

Investigation: 15-08-019

U-39M

Exhibit No.: \_\_\_\_\_

Date: January 8, 2018

Witness(es): Various

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**PACIFIC GAS AND ELECTRIC COMPANY**  
**SAFETY CULTURE AND GOVERNANCE OII**  
**PREPARED TESTIMONY**

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PACIFIC GAS AND ELECTRIC COMPANY  
SAFETY CULTURE AND GOVERNANCE OII  
PREPARED TESTIMONY

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**PACIFIC GAS AND ELECTRIC COMPANY**

**CHAPTER 1**

**INTRODUCTION**

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CHAPTER 1  
INTRODUCTION

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1                                   **PACIFIC GAS AND ELECTRIC COMPANY**  
2   **CHAPTER 1**  
3   **INTRODUCTION**

4   **A. Introduction**

5           My name is Nickolas Stavropoulos. I am the President and Chief Operating  
6   Officer of Pacific Gas and Electric Company (PG&E or the Company). In that  
7   capacity, I am responsible for the delivery of safe, reliable, affordable and clean  
8   electric and gas service to 16 million people across PG&E's 70,000 square mile  
9   service area in northern and central California.

10          The purpose of this testimony is to reinforce PG&E's commitment to  
11   continuing to improve our safety culture and performance in public, employee,  
12   and contractor safety. While PG&E has made significant, measurable progress  
13   with regard to many aspects of safety over the last several years, we recognize  
14   that we still have more to do. When it comes to safety, no company is ever  
15   done, and neither are we. We appreciate the opportunity this proceeding has  
16   provided to receive thoughtful, meaningful feedback, and we look forward to  
17   taking advantage of that feedback to help inform continuing improvements to  
18   PG&E's safety culture and performance and to help us on our mission to  
19   become the safest, most reliable energy Company in the nation.

20   **B. Witness Qualifications**

21          I received a Bachelor's degree from Bentley University and master's degree  
22   from Babson College. In addition, I have completed executive education  
23   programs at Harvard and MIT. I am on the Boards of Directors for the  
24   National Safety Council, the American Gas Association, and the Gas  
25   Technology Institute.

26          In 2011, I joined PG&E as the Executive Vice President of Gas Operations.  
27   In August 2015, I accepted the position of President of Gas Operations. I was  
28   promoted to my current role of President and Chief Operating Officer of PG&E  
29   effective March 1, 2017.

30          Prior to joining PG&E, I served as the Executive Vice President and Chief  
31   Operating Officer for National Grid, where I was responsible for all aspects of its  
32   U.S. gas distribution business. Prior to that, I was President of KeySpan Energy

1 Delivery, where I led the Company's gas line of business (LOB). Prior to joining  
2 KeySpan, I held several positions at Colonial Gas Company and Boston Gas.

### 3 **C. Background**

4 Any discussion about PG&E's safety culture must begin with the tragic  
5 San Bruno gas explosion and fire in September 2010. Since that event, PG&E  
6 has looked inward to transform our leadership, governance, and processes, as  
7 well as outward to benchmark and learn from companies across the country with  
8 best-in-class safety records.

9 Over the past seven years, PG&E and PG&E Corporation have  
10 implemented sweeping changes throughout the companies. A detailed  
11 description of those changes is provided in a whitepaper, *PG&E's Safety*  
12 *Journey: 2010-2017 and Beyond*, which PG&E submitted to the California  
13 Public Utilities Commission's (Commission) Safety and Enforcement Division  
14 earlier in this proceeding.<sup>1</sup> In this chapter, I want to highlight some of the key  
15 changes.

16 In early 2011, PG&E announced that electric and gas operations would split  
17 into separate units, each with its own senior leader in charge. This split was  
18 aimed at providing more commodity-specific focus on operations and safety, and  
19 creating clear lines of oversight and accountability.

20 In June 2011, PG&E's then-Senior Vice President Geisha Williams was  
21 elevated to the newly created role of Executive Vice President of Electric  
22 Operations for PG&E, and I joined the Company as Executive Vice President of  
23 Gas Operations. In September 2011, Tony Earley—a seasoned and widely  
24 respected utility leader—joined PG&E Corporation as Chairman, Chief Executive  
25 Officer, and President. And over the last several years, the Company has  
26 brought leaders from utilities across the country, and from various industries,  
27 into all areas of the organization, including the Gas and Electric organizations.

28 Since 2011, the PG&E Corporation Board of Directors has added new  
29 members with significant utility experience. To further strengthen its focus on  
30 safety and operations, the Board created the Nuclear, Operations and Safety  
31 Committee, led by Dr. Richard Meserve, former Chair of the Nuclear Regulatory  
32 Commission, to oversee matters related to safety, operational performance, and

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1 A copy of the whitepaper is attached to this chapter as Appendix 1-A.



1 compliance in the companies.<sup>2</sup> To further highlight the importance of  
2 compliance, which includes safety compliance, in 2015 the PG&E Corporation  
3 Board renamed its Public Policy Committee as the Compliance and Public Policy  
4 Committee, and amended its charter to help assure comprehensive and  
5 well-coordinated oversight of both PG&E’s compliance and ethics programs and  
6 the companies’ management of enterprise-level compliance risks.

7 Recognizing the need to improve our safety culture, we engaged in an  
8 intensive benchmarking process to learn from companies who had done so  
9 successfully. We met with leaders from Alaska Airlines, Eastman Chemical, and  
10 Norfolk Southern, among others, and brought several best practices to PG&E,  
11 including daily operational calls (Alaska Airlines), process safety improvements  
12 (Eastman Chemical), and non-punitive reporting (Federal Aviation  
13 Administration, Eastman Chemical, and NS Railway).

14 Following benchmarking with General Electric, Ford, and DTE Energy,  
15 PG&E launched an enhanced Integrated Planning Process in 2012, which  
16 improved the integration of risk management into the planning and budgeting  
17 process.<sup>3</sup> In addition, our processes for risk management and asset  
18 management have matured significantly and continue to mature. Risk  
19 management processes have been established at the enterprise level, with  
20 common direction across all of the LOBs. Each LOB has also worked to  
21 continually improve its more detailed risk management processes.

22 When it comes to safety, PG&E’s commitment to strengthening our safety  
23 culture and performance is embedded in the Company’s Mission, Vision, and  
24 Culture that was unveiled in 2017. Figure 1-1 illustrates PG&E’s newly-updated  
25 mission, vision and culture statements that are the foundation of how we run  
26 our business.

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**2** Additional actions by the PG&E and PG&E Corporation Boards of Directors are described in Chapter 4.

**3** A more complete description of PG&E’s Integrated Planning Process is provided in Chapter 3.

**FIGURE 1-1  
PG&E'S MISSION, VISION AND CULTURE STATEMENTS**



1           The imperative to put safety first drives a commitment to a culture in which  
2 employees understand that their actions every day must reflect that priority.  
3 Companywide efforts include the utilization of safety committees, including  
4 Grass Roots Safety Committees that involve front line field workers at the local  
5 level, and a senior leadership level safety committee which engages the  
6 executive team. The Company has also redefined the Contractor Safety  
7 Program, established the enterprise-wide Corrective Action Program (CAP), and  
8 established a Speak Up Program to reinforce and enable our employees' and  
9 contractors' commitment to improving safety culture and performance.

10           We measure our progress in safety culture and performance in a variety of  
11 ways. For example:

- 12 • We have continued to pursue independent third-party verification of our  
13 Company's systems and processes from a number of different global  
14 organizations. Over the past seven years, PG&E's gas business has earned  
15 or qualified for international certifications including ISO 55001 and PAS 55  
16 (asset management), API RP 1173 (pipeline safety management system),  
17 and RC 14001 (process safety). PG&E is the only North American utility to  
18 currently hold these third-party certifications. In addition, our Supply Chain  
19 organization has achieved ISO 9001 certification for supplier quality.

- 1       • The bi-annual employee survey, with a strong 2016 participation rate of  
2       approximately 81 percent of our 23,000 employees, includes specific  
3       dimensions focused on safety culture such as whether employees feel  
4       comfortable discussing safety concerns with their supervisors (93 percent  
5       favorable) and whether they feel free to stop work if they believe conditions  
6       are unsafe (93 percent favorable).
- 7       • The Corrective Action Program that began at Diablo Canyon Power Plant  
8       has now been implemented across the entire Company. One metric we  
9       track from CAP is the number of submittals that are anonymous. In 2017,  
10      the average anonymous submission rate was 2 percent of all issues  
11      submitted to CAP. Of the issues submitted to CAP that were related to  
12      safety, only 0.2 percent were anonymous. CAP's low anonymous  
13      submission rate is a clear indication that employees are willing to speak up  
14      and be recognized for their concerns and ideas about safety.<sup>4</sup>
- 15     • Performance, as measured by metrics in various areas, indicate significant  
16      improvements since 2011. Examples include:
- 17       – Gas emergency response time has decreased by nearly 40 percent to  
18       top quartile performance.
- 19       – The year-end backlog of non-hazardous workable grade two gas leaks  
20       has been reduced by 99 percent.
- 21       – Dig-ins on the gas system have been reduced by 45 percent.
- 22       – Customer satisfaction with reliability of service has continued to  
23       improve, with results in 2016 and 2017 showing the highest levels in the  
24       last decade.
- 25       – Leading indicators for occupational safety and health that reinforce the  
26       desired safety culture have been developed. For example, the quality of  
27       corrective actions metric focuses attention on identifying and  
28       implementing actions that prevent injury. Performance has improved  
29       over 100 percent in the first two years of measurement.<sup>5</sup>

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<sup>4</sup> More detail about the Corrective Action Program is presented in Chapter 5.

<sup>5</sup> Improvement as of Nov 2017 since EOY results were not available at the time of this filing.

1 PG&E's commitment to driving these improvements has been demonstrated  
2 in several ways, including:

- 3 • On the gas system, investment in infrastructure improvement since 2011  
4 has been extensive, including replacement of over 200 miles of transmission  
5 pipe and 585 miles of distribution pipe, hydro-testing over 1090 miles of  
6 transmission pipe, enabling in-line inspection of 850 miles of transmission  
7 pipe, and installing 291 automated valves on the transmission system.
- 8 • On the electric system, infrastructure investment has also been extensive  
9 over the last five years, including replacement of over 700 miles of overhead  
10 distribution conductor, 49 miles of underground distribution cable, 40 miles  
11 of network cable, and over 4,300 manhole cover replacements with venting  
12 covers, as well as installing or replacing over 700 miles of transmission line.
- 13 • Investment in the skills and competencies of our employees has also been a  
14 strong focus. The Employee Knowledge and Skills Program has assessed  
15 thousands of employees with regard to requirements to be a Qualified  
16 Electrical Worker, and addressed skills gaps that were identified. In the fall  
17 of 2017, the new Gas Safety Academy, a state-of-the-art facility for  
18 hands-on training for gas workers, was opened in Winters, California.
- 19 • Fifty percent of the Short-Term Incentive Plan is now based on safety, which  
20 is industry leading.

21 While the progress we've made has been significant, we know that there is  
22 more we can do and will do to reduce risk and improve safety culture and  
23 performance. One example is our effort to embark on the implementation of an  
24 Enterprise Safety Management System (ESMS). Over the last several years,  
25 we have seen the positive effects a safety management system can have on  
26 overall safety focus and performance through the experience we have gained  
27 through the implementation of the Gas Safety Excellence Program in Gas  
28 Operations, and through our involvement in the creation of API 1173, the new  
29 recommended practice for gas pipeline safety management systems. Based on  
30 this learning, we have committed to implementing an ESMS that will establish a  
31 common framework across the entire enterprise for driving performance and  
32 improvement in dimensions such as safety culture, asset management, process  
33 safety, environmental management, and occupational health and safety. For  
34 each dimension, we plan to utilize independent standards to guide our efforts

1 and measure our progress. We believe that the extent to which we plan to  
2 establish our ESMS will be industry leading and will add significantly to our  
3 efforts in improving safety performance.

4 **D. Organization of Testimony**

5 The remaining chapters of testimony are organized in response to the  
6 questions presented in the Assigned Commissioner’s Ruling (ACR) dated  
7 November 17, 2017.

8 Chapter 2 addresses the recommendations in the NorthStar Report.  
9 In summary, PG&E agrees with all of the 67 recommendations and supports  
10 their adoption by the Commission. PG&E has established an implementation  
11 plan for the 61 recommendations directed at PG&E, included as Appendix 2-A.  
12 As noted in those plans, implementation of 22 (36 percent) of the PG&E  
13 recommendations is already complete and an additional 36 will have  
14 implementation completed in 2018, bringing the total at that point to 95 percent  
15 complete.

16 Chapter 3 addresses the One PG&E Occupational Health and Safety Plan  
17 and NorthStar Data Request 144. PG&E has created a single, unified plan for  
18 the Company for employee and contractor safety over the next five years, and it  
19 has already begun implementing the plan. The safety initiatives that PG&E  
20 described in response to Data Request 144 have, with few exceptions, been  
21 completed and incorporated into PG&E’s operational processes.

22 Chapter 4 addresses the PG&E and PG&E Corporation Boards of Directors’  
23 actions in response to the NorthStar Report, which include amending  
24 governance and related documents to enhance and clarify the Boards’  
25 responsibility for overseeing safety, formalizing requirements for  
26 communications on safety matters, increasing the number of Board-level  
27 meetings involving the Safety and Nuclear Oversight Committees, enhancing  
28 safety expertise of the Boards, and confirming Board-level authority to consider  
29 safety performance when establishing executive compensation.

30 Chapter 5 addresses PG&E’s CAP, including the current status of  
31 implementing the program enterprise-wide, sharing of lessons learned, and an  
32 early assessment of results.

1 Chapter 6 addresses the ACR questions regarding five safety incidents that  
2 occurred in the 2013-2015 timeframe and PG&E's actions in response to  
3 those incidents.

#### 4 **E. Conclusion**

5 The provision of electricity and natural gas has certain inherent hazards and  
6 related safety implications for our employees, our contractors and the public.  
7 Due to the nature of the commodities provided by the utility industry, there will  
8 always be some risk. Our job, collectively, is to appropriately prioritize risks and  
9 responsibly reduce them. Our focus has to be to continuously improve safety  
10 performance over time. Our success, in large part, depends on our ability to  
11 create a healthy, constructive safety culture.

12 The quest for safety and the nature of the regulatory structure require the  
13 creation of a culture in which employees are encouraged to raise issues without  
14 fear of retaliation and in which the utility interacts with its regulators transparently  
15 and with integrity. A healthy safety culture is marked by open communication;  
16 open communication both within the utility and between the utility and its  
17 regulators.

18 The creation of a healthy and constructive safety culture is a never-ending  
19 journey. Our commitment to our employees and the public is that we will work  
20 with our regulators to be transparent about our challenges so that, collectively,  
21 we can learn from them and improve.

22 This is our commitment, and it is critical to the success of our journey: we  
23 will continually improve, we will nurture a culture of transparency and integrity,  
24 and we will always put safety first.

**PACIFIC GAS AND ELECTRIC COMPANY**

**CHAPTER 1**

**APPENDIX 1-A**

**PG&E'S SAFETY JOURNEY: 2010-2017 AND BEYOND**

# **PG&E's Safety Journey: 2010-2017 and Beyond**

**Prepared for**  
Safety Culture and Governance OII (I.15-08-019)

**April 3, 2017**



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## **Executive Summary**

The San Bruno gas explosion and fire in September 2010 was a tragedy, and since that event PG&E has been working to improve all aspects of its business that affect safety. In the last six years, PG&E has made progress across the company—a focus on safety is integrated into how we plan, execute, and measure our work. We also recognize, and our experiences over the last several years have affirmed, that there is more work to do in our mission to provide safe, reliable, affordable, and clean energy.

The purpose of this document is to provide an overview of the actions PG&E has taken to improve its safety culture and safety performance since the San Bruno accident. This executive summary provides an overview of PG&E's safety philosophy, our journey since San Bruno, and an overview of how we measure success. The remainder of the document provides further detail on the actions we have taken since San Bruno to support our safety efforts summarized into the following three time periods:

- San Bruno and Immediate Aftermath (September 2010 – 2012);
- Improving Safety Through Integrated Planning (2013 –2016); and
- 2017 and Looking Forward.

The footnotes and appendices provided with this document cross-reference the various actions taken and accomplishments with data request responses provided to the California Public Utilities Commission (CPUC) and its consultant NorthStar.

### **Our Safety Culture Philosophy**

PG&E is driven to achieve an effective and robust safety culture, the goal of which is to ensure the safety of the public and employee and contractor workforce. As the CPUC noted in its Safety Culture and Governance OII (I.15-08-019), this is a prerequisite for any utility's positive safety performance record.

The primary tools used to achieve this include leadership, governance, third-party and internal benchmarking, training, risk identification and integrated planning to inform investment needs, performance management and compensation policies, and metrics. When these tools are successfully deployed the result is a safety culture that demonstrates a collective and consistent commitment to emphasize safety over competing goals.

PG&E's philosophy is that safety is each employee's concern, priority, and job. Our safety culture lives in our people and the way they approach their work every day. What we are building is a mindset that values safety above all else and integrates safe practices into the work we perform. The safety culture at PG&E is formed as a result of the work, actions, and decisions made every day that demonstrate that safety is our core value. It is not represented by words or slogans alone, but rather by choices made that demonstrate to our organization that nothing is more important than safety. Our goal is to integrate our safety-first philosophy and our approach to continuous improvement when we identify performance gaps.

In cases where we find that an employee has failed to uphold our safety standards, or lacks the skills required to meet them, we respond not with termination of employment or immediate disciplinary action, but coaching and training, so that people know they have nothing to fear from bringing problems to light.<sup>1</sup> We believe that a healthy safety culture comes from employees' willingness to speak up about the deficiencies they see, share information, and have crucial conversations with each other. Initiatives discussed later in this document such as the Near Hit Program<sup>2</sup>, Corrective Action Program (CAP)<sup>3</sup>, and Speak Up for Safety campaign<sup>4</sup> are all designed with this objective – to encourage and empower employees to speak up for safety.

### *Accountability for Safety*

Our expectation is for the men and women on the front lines of PG&E's operations to know and understand why the accountability for safety rests with them. We enable this by giving them authority to do what is necessary to protect the safety of the public, their fellow employees, and our contractors. This manifests in employee actions including communicating about safety<sup>5</sup>, stopping or pausing a job for safety, and organization-wide stand-downs to revisit our procedures. All this is supported by cross-functional structures specifically designed to encourage and enable that response.<sup>6</sup>

Our leaders, too, are each personally accountable for instilling that culture by demonstrating – through their own actions – that PG&E's values about safety hold true at every level of the enterprise. Front-line employees must be able to see for themselves that every successive level of leadership owns the safety of the teams they support, all the way to the most senior levels of leadership. They set the tone, expectation, and example that nothing comes before safety; not deadlines, productivity, or profit.

### *Roles and Responsibilities – Our Organizational Approach*

While we want every business operation to think about safety in the same way, we recognize that one size does not fit all. That is why the primary responsibility for public, employee, and contractor safety is located at the line of business (LOB) level. This approach is both strategic and practical and comes from understanding that the risks and hazards for each LOB are

<sup>1</sup> See response to NorthStar Data Request (NS DR), attachment (Atch) 007 for a presentation that includes information on changes made to PG&E's discipline policy in early 2011 as noted in NS 314, item 5 of Atch 001. Further information associated with these changes was provided in responses to NS DRs 025 and 027.

<sup>2</sup> See first supplemental (Supp) response to NS DR 004, Atch 009 for a presentation on the Near Hits Program which was implemented enterprise-wide in mid-2012 as noted in NS 314, item 8 of Atch 001. Further information on PG&E's Near Hits Program was provided in responses to NS DRs 212 Supp 002, 225, 726, 756, 861-862, and 877-879.

<sup>3</sup> See first supplemental response to NS DR 004, Atch 008 for a presentation on CAP. Further information on CAP was provided in responses to NS DRs 061, 214, 218, 225, 271, 274, 404, 438, 446, 512, and 890.

<sup>4</sup> See responses to NS DRs 256, 567, and 747 for information on the Speak up for Safety campaign.

<sup>5</sup> See responses to NS DRs 066, 208-210, 259, 452, 531, and 745-746 for example safety-related communications to employees.

<sup>6</sup> See response to NS DR 770 for additional information.

different. For example, we know that the practices involved in lowering electric linemen and equipment from helicopters onto electric transmission towers are very different than those needed for gas workers toiling at the bottom of a trench. Likewise, the levels of rigor and redundancy necessary to operating a nuclear power plant would be unwarranted at an equipment yard. We also believe that the people closest to the work are the most expert about the inherent risks associated with performing the work, and finding the ways to mitigate those risks.

PG&E's LOB leaders understand these realities, and how best to ensure the safety of their teams and the communities they serve. Our Corporate Safety team is there to provide support for our safety work in the form of cross-collaboration process improvements and deployments, training, technology deployment, incident investigation, compliance, metrics, best practice identification, and benchmarking.<sup>7</sup>

#### *Use of Risk Assessment as a Basis for Plans and Actions*

In the years since San Bruno, we have matured our approach and employment of risk identification and mitigation for our operations.<sup>8</sup> We see risk as a critical factor in how we prioritize multi-year capital investments that improve the safety and reliability of our system operations in Gas, Electric Transmission and Distribution (T&D), and Electric Generation. Risk management is foundational to the improvements we have made to employee safety and health, enabling us to target the activities and behaviors most likely to cause injury on the job.<sup>9</sup> It has also been utilized for our Contractor Safety Program<sup>10</sup> to ensure we have skilled and qualified workers acting on our behalf.<sup>11</sup>

Risk assessment is embedded in the way we plan and budget for work and plan for rate cases. As discussed later, a component of our annual integrated planning process is dedicated to risk assessment; ensuring safety receives top priority when making budget decisions. We know risks are not static. We revisit our assessments each year to determine if we have effectively mitigated risks, or if new ones have emerged.<sup>12</sup> Each LOB has a Risk and Compliance Committee (RCC) with standardized agendas and approaches to risk and compliance

<sup>7</sup> See response to NS DR 004, Atch 004, for an overview of the roles and responsibilities of Corporate Safety.

<sup>8</sup> See response to NS DR 004, Atch 003, for an overview of PG&E's integrated planning process, including Session D on risk management identification and planning. Further information on PG&E's Enterprise Risk Management program was provided in responses to NS DRs 168, 317, 472, and 635

<sup>9</sup> See response to NS DR 771 for additional information.

<sup>10</sup> See first supplemental response to NS DR 004, Atch 004 for a presentation on the Contractor Safety Program which was established in mid-2014 as noted in NS 314, item 15 of Atch 001. Further information on this program was provided in responses to NS DRs 049, 054, 063, 072, 075-077, 084, 087-089, 096, 099-101, 108, 111-113, 183-186, 195-203, 254, 309-310, 322, 372, 385-390, 426-428, 431-435, 490, 504, 506-510, 519, 521-524, 537, 543-544, 553-558, 561-563, 585-599, 611, 643-649, 672 (Atchs 001 and 002), 724 (item 7), 758-761, 765, 863, and 867.

<sup>11</sup> See response to NS DR 863 for additional information.

<sup>12</sup> See response to NS DR 004, Atch 003, for an overview of PG&E's integrated planning process. Further information on PG&E's Integrated Planning Process was provided in responses to NS DRs 039-041, 205, 297, and 663-666.

management for their respective areas of responsibility.<sup>13</sup> The improvements we have made in data analysis and records management has contributed to helping us have a clearer understanding of risk.<sup>14</sup>

## **Our Journey**

The period following San Bruno was indisputably a time of crisis for PG&E. PG&E worked to support the San Bruno community, make sure the gas system was safe, cooperate with our regulators and other third party investigators to understand the accident and its root cause(s), make our own assessment of our operations and processes, identify and hire expertise from across the country, develop and begin implementation of a pipeline modernization program, and implement safety and operational requirements and recommendations across the other operational LOBs. The pace of activity and the focus of our regulators and employees on the safety of our pipeline system were significant. Similarly, the Electric T&D Operations and Generation teams worked diligently to prevent public, employee, or contractor safety incidents. Safety Improvement Plans were developed for all three operational LOBs and became the basis for the improvements made in safety in the years that followed.<sup>15</sup>

The results and findings of many of the internal and external investigations of the San Bruno accident were received by August 2011. To be able to process all the incoming requests and report recommendations, PG&E used a multi-phased approach to classify, assess, prioritize, and develop strategies and plans.<sup>16</sup> Although the recommendations from many of these assessments were focused on gas operations, we took a broader approach in addressing the recommendations with initiatives led across the company. In parallel, Electric Operations created its Electric Operations Improvement Plan<sup>17</sup> and Gas Operations developed its Gas Safety Excellence strategic framework<sup>18</sup> to drive safety improvements in their organizations. These plans focused on closing gaps identified by the CPUC's Independent Review Panel (IRP), the National Transportation Safety Board (NTSB), benchmarking, and internal reviews, and were resourced and immediately put in place. Monthly meetings chaired by the Executive Vice Presidents of Gas and Electric Operations were held to drive performance and measure progress beginning in the fall of 2011 / early 2012.<sup>19</sup>

<sup>13</sup> See responses to NS DRs 145, 155, 160, and 314 (Atch 001, item 37) for information on Risk and Compliance committees.

<sup>14</sup> See response to NS DR 772 for additional information.

<sup>15</sup> See response to NS DR 773 for additional information on these plans.

<sup>16</sup> See response to NS DR 774 for additional information.

<sup>17</sup> See response to NS DR 505 for a presentation on the Electric Operations Improvement Plan.

<sup>18</sup> See responses to NS DRs 004 Supp 001 (Atch 003, pp. 4 and 27) and 013 (Atch 005, pp. 10-13) for information on Gas Operations' Gas Safety Excellence strategic framework.

<sup>19</sup> See response to NS DR 775 for additional information on these meetings.

Soon thereafter, PG&E initiated an effort to bring all of its plans – focused on safety – together in a more integrated fashion.<sup>20</sup> The enhanced integrated planning process was introduced in the first quarter of 2012 and the plans took effect January 1, 2013.<sup>21</sup> The safety initiatives noted above were folded into each LOB’s plan as part of the planning process, reinforcing their ownership of safety in their operations.

## **How We Measure Success**

In our drive for continuous improvement, we actively look for multiple perspectives on our safety culture and performance, internally and externally, qualitatively and quantitatively. The assessments provided by Behavioral Science Technology (BST) yielded insights that formed the basis of our safety culture training and coaching curriculum.<sup>22</sup> Similarly, we actively encourage employees to provide open and honest feedback via our biennial Premier Survey<sup>23</sup> and quarterly Know, Feel, Do pulse survey<sup>24</sup> to inform our progress on safety culture, and areas in which we need to improve.

Our use of public, employee, and contractor safety performance metrics has matured in recent years and we are now employing more leading indicators such as near hit reporting, timely reporting of injuries, and serious injury and fatality (SIF) exposure mitigation, that measure the behaviors we are trying to encourage.<sup>25</sup> And we have begun to factor some of these leading indicators, such as timely reporting of injuries, into our compensation packages to further encourage these behaviors.<sup>26</sup>

Third party validation of our performance provides objective milestones of our progress.<sup>27</sup> The certifications received from internationally recognized engineering and standards

<sup>20</sup> See response to NS DR 776 for additional information.

<sup>21</sup> See response to NS DR 004, Atch 003, for an overview of PG&E’s integrated planning process. Further information on PG&E’s Integrated Planning Process was provided in responses to NS DRs 039-041, 205, 297, and 663-666. Documentation of the launch of the enhanced process was provided in response to NS DRs 776 and 777.

