OSA DATA REQUEST - 1
SDG&E-SOCALGAS RAMP - I.16-10-015_016
SDG&E & SOCALGAS RESPONSE
DATE RECEIVED: FEBRUARY 21, 2017
DATE RESPONDED: MARCH 7, 2017

Question 1: Please provide a listing of SoCalGas and SDG&E risks with Health, Safety and Environment (HSE) risk level 3 pursuant to the September 2015 risk registry. If frequencies were assigned and residual risk scores calculated for those risks, also provide those figures.

Response 01:

Please find below a list of the risks with a score of 3 in the Health, Safety and Environmental (HSE) impact area from the 2015 risk registries of SDG&E and SoCalGas. Also provided is the residual frequency and risk score. Please note that HSE is one of four impact dimensions.

SDG&E

Physical Security of Critical Electric Infrastructure

Health, Safety, Environmental- 3

Residual Frequency- 4

Residual Risk Score- 4,455

Major Project Delays (e.g. CNF, SOCR, Line 3602)

Health, Safety, Environmental- 3

Residual Frequency- 5

Residual Risk Score- 2,656

Management of Emergency Spares for Major Electrical Equipment

Health, Safety, Environmental- 3

Residual Frequency- 3

Residual Risk Score- 1,305

Response 01:-Continued

Violation of Environmental Policies/Procedures

Health, Safety, Environmental-3

Residual Frequency- 3

Residual Risk Score- 1,293

Gas Pipeline Safety and Regulatory Compliance

Health, Safety, Environmental- 3

Residual Frequency- 4

Residual Risk Score- 807

Social Media's Impact on Business

Health, Safety, Environmental- 3

Residual Frequency- 5

Residual Risk Score- 463

Impact of Unplanned Outages at Utility Owned Generation Plants

Health, Safety, Environmental- 3

Residual Frequency- 3

Residual Risk Score- 150

Non-Performing Backup Power at Critical Facilities

Health, Safety, Environmental- 3

Residual Frequency- 4

Residual Risk Score- 150

Response 01:-Continued

PCB Release and Toxic Materials Release pg. 42

Health, Safety, Environmental- 3

Residual Frequency- 3

Residual Risk Score- 37

SoCal Gas

Environmental Risk

Health, Safety, Environmental- 3

Residual Frequency- 5

Residual Risk Score- 1,617

Gas Pipeline Safety and Regulatory Compliance

Health, Safety, Environmental- 3

Residual Frequency- 4

Residual Risk Score- 807

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Question 2: On page SDGE/SCG F-2 of the SoCalGas/SDG&E November 30, 2016 Risk Assessment and Mitigation Phase Report (RAMP Report), the utilities state that the "utilities made revisions to their risks and the accompanying scores in 2016." Please indicate whether risk scoring results are available from the September 2016 annual risk registry assessment. If so, please provide:

a. A listing of risks with HSE risks at level 3 or above from the September 2016 annual assessment
b. The revised 2016 risk scores for the four major risk categories, frequency assessments and calculations of residual risk scores.

Response 02:

Yes, risk scoring results are available from the 2016 Enterprise Risk Registry annual assessment. Please see below.

SDG&E

a) Wildfires Caused by SDG&E Equipment (including Third Party Pole Attachments)
b) Health, Safety, Environmental- 7
Operational and Reliability-6
Regulatory, Legal, Compliance- 5
Financial- 6
Residual Frequency- 5
Residual Risk Score- 2,551,888

a) Employee Safety (previously combined as Employee, Contractor & Public Safety risk in 2015)
b) Health, Safety, Environmental- 6
Operational and Reliability- 2
Regulatory, Legal and Compliance-3
Financial- 3
Residual Frequency- 5
Residual Risk Score- 231,183

a) Electric Infrastructure Integrity
b) Health, Safety, Environmental- 6
Operational and Reliability- 3
Regulatory, Legal and Compliance- 5

Response 02:-Continued

Financial- 4
Residual Frequency- 4
Residual Risk Score- 77,083

a) Catastrophic Damage Involving Third Party Dig Ins
b) Health, Safety, Environmental- 6
Operational and Reliability- 4
Regulatory, Legal, Compliance-3
Financial- 4
Residual Frequency- 4
Residual Risk Score- 73,796

a) Customer Safety (previously combined as Employee, Contractor and Public Safety Risk in 2015)
b) Health, Safety, Environmental- 6
Operational and Reliability- 1
Regulatory, Legal, Compliance- 3
Financial- 4
Residual Frequency- 4
Residual Risk Score- 73,432

a) Contractor Safety (previously combined as Employee, Contractor & Public Safety risk in 2015)
b) Health, Safety, Environmental- 6
Operational and Reliability- 3
Regulatory, Legal, Compliance- 3
Financial- 3
Residual Frequency- 4
Residual Risk Score- 73,139

a) Electric Grid Failure and Restoration (Blackout/Failure to Black Start)
b) Health, Safety, Environmental- 6
Operational and Reliability- 7
Regulatory, Legal, Compliance- 5
Financial- 5
Residual Frequency- 2
Residual Risk Score- 44,548

Response 02:-Continued

a) Catastrophic Damage Related to Inadequacy of Operational Asset Records (previously combined as Records Management risk in 2015)
b) Health, Safety, Environmental- 6
Operational and Reliability- 5
Regulatory, Legal, Compliance- 5
Financial- 6
Residual Frequency- 3
Residual Risk Score- 36,950

a) Catastrophic Damage Involving a High Pressure Gas Pipeline Failure
b) Health, Safety, Environmental- 6
Operational and Reliability- 4
Regulatory, Legal, Compliance- 5
Financial- 6
Residual Frequency- 3
Residual Risk Score- 35,911

a) Cyber Security
b) Health, Safety, Environmental- 3
Operational and Reliability- 5
Regulatory, Legal, Compliance- 5
Financial- 4
Residual Frequency- 5
Residual Risk Score- 24,480

a) Distributed Energy Resources (DERs)
b) Health, Safety, Environmental- 6
Operational and Reliability- 3
Regulatory, Legal, Compliance- 3
Financial- 3
Residual Frequency- 3
Residual Risk Score- 23.129

Response 02:-Continued

a) Aviation Incident
b) Health, Safety, Environmental- 6
Operational and Reliability- 2
Regulatory, Legal, Compliance- 2
Financial- 3
Residual Frequency- 3
Residual Risk Score- 23,108

a) Workplace Violence
b) Health, Safety, Environmental- 6
Operational and Reliability- 1
Regulatory, Legal, Compliance- 2
Financial- 3
Residual Frequency- 3
Residual Risk Score- 23,107

a) Physical Security of Critical Electric Infrastructure
b) Health, Safety, Environmental- 4
Operational and Reliability- 5
Regulatory, Legal, Compliance- 4
Financial- 4
Residual Frequency- 4
Residual Risk Score- 5,112

a) IT Critical Infrastructure Risk (Natural Disasters)
b) Health, Safety, Environmental- 3
Operational and Reliability- 6
Regulatory, Legal, Compliance- 2
Financial- 4
Residual Frequency- 2
Residual Risk Score- 3,688

a) Climate Change Adaptation
b) Health, Safety, Environmental- 4
Operational and Reliability- 5
Regulatory, Legal, Compliance- 4

Response 02:-Continued

Financial- 5
Residual Frequency- 3
Residual Risk Score- 2,656

a) Major Project Delays (e.g. CNF, SOCRE, PSRP)
b) Health, Safety, Environmental- 3
Operational and Reliability- 4
Regulatory, Legal, Compliance- 3
Financial- 4
Residual Frequency-5
Residual Risk Score- 2,656

a) Catastrophic Damage Involving a Medium Pressure Gas Pipeline Failure
b) Health, Safety, Environmental- 5
Operational and Reliability- 3
Regulatory, Legal, Compliance- 3
Financial- 3
Residual Frequency- 3
Residual Risk Score- 2,344

a) Management of Emergency Spares for Major Electric Equipment
b) Health, Safety, Environmental- 3
Operational and Reliability- 4
Regulatory, Legal, Compliance- 3
Financial- 5
Residual Frequency- 3
Residual Risk Score- 1,305

a) Violation of Environmental Polices/Procedures
b) Health, Safety, Environmental- 3
Operational and Reliability- 1
Regulatory, Legal, Compliance- 5
Financial- 4
Residual Frequency- 3
Residual Risk Score- 1,293

Response 02:-Continued

a) Untimely and Unfavorable Regulatory Decisions
b) Health, Safety, Environmental- 3
Operational and Reliability- 4
Regulatory, Legal, Compliance- 4
Financial- 4
Residual Frequency- 4
Residual Risk Score- 1168

a) Inadequate Knowledge Transfer
b) Health, Safety, Environmental- 4
Operational and Reliability- 3
Regulatory, Legal, Compliance- 3
Financial- 2
Residual Frequency-4
Residual Risk Score- 807

a) Gas Pipeline Safety Regulatory Compliance
b) Health, Safety, Environmental- 3
Operational and Reliability- 2
Regulatory, Legal, Compliance- 4
Financial- 4
Residual Frequency- 4
Residual Risk Score- 8,070

a) Unmanned Aircraft System (UAS) Incident
b) Health, Safety, Environmental- 4
Operational and Reliability- 3
Regulatory, Legal, Compliance- 3
Financial- 3
Residual Frequency-4
Residual Risk Score- 266

SoCalGas

a) Catastrophic Damage Involving Third Party Dig Ins
b) Health, Safety, Environmental- 6

Response 02:-Continued

Operational and Reliability- 4
Regulatory, Legal, Compliance-3
Financial- 4
Residual Frequency- 5
Residual Risk Score- 233,365

a) Customer Safety (previously combined as Employee, Contractor and Public Safety Risk in 2015)
b) Health, Safety, Environmental- 6
Operational and Reliability- 1
Regulatory, Legal, Compliance- 3
Financial- 4
Residual Frequency- 5
Residual Risk Score- 232,211

a) Catastrophic Damage Related to Inadequacy of Operational Asset Records (previously combined as Records Management risk in 2015)
b) Health, Safety, Environmental- 6
Operational and Reliability- 5
Regulatory, Legal, Compliance- 5
Financial- 6
Residual Frequency- 3
Residual Risk Score- 36,950

a) Catastrophic Damage Involving a High Pressure Gas Pipeline Failure
b) Health, Safety, Environmental- 6
Operational and Reliability- 5
Regulatory, Legal, Compliance- 5
Financial- 6
Residual Frequency- 3
Residual Risk Score- 36,950

a) Cyber Security
b) Health, Safety, Environmental- 3
Operational and Reliability- 5
Regulatory, Legal, Compliance- 5
Financial- 4

Response 02:-Continued

Residual Frequency- 5
Residual Risk Score-24,480

a) Employee Safety (previously combined as Employee, Contractor, Customer and Public Safety risk in 2015)
b) Health, Safety, Environmental- 5
Operational and Reliability- 1
Regulatory, Legal, Compliance- 3
Financial- 2
Residual Frequency- 5
Residual Risk Score- 23,222

a) Contractor Safety (previously combined as Employee, Contractor, Customer and Public Safety risk in 2015)
b) Health, Safety, Environmental- 6
Operational and Reliability- 2
Regulatory, Legal, Compliance- 3
Financial- 3
Residual Frequency- 3
Residual Risk Score- 23,118

a) Workplace Violence
b) Health, Safety, Environmental- 6
Operational and Reliability- 1
Regulatory, Legal, Compliance- 2
Financial- 3
Residual Frequency- 3
Residual Risk Score- 23,107

a) Physical Security of Critical Gas Infrastructure
b) Health, Safety, Environmental- 5
Operational and Reliability- 6
Regulatory, Legal, Compliance- 4
Financial- 4

Response 02:-Continued

Residual Frequency- 3
Residual Risk Score- 14,087

a) Catastrophic Event Related to Storage Well Integrity
b) Health, Safety, Environmental- 5
Operational and Reliability- 6
Regulatory, Legal, Compliance- 6
Financial- 6
Residual Frequency- 2
Residual Risk Score- 11,685

a) Inadequate Knowledge Transfer
b) Health, Safety, Environmental- 4
Operational and Reliability- 4
Regulatory, Legal, Compliance- 5
Financial- 4
Residual Frequency- 4
Residual Risk Score- 5,112

a) Untimely and Unfavorable Regulatory Decisions
b) Health, Safety, Environmental- 3
Operational and Reliability- 4
Regulatory, Legal, Compliance- 4
Financial- 5
Residual Frequency- 4
Residual Risk Score- 5774

a) IT Critical Infrastructure Risk (Natural Disaster)
b) Health, Safety, Environmental- 3
Operational and Reliability- 6
Regulatory, Legal, Compliance- 2
Financial- 4
Residual Frequency- 2
Residual Risk Score- 3696

a) Climate Change Adaptation
b) Health, Safety, Environmental- 4

Response 02:-Continued

Operational and Reliability- 5
Regulatory, Legal, Compliance- 4
Financial- 5
Residual Frequency- 3
Residual Risk Score- 2,656

a) Gas Pipeline Safety Regulatory Compliance
b) Health, Safety, Environmental- 3
Operational and Reliability- 3
Regulatory, Legal, Compliance- 4
Financial- 4
Residual Frequency- 5
Residual Risk Score- 2,656

a) Catastrophic Damage Involving a Medium Pressure Gas Pipeline Failure
b) Health, Safety, Environmental- 5
Operational and Reliability- 3
Regulatory, Legal, Compliance- 3
Financial- 3
Residual Frequency- 3
Residual Risk Score- 2,344

a) Environmental Risk
b) Health, Safety, Environmental- 4
Operational and Reliability- 3
Regulatory, Legal, Compliance- 4
Financial- 5
Residual Frequency- 3
Residual Risk Score- 1,513

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Question 3: Please explain whether any of the 2016 revisions made by the utilities to the risks and the accompanying scores were incorporated in the RAMP Report. If so, please explain specifically which revised risks and accompanying scores were incorporated in the November 2016 RAMP Report.

Response 03:

Risk score changes (between the 2016 and 2015 enterprise risk registers) were not incorporated into the RAMP filing due to timing. Generally, risk registers are complete in Q4 of a given year, which did not provide adequate time to include results from the 2016 risk registry in the November 30, 2016 RAMP filing. As such, the RAMP Report was based on the 2015 enterprise risk registry. However, updates and improvements to wording of triggers/drivers, potential consequences, and controls/mitigations were incorporated in RAMP risks from prior risk registers. These improvements mostly focused on gaining consistent wording between the risks where the same trigger or consequence occurs.

