PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

FILED
11/03/22
01:32 PM
R2007013

November 3, 2022

Agenda ID #21126
Quasi-Legislative

TO PARTIES OF RECORD IN RULEMAKING 20-07-013:

This is the proposed decision of Commissioner Rechtschaffen. Until and unless the Commission hears the item and votes to approve it, the proposed decision has no legal effect. This item may be heard, at the earliest, at the Commission's December 15, 2022 Business Meeting. To confirm when the item will be heard, please see the Business Meeting agenda, which is posted on the Commission's website 10 days before each Business Meeting.

Parties of record may file comments on the proposed decision as provided in Rule 14.3 of the Commission's Rules of Practice and Procedure.

/s/ MICHELLE COOKE
Michelle Cooke
Chief Administrative Law Judge

MLC:jnf
Attachment

COM/CR6/jnf **PROPOSED DECISION** **Agenda ID #21126**
Quasi-Legislative

Decision **PROPOSED DECISION OF COMMISSIONER RECHTSCHAFFEN**
(Mailed 11/3/2022)

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Further Develop a Risk-Based Decision-Making Framework for Electric and Gas Utilities.	Rulemaking 20-07-013

PHASE II DECISION ADOPTING MODIFICATIONS TO THE RISK-BASED DECISION-MAKING FRAMEWORK ADOPTED IN DECISION 18-12-014 AND DIRECTING ENVIRONMENTAL AND SOCIAL JUSTICE PILOTS

TABLE OF CONTENTS

Title **Page**

PHASE II DECISION ADOPTING MODIFICATIONS TO THE RISK-BASED DECISION-MAKING FRAMEWORK ADOPTED IN DECISION 18-12-014 AND DIRECTING ENVIRONMENTAL AND SOCIAL JUSTICE PILOTS

Summary

This decision modifies the Risk-Based Decision-Making Framework (RDF) adopted in Decision (D.) 18-12-014. It replaces the "Multi-Attribute Value Function" adopted in D.18-12-014 with a Cost-Benefit Approach that includes standardized dollar valuations of Safety, Electric Reliability and Gas Reliability Consequences from Risk Events. It requires Pacific Gas and Electric Company (PG&E), Southern California Gas Company, Southern California Edison Company, and San Diego Gas & Electric Company (collectively investor-owned utilities or IOUs) to implement the modified RDF to assess and rank risks and mitigations in their Risk Assessment and Mitigation Phase (RAMP) and General Rate Case filings, starting with PG&E's 2024 RAMP filing. As such, this decision updates the Rate Case Plan most recently modified in D.21-11-009. The RDF as modified and adopted here is included in Appendix A.

This decision directs the IOUs to undertake Environmental and Social Justice Pilots as part of each IOU's next RAMP filing and requires the IOUs to consider seven Action Items in the pilots. It authorizes continuation of the RDF Technical Working Group authorized in D.21-11-009.

This proceeding remains open.

1. Background

On November 14, 2013, the California Public Utilities Commission (Commission) opened Rulemaking (R.) 13-11-006, *Order Instituting Rulemaking to Develop a Risk-Based Decision-Making Framework to Evaluate Safety and Reliability Improvements and Revise the Rate Case Plan for Energy Utilities*. The purpose of

R.13-11-006 was to develop a Risk-Based Decision-Making Framework (RDF) to evaluate safety and reliability investments presented in utility General Rate Case (GRC) applications and to modify the Rate Case Plan (RCP) documentation requirements accordingly. The RCP guides the type of information presented and the procedural schedule utilities must adhere to when they file GRC applications.

In response to R.13-11-006, and as a result of Senate Bill 705, the Commission modified the RCP in Decision (D.) 14-12-025 to establish parameters and processes for integrating risk assessments into the GRCs of large investor-owned utilities (IOUs or utilities), including Pacific Gas and Electric Company (PG&E), and Southern California Edison Company (SCE), as well as Southern California Gas Company (SoCalGas), and San Diego Gas & Electric Company (SDG&E) (collectively Sempra Companies). In modifying the RCP, a primary objective was to promote transparency and assist the Commission and interested parties in evaluating the various processes that the energy utilities use to assess their safety risks and to manage, mitigate, and minimize such risks.[1]

D.14-12-025 established two processes that precede the IOU GRC applications: 1) the filing of a Safety Model Assessment Proceeding (S-MAP) application in a dedicated S-MAP proceeding (e.g., Application (A.) 15-05-002 *et al)*, where the IOUs present their risk-based decision-making models; and 2) a subsequent Risk Assessment Mitigation Phase (RAMP), occurring prior to each GRC, where the IOU describes how it plans to assess its risks and to mitigate and minimize such risks, using a reporting format adopted in the S-MAP proceeding.

[1] D.14-12-025, Finding of Facts 19 and 26.

The RAMP application, as clarified or modified in the RAMP proceeding, is then incorporated into the IOU's Phase 1 GRC filing.[2]

On May 15, 2015, the large IOUs filed their S-MAP applications, which were consolidated as the A.15-05-002 *et al.* proceeding. On August 18, 2016, the Commission adopted D.16-08-018, *Interim Decision Adopting Multi-Attribute Approach (Or Utility Equivalent Features) and Directing Utilities to Take Steps Toward a More Uniform Risk Management Framework* (Interim Decision) in the consolidated proceedings. The Interim Decision directed the IOUs to take steps to develop a more uniform approach to risk management and to test an approach proposed by intervenors towards this end. The Interim Decision adopted the use of the "Cycla Corporation 10-Step Evaluation Method" for evaluating the IOUs' risk assessment models, specified an initial "lexicon" of terms relating to the S-MAP and RAMP frameworks, directed the IOUs to test drive a "Multi-Attribute Approach" for evaluating risk using real-world problems, emphasized the importance of risk-spend efficiency (RSE) calculations in ranking risks, adopted an interim S-MAP Roadmap to move towards more quantified methods for optimized risk mitigation, and adopted other guidelines concerning what should be included in the utilities' RAMP applications, as well as what the Commission's Safety and Enforcement Division (SED) should look for when evaluating the utilities' RAMP filings.

On December 13, 2018, the Commission adopted D.18-12-014, *Phase Two Decision Adopting Safety Model Assessment Proceeding Settlement Agreement with*

[2] For the large IOUs, GRC proceedings are divided into two phases: In Phase 1, the Commission reviews and authorizes the revenue requirement necessary for a utility to operate and maintain its facilities and equipment in a safe and reliable manner. In a later and separately filed Phase 2 of the GRC, the Commission considers how the revenue requirement authorized in Phase 1 should be allocated among customers classes and collected from those customers in rates.

Modifications (SA Decision). The SA Decision approved, with modifications, an uncontested Settlement Agreement intended to achieve a more uniform and quantitative RDF. The provisions of the SA Decision constitute the minimum required elements for risk and mitigation analysis by the IOUs in their RAMP and Phase 1 GRC filings, including the specific "steps" that the IOUs must follow to analyze risk and mitigation choices. Additional information concerning the RDF adopted in the SA Decision is provided in Section 5.1.1.

Each IOU filed a RAMP application using the RDF adopted in the SA Decision. PG&E filed a RAMP application (A.20-06-013) with the Commission on June 30, 2020, related to its Test Year 2023 GRC cycle, for which PG&E subsequently filed a GRC application (A.21-06-021) on June 30, 2021. SoCalGas and SDG&E each filed their respective RAMP applications (A.21-05-014 for SoCalGas and A.21-05-011 for SDG&E) on May 15, 2021, related to their Test Year 2024 GRC cycle, for which SoCalGas filed its GRC application (A.22-05-015) and SDG&E filed its GRC application (A.22-05-016) on May 15, 2022, and May 16, 2022, respectively. SCE filed a RAMP application (A.22-05-013) on May 13, 2022, related to its Test Year 2025 GRC cycle. The GRC application for SCE is scheduled to be filed May 15, 2023.

The central element of the RDF adopted in the SA Decision is a Multi-Attribute Value Function (MAVF). The MAVF is a tool for combining the potential Consequences[3] from unlike Attributes into a single metric to quantify risk. Building the MAVF, as described by the SA Decision, is "a fundamental building block for the risk and mitigation analysis agreed to by parties."[4] An

[3] This decision capitalizes terms included and defined in Appendix A.

[4] SA Decision at 22.

important component in building the MAVF is the assignment of relative weights to each Attribute based on a comparison of the ranges of each Attribute, effectively resulting in a trade-off in values between Attributes, such as Safety and Financial.

2. Procedural Background

On July 16, 2020, the Commission issued an *Order Instituting Rulemaking to Further Develop a Risk-Based Decision-Making Framework for Electric and Gas Utilities,* thus launching R.20-07-013 (RDF Proceeding). The main objectives of the RDF Proceeding are to further guide and ensure electric and gas utilities make safety their priority consistent with California Public Utilities Code (Pub. Util. Code) § 451 requirements to ensure just and reasonable rates.[5]

A prehearing conference was held on September 15, 2020, to determine parties, discuss the scope, schedule, and other procedural matters.

On November 2, 2020, the assigned Commissioner issued a Scoping Memo and Ruling (Phase I Scoping Memo), dividing the proceeding schedule into two phases. Phase I of the proceeding includes the following issues, divided along four separate tracks: Track 1 - Clarifying RDF Technical Requirements; Track 2 - Safety and Operational Metrics; Track 3 - Refining RAMP and Related Procedural Requirements; and Track 4 - Small and Multijurisdictional Utilities. The Scoping Memo also identified issues for potential consideration in Phase II, and determined that the scope of Phase II issues would be revisited at the conclusion of Phase I.

On November 9, 2021, the Commission adopted D.21-11-009, addressing the Phase I, Track 1 and 2 Issues in this proceeding. Among other things,

[5] Hereafter, all references to code are to the Public Utilities Code unless otherwise stated.

D.21-11-009 clarified the terms "Mitigations" and "Controls," and adopted specific approach to establishing baselines for Mitigations and Controls at the start of a new GRC cycle, determined when Foundational Programs and/or Activities[6] should be included in RSE calculations, adopted a revised S-MAP lexicon, and directed the IOUs to treat Public Safety Power Shutoff (PSPS) events as a Risk to be modeled within the RDF framework, not just as a Mitigation. To assist with developing a Phase II schedule, D.21-11-009 also established a R.20-07-013 Technical Working Group (TWG) and directed Safety Policy Division Staff (SPD Staff or Staff) and parties participating in the TWG to collaborate and assemble a draft R.20-07-013 Phase II Roadmap for consideration.

Phase 1, Track 3 and 4 Issues in this proceeding were considered and addressed by the Commission in D.22-10-002. Among other things, and as relevant to this decision, D.22-10-002 further aligned the framework for and information presented across RAMP, GRC, Risk Spending Accountability Reports, and Wildfire Mitigation Plan submissions, including the requirement that the IOUs consistently map and identify mitigation costs, variances, and party comments between the various filings.[7]

On February 16, 2022, the assigned Commissioner issued a ruling providing Staff's proposed Phase II Roadmap for comment. Party comments on the Phase II Roadmap were filed on March 8, 2022, and March 14, 2022.

---

[6] Foundational Programs and/or Activities are defined as "initiatives that support or enable two or more Mitigation programs or two or more Risks but do not directly reduce the Consequences or reduce the Likelihood of safety Risk Events." (*See* D.21-11-009 at 22.)

[7] Risk Spending Accountability Reports refer to reporting requirements in which the IOUs report on deviations between approved and actual IOU risk mitigation and maintenance spending and activities. *See* D.19-04-020 at 2.

