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Exhibit Number	:	
Reference Number	:	ORA-01
Commissioner	:	L. Randolph
ALJ	:	J. McKinney
Witness	:	N. Stannik

OFFICE OF RATEPAYER ADVOCATES
CALIFORNIA PUBLIC UTILITIES COMMISSION

Application of San Diego Gas & Electric Company for Authorization to Recover Costs Related to the 2007 Southern California Wildfires Recorded in the Wildfire Expense Memorandum Account (WEMA)

ORA Prepared Testimony

San Francisco, California
October 3, 2016

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I. INTRODUCTION AND SUMMARY

This exhibit presents the Phase 1 analyses and recommendations of the Office of Ratepayer Advocates (ORA) regarding San Diego Gas & Electric Company's (SDG&E, hereafter also called "Applicant") Wildfire Expense Memorandum Account (WEMA) Application, submitted September 25, 2015. The WEMA is the mechanism adopted by the Commission in 2010[1] to allow the Applicant to track its costs associated with the lawsuits and litigation related to the October 2007 San Diego County wildfires. The wildfires addressed herein were caused by SDG&E's electrical facilities. Specifically, this exhibit addresses the following wildfires:

- The Witch Fire, caused by the contact of a set of conductors on a transmission line;[2]

- The Guejito Fire, caused by the contact of a distribution wire with a communications company's wire;[3] and

- The Rice Fire, caused by the contact of a distribution wire with a sycamore tree branch.[4]

This exhibit also provides testimony on weather and environmental conditions at the time of the 2007 wildfires and SDG&E's actions since the 2007 wildfires.

[1] Resolution E-4311, issued June 29, 2010. See: http://docs.cpuc.ca.gov/PUBLISHED/FINAL_RESOLUTION/121458.htm

[2] CalFire Investigation Report (Witch Fire), p. 2, lines 13-18.

[3] CalFire Investigation Report (Guejito Fire), p. 2.

[4] CalFire Investigation Report (Witch Fire), p. 2, lines 10-11.

The Application requests $379 million for "costs and legal fees [SDG&E] has incurred to resolve third-party damage claims arising from three wildfires."[5] Per the Scoping Memo, the Phase 1 Testimony is to address:

> *"Whether SDG&E's operation, engineering, and management (of) the facilities alleged to have been involved in the ignition of the fires was reasonable. Each of the three fires should be addressed separately."* [6]

ORA focused its review on the conduct, the actions, the inactions, and the decision-making of the SDG&E personnel involved with the operations and management of the facilities involved in these wildfires. The reasonableness standard is based on what the prudent utility manager *knew or should have known at the time a decision was made or when the action was taken.* This prudency review fulfills the guidance provided in the Scoping Memo.[7]

Besides reviewing the SDG&E testimony submitted with the Application, ORA conducted extensive discovery (over 115 questions, with thousands of pages of text responses and other documents), reviewed relevant documents associated with the Commission's previous investigations[8] into these wildfires, and reviewed numerous public documents including the CalFire investigation reports, San Diego County "after action report", and the CalFire Fire Siege Overview Report.

Based on the results of this review, ORA submits that the facts show that (1) SDG&E facilities caused the ignition of the Witch, Guejito, and Rice fires, and (2) these ignitions were the result of imprudent actions, poor decision-making, and mismanaged operations of its facilities during the timeframe leading up to the

[5] Application of San Diego Gas & Electric Company (U 902 E) For Authorization to Recover Costs Related to the 2007 Southern California Wildfires Recorded in the Wildfire Expense Memorandum Account (Application) A. 15-09-010, p. 1.

[6] Scoping Memo and Ruling of Assigned Commissioner and Assigned Administrative Law Judge, dated April 11, 2016, p.6.

[7] If needed, Phase 2 will address reasonableness issues related to settling of legal claims. See Scoping Memo p. 4.

[8] Order Instituting Investigation (OII.) 08-11-006 and OII 08-11-007.

wildfire events. The facts and findings of each fire are discussed in the following sections of this testimony.

In its testimony in support of the WEMA application, SDG&E did not make an affirmative showing of the reasonableness of its operations and management of its facilities which caused the ignition of the Witch, Guejito, and Rice Fires. Based on our review of discovery materials and other information cited above, ORA makes the following findings:

- SDG&E's response to the tripping[9] and arcing[10] of the facilities involved in the Witch Fire was unreasonable and contributed to the ignition of the Witch Fire. SDG&E failed to maintain adequate clearances between the facilities involved, which constitutes a violation of General Order (GO) 95.

- SDG&E's routine inspection procedures were poor, which led to a failure to maintain required clearances of the facilities which ignited the Guejito Fire. These poor procedures reflect imprudence and a failure to comply with GO 95. The potential involvement of communications facilities in the ignition does not excuse SDG&E from its obligations under GO 95.

- SDG&E failed to perform vegetation management prudently in Vegetation Management Area 379, directly leading to the ignition of the Rice Fire. These poor practices are a violation of GO 95. Further, SDG&E destroyed significant segments of the subject sycamore tree prior to any post-incident investigation or testing. Documents provided by SDG&E in response to

[9] The term "trip" refers to the breaking or disconnecting of a circuit which interrupts or stops power flow. Trips can occur when an abnormality is automatically detected (by equipment designed for this purpose) or unintentionally as a result of equipment failure.

[10] Arcing is the ionization of air when a voltage difference is sufficient for electricity to "jump" across the space between two conductors. Arcing typically appears as a glowing line or series of sparks between two conductors. Lightning is a form of arcing between the earth and clouds.

discovery contain unexplained discrepancies about the Company's practices and actions directly related to the cause of the Rice Fire.

SDG&E has admitted in multiple places to the ignitions of these fires.[11,12,13] The facts gathered during the course of this reasonableness review support our conclusion that not only did SDG&E's facilities ignite these fires, but SD&E's *management* of the facilities caused these ignitions. Very little, if any, evidence is provided by SDG&E to support an argument that the utility prudently managed the facilities in question during the critical time leading up to the fires.

SDG&E's operational changes since the 2007 wildfires are not within the scope of the current proceeding and should be given no weight.

SDG&E's operation, engineering, and management of its facilities involved in the ignition of the fires should be found unreasonable and the Application should be denied.

Background information and ORA's analysis of issues are detailed below.

II. FACTUAL AND PROCEDURAL BACKGROUND

In October 2007, over sixteen fires ignited over the course of four days during the Southern California wildfire season. The fires ultimately burned over half a million acres, caused millions of dollars in property damages, and, in the case of the Witch Fire, resulted in two fatalities. The fires were not fully contained for weeks.[14]

[11] CalFire Report (Guejito), p. 14.

[12] CalFire Report (Rice), p. 16, lines 20-23.

[13] As described in Section III-B below, multiple SDG&E personnel made clear that they believed the Witch Fire to be caused by contact between energized conductors immediately following the ignition of that fire.

[14] CalFire "California Fire Siege 2007: An Overview," p. 67.

The subsequent CalFire investigations determined that the Witch, Guejito, and Rice Fires were caused by SDG&E-owned electric power lines.[15],[16],[17]

SDG&E's involvement in the Witch and Rice Fires was the subject of California Public Utilities Commission (CPUC) Investigation (I.) 08-11-006. In I. 08-11-007, the CPUC investigated both SDG&E's and Cox Communications' involvement in the Guejito Fire.

The Consumer Protection and Safety Division's[18] (CPSD) investigations found SDG&E in violation of Rule 31.1 of General Order 95 in all three fires for failing to maintain lines given known local conditions. CPSD also found SDG&E in violation of accident reporting requirements, Public Utilities Code Section 451, Rule 38 of GO 95,[19] and noted the utility's failure to cooperate with CPSD's investigation.[20] In 2010, the Commission approved a settlement between CPSD and SDG&E for $14.75 million.[21] As part of the settlement, SDG&E did "not admit to any violations of the safety General Order provisions or related statutory requirements."[22]

In 2008, SDG&E filed an application for a Wildfire Expense Balancing Account (WEBA) jointly with Pacific Gas & Electric Company (PG&E) and Southern California Edison Company (SCE).[23] The WEBA Application was denied in December of 2012 and the Commission determined that:

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[15] CalFire Report (Witch), p. 2, lines 13-18.

[16] CalFire Report (Guejito), p. 2.

[17] CalFire Report (Rice), p. 2, lines 10-11.

[18] CPSD was the predecessor to the Safety and Enforcement Division or SED.

[19] Rebuttal Testimony of the Consumer Protection and Safety Division (CPSD) in I. 08-11-006 (Witch/Rice), p. 2-1.

[20] CPSD Rebuttal Testimony in I. 08-11-006 (Witch/Rice), p. 2-1.

[21] Decision (D.) 10-04-047, issued April 26, 2010. See: http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/116945.PDF.

[22] D. 10-04-047, p. 5.

[23] A.09-08-020; Application of San Diego Gas & Electric Company, Southern California Edison Company, Southern California Gas Company, and Pacific Gas and Electric Company for Authority to Establish a Wildfire Expense Balancing Account to Record for Future Recovery Wildfire-Related Costs.

"applicants have made no meaningful effort to remedy the deficiencies identified in the rulings. Ratepayers remain subject to limitless potential liability for uninsured damages to third parties. No financial or operational incentives for management to reduce the risk of wildfires have been proposed."[24]

The WEBA decision preserved SDG&E's right to file for WEMA costs in a future proceeding.[25]

III. THE WITCH FIRE

A. Background

The Witch Fire, which later merged with the Guejito Fire, was the second largest fire that occurred in San Diego County in 2007. The fire was first reported by CalFire Air Tanker Pilot Mike Venable at approximately 12:29[26] on October 21, 2007 and was located around State Highway 78 in central San Diego County near the town of Santa Ysabel. The Specific Origin Area (SOA)[27] location was 33.08307, -116.69398.[28],[29] This location is between

[24] Decision (D.) 12-12-029, issued December 20, 2012, pp. 16-17. See: http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M040/K674/40674698.PDF.

[25] D.12-12-029, p. 1.

[26] All times are presented in 24-hour format. For example, 8AM is written as 08:00, 1PM as 13:00, and midnight as 00:00.

[27] CalFire defines an SOA as the "area immediately surrounding the ignition area." See: CalFire Guide to Wildland Fire Origin and Cause Determination, p. 33. http://www.nwcg.gov/sites/default/files/publications/pms412.pdf

[28] CalFire Report (Witch), p. 2.

[29] Here and later in testimony, location coordinates are given using a positive/negative latitude/longitude format. The first number indicates north-south position (i.e. latitude). North is positive; south is negative, relative to the equator. The second indicates east-west position (i.e. longitude). East is positive; west is negative, relative to the prime meridian. For more information, see: https://en.wikipedia.org/wiki/Geographic_coordinate_system and http://www.earthpoint.us/Convert.aspx.