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Question 4: Please describe how SoCalGas and SDG&E will incorporate the September 2016 results in its September 2017 GRC application.

Response 04:

Items learned, known and/or identified following the September 2015 assessment in the 2015 Enterprise Risk Registry will be taken into consideration by the GRC witness teams when developing testimony for the Test Year 2019 GRC. The extent to which the results will be incorporated into the GRC applications are not yet known. The 2019 GRC applications are expected to be filed on September 1, 2017.

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Question 5: Please explain whether SoCalGas and SDG&E found any significant changes in its risk assessments in September 2016 vs September 2015.

Response 05:

Some significant changes in risk assessments between 2015 and 2016 occurred. The significant changes, as it relates to the RAMP risks, are provided below:

Utility	RAMP Risk Name	Comments
SDG&E	Catastrophic Damage involving Third Party Dig-Ins	In 2016, the SDG&E residual risk score was lowered to reflect specific third party damage data at each utility. This resulted in the residual risk score change from 233,365 to 73,797.
SDG&E	Electric Infrastructure Integrity	In 2016, the scores for Health, Safety, Environmental, and Operational & Reliability impact areas changed from 4 to 6 and from 4 to 3 respectively. These scores were updated based on an reassessment of the potential impact that could result from a person or persons contacting with an energized downed wire. This resulted in a residual risk score change from 5,112 to 77,083.
SDG&E	Distributed Energy Resources (DERs)	In 2016, the Residual Frequency score changed from 4 to 3, lowering the SDG&E residual risk score from 73,139 to 23,130. Industry and internal data, and subject matter expertise, led to a reassessment of the residual frequency.
SDG&E/ SoCalGas	Employee, Contractor, Customer and Public Safety	In 2016, this single risk was split into three separate safety risks: (i) “Customer Safety”, (ii) “Employee Safety”, and (iii) “Contractor Safety”.
SDG&E/ SoCalGas	Records Management	In 2016, this enterprise risk was refocused onto operational asset records, and renamed: “Catastrophic Incident Related to Inadequate Operational Asset Records”.
SDG&E	Major Disturbance to Electrical Service (Blackout)	In 2016, this risk was combined with the “Fail to Black Start” risk, and called “Electric Grid Failure and Restoration”.
SDG&E	Fail to Black Start	In 2016, this risk was combined with the “Major Disturbance to Electrical Service (Blackout)” risk, and called “Electric Grid Failure and Restoration”.
SDG&E	Public Safety Events - Electric	In 2016, this risk was combined into the “Customer Safety” risk.

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Question 6: For the risk mitigations proposed in its RAMP Report, please explain whether SoCalGas/SDG&E recommend that all of its "proposed" mitigations be adopted by the Commission.

Response 06:

Consistent with Decision 14-12-025, the purpose of the RAMP Report is to present an assessment of the key safety risks of SDG&E and SoCalGas and the proposed activities for mitigating those risks. As noted by the Scoping Memo's schedule for the RAMP proceeding, while the RAMP Report identified SDG&E's and SoCalGas' preliminary recommendations for mitigations, these will be updated and refined in May to August 2017 for the Test Year 2019 GRC applications and testimony. The applications will be filed on September 1, 2017, including actual funding requests rather than the ranges represented in the RAMP Report.

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Question 7: In sections of the RAMP Report for Risk Spend Efficiency Results (e.g. SCG 1-26, footnote 27), SoCalGas/SDG&E state: "It is important to note that the risk mitigation prioritization shown in this Report is not comparable across other risks in this Report." Please explain what this statement means and implies. Does it mean, for example, that the risk spend efficiency figures calculated by SoCalGas and SDG&E cannot be directly compared to each other? Are the RSE figures calculated by the utilities only intended to provide a measure of the risk reduction for a specific risk area? Does this mean that the residual risk scores for each risk area can't be directly compared to each other?

Response 07:

The RSE figures presented in the RAMP Report can only be used to compare mitigations within a single risk. For example, RSE figures for the Dig-In risk cannot be compared with the RSE figures for the Fail to Blackstart risk. Mitigations within the Dig-In risk, however, can be compared with each other to determine the relative efficiency of these mitigations in terms of mitigating the Dig-In risk. This also means that RSE figures for SoCalGas risks cannot be compared with RSE figures for SDG&E risks. However, within each risk, in both SoCalGas and SDG&E, RSE figures for different mitigations can be compared.

The residual risk score is a measure of expected impact/value. It is derived from two components – impact and frequency. The impact and frequency of a risk are assessed using a reasonable worst case scenario. Thus, the residual risk scores for different risks generally are comparable because they are indications of the expected impact for those scenarios. In the example above, the expected impact (accounting for frequency) for Dig-Ins under the reasonable worst case scenario is estimated to be roughly 100 times as large as expected impact for Medium-Pressure Pipeline Failures. The risk evaluation presented in the RAMP Report is largely based on subject matter expertise at this time. As such, the risk evaluation is one component considered by SoCalGas and SDG&E for decision-making purposes, but not the sole factor. As recognized by the CPUC, the approach used by SoCalGas and SDG&E to develop risk scores continues to evolve over time. When assessing comparability of residual risk scores across risks, it is important to consider that subject matter experts used judgment and informed opinion to develop the worst reasonable case scenarios.

It is also important to note that in D.16-08-018 at page 36, "[t]he information given by the RSE calculations could be useful but the limitations should be recognized." The Decision further noted at page 138 that although the "utilities should include risk-spend efficiency calculations in their RAMP filings, . . . those calculations are imperfect. It may take iterations over multiple [S-MAP] cycles to refine those calculations. . . ." An excerpt from Safety and Enforcement Division's (SED) report in Appendix A of that Decision at page 23 also emphasized that SoCalGas and SDG&E's RSE "calculation will be a pilot, and will be expected to go through iterations before becoming mature. SED plans to watch that calculation develop, but does not yet know to what extent it will succeed."

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Question 8: Please explain how SoCalGas and SDG&E will measure and/or quantify the impact of their proposed RAMP Report mitigations and their impact on the residual risk score. Please provide not only a general explanation, but also a specific explanation for each of the risk areas with HSE risk of 4 or more.

Response 08:

The residual risk score is a measurement for a point in time. Using the point in time as established by the 2015 risk registry, the utilities estimated the impact of the proposed mitigations on the residual risk score through the calculation of the Risk Spend Efficiency (RSE). In the Risk Spend Efficiency section of the RAMP Report risk chapters (specifically the Calculating Risk Reduction subsection, Step 4), SoCalGas and SDG&E describe "Calculate the risk reduction (change in the risk score)." The change in risk score measures and quantifies the impact on residual risk score for the mitigation groupings provided in the RAMP. Further detail about the change in risk score also is provided in the RSE workpapers. The RSE workpapers can be found using the link below:

http://www.sdge.com/regulatory-filing/20016/risk-assessment-and-mitigation-phase-report-sdge-socalgas

Then, use the following path: Discovery > CUE > CUE DR-01 RAMP RSE Workpapers

The RSE work papers include all supporting documentation for the calculation of the potential risk reduction of each mitigation group. Such calculations serve as the numerator of the RSE scores seen in each risk chapter of the RAMP filing.

Each file has a tab entitled "Analysis" which contains the calculations used to derive the potential risk reduction of each mitigation group. This potential risk reduction is quantified in a column entitled "Weighted New Score" or "Calibrated Weighted New Score." These are the figures used in the numerator of the RSE scores. In addition, the "Analysis" tab contains a sample RSE calculation with estimated cost figures to illustrate how the RSE can be calculated.

Some files may have additional worksheets which show supporting analysis or data for the results shown in the "Analysis" tab. The risk analysis team used this supplemental information to:

- summarize the analysis;
- facilitate discussions with the subject matter experts and other stakeholders as the mitigations were being evaluated and analyzed;
- consolidate external data for internal use;
- document discussion notes or other data;

Response 08:-Continued

- parse complex calculations for the sake of clarity; and/or
- provide reference for baseline residual risk scores.

SoCalGas and SDG&E found one calculation error regarding the RSE in its filing in Chapter SDG&E-03 (Employee, Contractor and Public Safety). The RSE work papers reflect the corrected values and such instances have been explicitly noted.

It is important to note that the estimated residual risk score presented in the RAMP will not necessarily be the risk score for 2016. As stated in chapter A of the RAMP Report, "As with any useful risk assessment, the subsequent risk registry is not static and changes annually" (Page SDGE/SCG A-1). As such, risk scores are continually reassessed to account for changing conditions and other factors.

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Question 9: Please describe (or provide a link to testimony which describes) the risks that are incorporated in the Health, Safety and Environment category, and the other risk categories.

Response 09:

All risks in the enterprise risk registry are annually given a score for frequency and level of impact, in the following four impact areas:

1. Health, Safety and Environmental
2. Operations and Reliability
3. Regulatory, Legal and Compliance
4. Financial

Each risk is assigned a score for each impact area, depending on how the risk is impacted by each category. The risks therefore are not categorized only as specific to "Health, Safety and Environmental," for example. Rather, all identified enterprise risks have a Health, Safety and Environmental score ranging from 1 (Negligible) to 7 (Catastrophic). (See discussion in Chapter B of the RAMP Report (p. SDGE/SCG B-4 and B-5).)

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Question 10 Please explain how SoCalGas/SDG&E determined the weighting of the risk categories, or provide a reference to testimony.

Response 10:

SoCalGas/SDG&E determined that four risk categories (i.e., attributes) were important for assessing risks – 1) Health, Safety & Environmental, 2) Operational and Reliability, 3) Regulatory, Legal & Compliance, and 4) Financial. Among these four categories, SoCalGas/SDG&E also determined that Health, Safety & Environmental was relatively more significant in terms of potential impact, and, accordingly, assigned a higher weight (40%) compared to the other attributes. The other categories were assigned the same weights (20%), as the impacts were considered to be, generally, equivalent.

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Question 11: Please provide a copy of the latest version of ISO 31000 and ISO 14001.

Response 11:

ISO standards are copyright protected documents and can be obtained online at either www.iso.org or https://webstore.ansi.org.

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Question 12: For the preparation of the RAMP report, please explain whether SoCalGas or SDG&E revised any of their proposed mitigations based on resulting RSEs. (For example, if an RSE turned out to be extremely low, did the utilities eliminate that proposed activity? Or, if an activity turned out to have a very high RSE, did the utilities devote more attention to that activity?).

Response 12:

Incremental mitigations included in the RAMP risk chapters' Proposed Risk Mitigation Plan are new and/or expanded activities that are expected to further address the level of residual risk, beyond the current level maintained from existing controls. The incremental activities included in the RAMP Report are mitigations that are recommended by SoCalGas and SDG&E after internal discussions and analyses. Some incremental mitigations were eliminated during this process. That being said, no mitigations were eliminated after RSE calculations were completed.

Some incremental mitigations resulted in a high RSE and were determined to be potentially even more effective than those mitigations currently in place. Even those incremental mitigations that had a low RSE may contribute to further reducing the risk.

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Question 13: When calculating or estimating the costs of proposed mitigations for the RAMP Report, did SoCalGas or SDG&E calculate or estimate the costs and RSEs for each specific, proposed mitigation? Or, did the utilities only calculate RSEs for groups of proposed mitigations? If the utilities did calculate costs and/or RSEs for each specific proposed mitigation, please provide workpapers showing those calculations

Response 13:

SoCalGas and SDG&E forecasted the cost for each of the proposed mitigations as set forth in Summary of Mitigations section. The RAMP cost workpapers, including mitigation cost estimates for the years 2011 through 2014 in direct, 2015 dollars, can be found using the following link: http://www.sdge.com/regulatory-filing/20016/risk-assessment-and-mitigation-phase-report-sdge-socalgas

Then, use the following path: Discovery > CUE > CUE DR-01 Cost Workpapers

Based on available data, SoCalGas and SDG&E calculated RSEs by grouping the proposed mitigations. For the majority of risks, the groupings included more than one mitigation. For a few, there was a grouping of "one."

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Question 14: When calculating the costs of mitigations for the RAMP, do the utilities consider "capital" costs to be capital expenditures incurred by the utilities for projects (even if the project has not yet been brought into service), or capital amounts added to plant-in-service?

Response 14:

Generally in the RAMP Report, the utilities included capital projects that are anticipated to be in-service by the test year, 2019. The "capital" costs provided for those mitigations are considered to be direct capital expenditures.

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Question 15: Please provide a table or tables showing, over the last 15 years (2002-2016), by year:

a. The year-end number of SoCalGas and SDG&E employees,
b. The year-end number of SoCalGas and SDG&E customers (for SDG&E, please show the number of electric and gas customers separately)
c. The number of fatalities, serious injuries/illness and minor injuries/illnesses experienced by SoCalGas and SDG&E employees while working or due to utility incidents.
d. The number of fatalities, serious injuries/illness and minor injuries/illnesses experienced by SoCalGas and SDG&E contractors while working for the utilities or due to utility incidents.
e. The number of fatalities, serious injuries/illness and minor injuries/illnesses experienced by customers and the public due to utility incidents.
f. For each fatality and serious injury/illness, provide an explanation of the cause.

Response 15a.:

Below please find five years of data for active employees by company:

YEAR	SoCalGas	SDG&E
2012	7,769	4,990
2013	8,147	4,603
2014	8,278	4,300
2015	8,412	4,313
2016	8,025	4,134

Response 15b.:

Spreadsheet "*Q15B_Electric_Customers.xlsx*" provides the year-end number of SDG&E electric customers. Spreadsheet "*Q15B_Gas_Customers.xlsx*" provides the year-end number of gas customers for SoCalGas and SDG&E.

Response 15c.:

For the purpose of answering Questions 15c, 15d, 15e and 15f, SDG&E and SoCalGas confine the responses to the years 2012-2016, as the Occupational Safety & Health Administration's

(OSHA) regulations require that the OSHA 300 Log, the privacy case list (if one exists), the annual summary, and the OSHA 301 Incident Report forms be saved for five (5) years following the end of the calendar year that these records cover.

Reference: Code of Federal Regulations (CFR) 29, 1904.33(a), Retention and maintenance of accurate records, https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=12777

For this response, we use the following definitions:

Injury or illness is an incident meeting the Occupational Safety and Health Administration (OSHA) recordability criteria.