As part of the Phase II Roadmap, Staff indicated they had engaged with a consulting firm, Level 4 Ventures Inc. (Level 4), to prepare an IOU Baseline Assessment Report (Baseline Report) that would summarize the risk management approach of each of the large IOUs, evaluate and compare their approaches, and make initial recommendations to address R.20-07-013 Phase II priorities. On March 3, 2022, Staff convened a workshop as part of TWG activities to discuss the draft Level 4 Baseline Report. On March 17, 2022, parties submitted informal comments on the draft Baseline Report to Staff.

On April 13, 2022, the assigned Commissioner issued a *Phase II Scoping Memo and Ruling Extending the Statutory Deadline* (Phase II Scoping Memo). The Phase II Scoping Memo set forth the scope, issues, schedule, and other matters necessary for the fair and timely resolution of Phase II of this proceeding. A central activity in Phase II of the proceeding has been the development of a Phase II Staff Proposal by SPD Staff that considers additional revisions and refinements to the RDF methodology adopted in the SA Decision. This includes revisions to the valuation of risks, as well as considerations for comparability of Risk Scores and cost-effectiveness values across IOUs, impacts on Environmental and Social Justice (ESJ) communities, and incorporation of climate change related risks in the RDF.

Following the Phase II Scoping Memo and in preparation for the development of a Phase II Staff Proposal, SPD Staff provided several opportunities for parties to discuss and provide informal comments on initial recommendations provided by Level 4 and SPD Staff regarding the Phase II issues. These addressed revisions and refinements to the RDF methodology, particularly the dollar valuation of risk Attributes, and incorporation of impacts on ESJ communities, including the following activities:

- April 20, 2022: Level 4 recommendations presented to TWG for input and discussion.
- May 20, 2022: SPD Staff hosted TWG session #2 to discuss Level 4's recommendation regarding the MAVF included in the RDF: "With input from the parties involved, the [Commission] should adopt a standard set of parameters/formulas to monetize risk Consequences, using standard values from other government agencies or industry sources where possible."
- June 2, 2022: SPD Staff hosted TWG session #3 to discuss Level 4's "MAVF 3" recommendation: "With input from the parties involved, the [Commission] should adopt standard metrics for electric and gas reliability, possibly adjusted for regional characteristics, and all IOUs should then use those metrics when estimating MAVF scores."
- June 16, 2022: SPD Staff hosted TWG session #4 to discuss Level 4's "Risk Modeling 3" recommendation: "With input from the parties involved, the [Commission] should adopt a standard readability factor to be used for RSE calculations."
- June 29, 2022: SPD Staff hosted a second workshop to present the Staff Recommendations and solicit oral and informal written comments.

On August 8, 2022, the assigned Administrative Law Judges (ALJs) issued a ruling entering the *Administrative Law Judges' Ruling Providing Phase II Staff Proposal for Comment* (Staff Proposal) into the record and inviting parties to submit written comments.[8] In addition to the Staff Proposal, the ALJ ruling in Attachment B provided Staff's proposed redlines to the Settlement Agreement adopted in the SA Decision corresponding to the recommendations in the Staff Proposal.

[8] R.20-07-013, Staff Proposal at https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M496/K415/496415725.PDF

On August 29, 2022, comments on the Staff Proposal were filed by Mussey Grade Road Alliance (MGRA), The Utility Reform Network (TURN), the Public Advocates Office (Cal Advocates), Protect Our Communities Foundation (PCF), SCE, PG&E and the Sempra Companies. On September 6, 2022, reply comments were filed by MGRA, PG&E, SCE, PCF, and the Sempra Companies.

3. Jurisdiction

Pub. Util. Code §§ 451 and 454 require electric and gas utilities to "promote the safety, health, comfort, and convenience of their patrons, employees, and the public," while offering "just and reasonable" rates.

Pub. Util. Code § 963(b)(3) states "it is the policy of the state that the Commission and each gas corporation place safety of public and gas corporation employees as the top priority," and that "the Commission shall take all reasonable and appropriate actions necessary to carry out a safety priority policy consistent with the principle of just and reasonable cost-based rates." Pub. Util. Code § 961(b)(1) requires gas corporations to develop plans for the safe and reliable operation of facilities that implement § 963(b)(3) requirements.

Pub. Util. Code § 750 requires the Commission to develop formal procedures to consider safety in a rate case application by an electrical corporation or gas corporation. Pub. Util. Code § 321.1(b) requires the Commission to "take all necessary and appropriate actions to assess the economic effects of its decisions and to assess and mitigate the impacts of its decisions on customer, public, and employee safety."

4. Issues Before the Commission

This decision addresses the following issues identified in the Phase II Scoping Memo:

- Should the Commission consider revising or refining the RDF methodology for valuing services, Mitigations and/or

impacts (such as those related to reliability or safety)? If so, should the Commission consider: (a) defining and requiring the use of a consistent value of a statistical life (VSL); (b) whether the dollar value of Attributes should be explicitly addressed; and (c) the valuation of the costs and impacts of PSPS events as both Risks and Risk Mitigations?

- Should the Commission consider refining or revising the methodology adopted in the SA Decision regarding weighting of Risk categories and/or the replacement of weights and ranges with direct trade-off values of services and impacts?
- Should the Commission consider revising the RDF adopted in the SA Decision? What principles or factors should guide consideration of revisions, refinements, or clarifications?
- Should the Commission consider refining or revising the requirements for the MAVF contained in the RDF? If so, should this include identifying best practices, minimum requirements (including, potentially, the development of a single risk-attitude function or scaling function), guiding principles, and/or aspirational characteristics for RAMP filings?
- Should the Commission consider impacts on ESJ communities, including the extent to which action in this proceeding impacts achievement of any of the nine goals of the Commission's ESJ Action Plan?[9]

This decision addresses the recommendations made in the Staff Proposal regarding: the transition from the MAVF to the Cost-Benefit Approach, obviating the need to assign Attribute weights and ranges in calculating Risk Scores; the

[9] The ESJ Action plan is available on the Commission's website, available as of September 7, 2022 at: https://www.cpuc.ca.gov/news-and-updates/newsroom/environmental-and-social-justice-action-plan

dollar valuation of Safety and Reliability Attributes; the incorporation of ESJ considerations into the RDF; and, modifications to the Settlement Agreement.

5. Refining the RDF Adopted in the SA Decision

The Commission established the S-MAP and RAMP procedures to incorporate additional transparency and participation opportunities into how safety risks for energy utilities are prioritized by the Commission and the energy utilities and to provide accountability for how these safety risks are managed, mitigated and minimized.[10] Through a series of decisions,[11] the Commission refined and improved upon the processes, information, terminology, evaluation approaches, and methodologies required to be included in the S-MAP and RAMP filings.

This decision makes additional refinements to the RDF to further increase transparency, participation, and accountability. Specifically, this decision:

(1) replaces the MAVF framework -- currently used in the RDF to translate different risk Consequences into unitless Risk Scores that can be compared and ranked -- with the Cost-Benefit Approach, which expresses risk Consequences in dollar values and provides an indication of the cost-effectiveness of proposed mitigations;

(2) approves the use of specific methodologies and sources of information to determine a standard dollar value of each risk Attribute; and,

(3) requires PG&E, SCE, and the Sempra Companies to each conduct an ESJ Pilot Study, the results of which will be filed with each utility's next RAMP application.

Each of these actions are described in greater detail below.

[10] Interim Decision at 6; also, D.14-12-025 at 3, 10.

[11] *See* Interim Decision, SA Decision, and D.21-11-009.

5.1. Replacing MAVF Attributes With a Dollar Value

This section starts with a summary of existing requirements for the assessment of Risk as adopted in the SA Decision. We then introduce Staff's proposal to modify the SA Decision requirements and summarize party comments. We conclude this section by adopting modifications to the SA Decision.

5.1.1. SA Decision Requirements

The Commission in the SA Decision adopted a step-wise methodology that each IOU must follow to analyze the risk and mitigation choices presented in their RAMP Report. Utilities are required to follow three steps to identify their top safety, reliability, and financial risks. The SA Decision requires each utility to explain how it analyzes and prioritizes each risk, and to evaluate proposed mitigation activities for each risk. A central component of the RDF adopted in the SA Decision requirements is the construction of an MAVF.

The SA Decision RDF requirements are briefly described below.[12]

Step 1A – Building an MAVF:

The SA Decision directs the IOUs to use an MAVF framework to combine different Consequences stemming from the occurrence of a Risk Event[13] into a generic unitless Risk Score so that risks and mitigation alternatives can be

[12] This section is intended to provide a broad, condensed summary of the Settlement Agreement adopted in the SA Decision. Additional detail and the specific provisions of the Settlement Agreement may be found in Attachment A to the SA Decision (D.18-12-014).

[13] A Risk Event is "[a]n occurrence or change of a particular set of circumstances that may have potentially adverse consequences and may require action to address." (*See* D.21-11-009, Appendix D at 3.)

compared on a uniform scale.[14] The unitless Risk Score generated from the MAVF scoring framework is referred to as the Multi-Attribute Risk Score (MARS).

The MAVF process begins with an IOU developing an Attribute[15] hierarchy, with primary Attributes (typically labels or categories such as Safety and Reliability) and associated sub-Attributes that are observable and measurable (such as fatalities or Customer Minutes of Interruption (CMI)).[16] Step 1A requires each IOU to use three key functions to translate a Consequence of a Risk Event into a MARS:

- First, the IOU develops a range, expressed in natural units, for each sub-Attribute. The lower and upper bound of a range generally corresponds with the smallest and largest values observed/measured during historical Risk Events.[17]
- Second, the IOU applies a scaling function to convert the range of natural units to scaled units, ranging from 0-100, in order to specify the relative value of changes within the range. The scaling function describes a stakeholder's – typically the IOU's – Risk Attitude and Tolerance for uncertainty. It can either be linear, reflecting that each incremental Risk Event is valued the same as the previous one, or non-linear.

[14] For example, to compare the full range of potential Financial Consequences with the potential Reliability Consequences resulting from a particular Risk Event, the Financial Consequences (assuming a natural unit of dollars) and Reliability Consequences (assuming a natural unit of Customer Minutes of Interruption would first need to be converted into a generic unitless Risk Score, or MARS. The same unitless Risk Score could then be used to compare different Risks and their respective Mitigations.

[15] An Attribute is "an observable aspect of a risky situation that has value or reflects a utility objective, such as safety or reliability. Changes in the Level of Attributes are used to determine the Consequences of a Risk Event. The Attributes in an MAVF should cover the reasons that a utility would undertake risk mitigation activities." (*See* D.21-11-009, Appendix D at 1.)

[16] CMI is the number of minutes of interrupted customer electric service, defined in IEEE Standard P1366. (*See* Staff Proposal at iv, footnote 9.)

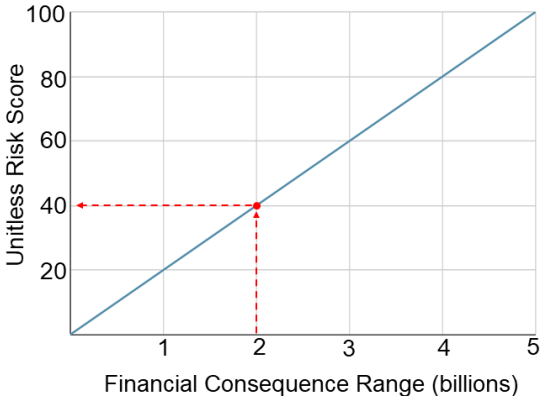
[17] MAVF Principle 3 addresses Attributes that are necessary but are not directly measurable.

