BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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Application No. 08-12-021
(Filed December 22, 2008)

Application of SAN DIEGO GAS & ELECTRIC COMPANY for Review of its Proactive De-Energization Measures and Approval of Proposed Tariff Revisions (U 902-E)

MUSSEY GRADE ROAD ALLIANCE OPENING COMMENTS

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MUSSEY GRADE ROAD ALLIANCE OPENING COMMENTS

I. INTRODUCTION

Pursuant to the June 3rd ruling of Administrative Law Judge Kenney directing parties to file comments[1] and by his subsequent ruling extending the filing deadline,[2] the Mussey Grade Road Alliance ("Alliance") files these opening comments.

The Alliance welcomes this ruling and the effort being made by the Administrative Law Judge to clarify the discrepancy between the understanding of the utilities (San Diego Gas and Electric Company and Southern California Edison) and the CPSD regarding the required design strengths for electrical infrastructure specified in GO 95. The Alliance was an active participant in the stakeholder meetings directed by the Commission in D.09-09-030,[3] and facilitated by SDG&E. As evidenced by the report issued by the stakeholders,[4] no specific analysis (cost/benefit or any other type) has been done by SDG&E or other parties regarding any power shut-off threshold at which overall costs and risks to the public would be minimized. Instead, SDG&E has claimed that it has the statutory authority to order a shut-off at the wind speed of 56 mph, which it interprets as the design limit specified in General Order 95. CPSD, on the other hand, interprets the design criteria specified by GO 95 quite differently, and maintains that the permissible shut-off threshold should be much higher. Until this matter is clarified, there is increased risk to the public from both inappropriate loss of power and from wildland fire from power lines.

There are three separate issues that need to be clarified in order to identify and minimize risk to the public. The first is identifying the correct interpretation of the GO 95 wind loading requirements. The second issue is what constitutes an appropriate statutory authority for shut-off for a given interpretation of the wind loading requirements. The third issue is how to resolve in the

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[1] A.08-12-021; ADMINISTRATIVE LAW JUDGE'S RULING DENYING THE MOTION TO STRIKE, PROHIBITING *EX PARTE* COMMUNICATIONS, AND DIRECTING PARTIES TO FILE COMMENTS. (Ruling Denying the Motion to Strike); June 3, 2011.
[2] A.08-12-021; ADMINISTRATIVE LAW JUDGE'S RULING SETTING A REVISED SCHEDULE FOR FILING COMMENTS; June 17, 2011.
[3] D.09-09-030; DECISION DENYING WITHOUT PREJUDICE SAN DIEGO GAS & ELECTRIC COMPANY'S APPLICATION TO SHUT OFF POWER DURING PERIODS OF HIGH FIRE DANGER; September 10, 2009; p. 70.
[4] Fire Safety Stakeholder Collaboration Final Report; December 2, 2010.

short and long term any potential discrepancies between SDG&E's current wind loading design specifications and the design specifications finally decided by the Commission as being the correct interpretation of GO 95. The Commission should continue to pursue collection of information from parties until we have clear understanding of all of these issues.

II. GENERAL COMMENTS

A. Comparison of SDG&E and CPSD GO-95 design load interpretations with NESC 2007 and ASCE 7-10 standards

SDG&E interprets GO-95 wind loading requirements to mean that its infrastructure must be designed to withstand wind gusts of 56 mph, whereas CPSD interprets the same regulation to require that SDG&E's infrastructure withstand wind gusts of 91 mph.[5] The Alliance has heretofore refrained from weighing in on this question due to the lack of clarity in the General Order itself and also because we are not fully familiar with the historical context in which this regulation has been applied.

When weighing which interpretation is most appropriate, however, we believe it would be illustrative to look at other alternative standards that might be applied in other jurisdictions, for comparative purposes. For this purpose we examine wind speeds used for wind loading calculations in the 2007 edition of the National Electrical Safety Code (NESC 2007)[6] and also in the standards published by the American Society of Civil Engineers ASCE7-10.[7] It should be mentioned that the geographical maps used by the NESC were originally derived from the ASCE maps. However, the ASCE has recently undertaken a major revision in the manner in which wind loading is to be calculated, and the wind speed map values have undergone significant revisions that are not yet reflected in the NSCE standards.

As far as definition of wind speed, both the ASCE and NESC adopt a 3 second wind gust occurring at a height of 10 meters as the standard measurement of wind speed for loading calculations.

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[5] Ruling Denying Motion to Strike; pp. 2-4.
[6] 2007 National Electric Safety Code; IEEE; C2-2007.
[7] ASCE/SEI; Minimum Design Loads for Buildings and Other Structures; ASCE/SEI 7-10.

The NESC wind speed maps specify a wind speed of 85 mph in California as the appropriate design criteria for electrical infrastructure.[8] It is important to point out that nowhere in the NESC standard is there any recognition that wildland fire needs to be accounted for as a potential risk of electrical infrastructure. We assume that these minimum design loads are specifically chosen to guarantee a certain reliability standard.