Serious injury or illness is an incident meeting the following criteria as defined by Cal/OSHA: "any injury or illness occurring in a place of employment or in connection with any employment which requires inpatient hospitalization for a period in excess of 24 hours for other than medical observation or in which an employee suffers a loss of any member of the body or suffers any serious degree of permanent disfigurement, but does not include any injury or illness or death caused by the commission of a Penal Code violation, except the violation of Section 385 of the Penal Code, or an accident on a public street or highway."

Reference: California Administrative Code, Section 330(h), Title 8, http://www.dir.ca.gov/title8/330.html

Minor injury/illness is an OSHA-recordable incident other than a fatality or a *serious injury or illness* as defined above.

Table 1. Employee fatalities, serious injuries/illnesses and minor injuries/illnesses, 2012-2016

Company	Category	2012	2013	2014	2015	2016
SDG&E	Fatalities	0	0	0	1	0
SDG&E	Serious injuries or illnesses	2	3	4	2	1
SDG&E	Minor injuries or illnesses	118	110	98	83	90
	SDG&E Totals	**120**	**113**	**102**	**86**	**91**
SoCalGas	Fatalities	0	0	0	0	0
SoCalGas	Serious injuries or illnesses	1	4	1	0	1
SoCalGas	Minor injuries or illnesses	241	260	280	295	249
	SoCalGas Totals	**242**	**264**	**281**	**295**	**250**

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Response 15d.:

For this response, we use the following definitions:

Injury or illness is an incident meeting the Occupational Safety and Health Administration (OSHA) recordability criteria.

Serious injury or illness is an incident meeting the following criteria as defined by Cal/OSHA: "any injury or illness occurring in a place of employment or in connection with any employment which requires inpatient hospitalization for a period in excess of 24 hours for other than medical observation or in which an employee suffers a loss of any member of the body or suffers any serious degree of permanent disfigurement, but does not include any injury or illness or death caused by the commission of a Penal Code violation, except the violation of Section 385 of the Penal Code, or an accident on a public street or highway."

Reference: California Administrative Code, Section 330(h), Title 8, http://www.dir.ca.gov/title8/330.html

Minor injury/illness is an OSHA-recordable incident other than a fatality or a *serious injury or illness* as defined above.

Reference: California Recordkeeping Standard, General Recording Criteria, Subsection 14300.7(b)(5)(B), https://www.dir.ca.gov/dosh/etools/recordkeeping/CaStandard/CA143007.htm

Table 2. Contractor fatalities, serious injuries/illnesses and minor injuries/illnesses, 2012-2016

Company	Category	2012	2013	2014	2015	2016
SDG&E	Fatalities	0	0	0	1	0
SDG&E	Serious injuries or illnesses	0	3	2	2	2
SDG&E	Minor injuries or illnesses	19	19	23	17	20
	SDG&E Totals	**19**	**22**	**25**	**20**	**22**
SoCalGas	Fatalities	1	0	0	0	0
SoCalGas	Serious injuries or illnesses	0	0	1	0	0
SoCalGas	Minor injuries or illnesses	25	20	32	42	29
	SoCalGas Totals	**26**	**20**	**33**	**42**	**29**

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Response 15e.:

For this response, we use the following definitions:

Injury or illness is an incident involving a claim of injury or illness made against SDG&E or SoCalGas by a customer or member of the public which might lead to liability. (Note: customer/public injuries and illnesses are not evaluated for OSHA recordability criteria.)

Serious injury or illness is an incident meeting the following criteria as defined by Cal/OSHA: "any injury or illness occurring in a place of employment or in connection with any employment which requires inpatient hospitalization for a period in excess of 24 hours for other than medical observation or in which an employee suffers a loss of any member of the body or suffers any serious degree of permanent disfigurement, but does not include any injury or illness or death caused by the commission of a Penal Code violation, except the violation of Section 385 of the Penal Code, or an accident on a public street or highway."

Reference: California Administrative Code, Section 330(h), Title 8, http://www.dir.ca.gov/title8/330.html

Minor injury/illness is an OSHA-recordable incident other than a fatality or a *serious injury or illness* as defined above.

Reference: California Recordkeeping Standard, General Recording Criteria, Subsection 14300.7(b)(5)(B), https://www.dir.ca.gov/dosh/etools/recordkeeping/CaStandard/CA143007.htm

Claims of injury and illness made by customers or members of the public are not evaluated according to Cal/OSHA or Federal OSHA criteria, as is the case for employee and contractor injuries and illnesses. Additionally, the information developed regarding these claims does not provide reliable or consistent means of identifying injuries or illness that qualify under the Cal/OSHA definition of "serious," thereby requiring speculation about the extent of the injury or illness. Therefore, for this response, we provide only the total numbers of fatalities and bodily injury/illness claims by year.

Table 3. Customer/Public fatalities and bodily injury or illness claims, 2012-2016

Company	Category	2012	2013	2014	2015	2016
SDG&E	Fatalities	5	1	8*	3	3
SDG&E	Bodily injury or illness claims	72	76	53	52	51
	SDG&E Total Claims	**77**	**77**	**59**	**55**	**54**

SoCalGas	Fatalities	3	0	1	0	0
SoCalGas	Bodily injury or illness claims	22	53	34	32	21
	SoCalGas Total Claims	**25**	**53**	**35**	**32**	**21**

*One claim with three fatalities

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Response 15f.:

For this response, we use the definitions provided in the responses to Questions 15c, 15d and 15e. Further, SDG&E and SoCalGas object to the request to the extent it seeks confidential and privileged information related to opinions of causation. Without waiving its objection, SDG&E and SoCalGas provide the following.

Table 4. Details – SDG&E Employee fatalities and serious injuries, 2012-2016

Year	Category	Injury Claim	Incident Description
2012	Serious injury	Multiple Injuries (equal severity)	Wooden pole broke at ground level with employee at 40 feet elevation
2012	Serious injury	Fracture	Steel crossarm fell on employee's foot
2013	Serious injury	Poisoning - Toxic Materials	Illness Galvanized Poisoning
2013	Serious injury	Fracture	Lineman fell from pole from 25-foot height and broke right kneecap
2013	Serious injury	Multiple Injuries (equal severity)	Pole being cut spun on the stump and hit lineman
2014	Serious injury	Emotional/Mental Disorder	Company truck hit pedestrian
2014	Serious injury	Multiple Injuries (equal severity)	Employee was involved in a vehicle incident
2014	Serious injury	Fracture	Fall during Air Inlet Inspection
2014	Serious injury	Fracture	Tree branch hit employee’s face
2015	Serious injury	Fracture	Employee fell through vault lid
2015	Serious injury	Fracture	Employee fell off the side of truck
2015	Fatality	Electrical shock	Lineman in possible contact with energized conductor
2016	Serious injury	Electrical Shock / Electrical Burn	Electrical Contact

Table 5. Details – SoCalGas Employee fatalities and serious injuries/illnesses, 2012-2016

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Year	Category	Injury Claim	Incident Description
2012	Serious injury	Fracture	Reading meters fell backwards, tripped over rock, fractured leg; Hospitalized for more than 24 hours
2013	Serious injury	Burn	First and second degree burns to face, neck hands; Hospitalized for more than 24 hours
2013	Serious Injury	Neck	Neck injury from repetitive motion-surgery required; Hospitalized for more than 24 hours
2013	Serious injury	Illness	Valley Fever; Hospitalized for more than 24 hours
2013	Serious injury	Knee	Bumped knee on car door hospitalized for possible blood clot assessment; Hospitalized for more than 24 hours
2013	Serious injury	Burn	Flash burn, multiple body parts; Hospitalized for more than 24 hours
2014	Serious injury	Head	Tripped over traffic cone and fell hitting head on asphalt- Emergency surgery; Hospitalized for more than 24 hours

Table 6. Details – SDG&E Contractor fatalities and serious injuries, 2012-2016

Year	Category	Injury Claim	Incident Description
2013	Serious injury	Laceration	Cheek, laceration, hit by chain saw
2013	Serious injury	Fracture	Foot, compound fracture
2013	Serious injury	Tick fever	Multiple parts, Colorado Tick Fever
2013	Serious injury	Fracture	Tibia and Fibula, fracture, hit by cross arms
2014	Serious injury	Electrical induction	Hands, induction burn, minor injuries
2014	Serious injury	Fracture	Legs, fractured in fall from palm tree
2015	Serious injury	Electrical burn	Hand, Hip, burns from induction incident
2015	Serious injury	Laceration	Arm, laceration and fracture when employee is hit by snapped rope

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Table 6. Details – SDG&E Contractor fatalities and serious injuries, 2012-2016

Year	Category	Injury Claim	Incident Description
2015	Fatality	Tree trimmer was hit by a car while clearing trimmed branches	Motor vehicle incident
2016	Serious injury	Hand, foot, entry and exit wounds from electric shock	Electrical contact
2016	Serious injury	Fracture	Hip, fracture when EE fell 6 feet from line truck catwalk.

Table 7. Details – SoCalGas Contractor fatalities and serious injuries, 2012-2016

Year	Category	Injury Claim	Incident Description
2012	Fatality	Fall	Employee fell through a skylight on a roof of a building while on a roof repair job at a SoCalGas facility
2014	Serious injury	Fracture	While changing a bucket on a backhoe lying on an asphalt surface, employee pinched finger between the bucket's teeth and the asphalt surface

Table 8. Details – SDG&E Customer/Public fatalities, 2012-2016

Year	Category	Incident Description	Injury Claim
2012	Fatality	Bicyclist fatality	Bicyclist on wrong side of street to avoid construction cones was struck by motorist
2012	Fatality	Motorist fatality	Vehicle struck pole
2012	Fatality	Fatality	Gardener electrocuted
2012	Fatality	Fatality	Structure fire
2012	Fatality	Motorist fatality	Vehicle struck pole
2013	Fatality	Motorist fatality	Injury not described - car-pole contact
2014	Fatality	Pedestrian fatality	Company vehicle involved
2014	Fatality	Motorist fatality	Vehicle struck pad-mount equipment
2014	Fatality	Pedestrian fatality	Company vehicle involved
2014	Fatality	Motorist fatality	Vehicle struck pole
2014	Fatality	Fatality	3rd-party contractor electrocuted
2014	Fatality	Three (3) fatalities	Vehicle struck pole
2015	Fatality	Motorist fatality	Vehicle struck pole
2015	Fatality	Fatality	Structure fire

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Table 8. Details – SDG&E Customer/Public fatalities, 2012-2016

Year	Category	Incident Description	Injury Claim
2016	Fatality	Fatality	Line contact wire down
2016	Fatality	Motorist fatality	Vehicle struck pad-mount equipment
2016	Fatality	Motorcyclist fatality	Injury not described

Table 9. Details – SoCalGas Customer/Public fatalities, 2012-2016

Year	Category	Injury Claim	Incident Description
2012	Fatality (3)	Three fatalities	Drunk driver vehicle hitting numerous objects including a Meter Set Assembly and resulted in a triple fatality
2014	Fatality (1)	One fatality	Gas appliance explosion incident

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Question 16: Please explain whether SoCalGas and SDG&E actively and continuously monitor utility safety incidents in the U.S., and how this is done.

Response 16:

SoCalGas and SDG&E do not actively and continuously monitor utility safety incidents in the U.S. However, SoCalGas and SDG&E both proactively monitor safety incidents within their respective service territories.

The "Message Center" acts as SoCalGas' and SDG&E's central point for actively and continuously monitoring utility safety incidents related to their gas assets within their service territories, including receiving, recording and relaying information on reportable incidents, emergencies and natural disasters affecting the company. Company supervisors report incidents to the Message Center that meet the specific criteria identified in a written procedure. Training is made available on an annual basis to employees responsible for opening Message Center Reports. Incidents are managed using the Incident Command System and are documented and tracked electronically using an Incident Tracking & Management System (WebEOC). Appropriate actions are taken to address the incident in a safe manner and reports are made to regulatory agencies as required within the prescribed timeframe.

In addition, SDG&E 's Service Dispatch manages notifications and tracks incidents related to the utility's electric assets. Similar to the Message Center, incidents meeting defined criteria are reported to Service Dispatch, which manages them to completion.

Similarly, SoCalGas and SDG&E also track safety performance of their field contractors, and in 2016 subscribed to ISN, a global leader in contractor and supplier management systems. The ISN system collects self-reported information from contractors and suppliers and maintains it in one centralized platform.

In addition, SoCalGas and SDG&E participate in annual safety performance benchmarking surveys. SoCalGas and SDG&E contribute data annually to the American Gas Association (AGA) survey, and SDG&E contributes data to the Edison Electric Institute (EEI) survey. These surveys capture information related to OSHA-recordable incidents and motor vehicle incidents. The EEI survey includes a section for Serious Injuries and Fatalities (SIF). AGA and EEI issue reports that provide survey results and analysis.

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Question 17: Have any independent audits been conducted of SoCalGas' and SDG&E's overall safety management systems, policies and procedures within the last 5 years? If so, please provide the dates of those audits, and the names of the parties who conducted the audits.

Response 17:

Yes. SoCalGas has participated in an independent, external peer review and has been audited by the Audit Services department at Sempra Energy, parent company of SoCalGas and SDG&E. SoCalGas' safety-related audits are described below.

External Peer Review
SoCalGas voluntarily participated in the American Gas Association (AGA) Peer Review Program, a voluntary peer-to-peer safety and operational practices review program that allows local natural gas utilities throughout the nation to observe their peers, share leading practices and identify opportunities to better serve customers and communities. Conducted by AGA Peer Team, October 26 through 30, 2015.