- Finally, the IOU assigns each Attribute a percentage weight reflecting its relative importance to other Attributes defined in the MAVF. Pursuant to the SA Decision, each IOU must assign a minimum weight of 40 percent to safety impacts.[18]

The steps for building the MAVF allow the IOUs to express risk Attributes with dissimilar natural units into dimensionless Risk Score values. These dimensionless Risk Score values can then be combined into a single Risk Score.[19]

Table 1 illustrates these concepts. Table 1 assumes that the Financial Attribute in a utility's MAVF scoring framework includes an associated range of $0 - $5 billion, a linear scaling function, and a weight of 25 percent. Table 1 illustrates how a utility would translate a Financial Consequence of $2 billion into a unitless Risk Score that could then be compared with a unitless Risk Score for a Reliability Consequence, for instance.

Table 1: Example MAVF for Financial Attribute



Action	Value
Identify Consequence Value	$2 billion
Determine Scaled Score	40
Identify Attribute Weight (Financial)	25%
Apply Weight to Scaled Score	10 = 25% * 40
Financial Risk Score	**10**

Step 1B - Identifying Risks for the Enterprise Risk Register:

The Enterprise Risk Register is an inventory of risks that a utility may face at a specific period in time and provides a starting point for the risks that may be

[18] SA Decision Ordering Paragraph 2.

[19] Staff Proposal at 19.

included in a utility's RAMP Report. Step 1B of the SA Decision requires the utility to identify risks to include in its Enterprise Risk Register.

Step 2A - Risk Assessment and Risk Ranking in Preparation for RAMP:

Using actual results, available data, and subject matter experts, Step 2A of the SA Decision requires the utility to identify the potential Consequences and the likely frequency of potential Risk Events. Step 2A then requires the IOUs to compute a Safety Risk Score for each risk in the Enterprise Risk Register using only the Safety Attribute in the MAVF.[20] For the risks in the top 40 percent of Safety Risk Scores, Step 2A of the SA Decision requires the utility to also compute a MARS using at least the Safety, Reliability, and Financial Attributes of its MAVF.

Step 2B - Selecting Enterprise Risks for the RAMP:

Step 2B of the SA Decision requires the utility to solicit input from interested parties and Staff before determining the final list of risks to be addressed in its RAMP Report.

Step 3 – Mitigation Analysis for Risks in RAMP:

Step 3 of the SA Decision sets the requirements each utility must follow to assess Mitigations for each of the selected RAMP risks. Step 3 requires each IOU to develop a detailed pre- and post-mitigation analysis to determine the estimated risk reduction from a proposed Mitigation. In order to provide a granular view of how Mitigations may reduce Risk, Step 3 requires each IOU to conduct its analysis by "Tranches," or subgroups of assets or systems with like

[20] To facilitate the risk calculation, a Bow Tie analysis is used. The Bow Tie consists of "a Risk Event in the center, a listing of Drivers on the left side that potentially lead to the Risk Event occurring, and a listing of Consequences on the right side that show the potential Outcomes if the Risk Event occurs." (*See* D.21-11-009, Appendix D at 1.)

characteristics. Step 3 requires each IOU to calculate pre-and post-mitigation Risk Scores as the product of the Likelihood and Consequence for each Tranche subject to the identified Risk Event. For each of the Mitigations, Step 3 of the SA Decision requires the IOU to perform an RSE calculation to estimate the risk reduction per dollar spent on the Mitigation.

5.1.2. Staff Proposal

The Staff Proposal recommends that the Commission shift from an RDF that includes an MAVF approach, as adopted in the SA Decision, to an RDF using the Cost-Benefit Approach. To do this, Staff recommend the Commission require the IOUs, when using the RDF, to represent the value of combined risk Attributes in dollars rather than unitless Risk Scores. Staff propose to leave unchanged the RDF scaling function requirements used to reflect Risk Attitude.[21] Staff also propose the Commission should provide the IOUs with the flexibility to incorporate Risk Attitude and Risk Tolerance into an RDF using the Cost-Benefit Approach as they would under the current RDF using the MAVF approach.[22] Staff assert that Staff's proposed modifications result in only limited changes, specifically the elimination of the application of ranges and weights in Step 1A of the RDF, but would positively impact analyses conducted in subsequent steps of the RDF.

To demonstrate proposed modifications, the Staff Proposal includes example calculations of the Safety, Reliability, and Financial Attributes under the MAVF approach adopted in the SA Decision as compared to Staff's proposed

[21] Staff Proposal at i-iii.

[22] *Id.* at 27.

Cost-Benefit Approach. We provide Staff's example calculations in Table 2 and Table 3 below.[23]

Both examples provided by Staff assume initial unit values (or Levels) of 20 fatalities, 500 CMI, and $1 billion of financial loss, and use a linear scaling function for all Attributes. While the MAVF approach relies upon the sum of weighted scores for each Attribute, each with its own stated range, scaling function, and weight parameter, Staff's proposed Cost-Benefit Approach uses dollar values taken from independent government and industry sources, which makes the assignment of Attribute ranges and weights no longer applicable.

Table 2: Use of MAVF Approach to Calculate a Risk Score[24]

Attributes	Natural Units	Value	Lower Bound	Upper Bound	Percent of Range	Scaling Function	Scaled Score	Weight	Weighted Risk Score*
Safety	Fatalities	20	0	100	20%	Linear	20	50%	10
Reliability	CMI	500 minutes	0	2 billion	25%	Linear	25	25%	6.25
Financial	Dollars ($)	$1 billion	$0	$2 billion	50%	Linear	50	25%	12.5
								Total Weighted Risk Score	**28.75**

* Weighted Score = Scaled Score x Weight

[23] *Id.* at 6-7. Table 2 includes minor mathematical corrections to the Financial Attribute calculation.

[24] *Id.* at 6.

Table 3: Use of Cost-Benefit Approach to Calculate a Monetized Risk Value[25]

Attributes	Natural Units	Value[a]	Scaling Function	Dollar Value of Attributes*	Monetized Risk Value**
Safety	Fatalities	20	Linear	$10 M/fatality	$200 M
Reliability	CMI	500 minutes	Linear	$2.50 M/CMI	$1.25 B
Financial	Dollars ($)	$1 billion	Linear	$1	$1 B
				Total Monetized Risk Value	**$2.45 B**

* The Dollar Value of Attributes is also referred to as the Trade-off Value.

** Monetized Risk Value = Value x Dollar Value of Attributes.

The Staff Proposal asserts that the MAVF approach requirement that utilities establish weights, ranges, and scales for conversion of natural risk values into unitless scores makes it challenging for the Commission and parties to interpret the results of this risk assessment. Staff assert that this lack of understandability reduces the transparency of IOU risk models for many stakeholders and constrains the Commission's ability to prioritize safety while evaluating proposed rate increases. Staff contend that the unitless Risk Scores lack readily accessible, tangible meaning. In contrast, Staff propose that quantifying Risk in dollars in the Cost-Benefit Approach would provide a familiar and intuitive valuation for Risk.[26]

Staff assert the Commission's requirement that the IOUs place a 40 percent minimum weight on the Safety Attribute[27] within the MAVF calculation has the impact of inflating the value of safety risk mitigation measures. Staff state that

[25] *Id.* at 7.

[26] *Id.* at 6-8.

[27] *See* SA Decision Ordering Paragraph 2.

the 40 percent minimum weight requirement can lead to manipulation of the Safety Attribute's range of outcomes to align the implied value with a generally accepted, reasonable estimate of the Benefit of proposed mitigations.[28]

Staff contend that the RSE produced by the MAVF approach has limited usefulness. Staff state that while the RSE value allows for IOUs and stakeholders to compare the cost-effectiveness of various mitigation measures, it does not convey whether the Benefits of a proposed mitigation measure outweigh the costs.[29]

Staff contend that requiring use of the Cost-Benefit Approach, which monetizes risk Attributes, would provide a more straightforward and transparent way for the IOUs to calculate Risk and risk reduction Benefits as compared to the MAVF approach adopted in the SA Decision. Staff state that this proposed change would result in an RDF calculation that is more understandable and useful to the Commission and parties when reviewing RAMP and GRC filings.[30] Staff also observe that use of a dollar valuation is common practice in risk assessment across various industries.[31] Unlike RSE values, a Cost-Benefit Ratio provides information on whether the Benefits from a proposed mitigation measure exceeds its costs, Staff note.[32]

---

[28] Staff Proposal at 11. The Staff Proposal at 11 points to recent IOU RAMP filings in A.20-06-012 and A.21-05-011 which contain an implied VSL nearly 10 times higher than the methodology suggested by the U.S. Department of Transportation (DOT), and between six to eighteen times higher than the top and bottom of the VSL range suggested by the U.S. Department of Health & Human Services (HHS).

[29] Staff Proposal at 8.

[30] *Ibid*.

[31] For example, actuarial tables and insurance policies, among others, attach a dollar amount to property damage, the loss of life, and injuries (with gradations of injury having different monetary values). (*See* Staff Proposal at ii.)

[32] Staff Proposal at 5-10.

Regarding implementation, Staff recommend that the Commission require the IOUs to transition to the Cost-Benefit Approach in the next GRC cycle, beginning with PG&E's 2024 RAMP.[33]

5.1.3. Party Comments

MGRA, PG&E, TURN, and PCF support Staff's proposed transition to the Cost-Benefit Approach. MGRA notes that the changes outlined in the Staff Proposal are "relatively minor" and that "incremental change can be helpful."[34] Although supporting the Cost-Benefit Approach proposed by Staff, TURN notes that, the MAVF framework has an advantage in that it allows for the inclusion of Attributes in the risk model and calculates their Risk Scores without needing to first determine a dollar equivalent, which TURN states may be difficult and/or impractical. However, TURN states that "together, the Commission, utilities and intervenors can identify reasonable ranges of values for any new [A]ttribute identified" and subject to the Cost-Benefit Approach.[35]

Cal Advocates supports the shift to the Cost-Benefit Approach but raises a concern that, without a test drive phase by utilities prior to final adoption of the Staff Proposal's recommendations, the intended improvements to the current RDF may ultimately prove "ineffective."[36] Cal Advocates recommends the Commission require utilities to implement the Staff Proposal's recommendations in a test drive phase before the Commission adopts a shift to the Cost-Benefit Approach. According to Cal Advocates, the test drive phase should include time for sensitivity analyses to provide a better understanding of how dollar valuation

[33] *Id*. at V.

[34] MGRA Reply Comments at 2.

[35] TURN Opening Comments at 6.

[36] Cal Advocates Opening Comments at 2-3.

impacts utility risk assessment and mitigation proposals. Cal Advocates asserts that a test drive phase would also aid the decision-making process by allowing the Commission and parties to understand utility-proposed safety mitigations.

The Sempra Companies comment that they are "not necessarily opposed" to a shift to the Cost-Benefit Approach but have concerns that a discussion about Risk Attitude and Risk Tolerance have not yet taken place in this proceeding. According to Sempra Companies, "[R]isk [A]ttitudes and [T]olerance should be part of the current conversation to prevent wasted effort and additional significant rework in 2023."[37] Sempra supports a test drive of the Cost-Benefit Approach and states that "the Commission should create a new document to reflect the risk-informed decision-making framework they are adopting in its entirety."[38]

The Sempra Companies, MGRA, and PCF submitted reply comments in support of Cal Advocates' suggestion of a test drive. However, PG&E argues that a test drive is not necessary. PG&E "supports the adoption of the Staff Proposal and Phase II requirements with the understanding that Phase III will be dedicated to discussing and testing key issues."[39] PG&E comments that key topics such as Risk Tolerance and Risk Attitude should be deferred to Phase III but also notes that this would not afford PG&E sufficient time to implement any resulting changes in its Test-Year 2027 GRC cycle, beginning with its 2024 RAMP application. Therefore, PG&E argues that it should not be deemed out of compliance if it cannot implement any recommendations adopted in a subsequent phase of this proceeding prior to its Test-Year 2027 GRC cycle.