SDG&E poles Z416675 and Z416676 along transmission Tie Line (TL) 637,[30] which connects SDG&E's Santa Ysabel and Creelman substations.[31]

In CalFire investigator Captain Matthew Gilbert's report on the Witch Fire, he stated that he "eliminated all other causes for the fire, determining the Witch Fire to be a power line caused fire."[32] CalFire Air Tanker Pilot Mike Venable reported seeing arcing occurring on the tie line at the time of the recorded faults,[33] with a fault recorded to have happened at around 12:23 on October 21, 2007[34] and other faults occurring on the line throughout the day as well.[35]

The Witch Fire ultimately led to the destruction of 1,141 homes, 509 outbuildings, and 239 vehicles, as well as damage to a further 77 homes and 25 outbuildings.[36] When later combined with the Guejito Fire, the Witch Fire burned a total of 197,990 acres before being contained. The two fires led to two fatalities and injured 40 firefighters.[37]

B. SDG&E's Response to Tripping and Arcing of Transmission Line 637 Was Unreasonable and Directly Led to the Ignition of the Witch Fire

ORA is including excerpts from Exhibit ORA-02 (Stannik) below. Exhibit ORA-02 contains ORA's full timeline of events and includes citations.

[30] CalFire Report (Witch), p. 2.

[31] The Santa Ysabel and Creelman substations are located northeast and southwest (respectively) of the Witch Fire origin area at 33.1105278, -116.6708167 and 33.0181194, -116.8530556, respectively.

[32] CalFire Report (Witch), p. 14.

[33] A fault is an abnormal and unintended electric current. In power or utility engineering, the term "fault" (or "fault current") usually indicates contact between pieces of equipment that are not designed to have electricity flow between them (for example, a power cable and the casing of a machine, or two transmission lines of different phases) or between a piece of equipment and ground.

[34] CalFire Report (Witch), p. 14.

[35] SDG&E Response to ORA Data Request DR-02, Question 1, Bulk Power System Report for Sunday, October 21, 2007.

[36] CalFire Report (Witch), p. 2.

[37] CalFire Report (Witch), p. 2.

ORA's review included numerous audio recordings of calls between SDG&E field personnel and grid control operators. These audio recordings communicate more information than can be understood from a transcript or summary and ORA recommends listening to the audio file itself where a call is quoted or cited.

SDG&E position titles such as "forester," "troubleman," and "lineman" are described in SDG&E's response to ORA data request DR-16,[38] available in Exhibit ORA-06 (Supporting Attachments, Volume 3).

[38] SDG&E Response to ORA Data Request DR-16, Question 1.

Table 01: Excerpted Witch Fire Timeline (October 21, 2007)

	Time	Description
A	08:53	Tie Line (TL) 637 faults for the first time
B	09:05	SDG&E troubleman Ray Necochea dispatched to Santa Ysabel substation
C	11:22	TL637 faults for the second time
D	11:56	Call to send troublemen to Santa Ysabel and Creelman substations
E	12:01	SDG&E troubleman Necochea dispatched to Santa Ysabel substation
F	12:07	SDG&E lineman Michael Higbee dispatched to Creelman substation
G	12:19	SDG&E troubleman Ray Necochea reports the third trip of TL637 while on the phone with grid control, says SDG&E is "going to have to get a patrolman out that way"
H	12:23	TL637 faults for the third time
I	12:29	Witch Fire reported by CalFire Air Tanker Pilot Mike Venable
J	12:34	SDG&E troubleman Ray Necochea on site at Santa Ysabel substation, reports on phone that TL637 tripped twice during the last fault and says "ought to get them out here man"
K	13:15	Pilot of CalFire Tanker 82 reported that the Witch fire "blew up"
L	13:59	SDG&E Transmission Construction & Maintenance Manager Bret Ball requests to turn off automatic reclosing on TL637 due to fire
M	15:24	SDG&E Construction Supervisor John Hotta asks line TL 637 to be open
N	15:25	TL637 faults for the fourth time
O	15:27	TL637 reported open at both ends
P	16:43	TL637 opened per electrical switching order document

In Exhibit ORA-02, ORA notes that judging from Grid Control Center audio calls, the two events at 15:24 and 15:25 on October 21, 2007 (items M and N in Table 01) appear to be reversed. This discrepancy is unconfirmed, but may be the result of time stamp errors.

As shown in rows A, C, H, and N in Table 01 above, Tie Line (TL) 637 tripped four times on October 21, 2007 at 08:53, 11:22, 12:23, and 15:25. CalFire pilot Venable first reported the Witch Fire at 12:29, at which time Mr.

Venable estimated the fire to be one to two acres in size,[39] indicating ignition before 12:29.

SDG&E's dispatch and response times to reported trips of TL637 are concerning, unreasonable, and directly led to the ignition of the Witch Fire. For example, after the first trip at 08:53 on October 21, SDG&E troubleman Necochea is dispatched to the Santa Ysabel substation after 12 minutes (at 09:05). However, after the second trip (at 11:22), a request call to dispatch troublemen to both the Santa Ysabel and Creelman substations happens after 34 minutes (11:56), with the actual dispatches happening 5 and 11 minutes after the call (12:01 and 12:07 respectively). The first troubleman was dispatched after 39 minutes; the second after 45 minutes. The dispatch time for the second trip was almost four times as long as for the first trip that occurred less than three hours before. Multiple trips of TL637 in a single day should have been a concern to the utility, especially since this was a rare event that had occurred only 9 times in the previous 24 years.[40]

SDG&E's actions after the time of ignition of the Witch Fire demonstrated a similarly slow response. As noted above, the Witch Fire was first reported by CalFire pilot Venable at 12:29, shortly after TL637 tripped for the third time at 12:23. Approximately forty-five minutes later, at 13:15, a different CalFire pilot fighting the fire reported that the Witch Fire expanded substantially.[41] After the third trip at 12:23, SDG&E did not disable automatic reclosing of the line, a mechanism by which switches attempt to automatically restore power to the line without manual human intervention,[42] for over an hour and a half, at 13:59. At 15:25, nearly three hours after initial ignition and over two hours after the fire expanded substantially, TL637 remained energized and then

[39] Transcript of Examination Under Oath of Michael Venable, March 31, 2010, p. 136, line 21.

[40] See ORA workpaper "ORA TL637 Fault History.xlsx."

[41] CalFire Report (Guejito), p. 19.

[42] See: SDG&E Response to ORA Data Request DR-15, Question 2 and Attachment TMC1010.

tripped for a fourth time at 15:25. Only at this time did an SDG&E fire coordinator finally ask for TL637 to be de-energized,[43] over 3 hours after the fire was first reported at SDG&E-owned power lines.

Over six hours passed from the initial tripping of Tie Line 637 to its de-energization. SDG&E's delayed response to the significant events of October 21, 2007 is concerning. For example:

- Time from the second trip (11:22) to de-energization: **over 4 hours;**
- Time from the third trip (12:23) and approximate Witch Fire ignition to de-energization: **over 3 hours;**
- Time from substantial expansion of the Witch fire (13:15) to de-energization: **2.25 hours;** and
- Time from disabling of automatic re-closing (13:59) to de-energization: **1.5 hours.**

SDG&E's slow response to concerns about tripping was notable in that field personnel specifically and repeatedly expressed concern about the repeated trips and their association with the ignition of the fire, both before and after the time of ignition.

When calling SDG&E Grid Control Center after the first trip of TL637, an SDG&E troubleman asks whether there was "anyone out there looking for [the cause of the trip]," to which the operator responded with a simple "No."[44]

When the same troubleman at the Santa Ysabel substation called SDG&E grid control again at 12:19, the grid control operator does not appear to be aware of the troubleman's location and says he is "super-busy with the

[43] SDG&E Grid Control Center Audio Recording (SDGE0209039_STM_jcampbel_datarequest_10-21-2007_204.wav) provided in SDG&E Response to ORA Data Request DR-02, Question 1. See also audio recordings call log "SDGE0246762-SDGE0246773.pdf."

[44] Control Center Audio (SDGE0209283_STM_jcampbel_datarequest_10-21-2009_175.wav)

[transmission line] 500; can you stand by?," referring to the fire threat to SDG&E's 500 kilovolt (KV) Southwest Power Link.[45] Only seconds later (on the same call), the troubleman reports a third trip of TL637 while on the phone with grid control, saying "Woah! It just tripped again… you're gonna have to get a patrolman out that way." However, the operator responds with only "Yes sir" before asking him to "please stand by."[46]

In a third call at 12:34 (after the Witch Fire is reported), the SDG&E troubleman at the Santa Ysabel substation calls grid control to request permission to deal with another issue. The troubleman further reports the nature of the trips on TL637, the fact that the line tripped twice, and again requests that SDG&E "get the transmission patrol guys out," saying "you gotta get them out here man, because this thing's gonna be going in and out."[47] However, despite the previous trips, which by this time had ignited the Witch Fire at least 5 minutes before, the nature of the trips, the fact that the line is still energized, the troubleman's assessment that the line would continue to trip, and the troubleman's repeated request for transmission patrol personnel, his request is met only with "Right."[48]

After the time of ignition of the Witch Fire, calls between SDG&E personnel make clear that they believed that the contact between lines not only occurred, but was a probable cause of the fire.

When the grid control center called SDG&E's on-site fire coordinator, who reported that the "wires are getting real close together," the operator responded that the wires "must have got together because it tripped."[49] On a later call discussing clearances and repairs to TL637 later in the day, SDG&E personnel

[45] SDG&E Response to ORA Data Request ORA-12, Q6.

[46] Control Center Audio (SDGE0208962_STM_jcampbel_datarequest_10-21-2007_1B7.wav)

[47] Control Center Audio (SDGE0208971_STM_jcampbel_datarequest_10-21-2007_1C0.wav)

[48] Control Center Audio (SDGE0208971_STM_jcampbel_datarequest_10-21-2007_1C0.wav)

[49] Control Center Audio (SDGE0209039_STM_jcampbel_datarequest_10-21-2007_204.wav)

specifically described the lines as coming into contact with each other, saying "We're gonna have to do some repair on the wire where it slapped together"[50] and, on a separate call, SDG&E personnel described the repair work to be performed as "repair the wire where it slapped together."[51] When recording TL637's third trip of the day in a substation log, the SDG&E troubleman at Santa Ysabel substation listed the cause as "Fire/Wind."[52]

A call between SDG&E grid control and SDG&E's emergency services manager at 14:43 indicated a similar conclusion:

Operator: "We also have a fire out there on 637 between Santa Ysabel and Creelman…"

Manager: "That must have been the reason that was tripping, huh? And we just didn't know it?"

Operator: "Absolutely. That's what's going on. We got a Zone 1, which is about 50% out that line."[53]

In later calls, grid operators again emphasized the connection between the tripping in Zone 1[54] of TL637 and the ignition of the Witch Fire, stating "We had a Zone 1 out of Santa Ysabel and so the fire's gotta be somewhere within that first Zone"[55] and, on a different call, "We had a Zone 1 out of Santa Ysabel so I'm sure that's probably where the fire's at."[56]

SDG&E failed to act on its personnel's recommendations and concerns regarding TL637 despite the fact that the utility had recognized that when a

[50] Control Center Audio (SDGE0209051_STM_jcampbel_datarequest_10-21-2007_210.wav)

[51] Control Center Audio (SDGE0209053_STM_jcampbel_datarequest_10-21-2007_212.wav)

[52] Transcript of Examination Under Oath of Ray Necochea, February 18, 2010, Exhibit 050-467.

