

Risk Assessment Mitigation Phase Risk Mitigation Plan Records Management (Chapter SCG-8)

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Executive Summary

The Records Management risk relates to the potential public safety, property, regulatory, or financial impacts that may result from the use of inaccurate or incomplete records.

To assess this risk, Southern California Gas Company (SoCalGas) first identified a reasonable worst case scenario and scored the scenario against five residual impact categories (e.g., Health, Safety, Environmental; Operational & Reliability, etc., discussed in Section 3). Then, SoCalGas considered as a baseline, the SoCalGas mitigations in place for Records Management in 2015 and estimated the costs (costs are discussed in Section 4). SoCalGas identified the following controls as of 2015:

1. Administrative: adherence to existing records management policies and practices, including audits;
2. Training: biennial training for records management, and compliance team meetings;
3. Operational Compliance and Oversight: records management and quality assurance within business groups; and,
4. Information Management Systems: existing IT applications, including but not limited to Geographic Information Systems (GIS).

These controls focus on safety-related impacts (e.g., Health, Safety, and Environment) per guidance provided by the Commission in Decision 16-08-018 as well as controls and mitigations that may address reliability.

Based on the foregoing assessment, SoCalGas proposed future mitigations. For Records Management, SoCalGas proposed to continue the four control categories from its 2015 baseline. In addition, SoCalGas proposed enhancements within each category. The enhancements include:

1. Administrative: SoCalGas proposes to hire a third-party records management expert to provide recommendations on its records management policies and practices.
2. Training: SoCalGas proposes to increase the frequency of training from biennial to annual, and to add training specific to operational asset records.
3. Operational Compliance and Oversight: SoCalGas proposes to launch a centralized operational records management organization.
4. Information Management Systems: SoCalGas proposes to continue the implementation of the Enterprise Asset Management System (EAM) solution, a solution that is intended to integrate existing records management systems, and proposes an effort to modernize its records.

Next, SoCalGas developed the risk spend efficiency (sometimes referred to as RSE). The risk spend efficiency is a new tool that SoCalGas developed to attempt to quantify how the proposed mitigations will incrementally reduce risk. The RSE leverages external records management-related criteria and subject matter expertise to determine an effectiveness of the mitigation activities.

Risk: Records Management

1 Purpose

The purpose of this chapter is to present the mitigation plan of Southern California Gas Company (SoCalGas or Company) for the risk of records management¹ with a focus on operational records that potentially implicate safety. The records management risk involves the use of inaccurate or incomplete information that could result in the failure to (1) construct, operate, and maintain SoCalGas' pipeline system safely and prudently; or, (2) to satisfy regulatory compliance requirements. However, due to the breadth of tasks associated with the management of records for the entire enterprise, this risk chapter focuses only on the enterprise-wide systems and processes for the management of operational records and is not intended to be a comprehensive discussion of all records. For example, this chapter does not address data created as a part of routine asset inspection and maintenance activities because it does not relate to the enterprise systems and processes involved in managing operational records. Other chapters included in the Risk Assessment Mitigation Phase (RAMP) Report address records-related activities, such as the chapter of Catastrophic Damage Involving Third Party Dig-Ins, Catastrophic Damage Involving a High-Pressure Pipeline Failure, Catastrophic Damage Involving a Medium-Pressure Pipeline Failure, and Catastrophic Event Related to Storage Well Integrity.

This risk is a product of SoCalGas' September 2015 annual risk registry assessment cycle. Any events that occurred after that time were not considered in determining the 2015 risk assessment, in preparation for this Report. While 2015 is used as a base year for mitigation planning, risk management has been occurring, successfully, for many years within the Company. SoCalGas and San Diego Gas & Electric Company (SDG&E) (collectively, the utilities) take compliance and managing risks seriously, as can be seen by the number of actions taken to mitigate each risk. This is the first time, however, that the utilities have presented a RAMP Report, so it is important to consider the data presented in this plan in that context. The baseline mitigations are determined based on the relative expenditures during 2015; however, the utilities do not currently track expenditures in this way, so the baseline amounts are the best effort of each utility to benchmark both capital and operations and maintenance (O&M) costs during that year. The level of precision in process and outcomes is expected to evolve through work with the California Public Utilities Commission (Commission or CPUC) and other stakeholders over the next several General Rate Case (GRC) cycles.

¹ SoCalGas considers records management as the practice of managing the records of an organization throughout the records' life cycle; from the time of creation to their eventual disposal. This includes identifying, classifying, storing, securing, retrieving, tracking and destroying or permanently preserving records, and recently, includes traceability, verifiability, completeness and ready availability (*See e.g.*, Decision (D.)11-06-017 at p. 19).

The Commission has ordered that RAMP be focused on safety related risks and mitigating those risks.⁴ In many risks, safety and reliability are inherently related and cannot be separated, and the mitigations reflect that fact. Compliance with laws and regulations is also inherently tied to safety and the utilities take those activities very seriously. In all cases, the 2015 baseline mitigations include activities and amounts necessary to comply with the laws in place at that time. Laws rapidly evolve, however, so the RAMP 2015 baseline does not take into account any new laws that have been passed since September 2015. However, some proposed mitigations (in e.g., Section 6) take those new laws into consideration, as practicable.

