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BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of San Diego Gas & Electric Company (U902M) for Review of its Safety Model Assessment Proceeding Pursuant to Decision 14-12-025.	Application 15-05-002 (Filed May 1, 2015)
And Related Matters.	A.15-05-003 A.15-05-004 A.15-05-005

OPENING COMMENTS OF THE ENERGY PRODUCERS AND USERS COALITION, THE INDICATED SHIPPERS AND THE UTILITY REFORM NETWORK ON THE PROPOSED DECISION OF COMMISSIONER PICKER

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I. INTRODUCTION AND SUMMARY

Pursuant to Commission Rule of Practice and Procedure 14.3, the Energy Producers and Users Coalition, the Indicated Shippers and The Utility Reform Network (together, Joint Intervenors[1]) submit these joint opening comments on the Proposed Decision of Commissioner Picker Adopting the Multi-Attribute Approach (or Utility Equivalent Features) and Directing Utilities to Take Steps Toward a More Uniform Risk Management Framework (PD).

The Joint Intervenors fully support the PD with the relatively minor changes described below. The PD presents a roadmap to guide the utilities toward quantitative,

[1] For the purposes of this proceeding, members of the Indicated Shippers and the Energy Producers and Users Coalition include Aera Energy LLC, Chevron U.S.A. Inc., ExxonMobil Power and Gas Services Inc., Phillips 66 Company, Shell Oil Products US, Tesoro Refining & Marketing Company LLC and CRC Marketing, Inc.

transparent risk assessment and mitigation, recognizing "the utilities' models do not meet Commission expectations."[2] The PD emphasizes the promise of the Joint Intervenors' Approach in achieving the Commission's safety goals through the use of multi-attribute utility functions, condition-dependent hazard rates, probabilistic modeling and optimization. It also wisely reaffirms the determination in D.14-12-025 that calculating risk reduction per dollar spent must be part of the utility Risk Assessment Mitigation Phase (RAMP) filings, recognizing that it is "necessary information for balancing safety with reasonable rates and holding utilities accountable for safety spending."[3]

While the PD's direction is sound, minor clarifications of its characterization of the Joint Intervenor Approach would ease future interpretation of the Commission's directives and set a more solid foundation for the next S-MAP. Most critically, the Commission should clarify that the Joint Intervenor Approach is not a stepping stone to another approach; instead, it is a multi-attribute, probabilistic model that can be both implemented in the short-term and refined into a long-term approach. The Commission should further correct minor mischaracterizations of the Joint Intervenor Approach, concluding that this approach:

- ✓ Produces absolute risk scores;
- ✓ Accounts for threat interactions; and
- ✓ Can be normalized to account for utility size.

Finally, Joint Intervenors request clarification that the 2017 Pacific Gas and Electric Company (PG&E) RAMP address all operations, including gas storage and transmission.

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2 PD at 11.

3 *Id.* at 182, FOF 81.

Joint Intervenors' suggested revisions to the Findings of Fact (FOF), Conclusions of Law (COL) and Ordering Paragraphs (OP) are set forth in Appendix A of these comments.

II. THE COMMISSION SHOULD ADOPT MINOR CHANGES TO THE PD'S CHARACTERIZATION OF THE JOINT INTERVENORS' APPROACH.

The PD necessarily characterizes and compares the parties' proposed risk management approaches. While not critical to the PD's ultimate direction, minor mischaracterizations of the Joint Intervenor Approach could affect the ongoing interpretation of a final decision and add confusion in the next phase. The Joint Intervenors propose clarifications to correct the mischaracterizations as detailed below.

A. The Joint Intervenor Approach Is a Multi-Attribute, Probabilistic Modeling Approach That Can Be Implemented in the Short-Term and Refined to Establish a Long-Term Model.

PD Section 9.6.4 accurately describes the short- and long-term steps proposed by the Joint Intervenors to improve the utilities' risk management processes.[4] Central elements of the Joint Intervenor Approach include:

- Calculation of likelihood of failure (LoF) based on mathematical probabilities using condition-dependent hazard rates;
- Consequences of failure (CoF) expressed using a properly designed multi-attribute utility function expressed on a linear scale;
- Evaluation of risk mitigation measuring the risk reduction per dollar spent; and
- Replacement of non-optimal ranking methods with actual optimization techniques.

[4] PD at 89-92.

The PD recognizes that the current utility models require incremental movement toward this desired end state and appropriately requires the utilities to take near-term action to implement all of the central elements of the Joint Intervenor Approach.[5]

However, the PD also may create unintended confusion by varying the label it uses to refer to the Joint Intervenor Approach. The PD refers to the proposal as the "Joint Intervenor Approach," the "Multi-Attribute Approach"[6] and the "EPRI Approach"[7] interchangeably. Joint Intervenors recommend that the Commission adopt the consistent use of "Joint Intervenor Approach" throughout the final decision.