<sup>22</sup> See responses to NS DRs 017, 048, 225, and 314 (Atch 001, item 3) for information on the safety assessments completed by BST.

<sup>23</sup> See first supplemental response to NS DR 004, Atch 006, for an overview of PG&E’s Premier Survey. Further information on and results from PG&E’s Premier Survey was provided with NS DRs 015, 366, 718, and 726.

<sup>24</sup> See first supplemental response to NS DR 004, Atch 007, for an overview of safety communications at PG&E which includes results from the Know, Feel, Do survey. Further information on and additional results from PG&E’s Know, Feel, Do survey was provided with NS DRs 030, 366, 444, 527, 726, and 876.

<sup>25</sup> See response to NS DR 666 for historical detail on metrics tracked in PG&E’s safety dashboard. Further information on these metrics was provided with the response to NS DRs 004 (Atch 004), 041, 663-666, and 722.

<sup>26</sup> See response to NS DR 004, Atch 008, for an overview of PG&E’s compensation package. Further historical information on PG&E’s historical Short-Term Incentive Plan (STIP) measures was provided with the response to NS DR 023.

<sup>27</sup> See response to NS DR 778 for additional information.

organizations underscore our drive to do the right work the right way.<sup>28</sup> Insights provided by former NTSB chairman Jim Hall and Associates<sup>29</sup>, Lloyd's Register<sup>30</sup>, and other third parties have helped us identify gaps in our culture and processes so that we can better target our efforts around safety.

As discussed later in this document, we have seen measurable progress in a number of our measures of safety culture, workforce safety, and public safety. Serious incidents are trending downward. Near hit and CAP reporting is trending upward, with a decline in anonymous CAP submissions, demonstrating increased employee willingness to openly speak up for safety. Employee perception of the importance of safety is showing positive trends through employee engagement surveys. And key public safety measures such as reduction in wires down, 911 electric emergency response time, reduction in gas dig-ins, and gas emergency response time have all shown positive trends since 2010.<sup>31</sup>

But the most important measure of our progress is how PG&E has performed in the real-world tests of our systems and procedures since the San Bruno accident, and the tangible benefit to our customers and workforce. The following few examples provide insight into the way our leaders encourage and employees embrace our commitment to put public, employee, and contractor safety first in everything we do:

*In 2012, PG&E Electric T&D leadership embarked on a quest to more clearly understand what gaps in knowledge and skills existed with the Journeyman Linemen, Electricians, and Crew Leaders, and to begin a process to close those gaps. We worked closely with the International Brotherhood of Electrical Workers (IBEW) and implemented the PG&E Employee Knowledge and Skills Program, which performs safety skill assessments and then remediates any identified knowledge and skills gaps on Journeyman classifications identified as Qualified Electrical Workers (QEW).<sup>32</sup> We use information on work procedure errors, incident notification, near hit, and observation databases to identify and target potential knowledge and skill deficiencies for high risk and high consequence activities. In the four years since the program began, we have completed more than 3,000 assessments. In the initial knowledge and skills assessment roughly 25 percent of our employees failed to demonstrate proficiency in critical skills needed to safely perform electric line work and 10 percent failed to demonstrate sufficient knowledge. Through effective one-on-one training and skills remediation, 92 percent of employees passed their knowledge and skills assessments on the second attempt and all but 23 employees were able to successfully demonstrate the skills and knowledge needed to safely perform electric line work. The 23 employees who were not able to demonstrate safety proficiency were either placed in*

<sup>28</sup> See responses to NS DRs 005, 017, 173, 176, 182, 314 (Atch 001, items 45 and 51), and 337 for information on third party certifications.

<sup>29</sup> See responses to NS DRs 017 and 043 for information on assessments completed by Jim Hall and Associates.

<sup>30</sup> See responses to NS DRs 005, 017, 182, 314 (Atch 001, item 45), 337, 729, and 737 for information on third party reviews and certifications conducted by Lloyd's Register.

<sup>31</sup> See response to NS DR 726 for an overview of PG&E's recent historical safety performance.

<sup>32</sup> See responses to NS DRs 078, 314 (Atch 001, item 27, and Atch 011) 380-384, 424-425, 559, 668, 675, 682, and 864-866 for further information on the Knowledge and Skills Program.

*other non-QEW jobs, or elected to leave the company.<sup>33</sup> This partnership with the IBEW to identify and remediate training and skills gaps has had a positive impact on our line worker safety culture and performance.<sup>34</sup> Additionally, this program has been identified as industry leading with one other company adopting a similar program and several other utilities benchmarking the program for their own consideration. The program has also been associated with a measurable reduction in work procedure errors, injuries, and fatalities.<sup>35</sup>*

*In late-June of 2014, following a conversation with leaders from a northeastern utility, we identified a gap in how we had been implementing plastic qualification procedures, a process used to join (or fuse) pipe as part of the gas distribution system. Immediately, we issued a system-wide stand-down on all non-emergency heat fusion work, a specific type of a plastic fusion, until the required number of our employees were re-qualified using both a visual verification and appropriate testing processes to perform this work. To assist us, we retained third party industry experts to lead our re-qualification efforts as well as provide quality control over the process. Less than two months later, we had completed the re-qualifying process for approximately 650 employees, and equipped our Training and Implementation team to perform plastic qualifications for remaining employees. Later in 2014, PG&E issued another safety stand-down, following the injury of an employee working on a job site where plywood was used to cover an excavation. The “complete stop” on the use of this process prevented potential, similar injuries and a new engineered product was rolled out three weeks later to lift the stand-down. PG&E has used similar stand-downs as a means to raise awareness to potential safety-related issues and review the appropriate and required mitigations at a system-wide level to ensure the continued safety of the public and employee and contractor workforce.<sup>36</sup>*

*At 3:30 am on Sunday, August 24, 2014, residents of the City of Napa and surrounding areas were jolted from sleep by a 6.0 magnitude earthquake that left 70,000 PG&E customers without power. More than 200 employees, many affected themselves by the earthquake, mobilized with the needed equipment, processes, and support to restore the community safely.<sup>37</sup> We completed a survey of our gas transmission and distribution lines by foot, air, and automobile, using state-of-the-art leak detection technology. Restoration crews worked safely and non-stop for 26 hours to get the power back on for every one of our customers. We also responded to more than 5,000 tags for gas odor, leaks, relights, and safety checks in the ensuing weeks. In appreciation, the Santa Rosa Press Democrat newspaper published a full-page ad praising our efforts and Napa Mayor Jill Techel presented PG&E with a key to the city.*

<sup>33</sup> See response to NS DR 864 for additional information.

<sup>34</sup> See response to NS DR 865 for additional information.

<sup>35</sup> See response to NS DR 866 for additional information.

<sup>36</sup> See response to NS DR 779 for additional stand-down examples.

<sup>37</sup> See responses to NS DRs 004 Supp 001 (Atchs 003 and 011) and 314 (Atch 001, item 46).



*On November 13, 2015, a fatal gas transmission dig-in occurred in Bakersfield, committed by a company with a history of repeated dig-ins.<sup>38</sup> One person died and three others were injured. Within 14 minutes of the line break, PG&E closed three large transmission valves and isolated the ruptured section of the pipeline. The operator required only four minutes to interpret the data, determine that there was a pipeline rupture, and act. Without hesitation, he closed the first valve. Over the next 10 minutes, the senior operator in the Gas Control Center established an isolation plan involving additional valves. He, too, had the data, the training, and the tools to interpret and respond to the emergency. He also understood that it was his responsibility, not anyone higher in the chain of command, to close the main line valves. Both operators had the necessary power, and both used it to safely contain the consequences of the pipeline rupture, recognizing that they were shutting down a large section of the natural gas system during a winter cold snap.*

## **Our Commitment**

From the beginning of PG&E's ongoing safety journey, we have taken opportunities to learn how to become a safer company. We benchmarked with Alaska Air<sup>39</sup>, Eastman Chemical, Norfolk Southern Railroad, and many others to learn from their experiences and adopt their best practices. In that spirit, we are open to any and all ideas about where we can do even better, and what aspects of our operations can still be improved.

We are proud of what we have accomplished, but we are not satisfied. We are committed to continuing our work on safety, and we understand that it is our duty to keep doing it.

<sup>38</sup> See responses to NS DRs 304-306 and 780 for further information on the Bakersfield gas explosion.

<sup>39</sup> See responses to NS DRs 182, 265 and 314 (Atch 001, item 43) for information on Alaska Airlines benchmarking.

## **San Bruno and Immediate Aftermath (September 2010–2012)**

Before the San Bruno accident, PG&E was working to improve its safety performance. Between 2007 and 2011, PG&E achieved more than a 50 percent reduction in rates for Occupational Safety and Health Administration (OSHA) recordable injuries, preventable motor vehicle incidents (MVI), and lost work day (LWD) cases.<sup>40</sup> Despite these improvements, worker fatalities and serious injuries persisted. To better inform our efforts to improve safety, PG&E leadership formed an officer team, referred to as the “Executive Safety Panel”, to investigate why we were experiencing serious incidents and fatalities and identify best practices to improve performance. A Leadership Safety Assessment was completed to identify opportunities for improvement within the company’s field organizations in the areas of communication flow, accountability, safety culture, and management policies related to the handling of safety incidents.<sup>41</sup> They also engaged industry experts to conduct independent analysis of our safety practices, programs, procedures, and overall safety culture.

The Leadership Safety Assessment Report, which was finalized in August 2011, identified a number of areas for improvement. External assessments revealed similar findings as the Leadership Safety Assessment.<sup>42</sup> We took these recommendations seriously and began making improvements.<sup>43</sup> We needed to understand and learn from best practices in the industry and other companies and industries. The executive team, with new additions, recognized the need to align on a set of principles and commitments that would define a new approach to safety.

From the lessons of San Bruno, PG&E recognized it must focus on its core operations across the enterprise and not just gas transmission pipeline operations.<sup>44</sup> Each LOB was charged with improving its operations. To do so effectively, we recognized that we needed to compare ourselves with best practices and leaders in safety from our industry and others to better understand strengths and areas of improvement.

PG&E took responsibility for the San Bruno accident and committed to embracing the findings from investigations. The following identifies our focus areas during the aftermath of

<sup>40</sup> NS DR 726, Atchs 002 and 003.

<sup>41</sup> See NS DR 048, Atch 001, for a copy of the Leadership Safety Assessment.

<sup>42</sup> See responses to NS DR 048, Atch 002 (BST Occupational Health and Safety Systems Assessment) and NS DR 349, Atchs 006 (Blacksmith Group review) for copies of other third-party assessments completed during the year following the San Bruno accident at direction of management or the Board of Directors. See response to NS DR 050, Atch 001 for a copy of the NTSB Accident Report. The CPUC’s Independent Review Panel report on the San Bruno Pipeline explosion is located here: <http://www.cpuc.ca.gov/General.aspx?id=7373>.

<sup>43</sup> See Boards of Directors (Board) presentation titled “PG&E’s Response to Safety Assessments” and dated June 20, 2012, made available for NorthStar’s in person review in response to NS DR 006. Progress updates on these efforts were later made to the Board. For example, see Board presentation titled “PG&E’s Response to Safety Assessments” and dated June 19, 2013, also made available for NorthStar’s in person review in response to NS DR 006.

<sup>44</sup> See response to NS DR 781 for additional information.

San Bruno and provides highlights of some of our activities. Additional detail on actions taken and accomplishments during this time period are provided in Appendix A.

### September 2010-2012 Focus Areas and Progress

As part of our company approach around operational safety, plans were developed by—and responsibility for those plans and activities rested with—the individual LOBs.<sup>45</sup> There was not a comprehensive, enterprise-wide plan developed at that time.<sup>46</sup> Some examples of major safety-related activities during this time period include:

- As directed by the CPUC, we took immediate action to ensure the safety of the gas pipeline system:
  - Reduced pressure on 130 miles of pipeline in high consequence areas (HCAs)<sup>47</sup>;
  - Accelerated leak survey of the gas transmission pipeline system<sup>48</sup>;
  - Validated MAOP (Maximum Allowable Operating Pressure)<sup>49</sup> which entailed gathering and validating pipeline records, a process that involved approximately 2 million person-hours of work; and
  - Conducted strength tests on 163.5 miles of gas transmission pipeline and verified strength test pressure records for an additional 50.9 miles of pipeline, for a total of approximately 214.5 miles, all in 2011.<sup>50</sup>
- As directed by the CPUC, we developed and submitted to the CPUC the Pipeline Safety Enhancement Plan<sup>51</sup>, which laid out an aggressive path for an asset modernization program designed to reduce public safety risk associated with the gas transmission system;
- Implemented leadership, organizational, and governance changes;
- Enhanced focus on public safety including identifying and beginning to address longer term areas of improvement in the gas system<sup>52</sup>, as well as other operational areas;
- Identified and implemented foundational safety culture and employee safety changes<sup>53</sup>;

<sup>45</sup> For example, see response to NS DR 505 for a presentation on the Electric Operations Improvement Plan.

<sup>46</sup> See response to NS DR 782 for additional information.

<sup>47</sup> See responses to NS DRs 013, Atch 001 (p. 18), 783, and 788 for additional information.

<sup>48</sup> See responses to NS DRs 013, Atch 001 (pp. 18-19, 28, 31-34), 784, and 788 for additional information.

<sup>49</sup> See responses to NS DR 090, Atch 002, p. 10; NS DR 013 Atch 001, pp. 18, 20; and NS DR 013 Atch 005, pp. 49-50 for information on MAOP validation process.

<sup>50</sup> See response to NS DR 013, Atch 001, p. 4 for detail on strength testing conducted through May 2012.

<sup>51</sup> An overview of the filed plan is located here: <http://www.pgecurrents.com/2011/08/26/pge-files-milestone-plan-to-modernize-improve-safety-of-gas-pipeline-system/>. The plan filed on August 26, 2011 is located here: <http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=4594>.

<sup>52</sup> See response to NS DR 013, Atch 001 for a copy of PG&E's first annual Gas Safety Plan submitted to the CPUC on June 29, 2012.

<sup>53</sup> See response to NS DR 004, Atch 004, p. 44 for a timeline of PG&E's safety progress from 2011 to 2016.

- Emphasized and reinvigorated grassroots safety teams across the company<sup>54</sup>;
- Improved emergency preparedness and response programs<sup>55</sup>;
- Conducted benchmarking<sup>56</sup>; and
- Assessed the results of third-party reviews and external investigations (the NTSB, the CPUC's IRP, Blacksmith Group, BST, and Towers Watson) and developed plans to improve safety performance.<sup>57</sup>

### *Leadership Organizational and Governance Changes*

In early 2011, PG&E announced that electric and gas operations would split into two separate units, each with its own senior leader in charge. This split was aimed at providing more commodity-specific focus on operations and safety, and creating clear lines of oversight and accountability. In June of 2011 Geisha Williams, at the time PG&E's Senior Vice President of Energy Delivery, became Executive Vice President of Electric Operations. Two weeks later, Nick Stavropoulos joined PG&E as Executive Vice President of Gas Operations. Tony Earley joined in September that year as Chairman, Chief Executive Officer, and President of PG&E Corporation. The company began hiring gas and electric operations leaders, engineers, and data scientists from across the industry to help drive safety changes throughout the organization. The company established the position of Lead Safety Officer, appointing Des Bell, an executive with extensive aviation safety experience.<sup>58</sup> Ed Halpin, a recognized leader in nuclear safety culture, was named Chief Nuclear Officer. The Board of Directors created the Nuclear, Operations, and Safety (NOS) Committee—led by Dick Meserve, former Nuclear Regulatory Commission (NRC) Chair—to oversee matters relating to safety, operational performance, and compliance issues related to the company's operations and facilities including risk management programs and safety culture efforts.<sup>59</sup>

### *Public Safety*

A number of immediate actions were taken following the San Bruno accident to make the gas system safe. In addition, all operational LOBs (i.e., Electric Transmission and Distribution,

<sup>54</sup> See first supplemental response to NS DR 050 for an overview of grassroots safety teams.

<sup>55</sup> See first supplemental response to NS DR 004, Atch 011 for a presentation on PG&E's emergency preparedness and response efforts.

<sup>56</sup> See responses to NS DRs 182, 265 and 314 (Atch 001, item 43) for information on Alaska Airlines benchmarking. See Leadership Safety Assessment Report provided as NS DR 048, Atch 001 for information on benchmarking with Entergy and Ameren, two top-performing safety utilities. See response to NS DR 040, Atch 001 for information on benchmarking with GE to inform the development of PG&E's enhanced integrated planning process. PG&E also benchmarked with Ford and DTE Energy for this effort. Benchmarking was also conducted with Norfolk Southern, Eastman Chemical to inform process safety improvements, and the Federal Aviation Administration (FAA), Eastman Chemical, and BNSF Railway to inform non-punitive reporting policy. Additional information on benchmarking with Ford and DTE Energy subsequently provided in response to NS DR 796 and additional information on benchmarking with Norfolk Southern, Eastman Chemical, and FAA subsequently provided in the response to NS DR 860.

<sup>57</sup> See response to NS DR 774 for additional information.

<sup>58</sup> NS DR 252.

<sup>59</sup> See responses to NS DRs 008, 009, 042, 354, 477, and 565 for information on the NOS Committee.

Gas Operations, and Generation) at PG&E looked across their systems to identify opportunities for improvement. Some of the key activities that occurred during the September 2010 through 2012 time period by LOB are as follows:

#### *Enterprise-wide*

- As part of the response to criticisms and recommendations related to the company's response to San Bruno, PG&E established EP&R and Emergency Management Advancement Program (EMAP).<sup>60</sup>

#### *Gas Operations*

- Adopted the Gas Safety Excellence framework, an overarching strategic framework for Gas Operations with gas system safety at its core.<sup>61</sup> This was intended to align the organization and help implement initiatives in a structured and prioritized manner.
- Brought in Jim Hall and Associates to provide independent analysis of our situation plans and progress.<sup>62</sup>
- Formed a team of eight public safety specialists, composed mostly of former fire and law enforcement leaders.<sup>63</sup> Among other responsibilities, the team conducts approximately 500 free "First Responder Workshops" annually and meets with each fire department with PG&E gas facilities in its territory to discuss contingency plans.<sup>64</sup>

#### *Electric T&D*

- Developed Electric Operations Improvement Plan informed by various independent assessments conducted following San Bruno. Areas of improvement were identified and leaders were tasked with developing improvement plans tied to specific focus areas including public/system safety, employee safety, compliance, customer satisfaction, reliability, and work efficiency.<sup>65</sup>
- Initiated Wires Down Program (including introduction of wires down metric) to reduce the number of conductors that fail and result in a contact with the ground, a vehicle, or other object. In an effort to identify the root cause of wires down incidents, PG&E implemented a program to site visit wire down locations to gather essential

<sup>60</sup> See first supplemental response to NS DR 004, Atch 011 for a presentation on PG&E's emergency preparedness and response efforts. See responses to NS DRs 788-789 and 840 for additional information.

<sup>61</sup> See responses to NS DRs 004 Supp 001 (Atch 003, pp. 4 and 27) and 013 (Atch 005, pp. 10-13) for information on Gas Operations' Gas Safety Excellence strategic framework. See responses to NS DRs 788 and 790 for additional information.

<sup>62</sup> See responses to NS DRs 017 and 043 for information on assessments completed by Jim Hall and Associates. See responses to NS DRs 788 and 791 for additional information.

<sup>63</sup> See responses to NS DRs 788 and 792 for additional information.

<sup>64</sup> See response to NS DR 013, Atch 005, pp. 44-47 for information on Gas Operations' emergency response efforts.

<sup>65</sup> See response to NS DR 505 for a presentation on the Electric Operations Improvement Plan.

data, understand the cause, and develop work plans to mitigate future wires down incidents.<sup>66</sup>

- Increased focus on 911 emergency response (including introduction of 911 emergency response metric) to improve PG&E's response to outages to address hazardous conditions.<sup>67</sup> By responding to utility-related 911 emergencies rapidly, PG&E can take action to make the situation safe.

### *Generation*

- Conducted a gap assessment of hydro system safety as part of the Enterprise Risk Management process and began mitigation activities.<sup>68</sup>
- Established Dam Safety Advisory Board to provide independent external oversight of our hydro generation assets and associated risks with the objective of ultimately enhancing the safety of our highest risk hydro generation assets.<sup>69</sup>
- Participated in the Fukushima forum and learned best practices from others in the industry in response to the Fukushima incident.<sup>70</sup> This included enhancing Diablo Canyon's (DCPP) design basis accident program.
- Enhanced DCPP's Emergency Preparedness Program in response to revised NRC regulations based on lessons learned and assessments of the 9/11 terrorist attacks.<sup>71</sup>

### *Benchmarking*

Recognizing the need to improve our safety culture, we looked to those who had done this successfully. To gain greater knowledge about instilling a stronger safety culture, we conducted benchmarking with Alaska Airlines, Eastman Chemical, Norfolk Southern, Entergy Corporation, and Ameren Corporation, among others. From this exercise, PG&E incorporated several best practices, including: daily operational calls (Alaska Airlines), process safety improvements (Eastman Chemical), and non-punitive reporting (Federal Aviation Administration, Eastman, and BNSF Railway).

### *Foundational Safety Culture and Workforce Safety Changes*

Internal employee surveys, external assessments, and other feedback revealed that our focus on compliance to rules and work procedures had led to an over-reliance on discipline in response to injuries and fatalities, which eroded the trust between company management and bargaining unit

<sup>66</sup> See first supplemental response to NS DR 004, Atch 002, pp. 20, 26, 37, 39, and 42, and response to NS DR 314 (Atch 001, item 28) for information on PG&E's wires down program efforts.

<sup>67</sup> NS DR 666, Atch 003 documents introduction of wires down and 911 emergency response metrics for Electric beginning in 2011.

<sup>68</sup> See responses to NS DRs 064, 314 (Atch 001, item 60) and 503 for further information on hydro system safety risk mitigation efforts. See response to NS DR 793 for information on comparable efforts by PG&E's Electric T&D and Gas Operations organizations.

<sup>69</sup> See responses to NS DRs 004 Supp 001 (Atch 005, p. 34), 017, 405, 788, and 794 for further information on the Dam Safety Advisory Board.

<sup>70</sup> See first supplemental response to NS DR 004, Atch 005, p. 29 for documentation of this event.

<sup>71</sup> See responses to NS DRs 004 Supp 001 (Atch 005, p. 32) and 314 (Atch 001, item 56) for information on Generation's emergency response efforts and the NRC's Emergency Plan Rulemaking.

employees.<sup>72</sup> PG&E changed its discipline policy to remove the use of discipline in response to safety incidents, except under very limited circumstances.<sup>73</sup>

PG&E also believed the use of certain metrics, including using Occupational Safety and Health Administration (OSHA) recordable injuries as a performance metric for field leaders, had created a practice of under-reporting safety incidents. Previously, supervisors and managers were held accountable for safety when performance of the people they managed did not meet established goals.

PG&E removed injuries and motor vehicle incidents (MVIs) from the performance scorecards of employees below the director level to eliminate any perceived disincentive to front-line employees reporting injuries and other safety incidents. For management employees, PG&E eliminated OSHA recordable injuries as a Short-Term Incentive Plan (STIP) metric and began using lost work day case rate instead, a better measure of the severity of injuries and less likely to influence reporting.<sup>74</sup> We increased the overall percentage of STIP tied to public and employee safety metrics from 15 percent to 40 percent.<sup>75</sup> STIP metrics and weightings are a powerful tool for generating employee focus on critical issues to the company and the public. To this day, our emphasis on safety in our annual compensation plan is an industry leading practice. Based on data available to PG&E, only 50 percent of our peers have safety metrics in their annual compensation plans and only one of those plans is higher than 10 percent. The rest are 10 percent or less tied to safety.

PG&E developed and initiated “safety stand-downs” for nearly 5,000 PG&E leaders, from crew foremen to the CEO. This series of workshops, each full day sessions on Safety Leadership, was designed to establish a common understanding of where the company had been, what we had learned, and where we were headed in regard to safety culture. The curriculum included: the story of the Alaska Airlines Flight 880 accident including the NTSB investigation findings, discussions of the San Bruno accident and associated findings, an assessment of our past practices that may have encouraged under-reporting, including examples of instances of managers not listening to employees who reported system issues, and the new safety principles and commitments including the new “Keys to Life”.<sup>76</sup> The “Keys to Life” replaced the “Rules to Live By” and served as an example of the changes

<sup>72</sup> For example, see response to NS DR 048, Atch 001, p. 7, findings 7 and 8 from the Leadership Safety Assessment Report.

<sup>73</sup> See response to NS DR 004, Atch 007 for a presentation that includes information on changes made to PG&E’s discipline policy in early 2011 as noted in NS 314, item 5 of Atch 001. Further information associated with these changes was provided in responses to NS DRs 025 and 027.

<sup>74</sup> See response to NS DR 314, Atch 001, item 9 for information on this event which is supported by documentation on STIP scorecards provided with the response to NS DR 023.

<sup>75</sup> See response to NS DR 314, Atch 001, item 6 for information on this event which is supported by documentation on STIP scorecards provided with the response to NS DR 023. See response to NS DR 004, Atch 008 for a presentation on PG&E’s compensation packages.

<sup>76</sup> See responses to NS DRs 025, 045, 050, 314 (Atch 001, item 10), 447, 568, and 575 for additional information on the Safety Leadership workshops.

being made to shift from a rules-based approach to safety to one where employees take responsibility for their personal safety.<sup>77</sup>

PG&E also developed and deployed a non-punitive, enterprise-wide Near Hit Program allowing any employee or contractor to report any issue or concern, online or in writing, and anonymously if preferred.<sup>78</sup>

*Assessing Causes, Adopting Changes: Initial Plan Development*

To help focus and prioritize next steps, PG&E employed five guiding themes to address safety, safety culture, and infrastructure needs in relation to public and employee safety.<sup>79</sup> These included:

- Strategy: Enhance strategic business planning focus on driving safety and operational improvements;
- Investment: Augment risk-based approach to prioritize multi-year capital investments for system operations;
- Risk Management: Develop a more robust approach to identify, assess, fund, and mitigate risks—including efforts to evaluate effectiveness of mitigation efforts and to close any gaps;
- Operations: Align people, processes, and technology to create the information and insights necessary for achieving safety and operational improvements; and
- Culture: Address norms, attitudes, behaviors, and/or beliefs influencing company conduct that hamper safety and operations and inhibit a speak-up culture.

Based on the five themes, PG&E developed a total of 30 initiatives to address safety across the enterprise. Although the recommendations from the NTSB, IRP, and the Blacksmith Group were focused on gas operations, we took a broader approach in addressing the recommendations with initiatives led across the company.<sup>80</sup>

As referenced earlier, PG&E introduced its enhanced integrated planning process in the first quarter of 2012, which included tracking a more extensive set of safety metrics.<sup>81</sup> PG&E was able to better target its efforts, monitor progress, and hold company leadership accountable for

<sup>77</sup> See responses to NS DRs 004 (Atch 007, pp. 6, 9) and 314 (Atch 001, item 4) for information on the Keys to Life.

<sup>78</sup> See first supplemental response to NS DR 004, Atch 009 for a presentation on the Near Hits Program which was implemented enterprise-wide in mid-2012 as noted in NS 314, item 8 of Atch 001. Further information on PG&E's Near Hits Program was provided in responses to NS DRs 212 Supp 002, 225, 726, 756, 861-862, and 877-879.

<sup>79</sup> See response to NS DR 774 for additional information.

