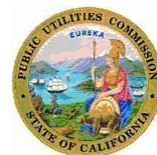


**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**



**FILED**

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Order Instituting Rulemaking to  
Develop and Adopt Fire-Threat  
Maps and Fire-Safety Regulations.

**MUSSEY GRADE ROAD ALLIANCE COMMENTS ON THE MAP 2  
WORKSHOP REPORT**

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# MUSSEY GRADE ROAD ALLIANCE COMMENTS ON THE MAP 2 WORKSHOP REPORT

## I. INTRODUCTION

The Mussey Grade Road Alliance (MGRA or Alliance) files these comments pursuant to D.17-01-009, which adopted a schedule for the Fire Safety Technical Panel (FSTP), and the July 7<sup>th</sup> Ruling of Administrative Law Judges Guo and Kenney,<sup>1</sup> which modifies said schedule. These comments have been prepared by Dr. Joseph Mitchell, the Alliance expert.

MGRA files comments to support its own proposed rule change and proposal for additional work to be done on wind maps, as well as to argue against competing proposals put forward in the Workshop Report.<sup>2</sup> MGRA included significant discussion of its proposals in its comments within the workshop report. Those comments will not be repeated within this filing, rather the statements made in the workshop by the Alliance expert will be verified and adopted. The purpose of these comments will be primarily to demonstrate the need for an additional map or map layer that identifies high-wind areas in a more granular manner so that more stringent design standards may be applied in those areas. We show that map development drifted from its original goal of identifying “areas of California where there is an elevated hazard for the ignition and rapid spread of power-line fires due to strong winds, abundant dry vegetation, and other environmental conditions.”<sup>3</sup> The Commission made decisions that led to the current Map 2 being highly inclusive – identifying all areas that are potential fire risks – but deviated from the original goal of identifying high-wind areas where utility infrastructure is at risk of being an ignition source. We propose that an additional proceeding is necessary to close this gap and to tie more stringent design standards to specific areas where extreme wind conditions are anticipated. This is necessary because measures that address wind loading can have large cost impacts, and should only be applied where such conditions are expected to occur.

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<sup>1</sup> R.15-05-006; ADMINISTRATIVE LAW JUDGES’ RULING MODIFYING THE SCHEDULE FOR PROPOSED FIRE-SAFETY REGULATIONS IN RESPONSE TO MOTION FOR EXTENSION OF TIME; July 31, 2017.

<sup>2</sup> R.15-05-006; JOINT PARTIES’ WORKSHOP REPORT ON FIRE SAFETY REGULATIONS; July 10, 2017. (Workshop Report)

<sup>3</sup> D.16-050936; p. 2.

## II. BACKGROUND

MGRA has been involved in the Fire Safety Rulemakings since their inception in 2008, and has been advocating for power line fire safety even before the 2007 fires. In fact, MGRA first proposed the creation of specialized maps to identify high wind areas prior to the October 2007 fires as part of the Sunrise Powerlink proceeding.<sup>4</sup> The October 2007 fires, were of course, the driving force for the initiation of the R.08-11-005 proceeding and this subsequent R.15-05-006 proceeding. The October 2007 firestorm was remarkable in that almost half of the 20 significant fires ignited were related to power lines, a fact that is doubly significant when one considers that under normal conditions power lines are responsible for only about 1% of fires. The chance of this occurring randomly is less than one in a trillion.<sup>5</sup> The October 2003 fire storm also resulted in approximately 20 significant fires, but none of them were linked to power lines. The difference between the 2003 and 2007 events was that winds were stronger in 2007 than in 2003. What this meant was that there was a dangerous threshold in wind speed beyond which utility infrastructure becomes a source of catastrophic ignitions. Some of the 2007 fires were due to infrastructure failure under high wind conditions that would have been less likely had the infrastructure in question been designed to higher wind loading.

It was in an attempt to address this hazard that MGRA first proposed creation of wind maps during the R.08-11-005 proceeding. We raised the issue during Phase 1 of the proceeding,<sup>6</sup> and then we coordinated with CPSD to propose the rule that would lead to map development, also coordinating with Cal Fire.<sup>7</sup> As we stated at the time, “wind effects that lead to ignition need to be closely modeled in a utility-specific wind map.”<sup>8</sup> In D.12-01-032, the Commission adopted major portions of the CPSD/MGRA proposal with a stated goal “to develop and adopt statewide, high-

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<sup>4</sup> A.06-08-010; PHASE 1 DIRECT TESTIMONY OF THE MUSSEY GRADE ROAD ALLIANCE; p. 47.