[53] Control Center Audio (SDGE0209028_STM_jcampbel_datarequest_10-21-2007_1F9.wav)

[54] Zone 1 was a section of TL637 closest to the Santa Ysabel substation.

[55] Control Center Audio (SDGE0208997_STM_jcampbel_datarequest_10-21-2007_1DA.wav)

[56] Control Center Audio (SDGE0208994_STM_jcampbel_datarequest_10-21-2007_1D7.wav)

Red Flag Warning was in effect, as it was on October 21, 2007, the risk of fire ignition would be elevated and steps should be taken to minimize this risk.[57] As described in Section V-C below, such self-prescribed measures included prohibitions of or restrictions on tree pruning and removal activities, welding work, and limitations on where vehicles may drive, as well as established written guidelines related to power lines that have repeatedly tripped.

ORA investigated the possibility of whether SDG&E's failure to respond quickly to the reported trips on TL637 may have been motivated by a desire to avoid outages or reliability issues. However, SDG&E operators stated multiple times on October 21, 2007 that grid load was "significantly under [what was] projected"[58] and that there was "plenty of generation,"[59] including peakers that could be brought online within 10 minutes.[60] When discussing TL637 specifically at 14:54 on October 21, grid control also noted "Looks like there's nothing on it,"[61] referring to line loading.

Prior to October 2007, TL637 had tripped an average of two to three times per year since 1983.[62,63] Since outage records began in 1983, two trips or more per day had occurred only twice (in October 1994 and March 2003) and three trips or more per day only once (March 2003).[64] Notably, the description of the 6 trips on March 29, 2003 was listed as "high winds in area/guy wire contact."[65] However, between 1983 and 2007, the median time between trips

[57] TMC1320 Red Flag Procedures, effective date 12/27/06, pp. 6-7.

[58] Control Center Audio (SDGE0208961_STM_jcampbel_datarequest_10-21-2007_1B6.wav)

[59] Control Center Audio (SDGE0208961_STM_jcampbel_datarequest_10-21-2007_1B6.wav)

[60] Control Center Audio (SDGE0209028_STM_jcampbel_datarequest_10-21-2007_1F9.wav)

[61] Control Center Audio (SDGE0209029_STM_jcampbel_datarequest_10-21-2007_1FA.wav)

[62] SDG&E Response to ORA Data Request DR-02, Question 1, Attachment TL637 Outage Record and ORA workpaper "ORA TL637 Fault History.xlsx."

[63] ORA workpaper "ORA TL637 Fault History.xlsx."

[64] SDG&E Response to ORA Data Request DR-02, Question 1, Attachment TL637 Outage Record and ORA workpaper "ORA TL637 Fault History.xlsx."

[65] SDG&E Response to ORA Data Request DR-02, Question 1, Attachment TL637 Outage Record and

on TL637 was well over one month (42 days), with an average time nearly three times this much.[66] And yet, as described above, SDG&E's concern about three trips within four hours was demonstrably minimal, even given plentiful generation and lower-than-projected load and the cautions given by SDG&E's personnel as discussed above. SDG&E's actions ran contrary to its established Red Flag Warning practices and ignored the concerns of its personnel, who later clearly stated that the conductors of TL637 came into contact with each other and caused the Witch Fire.

SDG&E's actions and response procedures to the events leading up to and including the ignition of the Witch Fire were not those of a prudent manager. A timelier and/or better-prepared response to the situation could have prevented the damage caused by the Witch Fire, particularly given the repeated warnings of SDG&E's personnel and the unusually high number of trips on TL637 within a short period.

C. SDG&E's Failure to Maintain Clearances as Required by General Order 95 Directly Led to the Ignition of the Witch Fire

In his report on the Witch Fire, CalFire Captain Matthew Gilbert, the investigating officer, stated that he "eliminated all other causes for the fire, determining the cause to be power lines."[67] Captain Gilbert also stated that, "While at the origin, I observed the lines coming in contact with each other in the wind."[68] CalFire tanker pilot Mike Venable reported seeing "bluish arcing

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ORA workpaper "ORA TL637 Fault History.xlsx."

[66] SDG&E Response to ORA Data Request DR-02, Question 1, Attachment TL637 Outage Record and ORA workpaper "ORA TL637 Fault History.xlsx."

[67] CalFire Report (Witch), p. 2, lines 13-14.

[68] CalFire Report (Witch), p. 2, lines 16-17.

coming from the lines"[69] to Captain Gilbert, and Mr. Venable confirmed this observation in his deposition under oath.[70]

CalFire tanker pilot Venable indicated that the geography and wind direction at the site of the Witch Fire pointed to a power-line ignited fire, stating under oath that "it appeared to me that the origin of the fire, which was at that time black … maybe a quarter-acre of actual black. As the fire progressed across, the lines went right through the corner or the top corner of that"[71] and that the burned area was "on the downwind side of the power lines."[72]

As discussed in Section III-B above, multiple SDG&E personnel used language that clearly and on multiple separate occasions indicated a direct connection between the tripping of TL637 and the ignition of the Witch Fire.

Contact between power lines represents a clearance violation of GO 95. The CalFire investigator eliminated all non-power line potential causes of the Witch Fire, including: lightning, spontaneous combustion, campfire, smoking, debris burning, vehicles, equipment use, railroad, fireworks, playing with fire, glass refraction, and incendiary devices.[73] Furthermore, the fact that multiple sections along TL637 between poles Z416675 and Z416676 were damaged by arcing[74] demonstrates that the lines were significantly out of compliance with General Order 95 to have ample slack which allowed them to touch at multiple separate points. Despite the fact that GO 95 allows a maximum reduction of

[69] CalFire Report (Witch), p. 2, lines 17-18.

[70] Venable EUO Transcript, p. 137-138, lines 20-25 and 1-23, respectively.

[71] Venable EUO Transcript, p. 136, lines 12-16.

[72] Venable EUO Transcript, p. 138, line 14.

[73] CalFire Report (Witch), p. 13-15.

[74] CalFire Report (Witch), p. 18, lines 22-26 and Attachment G.

10% for slack in the lines in wind,[75] the SDG&E line touched at multiple separate points.

IV. THE GUEJITO FIRE

A. Background

The Guejito Fire – also known as the San Pasqual Fire – was first reported by CalFire Battalion Chief Suzanne Todd around 01:00 on October 22, 2007 within the San Pasqual Valley in northwest San Diego County near the City of Escondido.[76] The Specific Origin Area was determined to be approximately 33.09371, -116.96165 and was located within the Guejito Creek drainage south of State Route 78 near Bandy Canyon Road.[77] This location is between SDG&E poles P196387 and P196394.

In his report, CalFire Investigator Gary Eidsmoe states that after the investigation, "the fire was determined to have started when energized power lines and lashing wire[78] from a Cox Communications cable came in contact with each other."[79] Chief Todd also reported arcing between the power lines when initially reporting the fire.[80] Tyson Short, a resident near the SOA, also reported having seen arcing occurring between wires.[81] An "interruption" in the line also occurred at 00:59, shortly before the fire was first reported.[82]

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[75] General Order 95, Table 2 (Original Version) and General Order 95, Rule 37 (Revised January 2006). See: http://www.cpuc.ca.gov/gos/Resmajor/DesNo05-01-030/GO95/DesNo05-01-030_go95_rule_38_table2.htm and http://www.cpuc.ca.gov/gos/Resmajor/DesNo05-01-030/GO95/DesNo05-01-030_go95_rule_37.htm.

[76] CalFire Report (Guejito), p. 3.

[77] CalFire Report (Guejito), p. 3.

[78] Lashing wire is a thin, typically non-electricity-conducting cable designed to hold other cables together.

[79] CalFire Report (Guejito), p. 3.

[80] CalFire Report (Guejito), p. 11.

[81] CalFire Report (Guejito), p. 13.

[82] CalFire Report (Guejito), p. 16.

The Guejito Fire, which later combined with the Witch Fire, burned a total of 197,990 acres before being contained. The two fires led to two fatalities and injured 40 firefighters.[83]

B. SDG&E's Failure to Maintain Clearances as Required by General Order 95 Directly Led to the Ignition of the Guejito Fire

CalFire's investigation of the Guejito fire noted "damage to the [power line] strand and also found three spots where the lashing wire from the fiber optics cable was fused to the power line."[84] CPSD's investigation report similarly concluded that "the [communications] lashing wire in question was broken and that the lashing wire and power line came into contact with each other."[85] In his direct testimony in I. 08-11-007, SDG&E witness Larry Hall stated "I concurred with [CalFire Investigator] Eidsmoe's conclusion that the Cox lashing wire had contacted the 12kV conductor while it was energized."[86] ORA's review of photographic and other evidence provided by SDG&E supports the findings that the Guejito fire was caused by contact between power and communication lines between poles P196387 and P196394. Physical contact between communications and power lines constitutes a clearance violation under General Order 95. As noted above, SDG&E does not dispute that a clearance violation occurred when its own facilities contacted communications facilities in the same span.

Nolte Associates, Inc. (an SDG&E engineering contractor) performed an engineering survey (the Nolte Survey) on the facilities involved in the ignition of the Guejito Fire on November 2, 2007[87] (a similar survey was performed for

[83] CalFire Report (Witch), p. 2.

[84] CalFire Report (Guejito), p. 13

[85] CPSD Report (Guejito), p. 5.

[86] Direct Testimony of Larry Hall in I. 08-11-007 (Guejito), p. 2, lines 5-7.

[87] The Guejito Fire Nolte Survey is attached in Exhibit ORA-04 (ORA Supporting Attachments).

the Rice Fire[88]). The Nolte Survey documented a 3.3 foot clearance between SDG&E and Cox Communications lines before any repairs were performed following the Guejito Fire.[89] A 3.3-foot clearance between two lines is a clearance violation under GO 95. Table 2 of General Order 95 specifies a minimum clearance of 6 feet with a maximum reduction of 10% under wind conditions.[90]

SDG&E admitted that the direct cause of the Guejito Fire was a clearance violation of General Order 95 with respect to the Cox Communications facilities.

C. SDG&E's Poor Routine Inspection Procedure Contributed to the Ignition of the Guejito Fire

Under General Order 165, SDG&E is required to perform inspections of its electric distribution facilities "in order to ensure safe and high-quality electrical service."[91] Basic patrol inspections of overhead conductors and cables in a rural area (as the facilities involved in the ignition of the Guejito fire were classified at the time of the 2007 fires) are required to be performed every two years.[92] General Order 165 requires detailed overhead inspections of overhead conductors and cables in rural areas every five years.