Sempra Energy Audit Services
The Audit Services department has conducted the following independent audits of SoCalGas' overall safety management systems, policies and procedures within the last 5 years (2012 – 2016):

- December 29, 2016 - SoCalGas Self-Assessment, Environmental and Safety Compliance Management Program
- October 14, 2016 - SoCalGas Pico Rivera Base EH&S Audit
- April 27, 2016 - SoCalGas EH&S Base Audit - Visalia District
- April 18, 2016 - CA Utilities Air Tanks Quality Program
- December 18, 2015 - CA Utilities Lead and Toxic Metals Management Program Audit
- October 7, 2015 - SoCalGas Aliso Canyon Turbine Replacement Construction Project Audit
- July 13, 2015 - SoCalGas Facilities EH&S Operational Audit
- April 24, 2015 - SoCalGas Montebello Operations Environmental, Health & Safety Audit
- July 31, 2014 - SoCalGas EH&S Base Audits - Compton & Anaheim Distribution Bases
- April 23, 2014 - SoCalGas, CareOnSite Health Care Contracts and Agreements
- April 4, 2014 - SoCalGas Compressor Station Environmental, Health & Safety Review
- November 14, 2013 - CA Utilities Telecommunication Sites EH&S Audit
- September 3, 2013 - SoCalGas PCB Management Review
- August 1, 2013 - SoCalGas Gas District Operating Bases – Taft Transmission Base

Response 17:-Continued

- July 9, 2013 - CA Utilities, Air Tanks – Quality Program
- June 12, 2013 - SoCalGas Aliso Canyon Operations
- April 25, 2013 - SoCalGas Northern Distribution Project Management and Environmental, Health and Safety Controls Review
- July 12, 2012 - SoCalGas Contractor Safety and Insurance Management
- April 27, 2012 - CA Utilities Performance Based Ratemaking – Safety Performance Indicator
- February 7, 2012 - SoCalGas Playa Del Rey Base – Financial, Operational and EH&S Audit
- January 27, 2012 - SoCalGas Coal-Tar Pipe Wrap Management

SDG&E has also had external audits as well as audits performed by Sempra Energy's Audit Services department. Please see below.

External Audits

- August 17, 2016 - OSHA VPP Assessment of the Palomar Plant conducted by Consultant Dan Drown of Drown Consulting
- July 2015 - OSHA Voluntary Protection Program (VPP) Recertification audit of Desert Star conducted by the OSHA VPP Team
- June 26, 2015 - Management System Audit conducted by Associated Electric & Gas Insurance Services Limited (AEGIS)

Sempra Energy Audit Services

- December 29, 2016 - SDG&E Self-Assessment ESCMP Management
- November 17, 2016 - SDG&E Power Plant Operations and Environmental Health and Safety
- April 18, 2016 - CAu Air Tanks Quality Program
- December 21, 2015 - SDG&E South Bay Substation Relocation Audit
- December 18, 2015 - CAu Lead and Toxic Metals Management Program Audit
- October 1, 2015 - SDG&E Fire Safety Program Audit (Attorney-Client Privileged)
- June 17, 2015 - SDG&E Electric C&O Districts - North Coast
- May 8, 2015 - SDG&E Electric Distribution and Transmission System Safety Audit
- March 26, 2015 - SDG&E Facilities EH&S Operational Audit
- December 5, 2014 - SDG&E PCB Management
- September 9, 2014 - SDG&E East County (ECO) Substation Construction Project Follow-up
- May 1, 2014 - SDG&E Electric Substation Safety
- April 23, 2014 - SDG&E Electric Construction & Operations Center - Orange County

Response 17:-Continued

- November 14, 2013 - CAu Telecommunication Sites EH&S Audit
- August 30, 2013 - SDG&E East County (ECO) Substation Construction Project Review
- August 29, 2013 - SDG&E Community Fire Safety Program (Attorney-Client Privileged)
- August 26, 2013 - SDG&E Palomar Energy Center Operations and EH&S Review
- July 9, 2013 - CAu Air Tanks - Quality Program
- June 26, 2013 - SDG&E Regional Construction & Operations Districts - Beach Cities
- October 30, 2012 - SDG&E Electric Operations and EH&S Standards Management Review
- July 31, 2012 - SDG&E Community Fire Safety Program (Attorney-Client Privileged)
- May 22, 2012 - SDG&E Contractor Safety & Insurance Management Audit
- February 14, 2012 - SDG&E Sunrise Powerlink Construction EH&S Audit

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Question 18: In the preparation of the RAMP Report:

a. Please explain whether SoCalGas and SDG&E personnel met to determine if the risk scores and frequencies were comparable between each utility and across risk areas.
b. Please explain whether SoCalGas and SDG&E considered their different "exposure" levels to risks. (For example, due to differing numbers of employees, different amounts of high- and medium pressure pipeline miles, different amounts of third-party dig-ins, etc.)

Response 18:

a. SoCalGas and SDG&E personnel did meet to determine if the risk scores and frequencies were comparable between each utility and across risk areas. This occurred during evaluation and assessment of the risks, and subsequently during the RAMP effort. Additional discussions have occurred in subsequent risk evaluations, and will continue to be discussed in the future.

b. Yes, for several risks, the RAMP teams considered differences in exposure level to the same risk between the two companies.

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Question 19: On page B-7 of the RAMP Report, the utilities refer to Existing Key Risk Indicators (KRIs). In general, what is a Key Risk Indicator? Please list the KRIs for SoCalGas and SDG&E, and explain how KRIs are used to assess the utilities' risks. Please also explain how KRIs are different from the risk scores set forth in the RAMP Report.

Response 19:

Key risk indicators (KRIs) are metrics that may be used to indicate the level or trend of a risk. KRIs tend to be "leading" or forward looking in nature. KRIs may act as a signal of a potential change in the likelihood and potentially the impact of the occurrence of a risk event. They are one of many data points used in the risk assessment process. A KRI, by itself, is not intended, nor should it be intended, to be the sole basis for assessing risk.

KRIs differ from the risk score in that they are data points that may be considered in evaluating the impact and/or frequency of a risk. The impact and frequency then form the basis of the risk score.

The following is a list of KRIs that currently exists. This list is under continuous review and is subject to change and refinement. Additionally, this list may be updated and/or KRIs replaced based on the work that is currently being done in the S-MAP metrics working group:

1. Cyber Security – both SoCalGas and SDG&E
    a. Number of Cyber security events
    b. Number of medium cyber security incidents
    c. Percentage of cyber security events not analyzed
    d. Number of high severity cyber vulnerabilities not remedied
    e. Number of high severity cyber vulnerabilities not remedied over 60 days old
2. Gas Public Safety Events-Pipelines
    a. Miles of tested pipe (>=1.25 MAOP) – both SoCalGas and SDG&E
    b. Proportion of total pipe tested (>=1.25 MAOP) – both SoCalGas and SDG&E
    c. Proportion of state-of-the-art pipe mileage (plastic) – both SoCalGas and SDG&E
    d. Proportion of state-of-the-art pipe mileage (plastic) – both SoCalGas and SDG&E
    e. Pending pipeline integrity digs older than 1 year (Remediation, Scheduled/Immediate) – SoCalGas only
    f. Proportion of right of way maintenance high priority or incomplete from last year – SoCalGas only
3. Aviation Incident – SDG&E only
    a. Aviation Services Department flight hours
    b. Contractor flight hours
    c. Federal Aviation Administration (FAA) incidents per total number of flights

Response 19:-Continued

4. Damage to Gas Infrastructure by 3rd Parties – SoCalGas Only
    a. Percentage of customers that have not requested field tech visit within last 7 years
    b. Percentage of suspected diversion reports followed-up and closed out
    c. A-1 response time (30/45 min & 60 min)
    d. System Quality Assurance (QA) index (techs following policies and procedures)
    e. QA errors - level 5 (unsafe findings on customer property not recognized by techs)
    f. Pending Leaks (Counts)
    g. Leaks (Code 3 Steel) Over 5 Years Old
    h. All Leaks Pending Inventory 12 Months to 60 Months
    i. All Leak Pending Inventory Under 12 Months
    j. Number of damages (transmission)
    k. Number of damages (distribution)
    l. Damages per 1,000 locate & mark tickets (all)
    m. Damages per 1,000 locate & mark tickets (distribution only)

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Question 20: On page SDGE/SCG C-3 the RAMP Report references the use of Behavior-Based Safety systems. Please more fully describe this program at SoCalGas and SDG&E, how it used, and what departments or organizations use BBS. Please also state whether any particular organization or department within the utilities or Sempra is responsible for administering the BBS program.

Response 20:

The Behavior Based Safety (BBS) program is a proactive approach to safety and health management, focusing on principles that recognize at-risk behaviors as a cause of injuries. The purpose of the program is (1) to reduce the occurrence of at-risk behaviors by modifying an individual's actions and/or behaviors through observation, feedback and positive interventions aimed at developing safe work habits, and (2) to sustain the use of safe behaviors by identifying and recognizing them. It is, in essence, a job observation program where a supervisor observes an employee performing his/her normal job activities (at work locations and in the field) and coaching the employee on his/her safe and unsafe behaviors.

SoCalGas

In SoCalGas' BBS program, the supervisors are trained by the Safety & Wellness Department in conducting effective job observations. The program is structured and helps identify and score employees' safe and at-risk behaviors to a pre-determined standard in various areas of safety, including driving safety, use of PPEs and tools, proper body mechanics, and job-site activities. The overall score reflects the employee's level of safe behavior. The program is administered by Safety & Wellness Department (developing formal job observation checklists/protocols, providing training, monitoring results) and implemented in the field by supervisors in the following operating organizations: Customer Services, Gas Operations (distribution), Gas Transmission, Gas Storage, Facilities, Fleet, Customer Contact Centers, Billing & Collections, Branch Payment Offices, and Warehousing.

SDG&E

SDG&E's BBS program proactively increases safe behaviors and eliminates at-risk behaviors through positive reinforcement, coaching, work observation and sharing of information. Each BBS team reports to their respective departments and has a management sponsor.

Response 20:-Continued

Benefits of SDG&E's BBS Program

1. **Flexibility** – Can meet the needs of any work group, department, organization, etc.
2. **Compatibility** – Can incorporate well with existing business and operating needs.
3. **Simplicity** – Developed with basic concepts that are easily understood by all employees.
4. **Active Participation** – Creates participation by all levels of the organization.
5. **Fact Based** – Relies on information collected from and about employees who are closest to the risk.
6. **Systematic** – Relies on structured analysis and review of observations and incidents to develop effective risk reduction solution.

SDG&E's BBS Organizations

- Advanced Metering Operations (AMO)
- C&O Centers, Electric Regional Operations and Skills Training
- Gas Technical Services
- Customer Services Field
- Gas Distribution

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Question 21: On page SDGE/SoCalGas C-4, the RAMP Report discusses SDG&E's capital and O&M budget planning process and the incorporation of risk mitigation into that process.

a. Please explain whether and how quantitative risk reduction is incorporated into the SoCalGas and SDG&E budget planning and expenditure allocation process, and whether risk reduction is considered on a quantitative, or qualitative, level for each specific project or activity.
b. Once SoCalGas and SDG&E have gone through the risk registry process, please describe how the utilities then prioritize specific assets or activities for mitigation work.

Response 21:

a. The budget planning process at SDG&E/SoCalGas is a risk-informed process. Company officers responsible for budget planning are engaged in the risk registry process via several sessions where the risks are discussed and prioritized thus informing the budget planning process. This risk informed process is evolving: the RAMP filing was the first time that SDG&E/SoCalGas had attempted to calculate risk reduction and risk spend efficiency. Even though the RAMP filing assigns risk spend efficiency values to mitigations (or groups of mitigations), they are currently only valid for comparisons within a risk making them difficult to incorporate quantitatively in the company wide budget process. Note that currently the budget planning is not allocated by risks, but across the entire organization. Therefore, now the risk reduction value is only considered on a qualitative level and is one of the several factors used in the budget planning process, such as resources and logistical constraints.

b. Please refer to the response provided to Q21a above. Further, the Company continues to evolve the risk registry process and is considering performing pilots to further test incorporating risk reduction in the budgeting decision making process.

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Question 22: On page SDGE/SCG C-8 of the RAMP report, the utilities state that "The Compensation Committee of the Sempra board of directors determines the safety measures that are included in the ICP for senior Sempra Energy corporate officers." Please list the safety measures that are included in the ICP for each senior Sempra Energy corporate officer.

Response 22:

The safety measures related to SDG&E and SoCalGas that were included in the 2016 ICP for senior Sempra Energy corporate officers are listed below. The metrics focus on both employee/contractor safety and operational safety. Safety measures for Sempra International, USG&P and Sempra LNG are not included.

SDG&E — Employee Safety (OSHA Recordable Injury Rate)
SDG&E — Employee Safety (OSHA Lost Time Incident Rate)
SDG&E — Contractor Safety (OSHA Recordable Injury Rate)
SDG&E — Pipeline Safety Program — Miles Remediated
SDG&E — Pipeline Safety Program — Number of Valves Retrofitted
SDG&E — Distribution System Integrity — Miles of Non-State-of-the-Art Pipe Replaced
SDG&E – Safety (Major Electric Safety Projects - Number of goals achieved out of four)
SDG&E – Safety (System Average Duration Interruption Index)
SoCalGas — Employee Safety (OSHA Recordable Injury Rate)
SoCalGas — Employee Safety (OSHA Lost Time Incident Rate)
SoCalGas — Contractor Safety (OSHA Lost Time Incident Rate)
SoCalGas — Pipeline Safety Program — Miles of Phase 1 Pipe Remediated
SoCalGas — Pipeline Safety Program — Number of Valves Retrofitted
SoCalGas — Distribution System Integrity — Main and Service Replacement
SoCalGas — Advanced Meter Installations (Cumulative Meter Installations)
SoCalGas — Storage Integrity Management Program (Wells Inspected under program)

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Question 23: In the RAMP Report, SoCalGas and SDG&E reference a number of internal safety-related organizations or departments, including at least the following

- Pg. A-4: Enterprise Risk Management
- Pg. C-7, 8 Environmental, Health, Safety and Technology Committee
- SCG2-17: Safety, Wellness and Emergency Services Department
- SCG 2-17: Emergency Management
- SCG 2-17: Environmental Services Department
- SCG 2-17, SDG&E 3-10: Safety Services Department
- SCG 2-19: Employee Assistance Program and Wellness Department
- SCG 2-20: Emergency Service Department
- SDGE 9/SCG 5-11: Corporate Security
- SCG 6-10: Critical Asset Security Team
- SCG 8-3 (footnote 2): System Integrity and Asset Management organization
- SCG 8-9: Quality, Risk and Compliance Team
- SDGE 7/SCG 3-16: 7X24 Security Operations Center.

g. Please list the executives, managers and employees who are included in the Enterprise Risk Management Team.
h. Do the utilities have a comprehensive safety organization chart or listing? If so, please that chart or listing.
i. Please briefly describe the activities and responsibilities of the above departments or organizations.
j. Please state where in the utility organization the department resides.
k. Do other major safety departments or organizations exist with SoCalGas or SDG&E that is not listed above? If so, please list those departments or organizations.

