

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



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Application A.26-02-005-2602005
(Filed February 9, 2026)

Joint Application of Pacific Gas and Electric Company (U 39-E), Southern California Edison (U 338-E) and San Diego Gas & Electric Company (U 902-E) Requesting Commission Approval of Proposals for a BCR Calculation Methodology, Audit Methodology, and Cost Recovery Conditions as Specified in Resolution SPD-37.

**MUSSEY GRADE ROAD ALLIANCE OPENING BRIEF REGARDING
JOINT IOU APPLICATION, STAFF BCR CALCULATION WHITE PAPER,
AND PARTY COMMENTS AND REPLIES**

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1. INTRODUCTION

Pursuant to the schedule set forth in the April 10, 2026 Scoping Memo,¹ the Mussey Grade Road Alliance (MGRA) files this Opening Brief.

1.1. Procedural History

On February 9, 2026, the Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas and Electric Company (SDG&E; together “Joint IOUs”) filed and served notice of an Application for approval of proposals for BCR calculation methodology, audit methodology, and cost recovery conditions as specified in SPD-37.² MGRA and other parties filed a Protest to the Application on March 16, 2026.³ The key issue of concern for MGRA in this proceeding is the provision in the Application that would allow the Commission’s evaluation of utility EUPs to be based on risk scaling function chosen at the discretion of the individual IOUs. MGRA’s Protest notes that “*MGRA has analyzed utility risk aversion functions in the PG&E and SDG&E WMP, RAMP, and GRC proceedings and found them to be ill-founded and faulty.*”⁴

The Scoping Memo was filed on April 10, 2026. Accompanying the Scoping Memo was a White Paper written by SPD staff on Benefit-Cost Ratio methodology.⁵ Parties were invited to provide comment on the SPD White Paper along with the Joint Utility Application.

¹ A.26-02-005; ASSIGNED COMMISSIONER’S SCOPING MEMO AND RULING; April 10, 2026. (Scoping Memo)

² A.26-02-005; JOINT APPLICATION OF PACIFIC GAS AND ELECTRIC COMPANY (U 39-E), SOUTHERN CALIFORNIA EDISON (U 338-E) AND SAN DIEGO GAS & ELECTRIC COMPANY (U 902-E) REQUESTING COMMISSION APPROVAL OF PROPOSALS FOR A BCR CALCULATION METHODOLOGY, AUDIT METHODOLOGY, AND COST RECOVERY CONDITIONS AS SPECIFIED IN RESOLUTION SPD-37; February 9, 2026. (Application)

³ A.26-02-005; MUSSEY GRADE ROAD ALLIANCE PROTEST TO JOINT APPLICATION REQUESTING APPROVAL OF SPD-37 PROPOSALS; March 16, 2026. (MGRA Protest)

⁴ Id; p. 3.

⁵ A.26-02-005; Staff White Paper on Benefit- Cost Ratio Methodology; CPUC SENATE BILL 884 APPLICATION 26-02-005; April 10, 2026. (SPD White Paper)

MGRA and other parties filed comments on June 9th. These included comments by the Joint IOUs (commenting on the Staff White Paper),⁶ and other intervening parties including Cal Advocates,⁷ and TURN.⁸ MGRA comments concentrated primarily on the risk scaling proposal put forward in the original utility application, which proposes that the Commission accept utility risk scaling functions. MGRA opposed this proposal, noting that current utility risk scaling functions are inadequate and that the utilities should enable the Commission to adopt risk neutral scaling if the utilities do not prove their risk scaling functions are correct and in the public interest.⁹ MGRA also briefly discussed the BCR Staff White Paper, specifically supporting SPD Staff's BCR Calculation Method #3.

MGRA and other parties issued their Reply Comments on July 7th.^{10,11,12,13}

This brief was prepared by Joseph W. Mitchell, Ph.D.

⁶ A.26-02-005; JOINT COMMENTS OF PACIFIC GAS AND ELECTRIC COMPANY (U 39-E), 3 SOUTHERN CALIFORNIA EDISON (U 338-E) AND SAN DIEGO GAS & ELECTRIC 4 COMPANY (U 902-E) ON STAFF BCR WHITE PAPER; June 9, 2026. (Joint IOU Comments)

⁷ A.26-02-005; RESPONSE OF THE PUBLIC ADVOCATES' OFFICE TO SCOPING MEMO REQUEST FOR COMMENTS AND COUNTER PROPOSALS TO JOINT IOUS' PROPOSALS FOR A BCR CALCULATION METHODOLOGY, AUDIT METHODOLOGY, AND COST RECOVERY CONDITION AS SPECIFIED IN RESOLUTION SPD-37; June 9, 2026. (Cal Advocates Comments)

⁸ A.26-02-005; COUNTERPROPOSAL AND COMMENTS OF THE UTILITY REFORM NETWORK (TURN) ON JOINT APPLICATION OF PACIFIC GAS AND ELECTRIC COMPANY, SOUTHERN CALIFORNIA EDISON, AND SAN DIEGO GAS & ELECTRIC COMPANY REQUESTING COMMISSION APPROVAL OF PROPOSALS FOR A BCR CALCULATION METHODOLOGY, AUDIT METHODOLOGY, AND COST RECOVERY CONDITIONS AS SPECIFIED IN RESOLUTION SPD-37 AND STAFF WHITE PAPER; June 9, 2026. (TURN Comments)

⁹ MGRA Comments; p. 32.

¹⁰ A.26-02-005; MUSSEY GRADE ROAD ALLIANCE REPLY TO PARTY COMMENTS ON JOINT UTILITY PROPOSAL AND SAFETY POLICY DIVISION BENEFIT COST RATIO PROPOSAL; July 7, 2026. (MGRA Reply Comments)

¹¹ A.26-02-005; JOINT REPLY COMMENTS OF PACIFIC GAS AND ELECTRIC COMPANY (U 39-E), SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) AND SAN DIEGO GAS & ELECTRIC COMPANY (U 902-E); July 7, 2026 (Joint IOU Reply Comments)

¹² A.26-02-005; REPLY COMMENTS OF THE PUBLIC ADVOCATES OFFICE; July 7, 2026. (Cal Advocates Reply Comments)

¹³ A.26-02-005; REPLY COMMENTS OF THE UTILITY REFORM NETWORK (TURN) ON JOINT APPLICATION OF PACIFIC GAS AND ELECTRIC COMPANY, SOUTHERN CALIFORNIA EDISON, AND SAN DIEGO GAS & ELECTRIC COMPANY REQUESTING COMMISSION APPROVAL OF PROPOSALS FOR A BCR CALCULATION METHODOLOGY, AUDIT METHODOLOGY, AND COST RECOVERY CONDITIONS AS SPECIFIED IN RESOLUTION SPD-37 AND STAFF WHITE PAPER; July 7, 2026. (TURN Reply Comments)

1.2. Recommendations

1.2.1. Risk Scaling

Regarding risk scaling MGRA recommends that:

- Utilities should submit not only alternative risk estimates using risk neutral scaling, but also an alternative portfolio using risk neutral scaling. The latter may be a subset of the application based on the IOU risk scaling function.
- Utilities should provide full justification for their risk scaling function, as per the suggested guidance in the previous section.
- The Commission has the authority and flexibility to adopt or reject either portfolio, in full or with modifications.
- A rejection of a portfolio based on inadequacy of a scaling function may be deemed a rejection.
- Should the utility develop a new scaling function that is compliant with Commission requirements, this should proceed through an application to modify the EUP.
- The Commission should participate in and oversee the development of a common utility scaling function such as that suggested by OEIS in its most recent WMP decisions. Applications to modify any current EUPs based on the new risk scaling function may be issued once this work is complete.

1.2.2. BCR Calculations

Regarding the calculation of BCRs, MGRA recommends that:

- MGRA recommends the adoption of Method #3 proposed in the SPD White Paper to calculate Benefit-Cost ratios.

