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VIA ELECTRONIC FILING **Docket # 2026-2028-WMPs**

Caroline Thomas Jacobs, Director
Office of Energy Infrastructure Safety
715 P Street, 20th Floor
Sacramento, CA 95814

RE: Reply Comments of San Diego Gas & Electric Company on its 2026-2028 Wildfire Mitigation Plan

Dear Director Thomas Jacobs:

San Diego Gas & Electric Company (SDG&E or Company) hereby provides reply comments regarding its 2026-2028 Wildfire Mitigation Plan Update (WMP). Failure of SDG&E to address any other issue in these Reply Comments does not indicate agreement or waiver.

I. SDG&E's 2026-2028 WMP SHOULD BE APPROVED WITHOUT MODIFICATION

SDG&E is committed to a wildfire mitigation strategy that promotes the safety of its customers, employees, and communities through enhancing risk-informed strategies, advancing technology integration, and continuing stakeholder engagement. SDG&E's 2026-2028 WMP includes enhancement to risk models to better inform the company's wildfire hardening strategies and initiative selections and to optimize the ability to pinpoint mitigations to areas with the highest wildfire and Public Safety Power Shutoff (PSPS) risk. Ultimately, these efforts lead to more accurate insights and empower risk-informed and cost-effective decision-making. As further described below, many of the criticisms of SDG&E's WMP are based on inaccurate information or misinterpretations of SDG&E's data and should be disregarded. SDG&E's 2026-2028 WMP meets the requirements of Public Utilities Code Section 8386 and all applicable Energy Safety Guidelines and should be approved.

II. RESPONSES TO THE COMMENTS OF MUSSEY GRADE ROAD ALLIANCE

A. SDG&E's Consideration of Risk Attitude is Appropriate and Supports Informed Wildfire Mitigation Decision-making.

SDG&E disagrees with MGRA's recommendation that Energy Safety only accept products of risk-neutral attitude function.[1] MGRA acknowledges that the CPUC allows electric utilities to calculate risk using a convex risk scaling function for the purposes of their cost/benefit analysis, provided they provide risk estimates without a scaling function ("neutral") for the purposes of comparison,[2] and Energy Safety should not unduly further restrict risk assessment in the manner proposed by MGRA. Further, MGRA's analysis contains factual errors, arrives at inconsistent conclusions, and is contradictory to MGRA's other comments for this WMP, undermining the recommendation's validity.

First, MGRA states that "A literature search reveals that acceptance risk aversion and the use of f-N curves is by no means universal"[3] based on one study's findings that risk-acceptance is more prevalent than risk-aversion and that it is unclear whether risk aversion is an appropriate attitude. While risk averse scaling and risk scaling using F-N curves may not be the subject of universal consensus, there is a rich body of peer-reviewed academic literature supporting the use of risk aversion-based nonlinear loss adjustment functions and F-N curves for decision-making in disparate fields including nuclear safety, aviation, and hazardous waste policy.[4,5] The lack of clear consensus on the topic does not render SDG&E's approach wrong, nor does it indicate that MGRA's approach is right. That is precisely why Energy Safety should allow presentation and consideration of both approaches, consistent with the CPUC.

In fact, MGRA appears to have selectively referenced Rheinberger and Treich (2017) with a clear goal of reinforcing their own stated view that only risk-neutral attitude functions should be accepted.[6] This is an example of the well-known confirmation bias, whereby an advocate selectively cites evidence that supports a preexisting position while ignoring credible countervailing research or interpretations that could weaken their argument. MGRA treats a nuanced academic discussion as a wholesale rejection — this is both a mischaracterization and cherry-picking from the body of authoritative literature.

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1 Comments from MGRA ON THE 2026 TO 2028 UPDATE OF THE WILDFIRE MITIGATION PLANS OF SDG&E (MGRA Comments) at 21.

2 *Id.* at 13.

3 *Id.* at 15.

4 Eeckhoudt, L., Schieber, C. and Schneider T. (2000) Risk aversion and the external cost of a nuclear accident. *Journal of Environmental Management,* 58, 109-117.

5 Burgherr, P., & Hirschberg, S. (2008). A comparative analysis of accident risks in fossil, hydro, and nuclear energy chains. *Human and Ecological Risk Assessment*, *14*(5), 947-973.

6 MGRA recommends that "Energy Safety should only accept products of risk-neutral attitude functions.", *See* MGRA Comments at 21.