As discussed in Section IV-B above and as recorded by SDG&E's consultants in the Nolte Survey, immediately following the fire SDG&E's

[88] The Rice Nolte Survey was provided to ORA in SDG&E's Response to ORA Data Request DR-02, Question 1. The complete survey is available in ORA-04 (Supporting Attachments).

[89] Rebuttal Testimony of the Consumer Protection and Safety Division (CPSD) in I. 08-11-007 (Guejito), p. 2-1.

[90] General Order 95, Table 2 (Original Version) and General Order 95, Rule 37 (Revised January 2006). See: http://www.cpuc.ca.gov/gos/Resmajor/DesNo05-01-030/GO95/DesNo05-01-030_go95_rule_38_table2.htm and http://www.cpuc.ca.gov/gos/Resmajor/DesNo05-01-030/GO95/DesNo05-01-030_go95_rule_37.htm.

[91] General Order 165, Section I: Purpose. See: http://www.cpuc.ca.gov/gos/GO165/GO_165%28I%29.html

[92] General Order 165, Table I. See: http://www.cpuc.ca.gov/gos/GO165/GO_165_table.html

conductors were in violation of General Order 95 by being well within the minimum allowed distance of 72 inches of the Cox Communication wires. The Nolte Survey also counted sixteen "lashing break" endpoints,[93] indicating eight points at which the communications lashing wire was severed. The same survey document noted four locations on the SDG&E conductor labeled "piece of lashing," presumably where parts of the lashing wire had fused with the conductor as stated in the CalFire investigation report describing the Guejito Fire[94] and seen in the photographs accompanying the report.[95]

At the time of the fires, SDG&E's most recent patrol inspection of the facilities involved in the Guejito Fire was on August 30, 2007,[96] less than two months (53 days) before the ignition of the Guejito Fire. The most recent detailed inspection before the fire was performed on June 22, 2007,[97] only four months (122 days) before the ignition of the Guejito Fire. Neither inspection identified any of the clearance or other issues discussed above,[98],[99] despite the fact that SDG&E's Electric Standard Practice Manual specifically instructed inspectors to "record in DIMS/MDT infractions caused by a foreign utility"[100] and check for "improper conductor clearances."[101]

In testimony in the Guejito Fire OII (I. 08-11-007), SDG&E stated that it "does not and cannot comprehensively inspect for potential problems with

[93] Guejito Nolte Survey, page "Guejito Fire San Pasqual Valley Road San Pasqual," Sheet 2 of 2 Sheets (wire span cross section).

[94] CalFire Report (Guejito), p. 13.

[95] CalFire Report (Guejito), attached photos A5-A8.

[96] Prepared Direct Testimony of Darren Weim, p. 10, lines 18-20.

[97] Weim Testimony, pp. 10-11, lines 22 and 1-3, respectively.

[98] Weim Testimony, p. 19, lines 19-20.

[99] Weim Testimony, p. 11, lines 1-3.

[100] SDG&E Response to ORA Data Request DR-03, Question 6, attachment "Attachment to Question 6b_Visual Inspection of Poles_Feb2006," p. 2.

[101] SDG&E Response to ORA Data Request DR-03, Question 6, attachment "Attachment to Question 6b_Visual Inspection of Poles_Feb2006," p. 5.

telecommunications facilities that are attached to SDG&E's poles,"[102] despite the fact that SDG&E's own procedures call for inspecting foreign utilities that may cause improper conductor clearances.

SDG&E's statement that "Proper inspection and maintenance of those facilities is the responsibility of the telecommunications companies"[103] is incomplete and errs in assuming that compliance with Rule 38 of General Order 95 is the responsibility of only one party. Rule 38 of General Order 95 states "The minimum vertical, horizontal or radial clearances of wires from other wires shall not be less than the values given in Table 2…"[104] Both Rule 38 and Table 2 do not specify which party or owner must maintain the necessary clearances between conductors and communication wires, only that clearances must be maintained. When the wires in question are owned by two different parties, it is reasonable that maintaining clearance between them is the joint responsibility of both of those parties. SDG&E acknowledged its responsibility to comply with GO 95 in previous testimony, stating "Consistent with General Order 165, Line Checkers focus on the General Order 95 compliance of SDG&E's facilities."[105]

SDG&E's inspection procedures and/or execution of those procedures failed to detect any of the clearance and safety issues identified above only weeks before the Guejito Fire.

[102] Direct Testimony of Darren Weim in I. 08-11-007 (Guejito), p. 8, lines 23-25.

[103] Weim Testimony (Guejito OII), p. 8, lines 25-26.

[104] General Order 95, Rule 38. See: http://www.cpuc.ca.gov/gos/GO95/go_95_rule_38.html

[105] Weim Testimony (Guejito OII), p. 8, lines 22-23.

V. THE RICE FIRE

A. Background

The Rice Fire originated in northern San Diego County, south of the town of Rainbow. The Specific Origin Area (SOA) as identified by CalFire was along a section of Rice Canyon Road referred to as "Deadman's Curve."[106] The coordinates of the SOA are 33.39888, -117.14555. The Rice Fire was first reported around 04:00 on October 22, 2007.[107]

In his report on the Rice Fire, CalFire Captain Matthew Gilbert, the investigating officer, stated that he "eliminated all other causes for the Rice Fire, determining it to be a power line caused fire" and noted that he "located downed power lines in each Specific Origin Area."[108],[109] Captain Gilbert also "observed arcing and spackling on the lines near each Specific Origin Area, which is indicative of the lines being energized" and stated "SDG&E records indicate the lines were energized when the fire occurred."[110]

The Rice Fire burned approximately 9,472 acres before it was contained and destroyed 206 homes, two commercial properties, and 40 other buildings.[111]

B. SDG&E's Failure to Perform Vegetation Management Effectively and in a Timely Manner Directly Led to the Ignition of the Rice Fire

CPSD investigated the Rice Fire in 2007 – 2009 and found that "on October 22, 2007, a sycamore tree limb broke and fell on San Diego Gas and

[106] CalFire Report (Rice), p. 11, lines 1-3.

[107] CalFire Report (Rice), p. 3.

[108] CalFire Report (Rice), p. 3.

[109] CalFire's investigation report identified two Specific Origin Areas, one immediately north of Rice Canyon Road and one immediately south.

[110] CalFire Report (Rice), p. 17.

[111] CalFire Report (Rice), p. 10.

Electric's (SDG&E) 12 kV overhead conductors between SDG&E poles 213072 and 112340, causing the conductors to break and fall to the ground."[112] The sycamore tree in question is assigned the identifier "FF1090" in SDG&E's Vegetation Management System (VMS).[113]

On July 18, 2007, approximately three months before the fire, Davey Tree Company (Davey), an SDG&E vegetation management contractor, inspected Tree FF1090. The pre-trim inspector indicated in SDG&E's vegetation management system that the tree should be trimmed within three months (by October 18, 2007) by selecting a digital dropdown choice of "0 to 3 months" in the "Months to Next Trim" field of SDG&E's vegetation management system.[114]

The inspector entered a note of "remove direct overhang" into SDG&E's VMS for the same tree. SDG&E's standard practice was to trim all trees with direct overhang (i.e. trees, or parts thereof, that entered into the vertical conductor-sky plane) regardless of their distance from the line.[115] Documents provided by SDG&E in response to discovery show tree FF1090 directly overhanging the conductors involved in the ignition of the Rice Fire.[116,117]

SDG&E has asserted that selection of the "0 to 3 months" dropdown in its Vegetation Management System does not indicate that a tree will be trimmed within that time frame, stating that either a separate selection is required to

[112] CPSD Investigation of the Rice Fire, p. 1.

[113] For more information on SDG&E's tree numbering, see SDG&E Response to ORA Data Request DR-03, Question 5.

[114] Transcript of Examination Under Oath of Mark Hayes Clemens, April 26, 2011, p. 16, lines 12-23.

[115] Prepared Direct Testimony of Don Akau, Appendix 3, p. 23 of Tree Pre-inspection Procedures Manual.

[116] SDG&E Response to ORA Data Request DR-02, Question 1, January 2008 VMA Record of Information for Tree FF1090.

[117] Four images in question were provided in the Witch/Rice Fire Investigation (I. 08-11-006) and are included in Exhibit ORA-06.

indicate a trim is needed (as asserted in the previous fire investigations[118]) or that an additional month is added to the total timeline for auditing the recommendations (as asserted in this proceeding[119]).

In testimony, SDG&E described the tree trimming assessment process as comprised of four stages: 1) a pre-inspection that is completed within 30 days, 2) a "quality assurance audit of the pre-inspection completed within the first month following the pre-inspection," 3) the tree trimming and/or removal work itself, and 4) a quality assurance audit of the trimming/removal work.[120] Regarding the second step of the process, ORA clarified in discovery that it was SDG&E's practice to complete the pre-trim quality assurance audit between 30 and 61 days following a pre-trim inspection and that the audit occurs prior to, and not concurrent with, actual trimming work.[121]

In his examination under oath, the Davey pre-trim inspector who examined FF1090 in July stated that tree FF1090 "had strong growth towards the lines, and I felt it would encroach in the 4 foot distance from the primary line in the facilities within three months."[122] In other words, the inspector determined that, if the tree were not trimmed within three months of July 18, 2007 (the date of the inspection), SDG&E's facilities would be out of compliance with the clearance requirements of GO 95. The pre-trim inspector stated that the tree "had fairly vigorous growth in the directions of the lines"[123] and "strong

[118] Direct Testimony of Don Akau in I. 08-11-006 (Witch/Rice), p. 7, lines 2-3.

[119] Akau Testimony, p. 7, lines 6-7. See also: SDG&E Response to ORA Data Request ORA-08, Question 2.

[120] SDG&E Response to ORA Data Request ORA-03, Question 3.

[121] SDG&E Response to ORA Data Request ORA-08, Question 2.

[122] Transcript of Examination Under Oath of Mark Hayes Clemens, March 25, 2008, p. 56, lines 24-26.

[123] Clemens EUO Transcript (2008), p. 12, lines 23-24.

growth towards the lines."[124] FF1090 was categorized in SDG&E's VMS as a "fast grower,"[125,126] indicating a growth rate of 4-6 feet per year.[127]

SDG&E's assertion[128] that its tree-trimming timeline could extend beyond the timeframe recommended by an inspector (in the case of tree FF1090, 0-3 months) via an additional auditing or administrative period is unreasonable. SDG&E asserts that the three-month time period for trimming begins only once the contractor is formally notified to undertake tree trimming, and not from when the inspector makes his recommendation in the software.[129] This assertion is directly contradicted by SDG&E's vegetation management manual, which describes the Vegetation Management System's "Months to Next Trim" field as "Estimated months it will take tree to grow out of compliance."[130] The manual does not mention, describe, account for, or otherwise include a modified timeline to take an auditing or administrative period into account.