SDG&E Response 23:

a. SDG&E/SoCalGas shared ERM personnel include:
VP Enterprise Risk Management (ERM) & Compliance
ERM Director
Operations Risk Management Director
ERM Manager (3 people)
ERM Project Manager (2 people)
Quantitative Risk & Controls Manager

SDG&E Response 23: - CONTINUED

Senior Risk Analyst
Staff Accountant/Intern (2 people)
Risk Management Coordinator

b. Organization charts for the Safety & Wellness departments of SoCalGas and SDG&E are included in the documents "*SoCalGas Q23B Safety Org Charts.pdf*" and "*SDGE 23B Safety Org Charts.pdf*". The names of the employees have been redacted.

c./d.

ERM

c. The activities and responsibilities of the ERM organization are as follows:
   - Sets the policy, governance, structures, process, and guidelines for SoCalGas and SDG&E's integrated approach to risk management practices;
   - Provides guidance to create consistent, risk-informed decision making;
   - Implements qualitative and quantitative processes to support the assessment and evaluation of risk; and
   - Monitors execution of programs and measure results.

d. The VP of ERM & Compliance reports to the Chief Risk Officer & General Counsel, who reports to the President.

Environmental, Health, Safety and Technology Committee

c. The Environmental, Health, Safety and Technology Committee (EHS&T) provides oversight across all Sempra companies for environmental, health, safety and technology issues. As stated in Chapter C of the RAMP Report, the Environmental, Health, Safety and Technology Committee of the Sempra Energy board of directors is responsible for:
   - Assisting the company's Board of Directors in overseeing the company's programs and performance related to environmental, health, safety and technology matters.

SDG&E Response 23: - CONTINUED

- Reviewing environmental, health and safety laws, regulations and developments at the global, national, regional and local level and evaluating ways to address these matters as part of the company's business strategy and operations.
- Reviewing cybersecurity programs and issues.
- Reviewing and evaluating technology developments that advance the company's overall business strategy.

d. The EHS&T committee is a committee of the Sempra Energy Board of Directors that does not sit at the utilities and is a function (i.e., not operational).

SoCalGas Safety & Wellness Department

c. Safety Department develops, administers and oversees occupational health and safety policies, programs and training for all SoCalGas employees. Safety staff includes industrial hygienists, ergonomist, occupational health nurses, safety advisors dedicated to supporting the occupational health and safety needs of the entire organization. The department employees:

- monitor laws and regulations
- provide compliance guidance and direction to supervisors and employees through formal safety standards/procedures
- create and deploy training tools and materials for educating employees on safe and compliant practices and behaviors
- conduct employee exposure assessments to ensure regulatory compliance and protection
- perform periodic self-assessments of company facilities, job hazards, and work practices to provide assurance that safety policies are implemented by employees the way they are intended
- assist supervisors with conducting employee injury and vehicle incident investigations
- establish guidelines and expectations for company project managers for managing contractor safety performance on construction projects
- support safety stand-downs as well as annual employee and contractor safety congresses

SDG&E Response 23: - CONTINUED

- track and report on company's safety performance internally and to the appropriate committees of the board of directors of SoCalGas and Sempra Energy.

Wellness Department is committed to promoting safe and healthy lifestyles for employees and their families through promotion of quality health and wellness programs that motivate behavior change focused on disease and injury prevention. Health promotion efforts emphasize the importance of giving employees informational tools and empowering employees to make educated and smart decisions about your health. Employee Assistance Programs, such as supportive services, are also included within the Wellness department.

Please note that this department previously included Emergency Services; however, Emergency Services is now a stand-alone department. A description of the activities and responsibilities of the Emergency Services department is provided below.

d. Safety & Wellness Department resides within the Human Resources, Diversity and Inclusion organization.

SoCalGas Emergency Services Department

c. As stated on page 2-20 of the Employee, Contractor, Customer and Public Safety risk chapter, the Emergency Services department manages company-wide emergency preparedness via the maintenance of Emergency Response Plans and Business Resumption Plans. Emergency Services is responsible for emergency incident reporting, maintenance of mutual assistance plans, staffing the Emergency Operations Center, conducting Incident Command Center (ICS) and Incident Management System (IMS) training, and coordinating liaison meetings with First Responders. The Emergency Response Plan, along with referenced documents and procedures, outlines how the Company prepares for, responds to, and recovers from gas-related emergencies. The Emergency Response Plan has three major elements:
    - Emergency Preparedness;
    - Crisis Management; and
    - Business Resumption.

SDG&E Response 23: - CONTINUED

The Emergency Services department is also responsible for the following activities:

- Complying with governmental regulations for emergency planning;
- Training employees to know their specific role, duties, and responsibilities;
- Establishing relationships and providing emergency response information to other emergency organizations;
- Facilitating inter-organizational assistance;
- Coordinating proper communications – both internal and external;
- Using effective emergency management technology;
- Conducting training and exercises;
- Engaging in Continuous Improvement; and
- Supporting internal and external educational efforts.

d. SoCalGas' Emergency Services department resides in the Transmission and Storage organization.

Emergency Management

c./d. Emergency Management is a function performed by the Emergency Services department. At stated on page SCG 2-17, "Emergency Management provides safety and basic operational information about SoCalGas facilities as they relate to First Responder operations and activities." Please refer to the description of the Emergency Services department provided above.

SoCalGas Environmental Services Department

c. The Company's Environmental Services department is a team of in-house experts and specialists who provide expertise and guidance to the company and its employees on compliance in the areas of natural resources, water quality, hazardous materials and waste, air quality and land planning. Environmental Services works closely with internal business units and third-party contractors to ensure that company employees and operations are in compliance with all local, state and federal environmental laws, rules, regulations and ordinances, as well as internal company policies and procedures.

SDG&E Response 23: - CONTINUED

Environmental Services creates and provides environmental trainings and materials to employees covering a variety of critical environmental issues. These trainings and related materials are developed to ensure compliance with environmental regulations and provide information necessary to employees to perform their job in compliance with legal and regulatory requirements.

Environmental Services also develops environmental standards and procedures to define and clarify company and employee roles, operating procedures and work requirements as they relate to environmental issues. These standards and guidelines are drafted by Environmental Services technical specialists who understand compliance requirements. The documents are published internally and provide day-to-day activities guidance to guarantee company operations are conducted in a manner that is compliant with all applicable environmental rules and regulations.

Environmental Services continuously evaluates internal departments' and employees' compliance with all applicable laws and regulations pertaining to the environment. Dedicated employees, such as Environmental Field Service representatives and Industrial Hygiene staff, and third-party contractors support and advise individual departments, facilities, projects and processes to ensure all environmental responsibilities are being met. This dedicated staff interfaces with contractors and is charged with administering the Safety Data Sheet (SDS) program so that only approved chemicals are introduced into the workplace. Activities associated with environmental and industrial hygiene activities are included within this category.

d. The SoCalGas Environmental Services department resides within the Operations Support department of SoCalGas and SDG&E which falls within the larger Human Resources & Administrative department of SDG&E.

SDG&E Safety Services Department

c. Safety Services is comprised of the Safety Operations and Safety Compliance departments. Safety Services develops, administers and oversees safety policies, programs and training. The safety staff includes a director, a safety compliance manager, a safety operations manager, industrial hygienists, field safety advisors and a safety advisor dedicated to supporting SDG&E.

SDG&E Response 23: - CONTINUED

As safety leaders, we strive to be effective field coaches with managers or supervisors and provide resources to integrate safety into everyday business decisions.

As safety advocates, we collaborate with other departments to ensure employee health and safety involvement.

As safety champions, we identify, champion and manage safety policies and programs.

As technical experts, we serve as safety and health Subject Matter Experts, monitor emerging trends, and provide regulatory guidance.

d. The Safety department resides in the Human Resources division.

Employee Assistance Program and Wellness Department

c./d. Please refer to the parts c. and d. under the Safety & Wellness Department above.

Corporate Security

c. Corporate Security is responsible for the protection of the personnel and assets of the company. Part of that responsibility includes investigating incident reports including arson, burglary, theft, vandalism, suspicious activity, etc. Corporate Security also includes a risk management and intelligence program to collect, analyze, and disseminate intelligence that may assist with decision making regarding energy operations and security procedures.

d. Corporate Security resides at Sempra Energy, the parent company of SoCalGas and SDG&E, under the Chief Intelligence Officer, Corporate Systems and Security department with the Human Resources division.

Critical Asset Security Team (CAST)

c. CAST is a cross-functional team made up of representatives from many departments. As stated in the narrative provided in the RAMP report - “CAST is composed of personnel from multiple business units, including Corporate

SDG&E Response 23: - CONTINUED

Security, Engineering, Operations, Legal and Environmental assists with enhancing security at all of SoCalGas' facilities. This cross-functional team was created to assess current security countermeasures across the SoCalGas infrastructure and to make incremental and long-term security recommendations. This team manages the implementation of many of the physical security systems."

d. n/a – this is a team, not an organization/department.

System Integrity and Asset Management organization

c. The System Integrity & Asset Management organization develops, implements, monitors and maintains asset and record information systems, operational policies, procedures, plans and programs, all related to the safe and reliable delivery of natural gas principally for the Distribution, Transmission and specified above ground Storage assets. Pipeline Integrity resides within this organization, where it's responsible for implementing and managing requirements set forth in 49 CFR Part 192, Subpart O – Gas Transmission Pipeline Integrity Management, and Subpart P – Gas Distribution Integrity Management. This organization is also responsible for the Information Management Systems which are a broad category that encompasses the various applications that support records management such as the Geographic Information System, Work Management, Document Management and Real-time Monitoring Systems.

d. This organization resides reporting to the Senior Vice President of Gas Operations & System Integrity, which in turn reports to the Chief Operating Officer/President of SoCalGas.

Quality, Risk and Compliance (QRC) Team

c. The QRC team was recently included in a re-organization where the responsibilities for records management will remain in System Integrity & Asset Management (SI & AM) and the QRC team's activities will be focused on Quality Management and with expanded responsibilities. The QRC team implemented a Quality Plan for the Pipeline Safety Enhancement Program (PSEP) for Project Execution, Construction and Project Closeout with an emphasis on auditing in progress and completed life of asset records through both field and office audits. Since the re-organization, the team is also developing a process to perform oversight quality audits on pipeline safety and compliance activities within Distribution operations. The renamed team, Gas Compliance Quality Management, is in the first stage of a development roadmap but continues to perform auditing on Distribution compliance activities as it also absorbed quality management resources from SI & AM.

SDG&E Response 23: - CONTINUED

d. The QRC (now Gas Compliance Quality Management) department resides in the Pipeline Safety and Compliance (PS&C) organization (reporting to the PS&C Director), which in turn reports to the Senior Vice President of Gas Operations & System Integrity.

SDGE 7/SCG 3-16: 7X24 Security Operations Center

c. The 7X24 Information Security Operations Center (ISOC) is responsible for continuously monitoring and analyzing cybersecurity events (an event that may or may not require a response action). Cybersecurity events are analyzed and, if warranted, escalated as a security incident for further action. The ISOC provides the first line of support and coordination for cybersecurity incident response.

The team is supported by an enterprise log analysis and event correlation solution which consolidates information from multiple enterprise, infrastructure, and cybersecurity systems. Predefined correlation rules and queries present alerts to the ISOC about possible malicious activity. Ad hoc monitoring and review for anomalous activity is also conducted. User reported cyber events and threat intelligence resources are also channeled through the ISOC.

d. The 7X24 Information Security Operations Center is part of the Information Security Department.

e. Another safety organization within SoCalGas is the Pipeline Safety & Enhancement Program (PSEP). There is one Safety Advisor located within the PSEP organization dedicated full-time to overseeing safety efforts of PSEP projects.

Other safety organizations within SDG&E are:

- Major Projects Safety Services;
- Safety Center of Readiness and Excellence (SCORE); and
- Field Safety Advisor for Construction Services.

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Question 24: Please list which risks, if any, in the RAMP Report incorporate the potential impact and frequency of earthquakes, and provide citations to the RAMP Report.

Response 24:

Earthquakes are mentioned in the following risks in the RAMP Report:

Risk	Chapter/Page
Catastrophic Damage Involving High-Pressure Pipeline Failure	SCG-4-6
Catastrophic Damage Involving Medium-Pressure Pipeline Failure	SCG-10-6
Cyber Security	SDGE7 / SCG-3-6
	SDGE7 / SCG-3-8
Climate Change Adaptation	SCG-9
Wildfires	SDGE-1-9
Major Disturbance to Electrical Service (Blackout)	SDGE-5-5
	SDGE-5-9
	SDGE-5-14
	SDGE-5-16
	SDGE-5-17
	SDGE-5-23
Fail to Blackstart	SDGE-6-6
	SDGE-6-17
	SDGE-6-25
Catastrophic Damage Involving High-Pressure Pipeline Failure	SDGE-10-6
	SDGE-10-14
Electric Infrastructure Integrity	SDGE-12-6
Catastrophic Damage Involving Medium-Pressure Pipeline Failure	SDGE-16-6
	SDGE-16-14

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Question 25: Please provide:

a. the number of third-party dig-ins experienced in the SoCalGas and SDG&E service territories, separately, by year for the last 15 years (2002-2016)
b. the number of significant third-party dig-ins (using the definition of "significant incident" on page SCG 1-12) experienced in the SoCalGas and SDG&E service territories, separately, by year for the last 15 years
c. the number of third-party dig-ins experienced in the SoCalGas and SDG&E service territories, separately, that resulted in fatality or injury requiring inpatient hospitalization in the last 15 years.
d. the annual utility costs associated with significant third-party dig-ins in the SoCalGas and SDG&E service territories, separately, over the last 15 years

Response 25:

The requested SDG&E and SoCalGas data for parts "a" through "d" listed above are provided in the Excel spreadsheet labeled "*OSA DR-01 Q25 support.xlsx*".

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Question 26: In the Employee, Contractor, Customer, and Public Safety risk area, please explain why SoCalGas assigned a frequency level of 5 while SDG&E assigned a frequency level of 4.

Response 26:

Rating differences reflect varying estimates by subject matter experts (SMEs) at SoCalGas and SDG&E. Since frequency ratings were done independently using a hypothetical reasonable worst case scenario, considering different sets of internal and external data to inform their ratings, and the criteria listed in the 7X7 risk matrix, the varying ratings reflect different conclusions. Specifically, SDG&E and SoCalGas SMEs concluded their reasonable worst case scenarios could potentially occur once every 3-10 years and once every 1-3 years, respectively.