<sup>80</sup> See Board presentation titled "PG&E's Response to Safety Assessments" dated June 20, 2012, made available for NorthStar's in person review in response to NS DR 006 for information on the five themes (p. 3) and various initiatives. Progress updates on these efforts were later made to the Board. For example, see Board presentation titled "PG&E's Response to Safety Assessments" and dated June 19, 2013, also made available for NorthStar's in person review in response to NS DR 006.

<sup>81</sup> See response to NS DR 004, Atch 003, for an overview of PG&E's integrated planning process. Further information on PG&E's Integrated Planning Process was provided in responses to NS DRs 039-041, 205, 297, and 663-666.



executing its plans to meet the recommendations of the NTSB and other third parties. These measures are primarily tracked through the Business Plan Review (BPR) process, a monthly, data driven conversation in which senior leadership reviews the company's performance against its two-year execution. Scorecards are developed for each review to ensure clarity and accountability for results.<sup>82</sup> Additionally, STIP metrics serve as a criterion of business performance against annual goals.

### **Status of Safety Metrics and Results by the End of 2012**

Prior to the San Bruno accident, PG&E tracked three employee safety metrics: OSHA recordable injuries, LWD cases, and MVIs. In 2011, PG&E began tracking 11 additional public safety measures. By 2012, to address further safety goals, PG&E's safety metrics expanded to include 7 employee and 12 public safety measures with enhancements made to improve the level of insight the measures provided. For example, PG&E began to distinguish MVIs as preventable versus non-preventable and serious versus non-serious to help encourage reporting and to focus improvement efforts on the most serious incidents.<sup>83</sup>

The effects of the changes we made in our discipline policy as well as our efforts to promote injury reporting began to show as numbers of *reported* injuries, LWD cases, and MVIs increased from 2011 to 2012. However, total LWDs declined despite the same number of injury claims received, suggesting that the nature of the injuries was becoming less severe. In fact, despite an increase in reported preventable MVI rates, the rate of *serious* preventable MVIs decreased from 2011 to 2012. Also, near hit reporting doubled from 2011 to 2012.<sup>84</sup>

PG&E's 2012 Premier Survey, the company's comprehensive biennial employee survey, indicated positive advances in PG&E's safety culture including the following favorable responses to safety questions:

- 94 percent of employees positively responded to "I would not hesitate to discuss any safety issue with my work group";
- 91 percent of employees positively responded to "When anyone at work is engaged in risky behavior, I will say something even if he or she is not likely to appreciate it";
- 87 percent of employees favorably responded to "My immediate supervisor sets a good example in safety"; and
- 87 percent of employees favorably responded to "PG&E shows by its actions that it's committed to public safety".<sup>85</sup>

<sup>82</sup> See response to NS DR 004, Atch 003, p. 16 for an overview of the BPR process. See responses to NS DRs 041 and 663-666 for additional information on the BPR process, including results.

<sup>83</sup> The response to NS DR 666, Atch 003 provides a historical look at PG&E's safety dashboard metrics by year from 2009 to 2016, showing when metrics were added, removed, or revised.

<sup>84</sup> See response to NS DR 726 for safety performance data and summary results.

<sup>85</sup> See responses to NS DRs 004 (Supp 001, Atch 006), 015, and 366 for information on PG&E's 2012 Premier Survey results.

In the years immediately after the San Bruno accident, we began implementing many of the safety and operational improvements required or recommended by our regulators, other third parties, and our own reviews. We began to see improvements through our metrics, our reporting data and our employee feedback. As explained in the next section we were positioned to continue our improvements in a more integrated way across the company.

## Improving Safety Through Integrated Planning (2013-2016)

As noted above, PG&E launched an enhanced integrated planning process in 2012 (for planning period starting 2013).<sup>86</sup> This was implemented as a best practice, following benchmarking with General Electric, Ford, and DTE Energy.<sup>87</sup> The planning process improved the integration of risk management into the planning process. It also became the way in which the multitude of interrelated initiatives is coordinated across the enterprise. Figure 1 depicts the components of the annual planning process. The process consists of interconnected sessions that together form the blueprint of how PG&E will deliver on its most important strategic initiatives. This approach provides focus and discipline around key areas like employee, contractor, and public safety and ensures through the risk informed budget allocation (RIBA) process that safety receives top priority when making budget and resource decisions.

The process is launched at the beginning of each year through Executive Guidance that establishes PG&E's goals over the next five years.<sup>88</sup> Reassessment of existing risks and identification of emergent risks is conducted in Session D to inform planning and prioritization to mitigate risk.<sup>89</sup> The RIBA process is used to develop budgets that remove or mitigate the greatest amount of risk from the company's operations.<sup>90</sup> Session 1 establishes five-year LOB operational plans to deliver on the goals and strategies informed by Executive Guidance.<sup>91</sup> These plans are updated on an annual basis and inform the two-year work execution plans set in Session 2.<sup>92</sup> Session C establishes the succession plans for company leadership to ensure the resources are in place to execute the plans.<sup>93</sup>

<sup>86</sup> See response to NS DR 004, Atch 003, for an overview of PG&E's integrated planning process. Further information on PG&E's Integrated Planning Process was provided in responses to NS DRs 039-041, 205, 297, and 663-666.

<sup>87</sup> See response to NS DR 040, Atch 001 for information on benchmarking with GE to inform the development of PG&E's enhanced integrated planning process. See response to NS DR 796 for information on benchmarking with Ford and DTE Energy.

<sup>88</sup> NS DR 004, Atch 003, p. 7 describes Executive Guidance. See response to NS DR 039, Atchs 001-004 for the Executive Guidance for years 2013 through 2016.

<sup>89</sup> NS DR 004, Atch 003, p. 8 describes Session D. See response to NS DR 039, Atchs 005-008 for Session D information for years 2013 through 2016. See responses to NS DRs 040, 316, 471, 472, 635, 636, and 639 for additional information on Session D.

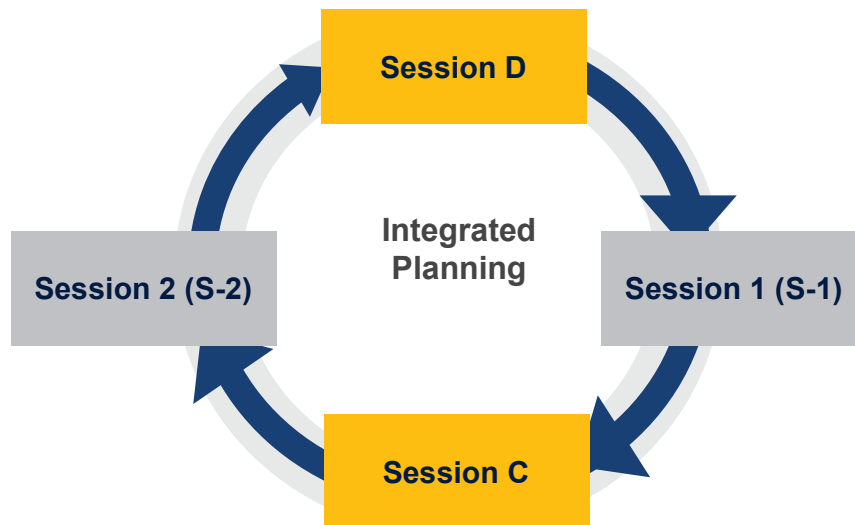
<sup>90</sup> NS DR 004, Atch 003, pp. 11-12 describe the Risk Evaluation Tool and RIBA process. See responses to NS DRs 039-040, 168, 204, 314 (Atch 001, item 35), 315, 640, and 672 (Atchs 003-004) for additional information on the RIBA process and the RET.

<sup>91</sup> NS DR 004, Atch 003, p. 9 describes Session 1. See first supplemental response to NS DR 039, Atchs 001-031 for Session 1 LOB materials for years 2013 through 2015. 2016 Session 1 materials were made available for NorthStar's in-person review as noted in the second supplemental response to NS DR 039. See responses to NS DRs 211, 254, 532-535, 724, 735, and 736 for additional information related to Session 1.

<sup>92</sup> NS DR 004, Atch 003, p. 10 describes Session 2. See first supplemental response to NS DR 039, Atchs 032-063 for Session 2 LOB materials for years 2013 through 2015. 2016 Session 2 materials were made available for NorthStar's in-person review as noted in the response to NS DR 734. See responses to NS DRs 211, 532, 535, 724, 735, and 736 for additional information related to Session 2.

<sup>93</sup> NS DR 004, Atch 003, p. 6 and Atch 005, pp. 4 and 12 describe Session C.

**Figure 1  
PG&E's Integrated Planning Process**



Over the four years that the integrated planning process has been employed some priorities have changed or evolved based on accomplishment, experience, and new information. For example, a safety culture assessment conducted by third-party safety culture expert BST in 2013 provided insight on where PG&E needed to direct its efforts on safety culture.<sup>94</sup> This led to more targeted efforts including implementing an enhanced safety leadership development program, clarifying the roles and responsibilities of safety resources<sup>95</sup>, and implementing a SIF Prevention Program<sup>96</sup>. Similarly, efforts to improve public safety continued to evolve as our risk management processes improved and new tools and technologies were deployed.

The section below focuses on PG&E's strategic focus areas for improving workforce safety, safety culture, and safety governance from 2013 through 2016 and explains why these priorities changed, or did not change, during this time period. While many of the enterprise-wide initiatives discussed below were coordinated by Corporate Safety, the executional responsibility lays with the respective operational LOBs because they ultimately have responsibility for the safety of our field employees and public, and establishing a strong safety culture. This is why we focus on training the leaders of our field employees to be safety leaders and effectuate safety culture change. Following this section is a summary of the progress made from 2013 through 2016 on improving public safety by our operational LOBs.

While we have grouped different activities into specific categories, many of the activities have impacts across the safety spectrum. In particular, we believe that the changes and improvements

<sup>94</sup> See response to NS DR 048, Atch 003-010 for results from the 2013 safety culture assessment performed by BST.

<sup>95</sup> See responses to NS DRs 004 (Atch 004), 049, 050, 147, 223, 314 (Atch 001, items 16 and 22), 730, and 822-823 for additional information on efforts related to roles and responsibilities for Corporate Safety.

<sup>96</sup> See responses to NS DRs 223, 254, 314 (Atch 001, item 20), 466, 490, 496, 583, 633, 722, 724 (Atch 001, item 1), and 757 for additional information on the SIF Prevention Program.

made to workforce safety and public safety—through leadership commitment to safety, backed by words, actions, and the company’s financial commitment—all contribute to a positive safety culture. Governance changes focused on safety enable leadership to receive input from employees at all levels and positively effectuate safety culture change.

## **2013 Focus Areas and Progress**

In 2013, PG&E safety efforts continued to focus on public and employee safety; PG&E also enhanced its efforts to improve contractor safety. This was largely influenced by the Kern Power Plant accident that occurred in June 2012 and subsequent investigation opened by the CPUC. While PG&E had been working on contractor safety for several years, this incident accelerated our efforts to establish a robust Contractor Safety Program in collaboration with the CPUC.<sup>97</sup> The company also focused on enterprise workforce safety programs and cross-cutting cultural issues and governance which were important driving forces to the maturation of our evolving enterprise safety approach.

Example actions taken and accomplishments for 2013 are provided in Appendix B. A summary of the key actions taken by focus area, including a discussion of why these actions were taken, is provided below.

### *Safety Culture*

- **Safety Leadership Development:** PG&E continued to roll out the safety stand-down meetings (i.e., Safety Leadership Workshops) across the company and reached almost all PG&E leaders by year end 2013.<sup>98</sup> During the course of this process, we realized the need to make further investments in developing our field leaders given their ability to influence the practices and behaviors of field employees. As a response, working with BST we designed a program called the Safety Leadership Development Program, composed of six safety leadership workshops, a 360 degree feedback process, and in-field coaching with safety leadership coaches. The program began in 2014.<sup>99</sup>
- **Corrective Action Program:** We decided to implement company-wide the Corrective Action Program (CAP) used in the nuclear industry and in place at DCP. The tool not only encourages employees to speak up for safety, but also helps to identify issues related to assets, records, or processes that, when addressed, reduce public safety risks. We believed that having a program to enable and promote employee reporting of safety-related concerns was another important element of a strong safety culture.<sup>100</sup> Because the focus on culture improvement in Gas continued to be a priority post-San Bruno, the CAP program was first expanded from DCP to Gas in late 2013. Other LOBs continued to

<sup>97</sup> See response to NS DR 867 for additional information.

<sup>98</sup> NS DR 568 documents the number of attendees and workshops conducted by year.

<sup>99</sup> See responses to NS DRs 032, 050, 171, 177, 222, 223, 225, 231, 314 (Atch 001, item 14), 447, 460, 513, 575, 577, and 724 (Atch 001, item 2) for information on the Safety Leadership Development Program.

<sup>100</sup> See first supplemental response to NS DR 004, Atch 008 for a presentation on CAP. Further information on CAP was provided in responses to NS DRs 061, 214, 218, 225, 271, 274, 404, 438, 446, and 512.

roll out CAP in future years, as identified below, and all LOBs will have implemented CAP by the end of 2017.<sup>101</sup>

### *Employee Safety*

- **Workforce Health:** Injury analysis revealed links between workforce health and safety performance, particularly with regards to musculoskeletal sprains and strains.<sup>102</sup> To address this focus area we expanded the Industrial Athlete Program for our field workers that began implementation in 2011. The Industrial Athlete Program provides T200 and T300 field workers with on-site prevention specialists who screen for signs and symptoms of musculoskeletal discomfort, observe work tasks, coach employees on avoid aggravating symptoms, and—where appropriate—make recommendations and supervise any first aid. With a focus on early intervention—critical in the lifecycle of an injury, to stop symptoms from worsening—the program is designed to reduce injuries and improve the physical and mental resilience of employees working in the highest-risk and most physically demanding positions. For this reason, we initially targeted our electric line worker population.<sup>103</sup>
- **Motor Vehicle Safety:** The job responsibilities of many PG&E workers include time spent driving<sup>104</sup>, and this activity has the potential to affect their safety and safety of the public. We started distinguishing MVIs as preventable versus non-preventable in 2012 and serious versus non-serious in 2013<sup>105</sup> to help encourage reporting and improve focus and analysis on serious incidents. We also decided to review a number of technologies to help us identify risky driving behaviors. As a result, we launched a pilot in 2014, as discussed further below.<sup>106</sup>
- **Peer-to-Peer Programs:** As we continued to consider what more could be done to improve safety behaviors and results, we identified peer-to-peer programs as an aspirational best practice.<sup>107</sup> However, as we evaluated the stage of maturity of our safety culture, we didn't feel that there was a sufficient level of bandwidth among our field leaders to begin

<sup>101</sup> See response to NS DR 724, Atch 001, item 9 for PG&E's CAP deployment schedule by LOB and response to NS DR 512 for a more detailed chronological history on CAP deployment.

<sup>102</sup> See response to NS DR 798 for additional information on this analysis.

<sup>103</sup> See responses to NS DRs 314 (Atch 001, item 23, Atchs 006-007), 342, 482, 672, 724 (Atch 001, item 3), 797-798, 815, and 833 for further information on the Industrial Athlete Program. In particular NS DR 314 Atch 006 provides an overview of the pilot. See response to NS DR 799 for additional information on roll out of this program.

<sup>104</sup> NS DR 726, Atch 004 includes annual miles driven since 2008.

<sup>105</sup> NS DR 666.

<sup>106</sup> See responses to NS DRs 060, 314 (Atch 001, item 13, and Atchs 004 and 005), and 582 for information on driver behavior technology platform Telogis ultimately selected by PG&E. See response to NS DR 799 for information on the pilot program.

<sup>107</sup> See response to NS DR 801 for additional information.

the program and we postponed implementation.<sup>108</sup> We were also concerned with initiative overload.<sup>109</sup>

### *Contractor Safety*

After the Kern Power Plant accident, and at the behest of the CPUC in the Kern OII, PG&E began an evaluation of its approach to contractor safety. We evaluated what other companies did in regard to contractor safety and benchmarked across industries.<sup>110</sup> A Contractor Safety Team was formed and the Contractor Safety Program pilot launched.<sup>111</sup> Contractor safety metrics were also added to PG&E's safety dashboard to help set goals and measure future progress.<sup>112</sup>

### *Safety Governance*

To support broader safety needs, a VP-level working group formed in 2012 called the Executive Safety Steering Committee (ESSC) was used to coordinate input on safety priorities and improve governance across the company.<sup>113</sup> Officers from LOBs across the company participated on the committee. The Safety Integration Committee, comprised of representatives from all LOBs with operational responsibilities, was established in 2013 to support the ESSC and focus on the effective integration of safety-related initiatives across the company. The Corporate Safety organization also deployed a centralized Safety and Environmental Management System (SEMS) to better manage and integrate safety data company-wide. Additional improvements to the SEMS system were made in 2014.<sup>114</sup>

## **2014 Focus Areas and Progress**

In 2014, we continued to focus on public and employee safety and also increased our focus on contractor safety and continuing improvements to safety culture and governance. BST's safety culture assessment plan completed in 2013 provided new insight into the challenges and opportunities we faced with culture change. This led to the development of a safety culture roadmap in collaboration with BST<sup>115</sup> and the formation of a Safety Culture Team residing within the Corporate Safety department<sup>116</sup> and a Safety Culture Steering Committee composed of leaders from around the company<sup>117</sup>. This roadmap helped us target our efforts

<sup>108</sup> See response to NS DR 802 for additional information.

<sup>109</sup> See responses to NS DRs 803-804 for additional information.

<sup>110</sup> See response to NS DR 049, Atch 001 for contractor safety benchmarking information.

<sup>111</sup> NS DR 314, Atch 001, item 15.

<sup>112</sup> See responses to NS DRs 666 and 868.

<sup>113</sup> The ESSC is referenced on p. 3 of Atch 001 to the response to NS DR 013.

<sup>114</sup> See responses to NS DRs 062, 212, 213, 218, 568, and 724 (Atch 001, item 35) for additional information on SEMS.

<sup>115</sup> See responses to NS DRs 223, 314 (Atch 001, item 11, and Atch 003).

<sup>116</sup> NS DR 004, Atch 004, p. 32.

<sup>117</sup> NS DR 234.

around safety in this and coming years. In addition, several employee safety programs that had been successfully piloted in prior years were expanded in 2014.

Example actions taken and accomplishments for 2014 are provided in Appendix C. A summary of the key actions taken by focus area, including a discussion of why these actions were taken, is provided below.

### *Safety Culture*

- **Safety Leadership Development:** As noted above, the development of a safety culture roadmap helped target our enterprise programs related to safety culture in 2014. PG&E initiated the Safety Leadership Development Program developed in 2013 and described above. The employees targeted as the initial cohorts of this program were supervisors, managers, and superintendents overseeing employees with the highest potential for hazards. We chose leaders at these levels, in consultation with BST, because they can have the greatest influence on the culture of our field employees.
- **CAP:** Another development in our safety culture was a full year of implementation of CAP in our Gas Operations organization. We believe the emphasis on “find it and fix it” has been critical at effectuating positive safety culture change in the organization. We purposely chose not do an enterprise-wide deployment in order to better respond to employee questions and avoid over-taxing resources. The Safety and Shared Services organization was identified as the next deployment opportunity in what would become the start of an enterprise CAP implementation, which launched in 2015, and is now being replicated across the enterprise with expansion to Power Generation and Electric T&D occurring in 2016.<sup>118</sup>
- As part of our continuing efforts to instill a focus on public, employee and contractor safety, we increased the percentage of STIP tied to safety from 40 to 50 percent in 2015.<sup>119</sup>

### *Employee Safety*

- **Workforce Health:** We continued to struggle with injuries, the root cause of which—in many cases—was lack of attention to employee health. A key contributor was—and still is—the prevalence of musculoskeletal disorder (MSD) and ergonomic-related injuries. We saw initial success in 2013 and 2014 with our Industrial Athlete and Early Symptom Intervention Program, in which professional trainers were able to identify and provide early symptom intervention for MSDs. Positive results were shown based on employee feedback, participation, and injury reductions. These findings led to an expansion of the program in 2015.<sup>120</sup> We enhanced communications, reporting, training, and support to improve timely reporting through

<sup>118</sup> See response to NS DR 724, Atch 001, item 9 for PG&E’s CAP deployment schedule by LOB and response to NS DR 512 for a more detailed chronological history on CAP deployment.

<sup>119</sup> See response to NS DR 004, Atch 008 for a presentation on PG&E’s compensation packages and the response to NS DR 023 for further documentation of STIP changes.

<sup>120</sup> See responses to NS DRs 314 (Atchs 006-007), 815, and 833 for information on the 2013-2014 early symptom intervention pilot and expansion of the Industrial Athlete Program in 2015.



the 24/7 Nurse Report Line.<sup>121</sup> Timely reporting of injuries, a leading indicator, was added to PG&E's safety dashboard to help set goals and track progress in this area.<sup>122</sup>

- **Motor Vehicle Safety:** To address driver behavior impacts on motor vehicle safety, PG&E launched a pilot of in-cab monitoring in field vehicles. The driver behavior feature of the technology enhances safety by giving vehicle operators the tools to monitor and manage unsafe driving habits. The feature utilizes in-cab alerts to notify drivers of unsafe behaviors, including speeding, hard breaking or acceleration, and seat belt use.<sup>123</sup> It was piloted in a small number of vehicles, rather than full deployment, so that we could evaluate its efficacy, manage employee questions/concerns, ensure smoother roll-out of technology, and avoid over-taxing resources. From the pilot we saw a reduction in risky driving behaviors and decided to expand the technology to more vehicles in 2015.<sup>124</sup>
- **Peer-to-Peer Programs:** PG&E management and union leadership held numerous meetings, including benchmarking trips, regarding the potential for launching this effort, and decided to hold off rolling out this program, based on conclusions that the cultural underpinnings were not in place—despite seeing encouraging progress in the use of our non-punitive reporting process (CAP) rollout. A peer observation program benchmarking study was completed by 2015.<sup>125</sup> We recognized that the program could be very effective, but it would be damaging to the future success of the program if it was rolled out too soon and without the proper leadership support due to bandwidth.<sup>126</sup>

### *Contractor Safety*

We formally launched the Contractor Safety Program during the year, which made enhancements to our screening and selection process to make sure we were only hiring contractors with strong safety records. The program also enhanced the way PG&E oversees contractor work.<sup>127</sup>

<sup>121</sup> See responses to NS DRs 314 (Atch 001, item 7, Atch 002), 629-632, 672, and 724 (Atch 001, items 4, 40-43) for additional information on PG&E's 24/7 Nurse Report Line.

<sup>122</sup> See responses to NS DRs 004 (Atch 008, p. 11), 023, 666, 724 (Atch 001, item 42), and 806 for documentation on tracking and use of timely reporting of injuries metric for STIP.

<sup>123</sup> See responses to NS DRs 060, 314 (Atch 001, item 13, and Atchs 004 and 005), 582, and 808 for information on driver behavior technology platform Telogis ultimately selected by PG&E.

<sup>124</sup> See response to NS DR 314, Atch 004 for information on results of PG&E's pilot. See response to NS DR 807 for additional information.

<sup>125</sup> See responses to NS DR 049 (Atch 003), and 809-811 for peer observation program benchmarking information.

<sup>126</sup> See response to NS DR 812 for additional information.

<sup>127</sup> See first supplemental response to NS DR 004, Atch 004 for a presentation on the Contractor Safety Program which was established in mid-2014 as noted in NS 314, item 15 of Atch 001. Further information on this program was provided in responses to NS DRs 049, 054, 063, 072, 075-077, 084, 087-089, 096, 099-101, 108, 111-113, 183-186, 195-203, 254, 309-310, 322, 372, 385-390, 426-428, 431-435, 490, 504, 506-510, 519, 521-524, 537, 543-544, 553-558, 561-563, 585-599, 611, 643-649, 672 (Atchs 001 and 002), 724 (item 7), 758-761, 765, 863, and 867.

### *Safety Governance*

In 2014, the new enterprise safety governance structure was established. The Chairman's Safety Council was formed to coordinate safety issues across LOBs. The Council was composed of key senior officers and union leadership, a best practice that was leveraged from DTE Energy, Tony Earley's former company, and provided a coordinated approach to safety at the executive level. LOB Safety Councils formed to provide an opportunity for dialogue on safety across the company and help drive safety culture and performance improvements. All councils included participation of field employees on grassroots safety teams to ensure the voices of those most exposed to safety risks are heard. The councils were responsible for improving LOB safety performance and implementing enterprise priorities. They also ensured that lessons learned at the broader Chairman's Safety Council were taken and acted upon. Each Council had Senior or Executive Vice Presidents as sponsors who were members of the Chairman's Safety Council. This ensured continuity between Chairman's Safety Council decisions and alignment across LOBs.<sup>128</sup>

Corporate Safety also completed a benchmarking study on safety roles and responsibilities that informed organizational improvement efforts made in 2015 and discussed further below.<sup>129</sup>

### **2015 Focus Areas and Progress**

In 2015, we continued to enhance many of the programs and governance rolled out in prior years. Through our experiences we learned what worked and what didn't and we made course corrections. We continued to focus on public, employee, and contractor safety, and made advancements in the focus areas identified in our roadmap around safety culture and governance.

Example actions taken and accomplishments for 2015 are provided in Appendix D. A summary of the key actions taken by focus area, including a discussion of why these actions were taken, is provided below.

### *Safety Culture*

- Safety Leadership Development: Following our Officer and Director Safety Summit in 2015<sup>130</sup>, we realized we needed safety culture training at the officer and director level. We also received feedback from our front-line supervisors who were undergoing safety leadership training on the need for improvements at the crew lead level. Consulting with BST, we began designing improvements. BST also began certifying PG&E's in-house talent to provide safety leadership training and coaching in a sustainable manner. This

<sup>128</sup> See responses to NS DRs 037, 224, 230, 314 (Atch 001, item 17), 343, 365, and 475 for information on changes made to PG&E's safety governance structure and additional information on the Chairman's Safety Council.

<sup>129</sup> See responses to NS DRs 049 (Atch 002), 147, and 822-823 for safety roles and responsibilities benchmarking information.

<sup>130</sup> Noted in response to NS DR 575.

led to the development of crew lead and officer and director training in 2016 for 2017 deployment.<sup>131</sup>

- Safety Messaging: We also began to leverage work done in 2014 to improve our communications around safety in response to feedback from employees across the company. In 2014, third party Monitor 360 completed analysis of survey comments from the 2012 and 2014 Premier surveys to identify “narratives” that indicate strategic opportunities to support continuous improvement of PG&E’s safety culture.<sup>132</sup> This report began to inform our safety communications in 2015 and was later utilized in 2016 to develop a safety communication campaign called “Speak Up for Safety”.<sup>133</sup>

### *Employee Safety*

- Workforce Health: A key organizational move made in 2014 was creating the Safety, Health, and Environment Organization. This resulted in bringing the Workforce Health team from Human Resources into the Safety and Shared Services organization in 2015.<sup>134</sup> The reason for this move was to better capitalize on the synergies and reciprocal relationship between safety and health, and to amplify the impact of our programs. The Industrial Athlete Program is a prime example of this relationship, as the ergonomic health and early symptom aspects of the program have a demonstrated impact on helping employees avoid injuries. In 2015, following review of the 2013-2014 Electric Operations pilot in our Fresno Division, we expanded the program to cover 33 sites across the service territory and included all members of the physical IBEW workforce at those sites.<sup>135</sup> We also added a 24/7 Nurse Report Line “timeliness of reporting injuries” metric, which began being tracked in 2014, as a company-wide STIP metric for 2016.<sup>136</sup> This reaffirmed our emphasis on encouraging employees to “speak up” to get care faster for work-related injuries and discomfort.
- SIF Mitigation: Additionally, we continued to mature our understanding and application of processes that address SIFs.<sup>137</sup> This is a fundamental shift from the traditional “safety pyramid” thinking, that purports to prevent the most serious risks by addressing lesser ones. With assistance from BST<sup>138</sup> we have adopted the philosophy

<sup>131</sup> See responses to NS DRs 032, 050, 171, 177, 222, 223, 225, 231, 314 (Atch 001, item 14), 447, 460, 513, 575, 577, and 724 (Atch 001, item 2) for information on the Safety Leadership Development Program. In particular, since response to NS DR 577 for information on changes made to the program in 2016.