In testimony, SDG&E claims that the tree was "inspected" by a different Davey employee on October 15, 2007 and found to be compliant at that time.[131] SDG&E cites to its own data request from the original Fire OIIs in which a Davey employee makes the same claim.[132] However, there is no record of this inspection in tree FF1090's record,[133] and SDG&E was unable to provide a list of site visits for the same Davey tree employee for October 15, 2007, the date of the claimed inspection, even though similar documents exist

[124] Clemens EUO Transcript (2008), p. 56, lines 23-24.

[125] SDG&E Response to ORA Data Request DR-02, Question 1, January 2008 VMA Record of Information for Tree FF1090.

[126] SDG&E's response to ORA Data Request DR-04, Question 9 also addresses growth rates.

[127] Akau Testimony, Appendix 3, p. 23 of Tree Pre-inspection Procedures Manual, p. 17.

[128] Akau Testimony (Witch/Rice OII), pp. 2-3.

[129] Akau Testimony (Witch/Rice OII), p. 3 lines 1-3.

[130] Akau Testimony, Appendix 3, p. 6 of Tree Pre-inspection Procedures manual.

[131] Akau Testimony, p. 17, lines 18-20.

[132] Akau Testimony, Appendix 7, Response of Davey Tree Survey to SDG&E Data Request, pp. 1-3.

[133] Akau Testimony, Appendix 6, Tree Trimming Record; Information for Tree FF1090, pp. 1-2.

for the inspector's site visits only three days later on October 18.[134] Similarly, SDG&E's asserts that an unscheduled October 19, 2007 site visit by two foresters for the purpose of evaluating a Davey expense request also counts as an "inspection." However, as noted by CPSD in the Commission's original fire investigation:

> *"Mr. Peck's vague assertion that he does not 'recall having any concerns about the tree' says nothing about the concern raised by Mr. Clemens (the pre-trim inspector) who recommended that the tree be trimmed within three months of his inspection due to the predicted encroachment of the tree on nearby power lines."*[135]

SDG&E's Vegetation Manager notes that the visit by the two foresters was intended to evaluate a Time and Equipment (T&E) request (rather than an inspection of Tree FF1090[136]), was carried out by different professionals with different duties and qualifications, and was not planned. In their separate testimony in the original OII, the two SDG&E foresters state that they "were headed out to Rice Canyon Road to investigate an outage, so I [Chris Thompson] suggested that we stop at tree FF1090 on the way to evaluate Davey's T&E request"[137] and that they "decided to stop by tree FF1090."[138] The two foresters' recollections of the tree's distance from the line are not equivalent to a thorough and planned inspection. However, regardless of the purpose of the alleged October 15 or October 19 site visits, even if such visits had occurred, there is no evidence that SDG&E's or Davey's procedures would

[134] SDG&E Response to ORA Data Request DR-05, Question 16, attachments Pre-inspection Scheduled Visits, TL637 Outage Record, and VMA Pre-inspection Audit Results.

[135] CPSD Rebuttal Testimony in I. 08-11-006 (Witch/Rice), p. 2-4, lines 12-16.

[136] Akau Testimony (Witch/Rice OII), p. 10, lines 10-13.

[137] Direct Testimony of Chris Thompson in I. 08-11-006 (Witch/Rice), p. 1, lines 25-27.

[138] Direct Testimony of Greg Peck in I. 08-11-006 (Witch/Rice), p. 1, lines 24-25.

have allowed such visits to supersede or delay action based on the previous recommendation, nor is there any evidence that the original recommendation had been changed or removed.[139]

In response to discovery, SDG&E has been unable to provide documentation showing the date by which FF1090 was to be trimmed under any schedule or set of assumptions timing/auditing. Although SDG&E stated in response to an ORA data request that "Trimming FF1090 was on schedule to be completed by the end of the routine trim cycle (November 1, 2007),"[140],[141] the two attachments to support this claim provided in response to ORA's query were a blank and undated work order form for tree FF1090[142] and a form documenting the "exception" trim[143] that occurred on November 13, 2007, over three weeks after the fire and 12 days after the end of the "routine trim cycle."

SDG&E's failure to address a situation that it had previously identified as a concern, while also violating its clearly defined special procedures to address direct overhang, was unreasonable and negligent. SDG&E's failure to trim tree FF1090 within the recommended timeframe was also unreasonable and negligent. SDG&E employed Davey Tree Surgery before the 2007 wildfire and continues to use the company today.[144] In testimony, SDG&E referred to Davey as "qualified contractors"[145] and having "a well-trained and qualified work force."[146] ORA is unaware of any SDG&E statements calling into

[139] See: CPSD Rebuttal Testimony in I. 08-11-006 (Witch/Rice), p. 2-5, lines 1-7.

[140] SDG&E Response to ORA Data Request DR-07, Question 5.

[141] As noted above, ORA disputes this date as the appropriate date by which tree FF1090 should have been trimmed.

[142] SDG&E Response to ORA Data Request DR-07, Question 5, Attachment "Bubble Sheet FF1090."

[143] SDG&E Response to ORA Data Request DR-07, Question 5, Attachment "Exception FF1090 11-13-07."

[144] Akau Testimony, p. 5 lines 19-21.

[145] Akau Testimony, p. 5, line 18.

[146] Akau Testimony, p. 6, lines 6-8.

question the ability of Davey, or its employees, to perform the required tree inspection and trimming work consistent with SDG&E's guidelines. Given SDG&E's extensive experience with Davey, the fact that contractors are supervised by SDG&E employees,[147] and SDG&E's continued reliance on Davey after the 2007 wildfires,[148] there is no indication that Davey's conclusions and recommendations regarding the trimming and growth of tree FF1090 were questioned or deemed incorrect or imprudent by SDG&E.

C. SDG&E's Actions Regarding Tree FF1090 in the Aftermath of the Rice Fire Destroyed Large Segments of the Subject Tree without Prior Investigation or Testing

The day following the ignition of the Rice Fire, tree FF1090 (originally reported to be approximately 80 feet tall[149]) was significantly reduced in height by SDG&E contractors under direction of SDG&E personnel.[150,151] CPSD's investigation cited an SDG&E Utility Forester as having ordered Davey to "trim the tree to a level below the assumed height of the wire."[152,153] The following day (October 23, 2007), FF1090 had been "reduced to two-thirds of its height"[154,155,156,157] or more.[158] A Davey employee stated under oath that the

[147] Akau Testimony, p. 5, line 19.

[148] Akau Testimony, p. 5, lines 19-21.

[149] Supplemental Direct Testimony of the Consumer Protection and Safety Division (CPSD) in I. 08-11-006 (Witch/Rice), Exhibit 1-M.

[150] Transcript of Examination Under Oath of Don Akau, April 18, 2008, p. 33, lines 14-23.

[151] CPSD Supplemental Direct Testimony in I. 08-11-006 (Witch/Rice), p. 2-3.

[152] Transcript of Examination Under Oath of Chris Thompson, April 18, 2008, p. 29, lines 3-8.

[153] CPSD Report (Rice), p. 5.

[154] CPSD Report (Rice), p. 5.

[155] SDG&E Response to ORA Data Request DR-04, Question 12.

[156] Akau EUO Transcript, p. 48, lines 15-20.

[157] SDG&E Response to ORA Data Request DR-02, Question 1, January 2009 VMA Record of Information for Tree FF1090.

[158] Transcript of Examination Under Oath of Ronald Christopher Hay, May 28, 2008, p. 27, lines 1-15.

removal of the branch involved in the ignition of the Rice Fire was a procedure separate and distinct from the significant trimming that happened later the same day.[159] He estimated the tree's post-trim height to be approximately 15-18 feet,[160] a reduction of 35-60 feet.

SDG&E and Davey have stated that the post-fire trim of FF1090 was necessary for public safety,[161] related to the future reinstallation of power lines,[162] and related to "fire at the base of the tree."[163] SDG&E and Davey have confirmed that, at the time of the exception trim, a Red Flag warning was still in effect,[164] that the remainder of FF1090 appeared healthy,[165] that the remaining branches of FF1090 were pointed away from the utility lines,[166] and that the power lines associated with the fire ignition were on the ground and had been de-energized for over 7 hours.[167] SDG&E was unable to provide requested information regarding the reinstallation of the facilities,[168] so it remains unclear whether reinstallation of the lines in question had even been scheduled or planned. Additionally, SDG&E's fire safety procedures included the practice of not performing routine tree trimming when a Red Flag Warning was in effect to minimize fire ignition risk.[169] While this safety procedure could be overruled on a case-by-case basis,[170] it is unclear why SDG&E chose to perform this allegedly "critical" work when, by its own admission, "there

[159] Hay EUO Transcript, p. 26, lines 20-26.

[160] Hay EUO Transcript, p. 27, line 4.

[161] Akau Testimony (Witch/Rice OII), p. 15, lines 7-10.

[162] Hay EUO Transcript, p. 27, lines 1-2.

[163] Hay EUO Transcript, p. 32, lines 8-11.

[164] SDG&E Response to ORA Data Request DR-08, Question 4a.

[165] Hay EUO Transcript, p. 32, lines 15-23.

[166] Hay EUO Transcript, pp. 33-34, lines 28 and 1-8, respectively.

[167] SDG&E Response to ORA Data Request DR-08, Questions 3 and 5.

[168] SDG&E Response to ORA Data Request DR-13, Question 1.

[169] TMC1320 Red Flag Procedures, effective date 12/27/06, pp. 6-7. See Exhibit ORA-06.

[170] TMC1320 Red Flag Procedures, effective date 12/27/06, p. 6. See Exhibit ORA-06.

was existing vegetation in the area that had not burned, and a shift in winds thus could have brought additional fire to that area."[171]

While it is possible that tree work on FF1090 may have been necessary at some point before the power lines were reinstalled and reenergized, SDG&E has not provided a compelling reason for the need to drastically reduce the height of FF1090 immediately after the Rice Fire and before any investigators had a chance to assess the scene. SDG&E's actions also took place without any CalFire or CPUC personnel present,[172] even though field personnel at the utility were well aware of regulatory obligations to report incidents potentially related to utility equipment[173] and the vegetation program manager was also aware of the implications of his actions for a future investigation.[174]

SDG&E's actions to dramatically reduce the height of tree FF1090 immediately following the Rice Fire were unnecessary and substantially modified the scene of the fire ignition prior to any investigation, documentation, or testing.

D. SDG&E's Record Evidence of Tree FF1090 Contains Unexplained Discrepancies

In both this proceeding and the previous Fire OIIs, SDG&E provided three tree information records for tree FF1090 from its Vegetation Management System. These records include basic information about a tree, its trimming history, and planned tree work. As described below, these records contain unexplained discrepancies directly related to the cause of the Rice Fire.

[171] SDG&E Response to ORA Data Request DR-08, Question 4.

[172] SDG&E Response to ORA Data Request DR-08, Question 4.

[173] SDG&E Grid Control Center Audio Recording (SDGE0209124_STM_jcampbel_datarequest_10-21-2007_259.wav).

[174] Akau EUO Transcript, p 46, lines 13-18.