The purpose of RAMP is not to request funding. Any funding requests will be made in the GRC. The forecasts for mitigation are not for funding purposes, but are rather to provide a range for the future GRC filing. This range will be refined with supporting testimony in the GRC. Although some risks have overlapping costs, the utilities have made efforts to identify those costs.

2 Background²

For safety and compliance purposes, SoCalGas has implemented various recordkeeping controls for its system in accordance with, for example, the Code of Federal Regulation (CFR) Part 192, General Order (GO) 112-F, and Public Utility Code (PUC) §957 and §958. CFR Part 192 prescribes minimum safety and record requirements for pipeline facilities and the transportation of gas. GO 112-F complements and enhances the federal requirements and applies them to the state level. PUC §957 and §958 require gas corporations to prepare and submit to the Commission a proposed comprehensive valve location plan and pressure testing plan for transmission pipelines that have not been pressure tested or lack sufficient records related to the pressure testing. These plans are intended to bring transmission pipelines into modern standard requirements for pressure testing and recordkeeping.

In addition to the existing rules, SoCalGas recognizes the need to also comply with new or developing records management rules. For example, the federal Pipeline and Hazardous Material Safety Administration (PHMSA) recently issued a Notice of Proposed Rule Making (NPRM) on Pipeline Safety: Safety of Gas Transmission and Gathering Pipelines, which among other items, is intended to expand the recordkeeping requirements. See attached Appendix A for proposed “Appendix A” as part of the NPRM.

⁴ D.14-12-025 at p. 31.

² The records management risk and associated scores were originally determined by the Financial Systems and Compliance department (Financial Systems) within the Controller’s organization because this organizational unit provides general policy oversight over company records, including administrative records. During the evaluation and development of this risk discussion, however, SoCalGas determined that operational and asset records are more likely to implicate safety than other records, such as administrative records, and shifted its focus to these operational records. Consistent with this focus, the risk was transitioned from Financial Systems to the System Integrity and Asset Management organization (System Integrity), which has greater visibility and knowledge of operational or asset records. This narrative, mitigations and proposals focus primarily on records management as it pertains to key operational activities in the Gas Operations organization.

3 Risk Information

As stated in the testimony of Jorge M. DaSilva in the Safety Model Assessment Proceeding (S-MAP) Application (A.) 15-05-004, “SoCalGas is moving towards a more structured approach to classifying risks and mitigations through the development of its new risk taxonomy. The purpose of the risk taxonomy is to define a rational, logical and common framework that can be used to understand, analyze and categorize risks.” The Enterprise Risk Management (ERM) process and lexicon that SoCalGas has put in place was built on the internationally-accepted ISO 31000 risk management standard. In the application and evolution of this process, the Company is committed to increasing the use of quantification within its evaluation and prioritization of risks. This includes identifying leading indicators of risk. Sections 3 through 9 of this plan describe the key outputs of the ERM process and resultant risk mitigations.

In accordance with the ERM process, Section 3 describes the risk classification, possible drivers and potential consequences of the Records Management risk.

3.1 Risk Classification

Consistent with the taxonomy presented by SoCalGas and SDG&E in A.15-05-004, SoCalGas classifies this as a cross-cutting risk as shown in Table 1. This risk affects people and regulatory, and is a function of employee conduct and compliance.

Table 1: Risk Classification per Taxonomy

Risk Type	Asset/Function Category	Asset/Function Type
CROSS-CUTTING	PEOPLE REGULATORY	EMPLOYEE CONDUCT COMPLIANCE

3.2 Potential Drivers³

When performing the risk assessment for Records Management, SoCalGas identified potential indicators of risk, referred to as drivers. These include but are not limited:

- Insufficient training of employees
- Insufficient time or resources to devote to the appropriate records management practices
- Insufficient data back-up policies, procedures or processes

Subcategories of these potential drivers can include, for example, incomplete or incorrect records, delays in capturing asset data into records systems, enterprise systems issues, and failure of employees to follow procedures, processes or practices.

³ An indication that a risk could occur. It does not reflect actual or threatened conditions.

3.3 Potential Consequences

If one of the risk drivers listed above were to occur, resulting in an incident, the potential consequences, in a reasonable worst case scenario, could include:

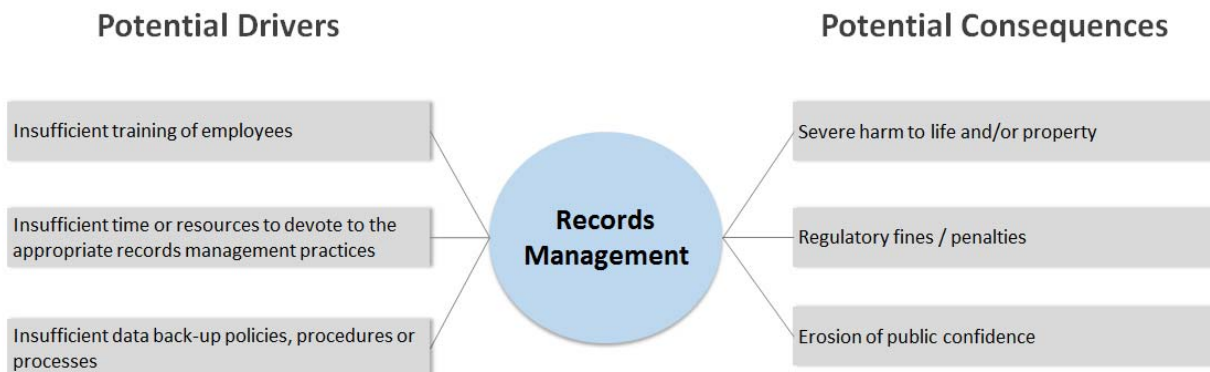
- Severe harm to life and/or property
- Regulatory fines / penalties; and,
- Erosion of public confidence.

