



**Risk Assessment Mitigation Phase
(RAMP-G)
Lessons Learned**

November 27, 2019

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I. INTRODUCTION

San Diego Gas & Electric Company (SDG&E or Company) puts forth these lessons learned, in accordance with Decision (D.) 16-08-018, which can be applied to future Risk Assessment Mitigation Phase (RAMP) Reports, including those of the other California investor-owned utilities (IOUs).¹ The lessons learned presented herein illustrate improvement opportunities that may be incorporated into future RAMP planning efforts, risk processes, and/or other longer-term goals.

As discussed in Chapter RAMP-A, the Company's 2019 RAMP Report vastly differs from its 2016 RAMP Report, as it implements the methodology and processes adopted in D.18-12-014,² the Safety Model Assessment Proceeding (SMAP) Settlement Agreement Decision (SA Decision), including developing and applying a new Multi-Attribute Value Function (MAVF).³ This 2019 RAMP Report⁴ also reflects lessons learned from the Company's 2016 RAMP Report⁵ and incorporates certain feedback from the California Public Utilities Commission's (CPUC or Commission) Safety and Enforcement Division (SED), and the RAMP filings of Pacific Gas and Electric Company (PG&E) and Southern California Edison Company (SCE). While the 2019 RAMP Report represents a prudent step forward in implementing a quantitative risk management framework, the Company is committed to continuously improving by incorporating best practices and lessons learned, and to collaborating and sharing knowledge with the Commission, IOUs, and other stakeholders.

¹ D.16-08-018 at 151. "Lessons learned by one company will also inform the RAMP filings of the other companies."

² D.18-12-014 contains the minimum required elements to be used by the utilities for risk and mitigation analysis in the RAMP and GRC.

³ The MAVF is discussed further in Chapter RAMP-C.

⁴ This 2019 RAMP Report will be incorporated into SDG&E's Test Year (TY) 2022 General Rate Case (GRC).

⁵ California Public Utilities Commission, Risk and Safety Aspects of Risk Assessment and Mitigation Phase Report of San Diego Gas & Electric Company and Southern California Gas Company Investigation, Investigation (I.) 16-10-015/-016 (cons.), (November 30, 2016).



II. OVERALL LESSONS LEARNED FROM THE 2016 RAMP REPORT

The Company's 2019 RAMP Report improves upon its 2016 RAMP Report by, among other things, implementing feedback provided in SED's Risk Assessment and Safety Advisory Report (SED RAMP Safety Advisory Report).⁶ Improvements include reviewing and developing some risk definitions, providing more detail on how programs correlate to the stated risk, advancing probabilistic and quantitative approaches to risk management (including alternatives), more closely aligning the identification of costs with the Company's General Rate Case (GRC) presentation, and producing workpapers concurrently with the RAMP Report.

A. Modification of Risks

The Company received feedback on its 2016 RAMP Report that its Employee, Contractor, Customer, and Public Safety risk was overly broad.⁷ In response, the Company has separated these into three distinct risks: Employee Safety (Chapters SCG-2 and SDG&E-3), Contractor Safety (Chapters SCG-3 and SDG&E-2), and Customer and Public Safety (Chapters SCG-4 and SDG&E-5). The Company found other risks which, if broken up, could be more effective risk assessment and alignment of mitigations. For example, in the 2016 RAMP Report, Third Party Dig-in was an individual risk chapter for both SoCalGas and SDG&E. In this 2019 RAMP Report, the risk of incidents resulting from a Third Party Dig-in has been further refined into two separate risk chapters, a Third Party Dig-in on a High Pressure Pipeline chapter and a Third Party Dig-in on a Medium Pressure chapter for each Company, for additional granularity and mitigations that are more specific to the type of pipeline. The decision to separate these risks was driven by the fact that there are vast differences in the quantity of the two asset classes, the volume of tickets impacting each class, the damages to each class, the potential consequences of each risk, some risk drivers, and while a majority of the Controls and Mitigations are common, there are some that are different.

⁶ California Public Utilities Commission, Risk and Safety Aspects of Risk Assessment and Mitigation Phase Report of San Diego Gas & Electric Company and Southern California Gas Company Investigation 16-10-015 and I.16-10-016 (SED RAMP Safety Advisory Report) (March 8, 2017).