More significantly, the PD's clear discussion of the Joint Intervenor Approach in Section 9.6.4 is clouded by other findings and conclusions. Specifically, the PD creates uncertainty about the nature of the Joint Intervenor Approach and its long-term role. Finding of Fact 69 provides:

> *The Joint Intervenor Approach is primarily more useful in the immediate future as a bridge between the non-probabilistic state and a more probabilistic state as the utilities models mature.*[8]

The Joint Intervenor Approach should *not* be characterized as a stepping stone to another model. To the contrary, the Joint Intervenor Approach implements in the short-term key features – including multi-attribute utility functions and probabilistic modeling -- of what will become a mature probabilistic model over time. This understanding of the Joint Intervenor Approach is correctly reflected in the PD's proposed Conclusion of Law 41, which contemplates long-term implementation of the "EPRI multi-attribute risk reduction

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5 PD at 112.

6 *See, e.g., id.* at 112, Finding of Fact 21 at 186, Ordering Paragraph 1 at 190, and Ordering Paragraph 12 at 192.

7 *See, e.g.*, *id* at 102, 104, 108, 114, and 160.

8 *Id*. at 181.

methodology (or equivalent)." Proposed modifications to correct Finding of Fact 69 are provided in Appendix A.

B. The Joint Intervenor Approach Produces Absolute Risk Scores.

The PD compares utility and Joint Intervenor approaches across several dimensions.[9] One point of comparison is whether an approach provides "relative" or "absolute" risk scores. The PD erroneously concludes that the Joint Intervenor Approach provides a "quasi-absolute" risk score.

The PD defines an "absolute" risk score as "a representation of the magnitude of risk based on a linear-scale risk formula, often expressed by risk = LoF x CoF."[10] The PD acknowledges that the Joint Intervenors rely on a definition of risk that is represented by LoF x CoF.[11] The PD further acknowledges the Joint Intervenor Approach's use of mathematical probabilities to calculate LoF.[12] Finally, the PD observes that the Joint Intervenors propose a "continuous," CoF scale.[13] The result of the Joint Intervenor Approach, necessarily, is an "absolute" risk score as the PD defines the term.

The PD's mischaracterization appears to be a consequence of conflating the definition of "absolute risk score" with what is represented by the score. It concludes "[t]he Joint Intervenor approach creates dimensionless risk unit scores instead of absolute risk scores which express risks in physical terms…." [14] The definitions the PD provides,

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9 PD at 93-94.
10 *Id.* at 21, n. 24.
11 *Id*. at 85. The PD incorrectly states that Joint Intervenors "use" the ASME definition of risk, which is represented as risk = LoF x CoF. More correctly stated, the Joint Intervenors represent risk as LoF x CoF, and ASME is an example of the use of that definition.
12 *Id*. at 89.
13 *Id.* at 90.
14 *Id.* at 88.

however, state that absolute risk scores may be provided in physical terms or without dimension.[15] Furthermore, any dimensionless risk unit score can be converted to a measurement expressed in the units of any of the attributes, including, for example, dollars or the applicable units of reliability (often unserved energy).

The PD should be modified to conclude that the Joint Intervenor Approach produces absolute risk scores that are grounded in physical consequences.

C. The Joint Intervenor Approach Accounts for Threat Interactions.

The PD incorrectly concludes that the Joint Intervenor Approach does not take into account "threat interactions and their effects on frequency impact, and impact definitions.[16] As the PD observes, the Joint Intervenor Approach relies on condition-dependent hazard rates.[17] Threat interactions are reflected in the LoF through the use of condition-dependent hazard rates and the effect of the joint occurrence of multiple threats on those hazard rates. Threat interactions do not need to be accounted for in determining CoF; if a failure event occurs (e.g., a pipe rupture), the consequences are not a function of the LoF. (This separation is one of the analytic virtues of the Joint Intervenor approach.)

The PD should be modified to reflect that the Joint Intervenor Approach takes interactive threats into account.

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15 *Id*. at 21, n. 24.
16 *Id.* at 94.
17 *Id.* at 90-91.

D. The Joint Intervenor Approach Can Be Normalized to Account for Different Utility Sizes.

The PD cites as a "con" the failure of the Joint Intervenors' Approach to "normalize or adjust to account for different utility sizes."[18] While this issue was not extensively discussed, the Joint Intervenor Approach permits normalizing to utility size if needed to provide comparability across utilities. There are several ways to accomplish this normalization, which Joint Intervenors can easily demonstrate at an appropriate time.