These potential consequences were used in the scoring of Records Management risk that occurred during SoCalGas' 2015 risk registry process. See Section 4 for more detail.

3.4 Risk Bow Tie

The risk “bow tie,” shown below in Figure 1, is a commonly-used tool for risk analysis. The left side of the bow tie illustrates potential drivers that lead to a risk event and the right side shows the potential consequences of a risk event. SoCalGas applied this framework to identify and summarize the information provided above.

Figure 1: Risk Bow Tie



4 Risk Score

The SoCalGas and SDG&E ERM organization facilitated the 2015 risk registry process, which resulted in the inclusion of Records Management as one of the enterprise risks. During the development of the risk register, subject matter experts (SMEs) assigned a score to this risk, based on empirical data to the extent it is available and/or using their expertise, following the process outlined in this section.⁴

4.1 Risk Scenario - Reasonable Worst Case

There are many possible ways in which a records management related event can occur. For purposes of scoring this risk, SMEs used a reasonable worst case scenario to assess the impact and frequency. The scenario represented a situation that could happen, within a reasonable timeframe, and lead to a relatively significant adverse outcome. These types of scenarios are sometimes referred to as low frequency, high consequence events. The SMEs selected a reasonable worst case scenario to develop a risk score for Records Management:

- Employees, relying on inadequate records, miscalculate the location of a natural gas pipeline, which ultimately leads to a pipeline failure. This results in severe injuries and disruption of service for an extended period. This also results in a legal consequences including regulatory investigation with financial impacts.

Note that the following narrative and scores are based on this scenario; they do not address all consequences that can happen if the risk occurs.

4.2 2015 Risk Assessment

Using the scenario in Section 4.1, SMEs then evaluated the frequency of occurrence and potential impact of the risk using SoCalGas' 7X7 Risk Evaluation Framework (REF). The framework (sometimes referred to as a "matrix") includes criteria to assess levels of impact ranging from Insignificant to Catastrophic and levels of frequency ranging from Remote to Common. The 7X7 framework includes one or more criteria to distinguish one level from another. The Commission adopted the REF as a valid method to assess risks for purposes of this RAMP.⁵ Using the levels defined in the REF, the SMEs applied empirical data to the extent it is available and/or their expertise to determine a score for each of the four residual impact areas and the frequency of occurrence of the risk.

Table 2 provides a summary of the Records Management risk score in 2015. This risk has a score of 4 or above in the Health, Safety, and Environmental impact area and, therefore, was included in the RAMP. These are residual scores because they reflect the risk remaining after existing controls are in place. For additional information regarding the REF, please refer to the RAMP Risk Management Framework chapter within this Report.

⁴ As explained in footnote 1, SMEs from the Financial Systems and Gas Operations scored the Records Management risk.

⁵ D.16-08-018 Ordering Paragraph 9.

Table 2: Risk Score

Residual Impact				Residual Frequency	Residual Risk Score
Health, Safety, Environmental (40%)	Operational & Reliability (20%)	Regulatory, Legal, Compliance (20%)	Financial (20%)		
5	5	5	4	3	4,734

4.3 Explanation of Health, Safety, and Environmental Impact Score

Applying the risk scenario of a pipeline failure (described in Section 4.1), SoCalGas anticipated that such an incident could result in many permanent or serious injuries to employees or the public. Accordingly, SoCalGas scored Records Management a 5 (Extensive) in the Health, Safety, and Environmental impact.

4.4 Explanation of Other Impact Scores

Based on the selected reasonable worst case risk scenario, SoCalGas gave the other residual impact areas the following scores:

- **Operational and Reliability:** SoCalGas scored the Operational and Reliability impact area a 5 (extensive). A serious incident could result in an interruption of service for greater than 10 days, and may impact a large number of customers.
- **Regulatory, Legal, and Compliance:** SoCalGas scored the Regulatory, Legal, and Compliance impact area a 5 (extensive) because of the potential for investigations and enforcement actions by the Commission and/or other local, state and federal government agencies that could result in fines and penalties, restricted operations, or other potential remedies.
- **Financial:** SoCalGas scored the Financial impact area a 4 (major) because SoCalGas reasoned that the primary financial impact would be a result of potential litigation and/or penalties, followed by costs associated with injuries and property damage. SoCalGas estimated a potential financial impact range between \$10 million to \$100 million resulting in SoCalGas' score of 4.

4.5 Explanation of Frequency Score

SoCalGas SMEs used empirical data to the extent available and/or relied upon their expertise to determine that the likelihood of a Records Management incident is a 3 (infrequent), which is defined in SoCalGas' 7X7 matrix as having the potential to occur every 10-30 years in its service territory. SoCalGas assigned a score of 3 because SoCalGas records management incidents involving operational asset records are rare and are further mitigated by the Company's existing controls; at the same time, there are components of the program that can be improved. Accordingly, SoCalGas considered its score of 3 (infrequent) to be appropriate.

