWS)	
11/29/02 4:53 PM	Undetermined	Unknown	4	1	39	16	ANEC1 (RAWS)	
11/29/02 5:00 PM	Undetermined	Fuse	3	0	41	16	GOSC1 (RAWS)	
11/29/02 5:11 PM	Undetermined	Fuse	3	0	41	20	GOSC1 (RAWS)	
11/29/02 5:13 PM	Undetermined	Unknown	3	0	41	20	GOSC1 (RAWS)	
11/29/02 5:16 PM	Undetermined	Unknown	4	1	39	20	ANEC1 (RAWS)	
11/29/02 5:32 PM	Pole	Transformer	9	2	41	20	VLCC1 (RAWS)	
11/29/02 5:36 PM	Undetermined	Unknown	9	2	41	20	VLCC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
11/29/02 5:41 PM	Undetermined	Unknown	9	2	41	20	VLCC1 (RAWS)	
11/29/02 5:44 PM	Undetermined	Unknown	4	1	39	20	ANEC1 (RAWS)	
11/29/02 5:47 PM	Undetermined	Unknown	4	1	39	20	ANEC1 (RAWS)	
11/29/02 5:49 PM	Wire	Conductor	4	1	39	20	ANEC1 (RAWS)	
11/29/02 5:49 PM	Undetermined	Unknown	4	1	39	20	ANEC1 (RAWS)	
11/29/02 5:50 PM	Undetermined	Unknown	10	1	39	20	ANEC1 (RAWS)	
11/29/02 5:55 PM	Undetermined	Unknown	10	1	39	20	ANEC1 (RAWS)	
11/29/02 6:20 PM	Undetermined	Unknown	4	1	41	18	GOSC1 (RAWS)	
11/29/02 6:32 PM	Undetermined	Lightning Arrestor	10	1	39	17	ANEC1 (RAWS)	
11/29/02 7:00 PM	Undetermined	Unknown	9	2	41	17	VLCC1 (RAWS)	
11/29/02 8:25 PM	Vegetation	Conductor	6	0	39	34	ANEC1 (RAWS)	
11/29/02 10:04 PM	Undetermined	Unknown	5	1	41	12	VLCC1 (RAWS)	
12/17/02 10:21 AM	Undetermined	Unknown	10	5	46	26	CAPC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/1/03 6:37 AM	Wire	Conductor	13	7	37	23	JULC1 (RAWS)	
1/6/03 2:23 AM	Pole	Pole	62	38	62	62	CAPC1 (RAWS)	
1/6/03 6:29 AM	Pole	Pole	41	31	45	47	AMOC1 (RAWS)	
1/6/03 6:37 AM	Undetermined	Unknown	41	31	45	47	AMOC1 (RAWS)	
1/6/03 6:46 AM	Undetermined	Unknown	41	31	45	47	AMOC1 (RAWS)	
1/6/03 7:00 AM	Undetermined	Unknown	43	27	43	47	GOSC1 (RAWS)	
1/6/03 7:34 AM	Wire	Conductor	43	27	43	43	GOSC1 (RAWS)	
1/6/03 7:34 AM	Wire	Conductor	43	27	43	43	GOSC1 (RAWS)	
1/6/03 7:38 AM	Undetermined	Unknown	41	31	45	43	AMOC1 (RAWS)	
1/6/03 7:44 AM	Wire	Conductor	43	27	43	43	GOSC1 (RAWS)	
1/6/03 7:50 AM	Undetermined	Crossarm	35	7	35	43	ANEC1 (RAWS)	
1/6/03 8:17 AM	Undetermined	Unknown	25	8	36	43	JULC1 (RAWS)	
1/6/03 8:40 AM	Undetermined	Unknown	36	28	36	47	KRNM (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/6/03 9:48 AM	Pole	Pole	26	21	45	49	AMOC1 (RAWS)	
1/6/03 10:11 AM	Undetermined	Unknown	26	21	45	40	AMOC1 (RAWS)	
1/6/03 10:23 AM	Wire	Conductor	36	17	78	40	CAPC1 (RAWS)	
1/6/03 10:44 AM	Vegetation	Conductor	14	12	45	51	AMOC1 (RAWS)	
1/6/03 11:01 AM	Undetermined	Unknown	14	12	45	53	AMOC1 (RAWS)	
1/6/03 12:00 PM	Undetermined	Unknown	24	16	39	53	KMYF (AIRPORT)	
1/6/03 12:00 PM	Undetermined	Unknown	24	16	39	53	KMYF (AIRPORT)	
1/6/03 12:05 PM	Wire	Conductor	11	10	45	53	AMOC1 (RAWS)	
1/6/03 12:15 PM	Wire	Conductor	25	11	43	53	GOSC1 (RAWS)	
1/6/03 12:19 PM	Pole	Pole	25	11	43	53	GOSC1 (RAWS)	
1/6/03 12:45 PM	Wire	Conductor	25	17	38	53	KRNM (AIRPORT)	
1/6/03 1:33 PM	Undetermined	Unknown	30	22	44	42	KCZZ (AIRPORT)	
1/6/03 1:37 PM	Undetermined	Unknown	41	23	51	42	DENC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/6/03 3:09 PM	Undetermined	Unknown	23	9	43	56	GOSC1 (RAWS)	
1/6/03 6:51 PM	Undetermined	Unknown	43	13	45	43	RCHC1 (RAWS)	
1/6/03 7:18 PM	Undetermined	Unknown	38	19	45	38	RCHC1 (RAWS)	
1/6/03 7:20 PM	Undetermined	Unknown	7	1	43	38	GOSC1 (RAWS)	
1/6/03 9:14 PM	Undetermined	Unknown	32	21	38	35	KRNM (AIRPORT)	
1/7/03 12:54 AM	Undetermined	Unknown	26	13	43	45	GOSC1 (RAWS)	
1/7/03 1:43 AM	Wire	Conductor	26	16	43	46	GOSC1 (RAWS)	
1/7/03 2:14 AM	Undetermined	Unknown	29	16	43	46	GOSC1 (RAWS)	
1/7/03 2:23 AM	Wire	Conductor	29	16	43	46	GOSC1 (RAWS)	
1/7/03 2:28 AM	Wire	Conductor	22	15	41	46	AMOC1 (RAWS)	
1/7/03 2:38 AM	Pole	Pole	29	16	43	57	GOSC1 (RAWS)	
1/7/03 2:41 AM	Vegetation	Conductor	22	15	41	57	AMOC1 (RAWS)	
1/7/03 2:48 AM	Wire	Conductor	37	30	38	57	KRNM (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/7/03 2:57 AM	Pole	Crossarm	22	15	41	57	AMOC1 (RAWS)	
1/7/03 3:29 AM	Undetermined	Regulator	41	28	41	57	KRNM (AIRPORT)	
1/7/03 3:35 AM	Wire	Conductor	37	20	43	66	GOSC1 (RAWS)	
1/7/03 3:41 AM	Vegetation	Conductor	20	15	41	66	AMOC1 (RAWS)	
1/7/03 3:41 AM	Vegetation	Conductor	54	17	54	66	ANEC1 (RAWS)	
1/7/03 3:52 AM	Undetermined	Unknown	20	15	41	66	AMOC1 (RAWS)	
1/7/03 3:54 AM	Undetermined	Unknown	37	20	43	66	GOSC1 (RAWS)	
1/7/03 4:02 AM	Undetermined	Unknown	20	15	41	66	AMOC1 (RAWS)	
1/7/03 4:03 AM	Undetermined	Unknown	41	24	43	66	GOSC1 (RAWS)	
1/7/03 4:06 AM	Wire	Conductor	41	24	43	66	GOSC1 (RAWS)	
1/7/03 4:21 AM	Undetermined	Unknown	41	24	43	66	GOSC1 (RAWS)	
1/7/03 4:29 AM	Vegetation	Unknown	49	32	49	66	KRNM (AIRPORT)	
1/7/03 4:34 AM	Undetermined	Unknown	41	24	43	69	GOSC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/7/03 4:40 AM	Wire	Conductor	44	20	54	69	ANEC1 (RAWS)	
1/7/03 4:50 AM	Undetermined	Unknown	41	24	43	69	GOSC1 (RAWS)	
1/7/03 5:11 AM	Undetermined	Unknown	28	28	49	69	KRNM (AIRPORT)	
1/7/03 5:15 AM	Wire	Conductor	45	32	45	69	KCRQ (AIRPORT)	
1/7/03 5:15 AM	Wire	Conductor	45	32	45	69	KCRQ (AIRPORT)	
1/7/03 5:17 AM	Vegetation	Conductor	45	32	45	69	KCRQ (AIRPORT)	
1/7/03 5:17 AM	Vegetation	Transformer	45	32	45	69	KCRQ (AIRPORT)	
1/7/03 5:20 AM	Wire	Conductor	45	32	45	69	KCRQ (AIRPORT)	
1/7/03 5:26 AM	Vegetation	Conductor	45	32	45	69	KCRQ (AIRPORT)	
1/7/03 5:33 AM	Pole	Conductor	28	28	49	67	KRNM (AIRPORT)	
1/7/03 5:44 AM	Undetermined	Unknown	45	32	45	67	KCRQ (AIRPORT)	
1/7/03 5:51 AM	Pole	Pole	28	28	49	67	KRNM (AIRPORT)	
1/7/03 5:55 AM	Undetermined	Transformer	9	9	39	67	KMYF (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/7/03 5:57 AM	Wire	Conductor	67	44	69	67	CAPC1 (RAWS)	
1/7/03 5:57 AM	Undetermined	Unknown	28	28	49	67	KRNM (AIRPORT)	
1/7/03 6:40 AM	Wire	Conductor	51	36	51	62	KCRQ (AIRPORT)	
1/7/03 6:44 AM	Undetermined	Unknown	24	24	49	62	KRNM (AIRPORT)	
1/7/03 7:12 AM	Wire	Conductor	30	21	51	62	KCRQ (AIRPORT)	
1/7/03 7:21 AM	Pole	Pole	30	21	51	62	KCRQ (AIRPORT)	
1/7/03 7:21 AM	Undetermined	Unknown	37	21	56	62	ANEC1 (RAWS)	
1/7/03 7:39 AM	Wire	Jumper	22	8	41	60	GOSC1 (RAWS)	
1/7/03 7:42 AM	Pole	Pole	37	21	56	60	ANEC1 (RAWS)	
1/7/03 7:49 AM	Undetermined	Unknown	19	19	49	60	KRNM (AIRPORT)	
1/7/03 8:04 AM	Undetermined	Unknown	33	25	51	60	KCRQ (AIRPORT)	
1/7/03 8:24 AM	Vegetation	Conductor	47	25	56	60	CMNC1 (RAWS)	
1/7/03 8:35 AM	Wire	Conductor	33	26	41	63	KSDM (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/7/03 8:36 AM	Wire	Conductor	42	19	42	63	GOSC1 (RAWS)	
1/7/03 8:55 AM	Wire	Conductor	33	25	51	63	KCRQ (AIRPORT)	
1/7/03 9:07 AM	Pole	Pole	47	31	49	63	KRNM (AIRPORT)	
1/7/03 9:07 AM	Wire	Conductor	29	12	47	63	JULC1 (RAWS)	
1/7/03 9:14 AM	Pole	Conductor	45	21	45	63	GOSC1 (RAWS)	
1/7/03 9:16 AM	Wire	Conductor	59	23	59	63	ANEC1 (RAWS)	
1/7/03 9:35 AM	Vegetation	Conductor	59	23	59	60	ANEC1 (RAWS)	
1/7/03 9:42 AM	Vegetation	Conductor	59	23	59	60	ANEC1 (RAWS)	
1/7/03 9:58 AM	Undetermined	Unknown	15	15	44	60	KNKX (AIRPORT)	
1/7/03 10:02 AM	Wire	Conductor	28	18	51	60	KCRQ (AIRPORT)	
1/7/03 10:45 AM	Undetermined	Unknown	20	13	39	60	KMYF (AIRPORT)	
1/7/03 11:00 AM	Wire	Conductor	58	23	59	60	ANEC1 (RAWS)	
1/7/03 11:05 AM	Vegetation	Conductor	24	24	49	60	KRNM (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/7/03 11:11 AM	Wire	Conductor	21	13	37	60	KMYF (AIRPORT)	
1/7/03 12:22 PM	Wire	Conductor	35	17	35	59	KSEE (AIRPORT)	
1/7/03 1:11 PM	Wire	Conductor	43	21	49	65	GOSC1 (RAWS)	
1/7/03 1:22 PM	Undetermined	Unknown	37	32	41	65	KSDM (AIRPORT)	
1/7/03 1:25 PM	Wire	Conductor	35	17	35	65	KSEE (AIRPORT)	
1/7/03 1:34 PM	Wire	Conductor	43	21	49	57	GOSC1 (RAWS)	
1/7/03 1:41 PM	Pole	Conductor	19	19	49	57	KRNM (AIRPORT)	
1/7/03 1:49 PM	Wire	Conductor	43	21	49	57	GOSC1 (RAWS)	
1/7/03 3:23 PM	Undetermined	Fuse	18	8	49	47	GOSC1 (RAWS)	
1/7/03 3:27 PM	Wire	Conductor	17	17	35	47	KSEE (AIRPORT)	
1/7/03 3:39 PM	Wire	Conductor	15	15	51	47	KCRQ (AIRPORT)	
1/7/03 3:59 PM	Pole	Pole	22	14	49	47	KRNM (AIRPORT)	
1/7/03 4:05 PM	Wire	Conductor	23	17	35	47	KSEE (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/7/03 4:06 PM	Undetermined	Unknown	17	5	49	47	GOSC1 (RAWS)	
1/7/03 4:17 PM	Wire	Conductor	13	13	51	47	KCRQ (AIRPORT)	
1/7/03 4:24 PM	Wire	Conductor	17	5	49	47	GOSC1 (RAWS)	
1/7/03 4:47 PM	Vegetation	Conductor	13	13	51	41	KCRQ (AIRPORT)	
1/7/03 5:01 PM	Vegetation	Conductor	7	7	51	41	KCRQ (AIRPORT)	
1/7/03 5:25 PM	Wire	Transformer	10	10	49	41	KRNM (AIRPORT)	
1/7/03 5:55 PM	Vegetation	Conductor	10	10	49	36	KRNM (AIRPORT)	
1/7/03 6:23 PM	Undetermined	Unknown	10	2	49	36	GOSC1 (RAWS)	
1/7/03 6:45 PM	Wire	Conductor	9	9	49	28	KRNM (AIRPORT)	
1/7/03 8:24 PM	Undetermined	Unknown	6	6	44	25	KNKX (AIRPORT)	
1/7/03 9:10 PM	Wire	Conductor	21	11	49	25	GOSC1 (RAWS)	
1/7/03 9:21 PM	Undetermined	Unknown	21	11	49	25	GOSC1 (RAWS)	
1/7/03 9:45 PM	Wire	Conductor	12	9	35	25	AMOC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/7/03 11:40 PM	Undetermined	Unknown	0	0	38	18	KSAN (AIRPORT)	
1/8/03 1:32 AM	Wire	Conductor	0	0	49	23	KRNM (AIRPORT)	
1/8/03 1:32 AM	Wire	Conductor	0	0	49	23	KRNM (AIRPORT)	
1/8/03 1:50 AM	Undetermined	Unknown	5	0	59	23	ANEC1 (RAWS)	
1/8/03 2:40 AM	Vegetation	Conductor	5	5	35	28	KSEE (AIRPORT)	
1/8/03 5:59 AM	Wire	Conductor	3	3	47	19	KRNM (AIRPORT)	
1/8/03 7:04 AM	Wire	Conductor	7	7	35	18	KSEE (AIRPORT)	
1/8/03 8:38 AM	Wire	Conductor	10	0	59	20	ANEC1 (RAWS)	
1/8/03 8:45 AM	Pole	Pole	6	6	35	20	KSEE (AIRPORT)	
1/8/03 3:26 PM	Undetermined	Unknown	10	4	42	16	CAPC1 (RAWS)	
3/17/03 4:07 PM	Wire	Conductor	35	23	35	35	KOKB (AIRPORT)	
3/29/03 2:33 AM	Wire	Conductor	40	29	45	49	CMNC1 (RAWS)	
3/29/03 2:47 AM	Undetermined	Unknown	40	19	46	49	DENC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
3/29/03 3:03 AM	Wire	Conductor	52	32	52	52	CMNC1 (RAWS)	
3/29/03 3:12 AM	Wire	Conductor	40	19	46	52	DENC1 (RAWS)	
3/29/03 3:14 AM	Wire	Conductor	49	23	49	52	JULC1 (RAWS)	
3/29/03 3:43 AM	Wire	Conductor	49	23	49	52	JULC1 (RAWS)	
3/29/03 3:44 AM	Wire	Conductor	52	32	52	52	CMNC1 (RAWS)	
3/29/03 3:46 AM	Wire	Conductor	49	23	49	52	JULC1 (RAWS)	
3/29/03 4:01 AM	Wire	Conductor	49	23	49	55	JULC1 (RAWS)	
3/29/03 4:35 AM	Wire	Conductor	9	9	60	55	KCZZ (AIRPORT)	
3/29/03 4:37 AM	Undetermined	Unknown	39	23	43	55	RCHC1 (RAWS)	
3/29/03 4:54 AM	Wire	Conductor	55	29	55	55	CMNC1 (RAWS)	
3/29/03 5:19 AM	Wire	Conductor	59	32	59	59	CMNC1 (RAWS)	
3/29/03 5:32 AM	Wire	Conductor	6	6	60	59	KCZZ (AIRPORT)	
3/29/03 5:39 AM	Wire	Conductor	6	6	60	59	KCZZ (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
3/29/03 5:46 AM	Wire	Conductor	59	32	59	59	CMNC1 (RAWS)	
3/29/03 5:54 AM	Undetermined	Conductor	6	6	60	59	KCZZ (AIRPORT)	
3/29/03 6:09 AM	Wire	Conductor	7	7	60	57	KCZZ (AIRPORT)	
3/29/03 6:13 AM	Wire	Conductor	38	19	49	57	JULC1 (RAWS)	
3/29/03 6:37 AM	Wire	Conductor	57	29	59	57	CMNC1 (RAWS)	
3/29/03 6:53 AM	Wire	Conductor	57	29	59	57	CMNC1 (RAWS)	
3/29/03 7:31 AM	Undetermined	Unknown	42	22	49	54	JULC1 (RAWS)	
3/29/03 8:06 AM	Wire	Conductor	59	32	59	59	CMNC1 (RAWS)	
3/29/03 8:20 AM	Wire	Conductor	3	3	60	59	KCZZ (AIRPORT)	
3/29/03 8:53 AM	Wire	Conductor	59	32	59	59	CMNC1 (RAWS)	
3/29/03 8:56 AM	Wire	Conductor	3	3	60	59	KCZZ (AIRPORT)	
3/29/03 8:57 AM	Wire	Conductor	59	32	59	59	CMNC1 (RAWS)	
3/29/03 9:04 AM	Wire	Conductor	56	26	56	56	DENC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
3/29/03 9:10 AM	Undetermined	Unknown	56	26	56	56	DENC1 (RAWS)	
3/29/03 9:58 AM	Wire	Conductor	43	20	49	55	JULC1 (RAWS)	
3/29/03 9:59 AM	Wire	Conductor	43	20	49	55	JULC1 (RAWS)	
3/29/03 10:12 AM	Wire	Conductor	6	6	60	55	KCZZ (AIRPORT)	
3/29/03 10:40 AM	Undetermined	Unknown	46	18	56	55	DENC1 (RAWS)	
3/29/03 10:49 AM	Undetermined	Unknown	36	9	36	55	VLCC1 (RAWS)	
3/29/03 10:53 AM	Undetermined	Unknown	33	24	36	55	KCRQ (AIRPORT)	
3/29/03 12:12 PM	Undetermined	Fuse	7	7	60	52	KCZZ (AIRPORT)	
3/29/03 12:16 PM	Pole	Pole	52	23	56	52	DENC1 (RAWS)	
3/29/03 2:28 PM	Undetermined	Unknown	29	7	36	44	VLCC1 (RAWS)	
4/8/03 12:41 PM	Undetermined	Unknown	18	16	36	29	TLGC1 (RAWS)	
4/14/03 3:31 PM	Wire	Conductor	37	28	37	37	KNKX (AIRPORT)	
4/15/03 3:33 AM	Wire	Conductor	38	23	43	38	RCHC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
4/15/03 11:20 AM	Wire	Conductor	14	4	39	27	CMNC1 (RAWS)	
4/23/03 11:40 AM	Wire	Conductor	22	11	46	25	RCHC1 (RAWS)	
4/30/03 4:38 PM	Undetermined	Unknown	20	11	35	27	RCHC1 (RAWS)	
8/20/03 1:11 PM	Undetermined	Unknown	12	5	39	25	RCHC1 (RAWS)	
8/27/03 6:57 PM	Undetermined	Unknown	21	3	41	21	RCHC1 (RAWS)	
11/22/03 4:44 AM	Undetermined	Unknown	36	18	43	46	JULC1 (RAWS)	
11/23/03 5:50 AM	Wire	Conductor	29	11	36	37	POTC1 (RAWS)	
11/23/03 2:28 PM	Wire	Conductor	33	18	38	33	JULC1 (RAWS)	
11/23/03 5:16 PM	Pole	Crossarm	21	7	36	26	DENC1 (RAWS)	
11/27/03 7:13 AM	Pole	Insulators	45	24	45	45	JULC1 (RAWS)	
11/27/03 7:21 AM	Pole	Insulators	45	24	45	45	JULC1 (RAWS)	
11/27/03 7:47 AM	Pole	Insulators	45	24	45	45	JULC1 (RAWS)	
11/27/03 9:22 AM	Wire	Conductor	31	8	35	46	VLCC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
11/27/03 10:00 AM	Wire	Transformer	38	19	41	49	DENC1 (RAWS)	
11/27/03 10:25 AM	Wire	Conductor	28	7	35	49	VLCC1 (RAWS)	
11/27/03 10:27 AM	Undetermined	Unknown	39	21	39	49	GOSC1 (RAWS)	
11/27/03 4:03 PM	Undetermined	Unknown	26	4	35	32	VLCC1 (RAWS)	
12/8/03 1:30 AM	Wire	Conductor	33	15	36	36	JULC1 (RAWS)	
12/15/03 7:52 PM	Vegetation	Conductor	34	23	41	34	JULC1 (RAWS)	
12/15/03 9:35 PM	Wire	Conductor	37	22	41	37	JULC1 (RAWS)	
12/15/03 9:48 PM	Wire	Conductor	37	22	41	37	JULC1 (RAWS)	
12/15/03 10:08 PM	Wire	Conductor	37	22	41	37	JULC1 (RAWS)	
12/15/03 10:55 PM	Wire	Conductor	39	22	41	39	JULC1 (RAWS)	
12/15/03 10:58 PM	Wire	Conductor	39	22	41	39	JULC1 (RAWS)	
12/15/03 11:14 PM	Wire	Conductor	41	23	41	41	JULC1 (RAWS)	
12/15/03 11:15 PM	Wire	Conductor	41	23	41	41	JULC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/16/03 5:01 AM	Undetermined	Unknown	40	19	41	43	JULC1 (RAWS)	
12/25/03 7:08 PM	Undetermined	Unknown	42	18	46	59	JULC1 (RAWS)	
12/25/03 7:48 PM	Undetermined	Pole	53	22	53	53	RCHC1 (RAWS)	
12/25/03 10:09 PM	Undetermined	Unknown	39	22	48	45	JULC1 (RAWS)	
12/26/03 12:04 AM	Undetermined	Unknown	25	22	36	39	KSAN (AIRPORT)	
12/26/03 2:09 AM	Wire	Conductor	36	20	48	37	JULC1 (RAWS)	
12/26/03 9:24 AM	Undetermined	Unknown	9	6	59	45	CAPC1 (RAWS)	
12/26/03 1:15 PM	Pole	Pole	31	17	48	40	JULC1 (RAWS)	
12/26/03 6:42 PM	Undetermined	Unknown	0	0	39	23	KRNM (AIRPORT)	
1/6/04 11:34 AM	Undetermined	Unknown	20	20	38	20	KCZZ (AIRPORT)	
2/3/04 2:06 AM	Wire	Conductor	3	3	35	30	KSEE (AIRPORT)	
2/3/04 12:31 PM	Vegetation	Conductor	14	14	35	38	KSEE (AIRPORT)	
2/19/04 12:00 AM	Pole	Crossarm	33	16	49	41	RCHC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
3/7/04 10:28 AM	Wire	Conductor	37	17	37	38	JULC1 (RAWS)	
4/23/04 4:59 PM	Undetermined	Unknown	35	25	44	35	CAPC1 (RAWS)	
4/29/04 5:51 AM	Undetermined	Unknown	40	22	46	40	RCHC1 (RAWS)	
5/29/04 11:03 AM	Undetermined	Unknown	18	11	38	24	JULC1 (RAWS)	
10/20/04 7:13 PM	Undetermined	Unknown	19	11	39	20	JULC1 (RAWS)	
10/21/04 7:43 AM	Undetermined	Unknown	13	6	41	15	CAPC1 (RAWS)	
10/27/04 12:42 AM	Vegetation	Conductor	30	17	38	44	CAPC1 (RAWS)	
10/27/04 1:42 AM	Vegetation	Conductor	44	32	44	44	TLGC1 (RAWS)	
10/27/04 3:38 AM	Wire	Conductor	18	16	37	32	AMOC1 (RAWS)	
10/27/04 3:44 AM	Vegetation	Conductor	18	16	37	32	AMOC1 (RAWS)	
10/27/04 8:47 AM	Vegetation	Conductor	13	7	37	40	AMOC1 (RAWS)	
11/21/04 7:01 AM	Undetermined	Conductor	45	17	45	45	KSAN (AIRPORT)	
11/21/04 7:12 AM	Undetermined	Unknown	45	17	45	45	KSAN (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
11/21/04 12:46 PM	Undetermined	Unknown	21	15	43	27	TLGC1 (RAWS)	
11/28/04 11:07 PM	Wire	Conductor	28	13	35	29	CAPC1 (RAWS)	
11/30/04 3:07 AM	Pole	Pole	13	6	41	26	CAPC1 (RAWS)	
12/16/04 9:02 AM	Undetermined	Unknown	48	21	48	48	DENC1 (RAWS)	
12/16/04 12:19 PM	Wire	Conductor	43	20	44	51	CMNC1 (RAWS)	
12/16/04 1:52 PM	Wire	Conductor	47	38	53	47	KCZZ (AIRPORT)	
12/16/04 3:55 PM	Undetermined	Unknown	39	22	48	60	DENC1 (RAWS)	
12/16/04 6:11 PM	Vegetation	Conductor	40	18	48	52	DENC1 (RAWS)	
12/16/04 8:02 PM	Wire	Conductor	48	28	48	59	JULC1 (RAWS)	X
12/16/04 9:40 PM	Wire	Conductor	28	16	39	51	KRNM (AIRPORT)	
12/16/04 10:29 PM	Wire	Conductor	46	27	50	55	CMNC1 (RAWS)	X
12/17/04 12:48 AM	Wire	Conductor	26	16	39	54	KRNM (AIRPORT)	X
12/17/04 4:55 AM	Undetermined	Unknown	21	9	36	46	VLCC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/17/04 5:25 AM	Wire	Conductor	39	15	48	46	PIHC1 (RAWS)	
12/17/04 7:24 AM	Vegetation	Conductor	20	6	36	43	VLCC1 (RAWS)	
12/17/04 10:43 AM	Vegetation	Conductor	29	9	50	52	ANEC1 (RAWS)	
12/17/04 11:39 AM	Wire	Conductor	36	11	48	46	PIHC1 (RAWS)	
12/17/04 1:47 PM	Undetermined	Unknown	14	11	39	44	AMOC1 (RAWS)	
12/17/04 1:50 PM	Undetermined	Unknown	24	8	50	44	ANEC1 (RAWS)	
12/24/04 4:54 AM	Wire	Conductor	29	9	37	41	DENC1 (RAWS)	
12/29/04 12:41 AM	Vegetation	Conductor	26	16	37	39	KSDM (AIRPORT)	
12/29/04 12:57 AM	Undetermined	Unknown	26	16	37	52	KSDM (AIRPORT)	
12/29/04 12:57 AM	Undetermined	Unknown	35	22	35	52	KSAN (AIRPORT)	
12/29/04 12:58 AM	Vegetation	Conductor	35	22	35	52	KSAN (AIRPORT)	
12/29/04 1:01 AM	Vegetation	Conductor	31	13	40	52	CAPC1 (RAWS)	
12/29/04 1:01 AM	Vegetation	Conductor	40	24	40	52	KSAN (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/29/04 1:01 AM	Vegetation	Conductor	40	24	40	52	KSAN (AIRPORT)	
12/29/04 1:18 AM	Vegetation	Conductor	37	25	37	52	KSDM (AIRPORT)	
12/29/04 1:20 AM	Undetermined	Unknown	24	10	37	52	VLCC1 (RAWS)	