⁷ SED RAMP Safety Advisory Report at 41; I.16-10-015/I.16-10-016. Opening Comments of the Office of Safety Advocate (OSA) (April 17, 2017) at 6.

Given that risks are dynamic and revisited at a minimum annually, risks may be modified as necessary with some being separated for additional granularity and others being combined. For additional examples, please refer to the Appendix B-1.

B. Correlation of Controls and Mitigation to Risk

The SED RAMP Safety Advisory Report commented that “for several mitigations, there needs to be more effort in showing the correlation between the risk and the mitigations proposed.”⁸ To respond to this critique, the Company provides in this 2019 RAMP Report a detailed description of the Control or Mitigation in Section V of the respective risk chapters, as well as additional explanation in Section VI of how the Control or Mitigation impacts the risk (*see* Sections VI(a) and (b) of individual risk chapters).

C. Quantitative Framework

Generally, concerns were raised in the 2016 RAMP proceeding with respect to the Company’s heavy reliance on subject matter expertise to determine risk reduction,⁹ and, because of that reliance, the usefulness of Risk Spend Efficiency (RSEs).¹⁰ While SED stated that RSEs are “admittedly an evolving area,” SED has indicated a preference for “quantified data.”¹¹ SED also recommended that “in the future” the Company “need[s] to do a better job clarifying and ranking the risk mitigations that are measured by the RSE and at the same time do a better job identifying metrics that correlate with the performance of the respective risk mitigation.”¹²

⁸ SED RAMP Safety Advisory Report at 6.

⁹ *Id.* at 14.

¹⁰ I.16-10-015/I.16-10-016. *See* Reply Comments of SDG&E and SoCalGas (May 9, 2017) at 5-6; Opening Comments of the Office of Safety Advocate (April 17, 2017) at 13; Comments of the Indicated Shippers and Southern California Generation Coalition (April 24, 2017) at 3; Opening Comments of the Coalition of California Utility Employees (April 17, 2017) at 4; Comments of the Utility Consumers’ Action Network (April 24, 2017) at 14; and Comments of the Office of Ratepayer Advocates (April 24, 2017) at 2-3, 26.

¹¹ SED RAMP Safety Advisory Report at 18.

¹² *Id.* at 6.



Similarly, in the TY 2019 GRC, the California Public Advocates Office (CalPA)¹³ recommended that the Companies “focus on quantitiveness and comparability”¹⁴ for future RAMP filings. CalPA cautioned the Companies about the continued use of the 7x7 matrix, stating that it was “largely based on subjective judgement and does not provide [a] quantifiable, clear, and appropriate way of measuring and comparing risks.”¹⁵ Therefore, CalPA recommended that the 7x7 be phased out by the next RAMP filing.¹⁶ Via discovery, CalPA asked the Company when it anticipated it could implement some of CalPA’s recommendations, such as the following: comparing RSE scores across risks; reducing groupings of mitigations for purposes of calculating RSEs; calculating RSEs for alternatives; including the timeframe over which risks/mitigations are measured; producing complete, unlocked RAMP workpapers at the time of RAMP submission; reporting of added, removed, or changed risks since the last RAMP filing; and identifying of subject matter expert (SME) input used and any supporting metrics/data.¹⁷ The Company noted in response that “many of the recommendations are anticipated to be included in the next RAMP.”¹⁸

The SA Decision and the methodologies therein create a process that makes considerable strides toward a more quantitative risk approach compared to the Company’s 2016 RAMP Report. In particular, the 7x7 matrix was not used for determining the pre-mitigation or post-mitigation risk scores in this 2019 RAMP Report. Instead, the Company implemented the methods from the SA Decision, including statistical distributions and Monte Carlo simulations to help quantify risk events. Further, the Company has also leveraged quantifiable data where such data existed, whether its own or from a third-party, and verified the appropriateness of the results

¹³ Formerly the Office of Ratepayer Advocates (ORA).

¹⁴ A.17-10-007/-008 (cons.). Exhibit (Ex.) 398 (ORA/Stannik Direct Testimony) at 11.

¹⁵ A.17-10-007/-008 (cons.). Ex. 398 (ORA/Stannik Direct Testimony) at 5.

¹⁶ *Id.* at 1 and 5.

¹⁷ *Id.* at 10-11 and footnote 20.