5 Baseline Risk Mitigation Plan⁶

As stated above, Records Management risk has potential public safety, property, regulatory, and financial impacts. The 2015 baseline mitigations discussed below includes the utilities' risk management of this risk as of September 2015. The baseline mitigations have been developed over many years to address this risk (and will continue to evolve over time). SoCalGas' baseline mitigation plan for this risk consists of four controls: (1) Administrative, (2) Training, (3) Operational Compliance and Oversight; and (4) Information Management Systems.

These controls focus on safety-related impacts⁷ (i.e., Health, Safety, and Environment) per guidance provided by the Commission in D.16-08-018⁸ as well as controls and mitigations that may address reliability.⁹ Accordingly, the controls and mitigations described in Sections 5 and 6 address safety-related impacts primarily, which for the Records Management risk focuses on records management of Gas Operations. Note that the controls and mitigations in the baseline and proposed plans are intended to address various Records Management risks, not just the scenario used for purposes of risk scoring.

1. Administrative

For this risk, the Administrative mitigation activities include SoCalGas' administration of and adherence with its record management policy and practices, resources to manage records, internal audits, and records retention.

In terms of policies, they include but are not limited to policies and systems containing records, definition and identification of records, organizational records (both paper and electronic) and document retention and disposal policy. The goal of records management policies and practices is to provide consistent responsibilities for records management, and to require the assignment of specific accountability for oversight and administration of records management.

SoCalGas also has records coordinators across the company. These record coordinators manage records and related issues, and are based within each of their respective business areas. The purpose is to give each operational area day-to-day control over records for which it has responsibility and knowledge. The record coordinators then coordinate with Financial Systems to promote and support the Company's records policies and procedures. In effect, this means that the management of operational asset records is decentralized.

⁶ As of 2015, which is the base year for purposes of this Report.

⁷ The Baseline and Proposed Risk Mitigation Plans may include mandated, compliance-driven mitigations.

⁸ D.16-08-018 at p. 146 states "Overall, the utility should show how it will use its expertise and budget to improve its safety record" and the goal is to "make California safer by identifying the mitigations that can optimize safety."

⁹ Reliability typically has an impact on safety. Accordingly, it is difficult to separate reliability and safety.



Sempra Energy’s Audit Services (Internal Audit) group performs periodic audits to verify compliance with policies related to records management and retention. Historically, these audits have occurred approximately every three years.

Lastly, SoCalGas uses physical storage space, both on-site and off-site, for records. SoCalGas manages the records storage so that it complies with SoCalGas’ policies related to retention and disposal.

2. Training

SoCalGas currently provides training on records management concepts to employees biennially. Because every employee has a part in records management, including administrative records, this training reinforces guidelines about SoCalGas’ records management policies and procedures. The training requirements include mandatory training on the SoCalGas record management policies and systems containing records, definition and identification of records, organizing records (both paper and electronic), retention and disposal, among other topics.

3. Operational Compliance and Oversight

Additionally, throughout the year, the records management compliance team holds meetings with records management coordinators throughout the operational areas to provide additional guidance on records management activities.

Within operations, SoCalGas resources are specifically tasked with collecting, inputting, and managing data. For example, the GIS Management organization manages two GIS databases; the first, for medium pressure pipelines operating at 60 psig or less, and the second, for high pressure pipelines operating at greater than 60 psig. The maintenance of these two GIS databases is required to reflect changes in the pipeline system based on the records created through maintenance, construction, replacement and abandonment activities for all companywide projects.

Furthermore, SoCalGas has recently created the Quality, Risk and Compliance team to provide quality assurance over the records related to high pressure construction activities including as-built documentation prior to reaching the mapping team, which includes completeness, accuracy and traceability of records.

The record coordinators, discussed in subparagraph 1 (Administrative), are also involved in operational compliance and oversight because they are based across operational units and are responsible for complying with records retention and management policies.

4. Information Management System

IMS is 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. These applications provide SoCalGas system attribute information such as design, materials and construction methods, pipeline condition, past and present operations and maintenance,

local environmental factors, and failure data (*e.g.*, leaks). The IMS allows employees and contractors to assist them in performing their operational work safely and accurately.

6 Proposed Mitigation Plan

The 2015 baseline mitigations outlined in Section 5 will continue to be performed in the proposed plan to maintain, in most cases, the current residual risk level. In addition, SoCalGas proposes to enhance each of these mitigations, as discussed below.

1. Administrative

As SoCalGas continues to refine its records management program, SoCalGas is proposing to hire third-parties with a background on records management to provide feedback and/or recommendations on its records management policies and practices. Specifically, as SoCalGas attempts to benchmark against industry best practices, consultants may be able to assist SoCalGas determine common records management pitfalls or assist with best practices roadmaps. While the proposal for consultants is included in the administrative category, consultants may assist with any or all of the mitigation categories listed below.

2. Training

The current records management training occurs biennially. With increased focus on records management within the utility industry and a desire to further minimize risk exposure associated with safety, reliability, and other impacts, SoCalGas proposes to provide annual training. Annual training will allow key records management concepts to be communicated to employees more frequently, which refreshes employee knowledge and enhances employees' ability to more adequately prepare to manage records.