12/29/04 1:20 AM	Vegetation	Conductor	31	13	40	52	CAPC1 (RAWS)	
12/29/04 1:31 AM	Undetermined	Unknown	40	24	40	52	KSAN (AIRPORT)	
12/29/04 1:35 AM	Vegetation	Conductor	40	24	40	52	KSAN (AIRPORT)	
12/29/04 1:36 AM	Vegetation	Conductor	40	24	40	52	KSAN (AIRPORT)	
12/29/04 1:39 AM	Wire	Conductor	40	24	40	52	KSAN (AIRPORT)	
12/29/04 1:58 AM	Vegetation	Conductor	24	10	37	49	VLCC1 (RAWS)	
12/29/04 2:02 AM	Vegetation	Conductor	49	29	49	53	MIGC1 (RAWS)	
12/29/04 2:05 AM	Undetermined	Unknown	35	18	35	53	KRNM (AIRPORT)	
12/29/04 2:07 AM	Wire	Conductor	24	10	37	53	VLCC1 (RAWS)	
12/29/04 2:12 AM	Pole	Pole	40	7	40	53	POTC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/29/04 2:12 AM	Wire	Conductor	44	25	44	53	KSEE (AIRPORT)	
12/29/04 2:13 AM	Wire	Conductor	32	23	40	53	KSAN (AIRPORT)	
12/29/04 2:14 AM	Vegetation	Conductor	31	15	37	53	VLCC1 (RAWS)	
12/29/04 2:16 AM	Wire	Conductor	32	23	40	53	KSAN (AIRPORT)	
12/29/04 2:17 AM	Vegetation	Conductor	35	18	35	53	KRNM (AIRPORT)	
12/29/04 2:24 AM	Pole	Conductor	44	25	44	53	KSEE (AIRPORT)	
12/29/04 2:26 AM	Vegetation	Conductor	39	13	39	53	KCRQ (AIRPORT)	
12/29/04 2:26 AM	Vegetation	Conductor	44	25	44	53	KSEE (AIRPORT)	
12/29/04 2:37 AM	Undetermined	Unknown	31	15	37	54	VLCC1 (RAWS)	
12/29/04 2:39 AM	Wire	Conductor	31	15	37	54	VLCC1 (RAWS)	
12/29/04 2:55 AM	Undetermined	Unknown	39	13	39	54	KCRQ (AIRPORT)	
12/29/04 3:10 AM	Vegetation	Conductor	36	24	48	54	KSDM (AIRPORT)	
12/29/04 3:12 AM	Vegetation	Jumper	36	24	48	54	KSDM (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/29/04 3:24 AM	Undetermined	Unknown	24	24	40	54	KSAN (AIRPORT)	
12/29/04 3:38 AM	Pole	Pole	10	4	37	52	VLCC1 (RAWS)	
12/29/04 3:39 AM	Wire	Conductor	24	24	40	52	KSAN (AIRPORT)	
12/29/04 3:47 AM	Vegetation	Conductor	15	15	44	52	KSEE (AIRPORT)	
12/29/04 3:54 AM	Vegetation	Conductor	24	24	40	52	KSAN (AIRPORT)	
12/29/04 4:01 AM	Vegetation	Conductor	34	6	40	52	POTC1 (RAWS)	
12/29/04 4:06 AM	Wire	Conductor	9	9	35	52	KRNM (AIRPORT)	
12/29/04 4:16 AM	Vegetation	Conductor	25	6	54	50	CAPC1 (RAWS)	
12/29/04 4:25 AM	Wire	Conductor	5	5	40	50	KSAN (AIRPORT)	
12/29/04 4:31 AM	Vegetation	Crossarm	5	5	39	50	KCRQ (AIRPORT)	
12/29/04 4:37 AM	Vegetation	Conductor	3	3	44	50	KMYF (AIRPORT)	
12/29/04 4:42 AM	Wire	Conductor	3	3	48	50	KSDM (AIRPORT)	
12/29/04 4:52 AM	Pole	Pole	5	5	40	50	KSAN (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/29/04 5:11 AM	Undetermined	Unknown	16	6	35	44	KRNM (AIRPORT)	
12/29/04 5:28 AM	Wire	Conductor	16	6	35	44	KRNM (AIRPORT)	
12/29/04 5:28 AM	Wire	Conductor	16	13	49	44	MIGC1 (RAWS)	
12/29/04 5:36 AM	Undetermined	Unknown	8	8	44	44	KSEE (AIRPORT)	
12/29/04 6:02 AM	Undetermined	Unknown	11	3	37	44	VLCC1 (RAWS)	
12/29/04 6:05 AM	Undetermined	Unknown	11	3	37	44	VLCC1 (RAWS)	
12/29/04 6:05 AM	Undetermined	Unknown	44	19	52	44	JULC1 (RAWS)	
12/29/04 6:14 AM	Wire	Conductor	8	8	44	44	KSEE (AIRPORT)	
12/29/04 6:18 AM	Vegetation	Conductor	12	3	37	44	VLCC1 (RAWS)	
12/29/04 6:22 AM	Undetermined	Unknown	8	8	44	44	KSEE (AIRPORT)	
12/29/04 6:27 AM	Wire	Guy Wire	8	8	44	44	KSEE (AIRPORT)	
12/29/04 6:31 AM	Pole	Pole	12	3	37	44	VLCC1 (RAWS)	
12/29/04 6:53 AM	Wire	Conductor	5	5	39	44	KCRQ (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/29/04 7:03 AM	Pole	Conductor	10	10	44	42	KMYF (AIRPORT)	
12/29/04 7:34 AM	Wire	Conductor	15	15	40	35	KSAN (AIRPORT)	
12/29/04 7:51 AM	Undetermined	Fuse	15	15	40	35	KSAN (AIRPORT)	
12/29/04 8:08 AM	Undetermined	Unknown	15	15	44	35	KMYF (AIRPORT)	
12/29/04 8:27 AM	Undetermined	Fuse	23	16	40	37	KSAN (AIRPORT)	
12/29/04 8:32 AM	Vegetation	Transformer	12	12	48	37	KSDM (AIRPORT)	
12/29/04 9:14 AM	Undetermined	Unknown	16	16	40	36	KSAN (AIRPORT)	
12/29/04 11:50 AM	Wire	Conductor	25	17	40	43	KSAN (AIRPORT)	
12/29/04 1:31 PM	Undetermined	Unknown	18	18	48	39	KSDM (AIRPORT)	
12/29/04 3:50 PM	Wire	Conductor	22	17	35	32	KRNM (AIRPORT)	
12/29/04 4:11 PM	Undetermined	Cutout	10	10	40	33	KSAN (AIRPORT)	
12/29/04 4:15 PM	Vegetation	Conductor	7	7	39	33	KCRQ (AIRPORT)	
1/3/05 5:25 PM	Undetermined	Unknown	12	5	40	26	PAMC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/9/05 6:38 AM	Undetermined	Unknown	26	5	40	27	JULC1 (RAWS)	
1/11/05 2:28 PM	Undetermined	Unknown	40	21	41	40	RCHC1 (RAWS)	
2/3/05 8:32 AM	Undetermined	Unknown	30	13	50	57	PIHC1 (RAWS)	
2/4/05 9:31 AM	Pole	Insulator	24	8	35	27	ANEC1 (RAWS)	
2/11/05 8:41 AM	Pole	Pole	35	12	43	35	MIGC1 (RAWS)	
2/11/05 9:48 AM	Wire	Conductor	25	13	43	35	MIGC1 (RAWS)	
2/11/05 2:09 PM	Undetermined	Unknown	17	10	43	26	MIGC1 (RAWS)	
3/31/05 10:55 AM	Undetermined	Unknown	46	25	46	47	DENC1 (RAWS)	
3/31/05 1:21 PM	Wire	Conductor	38	14	44	46	POTC1 (RAWS)	
3/31/05 3:59 PM	Undetermined	Unknown	24	10	48	43	DENC1 (RAWS)	
3/31/05 9:48 PM	Undetermined	Fuse	38	14	48	42	JULC1 (RAWS)	
4/1/05 6:08 AM	Vegetation	Conductor	35	7	35	42	VLCC1 (RAWS)	
4/1/05 10:58 AM	Undetermined	Unknown	35	9	41	47	VLCC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
4/1/05 11:45 AM	Undetermined	Unknown	38	13	46	39	JULC1 (RAWS)	
4/9/05 12:32 AM	Undetermined	Unknown	43	20	43	50	JULC1 (RAWS)	
4/9/05 1:33 AM	Pole	Pole	48	24	53	48	RCHC1 (RAWS)	
4/9/05 8:22 AM	Wire	Conductor	31	17	53	31	RCHC1 (RAWS)	
5/6/05 12:43 AM	Undetermined	Unknown	35	18	35	35	JULC1 (RAWS)	
7/30/05 4:00 PM	Undetermined	Unknown	7	1	38	18	RCHC1 (RAWS)	
8/2/05 5:18 AM	Undetermined	Unknown	3	3	44	8	KNKX (AIRPORT)	
10/17/05 12:57 PM	Pole	Pole	14	7	43	31	CAPC1 (RAWS)	
11/26/05 5:06 PM	Undetermined	Unknown	43	23	52	43	RCHC1 (RAWS)	
12/3/05 12:50 PM	Vegetation	Unknown	31	24	38	46	KRNM (AIRPORT)	X
1/1/06 6:37 AM	Undetermined	Unknown	20	11	40	20	JULC1 (RAWS)	
1/2/06 11:53 AM	Undetermined	Unknown	48	20	48	48	CAPC1 (RAWS)	
1/2/06 2:19 PM	Undetermined	Unknown	35	26	40	53	MIGC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/3/06 9:00 AM	Undetermined	Unknown	19	4	53	19	CAPC1 (RAWS)	
1/5/06 8:08 PM	Undetermined	Unknown	35	12	40	42	CMNC1 (RAWS)	
1/18/06 10:43 PM	Wire	Unknown	33	18	37	43	JULC1 (RAWS)	
1/19/06 4:38 AM	Wire	Unknown	31	19	37	44	JULC1 (RAWS)	
1/23/06 9:23 AM	Wire	Conductor	39	20	39	45	CMNC1 (RAWS)	
1/25/06 7:04 AM	Wire	Unknown	5	3	39	18	ANEC1 (RAWS)	
2/7/06 9:34 PM	Vegetation	Conductor	52	18	53	52	CAPC1 (RAWS)	X
2/10/06 5:56 PM	Undetermined	Unknown	36	7	40	36	CAPC1 (RAWS)	
2/15/06 4:08 PM	Wire	Conductor	40	21	48	47	JULC1 (RAWS)	
3/11/06 3:44 AM	Undetermined	Unknown	22	14	41	33	KCZZ (AIRPORT)	
3/12/06 7:14 AM	Wire	Conductor	19	3	36	21	CMNC1 (RAWS)	
3/19/06 3:19 PM	Wire	Unknown	22	12	35	27	JULC1 (RAWS)	
4/4/06 9:42 PM	Vegetation	Conductor	37	24	37	39	KCRQ (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
4/4/06 10:01 PM	Undetermined	Unknown	14	14	37	39	KCRQ (AIRPORT)	
4/5/06 5:53 AM	Vegetation	Conductor	6	6	37	34	KCRQ (AIRPORT)	
4/6/06 6:37 AM	Undetermined	Unknown	15	5	41	23	RCHC1 (RAWS)	
4/20/06 10:30 AM	Undetermined	Unknown	43	6	44	43	CAPC1 (RAWS)	
4/22/06 7:19 AM	Undetermined	Unknown	17	3	37	34	CAPC1 (RAWS)	
10/27/06 8:16 AM	Wire	Conductor	27	15	35	31	JULC1 (RAWS)	
11/15/06 12:46 PM	Undetermined	Unknown	31	22	35	31	KCZZ (AIRPORT)	
11/27/06 8:38 AM	Wire	Unknown	35	20	35	35	JULC1 (RAWS)	
11/28/06 4:23 AM	Wire	Conductor	43	26	45	43	JULC1 (RAWS)	
11/29/06 7:36 PM	Pole	Conductor	43	10	43	43	POTC1 (RAWS)	
11/29/06 9:11 PM	Undetermined	Unknown	41	22	43	41	JULC1 (RAWS)	
11/29/06 10:49 PM	Undetermined	Unknown	38	15	38	45	DENC1 (RAWS)	
11/29/06 10:59 PM	Undetermined	Unknown	42	25	43	45	JULC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
11/30/06 4:49 AM	Undetermined	Unknown	43	23	47	43	JULC1 (RAWS)	
11/30/06 6:19 AM	Wire	Conductor	38	21	47	42	JULC1 (RAWS)	X
11/30/06 7:26 AM	Pole	Connector	37	12	38	45	DENC1 (RAWS)	
11/30/06 10:41 AM	Undetermined	Unknown	39	23	47	39	JULC1 (RAWS)	
12/3/06 12:00 AM	Vegetation	Unknown	31	12	39	42	ANEC1 (RAWS)	X
12/3/06 8:15 AM	Undetermined	Unknown	31	17	37	40	GOSC1 (RAWS)	
12/3/06 9:22 AM	Vegetation	Conductor	25	14	37	46	GOSC1 (RAWS)	
12/3/06 9:45 AM	Pole	Jumper	36	21	36	46	JULC1 (RAWS)	
12/3/06 11:29 AM	Undetermined	Unknown	36	19	36	44	JULC1 (RAWS)	
12/3/06 5:34 PM	Undetermined	Unknown	29	16	38	33	KRNM (AIRPORT)	
12/27/06 2:14 PM	Wire	Conductor	37	29	37	41	KMYF (AIRPORT)	
12/27/06 2:36 PM	Wire	Conductor	35	23	35	38	KSAN (AIRPORT)	
12/27/06 2:51 PM	Undetermined	Unknown	36	15	36	38	KOKB (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/27/06 3:50 PM	Wire	Conductor	33	18	36	45	KOKB (AIRPORT)	
12/28/06 6:26 AM	Undetermined	Unknown	12	3	40	14	JULC1 (RAWS)	
12/28/06 8:33 AM	Undetermined	Unknown	7	2	40	24	JULC1 (RAWS)	
1/4/07 11:13 PM	Undetermined	Unknown	47	23	47	47	JULC1 (RAWS)	
1/5/07 11:42 AM	Undetermined	Unknown	40	32	40	40	AMOC1 (RAWS)	
1/5/07 11:43 AM	Wire	Conductor	37	21	40	40	RCHC1 (RAWS)	
1/5/07 1:13 PM	Wire	Conductor	38	38	40	38	AMOC1 (RAWS)	
1/5/07 4:40 PM	Wire	Conductor	28	20	40	38	AMOC1 (RAWS)	
1/6/07 2:15 AM	Wire	Conductor	39	22	43	39	JULC1 (RAWS)	
1/12/07 8:15 AM	Undetermined	Unknown	27	14	47	27	JULC1 (RAWS)	
1/12/07 9:00 AM	Wire	Conductor	21	15	35	27	KCZZ (AIRPORT)	
1/21/07 4:04 PM	Pole	Deadend	49	19	49	49	CAPC1 (RAWS)	
2/27/07 11:13 AM	Wire	Conductor	39	25	47	41	RCHC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
2/27/07 11:13 AM	Undetermined	Unknown	39	25	47	41	RCHC1 (RAWS)	
3/2/07 7:57 PM	Undetermined	Unknown	6	6	38	13	KCZZ (AIRPORT)	
3/3/07 7:53 AM	Vegetation	Conductor	35	18	35	50	MIGC1 (RAWS)	X
3/3/07 9:20 AM	Undetermined	Unknown	41	14	50	47	POTC1 (RAWS)	
3/3/07 10:35 AM	Undetermined	Unknown	31	14	35	52	MIGC1 (RAWS)	
3/3/07 11:34 AM	Vegetation	Conductor	40	31	40	62	KRNM (AIRPORT)	
3/3/07 1:13 PM	Wire	Pole	26	9	51	50	CMNC1 (RAWS)	
3/3/07 4:34 PM	Wire	Conductor	35	21	46	42	KRNM (AIRPORT)	
3/4/07 7:35 AM	Undetermined	Unknown	24	14	46	51	KRNM (AIRPORT)	
3/4/07 10:39 AM	Pole	Jumper	31	17	37	52	GOSC1 (RAWS)	
3/27/07 12:49 PM	Undetermined	Unknown	38	25	38	39	KMYF (AIRPORT)	
4/11/07 5:07 PM	Undetermined	Unknown	45	32	45	45	RCHC1 (RAWS)	
10/5/07 7:40 AM	Wire	Unknown	36	18	36	36	JULC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
10/5/07 9:05 AM	Wire	Unknown	35	17	36	35	JULC1 (RAWS)	
10/13/07 9:06 AM	Undetermined	Unknown	25	14	37	29	JULC1 (RAWS)	
10/21/07 8:53 AM	Wire	Conductor	39	16	39	43	JULC1 (RAWS)	
10/21/07 9:46 AM	Undetermined	Unknown	41	17	41	49	POTC1 (RAWS)	
10/21/07 11:16 AM	Pole	Pole	35	25	35	55	CAPC1 (RAWS)	
10/21/07 11:22 AM	Wire	Conductor	48	24	48	55	JULC1 (RAWS)	
10/21/07 12:23 PM	Wire	Conductor	43	24	48	51	JULC1 (RAWS)	
10/21/07 12:35 PM	Wire	Conductor	43	24	48	55	JULC1 (RAWS)	X*
10/21/07 2:03 PM	Vegetation	Conductor	36	23	36	61	AMOC1 (RAWS)	
10/21/07 3:27 PM	Wire	Conductor	46	24	48	62	JULC1 (RAWS)	
10/21/07 6:18 PM	Undetermined	Unknown	45	21	48	45	CMNC1 (RAWS)	
10/21/07 7:40 PM	Wire	Conductor	32	14	47	52	ANEC1 (RAWS)	
10/21/07 8:16 PM	Wire	Conductor	5	5	62	58	KCZZ (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
10/21/07 8:27 PM	Wire	Unknown	30	23	38	58	KRNM (AIRPORT)	
10/21/07 9:10 PM	Undetermined	Unknown	38	22	47	58	ANEC1 (RAWS)	
10/21/07 10:21 PM	Wire	Conductor	48	25	57	56	DENC1 (RAWS)	
10/21/07 10:30 PM	Undetermined	Unknown	48	25	57	56	DENC1 (RAWS)	
10/21/07 11:16 PM	Vegetation	Conductor	44	35	49	60	KRNM (AIRPORT)	
10/22/07 12:11 AM	Wire	Unknown	59	28	59	60	DENC1 (RAWS)	
10/22/07 12:45 AM	Undetermined	Pole	34	19	50	62	VLCC1 (RAWS)	
10/22/07 12:45 AM	Undetermined	Unknown	34	19	50	62	VLCC1 (RAWS)	
10/22/07 1:00 AM	Wire	Under Investigation	43	36	48	62	KRNM (AIRPORT)	X*
10/22/07 1:35 AM	Undetermined	Unknown	52	27	54	60	CMNC1 (RAWS)	
10/22/07 1:50 AM	Undetermined	Conductor	59	27	60	60	DENC1 (RAWS)	
10/22/07 2:06 AM	Wire	Conductor	41	20	50	60	VLCC1 (RAWS)	
10/22/07 2:19 AM	Undetermined	Unknown	40	19	50	69	VLCC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
10/22/07 2:39 AM	Wire	Conductor	58	24	58	69	CMNC1 (RAWS)	
10/22/07 3:46 AM	Undetermined	Unknown	50	25	50	67	VLCC1 (RAWS)	
10/22/07 4:16 AM	Vegetation	Conductor	40	35	44	67	AMOC1 (RAWS)	X*
10/22/07 4:18 AM	Undetermined	Unknown	47	24	50	59	VLCC1 (RAWS)	
10/22/07 4:46 AM	Undetermined	Conductor	41	23	49	59	KRNM (AIRPORT)	
10/22/07 4:54 AM	Undetermined	Unknown	56	25	60	59	DENC1 (RAWS)	
10/22/07 5:30 AM	Undetermined	Conductor	54	31	57	61	JULC1 (RAWS)	
10/22/07 6:15 AM	Undetermined	Unknown	55	24	55	64	ANEC1 (RAWS)	
10/22/07 6:31 AM	Wire	Unknown	53	29	53	64	KRNM (AIRPORT)	
10/22/07 6:41 AM	Pole	Pole	55	24	55	64	ANEC1 (RAWS)	
10/22/07 7:11 AM	Wire	Unknown	40	13	40	64	MIGC1 (RAWS)	
10/22/07 7:29 AM	Pole	Connector	59	27	59	60	ANEC1 (RAWS)	
10/22/07 8:05 AM	Wire	Unknown	41	28	53	60	KRNM (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
10/22/07 8:11 AM	Wire	Conductor	52	27	58	60	CMNC1 (RAWS)	
10/22/07 8:53 AM	Vegetation	Unknown	46	4	46	60	CAPC1 (RAWS)	
10/22/07 8:55 AM	Vegetation	Transformer	48	21	52	60	VLCC1 (RAWS)	
10/22/07 9:17 AM	Undetermined	Conductor	49	26	58	65	CMNC1 (RAWS)	
10/22/07 9:57 AM	Wire	Conductor	14	14	62	65	KCZZ (AIRPORT)	
10/22/07 10:41 AM	Undetermined	Unknown	46	24	52	67	VLCC1 (RAWS)	
10/22/07 11:36 AM	Undetermined	Unknown	41	13	59	56	ANEC1 (RAWS)	
10/22/07 12:00 PM	Pole	Pole	49	24	52	56	VLCC1 (RAWS)	
10/22/07 12:43 PM	Undetermined	Unknown	30	14	40	60	MIGC1 (RAWS)	
10/22/07 12:50 PM	Pole	Pole	46	19	52	60	VLCC1 (RAWS)	
10/22/07 12:57 PM	Undetermined	Unknown	46	19	52	60	VLCC1 (RAWS)	
10/22/07 4:00 PM	Pole	Pole	40	16	59	53	ANEC1 (RAWS)	
10/22/07 4:50 PM	Undetermined	Unknown	44	19	58	55	CMNC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
10/22/07 4:51 PM	Undetermined	Unknown	11	3	40	55	MIGC1 (RAWS)	
10/22/07 6:38 PM	Undetermined	Unknown	0	0	53	45	KRNM (AIRPORT)	
10/22/07 7:55 PM	Vegetation	Unknown	34	16	46	50	PAMC1 (RAWS)	
10/22/07 11:53 PM	Undetermined	Conductor	42	19	59	44	ANEC1 (RAWS)	
10/23/07 8:34 AM	Undetermined	Unknown	40	18	59	51	ANEC1 (RAWS)	
10/23/07 9:20 AM	Undetermined	Unknown	41	20	58	56	ANEC1 (RAWS)	
10/23/07 10:46 AM	Wire	Conductor	44	23	60	45	DENC1 (RAWS)	
10/23/07 1:00 PM	Undetermined	Unknown	44	18	50	45	DENC1 (RAWS)	
10/23/07 2:29 PM	Undetermined	Unknown	35	9	50	42	VLCC1 (RAWS)	
10/23/07 4:24 PM	Undetermined	Unknown	12	9	50	42	VLCC1 (RAWS)	
10/23/07 7:45 PM	Undetermined	Unknown	23	10	43	32	PIHC1 (RAWS)	
12/1/07 6:36 AM	Pole	Conductor	30	11	35	33	JULC1 (RAWS)	
12/1/07 7:39 AM	Pole	Conductor	28	14	35	31	JULC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/2/07 2:16 AM	Wire	Conductor	16	5	51	16	RCHC1 (RAWS)	
12/9/07 2:15 AM	Undetermined	Unknown	3	0	37	12	JULC1 (RAWS)	
12/31/07 7:06 PM	Undetermined	Unknown	37	24	37	40	GOSC1 (RAWS)	
12/31/07 8:21 PM	Wire	Conductor	45	19	45	45	VLCC1 (RAWS)	
12/31/07 9:59 PM	Undetermined	Unknown	38	23	38	38	GOSC1 (RAWS)	
12/31/07 10:21 PM	Wire	Conductor	38	23	38	40	GOSC1 (RAWS)	
1/1/08 2:08 AM	Undetermined	Unknown	39	25	44	42	GOSC1 (RAWS)	
1/1/08 3:43 AM	Pole	Conductor	41	25	44	41	GOSC1 (RAWS)	
1/1/08 5:58 AM	Undetermined	Unknown	31	20	44	41	GOSC1 (RAWS)	
1/1/08 7:06 AM	Undetermined	Unknown	35	23	35	38	KRNM (AIRPORT)	
1/1/08 7:58 AM	Undetermined	Unknown	36	23	44	40	GOSC1 (RAWS)	
1/1/08 8:17 AM	Wire	Conductor	36	23	44	42	GOSC1 (RAWS)	
1/1/08 8:46 AM	Wire	Unknown	42	14	45	42	VLCC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/5/08 4:52 AM	Wire	Conductor	27	11	49	35	JULC1 (RAWS)	
1/6/08 6:35 AM	Undetermined	Unknown	25	15	40	31	MIGC1 (RAWS)	
1/7/08 12:17 AM	Undetermined	Unknown	38	12	43	42	JULC1 (RAWS)	
1/7/08 12:24 AM	Undetermined	Unknown	42	28	42	42	MIGC1 (RAWS)	
1/7/08 12:42 AM	Undetermined	Unknown	42	28	42	42	MIGC1 (RAWS)	
1/7/08 3:40 AM	Vegetation	Conductor	45	21	46	45	JULC1 (RAWS)	
1/7/08 7:25 AM	Wire	Conductor	20	10	42	39	MIGC1 (RAWS)	
1/7/08 12:16 PM	Pole	Pole	9	3	35	20	POTC1 (RAWS)	
1/7/08 8:36 PM	Undetermined	Unknown	0	0	37	7	KSAN (AIRPORT)	
1/27/08 4:55 AM	Undetermined	Unknown	37	28	38	46	KSAN (AIRPORT)	
1/27/08 5:03 AM	Vegetation	Conductor	33	24	40	46	KSDM (AIRPORT)	
1/27/08 6:49 AM	Wire	Unknown	24	13	38	37	KSAN (AIRPORT)	
1/27/08 8:32 AM	Pole	Connector	27	15	46	30	MIGC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/27/08 6:56 PM	Wire	Conductor	27	7	41	34	VLCC1 (RAWS)	
1/27/08 7:23 PM	Vegetation	Conductor	25	11	41	31	VLCC1 (RAWS)	
2/2/08 2:33 PM	Wire	Conductor	23	13	37	23	RCHC1 (RAWS)	
2/3/08 12:34 PM	Undetermined	Unknown	37	23	37	53	AMOC1 (RAWS)	
2/3/08 12:38 PM	Undetermined	Jumper	53	35	53	53	RCHC1 (RAWS)	
2/3/08 12:53 PM	Undetermined	Unknown	47	28	47	53	JULC1 (RAWS)	
2/3/08 12:59 PM	Wire	Conductor	50	30	50	53	JULC1 (RAWS)	
2/3/08 1:02 PM	Pole	Pole	53	35	53	53	RCHC1 (RAWS)	
2/3/08 1:35 PM	Wire	Conductor	50	30	50	51	JULC1 (RAWS)	
2/3/08 1:41 PM	Vegetation	Pole	51	36	53	51	RCHC1 (RAWS)	
2/3/08 5:31 PM	Undetermined	Unknown	50	34	53	50	RCHC1 (RAWS)	
2/3/08 5:55 PM	Wire	Conductor	40	26	50	50	JULC1 (RAWS)	
2/3/08 7:34 PM	Wire	Conductor	11	9	37	50	AMOC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
2/3/08 11:26 PM	Undetermined	Unknown	35	21	50	49	JULC1 (RAWS)	
2/4/08 1:02 AM	Undetermined	Unknown	34	23	53	37	RCHC1 (RAWS)	
2/4/08 3:18 PM	Undetermined	Unknown	12	4	44	17	JULC1 (RAWS)	
2/14/08 7:31 PM	Undetermined	Unknown	34	19	53	35	POTC1 (RAWS)	
3/3/08 3:43 AM	Undetermined	Unknown	52	18	52	52	DENC1 (RAWS)	
3/3/08 5:28 AM	Pole	Insulator	33	22	42	59	JULC1 (RAWS)	X
3/3/08 6:16 AM	Undetermined	Unknown	59	17	59	59	DENC1 (RAWS)	
3/3/08 2:47 PM	Vegetation	Transformer	7	7	35	33	KSEE (AIRPORT)	
5/21/08 10:13 AM	Undetermined	Unknown	40	23	42	40	RCHC1 (RAWS)	
5/25/08 8:37 PM	Undetermined	Unknown	11	4	46	24	VLCC1 (RAWS)	