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Question 27: Regarding the Employee, Contractor, Customer, and Public Safety risk area, please provide:

a. the number of incidents in the last 15 years (2002-2016), by year, experienced in the SoCalGas and SDG&E service territories separately which resulted in a fatality or serious injury or illness due to an employee and/or contractor improperly following policies or procedures.
b. the number of fatalities or serious injuries/illnesses that resulted from each such incident.

Response 27:

SoCalGas and SDG&E object to the request to the extent it seeks confidential and privileged information related to opinions of causation. Without waiving its objection, SoCalGas and SDG&E provide the following:

While thorough incident investigations and root cause analysis are performed, it is not feasible to ascribe safety incidents solely to improper following of policies or procedures by employees or contractors. While this type of information could possibly be found in the investigation reports, it is not tracked this way at SoCalGas and SDG&E.

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Question 28: In SoCalGas'/SDG&E's assumed worst case Cyber Security scenario discussed on page SDGE 7/SCG 3-11, do the utilities assume that serious injuries or fatalities occur? If so, how would such injuries or fatalities occur?

Response 28:

Yes, there is potential for serious injuries to occur through a variety of situations related to loss of energy resources, malfunction of operational and safety equipment, or impacts to other critical infrastructure services. Misuse of operational equipment or disabling safety systems can lead to some of the other risks described by manipulating centralized remote management systems to mislead operating or field teams. While it is possible for fatalities to occur as a result of a persistent blackout, the reasonable worst case scenario selected by the Subject Matter Experts (SMEs) in 2015 for the Cyber Security risk chapter did not assume a cyber-related breach would be the primary cause of a fatality.

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Question 29: Please provide:

a. the number, if any, of significant Cyber Security events by year experienced by SoCalGas and SDG&E in the last 15 years (2002-2016) that have resulted in any fatalities or serious injuries/illnesses to the public or utility employees.
b. the number of fatalities or serious injuries/illnesses that resulted from each such incident.
c. the number, if any, of significant Cyber Security events by year experienced by SoCalGas and SDG&E in the last 15 years that have resulted in any of the consequences assumed in the utilities' assumed worst case scenario.

Response 29:

a. 0
b. 0
c. 0

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Question 30: Please provide:

l. The number of SoCalGas and SDG&E high-pressure pipeline incidents in the last 15 years (2002-2016), by year, which resulted in a fatality, injury, or property damage exceeding $25,000.

m. the number of fatalities and injuries, the utility costs, and other property damage costs that resulted from each such incident.

Response 30:

a. The number of SoCalGas and SDG&E high-pressure pipeline incidents in the last 15 years (2002-2016), to the extent such incidents exist, filtered by the criteria above are provided in the spreadsheet "*Data Request Q30_RAMP REPORT SUMMARY.xlsx*".

b. Please refer to the spreadsheet referenced in question 30a above.

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Question 31: On page SCG 4-7, SoCalGas lists "incorrect operation" as one potential driver for a high-pressure pipeline failure. Isn't "incorrect operation" already included as a potential driver in the in the earlier chapter on Employee, Contractor, Customer, and Public Safety?

Response 31:

According to the risk lexicon that was submitted to the Commission in Phase 1 of the S-MAP proceeding, the definition of a risk driver/trigger is as follows:

> Factor(s) that could cause one or more risks to occur (risk driver may also be commonly referred to as "threat").

As such, the potential drivers provided in the RAMP Report could cause one or more risks to occur.

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Question 32: Please provide:

a. the number of workplace violence incidents at SoCalGas and SDG&E over the last 15 years (2002-2016), by year, that have resulted in serious injury or fatality,
b. The number of fatalities and serious injuries that resulted from each such incident

Response 32:

Two known security-related workplace violence incidents occurred during this period, as follows (note: there were no known incidents for SDG&E):

a. 2009 – one SoCalGas incident resulted in fatalities
   2012 – one SoCalGas incident resulted in serious injury

b. 2009 – above incident resulted in three fatalities (two current employees, one former employee)
   2012 – above incident resulted in one employee being seriously injured.

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Question 33: With regard to workplace violence mitigation costs: please explain why SDG&E's proposed mitigations have such a large capital increase relative to the costs of the SoCalGas proposed mitigations.

Response 33:

A significant cost difference between the proposed mitigation costs at SDG&E and SoCalGas is security-related upgrades to SDG&E's Mission Control Center (i.e., gates, barriers, etc.). This is estimated to be a multi-year project forecasted to cost more than $5 million. Such security upgrades came at the recommendation of Federal and local agencies as well as a third-party security assessment.

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Question 34: On pg SCG 6-3, footnote 2, SoCalGas states that "Critical gas infrastructure information is confidential and protected from disclosure."

a. Can SoCalGas at least disclose the nature of this infrastructure, without identifying specific assets? If so, please do so.
b. Does SoCalGas specify to appropriate SED staff which specific assets are considered critical gas infrastructure?

Response 34:

a. SoCalGas' critical gas infrastructure generally includes assets, such as gate stations, compressor, storage facilities, among others.
b. SED has been informed that SoCalGas has critical gas facilities per the TSA guidelines; however, SED has not been provided specific asset information.

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Question 35: SDG&E does not appear to have identified this risk area (Physical Security of Critical Gas Infrastructure) as an HSE risk level 4 or above. Please explain why this is the case. Also, does SDG&E have "critical electric infrastructure"? If so, why is "physical security of critical electric infrastructure" not a significant risk for SDG&E?

Response 35:

SDG&E's critical gas infrastructure risk exposure is lower than SoCalGas due to a number of factors and differences, including but not limited to lower number of sites, implemented controls, and service area. As such, SDG&E does not have the risk of Physical Security of Critical Gas Infrastructure.

SDG&E does, however, have a comparable risk on the electric side. Using SDG&E's 7X7 matrix, only risks which scored a 4 or greater[1] for the Health, Safety, and Environmental impact area within the SDG&E 2015 Risk Registry were included in the RAMP Report. The SDG&E risk of Physical Security of Critical Electric Infrastructure was scored a 3[2] in 2015. The conservative score of a 3 in the Health, Safety, and Environmental impact area was given using a reasonable worst case scenario, which considered a case study of the Eastern earthquake in Imperial Valley that disrupted operations at the Imperial Valley Substation. Please note that the scores are based on this reasonable worst case scenario; they do not address all consequences that can happen if the risk occurs. It should also be noted that the score of 3 reflects the risk remaining after existing controls are in place.

Considering the reasonable worst case scenario, even with this major disruption to the substation, there was likely not a Health/Safety concern that would warrant a score of 4. However, a different reasonable worst case scenario could result in different scores. Further, SDG&E has taken a proactive approach to mitigating and managing the risk of Physical Security of Critical Electric Infrastructure which was also supports the conservative score of 3. However, based on a subsequent assessment in 2016, the Health, Safety, and Environmental rating was changed to 4.

In addition, a majority of the mitigations for the Physical Security of Critical Electric Infrastructure risk are related to Physical Security. Such mitigation activities include physical security systems and contract security for both manned and unmanned SDG&E locations as well as the Critical Asset Security Team (CAST). These controls were included in the RAMP risk of Public Safety Events – Electric. Accordingly, while the risk of Physical Security of Critical Electric Infrastructure was not included in the RAMP, the primary mitigation activities were presented in SDG&E's RAMP Report.

[1] Major - Permanent/Serious injuries or illnesses: Few serious injuries or illnesses to the public or employees, significant and short-term impacts to the environment.
[2] Moderate – Minor injuries or illnesses: Minor injuries or illnesses to many public members or employees, Moderate and short-term impacts to the environment.

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Question 36: On page SCG 6-7, SoCalGas assigns an HSE risk score of 5 to physical security of critical gas infrastructure, and on pages SCG 6-6 and 6-7 SoCalGas describes the assumed worst case scenario.

a. Please explain why the HSE risk score for this area (5) should be lower than the risk score for high-pressure transmission lines (6) when there is an assumption of a rupture of several ("all major transmission lines at a single facility" page SCG 6-8) major transmission lines which results in a fire.
b. Does SoCalGas assume that injuries would occur but no fatalities from the worst case scenario?

Response 36:

a. The reasonable worst case scenario used to score the Physical Security of Critical Gas Infrastructure risk did not include fatalities, related to a severe disruption to service, and assumed that the target of such an attack occurred in a less populated area. Therefore, based on the scenario's level of Health, Safety, and Environmental impacts, the subject matter experts rated the risk a 5 on the utilities' 7X7 matrix. Whereas the reasonable worst case scenario used to score the High Pressure Pipeline Incident risks assumed that the incident occurred in a populated residential area resulting in fatalities, injuries and property damage, and service impacts. Therefore, the subject matter experts rated that risk a 6 for Health, Safety, and Environmental impacts.

b. Given the reasonable worst case scenario selected by the subject matter experts for the risk of Physical Security of Critical Gas Infrastructure and the assumption for that scenario, it is assumed that no fatalities may occur. As noted in section 4.1, "the following narrative and scores are based on this scenario; they do not address all consequences that can happen if the risk occurs."

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Question 37: Please provide:

a. The number of incidents that occurred due to a breach of security at SoCalGas critical gas infrastructure facilities in the last 15 years (2002-2016), by year
b. The number of such incidents that resulted in fatalities, injuries or property damage exceeding $25,000,
c. The number of fatalities and injuries and the amount of property damage for each such incident.

Response 37:

a. 2014 – one incident.
   2015 – one incident.
b. Zero.
c. No fatalities/injuries, no property damage.

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Question 38: Regarding workforce planning risk, please provide:

a. the number of utility incidents at over the last 15 years (2002-2016) at SoCalGas and SDG&E related to workforce inexperience that has resulted in injuries or fatalities.
b. The number of fatalities or injuries that resulted from each such incident,
c. Please explain how SoCalGas and SDG&E would separate the impact of insufficient workforce planning as a driver for such incidents.
d. Please explain how SoCalGas and SDG&E would be able to measure the impact of mitigation measures related to workforce planning.

Response 38:

a. SoCalGas and SDG&E require new and existing employees to have a requisite level of experience and complete necessary training programs prior to performing work in the field, as described in RAMP Chapters SCG-2 and SDG&E-3. It is not feasible to attribute safety incidents as related to or influenced by a less experienced workforce, or to track safety incidents in that way. Therefore, SoCalGas and SDG&E do not have the requested information.

b. Please refer to response above.

c. Workforce planning is not a driver for such incidents, but is rather an activity that mitigates the overall cross cutting risk of incidents, as described in Section 2 of the SoCalGas and SDG&E Workforce Planning Chapters (SCG – 7 and SDGE – 17). The risk bow tie diagram for both SoCalGas and SDG&E (see Figure 1 on SCG 7-9 and Figure 2 SDGE 17-12, respectively) explain the potential drivers and potential consequences mitigated by conducting workforce planning. Some of these drivers include economic factors, increasing retirements/turnover, new technology, etc. The lack of workforce planning is the event that is tied to the drivers and consequences in the risk bow tie and is not separately measured as a driver for incidents. SoCalGas and SDG&E anticipate that applying all of the various controls will maintain the current risk level and keep the risk score from increasing.

d. The information provided by the job proficiency curves in both SoCalGas' and SDG&E's workforce planning depict the relationship between an employee's years of experience and the employee's level of mastery of the job. The controls and mitigations proposed within the workforce planning risk chapters are intended to reduce the proficiency gap of less-tenured employees by offering more training, which would prevent the current level of risk from getting worse (OSHA incidents, fatalities, etc.), or the frequency score could even improve as the total number of incidents are reduced.

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Question 39: For the workforce planning risk area, please explain why SoCalGas expects the frequency to be at level 5, while SDG&E assigns a frequency level 3.

Response 39:

Subject matter experts (SMEs) consider many factors when scoring the frequency of a risk. Such factors include historical information, industry data, potential new laws, and perceived or anticipated events or changes that may affect the risk.

Considering these many factors, as explained on page SCG 7-11, SoCalGas assigned Workforce Planning a frequency score of 5 because an event caused by a less experienced employee could occur every 1-3 years. This score is based on current knowledge of the business and historical experience, especially given the potential high turnover of over 36% of its employees in a five-year period. While SoCalGas has many existing training and safety programs in place, they cannot keep pace with this potential high turnover rate.

SDG&E, on the other hand, assigned its Workforce Planning risk a score of 3, the potential to occur once every 10-30 years (see page SDG&E 17-14). This score was given after considering the current controls in place as well as SDG&E's strong existing training and safety programs.

Another potential consideration when reviewing the frequency scores of both Workforce Planning risk chapters is size differences. SoCalGas has over 8,500 employees and a larger service territory, thus increasing the number of potential incidents that can occur. SoCalGas delivers energy to 21.6 million consumers through 5.9 million meters in more than 500 communities in a 20,000 square-mile service area, while SDG&E has over 4,200 employees and delivers energy to 1.4 million business and residential accounts in a 4,100 square-mile service area spanning 2 counties and 25 communities.

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Question 40: Are SoCalGas or SDG&E able to identify any specific safety incidents in the last 15 years on their utility systems that resulted from or at least were partly due to inadequate records management? If so, please provide:

a. the number of utility incidents at over the last 15 years (2002-2016) at SoCalGas and SDG&E related to inadequate records management that resulted in fatalities, injuries or property damage exceeding $25,000.
b. The number of fatalities or injuries or property damage amount that resulted from each such incident.

Response 40:

SoCalGas and SDG&E object to this request to the extent it seeks confidential and privileged information and to the extent, the terms "inadequate records management" and "specific safety incident" are overbroad and ambiguous. Subject to these objections, SoCalGas and SDG&E provide the following:

Neither SoCalGas nor SDG&E is able to identify any specific safety incidents that were due to inadequate records management. Thorough incident investigations and root cause analysis are performed but it is not feasible to ascribe safety incidents to inadequate records management and SoCalGas and SDG&E do not track incidents by inadequate records management. Please see response to Question15f for incident descriptions tracked by SoCalGas and SDG&E.