Due to industry incidents over the past several years, there is increased focus on operational asset records, specifically in the areas of accuracy, completeness, searchability, and traceability. This is because as noted in Section 3.2, Potential Drivers, human error can be a driver of incidents related to records management. While operating groups do provide task-specific training internally as well as in areas such as design, asset inspection, maintenance, construction, and mapping, SoCalGas believes additional training specific to operational asset records is a necessary mitigation to improve future risk reduction. By providing additional training specific to operational asset records and the management of those records over the entire lifespan of the record, avoidable human errors due to misunderstanding will be reduced. The additional training specific to operational asset records management would be explicitly for those individuals in Operations is meant to be between 4-12 hours of additional training for operational employees.

3. Operational Compliance and Oversight

SoCalGas proposes to launch a centralized records management organization and does so for a number of reasons. First, this will allow SoCalGas to continue executing on its proposal of EAM, discussed in detail, below, and the modernization of records while additionally identifying other potential

opportunities to improve its records management program and oversight on day-to-day activities. In addition, this will allow SoCalGas to more nimbly respond to and implement new and proposed regulations, such as the PHMSA NPRM.

This organization would provide operational oversight for records management processes in specific operational areas and would provide dedicated full-time records management over the daily tasks and activities performed. In essence, records management specialists representing each functional area in Gas Operations would serve as the ‘eyes and ears’ of the centralized operational records management organization and be a bridge to provide real-time feedback on continual improvement of SoCalGas’ records-related programs.

In order to launch this records management organization, SoCalGas anticipates needing an additional 5 to 15 employees who would effectively be records management specialists; at a minimum, one manager to oversee the team and 1-3 individuals for each functional area (transmission, distribution, storage and engineering). These resources would be in addition to Financial Systems and the record coordinators.

4. Information Management Systems

As discussed above, SoCalGas proposes to continue the process to consider the implementation of the EAM solution on a phased basis. The EAM solution is intended to be SoCalGas’ core operating environment that will integrate historical and current data stored in various SoCalGas enterprise systems, including data stored in the Geographic Information System (GIS),¹⁰ Document Management System,¹¹ Maintenance Management System,¹² and System Monitoring & Control.¹³ EAM improves safety, integrity, transparency and availability of pipeline asset records by integrating asset data with equipment safety and handling information as well as validating the appropriate documentation is used. Experience has shown that effective integration with GIS, Work Management (WM), Material Management (MM), Document Management (DMS) and Real-time Monitoring Systems provides the ability to access, use, display, and manage pipeline related records and data in timely and efficient manner.

Overall, the EAM project implementation consists of analyzing, defining, reconciling and removing the inconsistencies of the pipeline related data in various systems, consolidate redundant systems, redefine business processes and install new hardware and software infrastructure. EAM will employ the enterprise application integration (EAI) approach. EAI is an open integration approach that will be incorporated in a hybrid approach with point-to-point application programming interfaces (APIs).

¹⁰ GIS contains asset material attributes, locational and connectivity details, pipeline integrity assessment details, etc.

¹¹ Document Management System contains work order documents, pipeline condition maintenance reports, photographic records, etc.

¹² Maintenance Management System contains asset material attributes, inspection details, etc.

¹³ System Monitoring & Control system contains system monitoring information, historical SCADA information, etc.

In parallel to EAM, SoCalGas proposes an initiative to digitize its records. This is an initiative that is being undertaken by many companies and government entities.¹⁴ SoCalGas' records have evolved over the life of the operational assets, and transferring existing paper records to an electronic format (digitization) is one aspect of modernizing SoCalGas' records. In addition to digitization, SoCalGas' initiative will also add searchability and traceability functionality. Regulatory compliance standards increasingly require that utilities be able to efficiently and effectively identify specific attributes related to operational assets. As a result, having applications for records management that enable searchability and traceability functionality are important.

For example, SoCalGas will continue with its material traceability project. The material traceability project will allow for the traceability of pipe and related components from initial receipt from a supplier through installation and then will relate the operational maintenance activities until permanent removal from service. This will improve compliance with new and upcoming regulations mandating the maintenance of "traceable, verifiable, complete, and readily available" documentation for transmission pipelines as proposed in the NPRM previously mentioned.

SoCalGas has identified IT solutions to support the modernization effort. The intent of these projects is to leverage existing investments in information technology while providing improved functionality to address current operational needs in the records management area.

Currently, SoCalGas has committed resources within numerous departments charged with validating and managing the company's records, implementing the company's processes and practices, and maintaining the data systems, like GIS. This records management risk discussion will provide information about how SoCalGas plans to enhance its existing policies and practices.

7 Summary of Mitigations

Table 3 summarizes the 2015 baseline risk mitigation plan, the risk driver(s) that a control addresses, and the 2015 baseline costs for Records Management. While control or mitigation activities may address both risk drivers and consequences, risk drivers link directly to the likelihood that a risk event will occur. Thus, risk drivers are specifically highlighted in the summary tables.

SoCalGas does not account for and track costs by activity, but rather, by cost center and capital budget code. So, the costs shown in Table 3 were estimated using assumptions provided by SMEs and available accounting data.

¹⁴ <http://www.maximus.com/federal/technology/data-solutions/document-and-records-management>.