<sup>5</sup> Mitchell, J.W., 2013. Power line failures and catastrophic wildfires under extreme weather conditions. Engineering Failure Analysis, Special issue on ICEFA V- Part 1 35, 726–735. doi:10.1016/j.engfailanal.2013.07.006. (Mitchell 2013)

<sup>6</sup> R.08-11-005; Mussey Grade Road Alliance Reply Comments; April 8, 2009; pp. 8-9.

<sup>7</sup> R.08-11-005; Mussey Grade Road Alliance – Phase 2 Opening Brief; September 3, 2010; pp. 42-43.

<sup>8</sup> Id.

resolution maps that accurately designate areas where there is a high threat of power-line fires occurring and spreading rapidly”<sup>9</sup> (emphasis added).

During the Map 1 conception and development (Phase 3 of R.08-11-005), there was significant push back against including an “ignition” element in map creation. Cal Fire, however, strongly supported the inclusion of an ignition component, and this was in the end included. Both threshold and wind speed squared were examined, and in the end a wind speed squared ignition component was adopted.<sup>10</sup> However, it should be noted that MGRA has repeatedly raised the point that based on SDG&E data the curve of outages versus wind speed is much steeper than velocity squared, with approximately a factor of 10 increase in outages for every 16 mph increase in wind gust speed, and I have published this result in an academic work.<sup>11</sup> Additional evidence for a steep wind dependency is found in the difference between the October 2003 (0/20 power line fires) and October 2007 (9/20 power line fires) fire storms. Including a velocity squared dependence was a compromise which we hoped would adequately identify areas of potential utility fire ignitions.

The final result was the Utility Fire Threat Map 1: Utility Threat Index.<sup>12</sup> This is a relatively fine-grained map with an unbounded and uncalibrated relative index that takes into account a the various factors related to fire ignition, including vegetation, terrain, and climate in addition to a velocity squared dependence on peak wind. The range of the index extends from 10-56,852. Map 1 does show the expected concentration of extreme values in the Southern California areas known for Santa Ana winds and wind-driven wildfires. It also shows, however, concentrations of extreme values occurring in the mountainous regions of Northern California, which do not typically have the dry foehn conditions experienced in Southern California. At the time of Map 1 evaluation in September 2015, the Butte Fire in Northern California gained attention as a power line fire that burned 71,000 acres but did not fall into a high fire hazard area in Map 1. Map 1 might potentially serve as a basis for identifying high wind areas where enhanced wind load requirements should be in place, however the fact that it also includes mountainous areas of Northern California may indicate that further filtering would need to be done to remove risk factors unrelated to power line infrastructure failures in high winds.

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<sup>9</sup> pp. 145-146.

<sup>10</sup> D.16-05-036; p. 10.

<sup>11</sup> Mitchell 2013.

<sup>12</sup> D.16-05-036, p. A-2.

During the course of Map 2 development a number of choices were made that further diluted the ability of Map 2 to achieve the goal of identifying areas with the potential for catastrophic wildfire ignition in a granular manner.

As stated in D.17-01-009:

*“The first step in the development of Fire Map 2 is the creation of a preliminary statewide fire-threat map called Shape A. Shape A will be fashioned from the following inputs specified in the Workshop Report:*

- 1. Cells on Fire Map 1 with a Utility Fire-Threat Index value that is equal to or greater than 800.6*
- 2. Cells on CAL FIRE’s Fire Resource and Assessment Program (FRAP) map of fire threats (FRAP map) classified as High, Very High, or Extreme.*
- 3. Historic fire perimeter data (all causes) in CAL FIRE’s FRAP data base.*
- 4. The intersection of the following areas associated with communities at risk from wildfire (CARs):*
  - i. Areas classified as “Very High” on CAL FIRE’s map of Fire Hazard Severity Zones (FHSZs), and*
  - ii. Areas within the boundaries of communities on record with CAL FIRE as being at risk from wildfire and to a distance of 1.5 miles outside the edges of the CARs boundaries.<sup>7</sup> In cases where there are no municipal boundaries for a particular CAR, the area for the CAR that will be used to develop Shape A is the CAR’s point location on CAL FIRE’s statewide map of CARs plus a radius of 1.5 miles around the point location.”*

What these additional steps specifically do is to take highly granular data with high resolution and mix it with poorer data with low resolution. It should not be forgotten that use of FRAP maps was frowned upon earlier in R.08-11-005, when the Commission noted that “Cal Fire warns that the FRAP Map remains ill-suited for the uses adopted in the Phase 1 Decision and the uses contemplated by various parties in Phase 2.”<sup>13</sup> Addition of the other elements broadens the net even further.