The three records in question are contained in Exhibit ORA-06 (Supporting Attachments, Volume 3). ORA describes the three versions of the tree record below:

1. **Record 1**: dated January 28, 2008; provided to ORA in this proceeding and to CPSD in I. 08-11-006 (Witch/Rice OII) in response to discovery;[175]
2. **Record 2:** dated May 14, 2008; included in this proceeding as Appendix 6 to the testimony of Mr. Akau;[176] and
3. **Record 3**: dated January 7, 2009; provided to ORA in this proceeding in response to discovery.[177]

All three documents clearly refer to the same tree and align completely as far as tree identifier, owner address, system add date, pole location, Vegetation Management Area (VMA), and more. As one would expect, later records contain additional information from later inspections, trims, etc.

However, in one case especially relevant to the Rice Fire, information is missing in later records. In Record 1, the first item of page 2 under "Tree Note Description" reads "Remove direct overhang," along with the inspector's name and the time (which is, down to the second, exactly the same as the July 18, 2007 inspection time). SDG&E's practice of removing direct overhang is discussed in further detail in Section V-B above.

In the second record, this note is listed under a different crew member name and under a different date: January 22, 2008, three months after the Rice Fire. January 22, 2008 is before the record generation date of Record 1, indicating

[175] SDG&E Response to ORA Data Request DR-02, Question 1, January 2008 VMA Record of Information for Tree FF1090.

[176] Akau Testimony, Appendix 6, Tree Trimming Record; Information for Tree FF1090, pp. 1-2.

[177] SDG&E Response to ORA Data Request DR-02, Question 1, January 2009 VMA Record of Information for Tree FF1090.

that this was not simply an addition that occurred after the record was generated. It is unclear whether the note was reassigned and the date changed or if the original note was deleted and a new note with the same date was added.

In the third record (January 2009), the Tree Note Description section contains no "Remove direct overhang" notes of any kind except a note from August 2008, which one can assume refers to a different instance.

These changes to the information record of a tree tied directly to the ignition of a significant wildfire are concerning and unexplained by SDG&E.

E. SDG&E's Failure to Maintain Clearances as Required by General Order 95 Directly Led to the Ignition of the Rice Fire

As discussed in Section V-B above, SDG&E failed to trim sycamore tree FF1090 in the timeframe officially recommended by an experienced professional. In doing so, SDG&E ignored not only recommendations concerning the clearances required by General Order 95, but also its own practices regarding vegetation management and direct overhang.

SDG&E's failure to maintain the required and appropriate clearances between tree FF1090 and its 12kV distribution line directly led to the ignition of the Rice Fire.

VI. WEATHER AND ENVIRONMENTAL CONDITIONS AT THE TIME OF THE 2007 WILDFIRES

A. Santa Ana Winds Were a Known Local Condition Before and at the Time of the 2007 Wildfires

The Santa Ana winds are a regularly-occurring weather pattern in Southern California. The winds generally occur between the months of October through February and, in Southern California, are characterized by northeasterly winds

that flow from the inland areas toward the coast.[178] Santa Ana winds are caused by the build-up of a region of cool, high-pressure air in the Great Basin (the area east of the Sierra Nevada Mountains and west of the Rocky Mountains). When this air mass gets pushed down the mountain slopes toward the coast, it warms due to compressional heating. Wind speeds during a Santa Ana event can range from 35 knots to upwards of 100 knots,[179] or approximately 40-115 miles per hour (mph).

Santa Ana conditions have been described qualitatively for at least two centuries[180,181] and were scientifically described as early as 1963, when San Diego experienced its hottest recorded temperatures.[182] The Santa Ana winds are well known in Southern California and have been a well-documented part of Californian weather for decades. Santa Anas' connection to wildfires have been documented as early as 1889.[183]

In SDG&E's testimony, Mr. Vanderburg discussed the severity of the Santa Ana winds during October 2007. Mr. Vanderburg noted that after 2007, the anemometers deployed by SDG&E recorded wind speeds over 90 mph in the proximity of Pine Hills in 2013 and speeds of up to 74 mph at West Santa Ysabel in 2014,[184] both in central San Diego County. After comparing the wind speeds of the Remoted Automated Weather Stations (RAWS) and newer SDG&E stations, Mr. Vanderburg calculated that the wind gusts on October

[178] National Oceanic and Atmospheric Administration: Glossary, Santa Ana Winds. See: http://w1.weather.gov/glossary/index.php?word=Santa+Ana+Wind

[179] 2004 NOAA Technical Memorandum NWS WR-270, p.5.

[180] A Brief History of the Santa Ana Winds, KCET, October 25, 2012. See: https://www.kcet.org/shows/lost-la/a-brief-history-of-the-santa-ana-winds

[181] Chandler, Raymond. "Red Wind" (1938).

[182] 2004 NOAA Technical Memorandum NWS WR-270, p.13.

[183] Keeley, Fotheringham, Moritz, Journal of Forestry. "Lessons from the October 2003 Wildfires in Southern California," p. 28.

[184] Prepared Direct Testimony of Steve Vanderburg, p. 6-7, lines 22-23, 1-2.

21, 2007 at West Santa Ysabel would have been approximately 92 mph.[185] Mr. Vanderburg's calculations and ORA's analysis thereof are described further in Section VI-B below. Based on his calculation, Mr. Vanderburg claimed that "October 2007 was an unusually strong, damaging and unprecedented Santa Ana wind event in San Diego County."[186]

However, the conclusion that the 2007 Santa Ana conditions were "unprecedented" appears to contradict the National Oceanographic and Atmospheric Administration's (NOAA) Technical Memorandum WR-270, co-authored by Mr. Vanderburg. In WR-270, Mr. Vanderburg and his co-authors stated:

> *"Winds are typically between north and east at a speed of 35 knots through and below passes and canyons with gusts to 50 knots. Stronger Santa Ana Winds can have gusts greater than 60 knots over widespread areas, and gusts greater than 100 knots in favored areas, such as the Santa Ana Canyon."*[187]

100 knots is approximately 115 mph. Therefore, even if one were to establish that calculation presented by Mr. Vanderburg in his testimony is correct and valid[188] and one were to establish that the 2007 Santa Ana event was "strong" as described in WR-270 and one could establish that the locations of the Witch, Guejito, and Rice fire ignitions were "favored areas," it seems unlikely that a calculated estimate of 92 mph is truly an "unprecedented" Santa Ana event. Appendix 4 to Mr. Vanderburg's testimony illustrates as much,[189]

[185] Vanderburg Testimony, p. 13, lines 13-16.

[186] Vanderburg Testimony, p. 16, lines 2-3.

[187] 2004 NOAA Technical Memorandum NWS WR-270, p.13.

[188] See Section VI-B below.

[189] "Developing and Validating the Santa Ana Wildfire Threat Index," Appendix 4 to the Testimony of Mr. Vanderburg.

showing multiple Santa Ana events since 2007 that are of a similar magnitude as the 2007 event.

SDG&E has been aware of the wind conditions in San Diego County for over 35 years. An engineering study performed in 1981 for SDG&E's Southwest Powerlink 500kV transmission line reported wind speeds of at least 65 mph, with dozens of sections exceeding 80 mph and multiple sections assuming wind speeds as high as 95 mph.[190] A similar study for the Sunrise Powerlink in 2006 used similar values, including a 91 mph wind speed used for "longitudinal wind."[191] Both the Southwest Powerlink and the Sunrise Powerlink run through areas that are geographically similar to the fire origin area of the Witch Fire.[192]

At the time of the 2007 wildfires, Rule 31.1 of General Order 95 stated:

> *"Electrical supply and communication systems shall 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.*
>
> *For all particulars not specified in these rules, design, construction, and maintenance should be done in accordance with accepted* ***good practice for the given local conditions known at the time*** *by those responsible for the design, construction, or maintenance of [the] communication or supply lines and equipment.*

[190] Mussey Grade Road Alliance (MGRA) Data Request 03, Question 21, attachment "SWPL Study.pdf," Design Loads section.

[191] MGRA DR-03, Question 21, attachment "Sunrise Study.pdf," page 2-8.

[192] Map of Approved Route for Sunrise Powerlink. See: http://regarchive.sdge.com/sunrisepowerlink/SPL_Media_MAP_021109.pdf. Sunrise Powerlink Project; Existing Southwest Powerlink Transmission Line and Interstate 8 Alternative Map. See: http://www.cpuc.ca.gov/environment/info/aspen/sunrise/feir/apps/a01/Fig%20Ap1-27a_SWPL.pdf.

All work performed on public streets and highways shall be done in such a manner that the operations of other utilities and the convenience of the public will be interfered with as little as possible and no conditions unusually dangerous to workmen, pedestrians or others shall be established at any time."[193] (emphasis added)

In 2007 as today, Santa Ana conditions were a well-established and well-documented phenomenon and known local condition in Southern California in general and in SDG&E's service territory in particular. As CPSD stated in its 2008 investigation reports,[194] SDG&E's failure to design and maintain its system to these known local conditions was a violation of Rule 31.1 of GO 95.

B. SDG&E's Analysis of Wind and Weather Data Cannot be Relied Upon

SDG&E's testimony on wind and weather data cannot be relied upon. Sections of testimony directly contradict one another as to appropriate methodologies, leave no way to verify assumptions and models, make unreasonable extrapolations, and do not address technical concerns previously raised in the 2008 investigations.

Components of SDG&E's testimony in this proceeding simultaneously rely on and fully reject the use of data generated by Remoted Automated Weather Stations (RAWS) and Automated Surface Observing Systems (ASOS). In the testimony of Dr. Peterka, SDG&E states:

"Thus, that wind data [from the Julian, Pine Hills, Goose Valley, and Valley Center RAWS sites, as well as the Ramona Airport ASOS] could not

[193] General Order 95 as revised by Decision 05-01-030. See: http://www.cpuc.ca.gov/gos/Resmajor/DesNo05-01-030/GO95/DesNo05-01-030_go95_rule_31_1.htm

[194] CPSD Investigation of the Rice Fire, p. 7. See also: CPSD Investigation Reports of the Guejito and Witch Fires.

reasonably serve as a basis for a conclusion as to the wind speeds at the time and location of the initiation of each of the three fires."[195]

and:

"RAWS measurements cannot reliably be used to represent wind conditions at other sites."[196]

However, in the testimony of Mr. Vanderburg, SDG&E explicitly uses the RAWS data in exactly this manner, stating:

"Based on the known relationship between [the Julian RAWS station and the SDG&E weather station at West Santa Ysabel] collected over the past several years, I can calculate what the wind speed would have been in the area of the Witch Fire ignition on October 21, 2007."[197]

SDG&E's wholesale discounting of the data in Dr. Peterka's testimony but reliance on one of the most-critiqued stations for the extrapolations made in Mr. Vanderburg's testimony is a contradiction that has not been justified in SDG&E's testimony. Furthermore, as discussed below, ORA's review indicates that neither the wholesale discounting of the data by Dr. Peterka[198] nor the extrapolations by Mr. Vanderburg are reasonable ways of analyzing weather conditions linked to the 2007 wildfires.