6/4/08 2:16 PM	Vegetation	Conductor	33	23	43	33	RCHC1 (RAWS)	
10/4/08 7:13 PM	Undetermined	Pole	34	23	42	34	RCHC1 (RAWS)	
10/13/08 11:55 PM	Vegetation	Conductor	35	13	36	38	DENC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
11/16/08 1:44 AM	Wire	Conductor	21	13	39	28	CAPC1 (RAWS)	
12/9/08 2:24 PM	Vegetation	Conductor	28	23	40	46	KNKX (AIRPORT)	
12/9/08 3:19 PM	Undetermined	Unknown	32	24	40	45	KNKX (AIRPORT)	
12/13/08 5:40 PM	Pole	Pole	30	21	37	51	KCZZ (AIRPORT)	
12/15/08 12:52 PM	Wire	Conductor	32	8	46	38	CAPC1 (RAWS)	
12/15/08 12:57 PM	Vegetation	Conductor	32	12	40	38	VLCC1 (RAWS)	
12/15/08 1:41 PM	Vegetation	Fuse	35	20	35	35	KNKX (AIRPORT)	
12/15/08 4:32 PM	Wire	Conductor	9	9	35	38	KNKX (AIRPORT)	
12/15/08 5:51 PM	Undetermined	Unknown	6	5	38	33	AMOC1 (RAWS)	
12/15/08 8:24 PM	Undetermined	Unknown	5	5	36	29	KMYF (AIRPORT)	
12/16/08 4:47 AM	Undetermined	Unknown	0	0	35	35	KNKX (AIRPORT)	
12/16/08 1:38 PM	Undetermined	Unknown	12	3	36	19	PAMC1 (RAWS)	
12/17/08 1:21 PM	Undetermined	Unknown	26	15	35	33	KCZZ (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/18/08 2:22 PM	Wire	Conductor	22	14	37	26	JULC1 (RAWS)	
12/22/08 2:59 PM	Undetermined	Unknown	43	30	43	43	RCHC1 (RAWS)	
1/10/09 5:19 AM	Wire	Conductor	45	25	52	45	DENC1 (RAWS)	
1/10/09 8:15 PM	Undetermined	Unknown	17	17	39	42	KRNM (AIRPORT)	
1/10/09 9:02 PM	Wire	Conductor	36	18	52	40	DENC1 (RAWS)	
1/10/09 9:56 PM	Pole	Conductor	38	17	49	43	DENC1 (RAWS)	
1/11/09 12:12 AM	Undetermined	Unknown	42	15	49	46	DENC1 (RAWS)	
1/11/09 1:44 AM	Undetermined	Unknown	37	18	49	53	DENC1 (RAWS)	
1/11/09 2:55 AM	Undetermined	Unknown	42	10	42	46	ANEC1 (RAWS)	
1/11/09 11:18 AM	Wire	Transformer	41	19	50	41	DENC1 (RAWS)	
1/11/09 11:13 PM	Undetermined	Unknown	9	1	42	32	ANEC1 (RAWS)	
1/12/09 10:49 PM	Vegetation	Conductor	25	23	36	33	AMOC1 (RAWS)	
1/13/09 1:10 PM	Undetermined	Unknown	8	3	38	29	VLCC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/30/09 11:41 AM	Pole	Connector	30	18	36	37	POTC1 (RAWS)	
2/9/09 7:23 AM	Undetermined	Unknown	31	10	35	32	JULC1 (RAWS)	
2/9/09 4:24 PM	Undetermined	Unknown	28	18	40	42	MIGC1 (RAWS)	
2/9/09 4:32 PM	Vegetation	Conductor	41	26	41	42	JULC1 (RAWS)	
2/10/09 6:59 AM	Undetermined	Unknown	8	0	38	22	CMNC1 (RAWS)	
2/12/09 11:30 PM	Undetermined	Unknown	5	1	38	10	RCHC1 (RAWS)	
2/16/09 11:27 AM	Vegetation	Conductor	40	22	40	40	KSDM (AIRPORT)	
3/22/09 9:44 AM	Undetermined	Conductor	49	30	49	49	RCHC1 (RAWS)	
3/22/09 10:14 AM	Undetermined	Unknown	44	30	49	44	RCHC1 (RAWS)	
3/22/09 11:32 AM	Undetermined	Unknown	44	28	49	44	RCHC1 (RAWS)	
3/22/09 12:43 PM	Wire	Conductor	38	26	38	42	JULC1 (RAWS)	
3/22/09 4:25 PM	Wire	Conductor	35	10	35	51	CMNC1 (RAWS)	
3/22/09 4:26 PM	Undetermined	Unknown	51	35	52	51	RCHC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
3/31/09 9:09 AM	Undetermined	Unknown	13	13	38	14	KCZZ (AIRPORT)	
4/14/09 9:36 PM	Undetermined	Unknown	51	31	55	51	RCHC1 (RAWS)	
5/3/09 4:48 PM	Undetermined	Unknown	34	21	40	37	RCHC1 (RAWS)	
10/28/09 4:51 PM	Wire	Conductor	31.6	15.3	38	34	PZAC1 (RAWS)	
10/29/09 2:30 PM	Wire	Conductor	10	5.5	36.7	18	PZAC1 (RAWS)	
12/7/09 2:01 PM	Undetermined	Unknown	38	23	38	40	CMN (CO-LOCATED RAWS)	
12/7/09 2:44 PM	Pole	Pole	21	13	37	40	RCHC1 (RAWS)	
12/7/09 2:44 PM	Undetermined	Unknown	40	24	40	40	KRNM (AIRPORT)	
12/7/09 3:08 PM	Undetermined	Unknown	36	17	36	40	KCRQ (AIRPORT)	
12/7/09 3:14 PM	Vegetation	Conductor	36	17	36	47	KCRQ (AIRPORT)	
12/7/09 3:32 PM	Wire	Conductor	37	23	37	41	MIGC1 (RAWS)	
12/7/09 3:40 PM	Undetermined	Unknown	36	17	36	41	KCRQ (AIRPORT)	
12/7/09 4:01 PM	Wire	Conductor	45	31	45	45	KSDM (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/7/09 4:02 PM	Undetermined	Unknown	45	31	45	45	KSDM (AIRPORT)	
12/7/09 4:06 PM	Vegetation	Conductor	36	25	36	45	KSAN (AIRPORT)	
12/7/09 4:07 PM	Wire	Conductor	45	31	45	47	KSDM (AIRPORT)	
12/7/09 4:10 PM	Vegetation	Conductor	45	31	45	47	KSDM (AIRPORT)	
12/7/09 4:15 PM	Wire	Conductor	37	21	37	47	MIGC1 (RAWS)	
12/7/09 4:21 PM	Wire	Conductor	25	16	39	47	KOKB (AIRPORT)	
12/7/09 4:23 PM	Vegetation	Conductor	36	25	36	47	KSAN (AIRPORT)	
12/7/09 4:27 PM	Undetermined	Unknown	37	21	37	47	MIGC1 (RAWS)	
12/7/09 4:28 PM	Vegetation	Conductor	35	23	36	47	KCRQ (AIRPORT)	
12/7/09 4:30 PM	Wire	Conductor	35	23	36	47	KCRQ (AIRPORT)	
12/7/09 4:30 PM	Wire	Conductor	37	21	37	47	MIGC1 (RAWS)	
12/7/09 4:32 PM	Wire	Conductor	37	21	37	47	MIGC1 (RAWS)	
12/7/09 4:32 PM	Undetermined	Unknown	37	21	37	47	MIGC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/7/09 4:33 PM	Wire	Conductor	37	21	37	47	MIGC1 (RAWS)	
12/7/09 4:35 PM	Wire	Conductor	23	18	40	47	KRNM (AIRPORT)	
12/7/09 4:35 PM	Vegetation	Pole	37	21	37	47	MIGC1 (RAWS)	
12/7/09 4:54 PM	Undetermined	Unknown	36	25	36	52	KSAN (AIRPORT)	
12/7/09 5:09 PM	Wire	Conductor	35	25	36	52	KSAN (AIRPORT)	
12/7/09 5:12 PM	Undetermined	Unknown	32	13	36	52	KCRQ (AIRPORT)	
12/7/09 5:20 PM	Wire	Conductor	37	25	40	52	KNKX (AIRPORT)	
12/7/09 5:27 PM	Vegetation	Conductor	35	25	36	52	KSAN (AIRPORT)	
12/7/09 5:43 PM	Vegetation	Transformer	32	13	36	52	KCRQ (AIRPORT)	
12/7/09 5:45 PM	Undetermined	Unknown	52	19	52	52	MIGC1 (RAWS)	
12/7/09 5:53 PM	Undetermined	Unknown	32	13	36	47	KCRQ (AIRPORT)	
12/7/09 6:01 PM	Undetermined	Unknown	36	22	36	44.1	KSAN (AIRPORT)	
12/7/09 6:07 PM	Undetermined	Unknown	37	18	45	47	KSDM (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/7/09 6:36 PM	Wire	Conductor	41	27	42	47	CAPC1 (RAWS)	
12/7/09 6:57 PM	Pole	Pole	36	22	36	52.5	KSAN (AIRPORT)	
12/7/09 7:20 PM	Undetermined	Unknown	44	30	44	58	JULC1 (RAWS)	
12/7/09 7:39 PM	Vegetation	Pole	31	18	52	58	MIGC1 (RAWS)	
12/7/09 8:16 PM	Undetermined	Unknown	49.7	29.1	52.5	49.7	BVDC1 (RAWS)	
12/7/09 8:27 PM	Pole	Conductor	48	30	48	48	JULC1 (RAWS)	
12/7/09 8:34 PM	Undetermined	Unknown	32	16	38	48	KMYF (AIRPORT)	
12/7/09 8:34 PM	Undetermined	Unknown	32	16	38	48	KMYF (AIRPORT)	
12/7/09 9:34 PM	Undetermined	Unknown	31	17	52	57	MIGC1 (RAWS)	
12/7/09 9:37 PM	Vegetation	Conductor	25	16	39	57	KOKB (AIRPORT)	
12/7/09 9:45 PM	Undetermined	Unknown	33	9	45	57	PIHC1 (RAWS)	
12/7/09 10:15 PM	Wire	Conductor	47	33	57	54	JULC1 (RAWS)	
12/7/09 10:15 PM	Undetermined	Unknown	54	34	58	54	RCHC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/7/09 10:37 PM	Wire	Conductor	31	21	43	54	KSAN (AIRPORT)	
12/8/09 12:11 AM	Wire	Conductor	47	32	58	47	RCHC1 (RAWS)	
12/8/09 12:51 AM	Wire	Conductor	27	9	50	47.2	CMN (CO-LOCATED RAWS)	
12/8/09 1:28 AM	Undetermined	Unknown	17	10	36	50	KCRQ (AIRPORT)	
12/8/09 1:59 AM	Wire	Conductor	40	27	57	50	JULC1 (RAWS)	
12/8/09 3:56 AM	Undetermined	Unknown	31	16	49	44.2	CMNC1 (RAWS)	
12/8/09 5:36 AM	Undetermined	Unknown	43	30	58	43	RCHC1 (RAWS)	
12/8/09 6:07 AM	Undetermined	Unknown	7	2	52	49	MIGC1 (RAWS)	
12/8/09 6:36 AM	Wire	Conductor	8	8	43	49	KSAN (AIRPORT)	
12/8/09 7:20 AM	Wire	Conductor	5	5	45	46	KSDM (AIRPORT)	
12/8/09 8:34 AM	Pole	Conductor	9	9	43	43	KSAN (AIRPORT)	
12/8/09 10:35 AM	Undetermined	Unknown	16	8	41	38	DENC1 (RAWS)	
12/8/09 11:45 AM	Pole	Jumper	16	10	36	30	KCRQ (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
12/8/09 4:10 PM	Pole	Pole	11.6	7.3	52.5	25	BVDC1 (RAWS)	
12/13/09 6:48 AM	Undetermined	Unknown	16	8	49	40	CMN (CO-LOCATED RAWS)	
12/22/09 8:22 AM	Pole	Conductor	30	20	36	47	KRNM (AIRPORT)	
12/22/09 8:38 AM	Wire	Conductor	44	28	44	47	JULC1 (RAWS)	
12/22/09 1:20 PM	Wire	Conductor	41	24	44	46	JULC1 (RAWS)	
12/23/09 3:44 AM	Wire	Conductor	23.4	14.4	35.6	23.4	BAJC1 (RAWS)	
1/18/10 1:06 PM	Vegetation	Conductor	38	25	38	38	KSAN (AIRPORT)	
1/18/10 2:01 PM	Vegetation	Fuse	33	25	38	41	KSAN (AIRPORT)	
1/18/10 3:18 PM	Undetermined	Unknown	32	16	35	42	KNKX (AIRPORT)	
1/18/10 4:09 PM	Undetermined	Unknown	38	24	38	48	KNKX (AIRPORT)	
1/18/10 4:53 PM	Vegetation	Conductor	39	28	40	45	KSAN (AIRPORT)	
1/18/10 5:24 PM	Vegetation	Conductor	7	7	38	45	KNKX (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/18/10 7:23 PM	Wire	Conductor	26	16	39	29	JUL (CO-LOCATED RAWS)	
1/19/10 1:02 AM	Vegetation	Conductor	5	5	40	30.7	KSAN (AIRPORT)	
1/19/10 4:59 AM	Undetermined	Unknown	7.5	5	39.9	23.5	PZAC1 (RAWS)	
1/19/10 6:33 AM	Undetermined	Unknown	3	3	40	17.5	KSAN (AIRPORT)	
1/19/10 1:43 PM	Vegetation	Conductor	22	12	39	46	KSDM (AIRPORT)	
1/19/10 1:45 PM	Vegetation	Conductor	22	12	39	46	KSDM (AIRPORT)	
1/19/10 1:45 PM	Vegetation	Conductor	33	15	44	46	CAPC1 (RAWS)	
1/19/10 1:47 PM	Wire	Conductor	22	13	40	46	KSAN (AIRPORT)	
1/19/10 1:50 PM	Undetermined	Unknown	55	40	55	63	MIGC1 (RAWS)	
1/19/10 1:51 PM	Undetermined	Unknown	22	13	40	63	KSAN (AIRPORT)	
1/19/10 1:52 PM	Wire	Conductor	22	13	40	63	KSAN (AIRPORT)	
1/19/10 1:52 PM	Undetermined	Unknown	55	40	55	63	MIGC1 (RAWS)	
1/19/10 1:53 PM	Vegetation	Conductor	55	40	55	63	MIGC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/19/10 1:54 PM	Wire	Conductor	22	12	39	63	KSDM (AIRPORT)	
1/19/10 1:54 PM	Undetermined	Unknown	63	38	63	63	MIG (CO-LOCATE D RAWS)	
1/19/10 1:56 PM	Undetermined	Unknown	33	15	44	63	CAPC1 (RAWS)	
1/19/10 1:57 PM	Wire	Conductor	63	38	63	63	MIG (CO-LOCATE D RAWS)	
1/19/10 2:00 PM	Vegetation	Conductor	9.5	8.3	39.9	55	PZAC1 (RAWS)	
1/19/10 2:05 PM	Wire	Conductor	55	40	55	55	MIGC1 (RAWS)	
1/19/10 2:08 PM	Wire	Conductor	30	21	38	55	KNKX (AIRPORT)	
1/19/10 2:08 PM	Wire	Conductor	30	21	38	55	KNKX (AIRPORT)	
1/19/10 2:12 PM	Wire	Conductor	53	33	63	55	MIG (CO-LOCATE D RAWS)	
1/19/10 2:19 PM	Undetermined	Unknown	44	28	44	55	KSAN (AIRPORT)	
1/19/10 2:21 PM	Wire	Conductor	44	28	44	55	KSAN (AIRPORT)	
1/19/10 2:22 PM	Vegetation	Conductor	44	28	44	55	KSAN (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/19/10 2:23 PM	Undetermined	Unknown	44	28	44	55	KSAN (AIRPORT)	
1/19/10 2:25 PM	Wire	Conductor	32	23	39	55	KSDM (AIRPORT)	
1/19/10 2:29 PM	Vegetation	Conductor	24	17	39	55	KMYF (AIRPORT)	
1/19/10 2:32 PM	Vegetation	Conductor	44	28	44	55	KSAN (AIRPORT)	
1/19/10 2:38 PM	Undetermined	Unknown	52	40	63	55	MIG (CO-LOCATE D RAWS)	
1/19/10 2:43 PM	Undetermined	Unknown	55	40	55	55	MIGC1 (RAWS)	
1/19/10 2:45 PM	Wire	Conductor	10.2	8.2	39.9	55	PZAC1 (RAWS)	
1/19/10 2:51 PM	Undetermined	Cutout	33	20	41	59	PIH (CO-LOCATE D RAWS)	
1/19/10 2:53 PM	Vegetation	Conductor	51	35	63	59	MIG (CO-LOCATE D RAWS)	
1/19/10 2:53 PM	Undetermined	Conductor	51	35	63	59	MIG (CO-LOCATE D RAWS)	
1/19/10 3:06 PM	Vegetation	Conductor	47	27	63	59	MIG (CO-LOCATE D RAWS)	
1/19/10 3:59 PM	Wire	Conductor	31	23	44	54	KSAN (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/19/10 5:59 PM	Undetermined	Cutout	15	10	63	43	MIG (CO-LOCATED RAWS)	
1/19/10 6:22 PM	Undetermined	Unknown	15	15	44	38	KSAN (AIRPORT)	
1/19/10 6:53 PM	Wire	Conductor	15	5	59	38	MIGC1 (RAWS)	
1/20/10 10:16 AM	Undetermined	Unknown	21	15	59	29.3	MIGC1 (RAWS)	
1/20/10 11:10 AM	Pole	Conductor	13	13	46	24	KSDM (AIRPORT)	
1/20/10 4:40 PM	Undetermined	Unknown	28	21	37	37	KSDM (AIRPORT)	
1/20/10 5:18 PM	Vegetation	Conductor	37	26	37	37	KSAN (AIRPORT)	
1/20/10 5:35 PM	Vegetation	Conductor	30	22	37	37	KSDM (AIRPORT)	
1/20/10 5:45 PM	Undetermined	Unknown	12.6	7.3	41.1	37	PSQC1 (RAWS)	
1/20/10 6:53 PM	Pole	Connector	33	24	37	42	KSAN (AIRPORT)	
1/20/10 7:44 PM	Undetermined	Unknown	3	3	37	34	KSAN (AIRPORT)	
1/21/10 5:43 AM	Vegetation	Conductor	35	23	37	35	KSDM (AIRPORT)	
1/21/10 5:53 AM	Vegetation	Conductor	35	23	37	43	KSDM (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/21/10 5:58 AM	Undetermined	Unknown	35	23	37	43	KSDM (AIRPORT)	
1/21/10 6:20 AM	Undetermined	Unknown	39	26	39	48	KSDM (AIRPORT)	
1/21/10 6:22 AM	Undetermined	Unknown	43	31	43	48	MIGC1 (RAWS)	
1/21/10 6:25 AM	Undetermined	Unknown	39	26	39	48	KSDM (AIRPORT)	
1/21/10 7:08 AM	Undetermined	Unknown	39	33	39	50	KSDM (AIRPORT)	
1/21/10 7:40 AM	Undetermined	Unknown	39	33	39	50	KSDM (AIRPORT)	
1/21/10 7:58 AM	Wire	Unknown	31	22	37	40	KSAN (AIRPORT)	
1/21/10 8:09 AM	Undetermined	Unknown	36	28	37	46	KSAN (AIRPORT)	
1/21/10 8:11 AM	Undetermined	Unknown	36	28	37	46	KSAN (AIRPORT)	
1/21/10 8:11 AM	Undetermined	Unknown	36	12	42	46	PAMC1 (RAWS)	
1/21/10 8:32 AM	Vegetation	Conductor	39	29	51	46	MIG (CO-LOC. RAWS)	
1/21/10 8:38 AM	Wire	Conductor	39	29	51	46	MIG (CO-LOC. RAWS)	
1/21/10 9:27 AM	Wire	Conductor	35	17	40	46	VLCC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/21/10 10:12 AM	Vegetation	Conductor	7.3	5.3	40	46	PZAC1 (RAWS)	
1/21/10 10:22 AM	Undetermined	Unknown	33	22	43	41	KNKX (AIRPORT)	
1/21/10 11:26 AM	Wire	Unknown	33	23	37	41	KSAN (AIRPORT)	
1/21/10 11:49 AM	Wire	Conductor	37	21	43	41	KNKX (AIRPORT)	
1/21/10 11:50 AM	Vegetation	Conductor	37	21	43	42	KNKX (AIRPORT)	
1/21/10 12:02 PM	Undetermined	Unknown	38	28	38	45	KSAN (AIRPORT)	
1/21/10 12:02 PM	Undetermined	Unknown	38	28	38	45	KSAN (AIRPORT)	
1/21/10 12:08 PM	Undetermined	Unknown	28	21	39	45	KMYF (AIRPORT)	
1/21/10 12:13 PM	Wire	Conductor	42	32	50	45	MIGC1 (RAWS)	
1/21/10 12:21 PM	Undetermined	Conductor	34	18	40	45	VLCC1 (RAWS)	
1/21/10 12:23 PM	Undetermined	Unknown	9.7	6.3	40	45	PZAC1 (RAWS)	
1/21/10 12:27 PM	Undetermined	Unknown	29	18	43	45	KNKX (AIRPORT)	
1/21/10 12:50 PM	Vegetation	Conductor	38	28	38	54	KSAN (AIRPORT)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/21/10 12:54 PM	Wire	Conductor	38	28	38	48	KSAN (AIRPORT)	
1/21/10 12:55 PM	Undetermined	Unknown	28	21	39	48	KMYF (AIRPORT)	
1/21/10 12:56 PM	Vegetation	Conductor	38	28	38	55	KSAN (AIRPORT)	
1/21/10 1:01 PM	Vegetation	Conductor	37	23	37	55	KCRQ (AIRPORT)	
1/21/10 1:01 PM	Undetermined	Unknown	38	25	51	55	MIG (CO-LOC. RAWS)	
1/21/10 1:03 PM	Undetermined	Unknown	45	20	50	55	MIGC1 (RAWS)	
1/21/10 1:04 PM	Undetermined	Unknown	6.7	4.7	40	55	PZAC1 (RAWS)	
1/21/10 1:12 PM	Vegetation	Conductor	36	21	36	55	KOKB (AIRPORT)	
1/21/10 1:23 PM	Wire	Conductor	38	19	40	66	VLCC1 (RAWS)	
1/21/10 1:34 PM	Vegetation	Conductor	37	23	37	52	KCRQ (AIRPORT)	
1/21/10 1:39 PM	Undetermined	Conductor	43	26	43	52	JULC1 (RAWS)	
1/21/10 2:27 PM	Undetermined	Crossarm	23	17	46	49	KSDM (AIRPORT)	
1/21/10 2:28 PM	Undetermined	Unknown	33	7	40	49	VLCC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/21/10 3:06 PM	Undetermined	Unknown	21	16	39	49	AMOC1 (RAWS)	
1/21/10 3:11 PM	Undetermined	Unknown	32	22	38	45	KSAN (AIRPORT)	
1/21/10 3:15 PM	Undetermined	Unknown	33	24	44	45	CAPC1 (RAWS)	
1/21/10 3:18 PM	Undetermined	Unknown	37	16	40	46	VLCC1 (RAWS)	
1/21/10 3:26 PM	Vegetation	Bushing	29	18	37	49	KCRQ (AIRPORT)	
1/21/10 3:29 PM	Undetermined	Unknown	29	18	37	49	KCRQ (AIRPORT)	
1/21/10 3:30 PM	Vegetation	Transformer	33	17	43	49	KNKX (AIRPORT)	
1/21/10 3:37 PM	Vegetation	Conductor	33	17	43	45	KNKX (AIRPORT)	
1/21/10 4:01 PM	Undetermined	Unknown	28	15	39	45	KMYF (AIRPORT)	
1/21/10 4:02 PM	Undetermined	Unknown	28	15	39	45	KMYF (AIRPORT)	
1/21/10 7:18 PM	Vegetation	Conductor	28	18	36	40	KOKB (AIRPORT)	
1/21/10 8:58 PM	Undetermined	Unknown	21	7	50	53	MIGC1 (RAWS)	
1/21/10 9:55 PM	Undetermined	Unknown	16	16	44	44	AMOC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/21/10 10:58 PM	Wire	Conductor	31.4	18.4	56	41	PZAC1 (RAWS)	
1/21/10 11:02 PM	Undetermined	Unknown	22	14	37	41	KCRQ (AIRPORT)	
1/21/10 11:02 PM	Undetermined	Unknown	22	14	37	41	KCRQ (AIRPORT)	
1/21/10 11:12 PM	Undetermined	Unknown	16.5	10	47.6	42	PSQC1 (RAWS)	
1/21/10 11:36 PM	Undetermined	Unknown	28	9	40	41	VLCC1 (RAWS)	
1/21/10 11:57 PM	Undetermined	Unknown	28	20	38	42	KSAN (AIRPORT)	
1/22/10 1:05 AM	Undetermined	Unknown	32.5	22.7	43.6	43	BAJC1 (RAWS)	
1/22/10 7:43 AM	Undetermined	Unknown	28	15	52	37	RCHC1 (RAWS)	
1/22/10 8:02 AM	Undetermined	Unknown	29	8	45	29.2	MIGC1 (RAWS)	
1/22/10 8:56 AM	Vegetation	Conductor	13	13	38	28	KSAN (AIRPORT)	
1/22/10 10:10 AM	Wire	Conductor	12	12	37	30	KCRQ (AIRPORT)	
1/22/10 10:20 AM	Undetermined	Unknown	8	8	38	27	KSAN (AIRPORT)	
3/9/10 8:00 AM	Undetermined	Unknown	32	20	41	39	JUL (CO-LOC. RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
3/16/10 2:53 AM	Undetermined	Unknown	23.2	10.7	46.7	33	YSAC1 (RAWS)	
3/16/10 6:21 PM	Undetermined	Unknown	25	12	36	33.1	DENC1 (RAWS)	
4/7/10 6:35 AM	Vegetation	Conductor	33	17	35	46	CMNC1 (RAWS)	
4/7/10 9:41 AM	Pole	Conductor	22	22	35	52	KRNM (AIRPORT)	
4/11/10 9:46 PM	Pole	Crossarm	35	21	35	35	RCHC1 (RAWS)	
4/28/10 9:28 PM	Undetermined	Unknown	49	35	53	49	RCHC1 (RAWS)	
7/15/10 8:49 PM	Undetermined	Unknown	7	7	37	18	KOKB (AIRPORT)	
7/16/10 12:18 AM	Undetermined	Unknown	0	0	37	11	KOKB (AIRPORT)	
8/26/10 12:08 PM	Undetermined	Unknown	13	7	38	30	PTM (SDGE)	
8/26/10 1:42 PM	Undetermined	Unknown	27	14	49	45	WAR (SDGE)	
10/5/10 4:00 PM	Wire	Conductor	34	21	35	34	SDBSG (NWS)	
11/29/10 1:24 AM	Undetermined	Unknown	1	0	50	15	BVD (SDGE)	
12/22/10 9:29 AM	Wire	Conductor	20	6	36	36	MIGC1 (RAWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
1/14/11 8:25 PM	Undetermined	Unknown	39	15	39	54	DENC1 (RAWS)	
1/15/11 7:25 AM	Undetermined	Unknown	18	12	42	41	MGD (SDGE)	
2/2/11 6:12 AM	Wire	Conductor	31	19	36	55	YSA (SDGE)	
2/2/11 7:18 AM	Wire	Conductor	56	42	60	56	WCK (SDGE)	
2/2/11 8:02 AM	Wire	Conductor	21	9	43	52	SRH (SDGE)	
2/2/11 8:12 AM	Wire	Conductor	45	35	47	55	GOS (CO-LOC. RAWS)	
2/3/11 1:31 PM	Undetermined	Unknown	23	8	45	30	DENC1 (RAWS)	
2/9/11 11:00 AM	Wire	Conductor	46	32	46	46	KCZZ (AIRPORT)	
2/19/11 8:57 PM	Wire	Conductor	10	7	35	31.1	FBK (SDGE)	
2/20/11 1:39 AM	Wire	Conductor	30	20	36	35	CWD (SDGE)	
2/20/11 5:55 AM	Wire	Conductor	34	24	39	37	CWD (SDGE)	
3/7/11 8:27 AM	Undetermined	Unknown	49	22	49	49	SDBSG (NWS)	
3/7/11 8:43 AM	Pole	Pole	49	22	49	49	SDBSG (NWS)	

