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RE: MUSSEY GRADE ROAD ALLIANCE COMMENTS ON THE INDEPENDENT EVALUATOR REPORTS OF SDG&E, PG&E, AND SCE

Dear Office of Energy Safety Infrastructure,

The Mussey Grade Road Alliance (MGRA or Alliance) files these comments pursuant to the instructions in the Memorandum[1] issued by the Office of Energy Infrastructure Safety (OEIS) extending the comment deadline on the Independent Evaluator Reports[2] to August 6, 2021.

Comments have been prepared by Alliance expert Joseph W. Mitchell, Ph.D.

1. OVERVIEW

The Mussey Grade Road Alliance has been involved in power line fire prevention issues since 2007 and has contributed extensive commentary and analysis to the 2019, 2020, and 2021 Wildfire Mitigation Plans under the auspices of the California Public Utilities Commission (CPUC)

[1] OIES Docket #: 2021-IE; Letter Extending IE Report Comment Deadline; REF #10250; July 19, 2021.
[2] FINAL INDEPENDENT EVALUATOR ANNUAL REPORT ON COMPLIANCE; 4LEAF, Inc. & AerialZeus, LLC; On behalf of SDG&E; June 30, 2021. (SDG&E IE Report)
Final Independent Evaluator Annual Report on Compliance; NV5 & Guidehouse; Southern California Edison; June 30, 2021. (SCE IE Report)
Final Independent Evaluator Annual Report on Compliance; Bureau Veritas North America, Inc.; Pacific Gas & Electric Company; June 30, 2021. (PG&E IE Report)

and OIES's predecessor the CPUC's Wildfire Safety Division (WSD). As we are currently involved in a number of initiatives both with the CPUC and OEIS, the following comments are somewhat cursory but capture issues that we believe merit OEIS's further attention.

All of the reports issued on behalf of the evaluators stated that time constraints curtailed the ability of the evaluators to effectively audit every initiative. The final IE scope of work was issued on April 21, 2021, with a statutory deadline of July 1, 2021 for the issuance of reports.[3] The SCE IE Report specifically notes that the contract between Southern California Edison and the Independent Evaluators was signed on May 18, 2021, and its IE draft report was issued on June 15, 2021.[4] 4LEAF/AerialZeus, the SDG&E contractors, report that all of their auditing activities occurred between June 1st and 15th, 2021.[5]

This is too short a time frame for an adequate assessment of whether the utilities are complying with their Wildfire Mitigation Plans. OEIS should ensure that in the future, independent evaluators have sufficient time for a full audit of the WMP plans. Even under these extraordinarily tight timeline constraints, however, some assessors did better than others and were able to do a reasonable number of field inspections. The reports show the following number of hardware and vegetation field inspections performed as part of the assessment:

Utility	Hardware Items	Vegetation sites
PG&E	728+ (+52 miles hardening)	1381
SDG&E	383	214
SCE	52	25 (pole brushing only)

Table 1 - Summary of field inspections performed as listed in the Independent Evaluator reports. Total specific item inspections were tallied and classified as either "hardware" or "vegetation". See footnote for references**.**

From the above summary, it is clear that PG&E evaluators did the most field inspections overall, while SDG&E did a comparatively higher number per unit mile of its system. Southern California Edison's inspectors failed to conduct a reasonable number of field inspections. The OEIS should not consider this result acceptable and should take appropriate action.

[3] SCE IE Report; p. 3.
[4] SCE IE Report; p. 3.
[5] SDG&E IE Report; p. 7.

2. SDG&E INDEPENDENT EVALUATOR REPORT

2.1. Methodology of Inspection Site Selection

In order to prioritize areas for inspection, the SDG&E evaluators used multispectral satellite imagery from the SENTINEL-2 satellite taken on May 30, 2021.[6] The evaluators used this to produce a "*Normalized Difference Vegetation Index (NDVI) maps and Normalized Difference Moisture Index (NDMI). The rationale for using NDVI values was based on finding spots where vegetation was expected to be strong enough to pose a threat of encroachment."*[7] *NDMI is an indicator for vegetation water content*.[8]

4LEAF/ArialZeus then applied the following criteria to select sampling points:

- Existence of distribution grid or transmission grid
- Values of NDVI higher than 0.6
- Values of NDMI Lower than 0.6
- Presence of areas inspected by SDG&E - for areas evaluation of inspected areas
- Absence of areas inspected by SDG&E - for areas evaluation of not inspected areas[9]

The evaluators suggest that this "data that might be useful in creation of new HFTD maps".[10]

It was the goal of the inspectors to accurately select geographic locations for inspection points based on utility risk reduction. However, there are many factors contributing to utility risk and the method chosen by the inspectors examines only two of these. Furthermore, this method has not been analyzed to prove its validity for utility risk reduction.

Issues with the NVDI/NDMI method and its application by the evaluators are:

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[6] SDG&E IE Report; p. 10.
[7] Id.
[8] SDG&E IE Report; p. 20.
[9] SDG&E IE Report; p. 9.
[10] Id.

- The evaluators provide no backing for their claims regarding the utility or accuracy of the methodology they are using.
- Utility power line wildfire ignitions are more likely to occur during high wind conditions,[11] and the IE methodology does not have a wind component.
- The IE methodology NDVI component only examines the risk of vegetation contact through encroachment. The risk of direct damage to utility equipment (such as cross-arms and clamps, inspected by the IEs) from high winds, a known cause of ignitions in the SDG&E service area, is not predicted by this variable. Nor will NVDI cover all vegetation risks, such as blow-ins or fall-ins.
- The NDMI observation was taken at the end of May 2021 and describes moisture content at that time. There is no evidence provided by the evaluators that this will be a valid measurement in the early autumn period when the greatest utility wildfire risk occurs and Santa Ana wind conditions are most likely.