[37] Sempra Opening Comments at 12.

[38] *Id.* at 11.

[39] PG&E Reply Comments at 2-3.

SCE opposes Staff's recommended shift away from the MAVF to the Cost-Benefit Approach. According to SCE, the recommendations in the Staff Proposal "simply update the current flawed methodology and would provide no real incremental benefits to the parties."[40] SCE also asserts that the changes in the Staff Proposal are unnecessary, with parties being able to request or calculate a conversion from RSEs to Cost-Benefit Ratios. SCE contends it is essential to address questions about Risk Tolerance, Risk Attitude, surrogate metrics, uncertainty, tail risk, and other issues before adopting the recommendations in the Staff Proposal.

5.1.4. Discussion

We adopt Staff's proposal and direct the IOUs to implement the Cost-Benefit Approach in the RDF by implementing a dollar valuation of Attributes rather than the MAVF approach. This replaces the need for the utilities to determine Attribute weights and ranges as entailed in the MAVF framework adopted in the SA Decision. We direct the IOUs to implement the Cost-Benefit Approach in their next respective GRC cycles, beginning with PG&E's 2024 RAMP application. These changes are embodied in the modified Risk-Based Decision-Making Framework contained in Appendix A of this decision.

This modification of the SA Decision has several benefits. First, adopting the Cost-Benefit Approach means that comparable values and trade-offs in dollars for each Attribute will replace the current weights and ranges in the MAVF approach. This simplifies the RDF calculations we require of IOUs, as shown in Tables 2 and 3 above, and provides for greater clarity and transparency when assessing risks and mitigations.

[40] SCE Opening Comments at 3.

Second, this modification eliminates the need for IOUs to assign weights and ranges to Attributes in when performing risk assessments. This in turn allows us to eliminate the requirement of Ordering Paragraph 2 of the SA Decision that IOUs must set a 40 percent minimum weight to the Safety Attribute in all of their risk calculations. We acknowledge that the 40 percent minimum weighting represented the idea of weights as a reflection of the "general importance" of risks rather than the concept of the "relative importance" of risks based on Attribute ranges, which is what the Settlement Agreement provides for.[41] We agree with Staff that application of a 40 percent Safety weighting tends to obscure a range of improbable assumptions within a utility's RDF. It is appropriate to eliminate the 40 percent Safety weighting requirement here.

Third, replacing the MAVF approach with the Cost-Benefit Approach means that utilities, when using the RDF, will express Risk and Mitigation Benefits in dollars. Utilities will calculate Cost-Benefit Ratios for Mitigations by computing the dollar value of a Mitigation Benefit divided by a Mitigation cost estimate. A Cost-Benefit Approach with these elements will be more intuitively understandable and useful than utility computation of Risk and risk reduction scores, and RSE values, as required currently in the MAVF framework.

We agree with Staff that utility presentation of unitless Risk Scores, as required in the MAVF approach, has complicated interpretation of the IOUs' RAMP filings and thus have not supported transparency. We concur with Staff that the RSE values produced by the MAVF approach have had limited utility. While the RSE values produced by the MAVF approach allow for comparison of the relative cost-effectiveness of various mitigation measures, the RSE values do

[41] SA Decision at A-6 states "[w]eights are assigned based on actual Attribute measurement ranges, not a fixed weight arbitrarily assigned to an Attribute."

not indicate whether the Benefits of a proposed mitigation measure outweigh its costs. We also concur with Staff that requiring the IOUs to implement the Cost-Benefit Approach that monetizes Attributes will result in utility risk and Mitigation Benefit calculations that are more useful during review and consideration of RAMP and GRC filings.

We concur with Staff, and the majority of parties in this proceeding, that shifting to the Cost-Benefit Approach will improve the overall value of the RDF while providing additional information on whether the Benefits from a proposed mitigation exceed its costs. Further, shifting to the Cost-Benefit Approach now does not preclude the Commission from considering further refinements to the RDF, in the near future, which may include other issues raised by parties.

Although we adopt Staff's proposed Cost-Benefit Approach, we do not intend that the Cost-Benefit Ratios produced using this method must serve as the sole determinants of IOU proposals or Commission decisions on risk Mitigations. Instead, as with the RSE values produced by the MAVF approach, while Cost-Benefit Ratios are central to the evaluation of risk mitigations, they need not be the only consideration in the final selection of Mitigations. To reflect this nuance, we retain language included in the Settlement Agreement in our modified RDF requirements, as illustrated in Step No. 26 of the Risk-Based Decision-Making Framework contained in Appendix A of this decision, as follows:

> In the RAMP and GRC, the utility will clearly and transparently explain its rationale for selecting Mitigations for each risk and for its selection of its overall portfolio of Mitigations. The utility is not bound to select its Mitigation strategy based solely on the Cost-Benefit Ratios produced by the Cost-Benefit Approach.
>
> Mitigation selection can be influenced by other factors including, but not limited to, funding, labor resources, technology, planning and construction lead time, compliance requirements, Risk Tolerance

> thresholds, operational and execution considerations, and modeling limitations and/or uncertainties affecting the analysis. In the GRC, the utility will explain whether and how any such factors affected the utility's Mitigation selections.

We agree with TURN that an advantage of the MAVF framework over the Cost-Benefit Approach is that the MAVF framework allows for the inclusion of risk Attributes without the need to have a dollar valuation associated with that risk Attribute. We also agree with TURN that the Commission and parties should be able to develop a reasonable standard dollar valuation for the Attributes for use in the Cost-Benefit Approach we adopt here.

We agree with MGRA that the transition from an MAVF framework to the Cost-Benefit Approach is an incremental change, but one that will dramatically increase the transparency and usefulness of the RDF. Section 5.4 and Appendix A of this decision summarize our adopted modifications from moving from the current MAVF framework to the Cost-Benefit Approach.

We disagree with SCE that adopting the Cost-Benefit Approach will not provide incremental benefits in terms of transparency to parties. To the contrary, shifting to the Cost-Benefit Approach will improve the overall value of the RDF while providing additional information on whether the Benefits from a proposed mitigation exceed its costs. Although we intend to examine the additional issues SCE identifies (*i.e.* Risk Tolerance, Risk Attitude, uncertainty, tail risk and other issues) in Phase III of this proceeding, it is not necessary to do so before adopting the Cost-Benefit Approach. These issues pertain also to the MAVF approach and require our attention more generally.

We disagree with party comments regarding the need for a test drive of the Cost-Benefit Approach before adopting it. As MGRA comments, the revisions to the current RDF framework are incremental. With every RAMP

filing, parties learn ways to improve upon the risk analysis. Each RAMP effectively serves as a learning exercise with new ideas, lessons learned, and additional incremental changes.

Rather than a test drive, we direct PG&E to conduct at least one workshop that demonstrates implementation of the Cost-Benefit Approach in the RDF. The workshop should occur at least 30 days prior to PG&E's filing of its 2024 RAMP application. At this pre-RAMP filing workshop, PG&E should illustrate how a dollar valuation approach impacts its risk assessment and Mitigation proposals. PG&E's pre-RAMP filing workshop should also include a discussion of assumptions and methodologies used to estimate Probabilities and Consequences associated with high-priority risks.

We agree with the recommendation in the Staff Proposal that IOUs should be afforded the same flexibility to incorporate Risk Attitude and Risk Tolerance into the Cost-Benefit Approach as they would under the current MAVF structure. However, we intend to further explore the application of Risk Attitude, Risk Tolerance, uncertainty, and tail risks later in this or a successor proceeding. To support this, we authorize continuation of the TWG established in D.21-11-009. We authorize Staff and parties participating in the TWG to prepare and propose recommendations regarding the application of Risk Attitude, Risk Tolerance, uncertainty, and tail risks in the RDF for consideration.

We adopt Staff's and the Sempra Companies' suggestion to replace the Settlement Agreement adopted in the SA Decision with a new document we call the "Risk-Based Decision-Making Framework." This document is contained in Appendix A of this decision. The Risk-Based Decision-Making Framework in Appendix A includes the entirety of the changes we adopt in this decision (*see* Section 5.4).

5.2. Dollar Valuation of Safety and Reliability Consequences

5.2.1 Staff Proposal

As part of a shift to the Cost-Benefit Approach to risk assessment using the RDF, Staff recommend the Commission require the IOUs to use a standard set of parameters and formulas to monetize the Consequences of risks. Staff's proposed monetization methods generally rely upon government or industry sources, where available. However, Staff propose the Commission allow an IOU to deviate from a government or industry standard by using a different dollar value so long as the IOU can offer a reasonable justification supported by research and data.

5.2.1.1. Dollar Valuation of Safety Consequences

Staff recommend the Commission require the IOUs to use U.S. DOT guidance on the VSL[42] to identify the dollar value of Safety Consequences. Staff state that the DOT updates the VSL annually based on changes to income and inflation. DOT guidance on the VSL for 2021 is $11.8 million.[43]

As an alternative to the DOT VSL, Staff recommend the IOUs be allowed to choose a VSL value between the high and low ranges provided by the U.S. HHS.[44] Staff recommend that the Commission require an IOU choosing this approach to justify its choice and to provide a sensitivity analysis for the Cost-Benefit Ratio impact of its choice as compared to the standard DOT VSL. The

[42] Also referred to as the value of mortality reduction.

[43] Staff Proposal at 13-14.

[44] *See* HHS: "Updating Value per Statistical Life Estimates for Inflation and Changes in Real Income," April 2021, available as of October 17, 2022 at: https://aspe.hhs.gov/sites/default/files/2021-07/hhs-guidelines-appendix-d-vsl-update.pdf

high and low VSL estimates provided by HHS for the base year 2021 are $5.4 and $17.5 million.[45]

Staff propose two methods for the IOUs to use to derive a monetary value for injury prevention. The first method is consistent with all of the IOUs' previous RAMP filings and values a serious injury as 0.25 of a fatality. The second method involves using more granular data at the injury severity level if data is available. Staff state that DOT provides a table detailing what fraction of the VSL should apply to an injury based on the injury's severity level.[46]

With respect to wildfire risk, Staff note that the use of the DOT VSL is applicable to death and injury caused by direct exposure to wildfire but is not well designed to handle injury from wildfire smoke. As the Commission has yet to consider valuation of smoke-related injuries, Staff propose that, for now, the IOUs should include research-based estimates of the impacts of wildfire smoke in their risk assessments, rather than use the VSL.[47]

5.2.1.2. Dollar Valuation of Electric Reliability Consequences

Staff recommend the Commission require the IOUs to use the Lawrence Berkeley National Laboratory (LBNL) Interruption Cost Estimate (ICE) Calculator as the first step toward dollar-valued quantification of electric reliability risk.[48] Staff assert that the ICE Calculator produces a dollar estimate of the cost to customers from electric service outages, with results that are differentiated by customer type (*i.e.*, residential, commercial, and industrial) and

[45] *Ibid*.

[46] DOT VSL Guidance – 2021 Update at 10. Available as of October 17, 2022 at: https://www.transportation.gov/resources/value-of-a-statistical-life-guidance.

[47] Staff Proposal at iii, 11-15.