<sup>132</sup> See response to NS DR 256 for a copy of the Monitor 360 report.

<sup>133</sup> See responses to NS DRs 256, 567, and 747 for information on the Speak up for Safety campaign.

<sup>134</sup> See response to NS DR 314 (Atch 001, item 18). 253, and 813-814 for additional information on these organizational changes.

<sup>135</sup> See responses to NS DRs 314 (Atchs 006-007), 815, and 833 for information on the 2013-2014 early symptom intervention pilot and expansion of the Industrial Athlete Program in 2015.

<sup>136</sup> See responses to NS DRs 004 (Atch 008, p. 11), 023, 666, 724 (Atch 001, item 42), and 806 for documentation on tracking and use of timely reporting of injuries metric for STIP.

<sup>137</sup> See responses to NS DRs 223, 254, 314 (Atch 001, item 20), 466, 490, 496, 583, 633, 722, 724 (Atch 001, item 1), and 757 for additional information on the SIF Prevention Program.

<sup>138</sup> See response to NS DR 223, Atch 002 for a BST presentation on SIF and NS DR 583, Atch 001 for a SIF Reference Guide developed with assistance from BST.

that addressing the most serious risks requires a specific focus on reducing exposure; a “one size fits all” approach is ineffective in reducing all levels of risk. Figure 2 below depicts the SIF Exposure Triangle that we are now focused on. This is a more sophisticated approach that we are now building into our processes. In 2015, operational LOBs completed analysis to identify exposures in their work with the potential to result in SIF incidents. Observations and pre-job briefings were utilized to raise awareness of such exposures and ensure steps are taken to mitigate them.

**Figure 2 SIF Exposure Triangle**



Additionally, an Enterprise Causal Evaluation Standard<sup>139</sup> and LOB causal evaluation procedures were developed and approved in 2015. Causal evaluations are necessary to identify the cause of the incident, issue or error, to prevent or minimize the probability of recurrence, and are a key way to ensure continuous improvement in safety performance. We also developed leading indicators related to SIF (SIF exposure %, SIF exposure count, and SIF timely corrective actions completed) to help set goals and track our progress in this area. These leading indicators began being tracked in 2016.<sup>140</sup>

- Motor Vehicle Safety: Following the success of our pilot, we continued the roll-out of in-cab technology in additional PG&E fleet vehicles.<sup>141</sup> Additionally, having

<sup>139</sup> NS DR 203, Atch 001.

<sup>140</sup> See responses to NS DRs 666 (Atch 003) and 722 for documentation and information on these events.

<sup>141</sup> See response to NS DR 314, Atch 005 for information on PG&E’s initial review of Telogis in 2015.

concluded that we could further mitigate driver exposure to safety incidents by improving driver training, we began development of a consistent, company-wide training standard for company motor vehicles that adopts industry best practices for training methodologies.<sup>142</sup> We also completed a distracted driving analysis that, supported by recommendations from the National Safety Council (NSC)<sup>143</sup>, informed the development of a phone-free driving policy.<sup>144</sup> 2015 served as a voluntary commitment period for this new policy to help identify and respond to unique needs across the company before making the policy official company-wide at the beginning of 2016.<sup>145</sup> These collective efforts reinforced our focus on driver behavior.

### *Contractor Safety*

Continuing our increased oversight of contractors, we focused on the highest risk contractors first. Our efforts included selecting a vendor to verify and evaluate the safety performance of all our contractors<sup>146</sup>, based on criteria PG&E set, changing terms and conditions of our contracts<sup>147</sup>, and enhancing contractor oversight and reporting—all while helping satisfy regulatory compliance and company-specific safety qualification requirements. Milestones reached in this area in 2015 included establishment of a Contractor Safety Standard<sup>148</sup>, development of LOB-specific contractor oversight procedures<sup>149</sup>, and prequalifying all prime contractors performing medium and high risk work<sup>150</sup>.

### *Safety Governance*

Findings from the 2013 safety culture assessment<sup>151</sup>, input from LOB focus groups, and benchmarking against several major utilities completed in 2014 and 2015 identified a need to

<sup>142</sup> See response to NS DR 724, Atch 001, item 27 for information on the new motor vehicle standard and training requirement. See response to NS DRs 817-818 for additional information on this effort.

<sup>143</sup> Information on the NSC's findings on distracted driving is located here: <http://www.nsc.org/learn/NSC-Initiatives/Pages/distracted-driving.aspx>.

<sup>144</sup> See responses to NS DRs 314 (Atch 001, item 19), 452, 531, and 724 (item 13) for information on the phone-free driving policy.

<sup>145</sup> See response to NS DR 819 for additional information on adjustments made during this voluntary commitment period.

<sup>146</sup> See responses to NS DRs 063, 196, 197, and 647 for information on the vendor selected by PG&E, ISNetwork (ISN).

<sup>147</sup> See responses to NS DRs 198, 201, 435, 724 (Atch 001, item 7), 753, and 754 for information on changes to PG&E's contract terms related to contractor safety.

<sup>148</sup> NS DR 072, Atch 001.

<sup>149</sup> See responses to NS DRs 198 and 435 for copies of the contractor safety oversight procedures by LOB.

<sup>150</sup> See responses to NS DRs 004 Supp 001 (Atch 004) and 197 for additional information on contractor pre-qualification.

<sup>151</sup> See response to NS DR 048, Atch 003-010 for results from the 2013 safety culture assessment performed by BST. Additional information on this assessment was provided with the responses to NS DRs 820-821.

clarify the roles and responsibilities of the Corporate Field Safety Operations team.<sup>152</sup> It was clear that our Corporate Field Safety leads needed to play their role differently; they were there to add value to the LOBs efforts by performing audits and assessments, ensuring compliance<sup>153</sup>, and assisting with strategy. It was not the aim for Corporate Field Safety to be responsible for safety performance or implementation of safety protocols for the LOBs. With this in mind, we put in place Service Level Agreements (SLAs) that clarify safety roles and responsibilities related to safety for each organization and better define the role of Corporate Field Safety Specialists.<sup>154</sup>

Additionally, we began exploring an enterprise Safety Management System (SMS), which did not exist at PG&E and is considered a global best practice. When done properly, an integrated SMS will allow us to put continuous improvement, benchmarking, and third party certification under one umbrella.<sup>155</sup>

## **2016 Focus Areas and Progress**

In 2016, PG&E leadership re-evaluated the number of workforce safety and safety culture initiatives underway across the company and results to date and concluded we needed to focus our workforce safety efforts on fewer things to help drive success.<sup>156</sup> Six enterprise safety priorities were defined, which continued to fall under our primary focus areas of employee safety, contractor safety, safety culture, and governance.<sup>157</sup> Apart from the highlights below, we also included speak up culture in our ethics training for the first time broadening our culture focus.<sup>158</sup>

Example actions taken and accomplishments for 2016 are provided in Appendix E. A summary of the key actions taken by focus area, including a discussion of why these actions were taken, is provided below.

### *Safety Culture*

- **Safety Leadership Development:** Corporate Safety and BST determined a two pronged approach was the best way to close identified gaps in first-line supervisor training. First, crew leads would be given training similar to that given to their leaders so that field forces received consistent direction and support. Second, officers and directors would be

<sup>152</sup> See responses to NS DRs 049 (Atch 002), 147, and 822-823 for safety roles and responsibilities benchmarking information.

<sup>153</sup> See response to NS DR 825 for additional information.

<sup>154</sup> See responses to NS DRs 050, 314 (Atch 001, item 22), 730, and 824 for additional information, including copies of, the SLAs.

<sup>155</sup> See responses to NS DRs 254, 255, 728, 729, 737, 826-827, 837, and 848 for information on PG&E's SMS efforts.

<sup>156</sup> See responses to NS DRs 828-829 and 844 for additional information.

<sup>157</sup> NS DR 254.

<sup>158</sup> See responses to NS DRs 024 and 397 for information on compliance and ethics training.

trained on the materials their teams were receiving so that they could support and reinforce the desired cultural attributes. Crew lead training was piloted from September through November 2016. Revisions were made to the program following the pilot, the curriculum was approved, and training will commence in February of 2017. The officer and director program was piloted in July and October 2016, the curriculum was finalized in December, and the first classes will be held in January of 2017. While these programs will begin in 2017 we are integrating this workshop-based curriculum into our existing Leading Forward Program. Specifically, all leaders at the company will—moving forward—receive training and support for safety leadership within 90 days of becoming or joining the company as a leader. By doing this, we are setting the clear expectation that safety is an essential part of leadership, not an “additional” topic.<sup>159</sup> We also held our second annual Officer and Director Safety Summit.<sup>160</sup>

- CAP: Additionally, following the rollout of CAP in Safety and Shared Services in 2015, we continued our progress in rolling out CAP to Power Generation and Electric T&D in 2016.<sup>161</sup>
- Peer-to-Peer Program: After assessing organizational readiness, PG&E decided to make this initiative a priority in 2018.<sup>162</sup>

### *Employee Safety*

- Workforce Health: Our investment in early intervention and reinforcement of the 24/7 Nurse Report Line has started paying off. We expect to achieve the goal set for timeliness of reported injuries in 2016 for the first time.<sup>163</sup> This is a positive development because our analysis shows that reporting injuries early and getting the necessary treatment is important to reduce severity and long-term impacts. Specifically our analysis shows that 26 percent of injuries are due to cumulative physical impacts, and employees who report injuries within 24 hours experience 40 percent less lost time.<sup>164</sup> To enable faster, more personalized care we have started a pilot at three sites to test the effectiveness of telemedicine and on-site medical professional support for occupational injuries. We also know that addressing non-occupational injuries and illness quickly is

<sup>159</sup> See responses to NS DRs 032, 050, 171, 177, 222, 223, 225, 231, 314 (Atch 001, item 14), 447, 460, 513, 575, 577, and 724 (Atch 001, item 2) for information on the Safety Leadership Development Program. In particular, since response to NS DR 577 for information on changes made to the program in 2016. Also, the Safety and Shared Services 2016 Session 2 (S-2) presentation (for planning period starting 2017) was provided for NorthStar’s in-person review in response to NS DR 734. See p. 12 of the 2018 Workforce Safety Action Plan provided on pp. 10-18 of the Safety and Shared Services 2016 S-2 for information on Safety Leadership Development Program plans for 2017 (provided with the response to NS DR 844).

<sup>160</sup> See responses to NS DRs 474, 490, and 575 for information associated with this meeting.

<sup>161</sup> See response to NS DR 724, Atch 001, item 9 for PG&E’s CAP deployment schedule by LOB.

<sup>162</sup> The Safety and Shared Services 2016 Session 2 (S-2) presentation (for planning period starting 2017) was provided for NorthStar’s in-person review in response to NS DR 734. See pp. 10 and 18 of the 2018 Workforce Safety Action Plan provided on pp. 10-18 of the Safety and Shared Services 2016 S-2 (provided with the response to NS DR 844). See response to NS DR 830 for additional information.

<sup>163</sup> See response to NS DR 665 for results as of September 30, 2016.

<sup>164</sup> See response to NS DR 831 for additional information on this analysis.

also important to keeping a healthy and safe workforce. For this, we have deployed telemedicine kiosks, which allow employees to have live, video-enabled consultations with doctors from the convenience of their work location. These are now in seven locations, with another four planned in 2017.<sup>165</sup> In 2016, we also completed the roll-out of the Industrial Athlete Program to cover 100 percent of the physical IBEW workforce.<sup>166</sup>

- SIF Mitigation: Several key milestones in the evolution of our SIF Prevention Program were reached in 2016, including completing historical SIF assessments, operationalizing SIF assessment teams, and developing prevention checklists<sup>167</sup> for the operational LOBs with SIF exposures.<sup>168</sup> We also built a specialized SIF Incident Investigation Team to enhance and improve consistency and effectiveness in the way we analyze safety incidents.<sup>169</sup> This team will be able to leverage the Enterprise Causal Evaluation Standard<sup>170</sup> and LOB causal evaluation procedures developed and approved in 2015. The number of SIF incidents has continued to decline and this continued focus is intended to help drive SIFs down as low as possible.<sup>171</sup> The roll-out of the SIF program will continue in 2017 when we plan to complete incorporation of SIF prevention checklists into established work processes and practices so that it is integrated into how work is performed.<sup>172</sup>
- Motor Vehicle Safety: In order to improve driver safety at PG&E, we updated our Motor Vehicle Standard by standardizing our training based on the type of vehicle being driven and the driving conditions typically encountered. Our program reflects current industry best practices and was developed with the LOBs. Our proposed frequency of training is

<sup>165</sup> See NS DR 004, Atch 004, p. 25 for information on on-site care and an earlier estimate of deployment by Q1 2017. Also, the Safety and Shared Services 2016 Session 2 (S-2) presentation (for planning period starting 2017) was provided for NorthStar's in-person review in response to NS DR 734. See p. 14 of the 2018 Workforce Safety Action Plan provided on pp. 10-18 of the Safety and Shared Services 2016 S-2 for information on Nurse Report Line and Care On-Site plans for 2017 (provided with the response to NS DR 844). See response to NS DR 832 for additional information.

<sup>166</sup> See responses to NS DRs 314 (Atch 001, item 23, Atchs 006-007), 342, 482, 672, 724 (Atch 001, item 3), 797-798, 815, and 833 for further information on the Industrial Athlete Program. Also, the Safety and Shared Services 2016 Session 2 (S-2) presentation (for planning period starting 2017) was provided for NorthStar's in-person review in response to NS DR 734. See p. 13 of the 2018 Workforce Safety Action Plan provided on pp. 10-18 of the Safety and Shared Services 2016 S-2 for information on Industrial Athlete and Ergonomics plans for 2017 (provided with the response to NS DR 844).

<sup>167</sup> NS DR 583, Atch 006.

<sup>168</sup> See responses to NS DRs 223, 254, 314 (Atch 001, item 20), 466, 490, 496, 583, 633, 722, 724 (Atch 001, item 1), and 757 for additional information on the SIF Prevention Program.

<sup>169</sup> See responses to NS DRs 464-466, 733, and 882 for additional information on the SIF Incident Investigation Team.

<sup>170</sup> NS DR 203, Atch 001.

<sup>171</sup> NS DR 726, pp. 7-9.

<sup>172</sup> The Safety and Shared Services 2016 Session 2 (S-2) presentation (for planning period starting 2017) was provided for NorthStar's in-person review in response to NS DR 734. See p. 11 of the 2018 Workforce Safety Action Plan provided on pp. 10-18 of the Safety and Shared Services 2016 S-2 for information on SIF mitigation plans for 2017 (provided with the response to NS DR 844).



now consistent with the National Safety Council's recommended frequency.<sup>173</sup> In-cab monitoring deployment continues throughout the company as we have experienced behavior changes and reductions in serious MVIs (SPMVIs).<sup>174</sup> 4,400 units are expected to be deployed by end of the year.<sup>175</sup>

### *Contractor Safety*

Full implementation of PG&E's Contractor Safety Program has continued in 2016. By the end of the year, all LOBs will have fully implemented their contractor oversight procedures. PG&E will also complete the pre-qualification of all high- and medium-risk subcontractors.<sup>176</sup> Engagement with contractors was a major focus of 2016 with the first Contractor Safety Forums and Roundtable being held by the Contractor Safety Team.<sup>177</sup>

### *Safety Governance*

A Safety Management System policy was established in 2016 to help identify and develop plans to address gaps in our current systems. Lloyd's Register began conducting a gap assessment against the policy and draft standard that will inform our multi-year safety planning starting in 2017.<sup>178</sup>

In 2016, we continued to look at ways to improve these SLAs between Corporate Safety and the LOBs and several were updated and all others are currently undergoing updates.<sup>179</sup> In addition, we established stronger, uniform, and well-applied professional job requirements for our Corporate Field Safety Specialists.<sup>180</sup> This included having all Corporate Field Safety Specialists go through a new Safety Professional Development Program based on best-in-class

<sup>173</sup> See responses to NS DRs 724 (Atch 001, item 27) and 834-835 for information on the new motor vehicle standard and revised training requirements.

<sup>174</sup> See responses to NS DRs 060, 314 (Atch 001, item 13, and Atchs 004 and 005), and 582 for information on driver behavior technology platform Telogis ultimately selected by PG&E. Also, the Safety and Shared Services 2016 Session 2 (S-2) presentation (for planning period starting 2017) was provided for NorthStar's in-person review in response to NS DR 734. See p. 15 of the 2018 Workforce Safety Action Plan provided on pp. 10-18 of the Safety and Shared Services 2016 S-2 for information on Motor Vehicle Safety plans for 2017 (provided with the response to NS DR 844).

<sup>175</sup> See response to NS DR 836 for additional information.

<sup>176</sup> The Safety and Shared Services 2016 Session 2 (S-2) presentation (for planning period starting 2017) was provided for NorthStar's in-person review in response to NS DR 734. See p. 17 of the 2018 Workforce Safety Action Plan provided on pp. 10-18 of the Safety and Shared Services 2016 S-2 for information on Contractor Safety Program plans for year end 2016 and 2017 (provided with the response to NS DR 844).

<sup>177</sup> See responses to NS DRs 322 and 390 for additional information on these events.

<sup>178</sup> See responses to NS DRs 254, 255, 728, 729, 737, 826-827, 837, and 848 for information on PG&E's SMS efforts. Also, the Safety and Shared Services 2016 Session 2 (S-2) presentation (for planning period starting 2017) was provided for NorthStar's in-person review in response to NS DR 734. See p. 15 of the 2018 Workforce Safety Action Plan provided on pp. 10-18 of the Safety and Shared Services 2016 S-2 for information on Motor Vehicle Safety plans for 2017 (provided with the response to NS DR 844).

<sup>179</sup> NS DR 730.

<sup>180</sup> See responses to NS DRs 328 and 731 for information on these job requirements.

safety professional standards (Cal/OSHA 30-hour training) designed to provide them with the necessary tools and expertise to bring high value to their roles.<sup>181</sup> Field Safety Specialist knowledge and skills assessments were completed thereafter to help inform organizational structure changes made in 2016 to help continue to improve the quality of service provided by Corporate Safety Field Operations.<sup>182</sup>

Building on the work done to clarify roles and responsibilities in 2015, PG&E re-organized Corporate Safety to provide appropriate direction and support to the LOB safety teams. Specifically, we created Safety Business Partners to ensure consistent senior leadership alignment to safety and a central point of contact from Corporate Safety for each LOB.<sup>183</sup>

### **Public Safety (2013-2016)**

Public safety continued to be a significant focus of PG&E's safety efforts during the 2013 through 2016 time period. The company's risk, asset, and investment management programs matured and became better integrated across the company. PG&E's core operational LOBs leveraged new processes and tools such as RIBA and the Risk Evaluation Tool (RET) to better identify, assess, and develop plans to mitigate public safety risks.<sup>184</sup> This led to new processes, tools, and technologies being deployed across the company, and significant capital investments to improve the quality of our infrastructure and minimize risks.<sup>185</sup>

The sections below highlight some of the key public safety activities led by our operational LOBs during this time period. Additional detail on actions taken and accomplishments related to public safety is provided in the appendices to this document. PG&E's rate case testimony describes the capital and expense spending during this time period to modernize our infrastructure and reduce public safety risks. These investments do not merely improve the safety of our systems. They also contribute to a positive safety culture by demonstrating to employees that the company is committed to putting safety first in our decision-making.

#### *Enterprise*

PG&E's emergency preparedness organization, Emergency Preparedness and Response (EP&R), continued to advance the company's integrated emergency response plans after 2012 by consolidating all plans into a single Company Emergency Response Plan (CERP).<sup>186</sup> This effort, combined with improved governance through quarterly alignment meetings, has strengthened

<sup>181</sup> See response to NS DR 724, Atch 001, item 20 for a description of this effort.

<sup>182</sup> See response to NS DR 732 for information on certifications and credentials held by Corporate Field Safety staff.

<sup>183</sup> See responses to NS DRs 463-466, 733, and 838 for further information on these efforts.

<sup>184</sup> NS DR 004, Atch 003, pp. 11-12 describe the RET and RIBA process. See responses to NS DRs 039-040, 168, 204, 314 (Atch 001, item 35), 315, 640, and 672 (Atchs 003-004) for additional information on the RIBA process and the RET.

<sup>185</sup> See response to NS DR 839 for additional information.

<sup>186</sup> See response to NS DR 468 for a copy of PG&E's CERP. See response to NS DR 840 for additional information on EP&R's overall efforts..

coordination of emergency response across LOBs. EP&R has also improved collaboration with our external partners (e.g., FEMA, Cal-OES) and conducted multiple workshops and mock exercises to prepare for emergency events. These efforts paid off during PG&E's response to the August 2014 Napa Earthquake and multiple large-scale wildfires.<sup>187</sup>

### *Electric T&D*

Through our integrated planning process, Electric T&D focused its asset management strategy on reducing safety risk, specifically through risk-informed investment decisions.<sup>188</sup> To improve the safety of PG&E's substations, PG&E took steps to enhance the security of its critical substations and increased the number of urban substations upgraded from 7 percent in 2010 to 34 percent in 2015.<sup>189</sup> Electric T&D also opened a new distribution control center in Fresno in 2014 to oversee the electric distribution system. This regional center—one of three opened by the end of 2016—is part of a consolidation of 15 division-level centers, enhancing grid reliability, enabling quicker response to outages and emergencies, and providing visibility to PG&E's entire distribution grid.<sup>190</sup>

Improvements have also been made to network system maintenance and replacement programs. For example, beginning in 2010, Electric T&D began installing manhole covers designed to quickly vent while staying latched in place in the event of a failure in the vault. All of the approximately 18,000 vault manhole covers in PG&E's electric system will eventually be replaced through this program.

The Electric T&D organization has also continued to focus on reducing wires down and improving its response to emergencies. Public contact with live wires, particularly in emergency events, is one of the most significant public safety risks associated with the electric system. In an effort to identify and mitigate the root cause of wires down incidents, Electric T&D implemented a program to visit wires down locations to gather essential data, understand the cause, and develop work plans to mitigate future wires down incidents.<sup>191</sup> We created a public awareness campaign to remind customers to stay away from downed power lines and call 911 using outdoor board advertisements, paid search, traffic news radio, and print and digital displays in English, Spanish, and Chinese which in total produced nearly 200 million customer impressions in 2015 alone.<sup>192</sup>

<sup>187</sup> See first supplemental response to NS DR 004, Atch 011 for a presentation on PG&E's emergency preparedness and response efforts. See responses to NS DRs 004 Supp 001 (Atchs 003 and 011) and 314 (Atch 001, item 46) for discussion on the Napa Earthquake.

<sup>188</sup> See responses to NS DRs 004 Supp 001 (Atch 002) and 145 for additional information on Electric T&D's risk management efforts.

<sup>189</sup> See slide 19 of PG&E Corporation's presentation titled "Business Update" and dated November 4, 2016. The presentation can be accessed here:

[http://www.pgecorp.com/news/press\\_releases/Release\\_Archive2016/161104press\\_release.shtml](http://www.pgecorp.com/news/press_releases/Release_Archive2016/161104press_release.shtml).

<sup>190</sup> NS DR 004 Supp 001, Atch 002, pp. 6-7.

<sup>191</sup> See first supplemental response to NS DR 004, Atch 002, pp. 20, 26, 37, 39, and 42, and response to NS DR 314 (Atch 001, item 28) for information on PG&E's wires down program efforts.

<sup>192</sup> NS DR 004 Supp 001, Atch 007, pp. 15-17.

All of these efforts have paid off as measures of wires down incidents and electric 911 emergency response time have shown positive trends over this time period. For example, the company's response to 911 electric-related emergencies improved by roughly 50 percent from third quarter 2010 to first quarter 2015. By 2015 the number of electric-related 911 emergencies responded to by PG&E personnel within 60 minutes of receiving a 911 electric-related call was over 97 percent.<sup>193</sup> In 2015 the company also recorded its seventh straight year of record-setting electric reliability.

Electric T&D also rolled out a new Geographical Information System (GIS) for managing records to improve quality and access to PG&E's electric distribution and transmission asset records and began consolidating and modernizing its distribution control centers.<sup>194</sup> The organization's SCADA system was expanded to improve operator visibility and reduce response time to incidents.<sup>195</sup>

The organization expanded its Vegetation Management Program<sup>196</sup> in response to drought impacts on trees near power lines through creation of a new program to remove dead and dying trees, increasing aerial patrols, and increasing funding to support local community FireSafe Councils. In 2015, the organization also began implementing the use of new technologies such as LiDAR and imaging technology to enhance vegetation management inspections to identify additional trees that may pose a hazard to power lines. Additionally, in 2016, PG&E started testing the use of drones to assist with inspections of electric infrastructure. In one specific application, drones were used to inspect lines near hazardous terrain that would otherwise have to be performed by employees using fall-restraint equipment and requiring specialized training; this innovation yields benefits not just for employee and public safety, but for increasing reliability of our service and response time to outages.

Electric T&D also rolled out CAP in November 2016 which will allow the numerous ways in which the organization identifies public and workforce safety issues to become more centralized in a manner consistent with other LOBs now using this platform.<sup>197</sup>

### *Gas Operations*

Gas Safety Excellence provided the strategic framework to focus the organization's efforts on asset management, safety culture, and process safety.<sup>198</sup> Gas Operations then validated these

<sup>193</sup> NS DR 726, pp. 13-14.

<sup>194</sup> See response to NS DR 841 for additional information.

<sup>195</sup> See response to NS DR 842 for additional information.

<sup>196</sup> See responses to NS DRs 004 Supp 001 (Atch 002), 427, 560-562 for additional information on PG&E's Vegetation Management Program.

<sup>197</sup> See response to NS DR 724, Atch 001, item 9 for PG&E's CAP deployment schedule by LOB and response to NS DR 512 for a more detailed chronological history on CAP deployment.

<sup>198</sup> See responses to NS DRs 004 Supp 001 (Atch 003, pp. 4 and 27) and 013 (Atch 005, pp. 10-13) for information on Gas Operations' Gas Safety Excellence strategic framework.

efforts by third parties. In 2013, the organization developed detailed asset management plans for eight gas asset families and assigned an owner to each plan.<sup>199</sup> Between 2014 and 2016, Gas Operations achieved third-party certification in PAS 55 / ISO 5501 (asset management)<sup>200</sup>, API 1173 (pipeline safety and safety culture)<sup>201</sup>, and RC 14001 (process safety)<sup>202</sup> to validate its progress and elicit feedback on opportunities to improve.

Gas Operations also continued to improve its records and knowledge of the system through completion of the Centerline Survey of over 6,750 miles of gas transmission pipelines<sup>203</sup>, implementation of Super Gas Ops and Super Crew processes<sup>204</sup>, and implementation of the Pathfinder (gas distribution) and Mariner (gas transmission) GIS records systems.<sup>205</sup>

New state-of-the-art gas control centers for gas transmission and distribution as well as gas dispatch were opened in 2013, utilizing the most advanced technology to monitor PG&E's gas system and respond to emergencies.<sup>206</sup> Additionally, to address one of the most significant public safety risks related to the gas system, PG&E designed the Gold Shovel Standard to help mitigate the ongoing risk of contractor dig-ins.<sup>207</sup> Innovation has been a key component of Gas Operations progress in public and employee safety. For example, in 2015, PG&E collaborated with the Pipeline Research Council International (PRCI) and NASA Jet Propulsion Laboratory (JPL) to develop a small, light, and ultra-sensitive device that allows leak surveyors to locate leaks from methane indications detected on the street. Similar technology was employed the following year in a series of tests using drones, which offer the promise of conducting methane detection via aerial assessments—similar to our survey of the electric transmission system.