¹⁸ *Id.* at 10 and 11.



with its subject matter experts. Where no data existed or was incomplete, subject matter expertise was necessary. However, the SA Decision acknowledges the fact that subject matter expertise has value and plays a role in risk analysis,¹⁹ and eliminating it entirely would hurt the value and accuracy of the quantitative analysis. With more reliable, quantitative data, the comparability of RSEs across risks has increased. As shown in Appendix D-1 and as required by the SA Decision,²⁰ the Company is providing a ranking of all programs by RSE, effectively comparing programs across risks.

Moreover, the Company has progressed in this RAMP Report on all the items noted by CalPA in the GRC. When performing RSEs, the Company made a concerted effort to calculate RSEs for each program and grouped or “bundled” activities, only when needed. For example, many of the activities in the Wildfire risk chapter provide SDG&E with more knowledge of its systems or local conditions – for example, situational awareness tools and inspections. These activities alone may not reduce the risk in a quantifiable manner. In order to quantify the risk reduction benefits, such activities need to be grouped with others. It is the Company’s intention to minimize grouping activities together for purposes of calculating an RSE.

Additional information is included in the workpapers accompanying this RAMP Report. Information regarding the length of time used for measurement of program risk reduction benefits is provided in the risk chapters’ RSE-related workpapers. Identification of data sources used for purposes of risk quantification are also provided in the RSE-related workpapers, as well as in Section IV and in the individual risk chapters. Changes to risks since the last Company’s 2016 RAMP filing is provided in Appendix B-1. Improvements related to alternatives, workpapers, and data collection are further discussed below.

D. Alternative Analysis

The SED RAMP Safety Advisory Report offered the feedback that, although the Company met the CPUC requirements related to providing alternatives in its last RAMP Report,

¹⁹ D.18-12-014 at Attachment A, A-8-A-9 (Identification of Potential Consequences of Risk Event and Identification of the Frequency of the Risk Event).

²⁰ D.18-12-014 at Attachment A, A-14 (Mitigation Strategy Presentation in the RAMP and GRC).



an expanded discussion of alternative mitigations should include estimates of risk reduction and RSE.²¹ Given this feedback, the Company is presenting more information in this 2019 RAMP Report regarding its alternative analysis. In Section VIII of the respective risk chapters, the Company puts forth, at a minimum, two alternatives. Section VII of each risk chapter describes the alternative and why it will not be pursued as well as the costs, risk reduction, and RSE. For these identified alternatives, the Company endeavored to provide new ideas and programs rather than relying on changing the pace and/or scope of the Risk Mitigation Plans. This exercise was challenging at times, for several reasons; for example, in instances where most or all mitigations and controls are mandated in a prescriptive manner, or where the Company already has an expansive or longstanding set of controls and/or mitigations.

E. Costs Presentation

Determination of costs presented in this 2019 RAMP Report was highly influenced through lessons learned from the Company's 2016 RAMP Report, its TY 2019 GRC, and its overall configuration of internal accounting and tracking systems.

Generally, the Company records operations and maintenance (O&M) costs in cost centers and capital expenditures on a budget code basis. This method is not mitigation-focused, but rather is organization-based for O&M and total project-based for capital. The Company presents its GRCs consistent with this approach. Internal labor costs are recorded in this manner and, for the most part, are not tied specifically to mitigation activities. Accordingly, additional granularity is largely unavailable without making a series of assumptions. Therefore, to identify costs for certain RAMP controls related to employee time and associated labor costs, many assumptions are required.

For example, in the 2016 RAMP Report, the Company estimated labor-related costs for controls.²² To do so, the Company gathered information related to how many employees took a given training class and multiplied that by the duration of the class and an average labor rate.

²¹ SED RAMP Safety Advisory Report at 6.

²² California Public Utilities Commission, Risk and Safety Aspects of Risk Assessment and Mitigation Phase Report of San Diego Gas & Electric Company and Southern California Gas Company Investigation, Lessons Learned (RAMP-F) I.16-10-015 and I.16-10-016 (November 30, 2016) at 2-3.



This estimation method was used because the exact costs are not available in this manner in the Company's accounting systems. However, using this approach became problematic when the Company integrated this assumption-based forecast into the GRC, because the Company then had to similarly estimate the costs in a given cost center or workpaper (a group of one or more cost centers), associated with the internal labor activity.