[48] LBNL ICE Calculator, available as of October 28, 2022 at: https://icecalculator.com/home

the duration of the outage. Staff state that while the ICE Calculator is currently unable to accurately calculate the impacts from outages lasting longer than sixteen hours, the ICE Calculator nonetheless represents an improvement over the CMI method currently used by IOUs, which assumes that all customer impacts are equal regardless of the outage duration or customer type.[49]

Staff suggest that the Commission could consider future improvements to the valuation of electric reliability risks, including the availability of the ICE 2.0 Calculator, in later phases of this rulemaking.[50] In the meantime, Staff recommend the Commission direct the IOUs to participate in the development of the ICE 2.0 Calculator to make the calculator more applicable. The cost of participating in development of the ICE 2.0 Calculator is $600,000.[51] Staff also note that LBNL is currently studying the impacts of more prolonged outages in its Power Outage Economic Tool (POET) project with Commonwealth Edison Company in Illinois and that this project could be the basis for a future study to include California utilities.[52]

5.2.1.3. Dollar Valuation of Gas Reliability Consequences

Staff state that they have been unable to find a suitable and currently available standard that the IOUs could use to identify a dollar value for gas reliability. Until such a standard is developed, Staff recommend the IOUs apply a dollar value for gas reliability using the Cost-Benefit Approach based on the implied value from each utility's most recent RAMP filing. The implied gas

[49] Staff Proposal at iv.

[50] For updates on ICE 2.0 *see*: https://icecalculator.com/recent-updates

[51] *LBNL Initiative to Update the Interruption Cost Estimate Calculator, Frequently Asked Questions* (ICE FAQ) at 3 (Appendix C of this decision).

[52] Staff Proposal at iii-iv, 16-18.

reliability dollar value in each utility's most recent RAMP filing was produced using an MAVF Risk Score calculation. The most recent RAMP filing for each IOU is the 2020 RAMP filing for PG&E, the 2021 RAMP filing for the Sempra Companies, and the 2022 RAMP filing for SCE. If a utility can provide an alternative gas reliability value based on research, Staff recommend the Commission allow the IOU to use this value, if it includes this research to support the alternative value in its RAMP filing.[53]

5.2.2. Party Comments

Regarding the dollar valuation of Safety Consequences, MGRA, TURN, and PG&E support the Staff Proposal. PCF also supports Staff's proposal to utilize DOT VSL as guidance. However, PCF has concerns that allowing the IOUs to use a range of VSL values opens the door to manipulation of those values, which renders the RDF process and results less transparent and potentially less accurate.[54]

The Sempra Companies comment that they do not oppose a Commission-specified VSL, as long as utilities are able to incorporate aversion to catastrophic risks using Risk Attitude Functions and tail risk estimation.[55]

SCE opposes Staff's VSL recommendation due to its general opposition to the Cost-Benefit Approach. SCE states that VSL does not directly consider how SCE makes business decisions and that placing a specific value on life brings up ethical issues.

Regarding the dollar valuation of electric reliability, PG&E supports Staff's recommendation that the Commission adopt a standard value for electric

[53] *Id.* at iv, 19-21.

[54] PCF Comments at 4.

[55] Sempra Companies Comments at 9-10.

reliability. PG&E also stresses that additional work is needed to implement Staff's recommendation, including maintaining consistency across proceedings and addressing changes that may occur from the use of the ICE Calculator. PG&E requests the Commission establish appropriate balancing account treatment for the funds necessary to participate in ICE 2.0 and the potential development of the POET project.

TURN supports Staff's recommendation on monetizing the value of electric reliability but recommends that if a utility relies on its own model, the Commission should also require the utility to provide an analysis comparing the results of its "equivalent or better" cost model to the ICE Calculator approach. MGRA stresses the Commission should ensure that PSPS is properly characterized and quantified in terms of both Risk and Benefits in a future phase of the proceeding. SCE generally does not support using the ICE Calculator due to its general opposition to the Cost-Benefit Approach.

Regarding the dollar valuation of gas reliability, PG&E and TURN support Staff's recommendation. PG&E points out that additional work needs to take place to implement Staff guidance, including calibration of gas reliability valuations tested for reasonable results across a wide range of scenarios. TURN states that further development and research on this issue should be prioritized and, at minimum, parties should work to identify a reasonable range for this value. PCF opposes the Staff recommendation on the basis that the implied values are a result of MAVF Risk Scores that do not provide accurate or realistic assessments of risks.

5.2.3. Discussion

We adopt Staff's recommendation to require a dollar valuation of the Safety Attribute in the Cost-Benefit Approach in the RDF using the DOT VSL as

the standard value. We direct the IOUs to apply the published DOT VSL as the standard value to express the Safety Attribute, adjusted for the base year of their respective RAMP filings. For example, in 2021, the published DOT VSL is $11.8 million.[56]

This change will result in a number of improvements. First, the change is warranted because the use of weights and ranges in the current MAVF approach has at times produced unreasonable "implied VSLs" in utility RAMP filings. For instance, the Staff Proposal states that recent RAMP filings contained implied VSLs of approximately $100 million. This amount is approximately ten times higher than any VSL contained in published in guidance documents across government and industry sources.[57] The impact of an implied VSL of this level is that it makes certain Mitigations appear more beneficial than they would otherwise. By requiring use of the DOT VSL, the utilities will henceforth directly express the Safety Attribute in dollars. This will add transparency and accountability to our review processes.

We disagree with SCE's assertion that adopting use of the DOT VSL raises unresolvable ethical issues. VSL is a concept from economics - an estimate of how much people are willing to pay for a reduction in the risk of death. While the MAVF framework does not explicitly address the VSL concept, estimates of risk reduction efficacy, the RSEs, implicitly place a value on the risk mitigation benefit associated with decreasing the likelihood of mortalities. Adding the VSL

[56] DOT VSL Guidance – 2021 Update at 7-8. Available here as of October 28, 2022: https://www.transportation.gov/resources/value-of-a-statistical-life-guidance.

[57] *See* examples: *SPD Staff Evaluation of PG&E's 2020 RAMP* (A.20-06-012) at 17 and *SPD Staff Evaluation of SDG&E and SoCal Gas RAMP* (A-21-05-011) at 8.

makes this explicit rather than obfuscating the issue. Its use here benefits risk assessment processes by promoting transparency and consistency across utilities.

We agree with Staff that the IOUs should be afforded some flexibility to choose a different dollar valuation for the Safety Attribute other than the DOT VSL for a given year. We recognize that an IOU may find that a VSL estimation methodology from a source other than DOT presents a more accurate representation of its customers. However, this flexibility should also be bounded to some degree.

We authorize the IOUs to choose a different dollar valuation for the Safety Attribute from the DOT VSL source adopted here. However, if an IOU makes this choice, it must choose a VSL that sits between the high and low ranges provided by the HHS, adjusted for the base year of the relevant RAMP filing. The IOU must also justify its choice of an alternative VSL and provide a sensitivity analysis for the Cost-Benefit Ratio impact of its choice compared to the standard DOT VSL. Requiring these additional elements adds transparency, supports Commission review and helps ensure that the IOUs employ reasonable dollar values in their calculations.

We direct the IOUs to apply one of two following methods for the dollar valuation of injury prevention when implementing the Cost-Benefit Approach. For the first method, the IOU shall weigh a serious injury as 0.25 of a fatality consistent with all IOUs' prior RAMP filings. For the second method, which involves more granularity at the injury severity level, if the data is available, the IOU shall use the following DOT estimates for the value of injury prevention corresponding to a fraction of a fatality:

Table 4: Value of Preventing Injuries as a Fraction of VSL, by Injury Severity Level[58]

Injury Severity	Fraction of VSL
Minor	0.003
Moderate	0.047
Serious	0.105
Severe	0.266
Critical	0.593
Unsurvivable	1.000

Source: DOT, Valuation of a Statistical Life Guidance, at 10.

Requiring use of these values provides consistent standard dollar valuations as a fraction of VSL for injuries, which increases transparency.

We direct the IOUs to use the most current version of the LBNL ICE Calculator to determine a standard dollar valuation of electric reliability risk for the Reliability Attribute. Utility quantification of electric reliability risk in the current MAVF framework does not address central considerations if electric service is lost, such as the categories of customers affected and varying outage durations. The ICE Calculator accounts for the different impacts on three customer categories (residential, commercial, industrial) and models the effects of varying outage durations based on inputs such as System Average Interruption Duration Index, System Average Interruption Frequency Index, and the number of customers for each customer category. The ICE Calculator is also specific to California. Utility use of the ICE Calculator in the Cost-Benefit

[58] DOT VSL Guidance - 2021 Update at 9-10. Available here as of October 28, 2022: https://www.transportation.gov/sites/dot.gov/files/2021-03/DOT%20VSL%20Guidance%20-%202021%20Update.pdf

Approach offers a first step towards improving the quantification of electric reliability risk.

However, we also authorize the IOUs to use a different dollar valuation for electric reliability risk to that included in the ICE Calculator if they prefer. If an IOU makes this choice, it shall provide an analysis comparing the results using its preferred electric reliability risk dollar valuation model to the results using the ICE Calculator. This flexibility is warranted as the ICE Calculator may not offer an accurate enough representation of outages unique to an IOU's specific customer-base and service territory. We also agree with TURN that if an IOU uses a different model to determine the dollar valuation of electric reliability risk, it must include, in its RAMP filing, an analysis comparing the results of its "equivalent or better" cost model against the results from the ICE Calculator and include the model used, or links to it.

As recommended by Staff, we direct the IOUs to participate in the LBNL customer survey process needed to incorporate California data into the ICE 2.0 model.[59] The LBNL customer survey process seeks to more accurately value reliability investments that reduce or avoid interruptions lasting up to 24 hours and seeks to reflect utility recommendations that improve the tool's design and performance.[60] Developing a reasonable valuation of electric reliability risk is an

[59] *See* LBNL ICE 2.0 Survey Design Memorandum (August 26, 2022), available as of October 28, 2022 at: ICE-2.0-Survey-Design-Memo.pdf (icecalculator.com).

[60] ICE FAQ at 2 (Appendix C of this decision): "Berkeley Lab envisions a sequential and overlapping set of survey activities – each survey will be initiated based on the date that a contract with Berkeley Lab is signed. Specifically, Berkeley Lab expects to execute contracts with sponsoring utilities starting in late 2021 and into early 2022. Survey redesign, including pre-testing, is expected to be completed in the second half of 2022. Survey administration will begin at the start of 2023 with the majority of the surveys completed by the end of 2023. The updated ICE Calculator is planned for release in 2024 (subject to the scope of participation in the

Footnote continued on next page.

ongoing process and participation in the survey by the IOUs will contribute to a more precise valuation of electric reliability.

However, because such participation has costs, we authorize the IOUs to include costs for participation in ICE 2.0 in their next GRC application, up to $600,000 each, which is the cost of participation provided by LBNL (*see* Appendix C).[61] We also understand from Staff that a LBNL ICE project similar to the ongoing POET project for Midwestern utilities may become available for participation by California utilities, although the timing and costs are unknown. As described by Staff, an LBNL POET project would capture the economic impacts associated with longer term durations, more than 24 hours, and/or consecutive outages that have similar cumulative impacts.[62] We direct the IOUs to participate in this LBNL project if it is initiated for California utilities.

We agree with MGRA and others that there are limitations to use of the ICE Calculator with regards to PSPS and that the proper quantification of PSPS risk and Benefits should be explored further in a future phase of this proceeding or in a successor proceeding.

We direct each IOU to apply a dollar value for gas reliability in the Cost-Benefit Approach based on the implied value from the IOU's MAVF Risk Score calculation included in its most recent RAMP filing. The IOUs' most recent RAMP filings are the 2020 RAMP filing for PG&E, the 2021 RAMP filing for the Sempra Companies, and the 2022 RAMP filing for SCE. The IOUs should

---

Initiative, discussed below). Along with the release, Berkeley Lab will publish a final technical report documenting all phases of the initiative."

[61] ICE FAQ at 3 (Appendix C of this decision).