<sup>199</sup> See responses to NS DRs 004 Supp 001 (Atch 003, p. 28), 085, 314 (Atch 001, item 41), and 347 Supp 001 (Atch 001, pp. 10-18) for additional information on asset management plans for Gas Operations.

<sup>200</sup> See responses to NS DRs 004 Supp 001 (Atch 003, pp. 26-29, 49, 50, and 53), 005, 017, 182, 314 (Atch 001, item 45), 337, and 347 Supp 001 (Atch 001, pp. 11 and 22) for additional information on PAS 55 / ISO 5501 certification.

<sup>201</sup> See responses to NS DRs 004 Supp 001 (Atch 003, pp. 26, 27, 37, 38, 49, 50, and 53), 005, 176, 182, 314 (Atch 001, item 51) and 337 for additional information on API 1173 certification.

<sup>202</sup> See responses to NS DRs 004 Supp 001 (Atch 003, pp. 27, 34, 49, 50, and 53), 017, 173, 337, and 347 (Atch 001, pp. 8-10) for additional information on RC 14001 certification.

<sup>203</sup> See responses to NS DRs 004 Supp 001 (Atch 003, pp. 26, 30, and 43), 314 (Atch 001, item 39), 347 Supp 001 (Atch 001, p. 37), and 854 for additional information on the Centerline Survey.

<sup>204</sup> See responses to NS DRs 004 Supp 001 (Atch 003, pp. 8, 26, and 53), 013 (Atch 009, pp. 40-41 and 67-68), 163, 164, and 314 (Atch 001, item 44) for additional information on Super Gas Ops and Super Crew.

<sup>205</sup> See responses to NS DRs 004 Supp 001 (Atch 003, p. 26), 013 (Atch 009, p. 63) and 314 (Atch 001, items 50 and 54) for additional information on Pathfinder and Mariner.

<sup>206</sup> See responses to NS DRs 314 (Atch 001, item 42), 337, and 347 Supp 001 (Atch 001, pp. 42-43) for additional information on the gas control and dispatch centers.

<sup>207</sup> See responses to NS DRs 004 Supp 001 (Atch 003, pp. 31, 32, 43, and 47) and 013 (Atch 009, p. 32) for information on PG&E's Gold Shovel Standard.

All of these efforts have paid off through measureable improvements. The company achieved a roughly 40 percent reduction in gas emergency response time from 2010 to 2015.<sup>208</sup> PG&E's gas leak backlog was reduced by over 99 percent from 2010 to 2015, with only 94 open Grade 2 and 2+ leaks remaining at the end of 2015. Gas dig-ins also reduced by 40 percent from 2010 to 2015.<sup>209</sup> These performance measures have placed us near top decile/quartile performance in the industry. In addition, Gas Operations replaced 490+ miles of transmission and distribution pipeline, hydrotested 750+ miles of transmission pipeline, made 690+ miles of transmission pipeline capable of in-line inspection, and installed 235 automated valves from 2010 through 2015.<sup>210</sup>

These plans and progress have been documented and submitted to the CPUC via the annual Gas Safety Plan, starting in 2012. The most recent plan was submitted in November 2016.<sup>211</sup> These annual plans include additional information on safety-related efforts and progress made by the Gas Operations organization since San Bruno.

### *Generation*

Power Generation (fossil, hydro, and solar) made advancements in its risk management programs during this time period, particularly with regards to its dams and water conveyance safety and its hydro asset management program.<sup>212</sup>

In 2011, the organization identified, evaluated, and addressed seven hydro system risk gaps on the dams and water conveyance systems.<sup>213</sup>

A Public Safety Program was launched in Power Generation in 2012 that included multiple public safety activities including outreach and education, reducing access to facilities through controls such as fencing and barriers, and improving emergency response through joint safety exercises with communities located near PG&E hydro facilities.<sup>214</sup> The progress of this program continues to be monitored today through the Hydro Public Safety Awareness Index.<sup>215</sup> In 2015,

<sup>208</sup> NS DR 726, pp. 14-15.

<sup>209</sup> See NS DRs 004 Supp 001 (Atch 003, pp. 31, 32, 45, and 47) and 347 Supp 001 (Atch 001, pp. 4, 24-25, and 36) for additional information on PG&E's gas dig-in reduction efforts.

<sup>210</sup> See slide 7 of PG&E Corporation's presentation titled "Business Update" and dated November 4, 2016. The presentation can be accessed here:  
[http://www.pgecorp.com/news/press\\_releases/Release\\_Archive2016/161104press\\_release.shtml](http://www.pgecorp.com/news/press_releases/Release_Archive2016/161104press_release.shtml).

<sup>211</sup> See response to NS DR 013 for copies of the 2012-2015 annual Gas Safety plans. See response to NS DR 347 Supp 001 for a copy of the 2016 Gas Safety Plan.

<sup>212</sup> See responses to NS DRs 004 Supp 001 (Atch 005, pp. 16-22 and 35-38), 064, 097, 154-155, and 503 for additional information on risk management efforts in Generation.

<sup>213</sup> See responses to NS DRs 064 and 314 (Atch 001, item 60) for additional information on this effort.

<sup>214</sup> See responses to NS DRs 004 Supp 001 (Atch 005, p. 31) and 064 for additional information on Power Generation's Public Safety Program.

<sup>215</sup> NS DR 666.

the Generation Risk Information Tool (GRIT) was implemented to improve risk identification and understanding related to PG&E's hydro assets.<sup>216</sup>

PG&E's nuclear power plant, DCP, continued to expand its public safety efforts through both outreach to improve public safety awareness in and around its Emergency Planning Zone and through efforts tied at improving the safety of the plant itself.<sup>217</sup> This included re-confirmation by the NRC in 2015 that DCP was safe to withstand extreme natural events such as earthquakes, tsunamis, and flooding. DCP also implemented the post-Fukushima emergency response "FLEX" equipment program in 2016.

### **Status of Safety Metrics and Results by the End of 2016**

Since 2012, PG&E's safety metrics expanded to include contractor safety as well as public and employee safety measures and have evolved to include more leading indicators. The company now tracks 27 safety metrics as part of its safety dashboard, including 14 employee safety measures, 3 contractor safety measures, and 10 public safety measures.<sup>218</sup> Safety metrics are reviewed consistently at monthly BPR reviews<sup>219</sup>, special attention review meetings<sup>220</sup>, and NOS Committee meetings<sup>221</sup>.

Some additional highlights on our safety metrics over this time period:

- Increased percent of STIP tied to safety from 40 percent to 50 percent in 2015, with 34 percent public safety and 16 percent employee safety<sup>222</sup>;
- Began tracking timely reporting of injuries as a leading indicator of safety culture and adopted as a STIP metric in 2016<sup>223</sup>;
- Added 5 percent component tied to safety for Long-Term Incentive Program (LTIP) in 2015<sup>224</sup>;
- Developed and implemented hydro public safety index in 2015<sup>225</sup>; and

<sup>216</sup> See responses to NS DRs 004 Supp 001 (Atch 005, p. 20), 097, and 314 (Atch 001, item 59) for additional information on GRIT.

<sup>217</sup> See responses to NS DRs 004 Supp 001 (Atch 005, p. 31)

<sup>218</sup> See response to NS DR 666 for historical detail on metrics tracked in PG&E's safety dashboard. Further information on these metrics was provided with the response to NS DRs 004 (Atch 004), 041, 663-666, and 722.

<sup>219</sup> See response to NS DR 004, Atch 003, p. 16 for an overview of the BPR process. See responses to NS DRs 041, 297, and 663-666 for additional information on the BPR process, including results.

<sup>220</sup> See response to NS DR 297 for list of recent special attention reviews completed.

<sup>221</sup> NOS Committee materials were provided for NorthStar's in-person review in response to NS DR 006.

<sup>222</sup> See response to NS DR 004, Atch 008 for a presentation on PG&E's compensation packages and the response to NS DR 023 for further documentation of STIP changes.

<sup>223</sup> See responses to NS DRs 004 (Atch 008, p. 11), 023, 666, 724 (Atch 001, item 42), and 806 for documentation on tracking and use of timely reporting of injuries metric for STIP.

<sup>224</sup> NS DR 004, Atch 008, p. 13.

<sup>225</sup> NS DR 666, Atch 003.

- Increased focus on SIFs by introducing measures for SIF exposure and SIF timely corrective actions completed in 2016<sup>226</sup>.

PG&E's actions to improve safety culture and performance have led to positive results.<sup>227</sup> Some examples include:

- Serious incidents are trending downward<sup>228</sup>, reflecting the positive impact of PG&E's SIF Prevention and Contractor Safety programs.
  - From 2008 to 2016 year to date, PG&E has experienced an overall decline in the number of employee and contractor SIFs. During the five-year period of 2007 through 2011 PG&E experienced nine employee fatalities and 31 employee serious injuries. From the almost five-year period of 2012 to today, these numbers decreased to three employee fatalities and 22 employee serious injuries during a period when staffing levels increased.
  - In 2012, PG&E began centrally tracking all contractor SIF incidents. Contractor SIF incidents have seen a similar decline since 2012. During the period of 2012 through 2013, seven contractor fatalities and six contractor serious injuries occurred. From 2014 to today these numbers decreased to three contractor fatalities and two contractor serious injuries in total.
  - Lost work days are also trending downward, an indication that the severity of injuries to PG&E employees is declining. Total lost workdays decreased by 30 percent between 2011 and 2015 despite an increase in worker's compensation claims of 56 percent.<sup>229</sup>
- Near Hit reporting continues to trend up, indicative of an improving safety culture where people feel comfortable speaking up.<sup>230</sup>
- Anonymous CAP submissions are decreasing, showing increased confidence and trust in that channel.<sup>231</sup>
- Employee perception of the importance of safety is strong and/or improving. In our 2016 Premier Survey, 93 percent of respondents said they were comfortable discussing safety issues with their supervisor (up two points from 2014). 93 percent said they felt free to stop a job for safety reasons (18 points higher than the industry benchmark used by PG&E, U.S. Utilities Plus Benchmarking). Lastly, 89 percent reported their supervisor insists on carefully following safety rules even if it means that work is slowed down (24 points higher than the industry benchmark).<sup>232</sup>

<sup>226</sup> NS DR 666, Atch 003.

<sup>227</sup> See response to NS DR 726 for safety performance data and summary results. All of the results shown in this section, including Figures 3 through 8 are supported with data and information included with that response.

<sup>228</sup> See response to NS DR 843 for SUF data for 2007 through 2016.

<sup>229</sup> See responses to NS DRs 726 (pp. 10-11) and 766.

<sup>230</sup> In addition to the response to NS DR 726, see the responses to NS DRs 225 and 666 for near hit reporting results.

<sup>231</sup> In addition to the response to NS DR 726, see the responses to NS DRs 225 and 214 Supp 004 for CAP submission data.

<sup>232</sup> See responses to NS DRs 004 (Supp 001, Atch 006), 015, 366, and 718 for information on PG&E's 2014 and/or 2016 Premier Survey results.

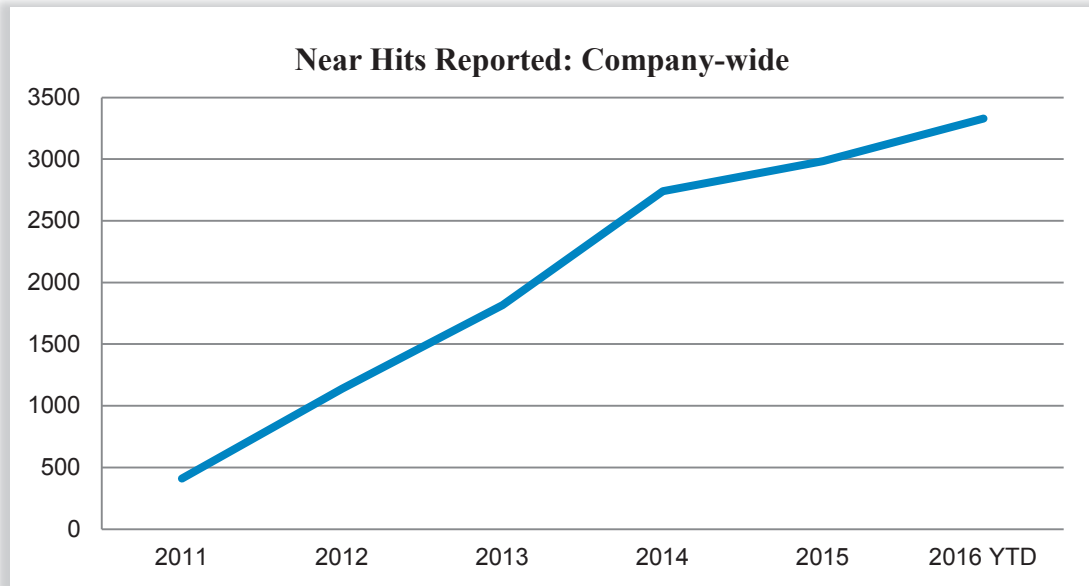


- PG&E's Supply Quality Assurance offices received ISO 9001 certification from Lloyd's Register Quality Assurance. The certification credits PG&E for holding its suppliers to the highest standards and having a quality management system that meets the requirements for a proper infrastructure, procedures, processes and resources. PG&E's supplier quality organization—which was built from scratch after recruiting experts from the automotive industry—was the first in the American utility industry to receive this certification

The following figures show some examples of the positive trends we have seen across the different dimensions of our safety performance.

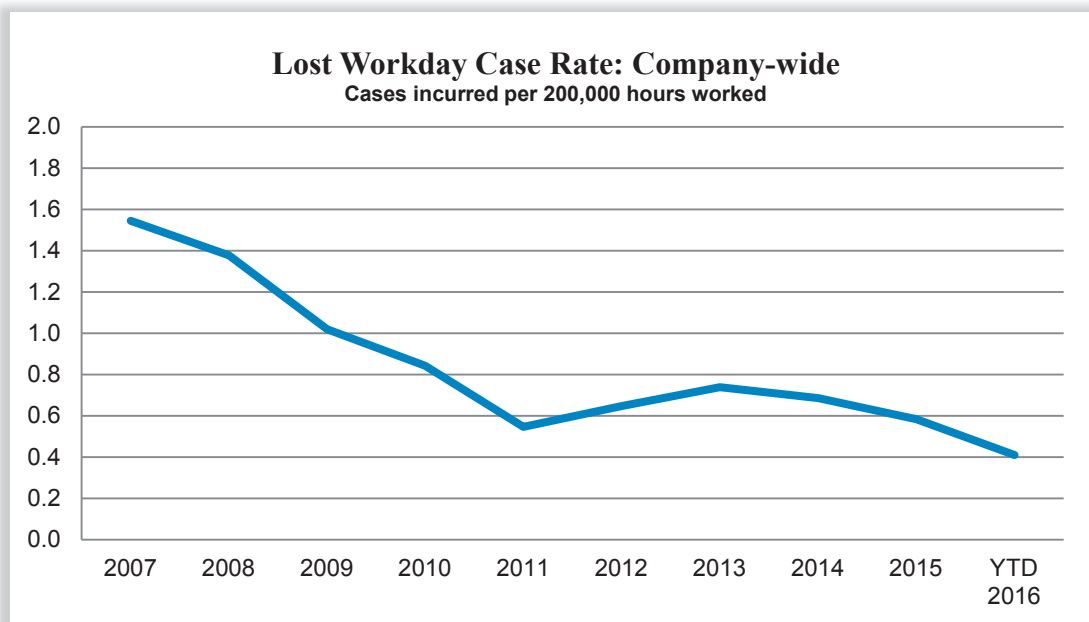
*Safety Culture*

**Figure 3 - Near Hits Reported (2011-2016 YTD)**

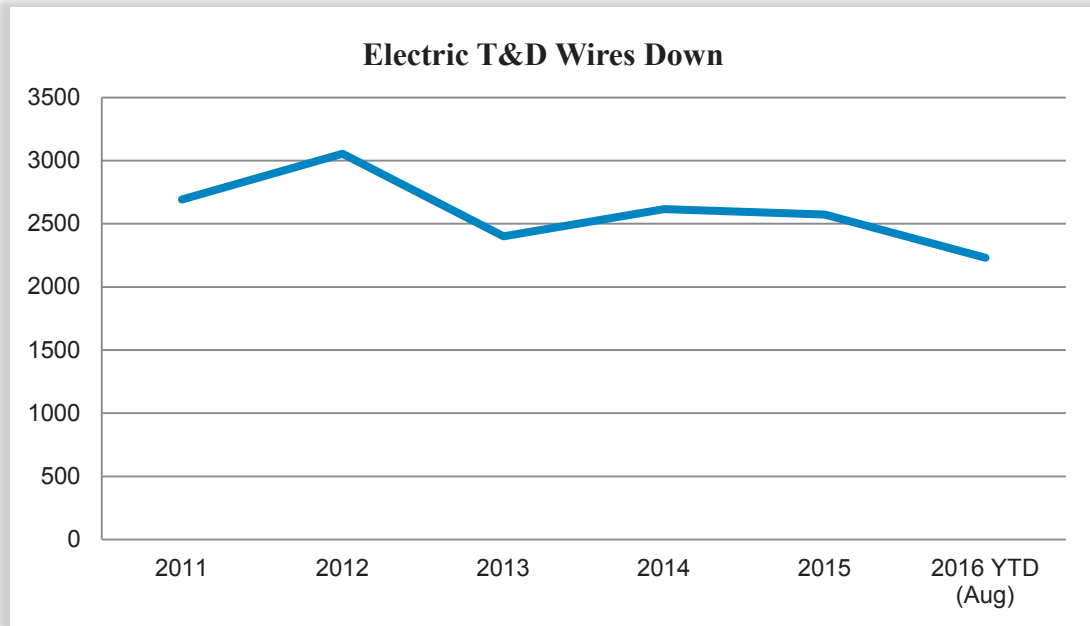


*Employee Safety*

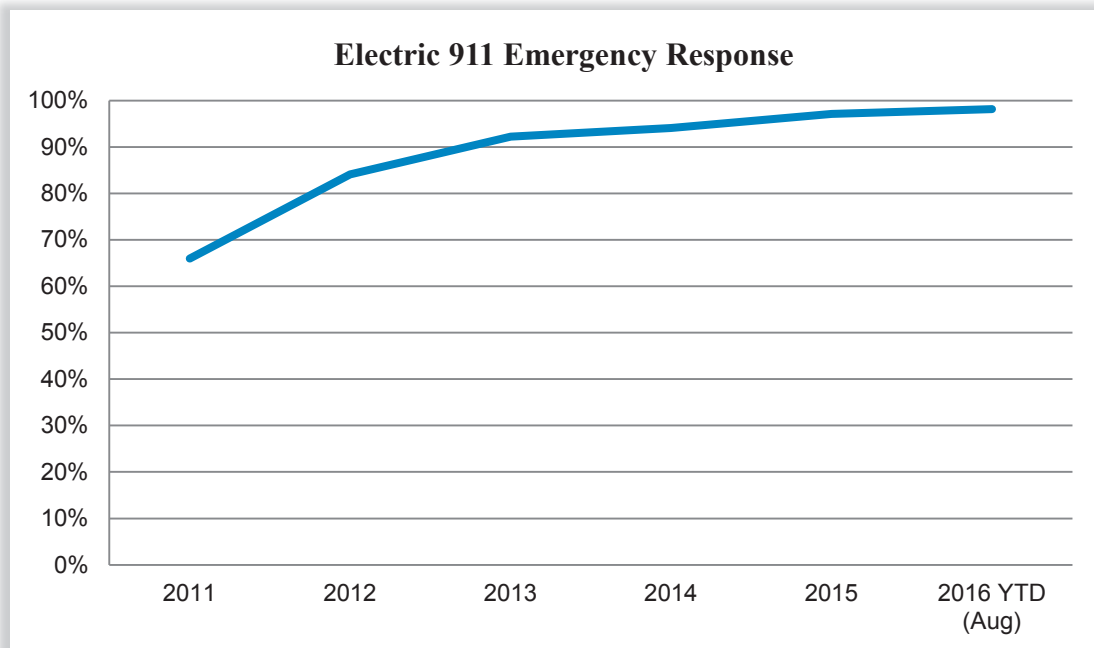
**Figure 4 - Lost Work Day Case Rate (2007-2016 YTD)**



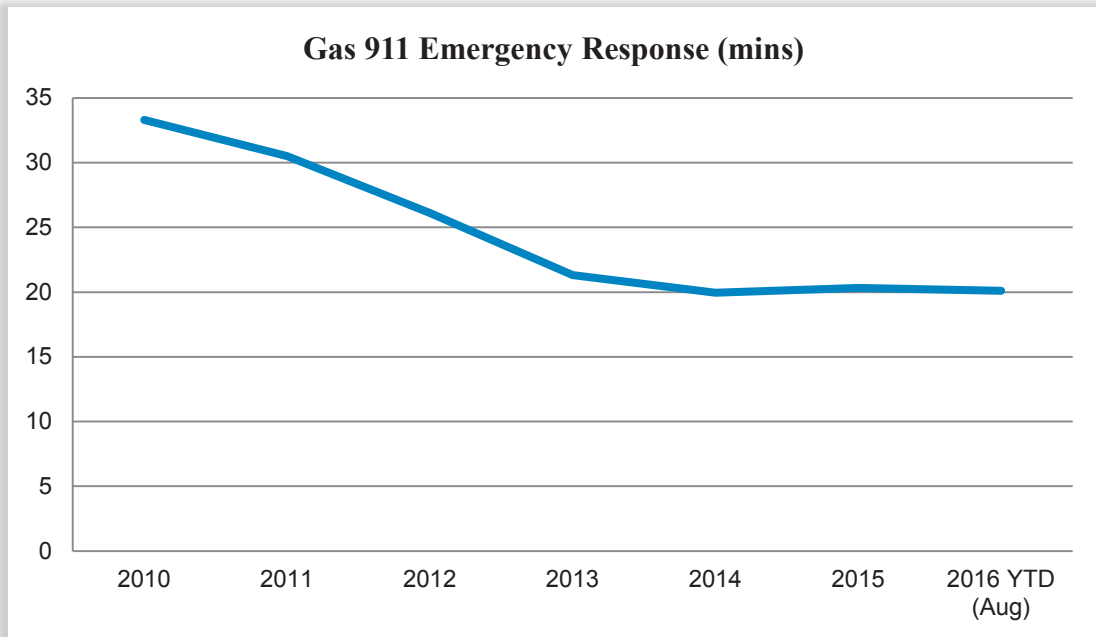
**Figure 5 - Electric T&D Wires Down (2011-2016 YTD)**



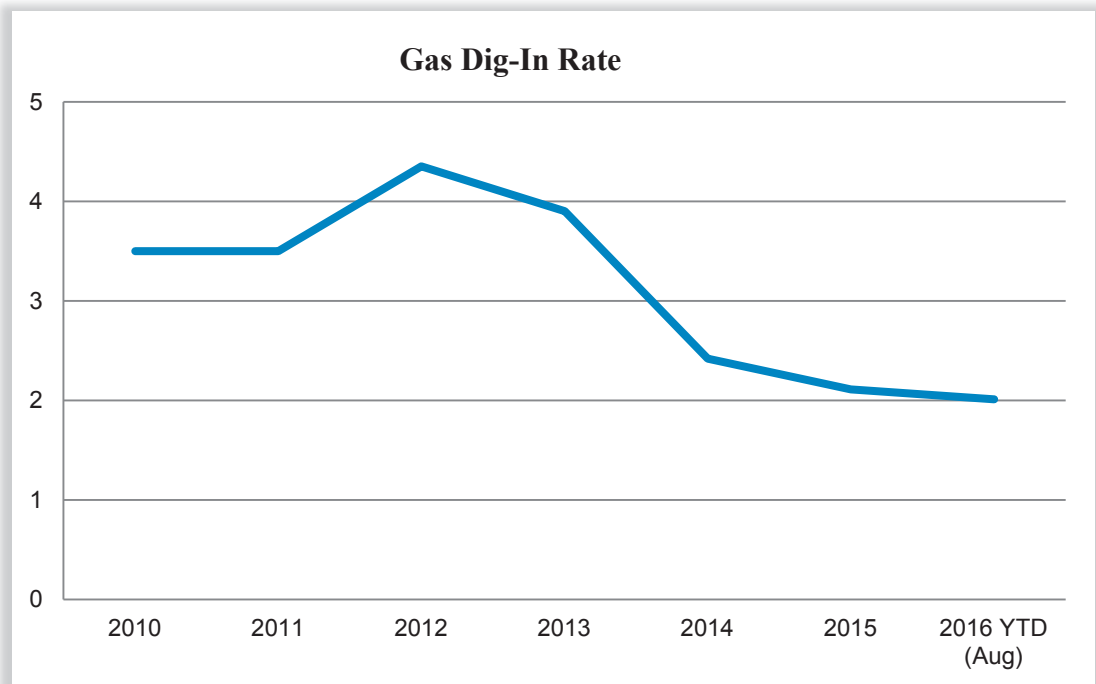
**Figure 6 - Electric 911 Emergency Response (2011-2016 YTD)**



**Figure 7 - Gas Emergency Response (2010-2016 YTD)**



**Figure 8 - Gas Dig-In Rate (2010-2016 YTD)**



## 2017 and Looking Forward

While PG&E has made strides to develop, implement, adjust, and mature its safety programs and improve safety culture, and its safety performance has improved, we recognize that safety is a never ending journey. Our work to improve safety performance and safety culture will never be done. We will continuously improve our safety systems, processes, and culture with specific areas of focus outlined below.

As part of the 2017 Session 1 development process, Safety and Shared Services worked jointly with the operational LOBs to develop a single enterprise-wide employee and contractor safety plan.<sup>233</sup> Previously, each LOB, including Safety and Shared Services, produced its own safety improvement plan following Corporate Safety guidance. The focus areas for 2017 include:

- Public safety<sup>234</sup>
- Employee safety
  - SIF mitigation
  - Workforce health
  - Motor vehicle safety
- Contractor safety
  - Integration into work practices/audits<sup>235</sup>
- Safety culture
  - Safety leadership development (crew lead and officer and director)
  - CAP rolled out company-wide
- Safety governance
  - Refine leading indicators for safety
  - Safety Management System

As PG&E continues to mature its safety programs and culture, we have identified several multi-year efforts, detailed below, that will support our focus areas. Our plans are intended to:

- Provide continued focus and progress in making risk-informed asset investments to enhance public safety;
- Enhance our overall safety governance and systems;
- Enhance programs that have helped reduce SIFs to employees and contractors while reducing less serious injuries and MVIs; and
- Continue to make progress with our safety culture through expanded safety leadership development initiatives, the Speak up for Safety campaign<sup>236</sup>, and a continued safety partnership with our unions<sup>237</sup>.

<sup>233</sup> The Safety and Shared Services 2016 Session 2 (S-2) presentation (for planning period starting 2017) was provided for NorthStar's in-person review in response to NS DR 734. The information provided in this section, unless otherwise noted, is documented in the 2017 through 2018 Workforce Safety Action Plan provided on pp. 10-18 of the Safety and Shared Services 2016 S-2 (provided with the response to NS DR 844).