Based on the foregoing, the Company took a different approach for this RAMP Report. As discussed in Chapter RAMP-A, internal labor for these certain controls (*e.g.*, internal labor to attend training, adhering to internal protocols or standards, internal time spent at meetings, etc.) is generally excluded from the baseline and forecasted cost estimates for Controls and Mitigations in the 2019 RAMP Report. While costs are not identified herein, the activities are discussed since they are associated with mitigating the RAMP risk.

Further, costs presented here are those the Company expects to include in its TY 2022 GRC application, as compared with the 2016 RAMP Report. Costs requested and recovered through regulatory means outside of the GRC, such as separate applications or from the Federal Energy Regulatory Commission (FERC), are generally not identified in the 2019 RAMP Report. While the Company discusses activities that mitigate the risk in an effort to provide a complete risk mitigation plan herein, associated costs for these non-GRC costs are not included herein.

Another lesson learned from its prior RAMP filing is the need to attempt to show activities and corresponding cost forecasts in this 2019 RAMP Report, either within a single risk chapter and/or allocated between risks.²³ In the 2016 RAMP filing, the Company did not attempt to split or apportion the costs of an activity to each risk. Rather, costs for activities that provided risk mitigation across multiple risks were included in all applicable risk chapters.

While the costs may reside within the risk chapter of primary benefit in this RAMP Report, other risk chapters may qualitatively discuss how the activity affects the risk in the chapter receiving the indirect benefit. Alternatively, for some activities, an allocation was determined and the applicable risk chapters each took a portion of the activity and associated cost. For purpose of moving towards probabilistic RSE calculations, the Company aimed to

²³ *Id.* at 3-4.



present costs in a single instance, even though these activities may provide risk mitigation benefits to multiple risks. That said, the Company did include activities and costs on a limited basis in a few risk chapters where the costs could not be attributed to simply one risk. An example includes the Company’s safe driving program, which mitigates both the risks of Employee Safety and Customer and Public Safety. It should be noted that although activities and costs may be included in multiple risk chapters, they will only be included once in the GRC. All these cost-related changes between the Company’s 2016 RAMP Report and the 2019 RAMP Report are to improve upon prior showing as well as to better align with the presentation of the Company’s GRC.

F. Workpapers

SED recommended that in the future “all utilities provide similar information in workpapers as part of their RAMP filings,”²⁴ and that technical documentation of risk modeling should be provided.²⁵ The Company followed SED’s recommendations and is submitting workpapers for costs and modeling for RSEs concurrently with this RAMP Report. Further, the Company reviewed the workpapers of SCE and followed a similar format for purposes of consistency and ease of review by the Commission and intervenors.

III. LESSONS LEARNED FROM SED’S FEEDBACK ON OTHER IOU RAMP REPORTS

The RAMP Reports of PG&E and SCE further improved upon the Company’s first RAMP Report. Both PG&E and SCE provided quantitative models and new value-added aspects. PG&E and SCE utilized the common risk terms of “Controls” and “Mitigations” and made certain determinations based on those distinctions, for purposes of calculating RSEs.

²⁴ SED RAMP Safety Advisory Report at 5.

²⁵ I.16-10-015/-016 (cons.). Risk and Safety Aspects of Risk Assessment and Mitigation Phase Report of San Diego Gas & Electric Company and Southern California Gas Company (March 15, 2017) at 20.



PG&E limited their RSE calculations to Mitigations, rather than also including Controls.²⁶ SCE performed RSE calculations on non-compliance²⁷ Controls and Mitigations.

SED's evaluation reports on PG&E's and SCE's RAMP Reports provided information that the Company used to inform aspects of this 2019 RAMP Report. With respect to PG&E, SED "strongly recommend[ed] that PG&E provide MARS [Multi-Attribute Risk Scores] and RSE for all controls on the same basis developed for mitigations for their future RAMP filings"²⁸ and expressed concerns with PG&E's approach to cross-cutting risk modeling, stating "the cross-cutting model [should be] reviewed within the S-MAP."²⁹ SED also concluded that PG&E's risk "evolution [] brought additional complexity...[with] refined attempts to illustrate how the components of the analysis fit together."³⁰ For SCE's RAMP, SED was concerned that SCE submitted two different conflicting proposals in the WMP [Wildfire Mitigation Plan] and RAMP filings.³¹

Based on SED's feedback towards PG&E's and SCE's approaches to calculating RSEs, the Company attempted to perform RSEs on individual programs, regardless of whether they were controls, mitigations, and whether they were mandated or not. However, establishing an appropriate methodology for longstanding mandated activities posed challenges, in many cases. Therefore, the Company performed RSEs on Mitigations, non-mandated Controls, and mandated Controls, where practical. The Company also provides several chapters in this RAMP Report (Chapters RAMP-C, RAMP-D, and RAMP-E) related to RSEs, their underlying assumptions,

²⁶ 2017 Risk Assessment and Mitigation Phase Report of Pacific Gas and Electric Company (PG&E's RAMP Report) (November 30, 2017) at A-6.