Table 3: Baseline Risk Mitigation Plan¹⁵
(Direct 2015 \$000)¹⁶

ID	Control	Risk Drivers Addressed	Capital ¹⁷	O&M	Control Total ¹⁸	GRC Total ¹⁹
1	Administrative	<ul style="list-style-type: none"> • Insufficient training of employees • Insufficient time or resources to devote to the appropriate records management practices • Insufficient data back-up policies, procedures or processes 	n/a	\$650	\$650	\$650
2	Training*	<ul style="list-style-type: none"> • Insufficient training of employees 	n/a	40	40	40
3	Operational Compliance and Oversight*	<ul style="list-style-type: none"> • Insufficient time or resources to devote to the appropriate records management practices 	3,850	5,570	9,420	9,420
4	Information Management Systems*	<ul style="list-style-type: none"> • Insufficient data back-up policies, procedures or 	12,860	5,440	18,300	18,300

¹⁵ Recorded costs were rounded to the nearest \$10,000.

¹⁶ The figures provided in Table 3 and 4 are direct charges and do not include Company overhead loaders, with the exception of vacation and sick. These costs are also in 2015 dollars and have not been escalated to 2016 amounts.

¹⁷ Pursuant to D.14-12-025 and D.16-08-018, the Company is providing the “baseline” costs associated with the current controls, which include the 2015 capital amounts. The 2015 mitigation capital amounts are for illustrative purposes only. Because projects generally span several years, considering only one year of capital may not represent the entire mitigation.

¹⁸ The Control Total column includes GRC items as well as any applicable non-GRC jurisdictional items. Non-GRC items may include those addressed in separate regulatory filings or under the jurisdiction of the Federal Energy Regulatory Commission (FERC).

¹⁹ The GRC Total column shows costs typically presented in a GRC.

ID	Control	Risk Drivers Addressed	Capital ¹⁷	O&M	Control Total ¹⁸	GRC Total ¹⁹
		processes				
	TOTAL COST		\$16,710	\$11,700	\$28,410	\$28,410

* Includes one or more mandated activities

Table 4 summarizes SoCalGas' proposed mitigation plan and associated projected ranges of estimated O&M expenses for 2019, and projected ranges of estimated capital costs for the years 2017-2019. It is important to note that SoCalGas is identifying potential ranges of costs in this plan, and is not requesting funding approval. SoCalGas will request approval of funding, in its next GRC. There are non-CPUC jurisdictional mitigation activities addressed in RAMP; the costs associated with these will not be carried over to the GRC. As set forth in Table 4, the utilities are using a 2019 forecast provided in ranges based on 2015 dollars.

Table 4: Proposed Mitigation Plan²⁰
(Direct 2015 \$000)

ID	Mitigation	Risk Drivers Addressed	2017-2019 Capital ²¹	2019 O&M	Mitigation Total ²²	GRC Total ²³
1	Administrative	<ul style="list-style-type: none"> Insufficient training of employees Insufficient time or resources to devote to the appropriate records management practices Insufficient data back-up policies, procedures or processes 	n/a	\$610 - 900	\$610 - 900	\$610 - 900
2	Training*	<ul style="list-style-type: none"> Insufficient training of employees 	n/a	570 - 1,720	570 - 1,720	570 - 1,720

²⁰ Ranges of costs rounded to the nearest \$10,000.

²¹ The capital presented is the sum of the years 2017, 2018, and 2019 or a three-year total. Years 2017, 2018 and 2019 are the forecast years for SDG&E's Test Year 2019 GRC Application.

²² The Mitigation Total column includes GRC items as well as any applicable non-GRC items.

²³ The GRC Total column shows costs typically represented in a GRC.

3	Operational Compliance and Oversight*	<ul style="list-style-type: none"> Insufficient time or resources to devote to the appropriate records management practices 	15,520 - 18,100	9,710 - 11,910	25,230 - 30,010	25,230 - 30,010
4	Information Management Systems*	<ul style="list-style-type: none"> Insufficient data back-up policies, procedures or processes 	81,120 - 99,150	5,360 - 6,550	86,480 - 105,700	86,480 - 105,700
	TOTAL COST		\$96,640 - 117,250	\$16,250 - 21,080	\$112,890 - 138,330	\$112,890 - 138,330

<input type="checkbox"/>	Status quo is maintained
<input type="checkbox"/>	Expanded or new activity
*	Includes one or more mandated activities

The mitigations and costs presented in Tables 3 and 4 mitigate the risk of Records Management. Some of the activities also mitigate other risks presented in this RAMP Report. For example, Catastrophic Damage Involving Third Party Dig-Ins (Dig-Ins) included GIS-related costs. Because this activity mitigates Records Management as well as Dig-Ins, the costs and risk reduction benefits are being included in all applicable RAMP chapters.

1. Administrative

This mitigation has an uncertain range of costs. The costs will depend on whether a third-party consultant is hired and how much time will be needed by that consultant to assess and provide recommendations to SoCalGas' records management policies and practices.

2. Training

The cost to increase the frequency of the current records management training from biennially to annually is estimated to be \$50,000-100,000 per year. The additional training specific to operational asset records management would be between 4-12 hours of additional training for operational employees, with an estimated cost of \$500,000 - \$1,000,000 annually.

3. Operational Compliance and Oversight

As mentioned in Section 6, SoCalGas' proposed centralized, operational asset-focused organization would consist of an additional 5 to 15 employees. The expected cost of these additional resources is \$500,000 - \$1,500,000.

4. Information Management Systems

To support SoCalGas' modernization efforts, the proposed applications are estimated to be approximately \$90 million in 2017 through 2019.