<sup>234</sup> See response to NS DR 845 for additional information.

<sup>235</sup> See response to NS DR 846 for additional information.

<sup>236</sup> See responses to NS DRs 256, 567, and 747 for information on the Speak up for Safety campaign.

<b>Focus Area</b>	<i>Improve incident causal analysis and system-wide corrective actions taken</i>
<b>Rationale</b>	Need to ensure our efforts are identifying and having the desired impact in controlling exposure to risks, especially the most significant ones
<b>Initiatives</b>	<ul style="list-style-type: none"> <li>• Mature our existing SIF Prevention Program using a consistent and effective approach across the enterprise for program implementation and sustainability;</li> <li>• Improve timelines and quality of SIF corrective actions; and</li> <li>• Integrate SIF exposure mitigation into work methods and procedures.</li> </ul>

<b>Focus Area</b>	<i>Develop company-wide governance for our safety processes and programs</i>
<b>Rationale</b>	Need to tie together our safety efforts in an integrated manner to aid with continuous improvement, enterprise alignment, and make our efforts more effective and efficient
<b>Initiative</b>	Develop and cascade an enterprise-wide SMS. PG&E's SMS will provide a standardized framework for how to manage public, employee, and contractor safety and implementation of the policy will help PG&E to better prioritize and manage its safety efforts

<b>Focus Area</b>	<i>Improve safety oversight for contractors and sub-contractors</i>
<b>Rationale</b>	Ensure all who perform work on behalf of PG&E are qualified to perform their work safely, and are meeting the safety standards for that work
<b>Initiatives</b>	<ul style="list-style-type: none"> <li>• Fully implement Contractor Safety Program including completing the pre-qualification process for subcontractors and implementation of the contractor oversight procedures (pre-job safety plan reviews, field observations, and post-job evaluations)</li> <li>• Begin to develop a plan to enhance program and develop a contractor safety dashboard for improved reporting</li> </ul>

<sup>237</sup> See response to NS DRs 694 and 740 for information on PG&E's safety partnerships efforts with its unions.

<b>Focus Area</b>	<i>Support ongoing efforts to promote a speak up culture at PG&amp;E</i>
<b>Rationale</b>	Employees need to feel that PG&E creates a supportive, comfortable environment that fosters open communication about safety, compliance and ethics, and other topics. This aids in all aspects of reporting, behavior change, engagement, and safety performance.
<b>Initiatives</b>	<ul style="list-style-type: none"> <li>• Continued roll out of Speak Up for Safety employee campaign and associated messages that encourage employees to change the conversations around safety;</li> <li>• Roll out CAP enterprise wide by 2017<sup>238</sup> and continue to encourage employees to speak-up via CAP, to help PG&amp;E find and fix processes, equipment, and anything else that isn't working optimally; and</li> <li>• Continue to implement PG&amp;E's Safety Leadership Development Program, including rolling out a single skills and reinforcement workshop for officers and directors, completing superintendent and supervisor coaching sessions, and beginning delivery of crew leader workshops.<sup>239</sup></li> </ul>

<b>Focus Area</b>	<i>Expand workforce health initiatives</i>
<b>Rationale</b>	Ensure employees are receiving timely care that helps prevent and address injuries
<b>Initiatives</b>	<ul style="list-style-type: none"> <li>• Expansion of Health and Wellness initiatives such as Industrial Athlete and ergonomics (office, industrial, and vehicle) to reduce injuries</li> <li>• Enhancement to Early Injury Recovery Management for our office and physical workforce to improve injury outcomes when they occur through proactive follow-up and care on-site</li> </ul>

<sup>238</sup> See response to NS DR 724, Atch 001, item 9 for PG&E's CAP deployment schedule by LOB and response to NS DR 512 for a more detailed chronological history on CAP deployment.

<sup>239</sup> See responses to NS DRs 575 and 577 for further discussion of these program plans.

<b>Focus Area</b>	<i>Continue to make investments to systematically modernize infrastructure and improve public safety<sup>240</sup></i>
<b>Rationale</b>	Continually upgrading our system reduces workforce and public safety risks and improves the overall safety and reliability of our system.
<b>Initiatives</b>	<ul style="list-style-type: none"> <li>• Continue to increase the percentage of the Gas Transmission system that is piggyback with a target of increasing from 25 percent piggyback in 2015 to approximately 56 percent by 2026;</li> <li>• Continue to replace gas distribution mains with a target of approximately 170 miles of annual replacement by 2019;</li> <li>• Continue to increase the penetration of automated switches in urban areas with a target of increasing from 30 to 45 percent from 2015 to 2019;</li> <li>• Continue to complete substation upgrades with a target of increasing from 34 to approximately 85 percent from 2015 to 2019; and</li> <li>• Continue grid modernization initiatives including increased remote control and sensor technology, distributed energy resource integration, and advanced grid analytics.</li> </ul>

*Other Key Efforts*

- Continue to enhance our partnerships with the unions through new joint Safety Partnership Committee and work towards a partnership to roll out a peer observation program pilot in 2018.
- Development of standardized motor vehicle safety training and the expansion of our Motor Vehicle Technology Program to influence safe driving behavior through the application of real-time alerts (Telogis), self-corrective actions, coaching, training, and regular reporting to identify trends and address safety risks.

*Metrics of Success*

For 2017 and beyond, PG&E’s safety metrics will continue to include public, employee, and contractor safety with a significant focus on SIF reduction with the public, employees, and contractors in mind (SIF is being considered as a STIP and LTIP metric beginning in 2017). Safety metrics will continue to be reviewed consistently at monthly BPR reviews and NOS Committee meetings.

<sup>240</sup> These planned efforts are described on slides 19-20 of PG&E Corporation’s presentation titled “Business Update” and dated November 4, 2016. The presentation can be accessed here: [http://www.pgecorp.com/news/press\\_releases/Release\\_Archive2016/161104press\\_release.shtml](http://www.pgecorp.com/news/press_releases/Release_Archive2016/161104press_release.shtml).



## **Final Thoughts**

We have worked diligently to apply the lessons we learned from San Bruno to bring about real safety progress and continuous improvement at PG&E. We are seeing, at all levels in the company, a strong and growing appreciation for the criticality of safety in everything we do. Our latest Premier Survey—our most comprehensive method for capturing employee feedback—shows promising signs that we are building the culture we want to see, and that employees are noticing the improvements we have made as a company in recent years.

Yet, we know there is still more work ahead in our effort to become an industry leader in safety. We will remain vigilant in providing for public, employee, and contractor safety at all times, and steadfast in our resolve to achieve the culture we need to support those aims.

## **Appendix A:**

### **Example Actions Taken and Accomplishments (September 2010-2012)**

The bullet lists below provide a listing of key safety-related actions taken and accomplishments during the identified time period. Included with each item is a cross-reference to relevant data request responses provided to the CPUC and NorthStar during the course of the Safety OII (I.15-08-019). The cross-references are provided in parentheses next to each item. References to safety initiatives and programs previously summarized in the responses to NorthStar data requests 314 and 347 include a reference to the item number from the spreadsheet attachments provided with those responses (e.g., item 3 in attachment 001 to 314 is denoted as 314-3).

#### **Enterprise-Wide**

##### *Safety Culture*

- Discipline policy changed from incident-based disciplinary practice to positive behavior-based discipline policy. (314-5, 004, 025, 027)
- PG&E's set of safety principles redeveloped to further define PG&E's commitment to safety. "Rules to Live By" replaced with a more comprehensive and affirmative "Keys to Life". (314-4, 004)
- Enterprise Near Hit Program established (enhanced in future years). (314-8, 004 Supp 001, 212, 225, 861-862)
- Near Hits Reported, a leading indicator metric, added to Safety Dashboard. (666)
- Use of OSHA recordable injuries and Preventable MVIs (PMVIs) as STIP metrics discontinued in 2012 and replaced with metrics that focus on more serious incidents. (314-9, 023)
- STIP percentage of pay tied to safety performance increased from 15 percent to 40 percent. (314-6, 023)
- Safety Leadership Workshops developed and kicked-off to ensure all leaders understood the safety direction PG&E was taking and the new expectations of leaders as part of that direction. These workshops were designed to provide leadership with practical information and guidance to increase their competence and confidence to be a good safety leader and included examples from Alaska Airlines and how they improved their safety culture and performance. (314-10, 025, 045, 050, 447, 568, 575)
- Supervisor Leadership Program, with a focus on safety leadership, launched. (032, 577)
- Incorporated lessons learned from San Bruno into New Employee Orientation. (032)
- Grassroots safety teams emphasized and reinvigorated across the company. (050 Supp 001, 365)
- Progress demonstrated on safety culture-related questions on 2012 Premier Survey, including:
  - 94 percent of employees positively responded to "I would not hesitate to discuss any safety issue with my work group";
  - 91 percent of employees positively responded to "When anyone at work is engaged in risky behavior, I will say something even if he or she is not likely to appreciate it";

- 87 percent of employees favorably responded to “My immediate supervisor sets a good example in safety”; and
- 87 percent of employees favorably responded to “PG&E shows by its actions that it’s committed to public safety”. (004 Supp 001, 015, 366)

#### *Employee Safety*

- 24/7 Nurse Report Line established. (314-7, 629-632, 672, 724)
- Began rolling out Industrial Athlete Program at limited sites. (314-23, 342, 482, 724, 798)
- Workforce safety measures tracked for Safety Dashboard increased from 3 to 7 in 2012. (666)
- Began to distinguish MVIs as preventable versus non-preventable and serious versus non-serious to help encourage reporting and to focus on the most serious incidents. (666)
- Safety and Performance Fundamentals handbook condensed to pocket size and began to be issued to employees. (323, 394)

#### *Safety Governance and Leadership Changes*

- Tony Earley, an experienced utility executive, hired as the Chairman and CEO.
- Separated gas and electric businesses and restructured leadership and reporting to better align personnel with objectives and bring in new talent.
- Board of Directors NOS Committee established. (008, 009, 042, 354, 477, 565)
- The company established the position of Lead Safety Officer, appointing Des Bell, an executive with extensive aviation safety experience. (252, 787)
- Ed Halpin, a recognized leader in nuclear safety culture, was named Chief Nuclear Officer.
- An Executive Safety Steering Committee was formed to oversee these leadership and operational changes. (013 Atch 001)
- Launched new integrated planning process in 2012 for planning period beginning 2013. (039, 040, 205, 776-777, 782)
- Implemented BPR process as part of overall integrated planning effort to better track and assess status of performance metrics and began conducting Special Attention Reviews (SARs) when needed. (041, 297, 663-666)

#### *Benchmarking / Third-Party Assessments*

- Benchmarked with various leading companies in safety including Alaska Airlines, Eastman Chemical, Norfolk Southern, Entergy Corporation, and Ameren Corporation. From this exercise, PG&E incorporated several best practices, including: daily operational calls (Alaska Airlines), process safety improvements (Eastman Chemical), and non-punitive reporting (FAA, Eastman, and BNSF Railway). (048, 182, 796, 860)
- Developed action plan based on recommendations made in various internal and third-party assessments including:
  - NTSB (050);
  - CPUC IRP report on PG&E’s natural gas system and operations (182);
  - Leadership Safety Assessment with analysis by third-party Towers Watson (048);
  - BST Occupational Health and Safety Systems Assessment (314-3, 017, 048);

- Blacksmith Group assessment of PG&E management systems (017, 349); and
- Internal audit of progress of the safety action plans developed under the Zero in on Safety Program.
- Benchmarked with General Electric, Ford, and DTE Energy to develop integrated planning process. (040, 796)
- First Hall and Associates end of year assessment on PG&E’s safety program completed in 2012; conducted each end-of-year thereafter. Hall and Associates is led by Jim Hall, the former Chairman of the NTSB. (017, 043, 788, 791)

#### *Public Safety*

- Overhauled Enterprise Risk Management (ERM) program. (317, 472, 635)
- As part of the response to criticisms and recommendations related to the company’s response to San Bruno, PG&E established EP&R and EMAP. (004 Supp 001, 788-789, 840)
- 11 public safety measures began being tracked in 2011 for Safety Dashboard. (666)

### **Gas Operations**

#### *Safety Culture*

- Gas Matters newsletter launched. (314-40, 178, 672)

#### *Employee Safety*

- Field Safety Specialist positions created. (314-2, 712)

#### *Safety Governance and Leadership Changes*

- Outside gas executive Nick Stavropoulos hired to lead the Gas business and the company began hiring gas leaders, engineering and data scientists from across the industry to help drive safety changes throughout the organization.
- All-day, monthly meeting called the “Keys to Success” meeting, or “Keys” meeting for short, were established to provide status on goals, metrics, accomplishments, challenges, and next steps. (314-36, 081, 166)
- Risk and Compliance Committee established. (314-37, 160)

#### *Benchmarking / Third-Party Assessments*

- Audits completed by Boots and Coots International of Los Medanos (field wellhead), McDonald Island (field wellhead and firewater system), and Pleasant Creek (field wellhead) gas storage facilities.
- PricewaterhouseCoopers completed Records and Information Management assessment. (017 Supp 002)
- Third party Mosaic completed Gas Training Improvement Project. (004 Supp 001, 019)
- Completed first four of 12 NTSB safety recommendations.

#### *Public Safety*

- Gas Safety Excellence strategic framework adopted combining elements of safety culture, process safety, and asset management. (004, 013, 788, 790)

- Pipeline Safety Enhancement Plan filed at the CPUC and execution of plan began. Aspects of the plan included significant capital investment related to pipeline strength testing, pipeline replacement, pipeline retrofitting to accommodate the use of in-line inspection tools, valve automation, enhancements to SCADA system, pipeline records integration, and interim safety enhancement measures. (013)
- 6,750-mile Transmission Pipeline Centerline Survey launched. (004, 314-39, 854)
- Picarro gas leak survey technology began being used. This technology is 1,000 times more sensitive than traditional equipment in order to help find and fix leaks before they become a problem. (314-38, 164, 337, 360, 672)
- Reduced pressure on 130 miles of pipeline in HCAs. (013, 783)
- Overall in 2011, PG&E conducted strength tests on 163.5 miles of gas transmission pipeline and verified strength test pressure records for an additional 50.9 miles of pipeline, for a total of approximately 214.5 miles (013 Atch 002)
- Validated MAOP which entailed gathering and validating pipeline records.
- Used new in-line camera technology following hydrostatic pressure tests to inspect interior girth and longitudinal seam welds.
- Installed remote gas shutoff valves based on a best-practice risk analysis system.
- Retrieved and scanned more than 1.2 million paper documents going back more than 50 years to substantiate current gas pressure levels and associated operating safety margin in all HCAs.
- Upgraded software tools (Supervisory Control and Data Acquisition, or SCADA) to enable enhanced surveillance of gas system and to speed response to emergency indicators.
- Increased software capability (Geographic Information System, or GIS) to track and integrate repair history, technical specs, and inspection results to enable risk-based pipeline replacement and maintenance decisions.
- Commenced design and construction of new Gas Control Center. (314-42, 337)
- Conducted an internal review of operating practices that could have an impact on public safety. (869)
- Notified all customers and municipalities of their proximity to gas pipelines. (870)
- Since October 2010, 59 automated remote control valves installed. (090 Atch 003)
- Established Gas Operations Emergency Preparedness Team. (013 Atch 001)
- Formed a team of eight Public Safety Specialists, composed mostly of former fire and law enforcement leaders. Among other responsibilities, the team conducts approximately 500 free “First Responder Workshops” annually and meets with each fire department with PG&E gas facilities in its territory to discuss contingency plans. (788, 792)

## **Electric T&D**

### *Safety Culture*

- Reach Every Employee initiative created. (314-24, 875)

### *Employee Safety*

- Employee Knowledge and Skills Program developed and piloted with full implementation in 2013. (314-27, 078, 380-384, 424-425, 559, 668, 675, 682)
- Field Safety Specialist positions created for Electric Distribution. (314-2, 146, 712)
- Ergonomics Program (office and industrial) established. (314-26)
- New fall protective equipment and training implemented to provide 100 percent fall protection. (078)
- Improved tailboard procedure and training. (078)

### *Safety Governance*

- Developed Electric Operations Improvement Plan informed by various independent assessments conducted following San Bruno. Areas of improvement were identified and leaders were tasked with developing improvement plans tied to specific focus areas (public/system safety, employee safety, compliance, customer satisfaction, reliability, and work efficiency). (505)
  - Made multiple organizational changes to help implement improvement plans, including creating vertically organized functions for Transmission Operations and Distribution Operations and creating organizational units focused on:
    - Continuous improvement, strategic planning, and performance management;
    - Asset management focused on public safety;
    - Centers of excellence for project management and engineering; and
    - Risk and compliance.
  - Began monthly reporting of metrics and work plans tied to the Electric Operations Improvement Plan and incorporated those plans into the new multi-year operating plan as part of new integrated planning process
- Electric Distribution Safety Council formed. (314-25)

### *Benchmarking / Third-Party Assessments*

- Apprentice Lineman Benchmark Study completed. (473, 669)

### *Public Safety*

- Wires down and emergency response public safety metrics established and benchmarked. (850)
- Created a Public Safety Team, which currently resides within the Emergency Management group. The team is comprised of one program manager and three public safety specialists, with two additional specialists contracted to support during peak fire season.
- Streamlined PG&E's streetlight maintenance process which increased focus on public safety. Streetlight maintenance requests moved to our Outage Management Tool, reducing time to repair from an average of 15 days prior to 2012 to three days currently.
- Began installing manhole covers designed to remain in place in the event of a failure in the vault

## **Generation**

### *Safety Culture*

- Facilitative leadership and crucial conversations training courses implemented at DCP. (314-57, 157)

### *Employee Safety*

- Field Safety Specialist positions created at DCP. (314-2)
- Several DCP refueling outages conducted with zero LWDs.
- Arc flash safety program at Gateway Generating Station received best practice award. (337)

### *Safety Governance*

- Established Dam Safety Advisory Board. (004 Supp 001, 405, 788, 794)

### *Benchmarking / Third-Party Assessments*

- Nuclear Safety Culture Monitoring Panel established. (314-55, 189, 226, 236, 528)
- DCP participation in Fukushima Forum. (004 Supp 001)

### *Public Safety*

- Risk and Compliance Committee formed. (155)
- DCP Emergency Plan updated in response to NRC rulemaking. (314-56)
- Public Safety Program launched in Power Generation including the following elements: Public Education/Public Outreach Program; preparedness/response effort related to emergency action plans and Incident Command System; installation of protective measures, and addressing programmatic enhancements (e.g., on-going benchmarking, risk assessment process, identification of additional standards, and procedures needed). (064)
- Hydro system safety risk mitigation effort enhanced. (064, 503)

## **Appendix B: Example Actions Taken and Accomplishments (2013)**

### **Enterprise-Wide**

#### *Safety Culture*

- Majority of Safety Leadership Workshops completed. (314-10, 025, 045, 050, 447, 568)
- Enterprise plan for CAP developed. (004 Supp 001, 061, 214, 218, 225, 271, 274, 404, 438, 446, 512, 890)
- Being First leadership training programs Executive Lab and Change Leader Roadmap – Leading Transformation began to be offered. (228, 575)
- Began conducting quarterly Know, Feel, Do employee engagement “pulse” survey, including questions related to safety culture. (030, 366, 444, 527, 876)

#### *Employee Safety*

- Senior Leadership Training Committee established. (290)

#### *Contractor Safety*

- Contractor Safety Team formed and Contractor Safety Program pilot launched. (314-15)
- Contractor safety metrics added to Safety Dashboard. (666)

#### *Safety Governance*

- Centralized SEMS deployed to better manage safety data enterprise-wide. Additional implementation steps taken in 2014. (062, 212, 213, 218, 568)

#### *Benchmarking / Third-Party Assessments*

- BST safety culture assessment completed. (314-3, 048, 225, 672)
- Contractor safety benchmarking completed. (049)

#### *Public Safety*

- Published Enterprise and Operational Risk Management (EORM) Standard. (168)
- A workshop based on the Loma Prieta earthquake incidents was conducted to help identify PG&E and public sector resource needs following a catastrophic incident. (851)

### **Gas Operations**

#### *Safety Culture*

- CAP launched for Gas organization. (314-12, 061, 271-274, 512, 890)

#### *Employee Safety*

- Operator Qualifications standards/procedures broadened and strengthened with other ongoing improvements. (058, 233, 275, 307, 418, 650-652)



### *Safety Governance*

- Gas Operations daily operating calls established as a best practice taken from Alaska Airlines. (314-43, 265)

### *Benchmarking / Third-Party Assessments*

- Gas Operations Advisory Group provided technical guidance based on natural gas industry benchmarking and experience to highlight potential opportunities for continuous improvement. (017 Supp 002)
- Benchmarking on training facilities at Enbridge, Atmos, and Northwest Natural completed. Ground breaking of Winters training facility in 2015 with new facility scheduled to be operational in 2017. (182, 724)
- Benchmarking with Boeing, Idaho National Laboratory, and DCPD on CAP programs. (004 Supp 001, 852)
- Completed additional five NTSB recommendations (9 of 12 completed). (043 Atch 002, 853)

### *Public Safety*

- Comprehensive asset management plan for each of eight asset families completed. (004 Supp 001, 314-41, 085)
- Centerline survey completed. (004, 314-39, 854)
- New state of the art gas transmission control center, gas distribution control center, and gas dispatch centers were opened in August 2013, employing the most advanced technology, from which we can monitor the entire system and respond more quickly and effectively to emergencies. (314-42, 337)
- 75 additional automated remote control valves installed. (090 Atch 003)

## **Electric T&D**

### *Employee Safety*

- Driver's Skill and Knowledge Program developed. (314-30)
- Truck rodeos developed and run by grassroots safety teams as a way for employees to conduct peer truck and tool inspections and ensure company vehicles are in safe operating condition. (314-32)
- Enhancement to Proper Protective Equipment (PPE) program to improve protection from step potential conditions by implementing requirements for electric hazard protection boots. (078)
- Revision of protective grounding procedures and replacement of temporary protective grounds completed. (078)
- Ergo tools implementation rolled out, eventually replacing 3,100 legacy tools for Electric T&D line workers. (078)
- Discontinued operation of pad-mounted heavy equipment single pole device to de-energize. (078)
- Field Force Initiative launched to increase the amount of time a supervisor spends in the field with crews. (688)

### *Safety Governance*

- Electric Distribution Rapid Incident Notification developed as an enhancement to Event Reporting Engine database used to house the organization's safety incident data. (314-29, 214, 314)

### *Public Safety*

- Enhancements made to wires down and 911 response metric tracking.
- Top quartile performance in wires down. (337)
- Continued record improvement in electric system reliability.
- Electric T&D GIS systems implemented to consolidate asset data and maps into a single database available to all Electric T&D departments and users. (841)
- Infrared inspections and wires down investigations and mitigations began to be conducted.
- Continued progress in maintenance backlog reduction improvements to network system maintenance and replacement programs.
- Progress on distribution control center consolidation preparations.
- Continued expansion of SCADA system to improve operator visibility and reduce response time to incidents. (842)

## **Generation**

### *Safety Culture*

- Time in the Field / Engagement and Coaching policy implemented at DCPP. (158)

### *Employee Safety*

- DCPP conducted refueling outage with zero LWDs.

### *Safety Governance*

- Organizational Effectiveness Leadership Model introduced at DCPP to promote an open, collaborative, and professional culture and obtain a strong and reliability performance.

### *Benchmarking / Third-Party Assessments*

- GEI Consultants completed public safety assessment for Power Generation. (017)

## **Appendix C: Example Actions Taken and Accomplishments (2014)**

### **Enterprise-Wide**

#### *Safety Culture*

- Collaborated with BST to develop a safety culture roadmap, including development of more comprehensive safety leadership training that would establish the structures, activities, and change approach to enable PG&E to create a self-reinforcing safety culture and various other focus areas. (314-11, 032, 050, 223, 231, 447, 460, 513, 575, 577, 659, 724)
- Built a Safety Culture Team in Corporate Safety and expanded from two to three Directors in Corporate Safety. (339, 659)
- Safety Culture Steering Committee established. (234)
- Safety Leadership Development Program (six BST safety culture workshops), safety 360 assessments and one-on-one safety coaching for leaders began being delivered. (314-14, 032, 050, 171, 177, 222, 223, 225, 231, 447, 460, 513, 575, 577, 724)
- Third party Monitor 360 completed analysis of survey comments from the 2012 and 2014 Premier surveys to identify “narratives” that indicate strategic opportunities that support continuous improvement of PG&E’s safety culture. This report was later utilized to develop a safety communication campaign called “Speak Up for Safety” in 2016. (256, 567, 747)
- Being First leadership training program 4Sight began to be offered. (228, 575)
- Crew Leadership Program, with a focus on safety leadership, launched. (032, 491, 570, 577, 713)
- 5% of the comments in 2014 Premier Survey provided positive responses addressing the company’s renewed commitment to safety (under the category of company progress), which was a significant improvement over 2012 results. This is a reflection of employees being proud to work for PG&E due to the strong safety culture and positive work environment. (015)
- Overall response to the three safety questions was 83 percent: “I feel comfortable discussing safety issues with my supervisor” (91 percent), “My supervisor acts quickly to correct safety issues” (87 percent), and “People in my work group report injuries and incidents, no matter how minor” (71%). (015, 366)

#### *Employee Safety*

- Standard roles and responsibilities established in Corporate Field Safety Operations. Some specialists moved to LOBs while some remained in Corporate Safety. (314-16, 004, 049, 223)
- Spans and Layers Program launched and Organizational Effectiveness survey completed. (029, 033, 459, 741)
- Verification of Keys to Life through regulatory and historical incident data review and completion of risk assessments with Compliance and Risk Assessment Management workgroup. (724, 872)

- Enhanced communications, reporting, training, and support to improve timely reporting through 24/7 Nurse Report Line. (724)
- Timely Reporting of Injuries, a leading indicator metric, added to Safety Dashboard. (666)
- Baseline Training Initiative launched. (292)

#### *Contractor Safety*

- Contractor Safety Program established. (314-15, 004 Supp 001, 049, 054, 063, 072, 075-077, 084, 087-089, 096, 099-101, 108, 111-113, 183-186, 195-203, 254, 309-310, 322, 372, 385-390, 426-428, 431-435, 490, 504, 506-510, 519-524, 537, 543-544, 553-558, 561-563, 585-599, 611, 643-649, 672, 724, 758-761, 765, 863, 867)

#### *Safety Governance*

- Safety governance structure evolved with establishment of Chairman's Safety Council and LOB safety councils that affirmed participation of grassroots safety team members and union representation. (314-17, 224, 343, 365)

#### *Benchmarking / Third-Party Assessments*

- UC-Berkeley Center for Catastrophic Risk Management completed evaluation of PG&E's risk management framework. (017, 855)
- Safety roles and responsibilities benchmarking completed. (049, 822-823)

#### *Public Safety*

- Development of enterprise-wide risk-informed RIBA process and RET for core operational LOBs. (314-35, 039-040, 168, 204, 315, 640, 672, 856)
- Two full-scale company exercises were conducted to test emergency response processes including base camp execution, resource mobilization, damage modeling, and gas and electric response alignment.
- Successfully responded to Napa Earthquake, highlighting effectiveness of new processes, tools, and other efforts since San Bruno. PG&E recognized by Edison Electric Institute for its outstanding response. (314-46)

## **Gas Operations**

#### *Safety Culture*

- CAP mobile application implemented. (314-47)

#### *Contractor Safety*

- Established Gold Shovel Standard, a first-of-its kind excavation safety program for contractors. (004 Supp 001)

#### *Safety Governance*

- Gas Operations Training Governance Team established. (229, 724, 857)

### *Benchmarking*

- Began participation in American Gas Association peer reviews. (314-49, 165)

### *Third-Party Assessments/Certifications*

- One of the first gas utilities in the world to receive PAS 55 / ISO 55001 certification, industry leading standards for asset management. (314-45, 004 Supp 001, 005, 017, 182, 337, 672)
- Blanton Godfrey and Roger Hoerl completed evaluation of Gas Operations and Safety and Shared Services Quality Management System. (017, 053)

### *Public Safety*

- Super Gas Ops and Super Crews implemented to improve management processes around operations, including non-emergency leaks. (314-44, 163, 164)
- The last identified section of cast iron pipeline in PG&E's gas service territory was removed from use. (314-48)
- 74 additional automated remote control valves installed. (090 Atch 003)
- Completed a multi-year effort to consolidate and digitize more than 12 million pages of gas service records associated with 3.3 million gas distribution services. (043 Atch 004)
- Consolidated more than four million records related to Gas Transmission pipeline system from 60 field offices across Central and Northern California into an electronic database that can be accessed from anywhere.
- Provided gas professionals working in the field with network-connected laptops to access real-time gas distribution records and maps. This information is electronically stored and available for all employees to use. (043 Atch 004)

## **Electric T&D**

### *Employee Safety*

- A PG&E team of linemen from Grass Valley won the International Lineman's Rodeo competition in 2014 and did so using all PPE safety equipment (only team to do so). (337, 858)
- SIF Prevention Program pilot. (724)
- Arc deflection tool implemented. (078, 859)
- Electric Operations Training Governance Team established. (398, 401, 485, 600, 603)

### *Public Safety*

- Centralized the control and handling of 911 emergency response calls for events such as downed power lines.
- Top quartile performance in wires down. (337)
- Improvements were made to the wires down forecast model to include weather day and non-weather day information to better understand events not related to weather. This provided better insights to Blue Sky day conductor performance and improved forecasting performance.
- Top decile performance in 911 response. (337)

- Continued record improvement in electric system reliability.
- Continued deployment of GIS technology to consolidate and improve asset data. To improve visibility of risk conductor splice, data was migrated into the legacy GIS system (MapGuide).
- Completion of electric distribution maintenance backlog effort.
- Improvements made to network system maintenance and replacement programs.
- Opened new distribution control center in Fresno to oversee the electric distribution system; this regional center—one of three opened by the end of 2016—is part of a consolidation of 15 division-level centers, enhancing grid reliability, enabling quicker response to outages and emergencies, and providing visibility to PG&E’s entire distribution grid.
- Expanded industry-leading Vegetation Management Program in response to drought impacts on trees near power lines through creation of a new program to remove dead and dying trees, increasing aerial patrols, and increasing funding to support local community FireSafe Councils. PG&E’s Vegetation Management Program has been consistently recognized by the Arbor Day foundation.