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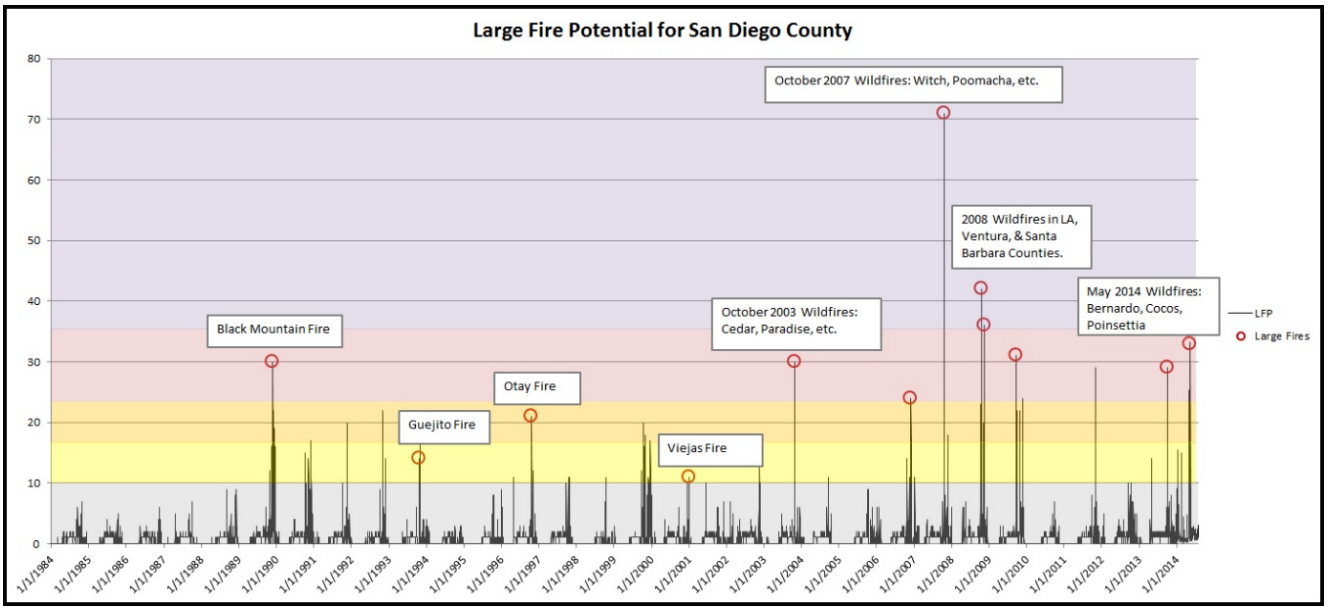
Question 41: Are SoCalGas or SDG&E able to identify any specific safety incidents in the last 15 years on their utility systems that resulted from or at least were partly due to climate change? If so, please provide:

a. the number of utility incidents at over the last 15 years (2002-2016) at SoCalGas and SDG&E related to climate change that resulted in fatalities, injuries or property damage exceeding $25,000.
b. The number of fatalities or injuries or property damage amount that resulted from each such incident.

Response 41:

a. Climate change is difficult to define and attribute as the sole or even partial cause of incidents. Nonetheless, SoCalGas has experienced intense El Nino conditions that resulted in property damage exceeding $25,000, but none known within the last 15 years.

SDG&E has worked closely with UCLA to study wildfire potential over the last 30 years. Through this initiative, every Santa Ana wind event has been analyzed and an increase in wildfire potential across SDG&E's service territory has been identified. Figure 1 below shows 30-year history combining the dryness of the vegetation and the weather conditions that contribute to extreme fire behavior.



Response 41:-Continued

Based upon the information above, SDG&E's service territory has experienced three major wildfire events (October 2003, October 2007, May 2014) that have fallen outside of our long-term climatological average.

1. October 2003: 273,246 acres per http://cdfdata.fire.ca.gov/incidents/incidents_details_info?incident_id=57. This event resulted in 14 fatalities; 104 firefighter injuries; 53 residences and 10 outbuildings damaged; and 2,232 residences, 22 commercial properties, and 566 outbuildings destroyed.
2. October 2007: http://www.fire.ca.gov/fire_protection/downloads/siege/2007/Overview_CompleteFinal.pdf. This event resulted in 10 fatalities, 99 firefighter injuries, 374 structures damaged, and 2,642 structures destroyed in San Diego County, not including utility infrastructure.
3. May 2014: http://www.sdfirefoundation.org/commandpost/San-Diego-County-Wildfires-May-2014.pdf. This event resulted in one fatality and 65 destroyed structures, not including utility infrastructure.

b. Please see responses to part a above.

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Question 42: Please explain why SoCalGas and SDG&E see climate change adaptation as a separate, specific threat. That is, aren't the potential consequences of climate change already incorporated in other risk areas?

Response 42:

Yes, the potential consequences of climate change are already incorporated in other risk areas. However, climate change adaptation is listed as a separate, specific threat because it is reliant upon an evolving science that should be continuously monitored and researched so the latest information can be a focal point for strategic integration into the other risk areas.

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Question 43: On page SCG 10-10, SoCalGas provides a table which shows 29 serious distribution level gas pipeline incidents in California over the last 20 years, including 9 fatalities. Please explain:

a. Why SoCalGas and SDG&E assign only an HSE risk level of 5 to medium pressure pipelines incidents, and
b. Why SoCalGas and SDG&E assign only a frequency level of 3 (once every 10-30 years).

Response 43:

a. The risk scores, including the score for the HSE residual impact area and residual frequency, are based on the reasonable worst case scenario, described in Section 4.1 (see p. SCG 10-8, SDG&E, p. 16-8). The reasonable worst case scenario assumed that no fatalities would occur.

   The data captured in the PHMSA table (p. SCG 10-10 & SDG&E, p. 16-10) is not directly analogous to the reasonable worst case scenario. The reasonable worst case scenario considers a "medium pressure pipeline failure due to a control device malfunction" which is narrower than the "Serious Incidents" being measured by PHMSA. Per PHMSA, "'Serious Incidents' include a fatality or injury requiring in-patient hospitalization. Gas distribution incidents caused by a nearby fire or explosion that impacted the pipeline system are excluded from this definition."[1] The PHMSA data set is broader because, for instance, PHMSA measures any fatality or injury requiring in-patient hospitalization irrespective of potential drivers or triggers. Under the reasonable worst case scenario, however, a "failure" is considered to occur when the medium pressure pipeline can no longer function as intended. This is why the reasonable worst case scenario includes the inability to serve customers for at least 24 hours. The PHMSA data set was provided and can be used to inform the risk analysis but is not intended to be a direct one-to-one comparison to the reasonable worst case scenario.

b. As stated in the response to part a., the residual frequency score was based on the reasonable worst case scenario. The SMEs' utilized their knowledge and experience as the basis for scoring the residual frequency in 2015.

[1] http://phmsa.dot.gov/pipeline/library/data-stats/performance-measures.

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Question 44: On page SCG 11-3, footnote 2, SoCalGas notes the October 2015 Aliso Canyon gas storage facility incident.

a. Please explain the extent, if any, to which the Aliso Canyon incident informed the Storage Well Integrity chapter in the RAMP Report and the risk and frequency estimates.
b. Please state whether SoCalGas believes that its HSE risk score of 5, other risk score of 5, and residual risk frequency score of 2 are still appropriate for this risk area.
c. If new risk scores, frequency and residual risk score have been determined during the 2016 risk registry, please provide those figures.

Response 44:

a. The Aliso Canyon incident prompted heightened awareness of underground storage operations risks. Some of the propose mitigations included in the Storage Well Integrity chapter of the RAMP Report are informed by the Aliso Canyon incident.

   The 2015 risk and frequency estimates were not impacted by the Aliso Canyon incident because the incident occurred in October of 2015, while the risk assessment was completed in September of 2015. However, as seen in Response 44.b. below, "the Operational and Reliability," "Regulatory, Legal, Compliance," and "Financial" scores increased from a 5 to a 6 in the 2016 assessment. These increases were informed by the Aliso Canyon incident; particularly the incident's demonstration of the importance of storage to operations and reliability, and the extent of potential regulatory, legal, compliance, and financial impacts.

b. For ease of reference, below is a comparison of the 2015 and 2016 SoCalGas Residual Risk Assessments:

Response 44 Continued:

2016 Residual Risk Assessment*

Residual Impact				Residual Frequency	Residual Risk Score
Health, Safety, Environmental (40%)	Operational and Reliability (20%)	Regulatory, Legal, Compliance (20%)	Financial (20%)		
5	6	6	6	2	11,685

2015 Residual Risk Assessment*

Residual Impact				Residual Frequency	Residual Risk Score
Health, Safety, Environmental (40%)	Operational and Reliability (20%)	Regulatory, Legal, Compliance (20%)	Financial (20%)		
5	5	5	5	2	1,826

* A potential reasonable worst case scenario used to assess the residual risk impacts and frequency. The scenario may not necessarily contain all drivers/triggers.

SoCalGas believes the above 2016 Residual Risk Assessment is appropriate.

c. See Response 44.b.

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Question 45: Please provide:

a. the number of SoCalGas storage well integrity incidents over the last 15 years (2002-2016) that have resulted in any fatalities or injuries/illnesses, resulted in any explosions or fires, resulted in the uncontrolled loss of more than 1 million cubic feet of gas, or resulted in more than $25,000 in property damage
b. For each such incident, please specify the number of fatalities and injuries/illnesses,
c. For each such incident, specify whether explosions or fires, the uncontrolled loss of more than 1 million cubic feet of gas or more than $25,000 in property damage occurred.

Response 45:

a. SoCalGas has had one storage well integrity incident in the last 15 years (2002 – 2016) that satisfied the categories: resulted in any explosions or fires, resulted in the uncontrolled loss of more than 1 million cubic feet of gas, or resulted in more than $25,000 in property damage. That incident was the SS-25 Aliso Canyon Incident.

   Please note: SoCalGas has experienced storage well integrity leaks where the repair of the leak may have exceeded $25,000, but there was no property damage exceeding $25,000.

b. Numerous individuals, businesses and government agencies have asserted claims against SoCalGas alleging injury/illnesses and at least one fatality related to the SS-25 Aliso Canyon Incident. SoCalGas disputes those claims and is not in a position at this time to confirm or deny the allegations.

c. The SS-25 Aliso Canyon Incident resulted in the uncontrolled loss of more than 1 million cubic feet of gas. Numerous individuals, businesses and government agencies have asserted claims against SoCalGas alleging property damage related to the SS-25 Aliso Canyon Incident. SoCalGas disputes those claims and is not in a position at this time to confirm or deny the allegations or to assess the claimed value of property damage alleged.

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Question 46: Please provide:

a. The number of wildfires caused by SDG&E equipment (including third-party pole attachments) that that occurred in SDG&E service territory by year over the last 15 years, (include only wildfires that caused more than $50,000 in damage or resulted in fatalities or injuries)
b. The SDG&E costs and the property damage costs caused by each such incident,
c. The number of wildfires caused by SDG&E equipment (including third-party pole attachments) that that occurred in SDG&E service territory by year over the last 15 years that have resulted in serious injuries or fatalities.
d. The number of fatalities, serious injuries, and minor injuries that have been caused by each such incident.
e. If SDG&E readily has such information, also provide the above information for other California utilities.

Response 46:

a. The wildfires that caused more than $50,000 in third-party property damage or resulted in fatalities or injuries associated with SDG&E equipment are as follows:
    - 2007: 3 (Witch, Rice and Guejito fires)
    - 2009: 1 (Ortega fire)
    - 2011: 1 (Pala fire)
b. SDG&E has incurred $2.4 billion in wildfire costs related to the 2007 wildfires through the process of resolving claims. However, outstanding litigation associated with the 2007 wildfires remains. For the 2009 and 2011 wildfires, no structures were impacted.
c. The 2007 wildfires listed in part a of this response resulted in serious injuries or fatalities.
d. SDG&E does not maintain the formal records of the number of fatalities and/or injuries associated with wildfires. Accordingly, the number of minor injuries, major injuries and fatalities associated with the 2007, 2009 and 2011 wildfires can be seen in the non-SDG&E links provided below:
    - 2007: http://www.fire.ca.gov/fire_protection/downloads/siege/2007/Overview_CompleteFinal.pdf
    - 2009: http://www.ocregister.com/articles/fire-220166-blaze-highway.html
    - 2011: http://cdfdata.fire.ca.gov/incidents/incidents_details_info?incident_id=568
e. SDG&E does not keep any records involving fire statistics for fires associated with the electric facilities of the other utilities in the State of California.

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Question 47: On page SDG&E 2-13, SDG&E states that Locate & Mark training consists of about two weeks of classroom and hands-on training at the centralized training facility.

a. Please explain why, on page SCG 1-13, SoCalGas states that Locate and Mark training consists of about only three days of classroom and hands-on training at the centralized training facility.
b. Are both statements correct for each utility?

Response 47:

a. The RAMP filing was a product of SoCalGas' and SDG&E's September 2015 annual risk registry assessment and as such, the Locate and Mark training described in SoCalGas' Chapter 1 and SDG&E's Chapter 2 relates that timeframe and context.

   In 2015, SoCalGas' had classroom and hands-on Locate and Mark training that was approximately three days in length, as indicated in the RAMP chapter. This Locate and Mark 3-day training is part of a larger training class, known as Energy Technician – Distribution (ETD) training, which includes non-Locate and Mark areas. The Locate and Mark portion of the ETD training class was expanded from the 3-days in 2015 to one week of classroom-based training in 2016. In 2015 and 2016, SDG&E had two weeks of Locate and Mark training. One week of SDG&E's Locate and Mark training is classroom-based; however, SDG&E provides ride-alongs the second week.

   In summary, both SoCalGas and SDG&E now have classroom-based Locate and Mark training that is one week in length. SDG&E has an additional week of ride-alongs that is not currently provided in the SoCalGas training.

b. In 2015, both statements were correct for each utility.

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Question 48: Regarding risk related to Distributed Energy Resources, please provide:

a. The number of times in the last ten years that a DER related incident has resulted in a fatality or injury on the SDG&E system
b. For each such incident, the number of fatalities or injuries that occurred
c. If such information is readily available to SDG&E, provide the above information for other California electric utilities

Response 48:

a. SDG&E is not aware of any fatalities or injuries resulting from a DER related incident on the SDG&E system.
b. SDG&E is not aware of any fatalities or injuries resulting from a DER related incident.
c. SDG&E is not aware of any fatalities or injuries resulting from a DER related incident for the other California electric utilities.

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Question 49: On page SCG 4-17, SoCalGas proposes to increase removal of previously abandoned pipelines as part of it proposed mitigation plan for high-pressure pipeline risk. SDG&E similarly proposes this measure on page SDGE 10-15. Please explain how removal of previously abandoned pipelines mitigates the risk of a high-pressure pipeline rupture.

Response 49:

The "removal of previously abandoned pipelines" is one activity of many that are part of the larger right of way (ROW) survey and maintenance initiative, and was listed in error because of its association with this larger ROW effort. The proposed costs for the abandonment activities were not included.