The ASCE allows a choice of minimum design standards depending on the criticality of the infrastructure, and whether it presents a hazard to the public, characterizing structures as being a Risk Category between I and IV, where Category I represents structures that "represent a low risk to human life in the event of failure" and Category IV includes "buildings and other structures, the failure of which could pose a substantial hazard to the community".[9] As has been amply demonstrated in the firestorm of 2007, and acknowledged in numerous Commission proceedings, the failure of electrical infrastructure under extreme wind conditions in the presence of fuel and low humidity poses a substantial hazard to human life and communities. For Class III and Class IV structures, which we maintain would be the classification of electrical infrastructure in high fire hazard areas, the wind speed used for design load calculations in California is recommended to be 115 mph. This corresponds to a predicted 3% probability of exceedance in a 50 year period (a mean recurrence interval of 1700 years).[10]

In light of this information, it is clear that the SDG&E interpretation of the GO 95 standard is greatly at variance with the majority of engineering practice in the United States, particularly when one considers the hazards posed to the public by electrical infrastructure failure under extreme weather conditions.

III. COMMENTS IN RESPONSE TO ALJ QUESTIONS

The Alliance offers responses to certain of the questions posed by Administrative Law Judge Kenney, in accordance with the instructions specified in the June 3, 2011 ruling.. The sections below will specify the question being addressed and the comments of the Alliance regarding this issue.

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[8] NESC 2007; p. 180.
[9] ASCE 7-10; p. 2.
[10] Id.; p. 248a.

A. Question 7

"*... what are the distribution curves for the strengths of wood listed in Rule 48.1, Table 5? Based on these distribution curves, what percentage of SDG&E's installed wood poles will fail at wind speeds of 56 mph, 60 mph, 65 mph, 70 mph, and 75 mph, and so on to 100 mph? Explain your answer, and identify any assumptions and sources of information used in your answer.*"

The Alliance would like to remind the Commission that it has provided failure curves for Florida hurricane data in its original comment during the body of these proceedings.[11] For convenience, these failure curves are included below.

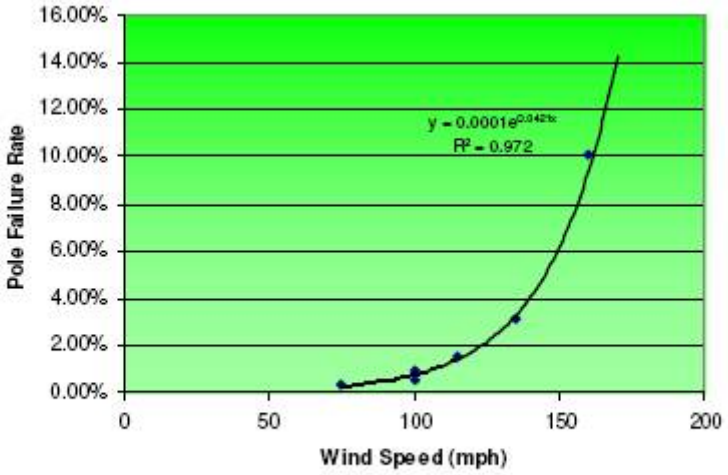

Figure 5-1. Pole Failure Rate vs. Average Wind Speed in Affected Area

[11] A.08-12-021; MGRA Opening Comments; Appendix A; Mitchell, Joseph W; M-bar Technologies and Consulting, LLC for the Mussey Grade Road Alliance; "WHEN TO TURN OFF THE POWER? COST/BENEFIT OUTLINE FOR PROACTIVE DEENERGIZATION"; March 27, 2009; p. 3.

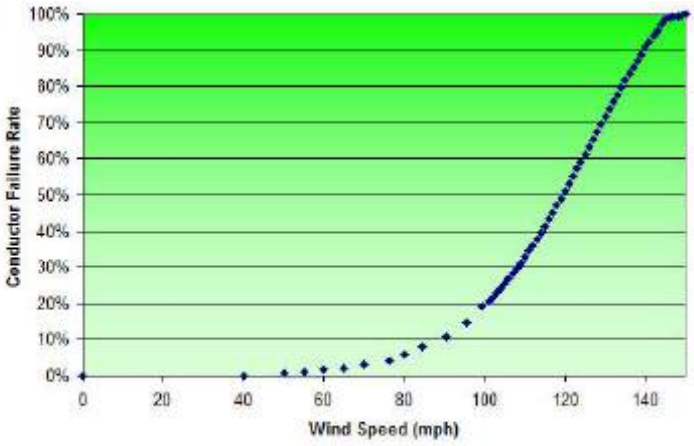

Figure 5-2. Florida Power & Light Span Failure Rate Data

We would generally expect the predicted failure curves produced by SDG&E to have the same general form as the measured hurricane data. Any significant discrepancies between these results should be clearly explained by SDG&E.