## **Generation**

### *Employee Safety*

- Guardian field observation tool deployed at DCP. (059)
- DCP completed two refueling outages with zero LWDs.
- Power Generation’s Qualified Electrical Work/Qualified Person (QEW/QP) Job Performance Measures (JPMs) initiative launched. (676)

### *Benchmarking / Third-Party Assessments*

- Completed hostile action-based event exercises and recognized for best-in-class benchmarking. (337)

### *Public Safety*

- Expanded public safety outreach efforts with focus on educating communities within the DCP Emergency Planning Zone. (004 Supp 001)
- DCP received 2014 Nuclear Energy Institute Top Industry Practice Award for public outreach efforts. (337)

## **Appendix D: Example Actions Taken and Accomplishments (2015)**

### **Enterprise-Wide**

#### *Safety Culture*

- BST began certifying in-house talent to provide safety leadership development and sustainable safety leadership coaching. (460, 513)
- CAP launched for Safety and Shared Services organization. (314-12, 061, 512)
- Held first annual Officer and Director Safety Summit, an all-day annual meeting attended by PG&E officers and directors with a focus on safety. (575)
- Being First leadership training program Change Leader Roadmap – User Training began to be offered. (228, 575)
- Consolidated information from employee surveys and analyzed it for safety trends. (004-5, 031)
- Redesigned safety recognition program to end the practice of rewarding employees simply when no injuries were reported. (149-150, 480-481)
- STIP percentage of pay tied to safety performance increased from 40 percent to 50 percent. (004, 023)
- LTIP added 5 percent component tied to safety. (004)

#### *Employee Safety*

- Workforce Health team in Human Resources combined with the Corporate Safety team in Safety and Shared Services to better link these efforts. (314-18, 253)
- SIF Prevention Program developed with assistance from BST and began roll out enterprise-wide. Operational LOBs completed analysis to identify exposures in their work with the potential to result in SIF incidents. Observations and pre-job briefings utilized to raise awareness of such exposures and ensure steps are taken to mitigate them. (314-20, 254, 466, 490, 496, 583, 633, 722, 724)
- Enterprise causal evaluation standard developed and a cross-functional Causal Evaluation Review Committee established; LOB causal evaluation procedures approved and implemented and training plan developed and implemented. (203, 495)
- Industrial Athlete Program rolled out to initial targeted sites. (314-23, 342, 482, 724, 798)
- Keys to Life standards developed and implemented and Keys to Life Training audit completed. (724, 872)
- Cal/OSHA 30-hour training was provided to all field safety specialists. Field safety specialist knowledge and skills assessments were completed thereafter. (724)
- Began proactively ordering vehicles with backup cameras that were scheduled for capital replacement. (724)
- Completed distracted driving analysis and phone-free driving policy developed and voluntary commitment period. (314-19, 452, 531, 724)
- Telogis technology identified for most high risk areas and job classifications in Electric, Gas, and Customer Care and began deployment in limited number of vehicles. (314-13, 060, 582)

- Spans and Layers Standard and Procedure for Setting Span Ranges published. (033, 741)
- Job Hazard Analysis (JHA) SEMS-based database management system was completed and went live end of 2015. System stabilization and implementation, through active user training, was completed in early 2016. (062, 724)

#### *Contractor Safety*

- Contractor Safety Standard established, enhanced contract terms included in new contracts for all medium and high risk contractors, and each LOB developed their contractor oversight procedures. (198, 201, 435, 724, 753, 754)
- PG&E engaged a third-party administrator, ISNetwork, to manage the pre-qualification process for contractors performing medium and high risk work. (063, 196-197, 647, 758-760)
- All prime contractors performing medium and high risk work prequalified. (197, 724)

#### *Safety Governance*

- Service level agreements developed to clarify the partnership and division of duties between Corporate Safety and LOBs. (314-22, 050, 730)
- New MVI reporting process implemented. (724)
- 27 safety metrics now being tracked with PG&E's Safety Dashboard including: 14 employee-focused items, 10 public safety items, and 3 contractor safety items. (666)

#### *Benchmarking / Third-Party Assessments*

- Third party ScottMadden completed Safety Benchmarking Survey to benchmark how other companies organize around safety, including the distribution of roles at corporate versus the LOB units/facilities. (147)
- Peer observation program benchmarking completed. (049, 809-811)
- MVI and LWD benchmarking completed. (049)
- Third party ISN produced case study containing peer-to-peer comparisons between PG&E and other utilities' grading systems. (647)

#### *Public Safety*

- Public safety communication campaigns launched for: safe-digging (811); wires down; metallic balloons; earthquake and winter storm preparedness; and customer education on carbon monoxide, drought/wildfire safety, storm safety, water safety, summer safety, and general safety. (004 Supp 001)
- Designed and executed a two-day full-scale exercise focused on testing the mobilization of incident management teams, the deployment of two large scale base camps and a micro site, the testing of new satellite communications technology, and the declaration of a National Response Event and requests for mutual assistance.
- Completed consolidation of all emergency response plans into a single CERP. (468)



## **Gas Operations**

### *Employee Safety*

- Guardian field observation tool deployed. (059)
- Ground breaking on new Gas Operations Technical Training Center in Winters. (314-52, 337)
- Motor Vehicle Safety Program implemented to influence safe driving through the application of real-time alerts, self-corrective actions, coaching, training, and regular reporting to identify trends and address safety risks. (060, 497, 579, 580, 581, 582, 724)
- Personal Protection Equipment Matrix developed. (323)

### *Third-Party Assessments/Certifications*

- Davies Consulting completed an assessment of PG&E's risk, asset, and investment management programs, including their integration. (640-641)
- One of the first gas utilities in the U.S. to receive API 1173 certification, new industry gold standard for pipeline safety and safety culture. (314-51, 004 Supp 001, 005, 176, 182, 337, 672)
- 11<sup>th</sup> of 12 NTSB recommendations closed. (314-53)

### *Public Safety*

- Pathfinder, Gas Operations' Gas Distribution GIS system, implemented to map, reconcile and analyze the data and events that take place during work on PG&E distribution assets. (314-50)
- Achieved top-decile performance in response time to gas odor calls. (337)
- Safely completed largest LNG/CNG project to support hydro tests and maintenance in Santa Cruz Mountains.
- 18 additional automated remote control valves installed. (090 Atch 003)
- PG&E gas safety leader Steve Redding honored with national award by the American Gas Association for detection, prevention, and repair of natural gas leaks. (179, 337)
- Published Quality Management System Manual. (053)

## **Electric T&D**

### *Safety Culture*

- A multi-year program was implemented to emphasize the use of near hits to engage employees in speaking up about safety and improve reporting quality. Year 1 (2014) focused on reporting. Year 2 focused on increasing participation (percent of employees who submitted at least one near hit) and closing corrective actions. Year 3 focused on quality of near hits and sharing high impact near hits more broadly (weekly Electric T&D-wide e-mail summarizing near hit submissions).

### *Employee Safety*

- Field Safety Specialist positions created for Electric Transmission. (314-2, 146, 712)
- Guardian field observation tool deployed. (059)

- Motor Vehicle Safety Program implemented to influence safe driving through the application of real-time alerts, self-corrective actions, coaching, training, and regular reporting to identify trends and address safety risks. (060, 497, 579, 580, 581, 582, 724)
- Additional arc protection tool implemented. (078)
- Electric Distribution Supervisor Manual published. (445)
- Coaching and Mentoring Training for electric apprentices introduced. (542)

### *Public Safety*

- Top decile performance in 911 response. (337)
- Seventh year of record improvement in electric system reliability.
- Improvements made to network system maintenance and replacement programs, including replacing oil-filled transformers in high-rise buildings.
- Opened new distribution control center in Concord.
- Electric Transmission GIS implementation completed. (841)
- Successful 2015 wildfire response and partnership with CalFIRE, which was aided by our earlier action to hire public safety specialists in electric to build this relationship.
- Expanded response to drought impacts on trees near power lines, removing over 20,000 dead and dying trees, increasing aerial patrols, and adding ground patrols of lines in high fire risk areas
- Began implementing the use of new technologies such as LiDAR and imaging technology to enhance vegetation management inspections to identify additional trees that may pose a hazard to power lines.

## **Generation**

### *Safety Culture*

- Implemented “Communicating Safety” through DCPD Site Alignment Workshops, focused on long-term safety, reliability, and affordability topics. (159)

### *Employee Safety*

- Motor Vehicle Safety Program implemented in Power Generation to influence safe driving through the application of real-time alerts, self-corrective actions, coaching, training, and regular reporting to identify trends and address safety risks. (060, 497, 579, 580, 581, 582, 724)
- Power Generation’s Driver Awareness Team (DAT) and driving rodeos were recognized at the BST Safety in Action Conference. As a result, BST invited PG&E’s DAT to share best practices in 2016 and 2017. (337)
- Gas-line safety program at Gateway Generating Station received best practice award. (337)
- DCPD conducted refueling outage with zero LWDs.

### *Third-Party Assessments*

- DCPD received 2015 Nuclear Energy Institute Top Industry Practice Award for seismic outreach efforts. (337)

- Dam Safety Advisory Board completed audit of PG&E's Dam Safety Program. (017)
- World Association of Nuclear Operations reviewed DCPD to determine strengths and areas in which improvements could be made in the operation, maintenance, and support of the nuclear units at the DCPD. (017)
- New and extensive analyses performed at the direction of the Nuclear Regulatory Commission to re-confirm that DCPD can safely withstand extreme natural events, including potential earthquakes, tsunamis, and flooding.

*Public Safety*

- Power Generation implemented Lock Out Tag Out (LOTO) instead of Man-On-Line tags for creating safety clearances to ensure that assets are de-energized prior to work being performed on them. This is consistent with best practices implemented in the independent power industry and improved safety protection for crews performing work. Representatives from other utilities have expressed interest in PG&E's efforts in this area. (314-58, 102, 337, 672)
- Power Generation's Generation Risk Information Tool implemented. (314-59, 097)
- Power Generation identified, evaluated, and addressed seven hydro system risk gaps. (314-60, 064)
- Developed and implemented Hydro Public Safety Index metric. (666)
- DCPD established a committee that focused on reliable off-site power, which planned and executed complete overhauls of the 230 and 500 KV switch yards.

## **Appendix E: Example Actions Taken and Accomplishments (2016)**

### **Enterprise-Wide**

#### *Safety Culture*

- Utilized the results of earlier Mosaic data analysis to develop a robust safety messaging campaign called “Speak Up for Safety”; currently deploying posters, brochures, stickers, and more across our service area. (347-4)
- Developed Leading Forward Program 2 on Safety Leadership, incorporating the Safety Leadership Development Program (six BST safety culture workshops) into PG&E’s comprehensive leadership development program. (032, 491, 575)
- Began development of crew lead and officer and director safety training. (734)
- Held second annual Officer and Director Safety Summit, an all-day annual meeting attended by PG&E officers and directors with a focus on safety. (474, 490, 575)
- Safety index established for 2016 Premier Survey and the 85 percent favorable category rating is highest among all categories in Premier survey. (314-21, 718)
- Safety ratings led by 93 percent agreement rating with each of the following statements: “My work group follows safe work practices without taking short cuts”, “I feel free to stop my work if I believe conditions are unsafe”, and “I feel comfortable discussing safety issues with my supervisor.” (718)
- Speak up culture shows significant improvement in 2016 Premier Survey with 84 percent positive response to “I can safely share my thoughts, concerns, and opinions with my supervisor”, up 5 points from 2014. (718)
- Annual compliance and ethics training features “speaking up” and scenarios include safety examples. (024, 397)
- Near Hit reporting continues to trend up, indicative of an improving safety culture where people feel comfortable speaking up. (726)
- Anonymous CAP submissions continue to decrease, demonstrating increased confidence and trust in that channel. (726)

#### *Employee Safety*

- Re-organized Corporate Safety Operations to provide appropriate direction and support to LOB safety teams including creation of Safety Business Partners to ensure consistent senior leadership alignment on safety and a specialized SIF Incident Investigation Team to enhance and improve consistency and effectiveness in the way we analyze safety incidents. (464-466, 733, 838, 882)
- As part of SIF Prevention Program, SIF checklists began to be integrated into standard work procedures and leadership observation tools began to be used to validate their use. (314-20, 223, 254, 466, 490, 583, 633, 722, 724)
- Phone-free driving policy became effective. (314-19, 452, 531, 724, 819)
- Tested, piloted, and implemented Telogis and developed 2017 Telogis deployment schedule, including plan to activate 2,000 vehicles in 2017 starting with groups that have the most preventable MVIs. (734, 807)

- Revised Motor Vehicle Safety Standard published to include requirement for employees to receive defensive driving training based on the type of vehicle the employee most frequently drives, include PG&E's phone-free driving policy, and establish frequency of training is consistent with National Safety Council's recommendation. All employees will receive standard web-based training on driver expectations, new laws and distracted driving. Recommended training for special circumstances based on driver behavior or frequently experienced driving conditions. Training requirements will begin in 2017. (724, 818)
- Enhancements to Keys to Life standards and development of additional communication tools completed. Integration of Keys to Life standard requirements into LOB work procedures and training is ongoing as the LOBs work to review and update each of their respective work guidance documents and training courses, where applicable. (724, 872)
- Corporate Safety Standards and Audit Verification to be completed by year end 2016. (724)
- Timely reporting of injuries becomes STIP metric. (004, 023, 724, 806)
- SIF Exposure %, SIF Exposure Count, and SIF Timely Corrective Actions Completed, all leading indicators, added to Safety Dashboard. (666, 722)
- Serious incidents are trending downward, reflecting the positive impact of PG&E's SIF Prevention and Contractor Safety programs. (726)
- Guardian field observation tool being deployed in Safety and Shared Services, Information Technology, and Customer Care organizations. (059)
- Enhancements to PG&E's training system, My Learning 2.0, implemented. (396)
- Began rolling out on-site clinics and telemedicine kiosks (first pilot was in fourth quarter of 2015). (004, 832)

#### *Contractor Safety*

- All subcontractors performing medium and high risk work will be prequalified by year end. (724)
- All LOBs will fully implement their contractor oversight procedures by year end. (724)
- 
- Contractor Safety Forum and Roundtable held. (322, 390)

#### *Safety Governance*

- Safety governance structure evolved with establishment of Safety and Risk Committee incorporating the Chairman's Safety Council and other safety-related leadership committees such as the Safety Culture Steering Committee. An Executive Safety Committee ensures that strategies and programs are reviewed prior to discussion at the Safety and Risk Committee. (314-17, 037, 230, 343, 475)
- Safety Management System policy established and began SMS gap analysis to be completed in February of 2017. (254, 255, 728, 729, 737, 826-827, 837, 848)
- Established joint Safety Partnership Committee with union (694, 740).

### *Benchmarking / Third-Party Assessments*

- Third party Mosaic completed PG&E Training Governance and Effectiveness Benchmark Study. (020, 569)
- Davies Consulting completed evaluation of forecasted risk reduction of various motor vehicle safety strategies. (324)
- Safety and Shared Services' Supplier Quality Assurance earned an international certification for quality management - ISO 9001. (873)

### *Public Safety*

- Published RIBA Scoring Standard. (204)
- Completed the deployment of nearly 10 million electric and gas smart meters to track real-time energy use and detect outages.
- To address cybersecurity risks, a cybersecurity annex was completed and added to the CERP and EP&R successfully conducted PG&E's first cybersecurity functional exercise in August of 2016. The exercise focused on unified operational coordination, incident management, crisis communications and information sharing, and external communications and public messaging.

## **Gas Operations**

### *Safety Culture*

- Safety Week initiative launched. (689, 871)

### *Employee Safety*

- Telogis technology (real-time driver feedback) installed in vehicles for most high risk areas and job classifications. (314-13, 060, 582, 807, 836, 849)
- Recipient of American Gas Association (AGA) Safety Awareness Video Excellence award for external video category for video submission, "[Hear from Jamir](#)," featuring PG&E employee Jamir Dixon who delivers an important message about "Educating California Families and Communities about Safe Digging and 811". (179)
- Supervisor Enablement Initiative launched to increase the amount of time a supervisor spends in the field with crews. (688)

### *Third-Party Assessments/Certifications*

- Became first gas utility to earn certification in RC 14001, the chemical industry's standard for process safety. (004 Supp 001, 017, 173, 337)

### *Public Safety*

- Mariner, Gas Operations' Gas Transmission GIS system, implemented. (314-54)
- Installed five additional automatic, remote controlled valves for a total of 240 such valves on the system (as of October).
- Safely completed an even larger liquefied natural gas/compressed natural gas project to support hydro tests and maintenance in Redding.
- Completed Millionth Picarro survey.

- PG&E gas safety leader Austin Hastings recognized by American Gas Association for outstanding contributions to natural gas distribution system. (179, 337)

## **Electric T&D**

### *Safety Culture*

- CAP launched for Electric T&D organization. (314-12, 061, 512)

### *Employee Safety*

- Telogis technology (real-time driver feedback) installed in vehicles for most high risk areas and job classifications. (314-13, 060, 582, 807, 836, 849)
- Electric T&D grass roots employee-led team won first place in the 2016 International Ergo Cup at the “Applied Ergonomics Conference” organized by the Global Organization of Ergonomics. (337)
- Rigging training and inspection process improvements made. (078)

### *Benchmarking / Third-Party Assessments*

- Apprentice Lineman Benchmark Study completed. (473, 669)

### *Public Safety*

- Expanded response to drought impacts on trees near power lines removing over 200,000 dead and dying trees and increasing aerial patrols and adding ground patrols of lines in high fire risk areas.
- Opened new distribution control center in Rocklin.
- Expanding imaging and analysis technology using LiDAR surveys to further enhance vegetation management inspections to identify additional trees that may pose a hazard to power lines.

## **Generation**

### *Safety Culture*

- CAP launched for Power Generation organization. (314-12, 061, 404, 512, 890)
- Facilitative leadership training program implemented in Power Generation. (314-61, 157)
- Launched Generation eConnect and a Monthly Alignment Video on safety topics and current initiative. (874)

### *Employee Safety*

- Field Safety Specialists moved into Power Generation organization. (314-2, 712)
- Guardian field observation tool being deployed in Power Generation. (059)
- DCPD conducted refueling outage with zero LWDs.

*Safety Governance*

- Generation Safety Council established following merger of Power Generation and Nuclear Generation into a single organization. (314-62)

*Benchmarking / Third-Party Assessments*

- DCP's maintenance and technical national academy training programs renewed by the Institute of Nuclear Power Operations (INPO) with no major issues identified.

*Public Safety*

- DCP reliability industry-leading.
- DCP successfully implemented the post-Fukushima emergency response "FLEX" equipment program.



**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 2**  
**NORTHSTAR RECOMMENDATIONS**

PACIFIC GAS AND ELECTRIC COMPANY  
CHAPTER 2  
NORTHSTAR RECOMMENDATIONS

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PACIFIC GAS AND ELECTRIC COMPANY  
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1                                   **PACIFIC GAS AND ELECTRIC COMPANY**  
2   **CHAPTER 2**  
3                                   **NORTHSTAR RECOMMENDATIONS**

4   **A. Introduction**

5           My name is John Higgins. I am Vice President of Safety and Health and the  
6   Chief Safety Officer at Pacific Gas and Electric Company (PG&E or the  
7   Company or the Utility). In that capacity, I am responsible for the occupational  
8   health and safety of PG&E’s employees and contractors and supporting the lines  
9   of business (LOB) focused on the safety of the public.

10          The purpose of my testimony is to respond to Questions 1 through 3 of the  
11   Assigned Commissioner’s Ruling (ACR) dated November 17, 2017. These  
12   questions pertain to the 67 recommendations, of which 61 were directed to  
13   PG&E, contained in the NorthStar Report.

14          In summary, PG&E’s responses to Questions 1 through 3 are as follows:

15               **Question 1:** *Should the Commission adopt the recommendations in the*  
16   *NorthStar Report? If so, what method or process should the Commission use to*  
17   *implement those recommendations? What method or process should the*  
18   *Commission use to monitor implementation of those recommendations?*

19          The NorthStar recommendations are summarized in the table below. PG&E  
20   has reviewed all recommendations in the Report, and identified a total of  
21   67 recommendations, i.e., after combining all overlapping recommendations and  
22   counting each of those only once.<sup>1</sup>

23          PG&E agrees with all of the 61 recommendations directed at PG&E,  
24   commits to complete most recommendations by the end of 2018, and  
25   supports their adoption by the Commission. Of the six recommendations  
26   directed at the Commission, PG&E supports these recommendations. These  
27   six recommendations require further Commission action and cannot be  
28   unilaterally implemented by PG&E.

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1   The NorthStar Report, Exhibit I-1, proves a summary of 60 recommendations directed at PG&E. However, PG&E has identified an additional “critical recommendation,” Section F, p. I-10 directed at PG&E. In addition to the 5 recommendations to the California Public Utilities Commission (CPUC or Commission) on pp. I-16 to I-17, PG&E has identified an additional recommendation directed to the CPUC on p. VII-20.

**TABLE 2-1  
SUMMARY OF NORTHSTAR RECOMMENDATIONS FOR PG&E AND CPUC**

Line No.		Critical Recommendations (Page I-10)	Total Recommendations	PG&E Implementation Plans (attached as Appendix 2-A)
1	Directed at PG&E	5 (4 of which are also included in Exhibit I-1)	61 (Includes 60 recommendations from Exhibit I-1 and 1 critical recommendation)	48 (As some plans address multiple recommendations)
2	Directed at the CPUC	3 (All of which are also included in pp. I-16-17)	6 (Includes 5 recommendations from pp. I-16-17 and 1 from p. VII-20)	3 (Describes PG&E actions in addressing critical recommendations for the CPUC)
3	Total	8	67	51

1 PG&E has already established 51 implementation plans for the  
2 recommendations in the NorthStar Report. Therefore, PG&E does not believe  
3 the Commission needs to adopt any additional method or process.

4 PG&E recommends that the Commission monitor implementation through  
5 the submission of an annual report by PG&E to the Safety and Enforcement  
6 Division (SED) on implementation status.

7 **Question 2:** *Should the Commission take any other actions based on the*  
8 *findings in the NorthStar Report that were not specifically set forth in the*  
9 *recommendations?*

10 PG&E believes that the recommendations in the NorthStar Report are  
11 thorough, and are addressed in PG&E's implementation plans and in PG&E's  
12 One PG&E Occupational Health and Safety Plan. Going forward, PG&E  
13 recommends that the Commission review the sustainability and effectiveness of  
14 PG&E's actions in ongoing regulatory proceedings such as the Risk Assessment  
15 and Mitigation Phase (RAMP) and/or General Rate Case (GRC) proceedings.

16 **Question 3 and 3.1:** *At the August 1, 2017 Prehearing Conference,*  
17 *PG&E's Corporate Safety Officer...stated that the utility is moving to comply with*  
18 *the "vast majority" of recommendations in the NorthStar Report...PG&E should*  
19 *specify what is being implemented currently, how the recommendations are*  
20 *being prioritized, and the schedule and manner of future implementation of each*  
21 *recommendation.*

1 Included as Appendix 2-A to this testimony is a matrix identifying each of the  
2 51 implementation plans and their corresponding NorthStar recommendations  
3 as well as the plans themselves, including milestones and timelines for  
4 completion. Details regarding PG&E’s prioritization process are provided in  
5 Chapter 3. PG&E’s implementation plans have also been aligned with the One  
6 PG&E Occupational Health and Safety Plan, discussed in detail in Chapter 3.

7 **Question 3.2 and 3.3:** *PG&E indicated that some of the recommendations*  
8 *“require further evaluation and discussion,” particularly those related to*  
9 *executive incentive compensation and performance based-ratemaking...PG&E*  
10 *shall specify its concerns about these recommendations and how the utility*  
11 *proposes to address these concerns.*

12 PG&E believes that further discussion regarding the recommendations  
13 pertaining to compensation should be evaluated in the context of PG&E’s GRC,  
14 where compensation issues have historically been addressed in a holistic  
15 manner. This recommendation is supported by the express language of the  
16 Commission’s decision in PG&E’s 2017 GRC.<sup>2</sup>

17 In addition, three of the NorthStar Report’s “critical recommendations”  
18 require further Commission action and cannot be implemented unilaterally by  
19 PG&E and are more appropriately addressed in other proceedings.<sup>3</sup>  
20 Recommendation F-6—creating meaningful, consistent routine reporting of  
21 safety performance and metrics to the CPUC by all major California investor-  
22 owned utilities (IOU)—is already being addressed in the Safety Model  
23 Assessment Proceeding (S-MAP) and should not also be the subject of this  
24 proceeding, particularly in light of the fact that is intended to include all the major  
25 California IOUs. Recommendation F-7—creating a non-punitive system for  
26 reporting actual and potential safety incidents to the CPUC—also appears to be  
27 broader than PG&E and should be examined in a proceeding that includes the  
28 other major California IOUs and interested stakeholders. PG&E believes  
29 recommendation F-8—consideration of a Performance-Based Ratemaking  
30 (PBR) mechanism that includes a safety element—is more appropriately  
31 considered in PG&E’s 2020 GRC.