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Question 50: On page SDGE 6-12, SDG&E states that regional blackouts occur on average once every 25 years. Please explain why SDG&E assigns a residual frequency score of 2 (once every 30-100 years) to the "Blackout" risk area on page SDGE 5-7, rather than a frequency score of 3.

Response 50:

SDG&E assigned a residual frequency score of 2 (once every 30-100 years) because it has only had one major blackout since its creation. The score of 2 is a specific score to SDG&E instead of a national average that depends on other factors. The intent behind listing the average regional blackout rate of occurrence 3 (once every 25 years) was to support that the specific residual frequency score selected for SDG&E was reasonable compared to other utilities and could be used to determine that future blackouts could occur at a similar rate.

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Question 51: On page SDGE 12-11 SDG&E says that following the Sept 2015 scoring, SDG&E realized that an HSE risk score of 6 was more representative in the area of electric infrastructure integrity.

a. Please explain whether SoCalGas/SDG&E made other such re-assessments after the Sept 2015 scoring, and provide any such re-assessments.
b. Please provide a re-calculation of the residual risk score and RSEs based on the revised HSE risk score.

Response 51:

a. The reference on page SDG&E 12-11 refers to a change made during the annual enterprise risk register assessment in 2016. The change for this risk included increasing the Health, Safety and Environmental impact score from a 4 to a 6 as well as decreasing the score in the Operational and Reliability impact area from 4 to a 3. All other values remained the same from the 2015 assessment to that completed in 2016.
b. The 2016 SDG&E risk registry score for Electric Infrastructure Integrity (EII) was computed as follows:

	Consequence Scores				Residual Frequency	Residual Risk Score
	Health, Safety, Environmental	Operational & Reliability	Regulatory, Legal, Compliance	Financial		
Weight	40%	20%	20%	20%		
Score	6	3	5	4	4	
Value	400,000	200	20,000	2,000	0.18257419	77,083

Table 51-1: Re-assessed Residual Risk Score for EII (2016)

(400,000+200+20,000+2,000)*0.18257419 = 77,083

Response 51:-Continued

The Risk Spend Efficiency (RSE) for this risk chapter was calculated with consideration for the risk exposure that could occur if all current and proposed mitigations were NOT to be funded. In this scenario, the safety risks associated EII would be expected to occur regularly, thus a score between 5 and 6; a frequency multiplier of about 1.9 representing multiple occurrences per year is assigned. In addition, these scenarios would be expected to involve serious injury or death caused by failure of electric infrastructure, thus requiring the elevated HSE value of 6. In total, the Inherent Risk Score would be:

	Consequence Scores				Inherent Frequency	Inherent Risk Score
	Health, Safety, Environmental	Operational & Reliability	Regulatory, Legal, Compliance	Financial		
Weight	40%	20%	20%	20%		
Score	6	3	5	4	5-6	
Value	400,000	200	20,000	2,000	~1.9	~800,000

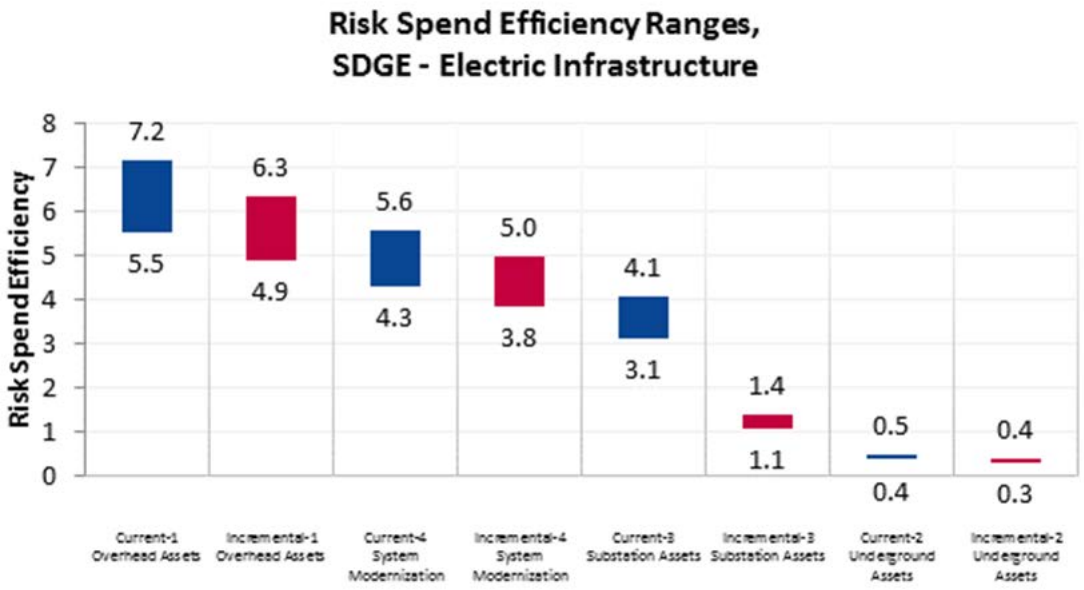
Table 51-2: Inherent Risk Score for EII as filed in 2016 RAMP

As filed in the SDG&E 2016 RAMP report, the risk reduction benefit was calculated as the Inherent Risk Score (~800,000) less the expected Residual Risk Score (5,112), yielding ~794,888.

With consideration for a revised Residual Risk Score of 77,083, the net benefit would be ~800,000 minus 77,083, equating to ~722,917.

These risk reduction benefits were divided by the cost of the baseline and proposed programs in each category, resulting in the Risk Spend Efficiency (RSE) values. In summary, to compare the RSE values as filed versus the re-assessed values, a total reduction of 9.5% would be realized because net benefits are reduced. The following graph represents the re-assessed RSE ranges:

Response 51:-Continued



OSA DATA REQUEST - 1
SDG&E-SOCALGAS RAMP - I.16-10-015_016
SDG&E & SOCALGAS RESPONSE
DATE RECEIVED: FEBRUARY 21, 2017
DATE RESPONDED: MARCH 31, 2017
PARTIAL Q15, 23, 27, 30, 31, 49, 50, 52

Question 52: Regarding SDG&E risk areas, Major Disturbance to Electrical Service and Fail to Blackstart, please provide the following information over the last 15 years (2002-2016) by year:

c. The number of times a blackout or major disturbance to electric service has occurred in the SDG&E service territory. (Specify how SDG&E has defined "blackout" or major disturbance to electric service for this purpose.)
d. The number of hours of each such blackout, and the number of affected customers
e. The number of times that a "failure to black start" has occurred in the SDG&E service territory.
f. The number of fatalities or injuries/illnesses that occurred as a result of each such blackout or fail to black start incident,
g. The extent of property damage if known for each such incident

Response 52:

a. One blackout on September 8, 2011. SDG&E has defined blackout for this purpose as loss of the electric power in the entire SDG&E system.
b. The entire SDG&E system went black within seconds of 15:38:22, which is when the SONGS separation scheme operated. SDG&E's load had been restored by September 9, 2011 at 3:23. It affected close to 1.4 Million customers in the SDG&E service territory.
c. None.
d. SDG&E knows of no fatalities or significant injuries/illness that took place as a result of the blackout.
e. No SDG&E facility was damaged during the blackout. Customers were affected by food spoilage and the like.

Note: the SDG&E system has experienced various wide spread firestorms, which could be viewed as Major Disturbances. Three are worth mentioning: the 2003 fires, the 2007 fires and the May 2014 fires. During these fire events there was consequential load loss as well as some intentional curtailments to protect equipment and for safety. SDG&E does not have the granularity about the illness/injuries and facilities damaged due to the disturbance to the electric system caused by the fires as noted in the response to Question 46. In cases, such as fires, it is hard to determine what is due to the fires and what is due to the disturbance to the electric system. There was no need to Blackstart the system during these fire events.

OSA DATA REQUEST - 1
SDG&E-SOCALGAS RAMP - I.16-10-015_016
SDG&E & SOCALGAS RESPONSE
DATE RECEIVED: FEBRUARY 21, 2017
DATE RESPONDED: MARCH 7, 2017

Question 53: Please provide:

a. the number of flight hours incurred by year by SDG&E employees, contractors or subcontractors by year in the last 15 years (2002-2016)
b. The number of aviation incidents by year experienced by SDG&E employees, contractors or subcontractors in the last 15 years
c. The number of such aviation incidents that have resulted in fatalities or injuries,
d. The number of fatalities or injuries that resulted from each such incident.

Response 53:

a. SDG&E's Aviation Services Department (ASD) was created in 2012. Accordingly, records maintained by ASD are available beginning from 2012 to present. Below please find the known information regarding flight hours:

   2012: 299 flights (flight hours were not recorded at this time)
   2013: 477 flights, 1,105.6 hours
   2014: 402 flights, 844.4 hours
   2015: 580 flights, 1,591.3 hours
   2016: 444 flights, 1,159.1 hours

b. Consistent with the response to part a, the following information is provided beginning in 2012 based on records from ASD and one known incident that occurred prior to the formation of ASD:

   2012- Present: 1 aviation incident
   2007: 1 aviation incident that resulted in 0 injuries.

c. 2012-Present: 0 fatalities, 0 injuries.

d. 2012-Present: 0 fatalities, 0 injuries.

OSA DATA REQUEST - 1
SDG&E-SOCALGAS RAMP - I.16-10-015_016
SDG&E & SOCALGAS RESPONSE
DATE RECEIVED: FEBRUARY 21, 2017
DATE RESPONDED: MARCH 7, 2017

Question 54: Please provide:

a. the number of unmanned aircraft system incidents that have occurred in the SDG&E service territory in the last 15 years (2002-2016) that has resulted in any serious injury or fatality.
b. The number of fatalities or injuries that resulted from each such incident,
c. If SDG&E has such data, the number of unmanned aircraft system incidents that have occurred in utility service areas in California in the last 15 years that have resulted in any serious injuries or fatalities.

Response 54:

a. 0 incidents.
b. 0 injuries, 0 fatalities.
c. SDG&E does not collect statewide data.

OSA DATA REQUEST - 1
SDG&E-SOCALGAS RAMP - I.16-10-015_016
SDG&E & SOCALGAS RESPONSE
DATE RECEIVED: FEBRUARY 21, 2017
DATE RESPONDED: MARCH 14, 2017

Question 55: Please provide:

a. The number of downed wire incidents in the SDG&E service territory by year over the last 15 years (2002-2016),
b. The number of downed wire incidents in the SDG&E service territory by year that have caused serious injuries or fatalities over the last 15 years.
c. The number of fatalities or injuries that resulted from each such incident
d. If SDG&E records the causes of the downed wire incidents, please also provide the cause of downed wire incidents that resulted in fatalities or injuries

Response 55:

a. SDG&E began collecting detailed wire down event data in 2007, therefore the following 10-year data record is provided for wire down event counts:

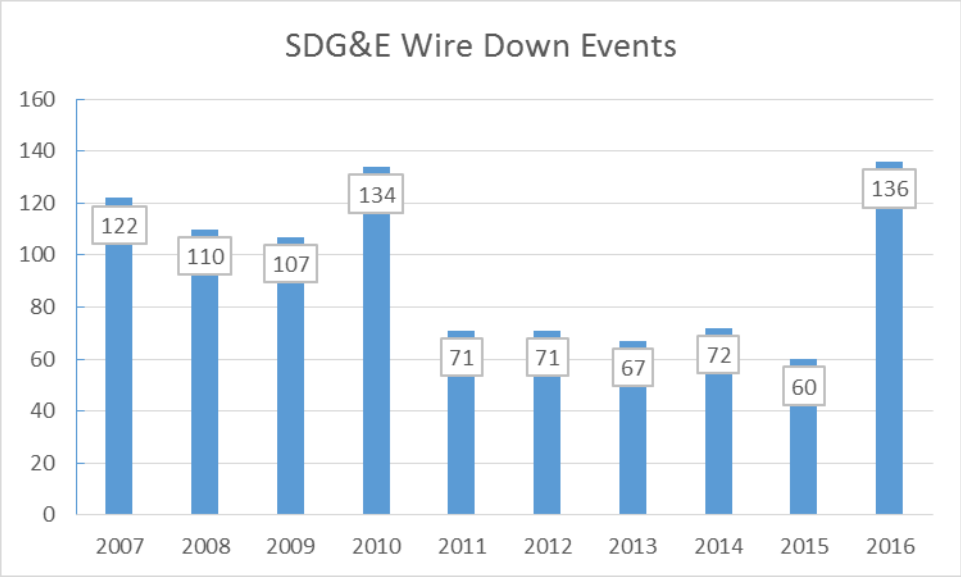


Table 55-1: SDG&E 10-Year Wire Down Event Trend

b. To our knowledge, SDG&E has experienced one down wire incident that resulted in serious injuries or fatalities over the last 15 years.
c. For the incident noted in part b, there was one fatality.
d. SDG&E objects on the ground that the request seeks information protected from disclosure by the attorney-client privilege and attorney work product doctrine. Without waiving its objection, SDG&E responds that the incident referenced above occurred when an overhead connector failed.

OSA DATA REQUEST - 1
SDG&E-SOCALGAS RAMP - I.16-10-015_016
SDG&E & SOCALGAS RESPONSE
DATE RECEIVED: FEBRUARY 21, 2017
DATE RESPONDED: MARCH 14, 2017

Question 56: On page SDGE 15-3, SDG&E notes that the mitigation activities for the Public Safety Events - Electric risk significantly overlap with those of other identified risks, and states that the Public Safety Events – Electric mitigation activities will be moved and incorporated into the mitigation plans for those other identified risks post-2015. By incorporating these risks with other identified risks, has SDG&E revised the risk scores and frequencies for those other areas, post-2015? If so, please provide the revised risk scores, frequencies, residual risk scores, costs and RSEs for those other risk areas.

Response 56:

During the annual assessment for the 2016 enterprise risk register, it was determined that the mitigations under the Public Safety Events – Electric risk also mitigated other risks, and that the risk itself was duplicative. The other risks that contain duplicative mitigations with the Public Safety Events – Electric risk are Employee, Contractor & Public Safety, Electric Infrastructure Integrity and Physical Security of Critical Electric Infrastructure. Because the overlapping mitigations were already included in the three other risks, any revision to the risk scores post-2015 would not be directly attributed to the incorporation or movement of mitigations from Public Safety Events – Electric. Rather, risk scores may change from year-to-year, based on further review and assessment as part of the annual enterprise risk register process.