Occurrence	Description of Failure	Equipment Involved	Estimated Gust	Estimated Sustained Wind	Max Gust (estimated) at Nearest Weather Station in Preceding 24 Hours	Maximum Gust (estimated) across SDG&E Service Territory at Time of Failure	Source of Data - Weather Station Code (Type)	Fire
3/7/11 2:16 PM	Undetermined	Unknown	45	30	48	45	RCHC1 (RAWS)	
3/8/11 3:55 PM	Wire	Conductor	20	11.2	38.4	30	BVDC1 (RAWS)	
3/20/11 8:57 PM	Undetermined	Unknown	21	21	43	44	SDL13 (NWS)	
3/20/11 8:57 PM	Undetermined	Unknown	39.1	27.6	39.1	44	KSAN (AIRPORT)	
3/20/11 11:32 PM	Vegetation	Conductor	11.5	11.5	39.1	34	KSAN (AIRPORT)	
5/17/11 11:30 AM	Vegetation	Transformer	4.6	4.6	42.6	32	KOKB (AIRPORT)	X
5/23/11 11:57 AM	Undetermined	Unknown	34	18	35	34	SDBSG (NWS)	
5/29/11 11:47 AM	Pole	Crossarm	41	26	49	43	RCHC1 (RAWS)	

*Denotes that for these incidences where a failure on SDG&E's overhead power-line system is suspected to have resulted in the ignition of a fire, the cause of the fire, fault or failure may not have yet been determined.