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<sup>13</sup> D.12-01-032, p. 142

MGRA had warned about this potential for loss of granular spatial information as this phase was initiated. In our PHC statement, we warned at length about the potential for dilution and the loss of specificity for regulatory planning, in the section we titled “Fire Map 2 Should not ‘Undo’ Fire Map 1”.<sup>14</sup> Among our statements were: “It is important to remember that the essential value of Map 1, as stated in D.16-05-036, is that it “identifies areas of California where there is an elevated hazard for the ignition and rapid spread of power-line fires due to strong winds, abundant dry vegetation, and other environmental conditions.”<sup>15</sup>

“...It is vital as we move into the Map 2 development process that the core value of Map 1 is not compromised by “adjusting” out the very elements that provide its value. Especially, incorporation of a wind-dependent ignition element (Ruling Issue 2c), is an essential element of Map 1 that make it uniquely applicable to electrical utility infrastructure.”<sup>16</sup>

“..MGRA cautions against incorporating conflicting needs to create a ‘one size fits all’ map as a result of the Map 2 process. The original goal of this proceeding was to identify those regions of greatest risk so that expensive mitigation resources can be focused on areas most likely to experience major fires. If every area becomes classified as high-risk then the original map is ‘watered down’, and its value in identifying areas for prioritization is lost. We therefore urge that any additional ignition / prevention models be added as separate maps or potentially as specific layers on the ‘master’ map.”<sup>17</sup>

While final Tier designation on Map 2 is now underway, it is clear that the Tier 2 and Tier 3 boundaries will not be strictly limited by the underlying Map 1 guidance, and that Tier 2 will be very broad. Tier 3, designated as “Extreme”, will take into account communities at risk in addition to other fire variables, and it may be that “Extreme” fire areas will be shared among Southern and Northern California. There is no indication that Tier 3 will differentiate areas with high winds from those with modest winds but with other fire risk factors that are more extreme. These other risk factors aside from wind will not be mitigated by adopting higher wind loading standards.

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<sup>14</sup> R.15-05-006; MUSSEY GRADE ROAD ALLIANCE PREHEARING CONFERENCE STATEMENT ON MAP 2 ISSUES; pp. 2-4.

<sup>15</sup> D.16-05-036; p. 2.

<sup>16</sup> Op. Cit.

<sup>17</sup> Id.

Finally, the Fire Safety Technical Panel (FSTP) did not adopt any rules that would attempt to leverage the spatial information gleaned during the Map 1 effort. The closest attempt was SDG&E's PR-11 which would apply a 10% increase in load within Tiers 2 and 3. We argue against this approach in our Workshop Report Comments. As stated above, much of what goes into the risk determination for Tier 2 and Tier 3 has nothing to do with wind and applying a blanket wind loading mitigation will not help. Additionally, we state that the 10% increase in loading is not likely to be adequate in the highest wind areas. T

This is a far cry from the initial hope that wind data could provide guidance that would allow cost-effective designation of high wind areas that could be used for determination of wind loading. In order to fill this gap, MGRA prepared and submitted its own proposal for a wind loading rule PR-11 that will identify high wind areas and require wind loading design that is capable of withstanding the maximum winds anticipated in those areas, increasing the 56 mph design load specification stated in GO 95 in the identified areas. Our proposal was prepared in consultation with Cal Fire, and it was their belief that additional work would be necessary to further process the Map 1 wind data to make it more applicable to utility design requirements. We therefore propose a follow-on proceeding to this one to create wind maps to be used in conjunction with the existing fire maps that could be used to ensure that design loads are commensurate with expected wind speeds in fire hazard areas while minimizing ratepayer costs by limiting enhanced design standards to areas where these fire winds occur.

### **III. DISCUSSION AND COMMENT**

We have provided extensive comments within the workshop report, and our Verification extends to these comments as well.