Further, there are several apparent issues with MGRA's characterization of SDG&E's risk scaling framework.[7] For instance, MGRA refers to an exponent of -1.47, which should in fact be a positive value of 1.47. The negative slope would refer to the slope of the F-N curves, which is detailed in Ferreira and Slesin (1976);[8] the risk scaling function derived from the F-N curves would use the absolute value of this exponent. SDG&E also notes that the "100X larger"[9] value that MGRA cites between scaled and unscaled risk is not a valid comparison; MGRA is comparing total scaled risk to safety only unscaled risk.

This difference between the safety (fatality) risk and total risk shows how simply characterizing safety through fatality counts misses a key component of the safety risk; the financial losses due to burned structures and land can be a proxy for the overall destruction, disruption, and dislocation in a community and its ability to recover from a devastating wildfire, which is a critical aspect of community safety. For example, there were 18 confirmed civilian fatalities due to the recent Eaton Fire, with over 10,000 structures damaged or destroyed.[10] The large number of structures destroyed is a clear indicator of the devastation of the greater community; recovery in the community of Altadena is ongoing and will take years to complete.[11] Society's substantial aversion to these extremely negative impacts of wildfires are indeed the types of high-consequence outcomes that risk scaling models are meant to capture and incorporate into decision making frameworks.

To this end, SDG&E disagrees with MGRA's characterization that "SDG&E's attitude toward risk aversion is not necessarily society's attitude toward risk aversion."[12] In regulated utility contexts, "SDG&E's risk attitude" is a proxy for society's risk preferences, because utilities act on behalf of the public under regulatory oversight. It is standard for regulated agents to model societal preferences—particularly aversion to rare catastrophic events—as part of their risk-informed decision-making framework. To some degree, this is similar to the safety approach adopted by the nuclear and aviation industries, who similarly face truly catastrophic consequences in the event of a failure or accident.

SDG&E's use of risk scaling is consistent with this principle and does not constitute a "bait and switch" as described by MGRA. Rare catastrophic wildfires can have devastating consequences for society, which can include significant loss of life, widespread economic damage, and long-term environmental impacts. There is no contradiction in describing the modeling choice as both a reflection of societal values and an institutional risk attitude embedded in mitigation decisions.

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7 MGRA Comments at 17.

8 Ferreira, J., & Slesin, L. E. (1976). *Observations on the social impact of large accidents*. Massachusetts Institute of Technology, Operations Research Center.

9 MGRA Comments at 17.

10 California Department of Forestry and Fire Protection (CAL FIRE), Incidents, Eaton Fire. https://www.fire.ca.gov/incidents/2025/1/7/eaton-fire.

11 Allen, J. 11 June 2025. "Their Altadena Homes Burned. They Showed Me What's Left." *The Washington Post*. https://www.washingtonpost.com/opinions/2025/06/11/california-wildfires-eaton-altadena/ .

12 MGRA Comments at 16.

MGRA also mischaracterizes SDG&E's risk aversion methodology. [13] SDG&E is not asserting an equivalence between the types of consequences (*e.g.*, injury/fatality vs. financial loss), but rather applying a consistent risk aversion function across all consequence types that have already been monetized. Treating catastrophic wildfire outcomes such as community dislocation as "catastrophic" within a risk aversion framework does not imply equivalence to loss of life but recognizes their scale and broad urban implications. Applying risk aversion to large financial risks does not equate money with lives; it reflects the practical and potentially disproportionate consequences of large financial losses.

MGRA's own bias is rooted in its erroneous contention that the risk it aims to mitigate is really for SDG&E and its shareholder, and further, that the risk is economic, not safety related.[14] SDG&E's risk approach is aimed at making our communities safe for years to come, in the face of evolving climate change and increasing risk. Further, Energy Safety's contention that somehow a risk-scaled analysis is outside the scope of Energy Safety's mandate[15] is flatly contradicted by the statutory requirement that the WMPs include a description of how electrical corporations will "achieve the highest level of safety, reliability, and resiliency,"[16] taking known factors into account, and "a methodology for identifying and presenting enterprise wide safety risk and wildfire-related risk."[17] MGRA's efforts to constrain risk analysis should be rejected both as detrimental to an informed wildfire risk-mitigation program and inconsistent with WMP statutory requirements and guidance.