2. RISK SCALING

Risk scaling, or risk attitude, is an adjustment made to the number calculated for a particular risk, which shows whether the stakeholder is risk-averse, risk-neutral, or risk-seeking, often as applied to catastrophic losses or tail risk. This value is applied via a “risk scaling function” that modifies the value of risk particularly at higher risk values and imposes a greater value. Risk scaling has been discussed and litigated in the S-MAP and RDF proceedings. Currently, both PG&E

and SDG&E each have a preferred risk scaling methodology, very different from each other but both leading to significant amplification of high-end risks.

The question of risk scaling is relevant to the present proceeding because it is explicitly stated in the utility application.

2.1. Joint IOU Position on Risk Scaling

The Application states that “*The IOUs recommend following the approved RDF method for calculating BCR values. Under this method, large electrical corporations may choose to apply a risk-averse scaling function, but they are not required to do so. The RDF also allows each IOU to use a different risk-averse scaling function if they choose to apply one.*”¹⁴

The Joint IOUs are also required to submit BCRs using risk neutral scaling in their EUP applications, along with their scaled BCRs. The Joint IOUs state their preferred interpretation of this requirement: “*The IOUs do not object to reporting BCR values both with and without a scaling function in the EUP as long as a large electrical corporation is allowed to make mitigation decisions based on either scaled or unscaled BCRs, consistent with the RDF.*”¹⁵

However, given the utility preference for scaled BCRs it is inevitable that those that will be predominantly used to select circuit segments for undergrounding.

2.2. MGRA Position on Risk Scaling

MGRA’s Comments provide an in-depth review of the factual, legal, and procedural issues surrounding risk scaling. Joint Utility assertions aside, there is no mandate for the Commission to adopt IOU risk scaling functions in preference over neutral risk scaling functions. In fact, the MGRA Comments raise numerous factual and logical errors the risk scaling functions currently being used by PG&E and SDG&E, as well flawed argumentation regarding Commission precedents. As MGRA’s comments note:

¹⁴ Application; p. 10.

¹⁵ Id.

“Risk attitude allows utilities the ability to amplify calculated risk, and therefore, potentially, their investment in capital expenditures to mitigate that risk. As noted in a ruling from the PG&E RAMP filing, ‘A risk-averse Risk Scaling Function results in a higher benefit/cost ratio than a risk-neutral Scaling Function, especially when the expected risk reduction is at the tail end of the consequence distribution. A higher benefit/cost ratio makes a mitigation appear more justifiable.’¹⁶ The consequences of the Joint Utilities’ proposal to allow utilities freedom to set risk scaling functions as they see fit cannot be ignored, as it will directly affect the BCRs and therefore the outcomes of the EUPs.”¹⁷

MGRA’s position is therefore that the reasonability of each utility risk scaling function will need to be evaluated. Because the evidentiary basis in the current proceeding lacks the same weight as that of the GRCs, where there has been or will be testimony and evidentiary hearings. PG&E’s and SDG&E’s risk scaling functions must be evaluated in the course of the GRCs, and it is therefore unlikely that a final determination regarding risks scaling will be made in the current proceeding. However, if the Commission decides a determination is necessary, then the least harmful alternative is for the Commission to evaluate EUP applications using risk-neutral scaling due to the numerous errors and flaws in the current IOU risk scaling approaches.

Specific recommendations regarding how to determine risk scaling questions in the current application are listed in Section 1.2.1.

2.3. Replies to MGRA’s Risk Scaling Comments

2.3.1. Joint IOUs

The Joint IOUs state that *“MGRA argues that the Commission should adopt a risk-neutral default and alternative. These recommendations are not consistent with the RDF. The RDF*

¹⁶ MGRA Comments; p. 4. Cites: A.24-05-008; ADMINISTRATIVE LAW JUDGE’S RULING TO PACIFIC GAS AND ELECTRIC COMPANY DIRECTING THE SERVICE OF ADDITIONAL INFORMATION AND OTHER REQUIREMENTS; April 22, 2025. (ALJ RAMP Ruling); p. 8.

¹⁷ MGRA Comments; p. 4.

explicitly allows utilities, in addition to presenting a risk-neutral value, to apply a ‘Risk Scaling Function’ to monetized attribute levels and provides that the function may be linear or convexly non-linear in order to capture aversion or indifference toward differing outcome magnitudes. the framework contemplates the use of both risk-neutral and risk-adjusted perspectives, rather than restricting utilities to a single approach.”¹⁸

This argument ignores the question of the Commission’s purpose in requiring risk-neutral scaling to be included if, as the Joint IOUs insist, they are at complete liberty to use a risk-scaling function as per the RDF. MGRA’s Protest specifically recommended that risk neutrality be imposed for the purposes of this proceeding and EUP applications: *“The Commission should instead base its EUP determination on risk-neutral BCRs. Developments after the decisions allowing utilities to use risk-averse scaling have amply demonstrated that these adjustments by utilities are arbitrary, without technical merit, and self-serving in that they improve the calculated BCR for undergrounding by a large amount.”¹⁹*

While significant support exists for MGRA’s position on risk neutral scaling, as it has shown in its Comments, there has been no testimony or evidentiary hearings where the facts supporting or opposing specific IOU risk scaling models can be properly tested. MGRA’s comments provide numerous citations, logical argument, and effectively summarize MGRA’s filings in both the PG&E and SDG&E rate cases. However, the Commission may not find sufficient evidentiary weight to opt for risk neutral scaling at this time. For this reason MGRA’s Comments and this Brief suggest that if the Commission allows both risk-neutral and risk-averse BCRs to be submitted to support EUP applications, that the EUP applications be constructed in such a way that the Commission can, on review of the EUP, reject the utility risk-scaling function and adopt the risk-neutral approach, and that this can then result in a “partial” approval of the application for circuit segments that still have a favorable BCR for undergrounding even under the assumption of risk neutrality.

¹⁸ Joint IOU Reply; p. 15.

¹⁹ MGRA Protest; p. 4.

It is important that the Commission reject the Joint IOU plea to accept risk-scaling as the default. The regulatory, legal, and evidentiary reasons that it should do so were presented in the MGRA Comments and are summarized in the following sections.

2.4. Regulatory and Legal Basis for Risk Scaling

Before discussing the merits and problems of risk scaling or discussing the PG&E or SDG&E implementations, it is important to first address the Joint IOU claim that utilities are given complete freedom under the determinations in the RDF to choose a risk scaling function and then use this risk scaling function to choose mitigations and thereby set revenue. If the Joint IOU claim were to be correct, then the Commission has no choice but to accept the utility-determined risk scaling functions as the basis of its evaluation. MGRA argues that this is both fundamentally at odds with the Commission's mandate to ensure just and reasonable rates and also not specifically pre-determined in the regulatory history.

2.4.1. Ratemaking authority may not be delegated to the utilities

Compliance with Public Utilities Code §451 ensures that it will be the Commission and not utilities that determines what constitutes "fair and reasonable" rates. Therefore, no mechanism by which a utility can set rates independent of Commission oversight can be considered consistent with Public Utilities Code §451. By allowing utilities the freedom to choose any risk scaling function they choose, it allows them to favor certain mitigations. Utilities are permitted to retain approximately 10% of capital investments as profit so have a conflict of interest with ratepayers in choosing mitigations. The Commission must therefore ensure that risk scaling functions chosen by utilities are consistent with ratepayer interests.

The Commission therefore is obligated to ensure that any utility risk scaling function is based on accurate assumptions and models, and that the risk aversion that the utility seeks to impose on ratepayers conceivably represents ratepayer risk aversion.