[62] Staff Proposal at 18.

continue to use these implied dollar values for gas reliability until such time as we adopt an alternate standard dollar valuation in this or a successor proceeding.

Section 5.1.4 authorizes continuation of the TWG established in D.21-11-009 and identifies one task in scope. Here we additionally encourage the TWG to explore ways to identify a suitable standard that could be used for establishing a dollar valuation for gas reliability and, if feasible, to recommend such a standard. We also encourage the TWG to explore if there is a need for the Commission to adopt a process to formally review and authorize IOUs' proposed exceptions to the standard dollar valuations we adopt here and, if so, to provide recommendations on this issue for consideration in a future phase of this proceeding or in a successor proceeding.

5.3. Incorporating Environmental and Social Justice Impacts into the RDF

The Phase II Scoping Memo asks if the Commission should consider impacts on ESJ communities of decisions and activities in this proceeding, including the extent to which actions taken here impact achievement of any of the nine goals of the Commission's ESJ Action Plan.[63]

In February 2019, the Commission adopted its ESJ Action Plan as a comprehensive strategy and framework for addressing ESJ issues in each proceeding. Version 2.0 of the ESJ Action Plan was approved by the Commission on April 7, 2022.[64] The most recent update to the ESJ Action Plan reinforces its focus on equity, defined as "increasing access to power, redistributing and

[63] Phase II Scoping Memo at 5.

[64] The ESJ Action plan is available on the Commission's website, available as of September 7, 2022 at: https://www.cpuc.ca.gov/news-and-updates/newsroom/environmental-and-social-justice-action-plan.

providing additional resources, and eliminating barriers to opportunity, to empower low-income communities of color to thrive and reach full potential."[65]

The ESJ Action Plan includes one action item that is directly related to risk assessment. Action Item 4.1.4 "require[s] IOUs to overlay planned infrastructure mitigations on the CalEnviroScreen[66] map to identify what portions of the mitigations would occur within disadvantaged communities when geographic locations of proposed mitigations are known."[67]

5.3.1. Staff Proposal

To begin incorporating ESJ impacts into the RDF, the Staff Proposal recommends the Commission direct PG&E to pilot incorporating use of CalEnviroScreen into the RDF, including consideration of Disadvantaged and Vulnerable Communities (DVC),[68] with the pilot results to be included in PG&E's 2024 RAMP filing.[69] Specifically, Staff recommend an IOU pilot be designed to:

- Action Item #1: Consider equity in the evaluation of consequences and risk mitigation using CalEnviroScreen or other data sources to better understand how risks may

[65] ESJ Action Plan version 2.0. at 8.

[66] CalEnviroScreen refers to the Office of Environmental Health Hazards Assessment California Communities Environmental Health Screening Tool. Additional information available as of September 7, 2022 here: https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40.

[67] ESJ Action Plan version 2.0. at 43, Action Item 4.1.4.

[68] *See* D.20-08-046 at 13, the Commission's *Decision on Energy Utility Climate Change Vulnerability Assessments and Climate Adaptation in Disadvantaged Communities (Phase 1, Topics 4 and 5)*. "A DVC for purposes of this proceeding consists of communities in the 25% highest scoring census tracts according to the most current versions of the California Communities Environmental Health Screening Tool (CalEnviroScreen), as well as all California tribal lands, census tracts that score in the highest 5% of Pollution Burden within CalEnviroScreen, but do not receive an overall CalEnviroScreen score due to unreliable public health and socioeconomic data, and census tracts with median household incomes less than 60% of state median income."

[69] Staff Recommendations at 25.

disproportionately impact some communities more than others;

- Action Item #2: Consider investments in clean energy resources to improve safety and reliability and mitigate risks in ESJ communities;
- Action Item #3: Consider Mitigations that improve local air quality and public health, including observations from Assembly Bill (AB) 617 community air protection program;
- Action Item #4: Evaluate how proposed mitigations may increase climate resiliency in ESJ communities;
- Action Item #5: Evaluate if estimated impacts from wildfire smoke disproportionately impact ESJ communities;
- Action Item #6: Estimate the extent to which risk mitigation investments disproportionately benefit populations outside of ESJ communities; and
- Action Item #7: Enhance outreach and public participation opportunities for ESJ communities to meaningfully participate in risk mitigation and climate adaptation activities consistent with D.20-08-046.

Staff recommend PG&E produce a White Paper: (a) identifying areas for further exploration; (b) identifying challenges faced incorporating ESJ issues into the RDF; and (c) discussing how to better target Mitigations that improve local air quality and climate resilience in DVCs. Staff suggest PG&E's White Paper be filed concurrently with its RAMP filing. Staff also recommend that the Sempra Companies conduct their own ESJ Pilot Study and White Paper for filing with their 2025 RAMP filing, unless different requirements are developed in the intervening time.[70]

[70] Staff Proposal at iv-v, 22-26.

5.3.2. Party Comments

Parties generally support Staff's ESJ Pilot proposal.

SCE states its support for the ESJ Pilot effort and recommends the creation of an IOU advisory panel to ensure "the pilots can be designed and carried out in a way that is applicable to and consistent across all the IOUs' service territories."[71] Because there are multiple overlapping community definitions, including "DVC communities" and "ESJ communities," SCE recommends the Commission clarify which geographic areas and demographics should be included in the ESJ Pilot.

MGRA and TURN argue that the Commission should require utilities in ESJ Pilots to consider the risks that unaffordable rates pose to human health in the RAMP filing. MGRA emphasizes in reply comments that issues surrounding affordability relate to choices surrounding Risk Tolerance since Risk Tolerance should be considered at the societal scale. SCE does not believe that RAMP is the appropriate forum to evaluate general customer affordability issues.

Regarding ESJ Pilot Action Item #5, PG&E recommends the Commission amend this action item to clarify that the evaluation should only consider the impacts of wildfire smoke from utility-caused wildfires within a utility's service territory. PG&E states that it does not consider itself as the appropriate entity to conduct studies about the health impacts of wildfire smoke. PG&E suggests that a program managed by the California Air Resources Board (CARB) may be appropriate as a source of information to examine the health impacts of short-term repeated exposure to wildfire smoke.[72] PG&E asserts it will only be able to

[71] SCE Opening Comments at 12.

[72] PG&E Opening Comments at 6, citing CARB, "Examining the health impacts of short-term repeated exposure to wildfire smoke: Funding Year 2021 – 2022 Proposal Solicitation."

Footnote continued on next page.

use public studies available in 2023 for such an effort. SCE argues that ESJ Pilot Action Item #5 should be considered in a forum with all of the IOUs and parties, and not in a Pilot that only targets a subsection of the population.

PG&E objects to the way the ESJ Pilot Action Item #6 is written since it appears to assume that mitigation investments disproportionately benefit populations outside of ESJ communities. Accordingly, PG&E recommends that ESJ Pilot Action Item #6 be re-formulated as follows: "Estimate the extent to which risk mitigation investments impact ESJ communities."[73]

To ensure the IOUs utilize CalEnviroScreen, TURN requests the words "or other data sources" be removed from ESJ Pilot Action Item #1.

TURN recommends the utilities be required to consult with the Commission's Disadvantaged Communities' Advisory Group (DACAG) and the Community-based Organization Working Group (CBOWG) prior to the IOUs finalizing their ESJ Pilot Study plans.[74]

PCF requests the Commission clarify that the requirements listed as applicable to PG&E's ESJ Pilot apply to all ESJ Pilots, including any ESJ Pilots conducted by the Sempra Companies.

PG&E requests that the due date for the White Paper be revised to two months after the 2024 RAMP filing due date. Since the White Paper is intended to address the ESJ challenges associated with the filing as it occurs, PG&E asserts

Available as of October 17, 2022 at: https://ww2.arb.ca.gov/resources/documents/examining-health-impacts-short-term-repeated-exposure-wildfire-smoke

[73] PG&E Opening Comments at 7.

[74] Details about the CBOWG can be found in the *Decision Requiring Development of Community Based Organization Case Management Pilot Program to Reduce Arrearages Associated with the Covid-19 Pandemic.* (D. 22-04-037).

there would not be sufficient time to properly review those challenges if the White Paper is submitted currently with the RAMP filing.

5.3.3. Discussion

We adopt Staff's proposal for an ESJ Pilot, with modifications. We agree with SCE that implementation of the ESJ Pilot should be consistent across all of the IOU service territories so that lessons learned can be relevant to all the IOUs. Therefore, we direct PG&E, the Sempra Companies, and SCE to implement the ESJ Pilot Study as specified below.

The ESJ Pilots begin the process of ensuring the IOU's risk assessments and risk mitigations address issues of equity and the needs of the most vulnerable. Although the Staff Proposal did not include a recommendation that SCE participate in the ESJ Pilot effort, we are confident that SCE can ably do so and will contribute important insights since SCE's Pilot results will not be filed until 2026.

We direct the utilities to provide timely information to Commission Energy Division Staff, who will consult with the DACAG and the CBOWG or their designees, prior to finalizing their ESJ Pilot Study plans. The scope of consultation with the DACAG and the CBOWG should include Pilot design, metrics, and methodology. The IOUs shall also work with Commission Energy Division Staff responsible for coordinating with the DACAG and CBOWG to make sure the ESJ Pilot Study is on an appropriate DACAG and CBOWG meeting agenda in time for these groups to provide meaningful feedback on the ESJ Pilot Study plans. This will help ensure that the experience reflected in these groups informs Pilot design and execution.

We direct PG&E to file the results of the ESJ Pilot with its 2024 RAMP filing. For all IOUs, ESJ Pilot results should include implementation details,

outputs, and outcomes from our adopted seven ESJ Pilot Action Items listed below and should summarize how the IOU incorporated feedback from DACAG and CBOWG into its final ESJ Pilot design and implementation. Similarly, we direct the Sempra Companies to file the results of their ESJ Pilot with their 2025 RAMP filing and direct SCE to file the results of their ESJ Pilot with their 2026 RAMP filing.

We concur with Staff that the ESJ Pilot should define and consider DVCs as defined in D.20-08-046, namely as:

- the 25 percent highest scoring census tracts according to the most current version of CalEnviroScreen;
- all California tribal lands;
- census tracts that score in the highest five percent of Pollution Burden within CalEnviroScreen, but do not receive an overall CalEnviroScreen score due to unreliable public health and socioeconomic data; and,
- census tracts with median household incomes less than 60 percent of state median income.[75]

For clarity, we change references of "ESJ communities" to "DVCs" within the ESJ Pilot Action Items. Using the narrower definition of DVC for the ESJ Pilots is important because it will ensure that the resources directed towards the ESJ Pilot addresses the needs of the most vulnerable.

We direct the IOUs to each file a White Paper that:

a) identifies areas for further exploration and challenges they faced incorporating ESJ into the RDF;

b) discusses how to better target Mitigations that improve local air quality; and

[75] D.20-08-046 at 13.

c) explores how to better target Mitigations that improve climate resilience in disadvantaged and vulnerable communities.

The due date for each IOU's White Paper is two months after its next RAMP filing deadline. These dates are reasonable and allow each IOU the time to reflect RAMP considerations into the ESJ Pilot results. The completion of an ESJ Pilot Study White Paper by each IOU supports the long-term goal of advancing equity and resiliency throughout California.

We do not require the IOUs to address issues surrounding the affordability of rates or risk mitigation in their ESJ Pilots, as suggested by MGRA and TURN. However, accounting for the health and safety impacts of rate increases may be an appropriate way for this Commission to consider the financial hardships caused by rate increases, which disproportionately impact lower-income Californians. Therefore, we encourage the IOUs to use the ESJ Pilots as an opportunity to consider the connections between the intertwined issues of affordability, risk mitigation, and societal Risk Tolerance and possible methods to address these issues in the future.