B. SDG&E's Estimates of Conductor Ignition Reduction are Correct.

MGRA asserts that SDG&E has provided no consistent or technically plausible explanation of how a mitigation that is expected to reduce ignitions by 86% (as calculated by MGRA)[18] is only 58% effective in reducing risk," and that "Energy Safety should require SDG&E to provide further documentation in order to justify its estimate."[19] However, the 86% ignition reduction fails to account for all potential risk events. Due to limited historical ignitions data, SDG&E has adopted an "evidence of heat" approach to evaluate the efficacy of both Combined Covered Conductor and undergrounding. This methodology includes not only actual ignition data, but also potential ignition scenarios and non-reportable ignitions. By capturing

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[13] MGRA States that "The whole idea of catastrophic risk aversion, whether one accepts it or not, is to decouple the value of human life from the cold logic of cost/benefit analysis, to say that the societal impact of a mass casualty event is worse than the impact of an equal number of fatalities that occur for more mundane reasons. For SDG&E to then conclude that if society is willing to spend an amount of money that grows exponentially with the number of casualties it is therefore willing to spend an amount of money that grows exponentially with amount of money at risk makes no sense from an economic or ethical point of view." MGRA Comments at 18.

[14] MGRA Comments at 19.

[15] *Id.*

[16] Public Utilities Code § 8386(a)(14).

[17] Pub. Util. Code § 8386(a)(18).

[18] MGRA Workpapers at "MGRA-2026-8-06-jwm.xlsx."

[19] MGRA Comments at 55.

near-miss incidents that may be excluded from traditional datasets, this broader lens provides a more comprehensive wildfire risk profile.

Based solely on limited historical ignition data, the mitigation effectiveness for Combined Covered Conductor is calculated at 86%. However, when all evidence of heat data is included, the adjusted mitigation effectiveness decreases to 58%, offering a more realistic reflection of field conditions. SDG&E has thoroughly outlined its methodology for evaluating Combined Covered Conductor efficacy during WMP workshops.

C. SDG&E Adequately Explains its Lower Risk Reduction Efficiency.

MGRA asks why SDG&E would prioritize assets that are already hardened for further hardening, either through Combined Covered Conductor or undergrounding, over assets that may be older and more vulnerable. [20] This characterization is based on a misunderstanding of SDG&E's data request responses. SDG&E clarifies that it is not prioritizing previously hardened areas for further hardening. Rather, the referenced discussion was intended to illustrate how risk reduction outcomes can vary across different scenarios, depending on the underlying risk characteristics of the assets involved.

MGRA also asserts that "SDG&E should be made to provide a technical explanation and examples of how and why drivers with a lower fractional ignition reduction would be more likely to have larger consequences and therefore a lower risk reduction than ignition rate reduction." [21] SDG&E suggests that MGRA may have misunderstood the DR response MGRA-2026-8-04-9. SDG&E conducts mitigation efficacy-informed sampling of risk events on a per-asset basis. For each asset, a subset of events is randomly selected proportionate to the efficacy rate of the mitigation, and the outcomes of these samples inform the calculated risk reduction. The sampling methodology is uniformly applied across all locations, with no preferential treatment based on geographic region or the potential consequence severity of the events. Due to the statistical properties of right-skewed distributions, random sampling is more likely to yield values below the mean of the distribution, as lower values occur with greater frequency.

D. SCE Covered Conductor Data is Not a Reasonable Proxy for SDG&E's Service Territory and Risk Profile.

MGRA recommends that "in lieu of statistically significant or representative field data, SCE field data should be considered representative of covered conductor deployments. SDG&E should be required to recalculate its wildfire reduction estimates using the ignition reduction effectiveness determined by SCE field data in its comparative analyses that include covered conductor." [22] MGRA raised similar concerns in their comments on SDG&E's 2025 WMP

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[20] *Id.*

[21] *Id.*

[22] MGRA Comments at 57.

update. Rather than repeating SDG&E's response in its entirety, SDG&E directs Energy Safety to its reply comments on its 2025 WMP Update.[23]

First, SDG&E maintains that it is not appropriate to adopt SCE's reported 86% ignition reduction efficacy as a proxy for SDG&E's system. The utility notes that its grid architecture, topography, vegetation profiles, weather patterns, and circuit design differ materially from those of SCE, and therefore warrant a system-specific evaluation.