Table 1 was constructed and should be interpreted using the following definitions and rules:

- **Occurrence**: Each occurrence is identified by the date and time of the failure reported;
- **Description of the Failure**: SDG&E included both mechanical failures and electrical faults and failures in Table 1:
  - Mechanical failures are commonly described as a physical failure of equipment such as a pole breaking, a cross arm snapping, a wire separating, or other equipment failing mechanically;
  - Electrical faults and failures include shorted circuits caused by wire-to-wire contact, contacts with foreign objects or other disturbances which cause the electric system to experience conditions beyond its intended design and operating range. Most of the conditions related to electrical faults and failures result in the line's system protection devices tripping and de-energizing the line until repairs

can be made or the cause of the disturbance is no longer present. Electrical failures may not necessarily be associated with mechanical failures, depending on the particular circumstances, but electrical failures are considered to be failures of the system in the sense that conditions have developed that have forced the system outside of its intended design and/or safe electrical operating range.

The following terms were used to describe the nature of the failure:

- *Wire*: Indicates conductors and associated equipment (*e.g.*, jumpers, connectors, *etc.*) failed. These include both electrical and mechanical failures. In some cases, the failure or previous damage may be result of external factors or forces (*e.g.*, lightning strikes, Mylar® balloon contact, gunshots, or contacts with flying debris) unknown to SDG&E;
- *Pole*: Indicates pole and/or pole hardware (*e.g.*, cross arms, insulators, guy wires, *etc.*) failed. These are typically mechanical failures;
- *Vegetation*: Indicates damage to SDG&E facilities or a short-circuit was caused by contact by trees, broken tree branches, palm fronds, and/or other blowing vegetation. These include both electrical and mechanical failures; and,
- *Undetermined*: Indicates that outages occurred during a wind event but, after patrol and inspection, the reason for the outage could not be determined by field personnel. These are typically electrical failures.

- **Equipment Involved**: Where known, the type of hardware (*e.g.*, pole, cross arm, insulator, *etc.*) that failed is identified;
- **Estimated Wind Gust**: For estimating local wind gusts, SDG&E utilized data from the weather station closest to the failure using the measurement closest in time prior to the failure. In cases where data was not available from the nearest weather station, SDG&E utilized data from the weather station closest to the location of the failed equipment that had information within the two (2) hours prior to the failure;
- **Estimated Sustained Winds**: For estimating local sustained winds, SDG&E utilized data from the weather station closest to failure using the measurement closest in time prior to the failure. In cases where data was not available from the nearest weather station, SDG&E utilized data from the weather station closest to the location of the failure that had information within the two (2) hours prior to the failure;
- **Estimated Maximum Wind Gusts at Nearest Weather Station During Preceding 24 Hours**: This information is included in Table 1 because SDG&E's experience demonstrates that failures do not always occur coincident with the time of the strongest winds. Facilities can suffer damage due to strong winds with the ultimate failure occurring hours, and even days, after additional cyclic stresses occurring over an extended period of time. As an example, a cross arm may be cracked during strong winds but will not break completely; as the wind continues to blow, the crack will propagate and the cross arm will suffer catastrophic failure at some point in time. For estimating the maximum local wind gusts occurring during the twenty-four (24) hours prior to the failure, SDG&E utilized data

from the weather station closest to the equipment that failed using the measurement closest in time prior to the failure. In cases where data was not available from the nearest weather station, SDG&E utilized data from the weather station closest to the location of the failure that had information within the two hours prior to the failure;

- **Estimated Maximum Wind Gust Across the SDG&E Service Territory at the Time of Failure**: This information is included in the table to provide a broader understanding of the wind conditions experienced throughout the SDG&E service area at the time of failure. For estimating the maximum area-wide wind gusts occurring at the time of the failure, SDG&E utilized the maximum wind gust measured by all weather stations for which SDG&E had data, using the measurement closest in time prior to the failure;
- **Fire**: This indicates that the incident resulted in the ignition of a fire. Greater detail is provided for these incidences in Table 2 below;
- **Source of Weather Data**: The codename and type of weather station that is the source of the information provided are provided in the last column of Table 1. The following types of weather stations were used as data sources and, because each type of station has different characteristics, the type of weather station used for the data included in Table 1 proved important:[1]
    - *RAWS (Remote Automated Weather Station)*: One of a nationwide system of weather stations with instruments adhering to specific standards emphasizing the collection of data for general weather conditions, typically reporting data once an hour, *e.g.*, the stations measure and report wind speeds at twenty (20) feet above ground level. These stations are utilized by various organizations for various purposes, including fire prevention. In the San Diego region, the United States Forest Service installed the original RAWS network. In 2009, SDG&E purchased and deployed another five (5) RAWS installations that participate in the national RAWS network. Importantly, a RAWS is typically installed in a "representative area" to report general weather conditions; it is not sited for the specific purpose of measuring maximum wind gusts or sustained wind speeds. Most of the RAWS locations in the San Diego region are near mountainous areas with uneven terrain, large canyons and mixed vegetation. Due to their location, SDG&E has data demonstrating wind measurements taken by a RAWS will vary considerably from measurements taken in surrounding areas, in some cases by as much as thirty to fifty percent (30% to 50%);
    - *Co-Located RAWS*: An SDG&E-installed weather station located in close proximity to an existing RAWS and used to measure weather conditions more frequently than would be the case for the existing RAWS. Between June 1, 2009,

[1] There exist many other weather stations in San Diego County that have records of varying degrees of trustworthiness. On occasion, SDG&E personnel may refer to a measurement from one of those stations to confirm another station's measurement. SDG&E has not made an effort to store data from these other stations, but consultants assisting in various projects have referenced and utilized data from weather stations not fitting into one of the five categories described below.

and August 31, 2009, SDG&E installed seventeen (17) of these stations in order to capture wind measurements every ten minutes, *i.e.*, six (6) times per hour as compared to hourly. As is the case with the RAWS installations, co-located installations report wind conditions for "representative areas" and are not located in order to capture maximum wind gusts and sustained wind speeds;

- *Proprietary SDG&E Weather Station*: An SDG&E-installed weather station whose location was determined by SDG&E to be strategic and valuable. Beginning on March 1, 2010, SDG&E has installed, and continues to install, dozens of stations located in areas where the highest wind speeds are experienced during Santa Ana conditions. These stations measure and report wind speeds at twenty (20) feet above ground level. SDG&E weather stations would typically report weather conditions six (6) times per hour;
- *Airport Weather Station*: Non-SDG&E weather stations located at the ten (10) local airports and air strips. Since January 1, 2003, SDG&E has purchased and archived weather data reported by these airport weather stations and utilized the data to predict system loads. Due to the location of these weather stations, typically in areas of open and flat terrain, the wind speeds and direction in surrounding areas can vary from the data reported by these stations. These weather stations typically measure and report wind speeds at thirty (30) feet above ground level and report general weather and meteorological data once an hour; and,
- *National Weather Service (NWS) Reports*: A weather station operated by the NWS. SDG&E Meteorology has obtained some data from the recorded reports of local NWS weather stations.

In developing Table 1, SDG&E used certain principles and rules to determine which failures should be included, *e.g.*, were "due to strong winds". A brief discussion of these key principles and rules follows.

SDG&E first analyzed its outage records to determine which failures were likely to have been caused by strong winds. For these purposes, SDG&E considered both mechanical and electrical failures. Speaking generally, SDG&E found that certain types of failures tended to occur more frequently when wind strength increased, while other types of failures showed little correlation to wind data. This led SDG&E to make two deductive assumptions.

The first assumption is that those types of failures where the rate of occurrence showed no correlation to wind records were not "due to strong winds". For example, the incidence of failures related to vehicle contacts, switch failures and transformer overloads did not vary between periods with "strong winds" and other periods, and it was therefore assumed that these types of failures, even when occurring

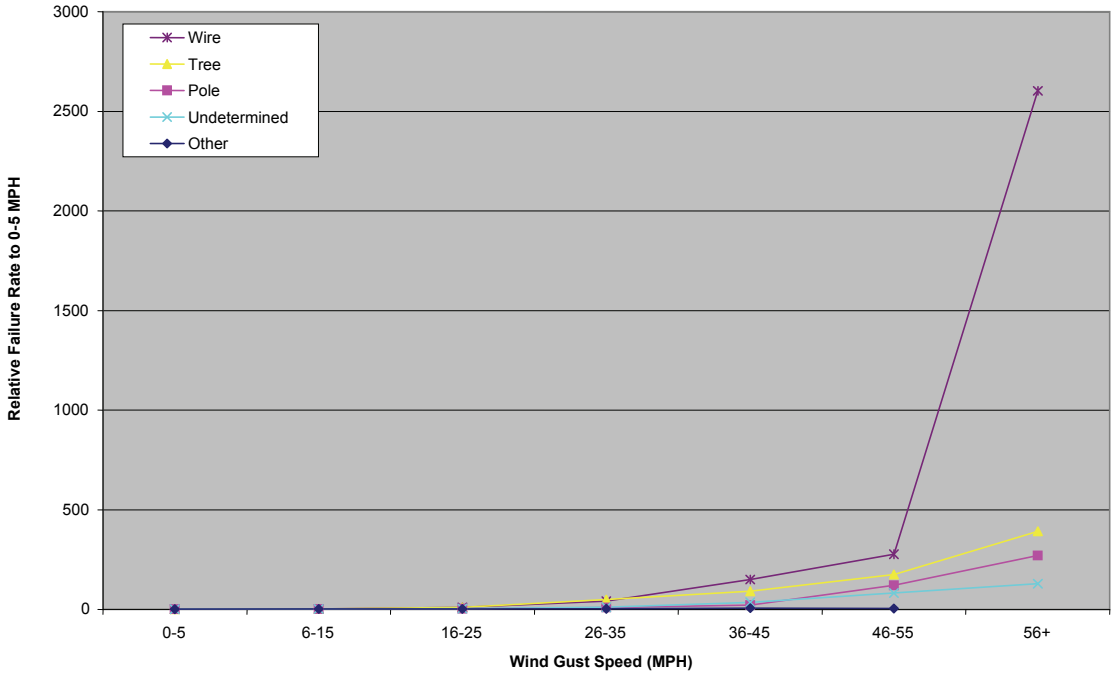
during periods of strong winds, were the result of some cause other than wind. These failures were therefore omitted from Table 1.

Second, where the cause of a failure had been reported as “undetermined”, SDG&E assumed that those types of failures where the rate of occurrence increased as the strength of the recorded winds increased were most likely caused by the wind and should be reported in Table 1.

As a general matter, SDG&E responds to each report of a momentary or sustained outage. Field personnel responding to an outage report will investigate an outage but in some instances cannot determine its cause. As an example, where a windblown tree limb or palm frond contacts an overhead power line, it could cause the line’s protective devices to activate, de-energizing a portion of the circuit and causing an outage. Depending on the protective device, this can cause a momentary outage or a sustained outage. If the wind continues to blow and causes the tree limb or palm frond to be freed from the line prior to the arrival of an SDG&E crew, the precise cause of the outage would be uncertain and the cause would be reported as “undetermined”. A review and analysis of SDG&E’s records indicated the number of outages of “undetermined” cause increased during periods of strong winds, and this was taken as evidence that the outage was “due to strong winds”, although it might have been the case that some other cause triggered the outage.

The basis for the foregoing two assumptions is shown in the following figure (Figure 1) which depicts the relationship between wind speed and certain categories of failure:

Figure 1
Relative Failure Rates by Cause Category



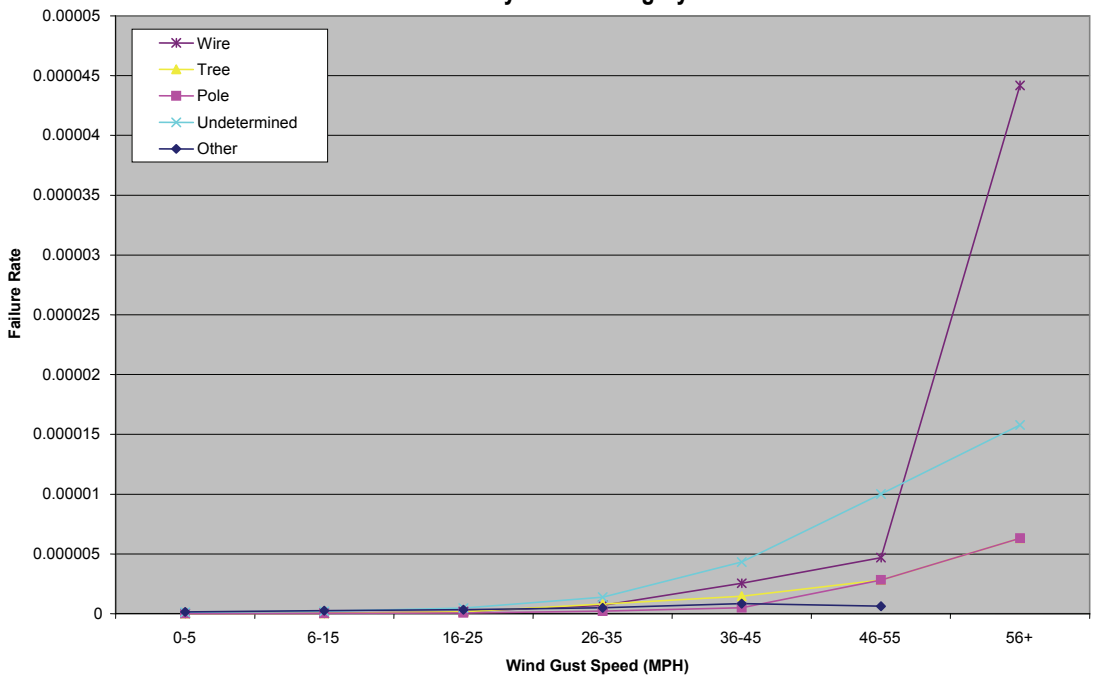
As shown in Figure 1, the likelihood of an outage caused by one of four causes (wire failure, pole failure, vegetation contact, and "undetermined") increased dramatically when wind speed increases from under five (5) miles-per-hour to over fifty-six (56) miles-per-hour. As examples, electrical and mechanical wire failures, including those caused by flying debris or other external causes, are over 2000 times more likely to occur when wind speeds exceed fifty-six (56) miles-per-hour compared to periods when wind speeds are below five (5) miles-per-hour. As explained previously, this data led SDG&E to conclude that, where our records indicated that a cause of a wire failure had been "undetermined" but occurred during a period of strong winds, those strong winds were likely the cause of the outage.

The following figure (Figure 2) illustrates the rate of failures attributable to certain categories based on cause. For this analysis, the failure rate was computed using outages per wind-pole-hour. That is, a "wind-pole-hour" value was calculated by assigning the measured or estimated wind speed at each distribution pole in SDGE's service territory for every hour since 2003.[2] Figure 2 also illustrates that wire failures tend to be rare when wind speeds are low, but the failure rate rises as wind speeds rise, particularly when wind speeds exceed design and construction criteria. These variations and relationships provided

[2] For Figure 2, SDG&E used data from 2003 to present, omitting prior years due to weather data-resolution and -quality issues discussed elsewhere in these Opening Comments.

the basis for the assumptions SDG&E made in deducing which categories of failures were and were not attributable to wind conditions when its records indicated that any specific failure had been "undetermined".

Figure 2
Failure Rates by Cause Category



In determining which failures were most likely caused by "strong winds", SDG&E defined the term "strong winds" to be wind speeds at or above thirty-five (35) miles-per-hour. This threshold was selected because it is consistent with the definitions and practices of the National Weather Service. When the Service forecasts that wind gusts will reach or exceed that level, it issues a "Wind Advisory", indicating that winds will reach levels that may cause hazards under certain conditions, *e.g.*, travel for vehicles with high centers of gravity could pose traffic-safety issues. Upon receiving notice of a Wind Advisory, SDG&E issues a safety alert to operational and field personnel – these personnel are reminded to be aware of the potential for safety hazards posed by high winds, such as flying debris or the buffeting of equipment by winds. For the purposes of responding to the question posed by the *Ruling*, Table 1 also includes instances of failures where winds exceeded thirty-five (35) miles-per-hour during the prior twenty-four (24) hours. As explained previously, damage caused by high winds may not result in an immediate failure, but the damage may propagate over time and ultimately cause a failure at some point in the future. Thus,

where a failure occurred within twenty-four hours after the occurrence of strong winds, it is included in Table 1.

With respect to the estimates for both wind gusts and sustained winds shown in Table 1, SDG&E observed the following conventions. For estimates related to failures occurring during the earlier periods shown in Table 1, SDG&E had relatively limited data regarding wind speeds, particularly because the number of weather stations was very limited prior to 2003. Between 2003 and 2008, SDG&E had records produced by approximately twenty-five (25) weather stations. The SDG&E service territory encompasses over 4,000 square miles, which means that each of the twenty-five (25) weather stations is, on average, physically representing an area of over 150 square miles. At present, SDG&E has weather data from over 100 weather stations. Thus, the degree of confidence SDG&E has in the wind speeds reported in Table 1 is highest for the data in the most recent years and lowest for the wind speeds reported in the earliest years. Figures 3 and 4 below provide a representation of the increasing number of weather stations that were in place over time and illustrate both the improving resolution of the data and SDG&E's confidence in the data, particularly for the rural and remote areas of SDG&E's service territory, used to produce the wind speeds shown in Table 1:

FIGURE 3
Pole Locations Color Coded by the Nearest Weather Station as of January 1, 2003

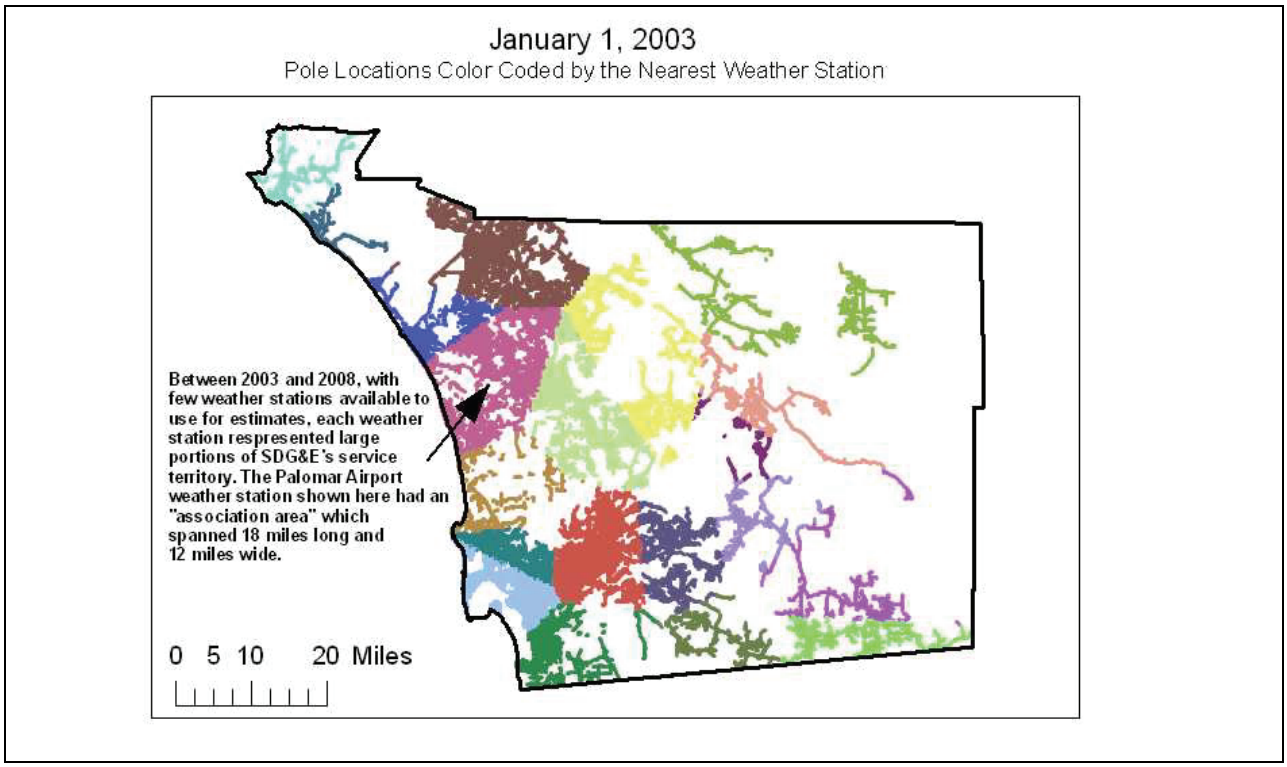
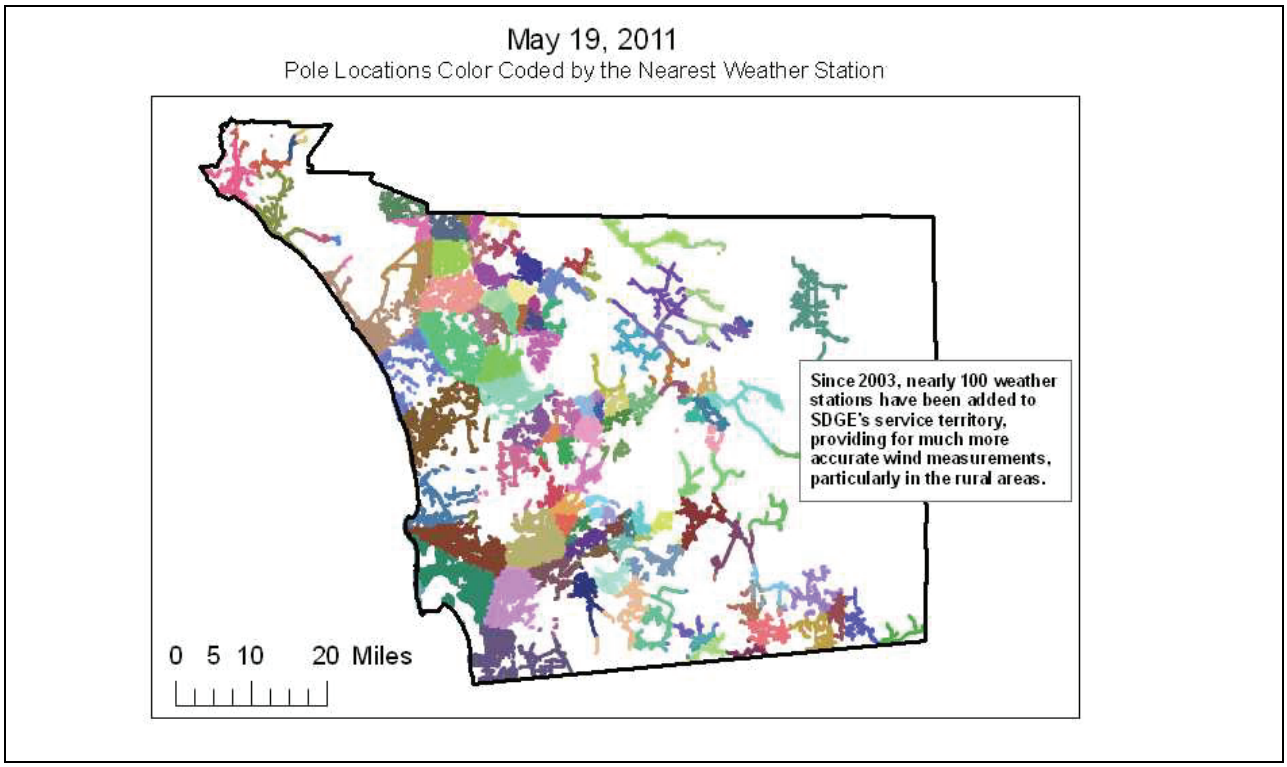


FIGURE 4
Pole Locations Color Coded by the Nearest Weather Station as of May 19, 2011



Prior to the installation of SDG&E's proprietary weather stations, most of the existing stations in the mountainous areas (where the RAWS installations are sited) were designed to measure representative wind speeds. In this case, "representative" indicates that some of the nearby areas would likely be experiencing higher winds and other nearby areas would likely be experiencing lower winds. Although the wind speeds shown in Table 1 reflect the data recorded by the RAWS closest to an outage, the actual wind speed at the location of the outage could have varied by as much as fifty percent (50%) from the measurement reported at the RAWS location based on SDG&E's experience.