²⁷ SCE defined "compliance" as "currently established measure that is modifying or reducing risks, which is required by law or regulation." SCE Workshop Presentation (December 14, 2018) at 10.

²⁸ California Public Utilities Commission, Risk and Safety Aspects of Risk Assessment and Mitigation Phase Report of Pacific Gas & Electric Company Investigation 17-11-003 (March 30, 2018) at 4.

²⁹ *Id.* at 133.

³⁰ *Id.* at 3.

³¹ California Public Utilities Commission, Risk and Safety Aspects of Southern California Edison's 2018-2020 General Rate Case Application 16-09-001 (January 31, 2017) at 8.



and an evaluation of RSEs at this stage. These chapters are provided in an effort to clearly explain the determinations on conducting RSEs.

SDG&E also attempted to address the feedback SCE received on its WMP. SDG&E filed its first Wildfire Mitigation Plan in February 2019. In the Wildfire risk chapter in SDG&E's RAMP Report (Chapter SDG&E-1), SDG&E transparently noted if activities therein were also included in SDG&E's 2019 WMP. Further, there have been considerable developments from a regulatory perspective regarding general wildfire risk. For example, the CPUC has initiated several wildfire-related proceedings including but not limited to Rulemaking (R.) 18-10-007 (WMP OIR), R.18-12-005 (De-Energization OIR), and R.19-07-017 (Wildfire Fund OIR). Given the level of activity and potential impacts from other regulatory proceedings, considerable coordination is necessary. It remains unclear as to how these coordinated efforts will be addressed. For example, SDG&E is submitting its RAMP Wildfire chapter in November 2019 and will likely be filing its second WMP in early 2020. However, it is also highly likely that SDG&E will not receive feedback from the CPUC's SED on the Wildfire Risk Mitigation Plan presented herein until after the next WMP is submitted. While these issues with overlap and timing may decrease over time, heavy coordination is needed and takes a considerable effort to confirm alignment.

IV. LESSONS LEARNED THROUGHOUT THE COURSE OF PREPARING THE TY 2022 RAMP REPORT

Through the course of preparing this RAMP Report, the Company identified additional lessons learned for future RAMP submissions. Although many of these must be addressed as longer-term goals, the Company is beginning to plan for such efforts.

A. Scoping of Risks

The Company's risk evaluation and registry process, facilitated by the Enterprise Risk Management organization, continues to evolve. Throughout the RAMP process and as discussed in the workshop held on March 5, 2019, pursuant to the SA Decision (Pre-RAMP Workshop),³² the scoping and definitions applied in each risk are the foundation for determining how to

³² D.18-12-014 at Attachment A, A-10 (Risk Selection Process for RAMP).



conduct the required safety, reliability, and financial assessments. Although the Company annually reevaluates its risks through its Enterprise Risk Management process, it also recognizes room for continuous improvement. Accordingly, the Company has reviewed its risks to clarify the scope of each risk for analysis in the RAMP Report, after the Pre-RAMP Workshop. Based on the data used to determine the pre-mitigation risk score, the risk scope for purposes of the RAMP Report may have been refined, as necessary. This is further discussed in Chapter RAMP-C. Going forward, the Company will determine how best to address aligning availability of data and the scoping of the risks in the Enterprise Risk Register (ERR).

B. MAVF

The Company's approach to developing a multi-attribute value function (MAVF) for purposes of RAMP Report analysis is described in Chapter RAMP-C. The Company found it challenging to develop a MAVF, within the requirements of the SA Decision, that is useful for analyzing every activity it performs. Conceptually, a MAVF should be designed to apply to everything from assessing a new billing system, to hydrotesting, to facilities upgrades, to hiring more staff. In reality, this is a substantial and complex undertaking. And, the Company had a limited time to develop, test, and implement a MAVF for purposes of this filing. Accordingly, the Company adhered to the minimum top-level attributes of Safety, Reliability, and Financial in this RAMP Report.³³ However, the Company will continue to learn from experience and refine its MAVF over time.