Further, SDG&E notes that SCE's dataset on covered conductor-related ignitions is limited (five years), and therefore reliance on cross-utility efficacy assumptions may not provide a sufficiently robust basis for risk modeling.

Finally, ignition reduction and risk reduction are two distinct terms, and reducing the risk of ignition does not directly correlate to a reduction in risk. For example, SCE has reported 15 covered conductor-related ignitions within their HFTD over the past five years.[24] SDG&E emphasizes that even a small number of ignitions, if occurring under critical fire weather conditions in high-risk areas, can result in severe consequences. Additionally, SCE has exercised PSPS on segments with covered conductor, further underscoring that CPUC reportable ignition reduction alone does not equate to proportional risk reduction. SDG&E continues to support a cautious, data-driven approach that reflects the unique characteristics of its service territory as well as the risk reduced by specific mitigations.

E. SDG&E's Has Adequately Described its Egress Model.

MGRA states that "SDG&E does not in its responses to either Energy Safety or MGRA data requests explain how their egress model is incorporated into its consequence model. "[25] and recommends that "Energy Safety should require SDG&E to quantify how its egress model is incorporated into the WiNGS-Planning model."[26] But this is unnecessary because SDG&E already does so.

SDG&E's documentation demonstrates that its egress model and outputs are fully incorporated into the Safety Attribute of the WiNGS-Planning model. The results of the egress model help pinpoint areas within SDG&E's service territory that are most vulnerable to evacuation challenges during simulated wildfire events. Currently, the model deliberately amplifies the estimates of potential fatalities and serious injuries at each location by applying a weighting factor based on the distribution of the egress model results, ensuring that these elevated risks are appropriately reflected in the analysis.

SDG&E is currently assessing how its egress model outputs feed into the Safety attribute of its wildfire risk assessments. The initial integration used an intentionally conservative

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[23] Reply Comments of San Diego Gas & Electric Company on the 2025 Wildfire Mitigation Plan Updates at 7, May 17, 2024. Available at https://efiling.energysafety.ca.gov/Search.aspx?docket=2023-2025-WMPs.

[24] MGRA Comments at 56, table 10.

[25] MGRA Comments at 30.

[26] *Id.* at 34.

weighting, which could potentially under-emphasize egress constraints relative to overall wildfire risk. Moreover, the shift to a Cost-Benefit framework further diluted the influence of the egress inputs on both the Safety attribute and the total risk estimates. SDG&E is actively reviewing its approach to ensure that the full effect of the egress model in identifying evacuation vulnerabilities is maintained and accurately reflected within its risk assessments. This initiative aims to ensure that the crucial input from the egress analysis is fully integrated into decision-making processes and cost-benefit evaluations.

F. Egress Inputs are not Appropriate for SDG&E's Operational PSPS Models as Better Data Exists in Real Time to Support PSPS Decision-making.

Another concern raised by MGRA pertains to the egress model's role in real-time operations (WiNGS-Ops). MGRA recommends that SDG&E use the outputs of the egress model as a key factor in making PSPS decisions.[27] SDG&E opposes this recommendation as SDG&E lacks authority in evacuation planning and execution, which fall under the jurisdiction of local emergency management agencies, fire authorities, and law enforcement, not the electrical utility. SDG&E's egress data fails to account for this information, which could lead to inconsistent and uninformed de-energization decisions.

SDG&E's fire coordination team collaborates closely with local authorities and others responsible for managing evacuation protocols during both the preparation and activation phases of potential wildfire and PSPS events. This partnership ensures that critical evacuation information is seamlessly integrated into the PSPS decision-making process. Rather than relying on simulated scenarios, the process leverages real-time, accurate information, such as active fire or emergency incidents, traffic congestion, and personnel availability during actual wildfire and PSPS events. This enables more effective and responsive decisions that prioritize public safety during extreme fire weather conditions. Modeled egress has value in the planning of mitigations, but consideration of real time conditions based on subject matter expertise from SDG&E personnel and first responder agencies has greater value when making real time decisions.

G. PSPS Damage Points Should Not Be Equated to Ignition Points, and Not All Damage Points Have the Same Level of Wildfire Risk.