2.4.2. CPUC Definitions of Risk Scaling and Risk Aversion

Risk scaling has had a varied history at the Commission, with definitions changing shape and emphasis depending on context. The most recent definition appears to be in D.25-08-032 which defines a Risk Scaling Function as: *“A function or formula that specifies an attitude towards different magnitudes of Outcomes including capturing aversion to extreme Outcomes or indifference over a range of Outcomes.”*²⁰

The Commission earlier emphasized that risk attitude is a stakeholder preference:

*“Risk scaling refers to applying a function to the full range of an attribute to capture one’s attitude towards varying consequences of risk events, particularly high-consequence outcomes at the tail end of a probability distribution of the attribute. As the term ‘attitude’ suggests, a risk scaling function is inherently axiological, or values-based, and derives from someone’s preferences.”*²¹

The concept of uncertainty also entered the Commission’s definition early in the early discussions of risk scaling:

Under the Multi-Value Attribute Function (MAVF) framework, incorporation of a risk scaling function was to allow *“capturing aversion to extreme outcomes or indifference over a range of outcomes.”*²² The MAVF framework alternatively stated that *“[t]he scaling function describes a stakeholder’s – typically the IOU’s – Risk Attitude and Tolerance for uncertainty.”*²³

Under the RDF framework, however, the Commission found that *“use of the risk scaling function is not necessary to address uncertainty. The concern with uncertainty can be addressed through the topic of tail risk, as addressed in Rows 5 and 24 of the RDF and affirmed with this decision...”*²⁴

²⁰ D.25-08-032; p. A-9.

²¹ D.24-05-064; pp. 93-94.

²² D.18-12-014; App A; p. A-5. (Settlement Agreement)

²³ D.22-12-027; p. 14.

²⁴ D.24-05-064; p. 97.

Definitions become important as parties litigate issues related to risk attitude in a number of proceedings. Moving forward, it is essential to remember that terms like “risk aversion” can have different meanings depending on context, and that arguments made by certain parties can switch contexts in the course of an argument. For example, MGRA Comments define a “Type 1” and “Type 2” risk aversion where Type 1 *“is simply the acknowledgement that a risk is a problem and the willingness to spend money on it – and ‘Type 2’ risk aversion – which implies that the stakeholder is willing to spend more than the predicted loss in order to avoid the risk and adopt a convex risk scaling function.”*²⁵ It becomes more complicated still when one considers the fact that the mere willingness of a stakeholder to assume a convex risk scaling function does not necessarily mean that they are willing to accept *any* convex risk scaling function, particularly if that risk scaling function leads to unreasonable costs.

2.4.3. CPUC Prior Attitude Toward Risk Scaling

Prior to the monetization of risk laid out in the RDF, risk scaling was allowed as a technique to incorporate catastrophic tail risk. As the transition to RDF went forward, D.22-12-027 found that: *“It is reasonable to afford the IOUs the same flexibility to incorporate Risk Attitude and Risk Tolerance into the Cost-Benefit Approach as they would under the current MAVF structure until further RDF refinements are adopted.”*²⁶

In response to party concerns, the Commission’s position was modified, first through Rulings in the PG&E and SDG&E general rate cases. As MGRA Comments relate:

*“A risk-averse Risk Scaling Function results in a higher benefit/cost ratio than a risk-neutral Scaling Function, especially when the expected risk reduction is at the tail end of the consequence distribution. A higher benefit/cost ratio makes a mitigation appear more justifiable.”*²⁷

“To address this concern, the Ruling directs PG&E ‘to conduct a parallel risk evaluation using a risk-neutral, linear scaling function to establish a neutral baseline for GRC stakeholders to

²⁵ MGRA Comments; p. 8.

²⁶ D.22-12-027; p. 60, COL 14.

²⁷ MGRA Comments; p. 9. Cites:

A.24-05-008; ADMINISTRATIVE LAW JUDGE’S RULING TO PACIFIC GAS AND ELECTRIC COMPANY DIRECTING THE SERVICE OF ADDITIONAL INFORMATION AND OTHER REQUIREMENTS; April 22, 2025. (ALJ RAMP Ruling); p. 8.

compare the impacts of its risk-averse scaling function on the selection decisions regarding risk mitigation.’ This Ruling implies that an evaluation of PG&E’s rate application will include an evaluation of its risk scaling function and allow for comparison to risk neutral scaling.”²⁸

This position was codified in D.25-08-032, which clarifies that “if a utility chooses to address tail risk using the power law or other statistical approach and chooses to present Risk-Adjusted Attribute Levels by relying on a convex scaling function, then it must supplement its analysis by also presenting Risk-Adjusted Attribute Levels by relying on a linear scaling function.”²⁹

Both PG&E and SDG&E use a power law to calculate tail risk for wildfire risk, so a parallel neutral scaling analysis will be required in their present and future RAMP and GRC filings. With regard to non-wildfire risk, MGRA has not analyzed these risks and has no position with regard to risk attitude. However, the current application is specifically related to undergrounding which is a mitigation for wildfire and reliability risks.

The Commission’s determination raises the question that if, as the Joint IOUs maintain, the utilities have the right to set their own risk scaling function, what purpose does supplying risk-neutral risks and BCRs serve? We must conclude that the Commission will compare these calculations with an eye to determining whether the risk scaling function is reasonable. If the risk scaling function is not reasonable, the Commission would have the option of rejecting the application in its entirety, or accepting only portions of the application that would be supported by risk-neutral scaling.

2.4.4. Use of Risk Attitude and Risk Scaling in Academia, Industry, and Government

In the conduct of the PG&E and SDG&E RAMP and GRC proceedings, all parties investigated the use of risk scaling in other domains and regulatory situations, assembling a sizable number of (sometimes conflicting) sources.

²⁸ Id.

²⁹ D.25-08-032; Appendix A “A Risk Based Decision Making Framework”; p. A-10.

2.4.4.1. EPRI Report

MGRA Comments discuss the 2006 report by EPRI, which has been used by PG&E in its rate case to support risk scaling. Specifically: “*The willingness of a decision-maker (individual or corporate) to take risks is called its risk preference. Generally, decision-makers are risk averse, meaning that they will spend money to avoid or mitigate risks; the amount of money depends on the degree of risk aversion, with more risk averse decision-makers willing to spend more to avoid a given risk.*”³⁰ However, there is no definition in the EPRI paper of the identity of the decision-maker (though the paper is directed to the electric utility sector), or should be, but it notes that when multiple stakeholders are involved “*the relevant people must reach a consensus about the value model.*”³¹

2.4.4.2. Rheinberger and Treich

MGRA also introduced a review paper by Rheinberger and Treich that covers risk attitudes in many different contexts and fields finds many situations where people do not act in a catastrophe-averse manner. The article concludes: “*It is not clear whether we are, nor whether we should be, catastrophe averse.*”³²

2.4.4.3. Wildland Urban Interface Studies

PG&E has also raised questions regarding the aversion of residents of fire-prone areas, claiming that because these customers are risk averse that risk neutrality is unacceptable. MGRA Comments reviews some of the referenced literature. While there is no dispute that most people do not like wildfire risk, that they wish to avoid it, and that they are willing to spend both private and public money to mitigate wildfire risk. Nevertheless, many homeowners knowingly opt to live in the wildland-urban interface (WUI) and face wildfire risk. A study conducted in Colorado (which at the time had weak laws requiring homebuyer risk disclosure) found that “*it does appear that*

³⁰ MGRA Comments; p. 7; Cites:

Bloom, J., 2006. Value Modeling for Reliability of Distribution and Transmission Systems (No. 1012501). Electric Power Research Institute; pp. 3-4. (EPRI Report)

³¹ MGRA Comment; p. 8; Cites:

EPRI Report; p. 2-1.