In critiquing the weather stations' data, Dr. Peterka's testimony states that "the wind data produced at those locations was unrepresentative of actual wind

[195] Prepared Direct Testimony of Jon A. Peterka, p. 16, lines 4-6.

[196] Peterka Testimony, p. 15, lines 4-5.

[197] Vanderburg Testimony, p. 13, lines 8-12.

[198] Peterka Testimony, p. 13, lines 8-13.

conditions at the actual time and locations of initiation of each of the three wildfires. Thus, that wind data could not reasonably serve as a basis for a conclusion as to the wind speeds at the time and location of the initiation of each of the three fires."[199] His testimony examines the Julian, Pine Hills, Goose Valley, Valley Center, and Ramona Airport RAWS and ASOS sites and concludes that in each case all data produced by these sites is unreliable and therefore cannot be used in any analysis.

As noted in CPSD's rebuttal testimony in the original Fire OIIs, Dr. Peterka's reason for discarding the measurements is largely based on "gust factors"[200] (gusting wind speed compared to average wind speed) that, by definition, occur only momentarily or over very short time periods. Even if Dr. Peterka's analysis of bad data regarding short-term gust factors is correct, SDG&E has provided no justification for why this assumption would justify discarding all data, including other data points like average wind speed, wind direction, and differences in wind speed. SDG&E confirmed that "Data to calculate gust factors at each fire site were obtained entirely from wind tunnel tests; no full scale data from the field were used."[201]

Dr. Peterka's approach to eliminate all weather data from the sites in question and use only theoretical data leaves no way to verify his results and compare them to real-world conditions. SDG&E's testimony does not provide any comparison to any other RAWS or ASOS sites to verify Dr. Peterka's analysis, nor does it provide comparisons to potential data sources such as satellite measurements, historical wind data, wind data collected from SDG&E's weather stations installed after 2007, or other independent sources. In this proceeding, as in the original OIIs, SDG&E's testimony essentially discards all data and analysis used in other parties' wind analysis testimony

[199] Peterka Testimony, p. 16, lines 2-6.

[200] See, for example: CPSD Rebuttal Testimony in I. 08-11-006 (Witch/Rice), p. 3-2.

[201] SDG&E Response to ORA Data Request DR-05, Question 6.

and asks the Commission and parties to accept its own model without any comparison to or verification by known and established sources or methods, as noted by CPSD's wind experts in the original fire OIIs:

> *"[Dr.] Peterka's reliance entirely on modeling leaves one with no weather station data to validate his results. This is problematic, since there are many modeling assumptions and user-specified parameters involved in his approach."*[202],[203]

Dr. Peterka's analysis, as described in SDG&E's testimony, is named Weather Researching and Forecasting (WRF) and is a computer simulation or numerical model.[204] Dr. Peterka also performed wind tunnels tests with a physical model of the terrain associated with the three wildfires.[205]

ORA notes that in the original fire OIIs, CPSD wind experts raised concerns about Dr. Peterka's wholesale discarding of all RAWS data, the appropriateness of mesoscale modeling, as well as numerous mathematical and technical critiques, saying:

> *"These omissions raise questions about the application of WRF here and make the accuracy of [Dr.] Peterka's reported results largely unknown."*[206],[207]

[202] CPSD Rebuttal Testimony in I. 08-11-006 (Witch/Rice), p. 4-3.

[203] CPSD Rebuttal Testimony in I. 08-11-007 (Guejito), p. 3-4.

[204] Peterka Testimony, p. 4, lines 12-22.

[205] Peterka Testimony, p. 5, lines 12-21.

[206] CPSD Rebuttal Testimony in I. 08-11-006 (Witch/Rice), p. 4-4.

[207] CPSD Rebuttal Testimony in I. 08-11-007 (Guejito), p. 3-4.

In his testimony in this proceeding, Dr. Peterka briefly discusses a "corroboration analysis" performed to compare his model's results to those actually recorded at the Ramona ASOS[208] and a research paper related to wind speeds during the 2007 wildfires.[209] Dr. Peterka ultimately concludes "This validation exercise supports my methodology."[210]

Dr. Peterka's corroboration analysis is ultimately circular in its logic. By making "corrections" to WRF to account for the shielding of the city of Ramona and the airport hangers,[211] Dr. Peterka claims to be able to validate the conclusions that WRF helped him reach. As described above, this data is not subject to independent verification or comparison to existing sources, nor have his methods or conclusions in this proceeding been shown to be peer-reviewed.

Dr. Peterka's use of adjusted Ramona Airport data contradicts his conclusions at other weather sites that shielding, equipment height, and other factors must necessarily cause all data from a site to be discarded. ORA is unaware of any portion of SDG&E's testimony that explains why the Ramona Airport site can be "corrected" with a mathematical adjustment while the other sites cannot.

Dr. Peterka's conclusion that the Ramona airport data can be made useful with a simple "correction" contradicts his earlier testimony in the Witch/Rice Fire Investigation (I. 08-11-006), where he stated:

> *"We also examined the data from the weather station at the Ramona Airport and found it likewise unusable because of the distance between the area of origin of the Witch Fire and the Ramona Airport weather station*

[208] Peterka Testimony, pp. 11-13.

[209] Peterka Testimony, pp. 12-13, lines 19-23 and 1-6.

[210] Peterka Testimony, p. 12, line 18.

[211] Peterka Testimony, p. 12, line 1.

and because the terrain is sufficiently different at the two sites such that readings from the Ramona Airport weather station are not representative of the Witch Fire area of origin."[212]

Dr. Peterka references an academic paper[213] regarding wind speeds and concludes that "an independent assessment of the Witch site wind speeds by Dr. Fovell provides confidence for the predicted wind speeds at the three fire sites Witch, Guejito, and Rice as presented earlier." This statement is misleading. Dr. Fovell's analysis uses a similar modeling methodology as Dr. Peterka and also lacks significant comparison to actual sites or independent data sources. In his paper, Dr. Fovell specifically notes (in regard to the "validation exercise at Ramona") that:

"Although validation is important, there may be less value in the effort than usually presumed, and it is possible incautiously [sic] trusting the observations leads one to some erroneous conclusions."[214]

Similar to Dr. Vanderburg's analysis (see below), Dr. Fovell's analysis also focuses on the peak wind speeds for the day of the fire and not the wind speeds at the time of the faults, which his results indicate to be substantially lower than the peak wind speeds.[215]

Further investigation into Dr. Peterka's analysis is warranted because, in response to discovery, SDG&E confirmed that prior to the 2007 wildfires, it

[212] Direct Testimony of Jon A. Peterka in I. 08-11-006 (Witch/Rice), p. 2, lines 18-22.

[213] Fovell, Robert. Downslope Windstorms of San Diego County: Sensitivity to Resolution and Model Physics. See Exhibit ORA-06 (ORA Supporting Attachments, Volume 3) for full paper.

[214] Fovell, section 5.

[215] Fovell, figures 11 and 12.

had no documented concerns about the use of RAWS data as described in Dr. Peterka's testimony, stating:

> *"SDG&E is unaware of any documented complaints, concerns, or doubts concerning the data quality of RAWS prior to 2007."*[216]

SDG&E failed to note any documented concerns with the RAWS data even after the 2003 San Diego County wildfires, despite its self-described efforts to "[improve] our understanding of fire risk to our system, as well as our ability to operate in fire conditions"[217] post-2003. It remains unclear why weather station data was deemed unreliable only in the aftermath of the 2007 wildfires, and not after the 2003 wildfires or at any intervening time if the stations were indeed as flawed as SDG&E has described.

ORA's review indicates that SDG&E's ratio-based analysis (as presented in the testimony of Mr. Vanderburg) raises a number of concerns about data quality and reasonable extrapolation.

Mr. Vanderburg's claim that "peak wind gusts at West Santa Ysabel were likely to have been approximately 92 mph at [the time of the Witch Fire ignition]"[218],[219] selectively examines data from the Julian RAWS station, which he uses as his reference point. Mr. Vanderburg's analysis selects the maximum wind gust for the day (59 mph) at the Julian Station and applies his ratio of 1.56 to predict the wind speed at the West Santa Ysabel station. Applying Mr. Vanderburg's ratio to the recorded wind speeds around the time of the faults provides "predicted" wind speeds at West Santa Ysabel in the 59 - 73 mph

[216] SDG&E Response to ORA Data Request DR-06, Question 2.

[217] Direct Testimony of David L. Geier, p. 16, lines 12-14.

[218] Vanderburg Testimony, p. 13, lines 13-16.

[219] ORA notes that Mr. Vanderburg's calculated wind speed, according to both SDG&E's workpapers and ORA's analysis, should be 90 mph, not 92 mph. See SDG&E Response to ORA Data Request DR-05, Question 7, attachment "WEMA_WSYcalcs.xls" and ORA workpaper "ORA Windspeed Analysis.xlsx."

range, a 20-40% difference from the single Julian RAWS station measurement. ORA's review indicates that, given the ratios and data sources used by Mr. Vanderburg but compared to the fault-time wind speeds at the Julian RAWS station (instead of the fastest wind speed of the day), there is a greater than 92% chance that actual wind speeds would be less than or equal to Mr. Vanderburg's predicted value (90 mph).[220] Comparison relative to the wind speeds around the 12:23 fault specifically (the time closest to fire ignition) indicates only a 1% probability that wind speeds were as high as Mr. Vanderburg's model. Similar examinations of fault-time wind speeds instead of day-maximum wind speeds for comparable stations for the Guejito and Rice Fires also indicate relatively low wind speeds (51 and 49 mph, respectively) at those sites.[221]

It is unclear that the ratio method employed by Mr. Vanderburg has scientific validity. SDG&E's own testimony states that "wind gust observations vary tremendously by location even among SDG&E weather stations that are in relatively close proximity."[222] SDG&E has provided no justification for the validity of extrapolating wind data from one location to another location, especially since different locations would almost certainly be subject to different weather phenomena and terrain. Similarly, it is unclear if the ratio Mr. Vanderburg claims is valid (and if so, with what level of correlation), for example, in Santa Ana events under or over a certain size, at certain times of year, or when combined with other weather phenomena. The relatively low data correlation (r-squared) value[223] of Mr. Vanderburg's

[220] See ORA workpaper "ORA Windspeed Analysis.xlsx."

[221] ORA workpaper "ORA Windspeed Analysis.xlsx."

[222] Vanderburg Testimony, p. 7, lines 2-4.

[223] The r-squared value, also known as the coefficient of determination, is a number that indicates the proportion of the variance in the dependent variable that is predictable from the independent variable. In this case, the r-squared value indicates the statistical effect that the West Santa Ysabel station wind speeds have on the Julian station wind speeds.

comparison (around 0.7, on a scale from 0 to 1) means that accurate predictions of precise values cannot be made using this dataset. SDG&E has not provided any evidence that meaningfully predicting instantaneous data at one weather station based on data from a different station is possible.