Finally, another major factor that influences the estimated wind speed is the height above ground at which a weather station is measuring wind speeds (compared to wind speeds at the height of the electrical equipment that failed). It is generally the case that, up to a certain height, wind strength increases as height above ground increases. Many formulae exist to estimate the differences in wind speed between two different heights above ground at the same location. The RAWS wind measurements taken at twenty (20) feet above ground can be significantly lower than the actual wind buffeting SDG&E's overhead power-line system and facilities. It is common for SDG&E equipment to be forty (40) or more feet above ground, especially where overhead lines traverse uneven terrain. Based on the foregoing, SDG&E believes that the

wind speeds reported in Table 1 are, on average and taken together, likely to be conservative estimates and generally lower, in some cases significantly lower, than the wind speeds that actually occurred at the time and point of the failure.

Table 2 below lists every known incident dating from January 1, 2000, to present, where a wind-related failure on SDG&E's overhead power-line facilities may have resulted in the ignition of a fire. Although it may have been or may be determined that each reported incident resulted from a failure on SDG&E's overhead power-line system, fault may yet to be determined. The approximate size of the fire and any damage caused by the fire are also provided.

TABLE 2
Incidences Where a Wind-Related Failure on
SDG&E Overhead Power-Line Facilities May Have Resulted in the Ignition of a Fire
2000 to Present

Occurrence	Incident Name[1]	Size (Acres)	Damage
12/16/04 8:00 PM	Wynola	1	Burned small portion of landscape hedge
12/16/04 10:05 PM	Power	5	No Significant Damage
12/17/04 1:00 AM	Green Valley	1	No Significant Damage
2/7/06 9:34 PM	Laguna Niguel	1	No Significant Damage
11/30/06 5:00 AM	Open, San Ysabel	0.1	No Significant Damage
12/3/06 9:08 AM	Viejas	0.1	No Significant Damage
12/3/06 12:50 PM	Fernbrook	130	Damage to private bridge and loss of grazing land.
3/3/07 7:33 AM	Jamul	0.1	No Significant Damage
10/21/07 12:35 PM	Witch	197,990	Significant property damage to structures, outbuildings, and other personal property
10/22/07 1:00 AM	Guejito	Included in Witch Fire	Significant property damage to structures, outbuildings, and other personal property
10/22/07 4:16 AM	Rice	9,472	Significant property damage to structures, outbuildings, and other personal property
3/3/08 4:07 AM	Julian	0.1	No Significant Damage
5/17/11 11:30 AM	Oceanside	0.1	No Significant Damage

[1]Incident Name is the official CALFIRE name, if available, or the internal name that SDG&E references in its own records.

*ii. Describe in detail the actual design criteria used for each major element of its overhead power-line facilities (*e.g.*, poles, conductors, cross arms, and fasteners) with respect to wind loads and identify the specific wind speeds that each major element is, in fact, designed to withstand.*

RESPONSE:

The actual design criteria for overhead facilities currently used by SDG&E for each major element of its overhead power-line facilities with respect to wind loads and the corresponding wind speeds each major element is, in fact, designed to withstand are described below. In applying those design criteria, SDG&E observes the following steps and principles in designing the major elements of its overhead power-line system. Initially, the load characteristics and pressures specified by the applicable wind-loading design criteria pertaining to each specific major element of SDG&E's overhead power-line facilities are computed for the exposed structural members of each line element to establish the horizontal forces acting on that structural member. These horizontal loads are then coupled with the other forces acting on the various structural members, *e.g.*, wire tensions and component weights, to establish the design loads, *e.g.*, bending moments, axial forces, and shear forces, each structural member is designed to withstand. Taking into account the type of line element, *e.g.*, poles, conductors, cross arms, and fasteners, *etc.*, the material from which it is composed, and the grade of construction applicable to the element, a "safety factor" (also known as a "strength factor") is determined for each structural member of the line element being designed;[3] the ultimate strength of the material used for a specific line element is divided by this safety factor to establish the element's maximum allowable working stress. Each structural member of a line element is then designed and sized to ensure that its physical properties can be reasonably expected to bear the working stress resulting from the design loads to which the member will be subjected. Under these design principles, each major line element is expected to perform reliably and the aggregate of all major elements can be expected to experience extremely low rates of failure at the wind loads upon which their design is based.

In applying the foregoing design principles, SDG&E bases the design of the structural members of the major line elements of its overhead power-line facilities upon four different types of wind-loading design criteria, depending on the applicable and salient circumstances relevant to each member and element:

[3] Minimum safety factors for specific line elements are determined pursuant to the regulations provided in Rule 44 of California Public Utilities Commission General Order No. 95.

- *California Public Utilities Commission General Order No. 95 ("General Order 95") Heavy Loading Criteria*: Rule 43.1 of General Order 95 specifies that, in all parts of the State of California where the elevation exceeds 3000 feet above sea level, a horizontal wind pressure of six (6) pounds per square foot of projected area on cylindrical surfaces and ten (10) pounds per square foot on flat surfaces shall be assumed, under the further assumptions that the temperature at the time of maximum loading is zero (0) °F, the normal temperature for computing erection conditions is sixty (60) °F, and the maximum temperature in computing sag is one hundred and thirty (130) °F. (Additional derivative specifications described in Rule 43.2 apply to instances where latticed structures are used.) For facilities located in those areas where Rule 43.1 applies, the corresponding wind speed these facilities are, in fact, designed and reasonably can be expected to withstand is approximately forty-nine (49) miles-per-hour. For facilities constructed in heavy-loading areas, a radial thickness of one-half inches of ice, weighing fifty-seven (57) pounds per cubic foot, on all conductors is assumed in computing vertical and wind loadings and the projected exposed area of conductors for which wind loadings are determined is increased to account for ice accretion in accordance with this assumption;
- *General Order 95 Light Loading Criteria*: Rule 43.2 of General Order 95 specifies that, in all parts of the State of California where the elevation above sea level is 3000 feet or less, a horizontal wind pressure of eight (8) pounds per square foot of projected area on cylindrical surfaces and thirteen (13) pounds per square foot on flat surfaces shall be assumed, under the further assumptions that the temperature at the time of maximum loading is twenty-five (25) °F, the normal temperature for computing erection conditions is sixty (60) °F, and the maximum temperature in computing sag is one hundred thirty (130) °F. (Additional derivative specifications described in Rule 43.2 apply to instances where latticed structures are used.) Ice loading is not considered for the purposes of applying these wind-loading design criteria. For facilities in those areas where Rule 43.2 apply, the corresponding wind speed these facilities are, in fact, designed and reasonably can be expected to withstand, is approximately fifty-six (56) miles-per-hour. Approximately ninety percent (90%) of SDG&E's overhead power-line facilities were designed and constructed in accordance with these light-loading conditions;

- *National Electrical Safety Code® ("NESC") Rule 250C Extreme Wind Loading Criteria*[4]: In addition to complying with the wind-loading design specifications provided in General Order 95, SDG&E is currently applying NESC Rule 250C extreme wind-loading criteria for the design of steel pole facilities located in areas SDG&E has identified as fire-threat zones. The wind-loading design criteria specified in NESC Rule 250C can be interpreted to imply that facilities designed and constructed under their terms are, in fact, designed and reasonably can be expected to withstand wind speeds of eighty-five (85) miles-per-hour;
- *Wind Loads Based on Site-Specific Meteorological Studies*: SDG&E has conducted investigations of site-specific meteorological conditions when concerns have been identified that local conditions may dictate the use of design-loading criteria (wind and/or ice loads) more stringent than the otherwise applicable wind-loading criteria specified in General Order 95.[5] Meteorological studies were done for the existing Southwest Powerlink 500-kV line and the Sunrise Powerlink 500-kV line currently in construction.

iii. Identify the approximate percent of SDG&E's power-line facilities (in terms of miles) that are designed to withstand a wind load of (a) 56 miles-per-hour ("mph"), and (b) more than 56 mph. SDG&E's response to (b) should not include (a).

RESPONSE:

One hundred percent (100%) of the 8,431 miles of SDG&E's overhead power-line facilities are designed in accordance with the specifications of General Order 95. As described above, the implicit wind speed corresponding to the eight (8) pounds per square foot wind-loading assumption applicable to the design and construction of the structural members of line elements with cylindrical surfaces that are located in light-loading districts is approximately fifty-six (56) miles-per-hour. Ninety percent (90%) of SDG&E's overhead power-line facilities, comprising approximately 7,552 miles, are located in light-loading districts and designed and reasonably can be assumed to withstand a wind speed of fifty-six (56) miles-per-hour.

[4] The National Electrical Safety Code® is owned, maintained and published by the IEEE Standards Association.
[5] Rule 43 of General Order 95 contemplates that "[m]ore stringent conditions may be used, if desired, in the design of lines. The use of modified conditions or modified loading districts may be authorized by this Commission upon application and presentation of data from United States weather records or other adequate and authenticated meteorological data which in the Commission's opinion justifies such a change."

In 2008, SDG&E began designing steel pole facilities in certain "Fire Threat Zones" using an assumed wind pressure of eighteen (18) pounds per square foot in order to add an additional measure of reliability in the Fire Threat Zones.[6] This pressure is approximately equivalent to the force exerted by the eighty-five (85) mile-per-hour wind speed prescribed by NESC Rule 250C (extreme wind-loading criteria for SDG&E's service territory. To date, the facilities designed and constructed to this standard includes approximately ninety miles, or a little over one percent (1%), of SDG&E's overhead power-line system.

With respect to the remaining 762 miles, or nine percent (9%), of the SDG&E overhead power-line system, those facilities are located in heavy-loading districts and designed to the wind-loading specifications found in Rule 43.1.A of General Order 95. That rule prescribes the design basis for facilities in heavy-loading areas as six (6) pounds per square foot for structural members of line elements with cylindrical surfaces, which corresponds to an implicit wind speed less than fifty-six (56) miles-per-hour.

2. The notices of ex parte *communication filed by SDG&E on September 16, and October 4, 2010, state that SDG&E has installed 93 anemometers to assess wind conditions on its power lines. SDG&E shall list every incident, for as far back as January 1, 2000, to the extent SDG&E has records, where an anemometer installed, operated, or contracted, or otherwise used by SDG&E has reported a wind speed of 56 mph or greater. SDG&E shall provide the following information for each incident:*

i. Date, location, start time, and length of time above 56 mph.

ii. Maximum measured wind speed.

RESPONSE:

The following table (Table 3) lists every incident, dating from January 1, 2000, to present, for which SDG&E has records where an anemometer installed, operated, or contracted, or otherwise used by SDG&E has reported a wind speed of fifty-six (56) miles-per-hour. The table includes the date, location, start time, and length of time above fifty-six (56) miles-per-hour for each incident, as well as the maximum measured wind speed for each incident. The date shown in the table is the date upon which the incident, *i.e.*, the first hour where SDG&E's records indicate a reported wind speed of fifty-six (56) miles or higher,

[6] As noted previously, the entirety of SDG&E's overhead power-line system was designed and constructed in accordance with the specifications found in General Order 95. The wind-loading specifications described in response to part (b) of the question represent design-basis specifications in excess of the requirements of General Order 95, comporting with the standards found in NESC Rule 250C.

occurred. The location shown in the table represents the weather station reporting the incident.[7] The hour of first gust reaching fifty-six (56) miles-per-hour shown in the table represents the first hour of the day when the incident was recorded. The length of time shown in the table has been rounded up to whole hours to comport with SDG&E's records. The maximum wind gust measured shown in the table represents the highest wind gust that was recorded that day at the specified weather station.

TABLE 3
Incidences when Recorded Wind Speeds
Exceeded Fifty-Six (56) Miles-Per-Hour
2000 to Present

Date	Location	Hour of first gust reaching 56mph or greater	Length of time above 56 mph (hours)	Maximum Wind Gust Measured (mph)
February 9, 2002	Cameron RAWS	11 pm	2	60
February 9, 2002	Descanso RAWS	11 pm	1	59
February 10, 2002	Cameron RAWS	9 am	3	61
February 10, 2002	Alpine RAWS	2 am	1	56
February 10, 2002	Alpine RAWS	8 am	4	63
February 10, 2002	Potrero RAWS	6 am	3	61
March 8, 2002	Ranchita RAWS	1 am	2	58
March 8, 2002	Ranchita RAWS	4 am	1	56
March 13, 2002	Ranchita RAWS	1 pm	1	56
March 13, 2002	Ranchita RAWS	3 pm	1	56
November 8, 2002	Ranchita RAWS	9 pm	1	56
November 25, 2002	Bell Cyn RAWS	5 pm	3	61
January 6, 2003	Bell Cyn RAWS	2 am	3	78
January 6, 2003	Cameron RAWS	3 pm	1	56
January 7, 2003	Alpine RAWS	5 am	1	56

[7] A discussion of the various weather stations and sources from which the source data for this table were drawn is provided in response to Question 1. Generally, these sources include:

- Remote Automated Weather Stations (RAWS): a nationwide network of weather instruments adhering to specific standards emphasizing the collection of data related to general weather conditions;
- Co-located RAWS: SDG&E-installed weather stations near currently existing RAWS in order to get more frequent weather measurements;
- SDG&E-owned weather stations: SDG&E-installed weather stations located specifically in areas where high winds are expected during Santa Ana conditions; and,
- Airport weather stations: beginning on or about January 1, 2003, SDG&E has utilized Airport weather station data for the purposes of predicting electric system load.

January 7, 2003	Alpine RAWS	9 am	1	59
January 7, 2003	Alpine RAWS	11 am	1	58
January 7, 2003	Bell Cyn RAWS	3 am	11	69
March 29, 2003	Cameron RAWS	5 am	2	59
March 29, 2003	Cameron RAWS	8 am	1	59
March 29, 2003	Cameron RAWS	11 am	1	60
March 29, 2003	Descanso RAWS	9 am	1	56
October 26, 2003	Descanso RAWS	1 pm	1	56
October 26, 2003	Campo	10 am	4	66
December 25, 2003	Bell Cyn RAWS	7 pm	1	59
January 3, 2004	Ranchita RAWS	5 am	1	57
December 16, 2004	Julian RAWS	11 pm	1	59
December 16, 2004	Potrero RAWS	7 pm	1	59
December 23, 2004	Campo	1 pm	2	59
February 3, 2005	Julian RAWS	8 am	2	57
March 3, 2007	Campo	10 am	2	62
October 21, 2007	Descanso RAWS	10 pm	2	60
October 21 2007	Campo	4 pm	2	62
October 21, 2007	Potrero RAWS	9 pm	3	62
October 22, 2007	Alpine RAWS	6 am	1	59
October 22, 2007	Alpine RAWS	8 am	2	59
October 22, 2007	Cameron RAWS	1 am	2	58
October 22, 2007	Cameron RAWS	11 am	1	57
October 22, 2007	Descanso RAWS	1am	1	59
October 22, 2007	Descanso RAWS	4 am	1	56
October 22, 2007	Descanso RAWS	11 am	2	60
October 22, 2007	Julian RAWS	5 am	1	59
October 22, 2007	Julian RAWS	8 am	3	56
October 22, 2007	Julian RAWS	1 pm	1	56
October 22, 2007	Pine Hills RAW	8 am	1	56
October 22, 2007	Potrero RAWS	1 am	10	69
October 23, 2007	Potrero RAWS	6 am	1	58
October 23, 2007	Potrero RAWS	8 am	1	56
March 3, 2008	Descanso RAWS	6 am	1	59
March 3, 2008	Descanso RAWS	9 am	1	56
March 3, 2008	Pine Hills RAW	5 am	1	59
October 14, 2008	Cameron RAWS	5 am	2	58
December 7, 2009	Julian RAWS	9 pm	1	57
December 7, 2009	Ranchita RAWS	7 pm	1	58

January 19, 2010	Miguel	2 pm	1	63
January 19, 2010	Miguel RAWS	2 pm	1	59
January 21, 2010	Cameron	2 pm	1	66
January 21, 2010	Pala RAWS	2 pm	1	56
August 26, 2010	Mataguay	2 pm	1	60
January 23, 2011	Boulder Creek	7 am	2	58
February 2, 2011	Boulder Creek	7 pm	1	59
February 2, 2011	Witch Creek	6 pm	2	60
February 2, 2011	Witch Creek	9 pm	1	58
February 3, 2011	Boulder Creek	1 am	1	56
February 9, 2011	Boulder Creek	7 am	1	56
March 2, 2011	Boulevard	11 am	1	56
May 2, 2011	Boulder Creek	8 am	1	58

3. Does the information provided by SDG&E in response to Items 1 and 2 support the conclusion that SDG&E's overhead power-line facilities are built to withstand a maximum wind speed of 56 mph, or a higher wind speed? Explain your answer.

RESPONSE:

Yes, the information provided in response to Questions 1 and 2 clearly supports the conclusion SDG&E's overhead power lines are, at a minimum, designed and reasonably can be expected to withstand wind loads specified in General Order 95; the vast majority of these facilities, amounting to ninety-one percent (91%) in terms of line miles, are designed and reasonably can be expected to withstand wind speeds of at least fifty-six (56) miles-per-hour.[8] Figure 2 above fully demonstrates that SDG&E's facilities exhibit extremely low rates of failure at low winds, *i.e.*, at wind speeds below the design-basis wind-load specifications. The rate of failures increases, as would be expected, at higher wind speeds, particularly as wind speeds reach and exceed fifty-six (56) miles-per-hour. These are the basic trends that would be expected, assuming that there are not systematic deficiencies inherent in either the loading (*e.g.*, the specified wind-loading criteria are not adequate for the area), ultimate strength, and/or safety factor requirements of General Order 95, or the engineering analyses and design processes demonstrated in the pole-loading examples provided in Appendix F of General Order 95. That is, overhead power-line

[8] As noted previously, certain of SDG&E's overhead power-line facilities are located in heavy-loading districts. These facilities are designed and constructed to meet the lesser wind-loading specifications provided in Rule 43.1 of General Order 95.

performance should be characterized by low risks of failure and low rates of failure when subjected to actual loads below design-basis load levels and higher risks of failure and higher rates of failure as loads are increased above design-basis load levels. The data presented by SDG&E in its responses are wholly consistent with these characterizations and expectations.

As previously discussed, SDG&E included both mechanical failures and electrical faults and failures in Table 1. Mechanical failures are commonly described as a physical failure of equipment such as a pole breaking, a cross arm snapping, a wire separating, or other equipment failing mechanically. Electrical faults and failures include shorted circuits caused by wire-to-wire contact, contacts with foreign objects or other disturbances which cause the electric system to experience conditions beyond its intended design and operating range. Most of the conditions experienced during an electrical failure result in the line's system protection devices tripping and de-energizing the line until repairs can be made or the cause of the disturbance is no longer present. Electrical failures may not necessarily be associated with mechanical failures depending on the particular circumstances, but electrical failures are considered to be failures of the system in the sense that conditions have developed that have forced the system outside of its intended design and/or safe electrical operating range.

Based on the "Description of Failure" data in Table 1, most failures are not of the types that are typical of mechanical failure. Mechanical failures, such as poles breaking, cross arms snapping and wire separating, were in the minority. Pole failures, which include failures of poles, cross arms, guys, insulators, braces, and related pole hardware, comprise less than ten percent (10%) of those incidents reported in Table 1.

Consistent with the foregoing discussion and conclusions, the incidences shown in Table 1 above demonstrate that a large proportion of wind-related failures have occurred on a relatively small number of days, those days being characterized by extreme wind conditions. By comparing the equipment failures shown in Table 1 to the extreme wind events shown in Table 4, it can be seen that there were seven (7) extreme wind events encompassing a total of twelve (12) days that accounted for over half of all the failures attributed to strong wind conditions. This comparison is shown in Table 4 below:

TABLE 4
Overhead System Failures Occurring During Extreme Wind Events
2000 to Present

Date of Extreme Wind Event (From Table 4)	Equipment Failures (From Table 1)
February 9, 2002	19
February 10, 2002	72
January 6, 2003	30
January 7, 2003	87
March 29, 2003	38
December 29, 2004	70
October 21, 2007	15
October 22, 2007	36
October 23, 2007	7
December 7, 2009	48
January 19, 2010	39
January 21, 2010	60
Total 12 Days	**521 Failures**

The failures included in Table 5 account for some fifty-three percent (53%) of the equipment failures included in Table 1, while the twelve days represent only 0.3 percent of the days from January 1, 2000, to Present. These facts clearly demonstrate that SDG&E's overhead facilities perform to their design and construction specifications and in accordance with the general objectives of providing reliable and safe electric services.