³² MGRA Comments; p. 13. Cites:

Rheinberger, C.M., Treich, N., 2017. Attitudes Toward Catastrophe. *Environ Resource Econ* 67, 609–636. <https://doi.org/10.1007/s10640-016-0033-3>

*homebuyers prefer homes proximate to dangerous topography (e.g., on a ridge), and the strength of these preferences in the current context of wildfire risk would need to be weighed against the chances that a homeowner would lose the home to a wildfire and how unpleasant homeowners find that possibility.”*³³

2.4.4.4. Premium Affordability

Once again, the definition of “risk averse” comes into play. People are “averse” to wildfire. If they buy wildfire insurance that indicates a “convex” risk attitude.³⁴ However there are limitations on what the consumer can bear, so affordability puts a limit on the acceptability of the convexity. The reduction in healthcare insurance enrollment due to recent federal changes to insurance premium support may result in 2-3.5 million losing insurance by 2027.³⁵ The people losing insurance are not less “averse” to health risks, but the costs of reducing risk to an acceptable level have become unaffordable to them.

2.4.4.5. Government Guidance

OMB Circular A-4 on Regulatory Analysis, the currently applicable version of which states that “*you should in general assume ‘risk neutrality’ in your analysis. If you adopt a different assumption on risk preference, you should explain your reasons for doing so.*”³⁶ (The Commission may want to note that a 2023 update of this Circular, since withdrawn, takes exactly the opposite position that risk aversion should be assumed, and that if risk neutrality is assumed it should be justified.³⁷ Nevertheless, in both cases federal regulatory agencies are given leeway to apply risk attitude preferences so long as they have good justification.)

³³ MGRA Comments; p. 13. Cites:

Champ, P.A., Donovan, G.H., Barth, C.M., 2009. Homebuyers and Wildfire Risk: A Colorado Springs Case Study. *Society & Natural Resources* 23, 58–70. <https://doi.org/10.1080/08941920802179766>

³⁴ MGRA Comments; p. 12.

³⁵ MGRA Comments; p. 13. Cites:

Re: The Estimated Effects of Enacting Selected Health Coverage Policies on the Federal Budget and on the Number of People With Health Insurance; CONGRESSIONAL BUDGET OFFICE; September 18, 2025. Downloaded January 14, 2026.

<https://www.cbo.gov/system/files/2025-09/61734-Health.pdf>

³⁶ MGRA Comments; p. 14. Cites:

U.S. Office of Management and Budget; Circular A-4; Regulatory Analysis; 2003; p. 42.

<https://www.whitehouse.gov/wp-content/uploads/2025/08/CircularA-4.pdf>

³⁷ MGRA Comments, p. 15. Cites:

PG&E’s GRC testimony cites to a World Bank study that argues for risk aversion applied to developing countries with small vulnerable economies, which does not apply to California.³⁸

PG&E’s GRC filings also cite a study indicating that Homeland Security spending seems to be risk averse. However, this is not put forward as a standard, but rather a preference:

*“Governments and their regulatory agencies normally exhibit risk-neutral attitudes in their decision-making. However, for low probability-high consequence events many decisionmakers tend to be risk-averse because of the catastrophic or dire nature of the hazard or event. The degree of risk averseness can be described by utility theory.”*³⁹

So in general, there is no hard guidance from government entities as to whether a risk neutral or risk averse attitude should be taken by regulators. Both are looked upon as acceptable if properly justified.

2.5. Joint IOU Justifications for Risk Scaling

A number of justifications have been used by utilities to support risk scaling in utility WMP, RAMP, GRC proceedings and in their Reply. These include:

- Utility preference,
- Compensating for tail risk,
- Uncertainty,
- Adopting best practices from other regulators, industries and academia,
- Adjusting utility risk estimates to make them equivalent to insurance market risk premiums,

U.S. Office of Management and Budget; Circular A-4; Regulatory Analysis; November 9, 2023.
<https://bidenwhitehouse.archives.gov/wp-content/uploads/2023/11/CircularA-4.pdf>

This version was withdrawn in August, 2025 and replaced with the previous 2003 version. Hence it is not currently operative for any federal agency. Nevertheless, it contains useful insight into risk preferences (pp. 72-75).

³⁸ MGRA Comments; p. 15. Cites:

Ghesquiere, F., Mahul, O., 2007. Sovereign Natural Disaster Insurance for Developing Countries: A Paradigm Shift in Catastrophe Risk Financing (No. WPS4345). The World Bank.

³⁹ MGRA Comments; p. 15. Cites:

Stewart, M.G., Ellingwood, B.R., Mueller, J., 2011. Homeland security: a case study in risk aversion for public decision-making. International Journal of Risk Assessment and Management 15, 367–386.
<https://doi.org/10.1504/IJRAM.2011.043690>

- Public safety,
- Long-term affordability, and
- Public preferences for risk-aversion.

2.5.1. Utility preference for risk aversion

Risk scaling suits the needs of the utilities in a number of ways:

- It reduces the potential for catastrophic financial liability to the company,
- It aligns with utility safety initiatives,
- It helps to avoid regulatory, civil, and criminal penalties,
- It reduces the potential for negative publicity and reputational harm,
- It can improve reliability,
- It helps to protect customer and resident life and property,
- Insofar as it requires capital investment, it results in additional profits for the company.⁴⁰

2.5.2. Tail Risk and Power Laws

Prior to the adoption of power law distributions by utilities in the 2019-2020 period, due in no small part to MGRA demonstration and advocacy, low frequency-high consequence events were being severely underestimated and the application of a risk aversion function was a reasonable mediation. Examining the administrative history back to the original RDF proceeding:

“MGRA states that ‘MAVF functions for wildfire risks, regardless of the functional form adopted, will be dominated by extreme outlier events, so any methodology that caps losses or otherwise fails to incorporate or predict extreme loss events will be an inaccurate representation of risk.’ MGRA emphasizes that ‘consequences for wildfire must sufficiently incorporate high-end losses.’”⁴¹ As an alternative, “MGRA... consistently highlighted the merits of using a ‘power law probability distribution’ to model wildfire consequences, a requirement that would be more specific than the existing requirement.”⁴² While at that time not yet adopting MGRA’s power law

⁴⁰ MGRA Comments; p. 16. Cites:

As per Advice Letter 7423-E, in 2025 PG&E earns a return of approximately 10.25% on equity.

⁴¹ D.21-11-009; pp. 32-33.

⁴² Id.; p. 31.

suggestion, the Commission stated: “*We agree with MGRA that it is essential that the modeling method used by IOUs in their RDFs, WMPs, and RAMPs produces a set of consequences for wildfire that sufficiently incorporate high-end losses.*”⁴³ This recommendation does not rely on an appeal to risk scaling to provide sufficient tail risk aversion.

The introduction of power law reduced the need to appeal to risk scaling to accurately incorporate tail-risk events, leading to an adjustment to the expectations. D.25-08-032 states that “*if a utility chooses to address tail risk using the power law or other statistical approach and chooses to present Risk-Adjusted Attribute Levels by relying on a convex scaling function, then it must supplement its analysis by also presenting Risk-Adjusted Attribute Levels by relying on a linear scaling function.*”⁴⁴

Power law statistics have been adopted into both PG&E’s and SDG&E’s risk models. PG&E’s enterprise risk model currently incorporates a “fat tail” power law model which is truncated at a point equivalent to 5X the Camp fire losses of approximately \$20 billion, so at \$100 billion.⁴⁵

Additionally, both PG&E’s and SDG&E’s planning model WDRM v4 simulates 24 hour wildfire spreads, a highly conservative assumption that MGRA has supported and that allows contributions from extreme events to be weighted properly.⁴⁶ SDG&E verified that the consequence distribution obtained in this manner was consistent with a power law (generalized Pareto distribution).⁴⁷

⁴³ Id.; p. 33.

⁴⁴ D.25-08-032; Appendix A; A-10.