Furthermore, the sample sizes used in Mr. Vanderburg's analysis are very small, both in number of wind measurements and in number of Santa Ana events. For example, most weather stations record average wind data over one hour and gust speeds over a period of ten minutes,[224] making only one wind data point (or even a handful over the course of a day) insufficient in determining actual conditions. Similarly, Mr. Vanderburg's comparison to previous Santa Ana events is limited to just a few dozen events over four years. As a result of these low sample sizes, the standard deviations in Mr. Vanderburg's predicted wind speeds (and ORA's comparison review) are relatively high. The speeds calculated for the Witch Fire have a standard deviation of +/- 10mph, indicating a higher degree of uncertainty in probabilistically estimating the Witch Fire wind speeds.[225] The wind speeds for the Rice and Guejito Fires reflect similar standards of deviation (+/- 13 mph and +/- 10 mph, respectively).[226]

SDG&E's reliance on a model that cannot be independently verified and concerns about data quality and extrapolation indicate that SDG&E's analysis of wind and weather data cannot be relied upon.

[224] "Interagency Wildland Fire Weather Station Standards & Guidelines," National Wildfire Coordinating Group. June 2012, p. 10.

[225] Since standard deviation is a measure of variation (deviation) within a data set, a relatively higher standard deviation indicates relatively higher variation and less statistical confidence that a value is within a given range.

[226] See ORA workpaper "ORA Windspeed Analysis.xlsx."

C. SDG&E's Description of Red Flag Warnings and Their Usage Are Inaccurate and Misleading

The National Weather Service (NWS) issues a Red Flag Warning "to call attention to limited weather conditions of particular importance that may result in extreme burning conditions. It is issued when it is an on-going event or the fire weather forecaster has a high degree of confidence that Red Flag criteria will occur within 24 hours of issuance."[227] Additionally, in California, CalFire "will place additional firefighters on duty, staff more fire engines and keep more equipment on 24 hours a day to be able to respond to any new fires."[228]

SDG&E uses Red Flag warnings to inform its decisions[229] in managing its system and informing personnel about fire risk. It did so before 2007 as well.[230]

In the testimony of Mr. Vanderburg, SDG&E states that Red Flag Warnings "are based on evaluation of certain expected weather conditions for a wide area, i.e., the humidity, wind speed, and temperature for San Diego County, but do not attempt to quantify the risk of fire or the threat posed in any particular location within the county."[231] Mr. Vanderburg discusses Red Flag Warnings in more detail later in his testimony[232] and critiques them as "too high level,"[233] only forecasting "weather conditions … conducive to rapid fire

[227] National Weather Service Glossary, Red Flag Warnings. See: http://w1.weather.gov/glossary/index.php?word=red+flag+warning

[228] CalFire, Red Flag Warnings & Fire Weather Watches. See: http://www.fire.ca.gov/communications/communications_firesafety_redflagwarning

[229] SDG&E Transmission Monitoring and Control TMC1320, SDG&E Fire Preparedness – Red Flag Fire Warning Overview, effective date 04/15/15.

[230] SDG&E Transmission Monitoring and Control TMC1320, Hazardous Fire Conditions – Red Flag Fire Warning Procedures, effective date 12/27/06.

[231] Vanderburg Testimony, p. 4, footnote 2.

[232] Vanderburg Testimony, pp 11-12.

[233] Vanderburg Testimony, p. 11, line 6.

growth" (and not fire outbreak),[234] because they do "not rate the severity of fire potential,"[235] and because they "do not indicate specific locations."[236]

Red Flag Warnings are not designed specifically and exclusively for utility application. However, Mr. Vanderburg's assertion that "[Red Flag] watches and warnings … are usually too high level to be helpful in any particular area with respect to the decision making process at the utility"[237] is misleading in that, prior to September 2008 and including the time of the 2007 wildfires, SDG&E used Red Flag Warnings as the primary method of making a number of decisions on various aspects of its operations including tree-trimming, welding work, and vehicular limitations during high fire risk conditions.[238] In its revised[239] Fire Conditions Manual after the 2007 wildfires, SDG&E expanded its protocol but continued to rely on Red Flag Warnings, stating "the NWS will declare Red Flag Warnings that will initiate SDG&E Fire Condition Red"[240] (the highest alert level). All previously-included guidance remained in place in the new manual, including the specific requirements discussed above, and the manual expanded from an 11-page document that listed eight general "safety procedures" to a 48-page document with detailed notification procedures and transmission- and distribution-specific sections that are clearly designed to guide decision-making. This includes what actions to take if a 69kV transmission line in SDG&E's Wildland Fire Safety Area trips during a Red Flag Warning.[241] Additionally, SDG&E's 2008 Fire Conditions Manual

[234] Vanderburg Testimony, p. 11, lines 15-18.

[235] Vanderburg Testimony, p. 11, lines 18-19.

[236] Vanderburg Testimony, p. 11, lines 21-22.

[237] Vanderburg Testimony, p. 11, lines 5-7.

[238] TMC1320 Red Flag Procedures, effective date 12/27/06, pp. 6-7.

[239] The revised TMC1320 manual is dated September 3, 2008.

[240] SDG&E Transmission Monitoring and Control TMC1320, SDG&E Fire Conditions – General, effective date 09/03/08, page 3.

[241] TMC1320, Transmission Procedures, effective date 09/03/08, page 12.

equates, in multiple places, its highest-level Fire Condition RED with the issuance of a Red Flag Warning.[242]

Mr. Vanderburg's testimony attempts to distance SDG&E's procedures and decision-making processes from Red Flag Warnings and for that reason is misleading and inaccurate. Before and after the 2007 wildfires, SDG&E's procedures incorporated Red Flag Warnings as indicators of fire risk so that its actions and decisions would be guided by this risk. This is also true of SDG&E's most recent fire-related procedures, updated in April 2015.[243]

VII. SDG&E'S WILDFIRE-RELATED ACTIONS SINCE 2007 DO NOT EXCUSE IT FROM PRIOR POOR MANAGEMENT

In multiple places in its testimony,[244] SDG&E describes programs, practices, and procedures it has implemented or changed since the 2007 wildfires, especially related to local weather patterns and Santa Ana events.[245] Any such implementation or program changes are out of the scope of this proceeding. As described in the scoping memo:

> *"For Phase 1, the scope of the matter properly before the Commission is whether SDG&E's operation and management in its facilities* ***prior to the 2007 Wildfires*** *were reasonable. Prior Commission decisions indicate that a reasonableness standard should entail a review on the prudency of SDG&E's actions* ***leading up to the fire****."*[246] (emphasis added)

[242] TMC1320, Transmission Procedures, effective date 09/03/08, page 4.

[243] TMC1320 SDG&E Fire Preparedness Procedures, effective date 04/15/15, page 10.

[244] For example, see: Geier, p. 19.

[245] Vanderburg Testimony, pp. 13-15.

[246] Scoping Memo and Ruling of Assign Commissioner and Assigned Administrative Law Judge, p.4.

As such, any operational changes that SDG&E implemented after 2007, regardless of their impact or effectiveness between 2007 and the present, cannot be used to determine the prudence of management and design practices prior to and during the Witch, Guejito, and Rice Fires.

In this proceeding, ORA has not examined SDG&E's post-2007 wildfire-related actions and changes to procedures and practices and takes no position on their effectiveness or prudence. These actions and changes are irrelevant to this proceeding and SDG&E's testimony discussing them should be given no weight.

VIII. CONCLUSION

SDG&E's actions in regards to the 2007 Witch, Guejito, and Rice Fires were not those of a prudent manager. SDG&E's failure to respond reasonably to the tripping and arcing of the facilities associated with the Witch Fire, failure to perform adequate inspections and maintain required clearances in regards to the Guejito Fire, and failure to perform the required vegetation management in regards to the Rice Fire all contributed or directly led to those three fires' ignitions.

SDG&E's analysis of weather and environmental conditions cannot be relied upon. The utility's description of Red Flag Warnings and how they were used is misleading.

SDG&E personnel at multiple levels have stated multiple times in multiple separate instances that SDG&E is responsible for the ignition of the three fires. SDG&E's operational actions since the 2007 wildfires are not within the scope of this proceeding and should be given no weight.

For the reasons listed above, SDG&E's operation, engineering, and management of its facilities involved in the ignition of the Witch, Guejito, and Rice Fires of 2007 should be found unreasonable and the request for WEMA cost recovery should be denied.

IX. WITNESS QUALIFICATIONS

My name is Nils Stannik. My business address is 505 Van Ness Avenue, San Francisco, California, 94102. I am employed by the California Public Utilities Commission as a Utilities Engineer in the Office of Ratepayer Advocates' Energy Safety and Infrastructure Branch. I am responsible for ORA's Phase I testimony in this proceeding.

I have a Bachelor of Engineering degree in Electrical Engineering from the University of Michigan. I am a California-registered Engineer in Training (EIT), number 151746.

Prior to joining ORA, I worked as an engineer designing and permitting residential photovoltaic systems throughout California. Prior to that, I worked as an electrical engineer on power and instrumentation technologies for large fossil power plants.

Since joining the ORA in 2014, I have worked on PG&E's 2015 Gas Transmission and Storage Application (A.13-12-012), SoCalGas's/SDG&E's 2016 Triennial Cost Allocation Proceeding (A.14-12-017), SoCalGas's/SDG&E's Pipeline Safety and Reliability Memorandum Account Application (A.14-12-016), the San Joaquin Valley Disadvantaged Community OIR (R. 15-03-010), Liberty Utilities' General Rate Case (A. 15-05-008), PacifiCorp's Mining Assets Application (A. 15-09-007), and the Safety Model Assessment Proceeding (A. 15-05-002), among other filings.

This completes my prepared testimony.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of San Diego Gas & Electric Company (U 902 E) for Authorization to Recover Costs Related to the 2007 Southern California Wildfires Recorded in the Wildfire Expense Memorandum Account (WEMA)	Application 15-09-010 (Filed September 25, 2015)

CERTIFICATE OF SERVICE

I hereby certify that I have on this date served a copy of the following documents to all known parties by either United States mail or electronic mail, to each party named on the official service list in **A.15-09-010:**

1. Ex ORA-01 - ORA Direct Testimony in A1509010
2. Ex ORA-02 - ORA Supporting Timeline in A1509010
3. Ex ORA-03 - ORA Workpapers in A1509010
4. Ex ORA-04 - ORA Supporting Attachments Volume 1 in A1509010 - NStannik_PUBLIC
5. Ex ORA-05 - ORA Supporting Attachments Volume 2 in A1509010 – Nstannik
6. Ex ORA-06 - ORA Supporting Attachments Volume 3 in A1509010 - NStannik_PUBLIC
7. Digital Audio Recording Components of Ex ORA-06

Executed on **October 10, 2016,** at San Francisco, California.

/s/ NILS STANNIK
NILS STANNIK

A. Parties

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