Regarding MGRA's comment about the issue of "PSPS blindness,"[28] while SDG&E agrees with incorporating PSPS damage points into the risk driver assessment and probability of failure model training, it respectfully disagrees with MGRA's assertion that the method used to populate the risk drivers in OEIS Table 3-1 misclassifies or introduces additional risk by mis-prioritizing mitigation. MGRA's comments appear to focus primarily on the frequency of cross-arm-related PSPS damage points without adequately considering the consequence and ignition potential. SDG&E's methodology, however, accounts for these factors and is designed to address potential blind spots by including risk drivers that, although not directly caused by high winds, are sufficiently random and frequent to pose a significant threat in high fire-risk areas.

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[27] *Id.* at 34.

[28] *Id.* at 23.

H. Wind Gust Correction is Incorrectly Interpreted Regarding the Risk Driver Table.

SDG&E respectfully disagrees with MGRA's characterization of the "wind gust correction" concept. MGRA appears to have misrepresented the methodology by substituting the term "wind gust correction" for what is accurately described as wind gust weighting used in risk driver ranking. This mischaracterization conflates two distinct use cases: the incorporation of wind gust data into the statistical and machine-learning probability-of-failure models, used by both WiNGS-Planning and WiNGS-Ops, with the completely different methodology for ranking risk drivers. It also fails to recognize the critical importance of evaluating risk in conditions beyond extreme fire weather conditions.

Energy Safety's guidelines do not specify that wind gusts must be measured precisely at the time of a risk event. SDG&E, therefore, uses historical wind gust data associated with the event location to estimate the overall risk for a given driver. MGRA's interpretation of SDG&E's wind gust weighting (WRwind) is incorrect. For example, MGRA stated:

> "SDG&E's description would appear to indicate that a location that has a wind gusts over the 75th percentile of 20 mph 10% of the time would have a higher wind gust correction than a location that had wind gusts over the 75th percentile of 90 mph 5% of the time, thus ignoring peak values."[29]

MGRA's interpretation fails to recognize that SDG&E's methodology assigns higher weights to locations with historically higher wind gusts. For instance, as shown in Figure 1, risk drivers occurring at locations where the 99th percentile wind gust is 20 mph (between the 25th and 50th percentile) are weighted at 2 (2^1), whereas those at locations with a 99th percentile wind gust of 75 mph (above the 75th percentile) are weighted at 8 (2^3).

SDG&E's approach to assess risk driver prioritization is more robust than methods that rely solely on outage frequency and disregard potential consequences. The wind gust weight is not intended to predict outage frequency directly, as is done in the WiNGS models; rather, it enhances the overall risk score by applying an exponential effect as wind gust intensity increases.

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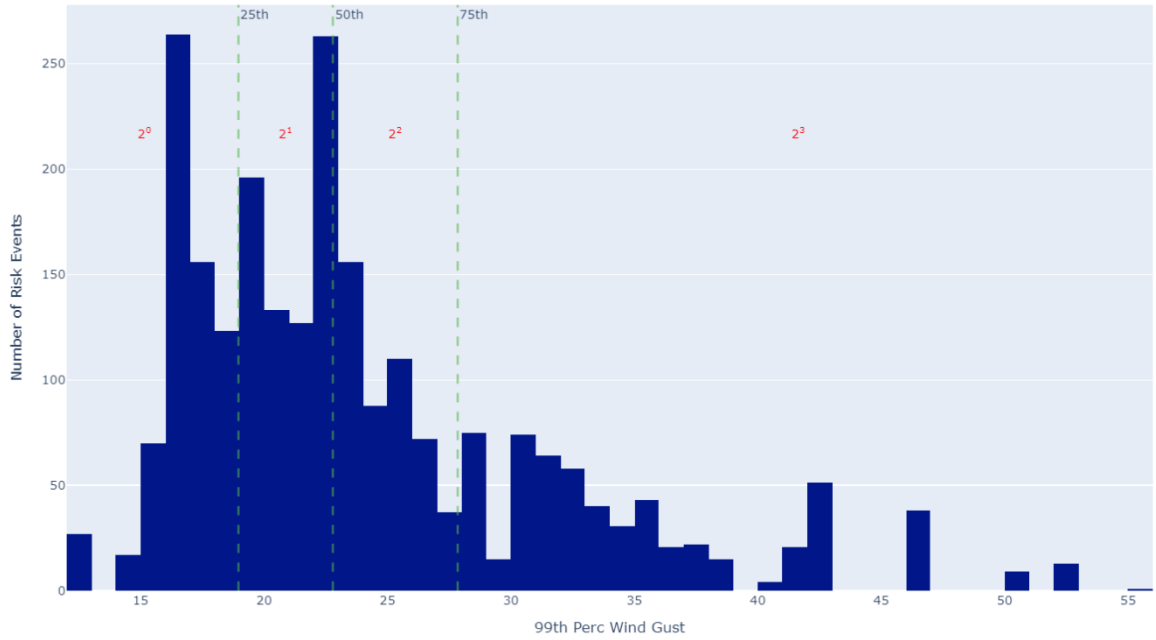
[29] *Id.* at 24.