⁴⁵ MGRA Comments; p. 18. Cites:

Pacific Gas and Electric Company; “Power Law Distribution”; September 3, 2021. (PG&E Whitepaper) Available at:

https://data.mendeley.com/public-files/datasets/8nds4cx88k/files/c0178e67-92fc-4ab3-9ea7-7fdcdf3b4556/file_downloaded

⁴⁶ MGRA Comments; p. 18. Cites:

PG&E; Wildfire Consequence Model Version 4; Documentation; March 12, 2025; p. 13.

⁴⁷ MGRA Comments; p. 18. Cites:

A.25-05-010/13; SDG&E RAMP; SDG&E-Risk-4; p. 27.

As a result the PG&E and SDG&E risk models heavily and accurately weight low-frequency, high-consequence events (tail risk) and no artificial amplification of these risks through a risk attitude function is necessary to assess actual risk.

2.5.3. Uncertainty

A common reason provided for risk aversion is that it helps to compensate for uncertainty, particularly for low probability-high consequence events. MGRA's Comments discuss the evolution of this idea in the CPUC proceedings.⁴⁸

D.22-12-027 found that: *"The scaling function describes a stakeholder's – typically the IOU's – Risk Attitude and Tolerance for uncertainty."*⁴⁹

The 2006 EPRI Report⁵⁰ states that *"Fundamental to scaling risks is the concept of certainty equivalence. The certainty equivalent of an uncertain outcome is the consequence that the decision-maker is willing to accept for certain in exchange for avoiding the specific uncertain consequences of the decision."*

Under the RDF framework, however, the Commission found that *"use of the risk scaling function is not necessary to address uncertainty. The concern with uncertainty can be addressed through the topic of tail risk, as addressed in Rows 5 and 24 of the RDF and affirmed with this decision..."*⁵¹

PG&E stated in its WMP that they *"believe that there is still considerable uncertainty and possibly an underestimation of risk due to the chosen truncation methodology and calibration approach. This further supports a need for a risk scaling function."*⁵²

⁴⁸ MGRA Comments; p. 18. Section 3.1.6.3.

⁴⁹ D.22-12-027; pp. 14-15.

⁵⁰ EPRI Report; p. 3-3.

⁵¹ D.24-05-064; p. 97.

⁵² MGRA Comments; p. 19. Cites:

OEIS Docket 2026-2028-Base-WMPs; Reply Comments of Pacific Gas and Electric Company to the 2026-2028 Wildfire Mitigation Plan Draft Decision Issued November 26, 2025; December 30, 2025; p. 7. (PG&E WMP DD Reply)

MGRA recommends that uncertainty in the truncated power law model be tested by using a Monte Carlo parameter to vary the cutoff parameter.⁵³ Doing so would absorb much of the systemic (parametric) uncertainty.

It should be noted that PG&E's mitigation decision tree introduces an additional and arbitrary 50% uncertainty factor.⁵⁴

Any remaining uncertainty after applying power law statistics and parametric uncertainty estimates might be managed by application of an appropriate risk scaling function, though derivation of an appropriate method will need to be deferred to a future date, and perhaps developed by the Commission, utilities, and stakeholders. Several reasons that PG&E proposed method of using market risk is inappropriate is that 1) there is no evidence the base risk of the risk spread calculated by third-party vendors is derived using power law statistics, 2) there is no evidence parametric uncertainty has been addressed by these vendors.

2.5.3.1. Industry best practice

PG&E's 2027 GRC Rebuttal Testimony cites the 2006 EPRI report, which is specifically target to utilities, as supporting a risk averse attitude by a utility, stating that "*Generally, decisionmakers are risk averse*"⁵⁵. The Report describes an example showing a convex risk aversion function using outage minutes.⁵⁶

⁵³ MGRA Comments; Cites: A.25-05-009; MGRA Ex-01-1E; p. 36; ll. 17-19. Discussion through p. 38.

⁵⁴ MGRA Comments; p. 19.

⁵⁵ EPRI Report; p. 3-4.

⁵⁶ Id.; p. 3-5.

SDG&E in its RAMP states that some industries apply risk aversion (aversion to multiple fatalities) as a practice,⁵⁷ and cited and provided references supporting this assertion.^{58,59,60} The cited references appeal to f-N curves and result in a risk aversion scaling formulas based on a power law that scales risk based on the number of fatalities. However, SDG&E inappropriately extends this approach to risk aversion to financial losses as well. The other industries cited by SDG&E apply risk averse scaling only to fatalities and safety risk.

2.6. Current utility risk scaling functions

2.6.1. SDG&E risk scaling function

SDG&E's methodology uses a power law function derived from f-N curves (fatalities versus frequency) obtained from literature, which it then applies as a multiplier if the number of fatalities is greater than a threshold. The SDG&E scaling function is described by:

$$f(x) = \begin{cases} x & 0 \leq x < 1 \\ x^a & x \geq 1 \end{cases}$$

where $a = -1.47$, and x is the number of what SDG&E calls “equivalent fatalities”, which will be discussed in depth below. SDG&E's WMP explains that “*this function converts the number of fatalities associated with an event into an adjusted figure that reflects SDG&E's risk aversion towards catastrophic events.*”⁶¹ SDG&E's determination of the exponent is derived as an average from two sources that study risk tolerance attitudes in different industries and natural catastrophes.

⁵⁷ MGRA Comments; p. 19. Cites:
SDG&E 2025 RAMP RAMP-3-23 to 27.

⁵⁸ MGRA Comments; p. 19. Cites:
Griesmeyer, J.M., Simpson, M., Okrent, D., 1980. Use of risk aversion in risk acceptance criteria (No. ALO-83; UCLA-ENG-7970). California Univ., Los Angeles (USA). Dept. of Chemical, Nuclear, and Thermal Engineering. <https://doi.org/10.2172/5230500>
Nessim, M., Zhou, W., Zhou, J., Rothwell, B., 2009. Target Reliability Levels for Design and Assessment of Onshore Natural Gas Pipelines. Journal of Pressure Vessel Technology 131.
<https://doi.org/10.1115/1.3110017> (Griesmeyer)

⁵⁹ MGRA Comments; p. 19. Cites:
Eeckhoudt, L., Schieber, C., Schneider, T., 2000. Risk aversion and the external cost of a nuclear accident. Journal of Environmental Management 58, 109–117. <https://doi.org/10.1006/jema.1999.0314> (Eeckhoudt)

⁶⁰ MGRA Comments; p. 19. Cites:
Burgherr, P., Hirschberg, S., 2008. A Comparative Analysis of Accident Risks in Fossil, Hydro, and Nuclear Energy Chains. Human and Ecological Risk Assessment: An International Journal 14, 947–973.
<https://doi.org/10.1080/10807030802387556> (Burgherr)

⁶¹ MGRA Comments; p. 21. Cites:
SDG&E 2026-2028 WMP p. 41.

As shown in Figure 5-7 of its WMP, this “Risk Aversion Function” causes a dramatic increase in SDG&E’s scaled risk as baseline risk increases.