We agree with TURN that the phrase "other data sources" should be removed from ESJ Pilot Action Item #1.

We agree with Staff that the ESJ Pilot Action Item #5, addressing the estimated impacts of wildfire smoke, is within scope of the ESJ Pilot Study and retain this element in the ESJ Pilots we require here. We also agree with PG&E that the Pilot Study should focus its evaluation of the impact of wildfire smoke on DVCs within a utility's service territory and based on utility-caused wildfires within the service territory. We authorize the IOUs to use public studies of the health impacts of wildfire smoke available in 2023 and thereafter to structure the risk methodology in their ESJ Pilots, which ensures the IOUs efforts to address

the health impacts of wildfires are based on the best available scientific analysis. We also encourage the IOUs to draw upon the research results from CARB's 2021-2022 solicitation regarding health impacts of short-term exposure to wildfire smoke, identified by PG&E.[76]

We accept PG&E's proposed change of wording to ESJ Pilot Action Item #6 but stress that IOU analysis related to this action item should emphasize impacts and benefits. We adopt ESJ Pilot action Item #6 as "[e]stimate the extent to which risk mitigation investments impact and benefit DVCs independently and in relation to non-DVCs in the IOU service territory."

After incorporating the modifications discussed above, we direct the IOUs to address the following Action Items in their Pilot Study:

- Action Item #1: Consider equity in the evaluation of Consequences and risk mitigation within the RDF, using the most current version of CalEnviroScreen to better understand how risks may disproportionately impact some communities more than others;
- Action Item #2: Consider investments in clean energy resources in the RDF, as possible means to improve safety and reliability and mitigate risks in DVCs;
- Action Item #3: Consider Mitigations that improve local air quality and public health in the RDF, including supporting data collection efforts associated with AB 617 regarding community air protection program;
- Action Item #4: Evaluate how the selection of proposed mitigations in the RDF may impact climate resiliency in DVCs;
- Action Item #5: Evaluate if estimated impacts of wildfire smoke included in the RDF disproportionately impact DVCs;

[76] *See* footnote 70.

- Action Item #6: Estimate the extent to which risk mitigation investments included in the RDF impact and benefit DVCs independently and in relation to non-DVCs in the IOU service territory; and
- Action Item #7: Enhance outreach and public participation opportunities for DVCs to meaningfully participate in risk mitigation and climate adaptation activities consistent with D.20-08-046.

Consistency in the required Action Items across the IOUs will allow for comparison of results across utilities and will allow for broad insights by the Commission and parties. Additionally, while this decision establishes clear parameters for the IOUs to follow in their Pilots, our intent is also to provide the IOUs with some flexibility to structure the Pilots in a manner that is most beneficial to addressing ESJ issues within their service territory.

5.4. Modification of the Settlement Agreement in Appendix B

The Staff Proposal suggests that the integration of the Cost-Benefit Approach into the RDF would require modifications to the Settlement Agreement. A redlined version of the Settlement Agreement appended to the Staff Proposal exhibits these modifications. Staff modifications include the concept we have adopted here, the Cost-Benefit Approach, and a new step added to the risk analysis the IOUs must conduct as part of their RAMP and GRC filings, which Staff calls "Principle 5- Monetized Value of Attributes."

5.4.1. Party Comments

PG&E provides detailed comments on the modifications to the Settlement Agreement proposed by Staff.[77] PG&E's comments focus on developing

[77] PG&E Comments on Staff Proposal at Attachment 1.

additional terms and definitions for concepts central to the RDF. The Sempra Companies suggest that the Commission should replace a redlined Settlement Agreement with a new document that better reflects the RDF.

5.4.2. Discussion

We adopt Staff's proposed modifications to the Settlement Agreement adopted in the SA Decision with some additional refinements. We agree with Staff, the Sempra Companies, and PG&E that we should adopt a new document, entitled the "Risk-Based Decision-Making Framework," to encapsulate the modifications to the Settlement Agreement adopted here. This RDF, contained in Appendix A, supersedes and replaces the Settlement Agreement adopted in the SA Decision in its entirety. Specifically, we adopt the following modifications:

- We incorporate D.21-11-009 Appendix D: 2021 S-MAP Revised Lexicon"[78] into the Definitions section of the document. In some instances, we have adjusted the language of the older definitions so that they are more accurate. This clarifies the pre-existing language used in the RDF.
- We change all references to the MAVF to "Cost-Benefit Approach." This term is a more accurate description of the analytical tool now used in the RDF.
- We remove the definitions of the Settlement Agreement and Settling Parties because they are no longer relevant to the new document.
- We add Step 1A No. 6, which details requirements for the monetization of natural units. This change is consistent with a shift to using a "Cost-Benefit Approach," which creates a single measurement of value represented in dollars.

[78] D.21-11-009 at Appendix D: 2021 S-MAP Revised Lexicon https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M407/K950/407950875.PDF

- We change Step 3 No. 25 from calculating Risk Spend Efficiencies to calculating a Cost-Benefit Ratio. We also change all references to "RSEs" in Step 3 No. 26 and No. 27 to "Cost-Benefit Ratios." This term more accurately describes the RDF process we require here.
- We accept many suggested modifications for the Settlement Agreement made by PG&E and, based on this, add and define new concepts such as "Risk Adjusted Levels of an Attribute," "Risk-Adjusted Attribute Value," and "Risk Attitude Function." These changes clarify and properly articulate the processes included in the refined RDF.
- In some cases, we only partially accept or reject PG&E's suggestions. For instance, we partially accept the definition of "Cost-Benefit Analysis" suggested by PG&E but apply this to the term "Cost-Benefit Approach." PG&E's suggestion improves upon Staff's definition but contains a grammatical error that we corrected. Similarly, with regard to Step 1A No. 7 as well as Step 3 No. 13, No. 18 and No. 21, PG&E's suggestions improve upon Staff's explanation of these steps. We reject PG&E's suggested term, the "Monetary Risk Equivalent Approach," and the associated definition because this is not an easily understandable phrase. Using it would obscure the Cost-Benefit Approach that we require here in the RDF.

To smooth the transition to these new definitions, we clarify that in case of conflict with other usages of these terms, the revised or new definitions supersede those other usages and definitions. The definitions and transition approach we adopt are reasonable and practicable.

6. Comments on Proposed Decision

The proposed decision of Commissioner Clifford Rechtschaffen in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were allowed under Rule 14.3 of the Commission's

Rules of Practice and Procedure. Comments were filed on _____, and reply comments were filed on _____ by _____.

7. Assignment of Proceeding

Clifford Rechtschaffen is the assigned Commissioner and Cathleen A. Fogel and Ehren D. Seybert are the assigned ALJs in this proceeding.

Findings of Fact

1. The Commission adopted the RDF in the SA Decision and directed the large IOUs to use the RDF to identify, assess, and rank safety risks and potential mitigations. A central component of the RDF was the MAVF approach.

2. The unitless Risk Scores required in the MAVF approach have made it difficult to interpret IOUs' RAMP filings and have not adequately supported transparency.

3. The RSE values produced by the MAVF approach have had limited usefulness, because while they allow for comparison of the cost-effectiveness of various mitigation measures, they do not show whether the Benefits of a proposed mitigation measure outweigh the costs.

4. Requiring the IOUs to use the Cost-Benefit Approach, which monetizes Attributes, provides a more transparent way for the IOUs to calculate Risk and risk reduction Benefits in the RDF as compared to the MAVF approach adopted in the SA Decision.

5. Dollar valuation of risks is common practice in risk assessment across various industries.

6. Requiring a standard dollar valuation of Attributes in the RDF eliminates the need to assign weights and ranges to Attributes, which is prone to misapplication and misunderstanding in the MAVF approach.

7. Requiring a standard dollar valuation of Attributes eliminates the need for a minimum 40 percent Safety weighting found in the SA Decision Ordering Paragraph 2, which did not reflect the relative nature of value weighting within the MAVF and could obscure a range of improbable assumptions with a utility's RDF.

8. The Cost-Benefit Approach expresses Risk in dollars and is more intuitively understandable than the unitless Risk Score value in the MAVF framework.

9. Requiring the Cost-Benefit Approach produces a Cost-Benefit Ratio for a Mitigation (Mitigation Benefits expressed in dollars divided by the cost of the Mitigation) that can be ranked against other Mitigation Cost-Benefit Ratios and that provides insight as standalone cost-efficiency metric.

10. Requiring a shift from the MAVF framework to the Cost-Benefit Approach leaves most RDF elements intact, resulting in an incremental but important increase in clarity and understandability.

11. As with the RSE values produced by the MAVF approach, Cost-Benefit Ratios are central to the evaluation of risk mitigations but need not be the only consideration in the final selection of Mitigations.

12. The DOT VSL represents an estimate of society's willingness to pay for small reductions in the risk of death from adverse health conditions.

13. Requiring the IOUs to use the LBNL ICE Calculator to determine a standard dollar valuation of electric reliability risk offers a first step towards solving the quantification and dollar valuation challenge of the Reliability Attribute while increasing clarity, transparency, and usefulness.

14. Requiring the IOUs to participate in the customer survey process of the ICE 2.0 model ensures continued progress in the development of a standard dollar valuation for the Reliability Attribute used in the RDF.

15. Requiring the IOUs to apply a dollar value for gas reliability based on the implied value from their most recent MAVF Risk Score calculations – the 2020 RAMP filing for PG&E, the 2021 RAMP filing for the Sempra Companies, and the 2022 RAMP filing for SCE – increases clarity and transparency and provides a reasonable transition towards development of an alternate standard dollar valuation.

16. Requiring the IOUs to begin incorporating ESJ impacts into the RDF through an ESJ Pilot Study that includes consideration of DVCs advances the goal of ensuring that IOUs' risk assessments and mitigations address equity issues and the needs of the most vulnerable.

17. Requiring the IOUs, in coordination with Commission Energy Division Staff, to solicit feedback from the DACAG and the CBOWG prior to finalizing their ESJ Pilot Study plans ensures the experience reflected in these groups informs ESJ Pilot design and execution.

18. Requiring the IOUs to file a White Paper about their ESJ Pilot that identifies areas for further exploration and challenges related to incorporating ESJ considerations into risk-based decision-making supports the long-term goal of advancing equity and resiliency throughout California.

19. Requiring the IOUs to use public studies on the health impacts of wildfire smoke available in 2023 and thereafter to structure their risk methodology related to evaluating the estimated impacts from wildfire smoke ensures the IOUs efforts to address these health impacts are based on the best available scientific analysis.

20. The title "Risk-Based Decision-Making Framework" accurately describes the processes and procedures discussed in this decision.

21. The term "Cost-Benefit Approach" accurately describes the process we require the IOUs to use in the refined RDF.

22. The term "Cost-Benefit Ratios" accurately describes the analytical tool we require the IOUs to use in the refined RDF.

Conclusions of Law

1. Public Utilities Code Section 750 requires the Commission to develop formal procedures to consider safety in a rate case application by an electrical corporation or gas corporation.

2. Public Utilities Code Section 321.1(a) requires the Commission to assess and mitigate the impacts of its decisions on customer, public and employee safety.

3. Public Utilities Code Section 451 requires the Commission to ensure that electric and gas utilities adopt just and reasonable rates.

4. The Commission should revise the Settlement Agreement adopted in the SA Decision and adopt the resulting "Risk-Based Decision-Making Framework," appended to this decision in Appendix A.

5. The Commission should require IOUs to implement the Cost-Benefit Approach in the RDF by implementing a dollar valuation of Attributes as described in this decision.

