

December 17, 2021

Office of Electrical Infrastructure Safety  
California Natural Resources Agency  
715 P Street 20th Floor  
Sacramento, CA 95814

**E-Filing**  
**Docket# Risk-Model-Group**

**Subject:** Southern California Edison Company's Report on Its Risk Spend Efficiency Practices

## I. Introduction

On November 8, 2021, the Office of Energy Infrastructure Safety (OEIS or Energy Safety) issued guidelines for the OEIS-led risk spend efficiency (RSE) working group with the intent to bring more transparency and consistency across utilities in terms of RSE, and identify areas of alignment methods, data sets, and analyses. As part of the guidance, Energy Safety required the utilities to submit a report by December 17, 2021, to provide Energy Safety and Stakeholders detailed documentation of each utility's current RSE practices and a detailed description of the following points:

### RSE Calculation Methodology

- Risk reduction value determination
- Total cost determination
- Net present value (NPV) determination
- Walkthrough of an RSE estimate calculation from start to finish
- Discussion of any assumptions within the calculations
- Anticipated changes to RSE calculation methodology from now to 2023 WMP

### RSE Estimate Verification Process

- Confidence values of RSE estimates, including how the confidences were determined
- Range of uncertainty for the RSE estimates, including how those ranges were determined and how uncertainties are minimized
- How uncertainty affects the interpretation and utilization of the RSE estimates
- Systems used to verify the RSE estimates, including:
  - Subject matter experts
  - Comparison against historical data
  - Third-part assessment
  - Cross-utility verification
- Anticipated changes to RSE estimate verification process from now to 2023 WMP

### RSE Estimate and Initiative-Selection Process

- Overview of the Initiative-Selection Process
- How RSE estimates are considered when selecting a mitigation initiative

- How do RSE estimates compare to other decision-making factors
- Anticipated changes to how RSE estimates are used for mitigation initiative selection from now to 2023 WMP

### Comprehensive Spreadsheet

- A spreadsheet containing risk reduction value, total cost, NPV, confidence, and uncertainty for each initiative that has a non-zero RSE value from the 2021 WMP Update

## **II. Responses to Current RSE Practices and Descriptions**

This document provides SCE's responses to Energy Safety's requirements regarding its RSE practices, which was also generally represented in SCE's December 9, 2021 presentation. Further, Chapter 4 of SCE's 2021 WMP Update provides further details on several of the topics within this report.

### **A. RSE Calculation Methodology**

#### **i. Risk reduction value determination**

- a. Risk reduction represents the difference between the baseline risk and the remaining risk score after a mitigation activity is implemented.
- b. Baseline risk is the product of ignition probability and consequences, prior to implementing a mitigation activity.
  - Probability is the sum of the probabilities at the risk-driver level (e.g., animal contact, balloon contact)
  - Consequence is based on the Multi Attribute Value Framework which considers the following attributes: Safety, Reliability and Financial. Each attribute has its own weights, ranges and scaling functions to turn the "natural" units (e.g., Customer Minutes of Interruption (CMI), dollars) of each of these attributes into a unitless risk score.
- c. A program's mitigation effectiveness (0% - 100%) is determined for each risk driver on the probability side, and for each attribute on the consequence side. A mitigation can be effective at addressing probability, consequence, or both components of the risk equation.
- d. A mitigation's risk reduction score is then calculated by applying the mitigation effectiveness values derived in part (c) to the baseline risk, to determine the remaining risk. The mitigation risk score is then calculated by taking the difference between the baseline and remaining risk scores.

#### **ii. Total cost determination**

- a. SCE uses the program scope and unit cost to determine total direct cost. SCE's unit cost is based on direct costs and does not include corporate overheads or financing costs.

#### **iii. Net present value (NPV) determination**

- a. For the benefits component, SCE multiplies the risk reduction identified in part (i) by the useful life of the mitigation program. SCE then discounts the annual benefit stream by 3%.

#### **iv. Walkthrough of an RSE estimation calculation from start to finish**

- a. RSE is the ratio of the benefit and cost. Take part (iii) and divide by part (ii). Please see slides 7 and 8 from SCE's Dec. 9 Presentation from the RSE Workshop.

#### **v. Discussion of any assumptions within calculations**

- a. Key assumptions for a program RSE calculation include:

- Scope and Exposure – Scope determines how many units are deployed out of the total exposure (e.g. # of poles in HFRA).
- Mitigation Effectiveness – Assumptions are made to help determine how effective the mitigation program is in reducing the probability and/or consequence of the event. These assumptions are based on data, engineering analyses, field experience, and subject matter expertise, or other factors.
- Useful Life – SCE must determine the length of the mitigation program’s benefit stream.
- Cost – SCE must determine the cost of the mitigation program using the best information that is reasonably available.