Figure 5-7: SDG&E Convex Risk Aversion Function

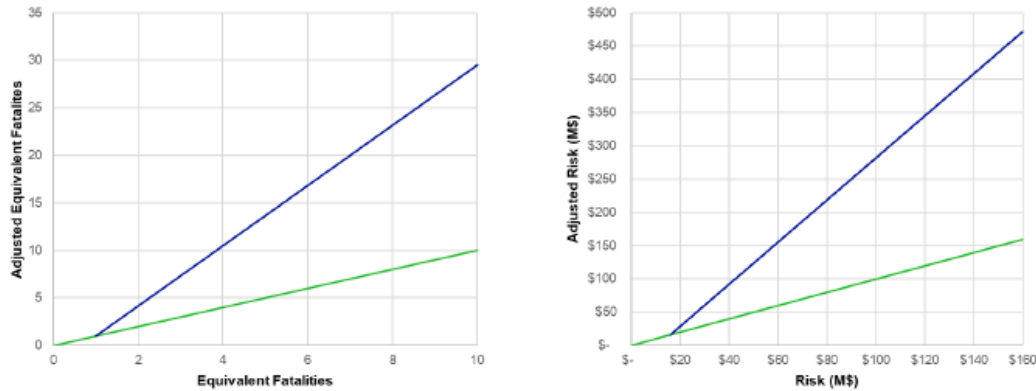


Figure 1 - SDG&E's Figure 5-7, showing its "Risk Aversion Function" in terms of what it calls "equivalent fatalities"

This approach leads SDG&E’s estimated losses to be as high as \$52B (P99) or even \$211B (P100), as shown in Table 5-7 of its WMP. These are implausibly high losses.

The underlying reason for these losses is that SDG&E is taking equations designed to model aversion to the loss of human life and applying these to financial losses. “*Specifically, the Companies apply the risk scaling factor on a trial-by-trial basis to each CoRE attribute, starting at the monetized equivalent of the VSL dollar value for one fatality.*”⁶² This approach has not been taken by any other industry or reference identified by MGRA in WMP or GRC literature reviews.

OEIS reviewed SDG&E’s risk scaling function in its WMP review and found:

*“SDG&E's risk-averse function could amplify the calculated risk, which may skew planning towards prioritizing additional risk mitigation in the highest risk areas where a more effective solution could be to accept the residual risk from a more resource efficient mitigation and divert remaining resources to other risky areas. Thus, SDG&E must collaborate with large electrical corporations to evaluate the impact of attribute function scaling on mitigation planning. This will help determine the methodology that should be used for attribute scaling function through collaboration given the wide variance across the electrical corporations.”*⁶³

⁶² MGRA Comments; p. 22. Cites: SDG&E 2025 RAMP; p. RAMP-3-27.

⁶³ MGRA Comments; p. 22. Cites:

2.6.2. PG&E risk scaling function

PG&E’s method to determine its risk scaling function uses wildfire Catastrophe (CAT) Bonds the spread between market price and predicted loss rates to calculate a risk premium that it applies to catastrophic risks (in the region above \$1 billion). CAT bonds are an insurance-linked security transferring catastrophic risk to market investors.⁶⁴

PG&E reviewed a small set of CAT bonds and selected the risk spread identical to the CAT bond issued on its behalf in 2018:

“The risk premiums (i.e., multipliers), as reported by Artemis, from these transactions ranged between 5.4 to 23. Based on these data points, we concluded that 7.5 is an appropriate multiplier to use as it was the actual value from our own CAT bond transaction (in August 2018, before the Camp Fire), and was within the range previously stated (and is in fact, towards the lower end of the range).”⁶⁵

This multiplier is applied only to losses in the “catastrophic” range over \$1 billion, as shown in the figure below:

OEIS Docket; 2026-2028-Base-WMPs; Office of Energy Infrastructure Safety’s Decision for San Diego Gas & Electric Company’s 2026-2028 Base Wildfire Mitigation Plan; February 2 2026; p. 9. (OEIS SDG&E WMP Decision)

<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=59774&shareable=true>

⁶⁴ MGRA Comments; p. 22. Cites:

Braun, A., Kousky, C., 2021. Catastrophe bonds, Risk Management and Decision Processes Center. Wharton. University of Pennsylvania.

https://ils-course.com/wp-content/uploads/2024/09/Cat_Bonds-Wharton.pdf, and

What is a catastrophe bond? - Artemis - Resource Library [WWW Document], n.d. . Artemis.bm - The Catastrophe Bond, Insurance Linked Securities & Investment, Reinsurance Capital, Alternative Risk Transfer and Weather Risk Management site. URL <https://www.artemis.bm/library/what-is-a-catastrophe-bond/> (accessed 1.12.26).

⁶⁵ MGRA Comments; p. 23. Cites:

OEIS Docket 2026-2028-Base-WMPs; Reply Comments of Pacific Gas and Electric Company on its 2026-2028 Wildfire Mitigation Plan; June 2, 2025; p. 6. (PG&E WMP Reply)

<https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=58585&shareable=true>

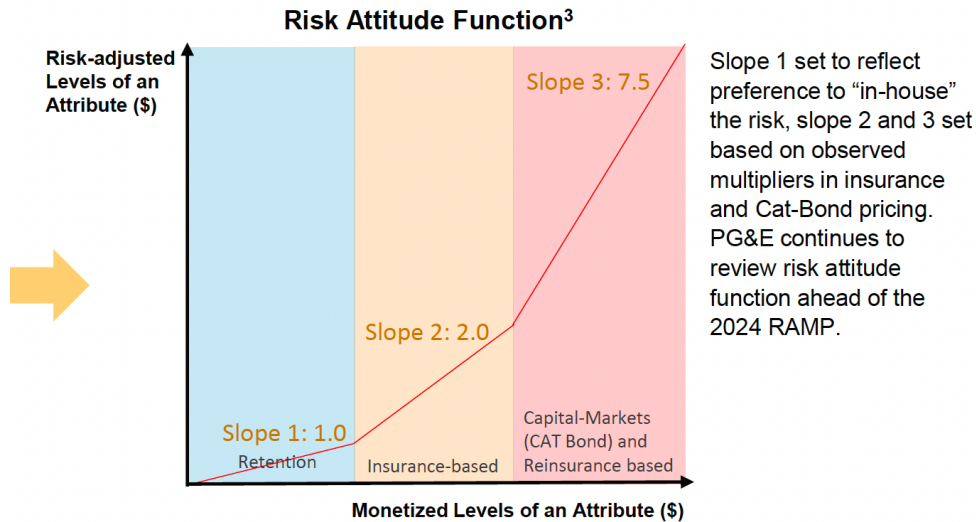


Figure 2 - PG&E's risk multipliers for different levels of consequence. Categories are Retention (<\$100m), Insurance-based (\$100m-\$1b), and Catastrophic (>\$1b).

PG&E claims this is a “market-based approach”.⁶⁶ However, this is a very small market. According to data collected by the Artemis news organization which tracks CAT bonds worldwide, wildfire CAT bonds have only been issued for the state of California. As of late 2025, only 9 of these bonds had been issued since they started in 2018. No bonds currently cover the large IOUs. Coverage amounts for these bonds are fairly low compared to known catastrophic wildfire losses (\$50 M to \$1.6 B) so these instruments represent only partial coverage. As of January 13, 2026, the total outstanding amount of CAT bonds and other forms of capital risk for all California wildfires (including with earthquake) is \$1.1 billion,⁶⁷ much smaller than the wildfire mitigation budgets of major utilities.

No evidence has been provided that CAT Bonds incorporate tail risk through power law functions or other methods

⁶⁶ MGRA Comment; p. 23. Cites: PG&E RAMP; PG&E-2; p. 2-21.

⁶⁷ MGRA Comments; p. 24. Cites: Catastrophe bonds & ILS outstanding by risk or peril - Artemis.bm [WWW Document], n.d. . Artemis.bm - The Catastrophe Bond, Insurance Linked Securities & Investment, Reinsurance Capital, Alternative Risk Transfer and Weather Risk Management site. URL <https://www.artemis.bm/dashboard/cat-bonds-ils-by-risk-or-peril/> (accessed 1.13.26).

CAT bond investors and providers do not have the same risk attitude as utility customers or the Commission. SPD, which reviewed PG&E's RAMP, mistakenly concluded that they do. However, SPD's conclusion may be attributed to disprovable assumptions.