While not invalidating the inspections, the choice of inspection location based on a fiat decision by the inspectors that has not been appropriately vetted or validated as accurately representing utility wildfire risk is not appropriate. This is not to say that the methods chosen by 4LEAF/AerialZeus lack value, but rather that they need to be validated and then incorporated into the broader spectrum of utility wildfire risk metrics.

Specifically, the evaluators should be asked to present appropriate validation that their methodology predicts wildfire risk, in the form of citations and/or calculations. In the future, OEIS should request that evaluators use established methodologies to estimate utility wildfire risk, and that they provide full support for any novel methodologies that they devise.

As far as the NVDI/NDMI methodology used in the SDG&E report, while it has potential shortcomings in predicting overall utility fire risk it may provide significant value for certain applications:

[11] MUSSEY GRADE ROAD ALLIANCE COMMENTS ON 2021 WILDFIRE MITIGATION PLANS OF PG&E, SCE, AND SDG&E; March 29, 2021; pp. 14-38. (MGRA 2020 WMP Comments)

- Because NDMI can provide an instantaneous vegetation moisture estimate, it may be valuable for calculating timely Fire Potential Indices, as an input to fire spread models, and to help determine areas that may require lower thresholds for power shutoff.
- Because NDVI purports to indicate vegetation encroachment potential, it could potentially aid utilities in prioritizing vegetation management work at the beginning and during the tree-trimming season.

Naturally, these methods would need to be compared against methodologies currently used by utilities and shown to be superior or a better value before being adopted. Nevertheless, the fact that maps of this type can be produced on demand provides potential added value.

2.2. Vegetation Management Prioritization

As MGRA noted in its 2021 WMP comments on page 40:

"*SDG&E provides the results of its Enhanced Vegetation Management program. MGRA has expressed concern regarding this program in the past and its choice of 'High Risk Species', which for SDG&E are 'Eucalyptus, Oak, Palm, Pine, and Sycamore, the species that rank in the top five as far as risk event contribution and account for over 80% of all vegetation related risk events.' In its 2020 Q3 comments on SDG&E's program, MGRA pointed out that SDG&E's high risk species do not necessarily represent the greatest risk per tree.56 As seen in the table below, trees representing the greatest risk per tree are palm, cypress, and century plant, with pine and eucalyptus also presenting an elevated risk. Sycamore presents a more modest risk per tree, while oaks a relatively low risk per tree*."

The Independent Evaluator, takes SDG&E's prioritization at face value and notes: "*IE's analysis of field-verifiable activities and work order patterns also reveals that vegetation management activities end up disproportionately focused on two species, pine, and eucalyptus, per the chart below. Insights of this nature may enable vegetation management teams to better plan and prepare for activities with high probability focused on those species*."[12]

[12] SDG&E IE Report; p. 24.

MGRA also noted SDG&E's prioritization in our 2021 WMP analysis:

"*So, while SDG&E lists eucalyptus, pine, oak, sycamore, and palm as 'at-risk' species, in fact their most aggressive removals primarily target palm and eucalyptus. This is appropriate, and consistent with the analysis shown in Table 9 and its determination that eucalyptus, palm, and pine are the most hazardous trees in terms of outage probability per tree*."[13]

MGRA therefore takes issue with the IE's characterization of SDG&E's prioritization of eucalyptus and pine as "disproportionate". In fact, trees of these species are demonstrably associated with a higher risk of tree-line contact than other tree types on SDG&E's "High Risk Species" list. Therefore, SDG&E's prioritization of these species is entirely appropriate.

3. PG&E INDEPENDENT EVALUATOR REPORT

3.1. Vegetation Management

The Independent Evaluator report for PG&E notes that:

"*Overall, the IE field assessment visited 1,381 sites (see Table 1), with 92% (1,274) of sites assessed found to have vegetation management activities meeting the standards and best management practices. Seven percent of sites (105) had no evident vegetation management activities; three of these instances were on areas where trimming had taken place but not fully completed. Two sites could not be accessed as the properties were gated*."

Seven percent of sites showing no evident vegetation management activities seems to be a very high fraction. OEIS should investigate these sites in more detail to ascertain whether the vegetation management was so minor as to be undetectable, whether the auditor was assessing the correct location, or whether PG&E's documentation of its VM program was inaccurate.

[13] MGRA 2021 WMP Comments; p. 42.

4. SCE INDEPENDENT EVALUATOR REPORT

4.1. Lack of Field Assessments

The SCE Independent Evaluator Report is lacking in terms of field assessments. While time constraints affected many aspects of the report, the lack of any serious effort at field verification is a particularly glaring omission. OEIS should seek further clarification as to why the evaluators working for other utilities were able to conduct a reasonable number of field audits while SCE's evaluators were not.

The IE Report for SCE is mostly a "desk audit", consisting of document review and data requests. Nevertheless, the Report claims that "the IE determined, with reasonable certainty, SCE achieved a majority of WMP Initiative Activity objectives and provided evidence for those that missed targets."[14] OEIS should examine why the IE feels justified in making such a strong claim given the numerous topics in which time constraints were listed as a limitation and the absence of a serious field audit program.

5. CONCLUSION

The Alliance thanks OEIS for the opportunity to contribute these comments and requests that they be incorporated into its review of utility compliance with the 2020 Wildfire Mitigation Plans.

Respectfully submitted this 3rd day of August, 2021,

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[14] SCE IE Report; p. 54.