Figure 1: Risk Events Associated with Historical 99th Percentile Wind Gust Pertaining the Location



I. SDG&E Adequately Reflects Risk Event Probability During Fire Weather.

SDG&E strongly disagrees with MGRA's assertion that its ability to predict risk events during fire weather is inadequate. Notably, MGRA itself acknowledges that "*SDG&E is currently the only utility that makes an attempt to 1) use wind data valid at the time of outage or ignition"*[30]. This recognition contradicts MGRA's broader critique and underscores the sophistication of SDG&E's approach.

MGRA wrongly assumes that risk drivers not directly caused by high winds should be deprioritized. Adoption of such an approach erroneously leaves risk on the table, because risk drivers separate from high wind can occur during a high fire threat wind event. SDG&E's methodology incorporates not only the frequency of risk events but also their potential consequences and ignition rates. This comprehensive approach ensures that risk drivers are evaluated based on their overall contribution to wildfire risk, particularly in high fire-risk areas.

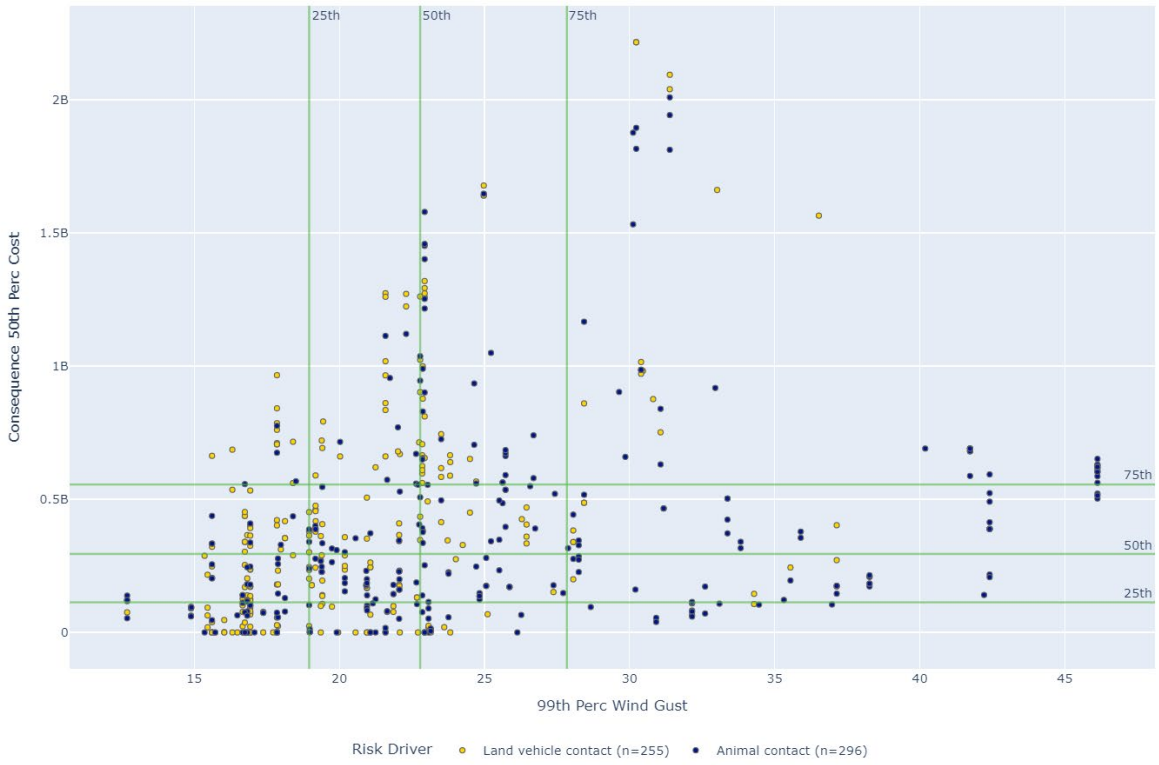
While certain risk events, such as animal or vehicle contacts, may not be directly linked to high wind conditions and exhibit more random occurrence patterns, they often take place in locations with elevated ignition potential and significant consequences, as illustrated in the graph below. Wildfires can and do occur outside of high wind conditions, and SDG&E's methodology is designed to identify and address such risks effectively.