The decision to "go broad" for Map 2, and increase the scope of the map to include more potential fire areas is understandable in light of community concerns regarding recent fires and the attention they have brought to the Commission by the public and government officials. Most of the fire safety measures proposed in the Workshop Report fit well within the scope of this broader Map 2, though arguably at a marginally higher cost to ratepayers than they would if the map had stayed true to its original focus. In the rush to satisfy everyone, however, an essential element and deliverable promised by these proceedings has been lost. We have been promised a steak, and it has

been turned into a hash, and then put into a stew, which has been used to make a soup. If the Commission is to deliver on what it has promised ratepayers in this proceeding – granular maps that can be used to determine wind loading<sup>18</sup> - it will need to pull the steak back out of the soup. Fortunately, the foundational work – accumulation of wind data, assembly of a team, and creation of appropriate Commission processes – were already performed for Map 1. The remaining work – reprocessing the data and determining appropriate wind loading tiers – will require an additional proceeding. In response to this proposal, ALJs Kenny and Kao have invited MGRA and parties to comment on what the parameters of such a proceeding would look like. We have done so in our comments within the Workshop report.

## **A. Response to Party Workshop Comments**

### **1. Response to PacificCorp**

PacificCorp in the workshop comments repeats its suggestion that ASCE maps be adopted for use by the Commission and California utilities.<sup>19</sup> MGRA continues to strongly oppose this suggestion.<sup>20</sup> The ASCE maps are ill-suited for the identification of winds associated with utility wildfire hazards:

- ASCE maps are primarily based on a small sample of coastal weather stations and do not identify areas with strong foehn winds.
- ASCE maps do not differentiate between fire wind conditions and wet storms, an important differentiation for PacificCorp whose service area may not include strong foehn conditions.
- The ASCE map for California is very low resolution, applying one standard wind speed to the entire state, with the exception of a band east of Los Angeles and a band extending along the crest of the Sierra Nevada.

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<sup>18</sup> D.14-12-089; p.4.

<sup>19</sup> Workshop Report, p. B-116.

<sup>20</sup> R.08-11-005; REPLY COMMENTS OF THE MUSSEY GRADE ROAD ALLIANCE ON PHASE 3 REPORTS FROM TRACK ONE AND TWO TECHNICAL PANELS; November 5, 2012.



## 2. Response to TURN

While MGRA shares TURN's concern about costs, we address their concerns in our response to ALJ Kenney and Kao's questions regarding the process that would attend the follow-on proceeding to create the wind map and associated wind loading standards. We suggest that there would be ample opportunity for cost/benefit analysis, prioritization and phasing of any enhanced wind loading requirements. We would also like to point out that the claimed losses for the 2007 fires were far in excess of \$2 billion, and that wildfire continues to be a threat to California residents. Loss avoidance is the "benefit" of cost/benefit considerations, and estimating losses and their probabilities is a difficult exercise that needs to be undertaken once all required information is available. Improvements should not simply be gainsaid because they might be costly.

MGRA's request is a modest statement of what should be obvious: engineering requirements for utilities should correspond to the environmental conditions in which their equipment operates. The 56 mph standard, we claim, is inadequate to ensure the safety of residents in some areas. Identifying which areas and addressing the problem are an essential part of the Commission's safety responsibilities. Cost issues are important, and affect livelihoods, but we need to ensure we are not trading marginal costs for enhanced safety for deferred costs in economic loss and human suffering. The MGRA proposal is designed to *minimize* the cost associated with engineering enhancements required for safety, and we hope that ratepayer advocates will be willing to help with the cost/benefit deliberations if our proposal moves forward.

Respectfully submitted this 31<sup>st</sup> day of July, 2017,

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 have also prepared comment as part of the R.15-05-006 JOINT PARTIES' WORKSHOP REPORT ON FIRE SAFETY REGULATIONS (Workshop Report), specifically Proposed Rule 11 and its description on pages B-103 to B-110, the section titled "MGRA responses to ALJ's questions circulated June 7 and discussed on June 8" on pages B-111 to B-115, and comment opposing SDG&E Proposed Rule 10 in section titled "MGRA" on pages B-98 to B-99. The technical data, description of historical events, and statements in these sections of the Workshop Report 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 31<sup>st</sup> day of July, 2017 at Ramona, California.

**/s/ Joseph W. Mitchell**

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