Apart from the statistical demonstrations provided above, SDG&E emphasizes that its design and construction practices, in addition to meeting applicable regulatory standards, are applied and observed in recognition of the unique characteristics of our service territory. Certain portions of SDG&E's service area are characterized by large expanses of rugged and dry terrain. Those areas are also prone to high winds, making them particularly vulnerable to the risk of wildfires. As shown in the following table (Table 5), a large proportion of the specific wind events and failures included in Table 4 occurred when the threat of fire was also extremely high:

TABLE 5
Weather Conditions on Days with High Number of Wind-Related Failures
2000 to Present

Date	Weather Conditions
February 9, 2002	Windy, extremely dry air and vegetation, Red Flag declared for wind and high fire risk
February 10, 2002	Windy, extremely dry air and vegetation, Red Flag declared for wind and high fire risk
January 6, 2003	Windy, no rain, moderately dry air and vegetation
January 7, 2003	Windy, no rain, moderately dry air and vegetation
March 29, 2003	Windy, no rain, moderately dry air and vegetation
December 29, 2004	Windy, rain, little to no large fire threat
October 21, 2007	Windy, extremely dry air and vegetation, Red Flag declared for wind and high fire risk
October 22, 2007	Windy, extremely dry air and vegetation, Red Flag declared for wind and high fire risk
October 23, 2007	Windy, extremely dry air and vegetation, Red Flag declared for wind and high fire risk
December 7, 2009	Windy, rain, little to no large fire threat
January 19, 2010	Windy, rain, little to no large fire threat
January 21, 2010	Windy, rain, little to no large fire threat

In designing, constructing, maintaining, and operating its overhead electrical system, SDG&E also takes into account the recent history of catastrophic fires that have occurred in its service area. A significant fire event occurred during the strong wind event of February 9 and 10, 2002. The fire burned over 5,500 acres and resulted in the destruction of dozens of homes.[9] In addition to the Guejito, Witch and Rice fires of October 2007 listed in Table 2, SDG&E notes that there were four other fires in San Diego County that burned over 100 acres each during that same wind storm.[10] Two other large-scale fires have threatened the San Diego wildland-urban interface during the period 2000 to present: the January 2001 Viejas Fire and the October 2003 Cedar Fire. Both of these fires occurred on days with very gusty localized winds accompanied by extremely dry conditions. SDG&E is fully mindful of these events and

[9] The February 2002 fire is not shown in Table 2 because the ignition source was not related to SDG&E's facilities.
[10] These fires include the Harris Fire, which destroyed over 200 homes and burned over 90,000 acres, and the Poomacha fire, which destroyed 140 homes and burned over 50,000 acres.

takes due care that the elements and facilities comprising its overhead electrical system, given that the rates of failure are known to increase as wind speeds increase, do not unduly add to the risks of fire that are the product of the natural conditions existing in its service area. This predisposition to consider fire risks is evidenced by the data shown in the foregoing tables and has otherwise resulted in the observance of design standards exceeding those found in General Order 95.

4. The Disability Rights Advocate's petition to modify Decision 09-09-030 states at page 1 that SDG&E plans to shut off power to prevent power-line fires when wind gusts exceed 56 mph on its wood poles or 85 mph on its steel poles. SDG&E shall list every incident where it has shut off power due to strong winds and provide the following information for each incident:

i. Date, location, start time, and duration of the power shut-off event.

ii. Measured wind speed(s) and location(s) of the anemometer(s).

iii. Number of affected customers (electric meters), broken down by residential (including medical baseline), medical baseline, and commercial/industrial.

RESPONSE:

To date, SDG&E has not shut off power due to strong winds. Consistent with safe operating practices and SDG&E's obligation to protect public safety, SDG&E has shut off power pursuant to the recommendations and requests of field personnel who have observed visible hazards posing the potential to compromise public safety or system integrity and operations.

*5. CPSD/DRA argue that Grade A utility poles must withstand wind speeds of at least 91 mph pursuant to Rules 43, 44, and 48 of General Order 95. However, these same Rules together indicate that everything attached to a Grade A utility pole (*e.g.*, cross arms, conductors, fasteners,* etc.*) may be built to withstand lower wind speeds than the pole itself.*

*i. What are the minimum wind loads (*i.e.*, wind speeds) that the power-line facilities attached to utility poles must withstand based on Rule 44.1, Table 4? Explain your answer.*

RESPONSE:

Much of the foregoing data and discussion have focused on empirical data and incidents of both mechanical and electrical failures occurring during strong winds. Based on the nature of the remaining

questions, the following responses and discussion are focused primarily on matters related to the mechanical design, performance and reliability of the SDG&E overhead power-line system.

As a general rule, the design-basis wind load SDG&E's power-line facilities, including all the components and materials that comprise these facilities, are designed and reasonably can be expected to withstand is equivalent to the pressure exerted by a wind gust of approximately fifty-six (56) miles-per-hour. That wind speed is implicit in the design and construction specification provided in Rule 43 of General Order 95, which provides that structural members of overhead line facilities located in light loading districts (*i.e*., locations at or below 3000 feet above sea level) must be designed assuming a horizontal wind pressure of eight (8) pounds per square foot on cylindrical surfaces.[11] The application of this design basis results in the design and construction of system components that will perform at a reasonably low risk of failure in the field under the conditions assumed for design purposes.

*ii. As a general principle, will the power-line facilities attached to SDG&E's poles (*e.g.*, cross arms and fasteners) fail at lower wind speeds than utility poles? Explain your answer.*

RESPONSE:

It is not the case that as a general principle the power-line facilities attached to SDG&E's poles will fail at lower wind speeds than utility poles.

Assuming the loading, ultimate strength and safety factor criteria of General Order 95 are properly applied, the power-line facilities attached to SDG&E's poles and the poles themselves should perform reliably and experience low risks and occurrences of failure when subjected to their design-basis wind loads (*i.e*., eight (8) pounds per square foot for facilities located in light loading districts). That being said, assessing which component is, as a general principle, likely to fail first when actual wind loads approach or exceed their design-basis wind loads is a challenging and complex task. The answer can change based on circumstances or assumptions. Nevertheless, limiting the change in circumstances and assumptions to changes in wind speed, tangent poles would be expected to fail before cross arms and other structural components for the reasons explained below.

[11] Higher wind pressures are to be assumed for flat surfaces but are omitted from discussion in this response. Lower wind pressures are to be assumed for facilities located in heavy-loading districts; since less than ten percent (10%) of SDG&E's overhead power-line facilities are located in heavy-loading districts, the calculation of the design-basis wind speeds applicable to these facilities are also omitted from this response. Those wind speeds would be lower than the wind speeds provided in the response.

The response to the question takes into account, and is a function of, several interrelated and interdependent variables (these interrelationships and interdependencies themselves being complex and variable) including:

- Grade of construction;
- Type of pole structure (*e.g.*, single versus braced multi-pole, and tangent versus angle versus dead end poles);
- Type of materials used (*e.g.*, wood versus steel);
- Type of load which controls the design of the component (*e.g.*, wind versus ice);
- Type of load to which components are subjected (*e.g.*, vertical versus horizontal);
- Percent utilization of individual components comprising an individual pole structure; and,
- Condition of the components (*e.g.*, "new" or "replacement" condition).

In addition, the safety factors specified in General Order 95 are used to reduce the ultimate strengths of materials to maximum allowable working stresses. Safety factors vary with material and component to account for differences in the basis for and the variability of strength properties, uncertainties with design, construction workmanship and performance, the potential for deterioration, and the consequences of an individual component failure. Safety factors also vary with grade of construction in recognition of the relative hazards and risks various configurations present to life and property and the operation of the system, and in relation to other lines and objects over which they are constructed.

In providing its response, SDG&E made the following assumptions with respect to the variables enumerated above and determined the design-basis wind loads and ultimate strength of the components being assessed as follows:

- Location in a light loading district;
- Grade A Construction;
- Single Pole Tangent Structure with:
    - Wooden cross arms;
    - Supply conductors and communications cables of various sizes; and,
    - Suspension insulators are used for supply conductors; and,
- All components are one hundred percent (100%) utilized.

Under these assumptions, for a structure with the foregoing characteristics, in new condition and subjected to an increasing transverse wind load, the pole is likely to fail at a lower wind speed than any other

component comprising the structure. This is due to the fact that a loading condition or stress associated with a cause *other than wind* is most likely to cause the failure of the other major components listed, even though the same design wind load of eight (8) pounds per square foot is used for all the cylindrical components. As an example, cross arms generally fail due to stresses from vertical loads, however, cross arms will generally see little to no increase in vertical loads during a wind event, whereas the vast majority of the stress in the pole in this example is directly proportional to the wind pressure being exerted upon it. This being the case, SDG&E submits that the pole, rather than the components attached to it, should experience mechanical failure due to wind-related loads first, absent external forces (*e.g.*, tree limbs or flying debris causing an electrical or mechanical failure of the wires).

iii. In Decision 09-09-030, the Commission held that SDG&E has statutory authority to shut off power in order to protect public safety if Santa Ana winds exceed the design limits for SDG&E's system and threaten to topple power lines onto tinder dry brush. (Decision 09-09-030 at pp. 61-62.) Assuming CPSD/DRA have correctly interpreted Rules 43, 44, and 48 [of General Order 95], what "design limits" should be used to decide when to shut off power – – the lower wind-load safety factors for facilities attached to utility poles, or the higher wind-load safety factors for utility poles? Explain your answer.

RESPONSE:

SDG&E does not believe that the CPSD/DRA have correctly interpreted Rules 43, 44 and 48 of General Order 95. Therefore, responding to the question under assumptions to the contrary would, in SDG&E's opinion, lead to the provision of misleading or irrelevant information. To date and at the present time, SDG&E has not and will not shut off power based on wind conditions alone. Rather, SDG&E will exercise its discretion and statutory authority to shut off power in order to protect public safety by applying its knowledge, experience and expertise to the known or reasonably foreseeable conditions on its system as appropriate. This would include circumstances where, as noted in the question, Santa Ana winds cause working loads and stresses to exceed the design-basis wind loads for SDG&E's overhead power-line facilities, taking into account other relevant conditions and circumstances that could reasonably be foreseen to affect the public safety and the safe operation of SDG&E's system and facilities.

6. SDG&E's Motion to Strike suggests at pages 6-7 that the design limit for conductor fasteners, including safety factors, is 65 mph. Assuming this is true, is it reasonable to shut off power when the wind speed reaches 56 mph at a location where wind speed is measured based on the supposition that wind speeds may exceed 65 mph at locations where wind speed is not measured? Explain your answer.

RESPONSE:

In the cited passage from its Motion to Strike, SDG&E did not intend to suggest that the design limit for conductor fasteners, including safety factors, is sixty-five (65) miles-per-hour. Rather, SDG&E's Motion to Strike was merely citing the design-basis wind speeds for the noted system components as they were determined by the CPSD/DRA. Because the question is based upon an erroneous assumption, responding to the question in its present form would, in SDG&E's opinion, lead to the provision of misleading or irrelevant information. Nevertheless, SDG&E reiterates its prior response to an earlier question and states, to date and at the present time, SDG&E has not and will not shut off power based on wind conditions alone. Rather, SDG&E will exercise its discretion and statutory authority to shut off power in order to protect public safety by applying its knowledge, experience and expertise to the known or reasonably foreseeable conditions on its system as appropriate. This would include circumstances where, as noted in the question, wind speeds cause working loads and stresses to exceed the design-basis wind loads for SDG&E's overhead power-line facilities, taking into account other relevant conditions and circumstances that could reasonably be foreseen to affect the public safety and the safe operation of SDG&E's system and facilities.

7. SDG&E's Motion to Strike states at page 6 that Rule 48.1, Table 5, of General Order 95 specifies average strengths for wood poles, which means 50% of wood poles are stronger than the values listed in Table 5, and 50% are weaker. Assuming this is true, what are the distribution curves for the strengths of wood listed in Rule 48.1, Table 5? Based on these distribution curves, what percentage of SDG&E's installed wood poles will fail at wind speeds of 56 mph, 60 mph, 65 mph, 70 mph, and 75 mph, and so on to 100 mph? Explain your answer, and identify any assumptions and sources of information used in your answer.

RESPONSE:

While SDG&E has attempted to provide a reasonable answer to the question as stated, we also believe that it is important to offer guidance regarding the usefulness and interpretation of the answer. First, the answer provided below is instructive and useful for examining the relative rates of failure that could be expected under idealized/controlled laboratory conditions. However, while the numbers provided are instructive for the purpose of performing "order of magnitude" comparisons, the Commission is cautioned against putting too much credence in the actual numbers. The precision (*i.e.*, decimal places) included to illustrate the relative differences should not be interpreted as being indicative of real-world accuracy. The results provided should only be considered relative indicators of what could be expected under controlled conditions.

Second and more importantly, it is essential to clarify the difference between the percentages of pole failures that could be expected under controlled conditions and the actual probabilities of failures of poles in the field. These are dramatically different circumstances. While it is true the expected failure percentages are akin to the probabilities of failure for the poles when subjected to the aforementioned controlled conditions, the percentages are not representative of the actual probabilities of failure of poles in the field. It is possible to estimate the actual probabilities of failure of representative poles and lines in the field, but doing this would require extensive data collection and very sophisticated and time consuming simulations and statistical modeling. Examples are provided below of: 1) the reasons why the percentages provided in the answer do not correspond to actual probabilities of failure of poles in the field; and, 2) factors that further reduce the risk of failure of pole structures and which help to explain why wood poles designed in accordance with Sections 43 and 44 of GO 95 have performed satisfactorily over the years. The actual probabilities of failure of poles in the field are functions of numerous variables in addition to the strength distribution for the poles including:

- The probability distribution for the actual loads at the line location in question versus the design loads will vary, *i.e.*, some locations may rarely see high winds;
- The probability distribution for wind direction at the line location in question will vary. Wind direction is seldom normal to line azimuth. This means that the effective wind pressure on the wires is generally less than that calculated for any given wind speed. For example, the wind pressure calculated for an eighty (80) mile-per-hour wind is sixteen (16) pounds per square foot, or twice the eight (8) pound per square foot wind pressure specified in General Order 95 for light loading districts. However, if this wind is blowing at an angle of forty-five (45) degrees to the line,

the net force on the wires is the same as that of an eight (8) pound per square foot wind blowing perpendicularly to the wires;

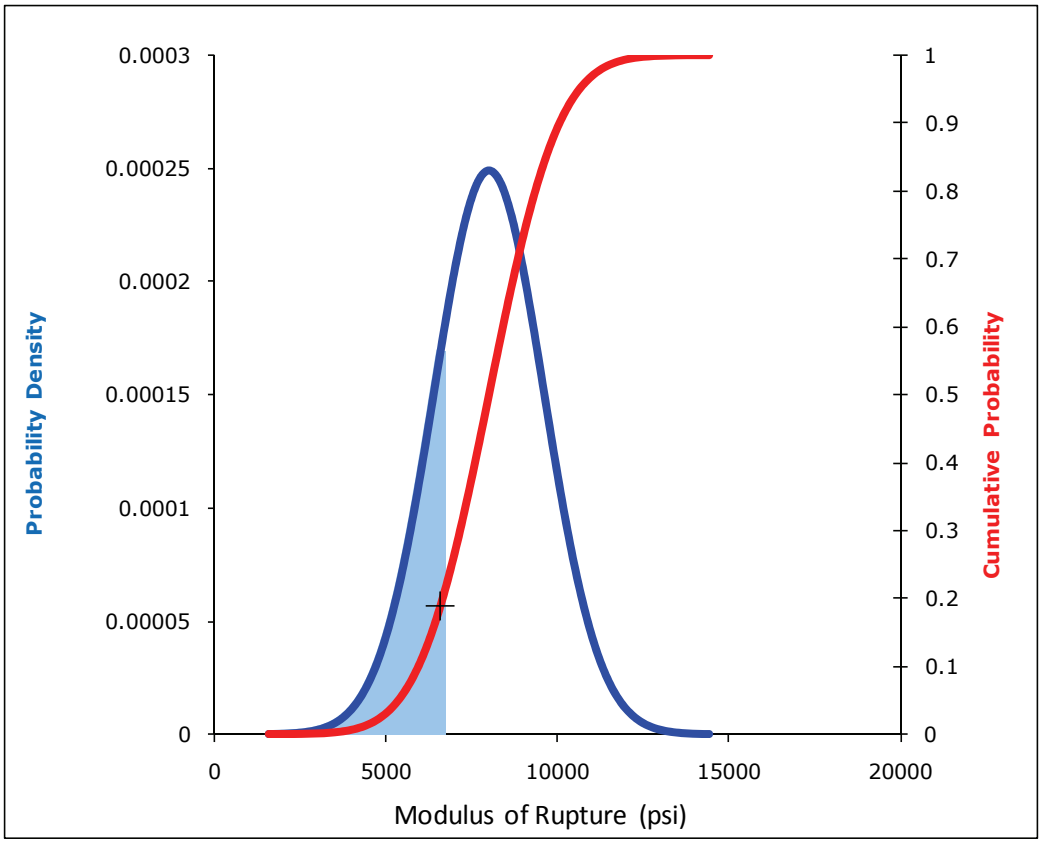
- The reported wind speed that is generally associated with any storm event is usually measured at a meteorological station located at a site that would best be characterized as having "open exposure." That is, there are no surrounding obstacles that would impede capturing maximum wind speeds. However, most transmission lines are not sited in "open exposure" terrain. Many are in urban areas where buildings and other structures tend to shield the lines, or they are in rural forested areas where the trees create a shielding effect, or they are in rural rugged terrain where terrain features may slow the wind speeds. In such situations, the wind speeds that would be measured along the transmission line corridors could be lower than those measured at a nearby, openly-exposed, weather station;
- Wind loads are dynamic in nature and structures respond differently to dynamic loads that may only occur for a fraction of a second than they respond to peak winds that may last for several seconds or longer;
- Winds vary spatially. The spatial extent of the highest winds occurring in any one location is limited. Therefore, wind speeds can vary significantly over relatively short distances. As a result, only a few poles, or in some cases only a fraction of a span, may be exposed to winds in the vicinity of the maximum speed reported in any single event;
- Drag coefficients used in calculations to convert wind speeds to wind loads for cylindrical surfaces are often assumed to be 1.0 for conservatism. In reality, the actual coefficients are typically less than 1.0 especially at higher wind speeds. Therefore, the wind loads actually experienced by most poles and wires are typically lower than the values that typical velocity to pressure conversion calculations would indicate;
- The degree to which the poles in a particular line are utilized and their condition will vary; and,
- Pole structures interconnected by wires exhibit some level of interaction and load sharing.

With the foregoing in mind, numerous documents are available which provide information related to the actual strength distributions for the various species of poles listed in Rule 48.1, Table 5, including publications by the USDA Forest Service Forest Products Laboratory, the Electric Power Research Institute, the American National Standards Institute, the American Society for Testing and Materials (now ASTM International), the Western Wood Preservers Institute, and other knowledgeable researchers. While there are myriad nuances associated with the differences in the strength distributions for individual species

and the various factors used to convert raw test values to design values, SDG&E provides the following response, developed by utilizing information presented in the body of Standard O5.1 published by the American National Standards Institute (2002) ("ANSI O5.1").

For Douglas fir and southern yellow pine poles, Rule 48.1 of General Order 95 at Table 5 (Wood Strengths) allows 8,000 pounds per square inch to be used for Modulus of Rupture, providing the poles meet the requirements of ANSI O5.1, which is the case for all wood poles deployed by SDG&E on its system. This value is described by ANSI O5.1 as a "Designated Fiber Stress" and defines it as the mean, groundline, fiber stress value with a coefficient of variation equal to 0.20 (or twenty percent (20%)). Research based on actual destructive tests of full-size wood poles has shown that the actual strengths of wood poles are approximately "normally" distributed and therefore fit well with a "normal" (or "Gaussian") probability distribution. This being the case, fifty percent (50%) of the poles made of Douglas fir or southern yellow pine will be stronger than the mean strength value and fifty percent (50%) of the poles will be weaker than the mean strength value. The mean value, coupled with the twenty percent (20%) coefficient of variation defines the "normal" strength distribution curve for these poles, as represented in the following figure:

FIGURE 5
Normal Distribution Curve
Strength of Full-Size Wood Poles



Based on this assumed strength distribution for SDG&E's poles, the percentages of new and deteriorated, fully utilized Grade A and Grade B poles that could be expected to fail when exposed to various wind speeds are shown in the following table (Table 6):

TABLE 6
Probability of Pole Failures at Various Wind Speeds
Construction Grades A and B
Worst-Case Scenario

Poles 100% Utilized - - New (no degradation) & Degraded (67% remaining strength)

Wind Speed	Grade "A"		Grade "B"	
(mph)	New Pole	Degraded	New Pole	Degraded
50	0.0043%	0.0205%	0.0109%	0.1157%
56.6	0.0089%	0.0895%	0.0430%	0.6228%
60	0.0163%	0.1924%	0.0892%	1.4353%
65	0.0404%	0.5814%	0.2564%	4.4664%
70	0.1017%	1.6654%	0.7185%	12.0671%
75	0.2533%	4.4205%	1.9255%	27.2612%
80	0.6210%	10.5650%	4.7803%	50.0000%
85	1.4728%	22.1605%	10.8099%	74.0513%
90	3.3213%	39.9757%	21.7469%	90.7843%
95	7.0168%	61.3302%	38.2473%	97.9864%
100	13.7009%	80.4786%	58.2371%	99.7541%
110	39.2459%	98.1672%	90.3531%	99.9996%
120	73.3951%	99.9706%	99.3790%	100.0000%
130	94.5414%	100.0000%	99.9928%	100.0000%

For the purposes of performing the calculations summarized in the table above and the following two tables, the relationship between wind load and wind pressure was assumed to be described by the equation: Wind pressure = $0.0025V^2$. A Coefficient of Variation of twenty percent (20%) was used for both the new and degraded poles.