Moreover, the fact that utilities cannot control events like vehicle contact highlights the importance of including these drivers in risk driver prioritization assessments. These events can

[30] *Id.* at 22.

still occur during high wind conditions and overlooking them may lead to the implementation of ineffective mitigation strategies. SDG&E's approach ensures that all credible risks are appropriately prioritized, regardless of their direct correlation with wind.

Figure 2: Vehicle and Animal Contact Caused Risk Events by Consequence and Historical Wind Gust Pertaining the Locations



III. GREEN POWER INSTITUTE

A. GPI's Recommendations are Based on Flawed Assumptions and Interpretations of SDG&E's WMP and Supporting Data.

GPI raises concerns about the cost comparison figure presented at the WMP Workshop on May 21, 2025, claiming that the analysis omits the 120% overhead-to-underground conversion factor.[31] But SDG&E clearly stated that the M$/mile values are used exclusively to compare the cost of 1 mile of distribution overhead against 1 mile of underground, rather than to

[31] "The cost comparison figure also chooses to leave out the 120% overhead to undergrounding correction factor for the conversion of 1 mile of overhead system to approximately 1.2 miles of undergrounding" Comments from GPI ON THE SDG&E 2026-2028 WILDFIRE MITIGATION PLAN (GPI Comments) at 7.

evaluate the expense of converting 1 mile of overhead to Combined Covered Conductor or strategic undergrounding, and therefore, the conversion factor would not apply. Moreover, SDG&E's workpapers clearly include the conversion factor, with its effects presented through distinct columns for existing overhead miles and strategic undergrounding miles. By reviewing the workbook's Excel formulas, it becomes evident that SDG&E incorporates the overhead-to-underground conversion factor when calculating the cost-benefit ratios for strategic undergrounding. Additionally, the workbook was designed with this conversion factor as an input variable, allowing users to define and adjust the value as needed.

Further, GPI inaccurately assumes that the "overhead and underground power lines" shown in SDG&E's Vegetation Management Brochure indicates that SDG&E conducts routine work along undergrounded lines; additionally, GIP erroneously asserts that SDG&E's undergrounding lifetime cost estimates exclude vegetation management O&M costs.[32] Vegetation management conducts follow-up work on underground locations that are identified by the Corrective Maintain Program (CMP) subject to underground asset inspection, the cost of which is charged under CMP. Therefore, the vegetation management cost for maintenance around undergrounded lines is already included in the underground asset related repairs, noted as "Inspection +" in the presentation.

GPI also incorrectly interprets that SDG&E's PSPS cost per mile estimate (if a given segment is undergrounded) is applied to every segment. This PSPS related cost is only applied to locations where the simulated PSPS chance is greater than 0. The PSPS cost per mile value shown in the bar chart[33] is the average calculated from non-zero PSPS costs. The reason some PSPS costs need to be considered for underground assets is due to the likelihood of de-energization due to PSPS activation on upstream overhead assets.

Additionally, GPI misinterpreted the statement SDG&E "assumes a 99% reduction of wildfire and PSPS risk upon deployment." This risk reduction applies to locations where the entire upstream overhead assets are underground. In this case, the PSPS cost would be zero given the chance of a PSPS is zero. In practice, however, some costs will not be eliminated given the transmission lines and other remaining overhead assets feeding the segment may still be subject to PSPS. Therefore, SDG&E estimates that the cost reduction on PSPS due to undergrounding is limited.

In conclusion, the main drivers of lifecycle cost savings are vegetation management and asset inspection related costs.

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[32] GPI Comments at 8.

[33] SDG&E Presentation, Slide 16 from May 21, 2025 OEIS WMP Stakeholder Workshop

IV. CONCLUSION

SDG&E respectfully requests that Energy Safety consider the above comments and approve SDG&E's 2026-2028 WMP without modification.

Respectfully submitted,

/s/ Laura M. Fulton
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San Diego Gas and Electric Company