III. IN LIGHT OF THE RECENT POSTPONEMENT OF PG&E'S NEXT GT&S APPLICATION, THE COMMISSION SHOULD CLARIFY THAT PG&E'S NEXT RAMP SHOULD INCLUDE ITS GAS TRANSMISSION AND STORAGE OPERATIONS

The PD notes that the Commission's plan to incorporate a risk-based decision-making framework for general rate cases (GRCs) is also meant to apply to gas transmission and storage (GT&S) rate cases.[19] The PD further notes that PG&E's next GT&S rate case application – which, throughout R.13-11-006 and this proceeding, the Commission and parties assumed would be filed in late 2016 – was not included in the RAMP schedule adopted in D.14-12-025.[20]

Late last month, the Commission issued D.16-06-056, in which it extended PG&E's current GT&S rate case period through 2018, thereby postponing the filing of PG&E's next GT&S application to late 2017.[21] As a result, contrary to previous

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18 *Id.* at 88.
19 *Id.* at 3, fn. 2.
20 *Id.* at 4, fn. 4.
21 D.16-06-056.

expectations, PG&E's next GT&S application will be filed shortly after PG&E's first RAMP submission on September 1, 2017.[22]

In light of these changed circumstances, PG&E's 2017 RAMP submission should address all of its CPUC-regulated systems, including gas transmission and storage. In this way, PG&E's risks and mitigation prioritization can be more usefully compared across its entire enterprise, and not exclude a portion of PG&E's gas system in which safety considerations are particularly important.

A new Ordering Paragraph to reflect this recommended clarification is included in Appendix A.

IV. TYPOGRAPHICAL CORRECTIONS

Joint Intervenors recommend correction of typographical errors as follows:

Page 86, sixth bold bullet	Change "CoF is based on probability of failure" to "LoF is based on…"
Pages 95, 96	Change "30 units of safety impact are to be treated equal to 25 units of reliability impact" to "25 units of safety impact are to be treated equal to 30 units of reliability impact."
Page 107, first full paragraph, fourth line	Change "Joint Intervenors" to "Joint *Utilities*"
Page 107, first full paragraph, sixth line	Change "Joint Utilities" to "Joint *Intervenors*"
Page 119, second line	Insert "believe that" after "In general . . ." so that the sentence reads: "In general, we strongly *believe that* prioritizing the reduction of safety risks . . ."

[22] PG&E filed its 2015 GT&S application on December 19, 2013. In light of the late issuance of the decision on that application, Joint Intervenors would encourage PG&E to file its next GT&S application a few months earlier in 2017.

Page 121, 2nd full paragraph, second line	Change "Joint Utilities" to "Joint *Intervenors*"
Page 180, Finding of Fact 64	Change "Measuring CoF" to "Measuring *LoF*"

V. CONCLUSION

For all of the foregoing reasons, EPUC, IS and TURN request that the Commission adopt the changes proposed herein.

Respectfully submitted,

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APPENDIX A
Joint Intervenors' Recommended Changes to the Findings of Fact, Conclusions of Law, and Ordering Paragraphs
(Deletions in ~~strikethrough~~, additions in *italics*)

Findings of Fact

16. Direction from the Commission is necessary before any risk management model can result in the ability to compare risk scores *among different utilities*.

61. The Joint Intervenor Approach ~~assumes~~ *determines risk reduction using the equation* Risk Reduction = (LoF x CoF) Before – (LoF x CoF) After.

64. Measuring ~~CoF~~ *LoF* is based on probability of failure, not frequency of failure (e.g., frequency, e.g., once every 10 years, is different from probability, e.g., 10% likelihood that a failure will occur next year).

67. The Joint Intervenor Approach creates ~~dimensionless~~ *absolute* risk ~~unit~~ scores*,* instead of ~~absolute~~ *relative* risk scores*,* which express risks in *dimensionless units based on* physical terms (such as expected injuries per asset element per unit time.)

69. The Joint Intervenor Approach *is a multi-attribute, probabilistic modeling approach, which can be implemented in the near term* and refined in the long term.~~is primarily more useful in the immediate future as a bridge between the non-probabilistic state and a more probabilistic state as the utilities' models mature~~.

70. ~~In the short term,~~ the Joint Intervenor Approach facilitates the calculation of risk reduction that is essential for optimization or prioritization of risk mitigations.

73. *In the absence of objective asset condition data,* ~~C~~calibrated subject matter expertise is an essential component of developing the distributions used in risk analysis.

Conclusions of Law

11. The *utilities* ~~Commission~~ should ~~consider a~~ shift from logarithmic to linear scales in *assessing consequences of failure.* ~~a risk methodology development timeline.~~

Ordering Paragraphs

8. Risk Assessment Mitigation Phase (RAMP) filings by San Diego Gas & Electric Company, Southern California Gas Company, Southern California Edison Company, and Pacific Gas & Electric Company shall explicitly include calculation of risk reduction and a ranking of mitigations based on risk *reduction* per ~~reduction~~ dollar spent.

8A. The scope of the September 1, 2017 RAMP filing by Pacific Gas & Electric Company shall include the gas transmission and storage system.