When estimating what might constitute an "acceptable" failure rate, it is important to remember that SDG&E has, by its own estimate, 75,600 utility poles in high fire hazard areas.[12] Component or pole failures under extreme weather conditions often lead to ejection of hot material and potential ignition in energized systems, so it is imperative that very few failures occur during the most extreme anticipated weather events. Even a 0.1% failure rate could lead to over 70 separate component failures, all of which would have the potential for starting a catastrophic wildland fire.

B. Question 8, item iii:

"*Wind speed is variable from place to place. It might not be possible for SDG&E to know the wind speed everywhere on its system. If wind speed approaches the design limit at a point where wind speed is measured, it is possible that wind speeds are exceeding the design limit at other locations on SDG&E's system where wind speed is not measured.*"[13]

The general theme of Question 8 is how variability in various factors affecting maximum wind load might affect the threshold for a putative shut-off. This is a valid concern – since the goal

[12] A.08-12-021; MGRA Opening Comments; March 27, 2009; Appendix B; SDG&E Response to MGRA Data Request #1, part 1. Feb. 24, 2009. MGRA-6, MGRA-8.
[13] Ruling Denying Motion to Strike, p. 8.

is to reduce the potential for ignitions due to component failure, it is important to reduce the chances that *any* component experiences loading greater than its safe design limits. This means that the extrema of any fluctuations in load values must be within design limits.

The Alliance draws the attention of the Commission to the considerable body of comment that has been made regarding the desirability of wind intensity mapping that has been conducted under the auspices of R.08-11-005.[14] Specifically, we'd like to stress at this point that the fire hazard maps being used by SDG&E at the time they provided comment do not take into account wind speed in a *quantifiable* way, as pointed out specifically by the Alliance.[15] Clear understanding of the topographic effects on Santa Ana wind intensities using computer modeling may reduce the potential for unanticipated geographical variations in wind loads. SDG&E should be directed to adopt landscape modeling that *explicitly* takes into account wind speeds in order to minimize geographical variations in wind loading.

C. Question 9, item i:

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

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

There are two primary reasons why it is preferable to use wind gusts versus sustained (or average) wind speed.

The first reason is that "basic wind speed" used in engineering standards "corresponds to a 3-sec gust speed at 33 feet (10 m) above the ground in Exposure Category C".[16] Hence, gust speed is used for most engineering calculations.

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[14] R.08-11-005; PHASE 2 JOINT PARTIES' WORKSHOP REPORT FOR WORKSHOPS HELD JANUARY – JUNE 2010; August 13, 2010; (Workshop Report); pp. B-209 – B-238.
[15] R.08-11-005; MUSSEY GRADE ROAD ALLIANCE OPENING BRIEF FOR ORDER INSTITUTING RULEMAKING R.08-11-005 PHASE 2; September 3, 2010; pp. 55-56.
[16] ASCE/SEI 7-10; "Minimum Design Loads for Buildings and Other Structures"; 2010; p. 245.

The second reason is that for many weather stations, in particular the RAWS stations[17] used by SDG&E prior to installation of its own wind gauge array, the measurement of gust speed is more accurate and representative than the putative "average" speed. In fact, the computed "average" wind speed for a RAWS weather station is only taken for the last ten minutes of every hour, immediately prior to data transmission, whereas the "gust" speed is the maximum measured over the entire hour period.[18] This makes the gust speed generally more reliable.

D. Question 9, item iii:

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

The Alliance reminds the Commission at this point that we still maintain that the method used by SDG&E to estimate wind loading as a function of height was in error, and should be corrected before it is used for engineering estimates.[19]

IV. CONCLUSION

The Mussey Grade Road Alliance welcomes this effort by the Commission to clarify the plans of SDG&E with regard to power shut-off. We urge the Commission to continue to collect information from parties until it has the ability to make an informed decision regarding SDG&E's plans to shut off power under high wind conditions.

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[17] Additionally, Remote Automated Weather Stations (RAWS) operated by the BLM and US Forest Service tend to be the only stations operating in the high-risk areas most subject to Santa Ana winds.
[18] National Wildfire Coordinating Group (NWCG); National Fire Danger Rating System (NFDRS) Weather Station Standards; PMS 426-3; May 2005 revision; p. 7.
[19] A.08-12-021; MUSSEY GRADE ROAD ALLIANCE ADDITIONAL COMMENTS REGARDING SAN DIEGO GAS & ELECTRIC REPLY COMMENTS AND RESPONSES TO ALJ QUESTIONS CONCERNING WIND ISSUES; May 26, 2009.

Respectfully submitted this 25th day of July, 2011,

By: __*/S/*____***Diane Conklin***_____

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VERIFICATION

I am the subject matter expert for the **MUSSEY GRADE ROAD ALLIANCE**, intervenor herein. I am the founder of M-bar Technologies and Consulting, LLC, a wildland fire research and consulting company. The technical data, description of historical events, and statements in this document are all true of my own knowledge, except as to matters which are therein stated on information or belief, and as to those matters I believe them to be true.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed this 25th day of July, 2011 at Ramona, California.

/s/ Joseph W. Mitchell

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