It may be possible in the future to add complexity to the Safety attribute, perhaps by considering additional lower-level attributes such as illness, lost time of employment, or mental health. Additionally, the Company is aware that some organizations differentiate between safety incidents in some manner, such as incidents that impact employees versus those that impact the general public. The Company did not feel that a consensus was reached on how to differentiate between safety incidents. Future regulatory proceedings and RAMP Reports, including those from other utilities, may help with progress in this area.

³³ *Id.*



In addition to the attributes presenting challenges, determining scaled units and the relative importance for the MAVF was also difficult. There are available studies that help guide decision-making on the relative importance between certain attributes. For example, as described in Chapter RAMP-C, studies exist that evaluate electric reliability in terms of dollars, the financial attribute. However, doing so would require a determination between reliability, financial, and safety attributes, consistent with the MAVF principles in the SA Decision. A range of potential scaled units were therefore determined for the Safety attribute, demonstrating the Company's belief that there is not one right answer to these questions. Rather, there is a range of potential possibilities that the Company should consider to inform its risk mitigation assessments. The Company believes that direction from the Commission on appropriate weights and scales for presenting risks in the RAMP Report could be helpful in future RAMP filings. The range of scaled units for the Safety attribute is discussed in greater detail in Chapter RAMP-C.

C. Tranches

This is the first RAMP Report to include the concept of tranching. While the Company understood and could identify different risk profiles among its activities, costs were largely not available in that manner. For example, for the risk of a Third Party Dig-in on a High Pressure Pipeline (Chapters SCG-7 and SDG&E-9), mitigations such as the Public Awareness Compliance could potentially have been tranced by geographical areas or demographics.

Third Party Damage prevention consists of training courses, policies, programs, and efforts aimed at reducing risk of injuries or fatalities to the public, employees, and contractors. Given the vast number of activities SoCalGas performs to mitigate the Third Party Dig-in on a Medium Pressure Pipeline risk, SoCalGas grouped like activities with like risk profiles into mitigation programs. The Company tracks costs for these activities consistent with Title 49 CFR § 192.616, which identifies the following four groups: the affected public, emergency officials, local public officials, and excavators. In order to have identified costs at the tranches for geographical area or demographics, considerable assumptions would have been required; thus, the Company elected to tranche based on the four categories outlined in the code, which are



representative of homogeneous risk profiles within this activity. The Company will evaluate how to improve upon this in the future.

D. Data Collection

The Commission identified the need for RAMP filings to include information regarding steps to “improve the collection of data and provide a timeframe for improvement” for business areas with less data, so that “the utilities can position themselves to make major improvements in risk assessment” for later S-MAP filings.³⁴ Quantitative risk analysis relies heavily on data. Therefore, the ability to locate and use meaningful data will always be in consideration. Although many data sources are available for a wide array of uses, it is common to find data that is not precisely of the type that is desired or needed at a particular point. The Company strives to add new data sources as needs arise and attempts to look ahead to what kind of data will be needed in the future. Throughout the creation of this RAMP Report, several instances arose where data was either unavailable or incomplete. Therefore, the Company used a combination of its own data and national data in this RAMP Report. When national or external data was used, the Company attempted to apply company-specific characteristics and supplemented it with subject matter expertise, consistent with the SA Decision,³⁵ as explained in Chapter RAMP-A. Although national data was scaled to the characteristics of the Company’s system or service territory, the Company will look for ways to further customize the use of national data, going forward.

Where data or metrics do not exist to track the performance of the activities presented in this RAMP Report, the Company seeks to develop such metrics for future applicability. For the Third-Party Dig-ins risk, for example, the Company is examining whether its existing data collection systems allow for the tracking of a more granular locate and mark process, to enable more precise identification of root causes and provide a better understanding of process improvements that may be necessary.

³⁴ D.16-08-018 at 146. *See also* Conclusions of Law (COL) at 38.

³⁵ *Id.* at Attachment A, A-8 – A-9 (Identification of Potential Consequences of Risk Event, Identification of the Frequency of the Risk Event).