**vi. Anticipated changes to RSE calculation methodology from now to 2023**

- a. SCE anticipates the CPUC’s Risk-Based Decision Making Framework (R.20-07-013) proceeding may drive changes to components of the RSE calculation methodology, such as attempting to have a consistent multi-attribute value function (MAVF) across IOUs that may result in comparability of risk scores.

**B. RSE Estimate Verification Process**

**i. Confidence values of RSE estimates, including how the confidences were determined**

- a. SCE uses point estimates for RSE estimates and currently does not have confidence values for those point estimates.

**ii. Range of uncertainty for the RSE estimates, including how those ranges were determined and how uncertainties are minimized**

- a. SCE currently uses only point estimates for RSE estimates and does not have uncertainty range.
- b. While SCE does not currently have confidence values for RSE estimates, breaking an RSE estimate down into its core components can provide insights as to where much of the uncertainty resides. Below, SCE lays out these core components and the general level of certainty associated with each:
- Cost – Component with highest level of certainty
  - Useful life – Component with next highest level of certainty
  - Mitigation Effectiveness – Component which has the greatest level of uncertainty. Below, SCE identifies various ways in which SCE is minimizing the uncertainty around mitigation effectiveness:
    1. Conducting working sessions with SMEs to assess and document mitigation effectiveness including reviewing historical data, testing, and benchmarking studies;
    2. Calibrating the mitigation effectiveness values across different activities to achieve consistent estimates;
    3. Conducting challenge sessions with subject matter experts and program managers to review inputs and assumptions;
    4. Conducting challenge sessions with internal management to review RSE estimates, assumptions, and documentation;
    5. Collaborating with other utilities to further refine mitigation effectiveness assumptions (such as the Joint IOU Covered Conductor Effectiveness Working Group).

- iii. **How uncertainty affects the interpretation and utilization of the RSE estimates**
  - a. RSE is only one component of a more comprehensive decision-making process which is described in section (C.) below. SCE may consider the assumptions used in the development of RSE estimates when evaluating RSEs as part of this broader process described in Section C.
- iv. **Systems used to verify the RSE estimates, including**
  - a. **Subject matter experts**
  - b. **Comparison against historical data**
  - c. **Third-part assessment**
  - d. **Cross-utility verification**

SCE employs all of the estimation techniques listed above to determine mitigation effectiveness as applicable to each mitigation program. SCE strives to use the most comprehensive and data-informed methodology to reduce the uncertainty of RSE estimates, but is limited to the data available for each mitigation program. Mitigation programs that are nascent in their maturity will often lack historical data and RSE estimates must then be supported by subject matter expertise. Mitigation programs that have years of historical data have a stronger estimate certainty and can be further benchmarked with third-party assessments. These results and assumptions can also be benchmarked with other utilities, such as through the ongoing Joint IOU Covered Conductor Effectiveness Working Group.

- v. **Anticipated changes to RSE estimate verification process from now to 2023 WMP**
  - a. SCE anticipates gathering more recorded data, working with other utilities on benchmarking and information sharing, and incorporating mitigation performance as applicable to help further refine and verify RSE estimates.

### C. **RSE Estimate and Initiative-Selection Process**

[Note: the material in this section was presented in oral and/or slide form at the December 9 workshop]

In responding to OEIS's Critical Issue SCE-02, SCE's June 3, 2021 Revised 2021 WMP Update provided a detailed narrative explanation and graphical representation of its general process for selecting Wildfire and PSPS mitigations (i.e., Wildfire and PSPS mitigation initiatives). SCE's write-up can be found in Appendix 9.9 of SCE's 2021 WMP Update (Revision), which can be retrieved from SCE's WMP webpage (<https://www.sce.com/safety/wild-fire-mitigation>). Within the document, please refer to SCE's response to Critical Issue SCE-02.

In its Final Action Statement, OEIS found that SCE's response for Critical Issue SCE-02 "adequately addressed all parts of this critical issue" and that SCE's work product "brings clarity to the decision-making process by illustrating factors such as 'risk reduced' and 'RSE' are weighted more heavily than 'operational feasibility' and 'compliance requirement.'" Please see OEIS Final Action Statement, pp. 87, 89.