8 Risk Spend Efficiency

Pursuant to D.16-08-018, the utilities are required in this Report to “explicitly include a calculation of risk reduction and a ranking of mitigations based on risk reduction per dollar spent.”²⁴ For the purposes of this Section, Risk Spend Efficiency (RSE) is a ratio developed to quantify and compare the effectiveness of a mitigation at reducing risk to other mitigations for the same risk. It is synonymous with “risk reduction per dollar spent” required in D.16-08-018.²⁵

As discussed in greater detail in the RAMP Approach chapter within this Report, to calculate the RSE the Company first quantified the amount of Risk Reduction attributable to a mitigation, then applied the Risk Reduction to the Mitigation Costs (discussed in Section 7). The Company applied this calculation to each of the mitigations or mitigation groupings, then ranked the proposed mitigations in accordance with the RSE result.

8.1 General Overview of Risk Spend Efficiency Methodology

This subsection describes, in general terms, the methods used to quantify the *Risk Reduction*. The quantification process was intended to accommodate the variety of mitigations and accessibility to applicable data pertinent to calculating risk reductions. Importantly, it should be noted that the analysis described in this chapter uses ranges of estimates of costs, risk scores and RSE. Given the newness of RAMP and its associated requirements, the level of precision in the numbers and figures cannot and should not be assumed.

8.1.1 Calculating Risk Reduction

The Company's SMEs followed these steps to calculate the Risk Reduction for each mitigation:

1. **Group mitigations for analysis:** The Company “grouped” the proposed mitigations in one of three ways in order to determine the risk reduction: (1) Use the same groupings as shown in the Proposed Risk Mitigation Plan; (2) Group the mitigations by current controls or future mitigations, and similarities in potential drivers, potential consequences, assets, or dependencies (e.g., purchase of software and training on the software); or (3) Analyze the proposed mitigations as one group (i.e., to cover a range of activities associated with the risk).
2. **Identify mitigation groupings as either current controls or incremental mitigations:** The Company identified the groupings by either current controls, which refer to controls that are already in place, or incremental mitigations, which refer to significantly new or expanded mitigations.
3. **Identify a methodology to quantify the impact of each mitigation grouping:** The Company identified the most pertinent methodology to quantify the potential risk reduction resulting from

²⁴ D.16-08-018 Ordering Paragraph 8.

²⁵ D.14-12-025 also refers to this as “estimated mitigation costs in relation to risk mitigation benefits.”

a mitigation grouping’s impact by considering a spectrum of data, including empirical data to the extent available, supplemented with the knowledge and experience of subject matter experts. Sources of data included existing Company data and studies, outputs from data modeling, industry studies, and other third-party data and research.

4. **Calculate the risk reduction (change in the risk score):** Using the methodology in Step 3, the Company determined the change in the risk score by using one of the following two approaches to calculate a Potential Risk Score: (1) for current controls, a Potential Risk Score was calculated that represents the increased risk score if the current control was not in place; (2) for incremental mitigations, a Potential Risk Score was calculated that represents the new risk score if the incremental mitigation is put into place. Next, the Company calculated the risk reduction by taking the residual risk score (See Table 2 in this chapter.) and subtracting the Potential Risk Score. For current controls, the analysis assesses how much the risk might increase (i.e., what the potential risk score would be) if that control was removed.²⁶ For incremental mitigations, the analysis assesses the anticipated reduction of the risk if the new mitigations are implemented. The change in risk score is the risk reduction attributable to each mitigation.

8.1.2 Calculating Risk Spend Efficiency

The Company SMEs then incorporated the mitigation costs from Section 7. They multiplied the risk reduction developed in subsection 8.1.1 by the number of years of risk reduction expected to be realized by the expenditure, and divided it by the total expenditure on the mitigation (capital and O&M). The result is a ratio of risk reduction per dollar, or RSE. This number can be used to measure the relative efficiency of each mitigation to another. Figure 2 shows the RSE calculation.

Figure 2: Formula for Calculating RSE

$$\text{Risk Spend Efficiency} = \frac{\text{Risk Reduction} * \text{Number of Years of Expected Risk Reduction}}{\text{Total Mitigation Cost (in thousands)}}$$

The RSE is presented in this Report as a range, bounded by the low and high cost estimates shown in Table 4 of this chapter. The resulting RSE scores, in units of risk reduction per dollar, can be used to compare mitigations within a risk, as is shown for each risk in this Report.

8.2 Risk Spend Efficiency Applied to This Risk

SoCalGas analysts used the general approach discussed in Section 8.1, above, in order to assess the RSE for the Records Management risk. The RAMP Approach chapter in this Report provides a more detailed example of the calculation used by the Company.

²⁶ For purposes of this analysis, the risk event used is the reasonable worst case scenario, described in the Risk Information section of this chapter.

To estimate the RSE, SoCalGas used the Maturity Model, which is a standard based on GARP developed by the ARMA International to identify and evaluate areas of records management risks. The Maturity Model is a performance-based standard that allows the user to assess the maturity of its records management program.

SoCalGas applied the Maturity Model to three different timeframes:

1. Ad Hoc: The level of maturity should SoCalGas abandon its current efforts for records management (i.e., administrative, training, operational compliance and oversight, and IT systems).
2. Current 2015: The level of maturity as of 2015.
3. Incremental 2019: The level of maturity if incremental mitigations are implemented in 2019.

The Current Controls were analyzed as one group; the Incremental Mitigations were analyzed as one group, also. Using the maturity model, SoCalGas estimated that reverting from the 2015 level of maturity to the Ad Hoc level will likely represent an approximately 600% increase in risk. On the other hand, progressing from the 2015 level of maturity to the 2019 prediction will likely represent a 55% reduction in risk.