The Company believes this data is needed to evaluate the program’s effectiveness as well as to meet future CPUC reporting requirements. To that end, the Commission and stakeholders have taken several steps to increase transparency and the availability of information. Specifically, the Commission instituted the Safety Performance Metrics Report³⁶ and the Risk Spending Accountability Report³⁷ requirements. Both of these reports are due annually on March 31, going forward. The Safety Performance Metrics Report will provide “26 safety performance metrics to measure achieved safety improvements.”³⁸ This report will also summarize “how reported data reflect[s] progress against the risk mitigation and management goals approved in the applicable Risk Assessment Mitigation Phase filing and General Rate Case (GRC) application and to identify and provide additional information for any metrics that may be linked to financial incentives.”³⁹ As part of the efforts related to the Safety Performance Metrics Report, the Company is reviewing available data and is actively participating in the S-MAP Metrics Technical Working Group to refine and develop metrics. Regarding the Risk Spending Accountability Report, the report was established in D.14-12-025 to “improve utility accountability of ratepayer money spent on risk mitigation.”⁴⁰ In D.19-04-020, the Commission added the requirement to report on work units as part of the Risk Spending Accountability Report.⁴¹ With the requirement of work units, the Company will provide more data in future GRCs and Risk Spending Accountability Reports.

E. Secondary Impacts

As discussed in Chapter RAMP-A, for this RAMP Report, the Company generally excluded secondary impacts from its risk quantification assessments. Secondary impacts are “downstream” of the initial risk event. These impacts are challenging to quantify, as there are

³⁶ See D.19-04-020.

³⁷ D.14-12-125 as modified by D.19-04-020.

³⁸ D.19-04-020 at 2.

³⁹ *Id.*

⁴⁰ See D.14-12-025.

⁴¹ D.19-04-020 at 36, 38-39, Findings of Fact 27 and 28, COL 15, and Ordering Paragraphs 10 and 11.



data limitations and overlaps between multiple risks. The Company will continue collaborating with stakeholders to continue to refine processes and develop improved methodologies for capturing data to support quantifying secondary impacts.

The Office of Safety Advocates (OSA) provided feedback that it would like to see Electric Grid Failure and Restoration (Blackout/Failure to Black Start) included in this RAMP Report. Electric Grid Failure and Restoration is the risk of a blackout or the loss of electric service throughout the SDG&E service territory and the inability to restore electric services. While the Electric Grid Failure and Restoration risk was included in SDG&E's 2018 annual risk registry assessment cycle, it was not selected as a RAMP risk for two reasons. First, OSA's feedback was provided several months after the Company had presented its proposed risks at a public workshop and consequently had made the determination of what risks to include in RAMP. There was not adequate time to conduct the extensive RAMP analysis adopted in the SA Decision. Second, the safety elements of this risk are largely related to secondary impacts. For example, a prolonged outage could be attributed to an extended Public Safety Power Shutoff event. In that scenario, the primary reason for the outage was to minimize the likelihood of a wildfire event. The secondary impact was the prolonged outage for customers.

F. Risk Reduction and RSEs

Estimating risk reduction generally presents various challenges, which also are present in calculating RSEs. These challenges are further discussed in Chapter RAMP-E. A methodology to estimate risk reduction was determined based on available data. This required the Company to evaluate risk reduction and RSEs on a case-by-case basis. The methodology required understanding how the activity impacted the risk and the effectiveness of a certain program. When data was available, less subjectivity was applied. Nevertheless, subject matter expertise is required to derive estimates for risk reduction benefits. Amongst the challenges, assessments of human-based activities, such as training and communicating with the public, were particularly difficult to estimate. As experienced by PG&E in its 2017 RAMP Report (described above), the Company has not identified a precise method of predicting future benefits for human-based activities. It is difficult to estimate how effective training is, because it is frequently difficult to ascertain if one or more risk events were caused by, or prevented due to, training. In some cases,



the impact is clear; but in the majority of cases, the conclusions are largely speculative. It is also not easy to surmise the duration for which training is considered effective.

As stated in the Data Collection section above, most RSE calculations required an extensive evaluation of company data. In many cases, the data necessary to support RSE calculations with a high level of confidence was often unavailable (*i.e.*, data was not currently collected) and/or difficult to find and obtain. This process required a high level of involvement of entire teams of individuals from across the organization, which was the case among all the risk chapters. As a result of these considerations, the RSE process was lengthier than initially predicted. This process, however, has identified opportunities for the Company to improve data collection and aggregation, which will support better business operations and make data readily available for future RAMP filings.