*“SPD reviewed the information PG&E presented and concluded PG&E’s methodology to base risk scaling factors on the risk premium multipliers of insurance products and CAT bonds of the types that PG&E purchases to cede risk exposures to be sound and acceptable. Since risk exposures in the Insurance-based tier and the Catastrophic tier are ceded to either the insurance companies or the capital markets via insurance products or CAT bonds, the risk attitude factors embedded in the risk premium multipliers of those products are a valid representation of the risk-averse behavior applicable to this RAMP. The risk attitude of PG&E ratepayers, PG&E, and the insurance market and capital market converge on the risk exposure in these two upper tiers. The reason is the risk exposure in these two tiers has been transferred to the insurance and capital markets by the insurance products and CAT bonds. **The only risk exposure facing ratepayers for losses in these upper-risk tiers are the premiums for which ratepayers are liable on the insurance products and CAT bonds that PG&E will purchase on the ratepayers’ behalf to cede the risk exposure to the insurance companies and the capital market.**”⁶⁸*

The last sentence highlights SPD's error. SPD assumes that PG&E will be purchasing insurance and CAT bonds – hence the market risk attitude toward CAT bonds and pricing multiplier will be passed on to ratepayers. PG&E is not participating in the CAT bond market, and cannot under the terms of its \$1 billion ratepayer-backed self-insurance agreement with the Commission. For catastrophic losses, PG&E and other major utilities now participate in the California Wildfire Fund, which covers catastrophic losses over \$1 billion,⁶⁹ so catastrophic insurance is no longer necessary. Utility ratepayers jointly share costs of catastrophic utility wildfire, but unlike insurance without a premium.

PG&E itself confirms:

⁶⁸ MGRA Comment; p. 24. Cites: SPD Report, PG&E 2024 RAMP; p. 15.

⁶⁹ MGRA Comments; p. 26. Cites: <https://www.cawildfirefund.com/>
Accessed December 13, 2025.

*“PG&E transitioned to 100 percent customer funded wildfire self-insurance in early 2023 to cover its wildfire liability coverage needs on a going forward basis. The wildfire self-insurance program was approved as part of PG&E’s 2023 General Rate Case proceeding under Decision (D.) 23-01-005. PG&E has been operating under the wildfire self-insurance model since implementation of the program. One of the conditions under D.23-01-005 is that PG&E no longer purchase wildfire liability coverage in the commercial markets. This restriction includes the purchase of CAT bonds.”*⁷⁰

As a result, SPD’s conclusion that CAT bond risk multipliers are applicable because the costs can be passed on to ratepayers is invalid, and SPD’s approval should be disregarded.

Based on the analysis presented in the previous subsection, SPD’s statement that *“the risk attitude factors embedded in the risk premium multipliers of those products are a valid representation of the risk-averse behavior applicable to this RAMP”* is also incorrect. Specifically, the premium multipliers are the emergent risk-averse attitude of a select group of capital investors when evaluating a risk analysis performed at the behest of a bond issuer by a third-party risk analysis vendor. This has nothing to do with the costs and risks that PG&E ratepayers are willing to assume.⁷¹

2.6.3. Determination Regarding PG&E and SDG&E Wildfire Scaling Functions

Substantial analysis indicated above and presented in more detail in the WMP, RAMP, and GRC proceedings of PG&E and SDG&E indicate that both companies have used dubious methodologies to create their risk scaling functions. For the Commission to accept these functions as valid during the basis for the upcoming EUP applications will have the deleterious effect of directing ratepayer revenue to projects that are of only marginal effectiveness in reducing wildfire risk, and which pose a smaller overall time-averaged financial and safety risk to the population than the time-averaged cost of the mitigation.

⁷⁰ MGRA Comments; p. 25. Cites: Ex-01-E1; Appendix B; DRR GRC-2027-PhI_DR_MGRA_005-Q002.

⁷¹ MGRA Comments; p. 25.

2.7. Risk Scaling Determinations Required by the Proceeding

Risk scaling is currently being litigated in a number of different proceedings, so it is necessary to determine which points of contention need to be resolved in order to effectively finalize the current proceeding and enable the pending EUP applications.

With regard to the general Joint IOU claim that risk scaling has already been determined and that utilities have the freedom to use whatever risk scaling approach they want in their EUP filings, Section 2.4.1 shows that this request effectively delegates ratemaking authority to utilities, while Sections 2.4.2 and 2.4.3 show that the Commission's administrative history does not merit an interpretation that requires the Commission to adopt utility scaling functions as a valid basis for ratemaking. The Commission must therefore reject the Joint IOU assertion made in the Application.

Practice and guidance from other industries, academia, and government agencies emphasizes that risk attitude is a choice that should be justified. And that large entities that can pool risk often use risk-neutral scaling.⁷²

Examination of specific utility functions has found them to lack scientific, logical, and economic merit, and furthermore that these functions lead to extreme amplification of risk which will require a commensurate amplification of revenue for mitigation. The full evidentiary record for utility support of these functions is being and will be litigated in their General Rate Cases, and what has been provided here is an overview of why MGRA believes these risk scaling functions will ultimately be rejected. However, determination is unlikely to occur prior to PG&E's issuance of its EUP in Q3 of 2026.

Therefore, the Decision in the current proceeding will need to future-proof the EUP submissions against potential future outcomes of other proceedings.

One principle that the Commission should adopt is that the EUP application be supported by a Commission-approved risk scaling function.

⁷² Section 2.4.4.

A second principle is that a risk-neutral scaling function is a valid scaling function.

The third is that an IOU that seeks to submit an EUP application with an unapproved risk scaling function must also submit an alternative application (which may be a subset of the projects in the original application) depending only on neutral scaling for their approval.

A fourth principle is that if a utility risk scaling model is found to be inappropriate for Commission approval in one proceeding, this henceforth becomes effective for all other parallel proceedings using that risk scaling model.

2.7.1. Practical Implementation of These Four Principles

The following rules and practices applying to EUP applications would put the principles laid out in the prior section into practice, and help to accelerate and streamline EUP applications:

- Utilities should submit not only alternative risk estimates using risk neutral scaling, but also an alternative portfolio using risk neutral scaling. The latter may be a subset of the application based on the IOU risk scaling function.
- Utilities should provide full justification for their risk scaling function, as per the suggested guidance in the previous section.
- The Commission has the authority and flexibility to adopt or reject either portfolio, in full or with modifications.
- A rejection of a portfolio based on inadequacy of a scaling function may be deemed a rejection.
- Should the utility develop a new scaling function that is compliant with Commission requirements, this should proceed through an application to modify the EUP.
- The Commission should participate in and oversee the development of a common utility scaling function such as that suggested by OEIS in its most recent WMP decisions. Applications to modify any current EUPs based on the new risk scaling function may be issued once this work is complete.

It is important that the Commission realize the asymmetric nature of approval and how this favors the consideration of a risk neutral baseline. If a project is approved based on a risk scaling function that is later shown to be faulty, excess spending on that project cannot be recovered. Alternatively, if portions of a project are rejected due to the application of a risk-neutral scaling function, and if later an acceptable risk scaling function is developed, the application may be amended and projects added based on the new, approved scaling function through a re-application process. This guarantees optimal spending on undergrounding projects and affords maximal protection for ratepayers.

3. BENEFIT COST RATIO METHODOLOGY

MGRA initially proposed that cost-benefit ratios be used to help determine power shutoff thresholds in 2009,⁷³ and has been advocating for cost-effective wildfire mitigation since that time, including the use of cost benefit analysis.

The Staff White Paper is elegant and simple and works through several of the problems that have been plaguing utilities, intervenors, and Staff since the shift to the RDF framework. The “back-to-basics” approach includes a literature search of the federal and state governments and foundational texts to see what has come before, and it has found that many of the areas causing consternation at the Commission have been already explored in other jurisdictions and best practices put into place.