6. The Commission should require the IOUs to implement the refined RDF including the Cost-Benefit Approach in each utility's next respective GRC cycle, beginning with PG&E's 2024 RAMP application.

7. Neither Cost-Benefit Ratios nor RSE values are intended to be the sole determinant for decisions made by the Commission on proposed investments by the IOUs in their GRC cycles.

8. The Commission should require PG&E to demonstrate implementation of the Cost-Benefit Approach in the RDF in at least one workshop held at least 30 days prior to the date of PG&E's 2024 RAMP filing.

9. The Commission should authorize the RDF TWG established in D.21-11-009 to: (a) prepare and propose recommendations regarding the application of Risk Attitude, Risk Tolerance, uncertainty, and tail risks in the RDF; (b) explore ways to identify a suitable standard that could be used for establishing a dollar valuation for gas reliability; and (c) explore if there is a need for, and, if so, recommend a formal process for authorizing exceptions to the recommended standard dollar valuations for consideration later in this proceeding.

10. The Commission should require the IOUs to apply the most current published DOT VSL, adjusted for the base year of their respective RAMP filing, as the standard value in expressing the Safety Attribute in dollars.

11. The Commission should authorize the IOUs to choose an alternative VSL within the high and low ranges provided by the HHS but should then require the IOUs to justify this and provide a sensitivity analysis for the Cost-Benefit Ratio impact of its choice as compared to the standard DOT VSL in its RAMP filing.

12. The Commission should require IOUs to apply one of two following methods for the dollar valuation of injury prevention, depending on the availability of data: (1) a serious injury as 0.25 of a fatality, or (2) the injury severity level using DOT estimates for the value of injury prevention:

Injury Severity	Fraction of VSL
Minor	0.003
Moderate	0.047
Serious	0.105
Severe	0.266
Critical	0.593
Unsurvivable	1.000

Source: DOT, Valuation of a Statistical Life Guidance, at 10.

13. The Commission should require the IOUs to adopt the use of the LBNL ICE Calculator to determine a standard dollar valuation of electric reliability risk for the Reliability Attribute.

14. 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.

15. Requiring the adoption of the DOT VSL as a standard dollar valuation of the Safety Attribute is practicable and transparent.

16. The Commission should authorize the IOUs to use a different dollar valuation for the Reliability Attribute, if they prefer, and direct the IOUs, in this case, to provide in its RAMP filing an analysis comparing the results of its preferred valuation model to the results using the ICE Calculator.

17. The Commission should require the IOUs to participate in the customer survey process needed to incorporate California data in the LBNL ICE 2.0 model, which is intended to capture the economic impacts of outages of up to 24 hours more accurately.

18. The Commission should authorize the IOUs to include costs for participating in LBNL's ICE 2.0 process in their GRC applications, up to $600,000 per utility.

19. The Commission should require the IOUs to apply a dollar value for gas reliability based on the implied value from their current MAVF Risk Score calculation, until a standard for dollar valuation is developed.

20. The Commission should require the IOUs to conduct an ESJ Pilot Study about incorporating ESJ impacts into the RDF that includes consideration of DVCs and addresses the following Action Items:

(a) Action Item #1: Consider equity in the evaluation of Consequences and risk mitigation within the RDF, using the most current version of CalEnviroScreen to better understand how risks may disproportionately impact some communities more than others;

(b) Action Item #2: Consider investments in clean energy resources in the RDF, as possible means to improve safety and reliability and mitigate risks in DVCs;

(c) Action Item #3: Consider Mitigations that improve local air quality and public health in the RDF, including supporting data collection efforts associated with AB 617 regarding community air protection program;

(d) Action Item #4: Evaluate how the selection of proposed mitigations in the RDF may impact climate resiliency in DVCs;

(e) Action Item #5: Evaluate if estimated impacts of wildfire smoke included in the RDF disproportionately impact DVCs;

(f) Action Item #6: Estimate the extent to which risk mitigation investments included in the RDF impact and benefit DVCs independently and in relation to non-DVCs in the IOU service territory; and

(g) Action Item #7: Enhance outreach and public participation opportunities for DVCs to meaningfully participate in risk mitigation and climate adaptation activities consistent with D.20-08-046.

21. The Commission should require the IOUs to provide timely information to Commission Energy Division Staff, who will consult with the DACAG and the CBOWG or their designees, prior to finalizing their ESJ Pilot Study plans.

22. The Commission should require the IOUs to work with Commission Energy Division Staff to make sure the IOU's ESJ Pilot Study plan is on an appropriate DACAG and CBOWG meeting agenda in time for these groups to provide meaningful feedback on the plans.

23. The Commission should require the IOUs to include the results of their ESJ Pilot Study within their next RAMP filings.

24. The Commission should require each IOU to file a White Paper about its ESJ Pilot two months after its next RAMP filing deadline.

25. The proceeding should remain open.

O R D E R

IT IS ORDERED that:

1. The Risk-Based Decision-Making Framework set forth in Appendix A is adopted; it supersedes and replaces in its entirety the Settlement Agreement adopted in Decision 18-12-014.

2. Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), Southern California Gas Company (SoCalGas), and San Diego Gas & Electric Company (SDG&E) (collectively IOUs) shall implement in their Risk Assessment Mitigation Phase (RAMP) filings the Risk-Based Decision-Making Framework (RDF) contained in Appendix A to this decision, starting

with PG&E's 2024 RAMP filing and continuing with subsequent filings, and including the following specific elements:

(a) Each IOU shall apply the most current published United States Department of Transportation (DOT) value of a statistical life (VSL), adjusted for the base year of their respective RAMP filing, as the standard value in expressing the Safety Attribute described in Appendix A in dollars.

i. If applicable, each IOU shall justify its choice of an alternative VSL within the high and low ranges provided by the United States Department of Health and Human Services and provide a sensitivity analysis for the Cost-Benefit Ratio impact of its choice compared to the standard DOT VSL.

ii. Each IOU shall apply one of two following methods for the dollar valuation of injury prevention, as defined in Appendix A, depending on the availability of data: (1) a serious injury as 0.25 of a fatality, or (2) the injury severity level using DOT estimates for the value of injury prevention as indicated here:

Injury Severity	Fraction of VSL
Minor	0.003
Moderate	0.047
Serious	0.105
Severe	0.266
Critical	0.593
Unsurvivable	1.000

Source: DOT, Valuation of a Statistical Life Guidance, at 10.

(b) Each IOU shall use the most current version of the Lawrence Berkeley National Laboratory (LBNL) Interruption Cost Estimate (ICE) Calculator to determine a standard dollar valuation of electric reliability risk for the Reliability Attribute included in Appendix A.

i. If applicable, each IOU shall justify its choice of an alternative model by providing an analysis comparing the results of its preferred alternative model to the results using the ICE Calculator.

ii. Each IOU shall participate in the customer survey process needed to incorporate California data into the ICE 2.0 model.

iii. Each IOU is authorized to include costs for participation in ICE 2.0 in its next General Rate Case (GRC) application, up to $600,000.

(c) Each IOU shall apply a dollar value for gas reliability based on the implied value from their most recent Multi-Attribute Value Function Risk Score calculation presented in their most recent RAMP:

i. For PG&E, use the 2020 RAMP filing;

ii. For SDG&E and SoCalGas, use the 2021 RAMP filings; and

iii. For SCE, use the 2022 RAMP filing.

(d) Each IOU shall no longer assign weights and ranges to Attributes in the RDF, which eliminates application of the minimum 40 percent Safety weighting found in the Decision 18-12-014 Ordering Paragraph 2.

3. Pacific Gas and Electric Company shall demonstrate full implementation of the Cost-Benefit Approach as defined in the Risk-Based Decision-Making Framework set forth in Appendix A in at least one workshop held at least 30 days prior to its 2024 Risk Assessment and Mitigation Phase filing.

4. The Risk-Based Decision-Making Framework (RDF) Technical Working Group (TWG) authorized in Decision 21-11-009 Ordering Paragraph 2, is authorized to:

(a) Prepare and propose recommendations regarding the application of Risk Attitude, Risk Tolerance, uncertainty, and tail risks in the RDF;

(b) Explore ways to identify a suitable standard that could be used for establishing a dollar valuation for gas reliability; and

(c) Explore if there is a need for, and, if so, develop recommendations for a formal process for authorizing exceptions to the required standard dollar valuations for consideration later in this or a successor proceeding.

5. Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), Southern California Gas Company (SoCalGas), and San Diego Gas & Electric Company (SDG&E) (collectively investor-owned utilities or IOUs) shall each conduct an Environmental and Social Justice (ESJ) Pilot Study that includes consideration of Disadvantaged and Vulnerable Communities (DVCs) as defined in this decision and shall file the results of their Pilot studies as described in this decision with their next Risk Assessment Mitigation Phase (RAMP) filing. The IOUs shall provide timely information to Commission Energy Division Staff, who will consult with the Disadvantaged Communities Advisory Group (DACAG) and the Community-Based Organization Working Group (CBOWG) or their designees, prior to finalizing their ESJ Pilot Study plans. The IOUs shall work with Commission Energy Division Staff to make sure each utility's ESJ Pilot Study plan is on an appropriate DACAG and CBOWG meeting agenda in time for these groups to provide meaningful feedback on the plans. The IOUs shall address the following Action Items in their ESJ Pilot Studies:

(a) Action Item #1: Consider equity in the evaluation of Consequences and risk mitigation within the Risk-Based Decision-Making Framework (RDF), using the most current version of CalEnviroScreen to better understand how risks may disproportionately impact some communities more than others;

(b) Action Item #2: Consider investments in clean energy resources in the RDF, as possible means to improve safety and reliability and mitigate risks in DVCs;

(c) Action Item #3: Consider Mitigations that improve local air quality and public health in the RDF, including supporting data collection efforts associated with Assembly Bill 617 regarding community air protection program;

(d) Action Item #4: Evaluate how the selection of proposed mitigations in the RDF may impact climate resiliency in DVCs;

(e) Action Item #5: Evaluate if estimated impacts of wildfire smoke included in the RDF disproportionately impact DVCs;

(f) Action Item #6: Estimate the extent to which risk mitigation investments included in the RDF impact and benefit DVCs independently and in relation to non-DVCs in the IOU service territory; and

(g) Action Item #7: Enhance outreach and public participation opportunities for DVCs to meaningfully participate in risk mitigation and climate adaptation activities consistent with Decision 20-08-046.

6. Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company, and Southern California Gas Company shall each file a White Paper summarizing their Environmental and Social Justice (ESJ) Pilot Study by no later than two months after their respective next Risk Assessment Mitigation Phase (RAMP) filing deadline. The White Paper shall:

(a) identify areas for further exploration and challenges they faced incorporating ESJ into the Risk-Based Decision-Making Framework;

(b) discuss how to better target Mitigations that improve local air quality; and,

(c) explore how to better target Mitigations that improve climate resilience in disadvantaged and vulnerable communities.

7. Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company, and Southern California Gas Company shall use public studies of the health impacts of wildfire smoke available in 2023 and thereafter to structure their risk methodology related to evaluating the estimated impacts from wildfire smoke in their Environmental and Social Justice Pilot Studies.

8. For the purposes of this proceeding, in case of conflicts with new definitions for terms adopted in this decision with other usages of these terms, the revised or new definitions adopted in this decision as contained in Appendix A supersede those other usages and definitions.

9. Rulemaking 20-07-013 remains open.

This order is effective today.

Dated _____, at San Francisco, California.

Appendix A

The Risk-Based Decision-Making Framework

Appendix B

The Risk-Based Decision-Making Framework
(Redlined Version)

Appendix C

LBNL Initiative to Update the ICE Calculator,
Frequently Asked Questions

Appendix D
List of Acronyms