8.3 Risk Spend Efficiency Results

Based on the foregoing analysis, SoCalGas calculated the RSE ratio for each of the proposed mitigation groupings. Following is the ranking of the mitigation groupings from the highest to the lowest efficiency, as indicated by the RSE number:

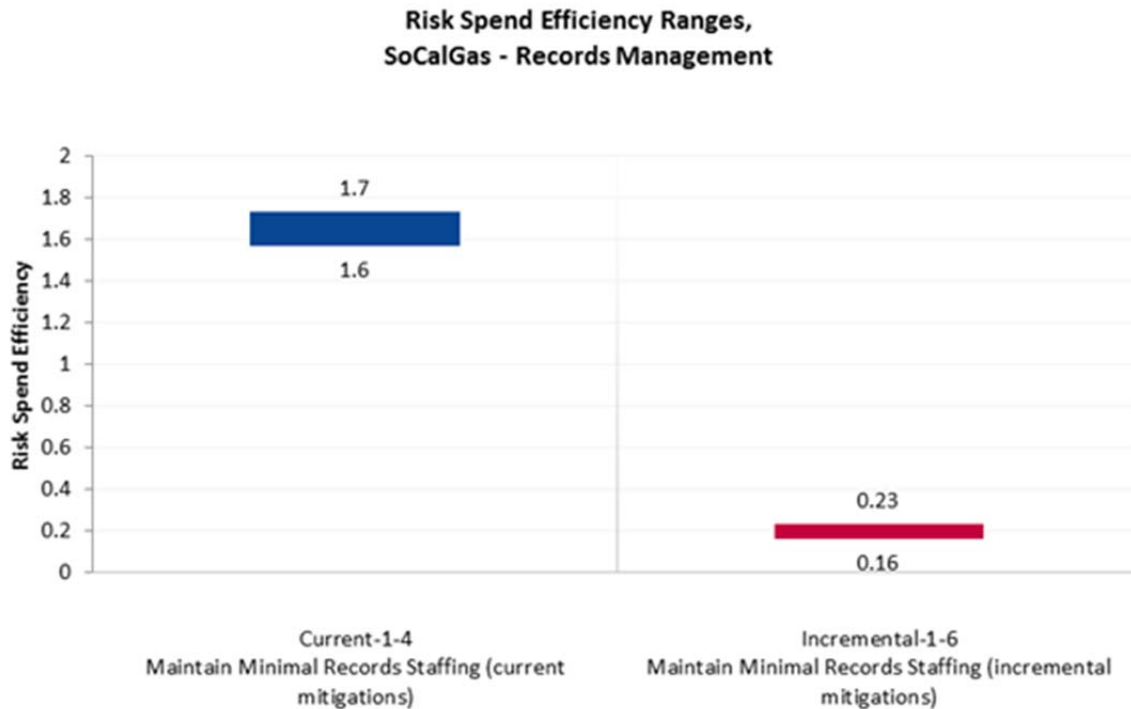
1. Maintain Minimal Records Staffing (current mitigations)
2. Maintain Minimal Records Staffing (incremental mitigations)

Figure displays the range²⁷ of RSEs for each of the SoCalGas Records Management risk mitigation groupings, arrayed in descending order.²⁸ That is, the more efficient mitigations, in terms of risk reduction per spend, are on the left side of the chart.

²⁷ Based on the low and high cost ranges provided in Table 4 of this chapter.

²⁸ It is important to note that the risk mitigation prioritization shown in this Report, is not comparable across other risks in this Report.

Figure 3: Risk Spend Efficiency



9 Alternatives Analysis

SoCalGas considered alternatives to the proposed mitigations as it developed the incremental mitigation plan for the Records Management risk. The alternatives analysis for this risk plan also took into account modifications to the proposed plan and constraints, such as budget and resources, and included discussions with key stakeholders.

9.1 *Alternative 1 – Maintaining Current Practices and Policies*

A potential alternative to the proposals discussed above is to maintain the current records management program, including the risk mitigations in their current state. Although current controls are strong, there may be areas that could be improved to further mitigate the risk and provide additional benefit. SoCalGas intends to leverage a records management expert (consultant) to identify any potential areas of improvement. Additionally, SoCalGas operations groups have identified specific areas for modernization of records. Maintaining the status quo may hinder these projects from moving forward.

9.2 *Alternative 2 – Centralized IT Records Application*

An alternative for IT applications is to implement one centralized records management IT system for all operational asset groups. This centralized system would replace all existing systems, like GIS, and



implement in their place a single system. This alternative would minimize the potential for multiple systems to have differing records and may reduce some costs since SoCalGas could stop supporting many of its other IT applications. However, this alternative would also prevent each operational asset group from identifying, implementing and utilizing a system that best meets the needs of the specific operational asset group. A one-size-fits-all approach that does not allow specialization because not all records require the same attributes to be collected and retained.

Further, inputting records can take considerable time and resources. SoCalGas strives to create interfaces that allow its employees and contractors to quickly and efficiently input data into its systems. This is especially critical as it pertains to the accuracy and completeness of SoCalGas' records. Additionally, an effort of this magnitude may cause a significant disruption to the existing records management process and may adversely impact the effectiveness of current mitigations. Therefore, this alternative was rejected in favor of the proposed plan.