The probabilities shown in Table 6 are based upon assumptions representing a “worst-case” scenario inasmuch as it is assumed that one hundred percent (100%) of SDG&E’s poles are fully utilized. A more realistic assessment of the percentage of wood poles that could be expected to fail when subject to the various wind speeds can be made by accounting for actual strength utilization and pole condition. SDG&E estimates that its wood poles, whether designed for Grade A or Grade B construction, have an average strength utilization of between seventy percent (70%) and eighty percent (80%). Additionally, SDG&E estimates that its wood pole population has, at minimum, an average remaining strength of ninety-five percent (95%), *i.e.*, a strength degradation of five percent (5%). Under these estimates, there would be a significant reduction in the percentages of failures compared to those shown in Table 6 under its “worst case” assumptions (*i.e.*., one hundred percent (100%) of poles fully utilized). The following tables (Tables 7

and 8) show the calculated percentages for wood poles with seventy percent (70%) utilization and five percent (5%) degradation, and eighty percent (80%) utilization and five percent (5%) degradation, respectively:

TABLE 7
Probability of Pole Failures at Various Wind Speeds
Construction Grades A and B
First Bounding Scenario

Poles 70% Utilized - - New (no degradation) & Degraded (95% remaining strength)				
Wind Speed	Grade "A"		Grade "B"	
(mph)	New Pole	Degraded Pole	New Pole	Degraded Pole
50	0.0008%	0.0009%	0.0022%	0.0027%
56.6	0.0019%	0.0023%	0.0064%	0.0082%
60	0.0030%	0.0037%	0.0113%	0.0149%
65	0.0060%	0.0078%	0.0271%	0.0365%
70	0.0126%	0.0166%	0.0656%	0.0907%
75	0.0269%	0.0362%	0.1594%	0.2252%
80	0.0577%	0.0796%	0.3835%	0.5485%
85	0.1251%	0.1755%	0.9006%	1.2997%
90	0.2683%	0.3813%	2.0336%	2.9336%
95	0.5683%	0.8155%	4.3664%	6.2317%
100	1.1744%	1.6946%	8.7888%	12.2671%
110	4.5449%	6.4687%	27.7972%	36.0938%
120	14.3949%	19.6302%	59.8706%	70.0499%
130	35.2386%	44.8163%	87.7129%	93.1311%

TABLE 8
Probability of Pole Failures at Various Wind Speeds
Construction Grades A and B
Second Bounding Scenario

Poles 80% Utilized - - New (no degradation) & Degraded (95% remaining strength)				
Wind Speed	Grade "A"		Grade "B"	
(mph)	New Pole	Degraded Pole	New Pole	Degraded Pole
50	0.0012%	0.0015%	0.0038%	0.0047%
56.6	0.0032%	0.0040%	0.0124%	0.0162%
60	0.0054%	0.0068%	0.0233%	0.0313%
65	0.0404%	0.0154%	0.0599%	0.0825%
70	0.0262%	0.0353%	0.1551%	0.2180%
75	0.0595%	0.0816%	0.3958%	0.5666%
80	0.1350%	0.1898%	0.9841%	1.4166%
85	0.3058%	0.4368%	2.3318%	3.3591%
90	0.6788%	0.9761%	5.2135%	7.3963%
95	1.4653%	2.1158%	10.7534%	14.8746%
100	3.0437%	4.3574%	20.2488%	26.9659%
110	11.1490%	15.3937%	51.6749%	62.0939%
120	30.8537%	39.6300%	84.1345%	90.5853%
130	61.0614%	72.5409%	97.9407%	99.2056%

8. SDG&E's Motion to Strike states at page 6 that power-line facilities should not be operated to within a hair's breadth of their failure point before safety precautions are taken. Explain when it is reasonable to shut off power to ensure that overhead power-line facilities are not operated at wind loads that exceed design limits, taking into account the variables in Items (ii) though (v) below:

i. "Design limit" is defined as the maximum working loads in Rule 43 multiplied by the minimum end-of-service-life safety factors allowed by Rules 44 and 44.1.[12]

ii. Wind speed is variable from moment to moment. It might not be possible for SDG&E to shut off power at the precise moment when wind speed exceeds the design limit of overhead power-line facilities.

[12] SDG&E was unable to find any reference to the term "design limit" in Rule 43 of General Order 95. Throughout its responses, SDG&E uses the term "design basis" to represent the assumptions and specifications provided in General Order 95 taken into account in the design and construction of overhead power-line facilities. SDG&E's responses below are consistent with the term "design basis" rather than the term "design limit" noted in the question.

iii. Wind speed is variable from place to place. It might not be possible for SDG&E to know the wind speed everywhere on its system. If wind speed approaches the design limit at a point where wind speed is measured, it is possible that wind speeds are exceeding the design limit at other locations on SDG&E's system where wind speed is not measured.

iv. The strength of the wood products is inherently variable. Thus, a particular wood utility pole, cross arm, or other wood structure might fail before the design limit is reached.

v. Rule 44.1 allows safety factors to decrease over time, but never below the prescribed end-of-service-life safety factors. At any point in time, most facilities are not at the end of their service lives. Thus, the structural strength for most facilities should be greater than (a) the minimum safety factors allowed by Rule 44.1, and (b) the design limit defined in Item (i) above.

RESPONSE:

As noted in earlier responses, SDG&E will exercise its discretion and statutory authority to take appropriate safety precautions in order to protect public safety by applying its knowledge, experience and expertise to the known or reasonably foreseeable conditions on its system or at given location as appropriate. This would include circumstances where, as noted in the question, wind speeds could cause working loads and stresses to exceed the design-basis wind loads for SDG&E's overhead power-line facilities, taking into account other relevant conditions and circumstances that could reasonably be foreseen to affect the public safety and the safe operation of SDG&E's system and facilities.

Consistent with safe operating practices and SDG&E's obligation to protect public safety, SDG&E would consider shutting off power when wind gusts exceed SDG&E's wind-load design criteria. Under conditions when wind gusts are strong and forecasted to exceed the wind-load design criteria for its overhead power-line facilities, SDG&E management, operations and field personnel would be on heightened alert and monitoring prevailing, contemporaneous conditions and potential hazards. Such conditions and hazards could, when coupled with wind conditions exceeding the wind-loading design basis of the various components comprising SDG&E's overhead power-line system, present a danger to the public safety and welfare. Thus, coupled with field observations from qualified electrical workers reporting visible hazards to the electrical system, the exercise of professional judgment, based upon these real-time observations by trained eyes, the science of quality-assured and quality-controlled wind-gust readings from SDG&E's extensive weather network, and SDG&E's expertise and experience, could be invoked and the shut off of power ordered for those portions of SDG&E's system where a risk to public safety was posed.

SDG&E agrees that wind speeds are variable from moment-to-moment and place-to-place. To improve its ability to monitor and assess prevailing wind conditions and the effects of wind on its overhead power-line facilities, SDG&E has installed and continues to improve its system of weather stations, which are strategically located in areas prone to extreme weather and/or wind conditions. SDG&E's meteorology team designed this network and selected locations to deploy weather-monitoring stations in an effort to capture when and where the strongest winds affecting the overhead electric system occur. To the best of our knowledge, SDG&E owns and operates the densest network of weather-monitoring equipment of any domestic electric utility. Thus, while it is true that wind speeds vary from moment-to-moment and that it is not feasible for SDG&E to turn off power at the "precise moment" when wind gusts might exceed the design-basis wind loads specified in General Order 95, SDG&E is receiving wind-speed information from its extensive network of weather stations in near real-time, increasing the data received across the monitored areas by two orders of magnitude relative to the data that was previously available; this enhances SDG&E's capacity to determine whether and when to exercise its authority to take safety precautions, including whether and when to shut off power to a discrete part of the SDG&E system.

With respect to considerations related to the strength characteristics of wood products and other materials used for the components of overhead power lines, SDG&E reiterates that its management, operations and field personnel would be on heightened alert during extreme wind conditions, monitoring system and weather conditions well in advance of the time when wind speeds would be approaching the design basis for those components. As noted in the question, all materials and components have inherent strength variability. Some materials, such as wood, exhibit more variability than others, such as steel. Relative differences in the strength properties of various materials used in structural design are accounted for in a variety of ways to ensure the reliability of the end product. General Order 95 uses a common engineering approach to account for these differences by employing safety factors specific to the various materials used in overhead line facilities. This design approach is known as "working stress", or "allowable stress", design. This approach ensures that the stresses to which a structure could be subjected do not exceed some designated, allowable value (the "design basis"). Under the terms of General Order 95, these values are determined by dividing the ultimate strengths of materials by safety factors and designing the components of the overhead power-line system to meet the allowable stresses. Rule 44 of General Order 95 specifies the use of larger safety factors for the design of wood poles than steel poles with the goal of ensuring that properly designed overhead lines will exhibit low risks of failure when subjected to design load levels regardless of the materials used in their construction. The efficacy of this approach is

evidenced by the low rates of failure that have been experienced throughout the California power system and, in the case of SDG&E, shown in the data presented earlier in these Opening Comments.

9. SDG&E apparently intends to shut off power when wind gusts reach 56 mph on its wood poles. Wind gusts, by definition, are brief and transitory.

i. Assuming it is acceptable to shut off power at 56 mph, would it be more reasonable to use sustained winds, instead of wind gusts, as the wind-speed criterion for shutting off power, given that power-line facilities are built with safety factors that should, in theory, enable them to withstand brief and transitory wind gusts of 56 mph? Explain your answer.

RESPONSE:

As noted in earlier responses, SDG&E will exercise its discretion and statutory authority to take appropriate safety precautions in order to protect public safety by applying its knowledge, experience and expertise to the known or reasonably foreseeable conditions on its system or at given location as appropriate. This would include circumstances where, as noted in the question, wind speeds could cause working loads and stresses to exceed the design-basis wind loads for SDG&E's overhead power-line facilities, taking into account other relevant conditions and circumstances that could reasonably be foreseen to affect the public safety and the safe operation of SDG&E's system and facilities.

In terms of whether SDG&E would consider the use of "sustained winds" as compared to "wind gusts" to be acceptable in terms of whether and when to exercise its authority to take appropriate safety measures, the simple answer is no. It is more reasonable and prudent to consider the potential hazards posed by wind conditions based on the actual or potential speeds associated with wind gusts as compared to sustained winds. Winds and associated resulting wind loads (pressures) exhibited by gusts most often exceed those of sustained winds and can cause significant structural damage, even when sustained winds measured during the same wind event may not indicate that SDG&E should be in a heightened state of operational alert and readiness. The risks associated with wind gusts, despite their momentary nature, can be greater than would be the case for sustained winds due to this variability and are therefore the risks

taken into consideration by SDG&E when assessing the adverse effects prevailing or expected wind conditions could have on the SDG&E system.[13]

SDG&E personnel have collected and analyzed wind data from across SDG&E's system. These data and analyses highlight and substantiate the reasons that the speed of wind gusts, rather than speeds of sustained winds, must be used as the wind-related criterion for making decisions to shut off power in order to protect the public safety. Data gathered by SDG&E indicate wind gusts will have the tendency to far exceed sustained winds during wind events. In many cases, speeds from momentary wind gusts are more than double the speeds of sustained winds associated with the same wind event. As an example, sustained winds recorded by the Bell Canyon RAWS at 3:00 a.m. on January 6, 2003, were measured at thirty-four (34) miles-per-hour while wind gusts were recorded at seventy-eight (78) miles-per-hour. According to the National Weather Service's account of the San Diego Day, "Two died and 11 were injured. Widespread property damage resulted, as well as road closures, power outages, downed trees, wildfires, and crop damage." Analyzing historical data from that event, the strongest two-minute sustained wind during this event across San Diego County was forty-one (41) miles-per-hour. The damage, injuries and fatalities that were observed as a result of this event were much more consistent with the highest wind gusts observed by SDG&E, which were measured at speeds of between fifty-six (56) and seventy-eight (78) miles-per-hour. This is consistent with SDG&E's experience and evidence that the wind gusts

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[13] SDG&E also notes that the term "sustained wind" does not have a consistent meaning in meteorology. The following definitions of "sustained wind" are in use (see http://www.aoml.noaa.gov/hrd/tcfaq/D4.html; also, Powell, et al. (1996):

- The maximum "sustained wind" used by the National Hurricane Center for tropical storms and hurricanes are the highest one-minute surface winds occurring within the circulation of the hurricane. These winds are at the standard meteorological height of ten meters (thirty-three feet) in an unobstructed exposure (*i.e.*, not blocked by buildings or trees); and,
- For measurements at First Order meteorological stations, the U.S. National Weather Service uses a two-minute average for its "sustained wind" definition. In most of the rest of the world, a ten-minute averaging time is utilized for determining "sustained winds".

The difference between a one-minute and ten-minute sustained wind speed is roughly fifteen to twenty percent (15% to 20%). This difference translates to a thirty- to forty-percent (30% to 40%) difference in wind loads (pressures) on a structure (wind pressure is a function of wind velocity squared). Further, peak gusts last a few (three to five) seconds, depending on data source. In general, the maximum three-second wind gust is roughly 1.23 times a one-minute sustained wind speed in open country (this ratio will vary from measurement-to-measurement). Thus, the wind load created by a three-second wind gust would be approximately fifty percent (50%) greater than would be estimated based on a one-minute sustained wind. For these reasons, virtually all domestic standards (American Society of Civil Engineers ASCE 7-05 and ASCE 7-10) and codes (IBC 2000, IBC 2003, IBC 2006, IBC 2009, NESC 2007, NESC 2011) for structural design use the three-second peak gust as the basis for calculating an "equivalent static" wind load (pressure). This means that the wind load calculated is to be applied to the structure as a mean load that does not change with time. This calculation procedure is calibrated to give the effective peak load which is expected to occur for the recurrence event associated with the selected wind speed. This concept of an "equivalent static" wind load has been used in codes and standards for decades.

embedded within sustained winds can create much higher wind pressures and pose a greater potential for causing more extensive damage.

ii. If SDG&E shuts off power, what criteria should be used to decide when to turn power on? How long should power stay off based on the occurrence of a single wind gust? Explain your answer.

RESPONSE:

In the event SDG&E, in order to protect public safety, were to shut off power as a result of prevailing wind conditions, SDG&E would restore power when, in the professional judgment of SDG&E management, operations and field personnel, the conditions that originally created conditions hazardous to public safety had abated and system conditions warranted the restoration of power operations to the affected areas. This comports with SDG&E's current operating practices with respect to all power outages. In making the determination to restore power due to wind-related conditions and events, SDG&E management would be monitoring, collecting and evaluating information from its weather network, system operators, field observers, and subject matter experts. Using all available information, SDG&E will use its best operational judgment with the safety of the public as its top priority. Because circumstances would be unique to any specific situation, it is difficult to say with any precision how long power would stay off under any specific circumstances or as a general rule.

iii. At what height will wind speed be measured – at 6 meters, 10 meters, or some other height? Should the "measured" wind speed be used to decide when to shut off power, or an estimate of wind speed (see, e.g., D.09-09-030 at 14 – 15)? Explain your answer.

RESPONSE:

The wind speeds taken at and by all SDG&E Weather Stations are measured at six (6) meters above the ground. SDG&E believes the actual "measured" wind speed, used in conjunction with visual observations from the field and input from our subject matter experts, will enable SDG&E to use its best judgment in determining whether and when to effect the de-energization of any portion of the SDG&E

system. Because it has access to superior information, SDG&E does not believe that an estimated wind speed should be used to make such determinations.

10. Rule 31.1 of General Order 95 requires overhead power-line facilities to "be designed, constructed, and maintained for their intended use, regard being given to the conditions under which they are to be operated, to enable the furnishing of safe, proper, and adequate service." The CPSD/DRA Response indicates at pages 11-12 that Rule 31.1 requires SDG&E to build overhead power-line facilities that can withstand winds greater than 56 mph if it is reasonably foreseeable that such winds will occur over the service life of facilities. Is this a correct interpretation of Rule 31.1? Explain your answer.

RESPONSE:

SDG&E agrees that Rule 31.1 requires California electric utilities to design their overhead electric facilities to "known" local conditions. The design and deployment of the SDG&E weather network are predicated on developing information enhancing and deepening our understanding of those conditions. This allows SDG&E to make better decisions using real-time information, but also to build wind histories and data bases for the entire SDG&E system. This also ensures SDG&E is building for "known" local conditions. In the absence of such information, the design and construction of SDG&E's overhead power-line facilities would comply with the terms of General Order 95 or, where appropriate, NESC Rule 250C.

11. Does SDG&E have authority under the Public Utilities Code, D.09-09-030, or GO 95 to shut off power when wind gusts reach 56 mph, or is SDG&E required by D.09-09-030 to file an application to obtain such authority? Explain your answer.

RESPONSE:

Under the laws and regulations of the State of California, SDG&E has the authority to shut off power when, in the exercise of its best professional judgment and using its experience and expertise, and taking into account conditions known or reasonably foreseeable, doing so would be necessary to protect public safety and/or the integrity of its overhead power-line system and facilities. Among the conditions that could prompt the exercise of SDG&E's discretion could include, as noted in the question, circumstances

when wind gusts exceed fifty-six (56) miles-per-hour. SDG&E does not believe it is required to file for such authority under the terms of Decision 09-09-030.[14]

First and foremost, Decision 09-09-030 affirmed SDG&E's authority and responsibility to design, construct, operate, and maintain its electrical system in a manner consistent with its duty to protect "the safety of its customers, employees, and the public at large." (*Id.*, printed opinion at p.7, citing Public Utilities Code Section 451.) In the context of the application, the Commission described the reach of SDG&E's discretion in meeting its responsibilities under this duty, finding "there is no dispute that SDG&E may need to shut off power to protect public safety if Santa Ana winds exceed the design limits for SDG&E's system and threaten to topple power lines onto tinder dry brush." (*Id.*, printed decision at pp.61-62; also, Conclusion of Law 3 at p.69, which provides in part that "SDG&E has authority under §§451 and 399.2(a) to shut off power in emergency situations when necessary to protect public safety.") While the Commission noted that actions taken by SDG&E to protect the public safety could be subject to later Commission review, the Commission noted its "resolve to protect Californians from the wildfire risks of overhead power lines," and ascribed to General Order 95 the essential purpose and intent of providing "the public with a high level of protection from the hazards associated with overhead power lines, including fire-related risks." (*Id.,* printed opinion at p.62.) Under these terms, SDG&E interprets the Commission's order to leave unimpaired SDG&E's full discretion to take such actions as may be necessary to protect the public safety, even where the taking of actions in the name of safety temporarily may compromise the provision of a continuous supply of electricity to a discrete part of SDG&E's service area.

As discussed earlier in these Opening Commission, SDG&E will exercise its discretion and statutory authority to take appropriate safety precautions in order to protect public safety by applying its knowledge, experience and expertise to the known or reasonably foreseeable conditions on its system or at given location as appropriate. When SDG&E receives notice from the National Weather Service or any other government agency charged with the protection of the public safety that conditions in its service territory present dangerous conditions, *e.g.*, a "Red Flag Warning", an "Elevated Fire Condition Notice" or a "High Wind Advisory", SDG&E will place its management, operations and field personnel on high alert to monitor the SDG&E system for hazardous conditions that might imperil the public and public safety. These circumstances could, in fact, present themselves well before wind speeds reached fifty-six (56) miles-per-

[14] See *Decision Denying Without Prejudice San Diego Gas & Electric Company's Application to Shut Off Power During Periods of High Fire Danger*, Decision 09-09-030 in Application 08-12-021 (Application of San Diego Gas & Electric Company for Review of its Proactive De-Energization Measures and Approval of Proposed Tariff Provisions (U-902-E)), issued September 18, 2009.

hour.[15] Although lower wind speeds would create pressures below the design-basis wind loads to which SDG&E's overhead facilities are designed and constructed, high winds could still pose the threat of electrical failures (as compared to mechanical or structural failures that are more relevant to General Order 95) due to blowing debris or other wind-related causes. For these reasons, SDG&E interprets its general responsibility and authorities to protect public safety as not being constrained to any single, specific condition or, for the purposes of these Opening Comments and the questions posed by the *Ruling*, limited only to those circumstances when wind loads exceed the design-basis wind-loading specifications of its overhead power-line facilities. Such arbitrary constraints and limitations, while superficially appealing, would require SDG&E under certain circumstances to ignore conditions posing known or foreseeable risks to the public safety. SDG&E can be expected to invoke its authorities and meet its responsibilities related to the protection of public safety under the principles of prudence and reasonableness and does not believe it should be required to file any specific application to obtain the authorities it already possesses.

Lastly, Decision 09-09-030 invited SDG&E to file an application for approval of a comprehensive fire-prevention plan based upon a consensus reached with local stakeholders or of its own design. (*Decision 09-09-030,* printed decision at pp. 70-71, Ordering Paragraph 3.) The decision to file or not file was left to SDG&E's discretion, subject to the provision of a notice and explanation as to why SDG&E would not file such an application in the event SDG&E decided not to make such an application. At this point in time, SDG&E is still considering whether to file such an application and intends in the interim to rely on its inherent authorities and act in accordance with its general duties to protect the public safety.

Respectfully submitted,

/s/ Alvin S. Pak

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July 25, 2011
San Diego, California

[15] As noted earlier in these Opening Comments, High Wind Advisories are issued by the National Weather Service when wind gusts are expected to reach thirty-five (35) miles-per-hour.

Declaration of David L. Geier

I, David L. Geier, am a duly elected officer of San Diego Gas & Electric Company, holding the title of Vice President – Electric Operations. I have read the foregoing Opening Comments of San Diego Gas & Electric Company (U-902-E) in Response to Direction of Administrative Law Judge's Ruling Denying Motion to Strike, Prohibiting Ex Parte Communications, and Directing Parties to File Comments and know its contents. To the extent the Opening Comments state facts, I have personal knowledge that they are true and correct and, as to matters of which I do not have personal knowledge, I believe them to be true based upon the information available to me or my beliefs after having made reasonable inquiry into these matters.

I have the full authority to make these declarations on behalf of San Diego Gas & Electric Company, and do so under penalty of perjury.

Declared and executed by:

David L. Geier
Vice President – Electric Operations
San Diego Gas & Electric Company
8330 Century Park Court
San Diego, California 92123

Executed on July 25, 2011
San Diego, California