The Staff White Paper addresses the question of how operational and maintenance (O&M) costs should be best incorporated into a BCR analysis, since different formulations can lead to inconsistency in regulatory settings.⁷⁴ Staff develop what they show to be a stable and consistent approach to O&M costs, which treats O&M savings in the numerator of the BCR calculation and O&M costs in the denominator of the BCR calculation.⁷⁵

⁷³ D.09-09-030; pp. 55;

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

⁷⁴ Staff White Paper; p. 18.

⁷⁵ Id.; p. 20.

3.1. Joint IOU Position

The Joint IOUs oppose the Staff Paper’s recommendation that Method 3 for calculating BCRs be adopted. Instead, the Joint IOUs support Method 1, which is similar to the methods currently in use by the utilities.

Joint IOUs maintain that when evaluating benefits from wildfire mitigation that benefits that reduce wildfire risk and increase reliability should be given preference to benefits that reduce O&M costs, which they claim should not be identified as benefits.⁷⁶ The Joint IOUs also request that BCR methodology be addressed in the RDF proceeding and not in the current proceeding.⁷⁷ Joint IOUs claim that Method 2 and Method 3 lack transparency, auditability, clarity, comparability, consistency with current SMAP/RDF guidelines, and simplicity.

In response to SPD’s observation that Method 1 is not stable and positive definite, the Joint IOUs suggest three “Guardrails” to “enhance consistency, auditability, and comparability”.⁷⁸ Guardrail 1 would introduce expanded reporting requirements that include additional variables. Guardrail 2 suggests presenting both risk reduction benefits and total net economic benefits. Guardrail 3 would set a denominator floor that would prevent negative valued BCRs.

3.2. Cal Advocates Position

Cal Advocates states that that placing avoided O&M costs as a negative value in the denominator as advocated by the Joint IOUs (and aligned with Staff Paper Method 1) is at odds with the standard treatment of avoided costs in economics, conflates realized and avoided O&M costs, is inconsistent with RDF guidance, and that it inflates the BCR for projects with positive net benefits.⁷⁹ Cal Advocates supports SPD’s BCR calculation Method 3 which includes all realized costs in the numerator and avoided costs in the denominator. Cal Advocates mentions as did the

⁷⁶ Joint IOU Comments; pp. 4,6,9.

⁷⁷ Id.; p. 5.

⁷⁸ Id; p. 16-19.

⁷⁹ Cal Advocates Comments; p. 5.

SPD White Paper that under some conditions the BCR for Method 1 becomes negative even if the net benefits are positive, which is a nonsensical result.⁸⁰

3.3. Party Replies

3.3.1. MGRA's Reply

MGRA found the Cal Advocates arguments in its comments convincing. Additionally, MGRA observed that the negative BCR's that can be produced by Method 1 are a clear indicator of analytical pathology. MGRA dismisses the Joint IOU "guardrails": *"While casting many aspersions on the other two methods, the Joint IOUs fail to state exactly what makes Methods 2 and 3 non-transparent, non-auditable, inconsistent, or unclear. At the same time there appears to be no disagreement that there are pathologies in the behavior of Method 1, which the admitted necessity of 'guardrails' indicates. None of the proposed 'Guardrails' address the pathology directly, and in fact would just hide it. The logical error that the Joint IOUs make is that if the BCR values are being distorted, they do not begin to distort only after crossing the BCR=0 boundary. There is no reason to trust them in the small positive region either. Additional or dual reporting only comes into play in the case where a calculation crosses into the unphysical zone ($BCR < 0$), leading to a bias. And truncating the BCR through controlling the denominator simply moves the BCR to an arbitrary value rather than a negative value, which is also a distortion and removes information.*

*The fact that Method 3 behaves well under different benefit and cost scenarios and different O&M assumptions is a strong argument in its favor."*⁸¹

MGRA also observes that the implicit preference for risk reduction and reliability improvement over cost savings inherent in Method 1 potentially "double counts" the risk attitude.⁸²

MGRA also supports Cal Advocates' observation that the "no mitigation" baseline should incorporate the numerous highly effective mitigations such as EPSS and PSPS already in place.⁸³

⁸⁰ Id.; p. 19.

⁸¹ MGRA Reply Comments; p. 3.

⁸² MGRA Reply Comments; p. 4.

⁸³ Id.; pp. 3-4.

Finally, MGRA opposed the Joint IOU proposal to defer consideration of BCR issues to the RDF proceeding: “*Utility EUPs will impact safety and costs for ratepayers for years to come, and so it is essential that the benefit-cost ratios used to approve utility undergrounding programs have a firm and unbiased foundation. The Joint IOU proposal to postpone consideration of BCRs should therefore be rejected.*”⁸⁴

3.3.2. Joint IOU Response to Intervenor Arguments

The Joint IOUs respond extensively to Cal Advocates’ arguments regarding the use of Method 3 versus Method 1, attacking the premises of Method 3 using a number of additional sources and arguments. However, nowhere in the Reply do Joint IOUs address the mathematical pathology of Method 1 or its propensity to create negative BCRs. No additional defense or explanations of their proposed “guardrails” is provided.

3.3.3. Cal Advocates Response to Joint IOU Arguments

Cal Advocates shows that the Joint IOUs mischaracterize the White Paper methodology, implying the BCR should be a risk-spend efficiency metric in spite of the adoption of a cost-benefit framework,⁸⁵ and that Method 3 represents a “savings metric”.⁸⁶ Cal Advocates also further demonstrates the mathematical pathology of Method 1, showing that Method 1 BCR increases as an inverse square function as avoided O&M costs increase.

4. CONCLUSION

The purpose of the present proceeding is to set appropriate administrative rules and guidelines to help expedite the processing of the Electrical Undergrounding Proposals (EUPs). President Reynolds has set an aggressive goal to finish the first EUP evaluations submitted by PG&E in 2028. Because of the need to expedite the current proceeding, not all issues can be fully

⁸⁴ Id.; p. 5.

⁸⁵ Cal Advocates Reply; p. 3.

⁸⁶ Cal Advocates Reply; p. 4.

litigated within the scope of the proceeding, and in fact some issues may require further scrutiny in the ongoing GRC or RDF proceedings and may need to be revisited.

That being said, the EUP timeline is 10 years, so misjudgments can be long-lasting. Additionally, the misjudgments are asymmetric. If, for example, undergrounding projects go forward that are of poor value or wrongly placed these are permanent sunk costs that ratepayers will end up bearing. If on the other hand, projects that might be found to have a better value proposition later on after further analysis can always be added to the EUP through a modification and reapplication process.

MGRA recommendations are constructed with this asymmetry and uncertainty in mind. The Commission still needs to make determinations on pending issues regarding risk scaling and benefit-cost ratios. The Joint IOUs, however, wish to move forward into the EUPs relying on their own interpretation of both risk scaling and BCRs, and these have been disputed. MGRA's recommendation is that the full EUP application make it easy to disentangle projects that rely on Joint IOU assumptions for risk scaling or BCR methodology from those that would have high value even with risk neutral scaling and alternative BCR methodologies. If the EUP is constructed in this manner, then a determination in another proceeding (for instance, rejection of an IOU risk scaling function in a GRC) allows the EUP to obtain partial approval. This reduces the costly potential for the entire EUP to be rejected and resubmitted. The Commission should also allow for modifications of the EUP in the event that substantive changes such as adoption of a Commission-approved risk scaling process are adopted.

MGRA and other intervenors have presented sufficient evidence in the current proceeding to belie the utility claim that the IOU assumptions regarding risk scaling and BCRs are supported by facts and law. While MGRA does not request that final determinations be made on these problems during the course of the current proceeding, we urge the Commission to ensure that flexibility is built into the process that will enable the EUPs to reflect final determinations made in proceedings where the full evidentiary record is presented, tested, and argued.

Respectfully submitted this 7th day of August, 2026,

By: /S/ ***Diane Conklin***

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