- i. **Overview of SCE's General Selection Process for Wildfire and PSPS Mitigation Initiatives**

As discussed in detail at the workshop, the process can generally be broken down into four key steps:

  - a. Evaluating or Reassessing, and then Prioritizing Wildfire/PSP Risks
  - b. Identifying the Mitigation Initiatives

- Here, SCE focuses on potential options to reduce the risks that SCE evaluated or reassessed, and then prioritized, in the first step. These potential options come in the form of existing, modified, or new initiatives.
- Mitigation options reduce either the frequency, consequence, or both, of wildfire and/or PSPS risk, resulting in overall risk reduction.
- When examining new mitigations, technology maturity can be a critical consideration. SCE carefully distinguishes between:

1. New mitigations that *are commercially ready* to deploy to reduce risk. These new options can be identified through, among other actions: benchmarking with other utilities; studying and adopting emergent best practices; looking to guidance from engineering and technical industry committees; examining emerging technology demonstrations; and assessing pilot studies that produce successful or otherwise useful results.
2. New mitigations that should be further studied/evaluated and/or piloted for *potential* future deployment.

c. Evaluating and Selecting Mitigation Initiatives

- SCE evaluates the mitigations and then selects the appropriate one(s) from amongst the alternatives, using decision-making factors.
- SCE focuses on efficiently reducing wildfire and PSPS risk as quickly as reasonably possible. SCE prioritizes mitigations for areas of our system that present, on a *relative* basis, the highest risk, and doing so in a manner that appropriately minimizes customer cost and service impacts. Therefore, the selection of mitigation initiatives has to consider several factors in the decision-making process, as discussed in greater detail below.

d. Scoping and Deploying Mitigations

- Once a mitigation is selected, risk models and/or other factors such as design/engineering/material lead time, deployment time, resource availability/optimization, permitting, and environmental factors are used to establish scope packages and deployment prioritization.

ii. **How RSE estimates are considered when selecting a mitigation initiative**

- a. RSEs are a key factor in the process for selecting mitigation initiatives. However, RSEs are not the only key factor.
- b. It is also necessary to take into account other important factors as applicable in the mitigation initiative selection process.
  - These other factors include, but are not limited to, the following: 1) Risk Drivers and Consequences Addressed (including lessons learned from other utilities or drivers that can be only addressed by other mitigations); 2) Risk Reduction; 3) Operational Feasibility / Deployment Time; 4) Cost to Customers; 5) Enabling Activity/Technology Maturity/Additional Benefits; 6) Compliance / Regulatory Guidance; and 7) Resource Availability.
- c. RSEs help SCE evaluate the relative cost-effectiveness of potential mitigation initiatives. This in turn provides insight concerning prudently allocating resources, funding, and efforts to efficiently mitigate wildfire risk.
- d. But if SCE were to carry out a comprehensive wildfire risk mitigation plan based solely on RSEs, it would not be in the best interests of the customers and communities that SCE

serves. An RSE cannot take into account certain operational realities, such as service disruptions, resource constraints, and lead time for implementing a mitigation initiative.

- e. A mitigation initiative with a relatively higher RSE is generally favored as compared to one with a relatively lower RSE. But when a mitigation initiative has a relatively lower RSE, it might still be selected. An initiative could be chosen, for example, if it is easier to deploy quickly, addresses a particular risk driver that other mitigation initiatives do not, or reduces overall risk even if it costs more (e.g., targeted undergrounding).

**iii. How RSE estimates compare to other decision-making factors**

- a. As described above, there are a number of factors that SCE must consider when selecting mitigation initiatives. As discussed in SCE's response to Critical Issue SCE-02 (referenced above), the RSE estimate is one of the critical factors that drives initiative selection. SCE carefully considers each factor (both on an individual basis and in the aggregate) in order to make sound and informed decisions. A given factor may not have a uniform level of importance or impact in all situations.

**iv. Anticipated changes to how RSE estimates are used for mitigation initiative selection from now to 2023**

- a. SCE continues to mature our processes to identify, review, and implement new or modified wildfire initiatives. SCE does so in a manner that supports an increasingly consistent assessment framework that helps ensure that proposed wildfire mitigations provide for measurable risk buy-down that can be successfully incorporated into an executable plan.

**D. Comprehensive Spreadsheet**

**i. A spreadsheet containing risk reduction value, total cost, NPV, confidence, and uncertainty for each initiative that has a non-zero RSE value from the 2021 WMP Update**

- a. Please see the attached file entitled, "SCE RSE Workshop Spreadsheet."
- b. Please note the spreadsheet does not contain uncertainty and confidence as SCE does not have those values as discussed in Section B.

**III. Conclusion**

SCE appreciates the opportunity to participate in the RSE working group meetings initiated by Energy Safety and looks forward to further collaboration with stakeholders through this process. SCE understands that RSE is a complex, technical subject, and capturing the intricacies of the risk models employed by the utilities in a brief presentation and report is challenging. As such, SCE fully supports the working group approach as we advance towards the 2022 WMP Annual Update.

Sincerely,

//s//

Gary Chen

Director, Safety & Infrastructure Policy

Southern California Edison

Cc: RSE Group Service List  
Wildfire Mitigation Plans Service List