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2 D.17-05-013, pp. 176-177.

3 “Critical recommendations” are listed in the NorthStar Report, Section F, p. I-10. PG&E refers to these recommendations as F-1 through F-8.

1 **B. Witness Qualifications**

2 I graduated from the University of Massachusetts in 1988 with a Bachelor of  
3 Science degree in Chemical Engineering. I received a Master’s of Business  
4 Administration degree in 1996 from the University of Massachusetts. I have  
5 been the Vice President of Safety and Health at PG&E since March 2017, and  
6 the Chief Safety Officer since May 2017. Previously, I held the position of Vice  
7 President of Gas Transmission and Distribution (T&D) Operations. I joined  
8 PG&E in 2012 as Director of Gas Operations.

9 Prior to joining PG&E, I was a Director of Field Operations and Construction  
10 at National Grid US from 2007-2012, where I led the damage prevention process  
11 and the Safety Improvement process team, among other field functions. I was  
12 responsible for management of 300 employees operating across three states  
13 and was responsible for leading field safety performance and reducing  
14 third-party damages through a matrixed organization.

15 From 1987-2007, I held various positions of increasing responsibility for  
16 engineering and operations of gas systems, first at Colonial Gas Company and  
17 later at BostonGas and KeySpan Energy Delivery.

18 **C. Background**

19 Before addressing the specific questions posed in the ACR in greater detail,  
20 it may be helpful to provide the context of the NorthStar Report and PG&E’s  
21 actions in support of, and in response to, the Report.

22 NorthStar began its review of PG&E’s organizational culture and  
23 governance as they relate to safety in April 2016 and conducted detailed  
24 fieldwork from May to December 2016.<sup>4</sup> As NorthStar acknowledges in the  
25 Report, it was provided “unfettered access to PG&E personnel and executive  
26 management meetings and processes,” including Board committee meetings,  
27 executive management meetings, and internal self-assessments.<sup>5</sup>

28 During the course of NorthStar’s review, PG&E responded to about 900 data  
29 requests and enabled NorthStar to conduct more than 250 interviews.<sup>6</sup> PG&E  
30 also provided NorthStar with a detailed whitepaper describing the safety-related

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4 NorthStar Report, p. II-1.

5 NorthStar Report, p. I-6.

6 NorthStar Report, p. II-1.

1 activities that PG&E has undertaken since the tragic accident that occurred in  
2 San Bruno in September 2010.<sup>7</sup>

3 On May 8, 2017, 13 months after it began its review, NorthStar issued its  
4 Final Report. The Report is over 300 pages, contains dozens of findings and  
5 conclusions, and offers eight critical recommendations, 61 recommendations  
6 directed at PG&E, and six recommendations directed at the Commission.<sup>8</sup>

7 While NorthStar was conducting its review, PG&E was actively working on  
8 an enterprise-wide employee and contractor safety plan.<sup>9</sup> Once the NorthStar  
9 Report was issued, PG&E reviewed each of the Report's 67 recommendations  
10 to determine whether they were already addressed in the safety plan, and if not,  
11 how to best incorporate them. Implementation plans addressing 22 (36 percent)  
12 of the NorthStar recommendations were completed in 2017. For those  
13 recommendations that could not be completed by the end of 2017, PG&E  
14 developed an implementation plan and schedule for each one, leveraging  
15 in-progress and planned activities.

#### 16 **D. Overview of Recommendations**

17 The following section provides a high-level assessment of the  
18 67 NorthStar recommendations and a description of PG&E's response.<sup>10</sup>  
19 Details of PG&E's implementation of these recommendations is set forth  
20 more fully in Attachment 2-A, which contains descriptions of all of PG&E's  
21 51 implementation plans.

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7 NorthStar Report, p. II-1. A copy of PG&E's whitepaper is attached to Chapter 1 as Appendix 1-A.

8 See Table 2-1 above for a breakdown of the recommendations.

9 Details about PG&E's Integrated Planning Process and the One PG&E Occupational Health and Safety Action Plan are provided in Chapter 3.

10 Due to the detailed nature of the NorthStar Report, PG&E will not address every finding or conclusion in this testimony. Instead PG&E has focused on the specific NorthStar recommendations identified in Table 2-1 above. While PG&E generally agrees with the Report, and particularly agrees with all of the recommendations, by not addressing each and every finding or conclusion in the Report, PG&E does not intend thereby to accept each and every such finding or conclusion.



1       **1. Executive Summary**

2               In the Executive Summary, NorthStar identifies eight recommendations  
3 as the “most critical recommendations for PG&E and the Commission.”<sup>11</sup>

4 They are:

- 5       • Development of an implementation plan for NorthStar’s  
6               recommendations, and periodic updates by PG&E on its implementation  
7               status;
- 8       • Clear definition of supervisory requirements, including an assessment of  
9               workload, field monitoring, time requirements, and staffing levels;
- 10      • Expedited completion of the safety leadership training for crew leads  
11             and foremen;
- 12      • Development of a comprehensive safety strategy, followed by the  
13             identification of necessary corporate and LOB safety resource  
14             requirements;
- 15      • Greater coordination among the LOBs and Corporate Safety to increase  
16             consistency, improve efficiencies, minimize operational gaps, and  
17             facilitate sharing of best practices;
- 18      • Creation of meaningful, consistent, routine reporting of safety  
19             performance and metrics to the CPUC by all major California IOUs;
- 20      • Creation of a non-punitive system for reporting actual and potential  
21             safety incidents to the CPUC to encourage reporting and facilitate  
22             lessons learned sharing among all California IOUs; and
- 23      • Consideration of a PBR mechanism that includes a safety element, to  
24             be included in the rate design phase of the Test Year 2017 GRC.

25               PG&E supports all eight of the recommendations and is implementing  
26 the first five specifically directed at PG&E, two of which have been  
27 completed and three of which will be completed by December 2018. PG&E  
28 has completed implementation of a Program Management Office (PMO)  
29 reporting directly to the Chief Safety Officer to provide governance over  
30 implementation of the NorthStar recommendations. Not only has a  
31 comprehensive, companywide occupational safety and health plan been

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<sup>11</sup> NorthStar Report, Section F, p. I-10. Some of NorthStar’s recommendations have been shortened in this testimony, but PG&E’s Implementation Plans pertain to the full, original recommendations.

1 created, the process for continual updating of the Plan and other safety  
2 programs has been built into the annual Integrated Planning Process as  
3 further described in Chapter 3.

4 The last three of NorthStar’s “critical recommendations” require further  
5 action by the Commission and cannot be implemented unilaterally by PG&E.  
6 However, PG&E has developed implementation plans for these  
7 recommendations to ensure support for future Commission action and, in  
8 two cases, to complete internal analysis in preparation for future  
9 Commission action. PG&E recommends the Commission open or expand  
10 the appropriate proceedings to address these three identified issues.

11 PG&E recommends that consideration of a PBR be conducted in  
12 PG&E’s 2020 GRC Phase I, rather than in the rate design phase of PG&E’s  
13 2017 GRC, which is already well underway.

14 In the Executive Summary, NorthStar also identifies  
15 five recommendations specifically directed at the Commission:<sup>12</sup>

- 16 • Eliminate penalties for self-reporting of safety-related incidents by the  
17 California IOUs;
- 18 • Work with all California IOUs to develop a listing and consistent  
19 definitions of key safety-related metrics;<sup>13</sup>
- 20 • Consider the implementation of a PBR mechanism with a fixed safety  
21 component based on traditional ratemaking principles and a variable  
22 adder based on safety performance;
- 23 • Perform periodic audits of the safety programs and culture at PG&E and  
24 potentially the other major California IOUs; and
- 25 • Creation of a multi-agency hot line that PG&E and other IOUs can call  
26 and request assistance to encourage interagency collaboration and  
27 expedite work permits.

28 PG&E supports all of these recommendations. The first three of these  
29 recommendations overlap with the last three “critical recommendations,”  
30 discussed above, and are subject to the same comments with respect to the

---

<sup>12</sup> NorthStar Report, Section H, pp. I-16 to I-17.

<sup>13</sup> SED is already leading an effort to identify relevant safety-related metrics in the S-MAP. That effort includes input from SED, the major IOUs and other interested stakeholders. PG&E recommends that the Commission leverage that work.

1 appropriate forum for further consideration. Implementation of the remaining  
2 two recommendations would also benefit from some form of public process  
3 so that stakeholder input can be considered.

## 4 **2. Strategy and Governance**

5 Chapter III of the NorthStar Report addresses strategy and governance,  
6 and includes several favorable findings and conclusions concerning PG&E  
7 executive management’s “strong commitment to safety” and “willingness to  
8 learn from this review,” as well as the PG&E Board’s support of  
9 “management’s efforts to improve safety.”<sup>14</sup> The Report also includes  
10 several constructive findings and conclusions, which form the foundation of  
11 the five strategy and governance-related recommendations:<sup>15</sup>

- 12 • Add safety to the list of qualifications used in selecting Independent  
13 Directors to the Boards of PG&E Corporation and PG&E;
- 14 • Reassess and stabilize the safety culture change initiatives;
- 15 • Develop a comprehensive safety plan by the end of 2017 that  
16 incorporates LOB and Corporate Safety activities;
- 17 • Clearly define and articulate any new initiatives to improve safety  
18 culture; and
- 19 • Internal Audit should play a more active role in auditing safety controls,  
20 programs, and processes.

21 PG&E supports all five of these recommendations and has completed  
22 implementation of four of the five. The remaining recommendation, related  
23 to defining and articulating new safety culture initiatives, is targeted for  
24 completion by April 2018. PG&E’s One PG&E Occupational Health and  
25 Safety Plan reflects the outcome of reassessing and stabilizing its safety  
26 culture initiatives. The PG&E Corporation Nominating and Governance  
27 Committee has recommended, and the PG&E and PG&E Corporation  
28 Boards of Directors have approved, adding safety to the list of qualifications  
29 used in selecting independent members of the Boards. The 2018 audit plan  
30 has been approved and reflects a broader scope relative to safety.

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<sup>14</sup> NorthStar Report, pp. III-5 and III-14.

<sup>15</sup> NorthStar Report, pp. III-21 to III-22.

### 3. Organization

Chapter IV of the NorthStar Report addresses PG&E’s organizational structure and includes a comprehensive description of PG&E’s executive leadership and safety organization over time. The Report includes favorable findings and conclusions concerning the “positive high-level organizational changes in response to the San Bruno” incident and the “recent changes in PG&E’s overall organizational structure.”<sup>16</sup> The constructive findings and conclusions are reflected in the Report’s seven organization-related recommendations:<sup>17</sup>

- Appoint a Corporate Safety Officer who has both operations and professional safety experience;
- The Corporate Safety Officer should report to the Chief Operating Officer of the Utility and to the Nuclear, Operations, and Safety Committee of the Board;
- Examine workload levels, potential morale issues, and other demands to understand and mitigate the reasons for the high turn-over in the Corporate Safety organization;
- Review the structure, reporting relationships, and staffing levels of the Corporate Safety organization after development of the safety strategy;
- Improve the safety credentials of personnel in PG&E’s safety functions and organizations;
- Simplify and clarify the roles and responsibilities of the Corporate Field Safety Specialists vis-à-vis the LOB Field Safety Specialists; and
- Establish and adhere to minimum qualifications for the Corporate and LOB Field Safety Specialists.

PG&E supports all seven of these recommendations and has completed implementation of two. Specifically, I was appointed as Chief Safety Officer in May 2017, and I have extensive operational and safety-related experience both at PG&E and in prior positions before joining PG&E. I also report directly to Nick Stavropoulos, PG&E’s Chief Operating Officer. The

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<sup>16</sup> NorthStar Report, pp. IV-12 to IV-13, and IV-20 to IV-21.

<sup>17</sup> NorthStar Report, pp. III-21 to III-22.

1 remaining five recommendations are on track to be completed in  
2 March 2018.

#### 3 **4. Field Operations**

4 Chapter V of the NorthStar Report addresses PG&E’s field operations  
5 in terms of observed safety practices and working knowledge of the  
6 Company’s safety initiatives, policies, and procedures. While recognizing  
7 PG&E’s “frequent safety newsletters and safety-related communications”  
8 and field personnel’s “increasing awareness of safety as a corporate  
9 priority,” the Report is critical of the insularity and lack of uniformity across  
10 the business as it relates to safety.<sup>18</sup> Consistent with these criticisms, the  
11 Report includes six recommendations directed at PG&E:<sup>19</sup>

- 12 • Improve processes used to evaluate and translate best practices and  
13 techniques from one LOB organizational unit to others;
- 14 • Have Field Safety Specialists focus on and support the first-line  
15 supervisors: foremen and crew leads;
- 16 • Perform a broad reassessment of all safety programs and initiatives to  
17 evaluate overall effectiveness and eliminate scope overlap;
- 18 • Reevaluate staffing, roles, responsibilities and work requirements to  
19 increase supervisors’ time in the field supervising crews;
- 20 • Increase the training requirements for LOB Field Safety Specialists,  
21 including Keys to Life/Serious Injury and Fatality (SIF) Prevention  
22 Program and a condensed version of the training provided to linemen  
23 and gas service representatives; and
- 24 • Reevaluate the travel requirements placed on employees to reduce the  
25 overall mileage driven.

26 PG&E supports all six of these recommendations and has completed  
27 assessment of safety programs and elimination of overlapping scope  
28 through integration with the One PG&E Occupational Health and Safety  
29 Plan. PG&E has also made significant progress on three others related to  
30 the Field Safety Specialists roles, responsibilities and organizational

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<sup>18</sup> NorthStar Report, pp. V-5 to V-22.

<sup>19</sup> NorthStar Report, p. V-23.

1 alignment to facilitate sharing of best practices with expected completion in  
2 March 2018. The remaining two will be addressed by June 2019.

3 The Report also includes a recommendation directed at the  
4 Commission: to create a multi-agency hot line that PG&E or other utilities  
5 can call and request assistance for interagency collaboration and expedited  
6 work permits. PG&E supports this recommendation. As noted above with  
7 respect to the same recommendation in the Executive Summary, PG&E  
8 believes implementation would benefit from some form of public process so  
9 that stakeholder input can be considered.

## 10 **5. Budgeting and Spending**

11 Chapter VI of the NorthStar Report addresses budgeting and spending,  
12 and includes a comprehensive description of PG&E's Integrated Planning  
13 Process, Risk Evaluation Tool, Risk Informed Budget Allocation (RIBA), and  
14 the S-MAP and RAMP filing.<sup>20</sup> The Report includes five budgeting and  
15 spending-related recommendations:<sup>21</sup>

- 16 • Develop a method of separating “safety” expenditures from routine  
17 reliability and integrity expenditures, possibly as part of the  
18 Commission’s RAMP process;
- 19 • Develop business case support and a record of management approval  
20 for safety initiatives;
- 21 • Develop a method for weighting the value of management-initiated  
22 safety programs comparable to RIBA but focused on management and  
23 training;
- 24 • Move forward with planned implementation of the Power Generation  
25 Integrated Planning Process Portfolio Planning and Management  
26 system for all operational LOBs; and
- 27 • Continue efforts to better link the Integrated Planning Process  
28 Session D to the Session 1 and 2 processes.

29 PG&E supports all five of these recommendations. The first  
30 recommendation has been addressed by implementing a method of tracking

---

<sup>20</sup> NorthStar Report, pp. VI-1 to VI-10.

<sup>21</sup> NorthStar Report, pp. VI-31 to VI-32.

1 mitigation costs related to top safety risks identified in the RAMP filing.<sup>22</sup>  
2 Improvements to the Integrated Planning Process are on track to take effect  
3 for the 2018 Integrated Planning Process cycle and will address the  
4 second and fifth recommendations. The process and software to support  
5 Portfolio Planning and Management will be in place for Power Generation by  
6 December 2018. The quantitative process for evaluating safety programs  
7 will be informed by the methodology under development in the  
8 RAMP proceeding.

## 9 **6. Compensation and Performance Management**

10 Chapter VII of the NorthStar Report addresses PG&E's compensation  
11 and performance management programs and their effectiveness in driving  
12 improved safety performance, and includes a comprehensive description of  
13 PG&E's Short-Term Incentive Plan (STIP), Long-Term Incentive Plan  
14 (LTIP), and Performance Management System.<sup>23</sup> The Report recognizes  
15 that there are "links between safety performance and compensation at most  
16 organizational levels" and that "[t]here are processes by which the Board of  
17 Directors and executive leadership may hold themselves and management  
18 accountable for decisions and actions which may impact safety or PG&E's  
19 safety culture."<sup>24</sup>

20 Consistent with its findings and conclusions, the Report includes seven  
21 compensation and performance management-related recommendations  
22 directed at PG&E:<sup>25</sup>

- 23 • None of the key performance indicators considered for use in measuring  
24 safety culture should be included as an incentive measure (i.e., part of  
25 the STIP or LTIP);
- 26 • Continue to track metrics eliminated from STIP as part of the Business  
27 Plan Review (BPR) process to allow trending;
- 28 • Increase the weighting of safety in the LTIP to more closely align safety  
29 performance and executive compensation;

---

<sup>22</sup> PG&E's RAMP Report dated November 30, 2017.

<sup>23</sup> NorthStar Report, pp. VII-1 to VII-7.

<sup>24</sup> NorthStar Report, pp. VII-11 and VII-14.

<sup>25</sup> NorthStar Report, pp. VII-19 to VII-20.

- 1 • Reevaluate the appropriateness of the Earnings From Operations (EFO)
- 2 component of the STIP;
- 3 • Revisit all STIP metrics and targets in light of the enterprise-wide
- 4 safety plan;
- 5 • Develop a more robust and comprehensive set of BPR metrics
- 6 addressing all aspects of safety; and
- 7 • Improve the internal sharing of best practices.

8 PG&E supports all of these recommendations, and has completed one  
9 related to tracking of former STIP metrics for trending purposes. Others  
10 related to BPR metrics and the structure of the STIP and LTIP are on track  
11 for implementation in February 2018. Improved sharing of best practices will  
12 be implemented in March 2018.

13 **a. Recommendations to PG&E Regarding Compensation**

14 Benchmarking shows that PG&E is leading peer utilities in the link  
15 between incentive compensation and safety.<sup>26</sup> Since the NorthStar  
16 Report was issued, PG&E has been reevaluating the appropriateness of  
17 the EFO and alternative financial measures as a STIP component. At  
18 this time, PG&E management believes that EFO, with a STIP weighting  
19 of 25 percent, continues to be an appropriate measure of financial  
20 performance that balances both customers' and shareholders' interest in  
21 maintaining PG&E's fiscal health. Going forward, PG&E commits to  
22 continuing to evaluate the linkage between safety and both LTIP and  
23 STIP. The appropriate forum for addressing issues of compensation is  
24 in PG&E's next GRC, where issues related to compensation have  
25 historically been addressed in a comprehensive and holistic manner and  
26 where all relevant factors can be considered together.

27 The Commission has expressly ordered that issues related to  
28 compensation and safety should be litigated in PG&E's 2020 GRC.  
29 In PG&E's 2017 GRC, the Administrative Law Judge requested that  
30 PG&E submit a late-filed exhibit on executive compensation and  
31 safety.<sup>27</sup> PG&E's late-filed exhibit provided additional documentation

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<sup>26</sup> See Chapter 4, Section C.

<sup>27</sup> A copy of PG&E's late-filed exhibit in its 2017 GRC is attached as Appendix 2-B.



1 and explanation of PG&E’s executive compensation plans and  
2 programs, including “the role that safety plays in PG&E’s at-risk  
3 compensation” and “how safety metrics included in that compensation  
4 are established and evaluated.”<sup>28</sup>

5 In PG&E’s 2017 GRC decision, the Commission directed PG&E to  
6 include testimony regarding the linkage between compensation and  
7 safety in its next GRC application:

8 We will require PG&E to provide additional information as part of its  
9 next GRC application in order to help the Commission and the  
10 parties to gain a better understanding, at the outset of the  
11 proceeding, of whether and how safety policies, practices and  
12 performance are considered in the total compensation that is paid to  
13 non-represented employees and executives. This information shall  
14 also include information about the governance and level of  
15 engagement by PG&E’s Board in influencing the variable  
16 compensation programs of PG&E.

17 In its next GRC application PG&E is directed to provide testimony  
18 regarding the compensation-related actions taken during the  
19 2017-2019 GRC cycle, supported by relevant workpapers, data,  
20 company documents, and reports containing the following  
21 information:

- 22 1. Describe what Board committees (for example, compensation  
23 committee, safety committee, or other committees) at PG&E  
24 Corporation, and at PG&E, are responsible for determining the  
25 guidelines for establishing any compensation, bonuses,  
26 severances, and benefits.
- 27 2. Describe what direction PG&E Corporation provides to PG&E  
28 in formulating their compensation, bonuses, severances, and  
29 benefits.
- 30 3. Describe the qualifications of the Board members at PG&E  
31 Corporation and at PG&E who are responsible for determining  
32 the guidelines for establishing compensation, bonuses,  
33 severances, and benefits, and what committees they sit on.
- 34 4. Describe the coordination, if any, between the different  
35 committees that are responsible for developing the guidelines  
36 for establishing compensation, bonuses, severances, and  
37 benefits, and the frequency that these committees meet.
- 38 5. Describe the performance metrics and the measures used to set  
39 compensation, bonuses, severances, and benefits for non-  
40 represented employees and executives, and how these are  
41 used to determine them.
- 42 6. If applicable, describe how the compensation structure: creates  
43 long term and sustainable value for the utility; incentivizes  
44 employees; makes executives and managers personally  
45 accountable for safety and operational risks; creates a safer

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<sup>28</sup> PG&E Late-Filed Exhibit (Appendix 2-B), p. 1.

1 working environment and utility system; results in a  
2 demonstrated improvement of the utility's processes, policies,  
3 and performance; discourages below standard performance, or  
4 actions that are contrary to the interests of the utility and the  
5 utility's customers; holds employees, managers, and executives  
6 accountable for failure to comply with management's guidance,  
7 policies and instructions, and for below standard performance.

- 8 7. Describe how engaged and effective PG&E Corporation's Board  
9 is on operations, performance metrics, and safety-related  
10 incidents, including: how often PG&E Corporation's Board  
11 requests reports and/or presentations from PG&E regarding  
12 safety incidents, the effectiveness of risk management plans,  
13 and the effectiveness of operational processes; what PG&E  
14 Corporation's Board did or directed in response to these reports  
15 and/or presentations; and whether and how frequently PG&E  
16 Corporation's Board followed-up or sought updates on the  
17 reports, presentations, and the Board's actions and directions.
- 18 8. Describe how risk management information is used by PG&E  
19 Corporation and PG&E, as follows: how PG&E shares this  
20 information with its employees; describe the type of training or  
21 education that employees receive about management of risks;  
22 describe what processes are in place, if any, that allow the  
23 employees in the field to provide feedback on the management  
24 of risks, and the reporting of unsafe practices or unsafe  
25 incidents.<sup>29</sup>

26 **b. Recommendations to the Commission**

27 Chapter VII also includes four recommendations directed to the  
28 Commission related to compensation and performance management:

- 29 • Assess the effectiveness of the newly introduced 2017 STIP and  
30 LTIP metrics;
- 31 • Eliminate penalties for self-reporting of safety-related incidents by  
32 the California utilities;
- 33 • Working with all California IOUs, develop a listing and consistent  
34 definitions of key safety-related metrics and other information; and
- 35 • Consider the implementation of a PBR mechanism with a fixed  
36 component based on traditional ratemaking principles and a variable  
37 adder based on safety performance.

38 PG&E supports all of these recommendations. For the reasons set  
39 forth above with respect to recommendations to PG&E regarding  
40 compensation, PG&E believes that the first of these Commission-  
41 directed recommendations should be addressed in PG&E's 2020 GRC.

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29 D.17-05-013, pp. 176-177.

1           The remaining three recommendations are largely identical to the  
2           latter three “critical recommendations” identified in the Executive  
3           Summary.<sup>30</sup> PG&E believes that the self-reporting and safety metrics  
4           recommendations should be pursued in a Commission proceeding such  
5           as S-MAP. As previously mentioned, PG&E recommends that any  
6           consideration of a PBR mechanism be pursued in PG&E’s 2020 GRC.

## 7       **7. Recruiting and Training**

8           Chapter VIII of the NorthStar Report addresses recruiting and training,  
9           and includes a description of PG&E’s enterprise-wide safety and  
10          compliance, and technical training programs.<sup>31</sup> The Report contains a  
11          highly detailed set of findings and conclusions, including largely positive  
12          comments about PG&E’s recruiting and training, stating that PG&E’s  
13          processes for new hires “contributes to a positive safety culture,” that the  
14          Safety Leadership Workshops “contributed to the development of an  
15          improved safety culture at PG&E,” and that the Safety Leadership  
16          Development (SLD) Program “has a positive impact on safety culture.”<sup>32</sup>  
17          The Report expresses concerns, however, in several specific areas,  
18          including training of crew foreman and PG&E’s oversight of certain Operator  
19          Qualifications (OQ).<sup>33</sup>

20          Consistent with its findings and conclusions, the Report includes  
21          11 recruiting and training-related recommendations:

- 22          • Accelerate crew foremen safety leadership training;
- 23          • Profile training participants so that office-based organizations generally  
24          do not receive field-oriented safety training ahead of field organizations;
- 25          • Complete the second 360-Degree Survey assessment for SLD program  
26          participants;
- 27          • Conduct mandatory refresher training for Electric T&D, Gas Operations,  
28          and Power Generation field resources;
- 29          • Profile employees to receive Human Performance training;

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<sup>30</sup> NorthStar Report, p. I-10.

<sup>31</sup> NorthStar Report, pp. VIII-1 to VIII-10.

<sup>32</sup> NorthStar Report, pp. VIII-11 to VIII-13.

<sup>33</sup> NorthStar Report, pp. VIII-14 to VIII-47.

- 1 • Develop a monthly OQ status report for the Senior Vice President of
- 2 Gas Operations and the President of Gas Operations;
- 3 • Conduct a review of 2014 OQs to determine if contract employees were
- 4 working on PG&E's system with expired OQs;
- 5 • Perform a feasibility study of PG&E training and testing of contractor
- 6 employees for OQs;
- 7 • Power Generation should continue to update its apprentice programs;
- 8 • Power Generation should work with the Academy to improve the
- 9 timeliness of training completion; and
- 10 • Power Generation should develop a refresher training program, similar
- 11 to Electric T&D and Gas Operations.

12 PG&E supports all 11 recommendations and has completed  
13 implementation of two related to specific LOB improvements. Visibility of  
14 actionable training status reports for Power Generation has been  
15 significantly improved and the same is true for OQ status reports in Gas  
16 Operations. The remaining nine recommendations will be addressed by  
17 December 2018.

## 18 **8. Communications**

19 Chapter IX of the NorthStar Report addresses PG&E's safety-related  
20 communications to the public and employees, including emergency-related  
21 communications and informing the public about the potential hazards  
22 associated with PG&E's business.<sup>34</sup> The Report also describes the various  
23 means by which PG&E measures the effectiveness of its communications.<sup>35</sup>

24 The Report praises PG&E's focus on the importance of safety and  
25 speaking up, but questions the effectiveness and in some cases volume of  
26 certain communications.<sup>36</sup> The Report includes four communications-  
27 related recommendations:<sup>37</sup>

- 28 • Develop and implement a strategic communications plan that does not
- 29 overwhelm employees with too much information;

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<sup>34</sup> NorthStar Report, pp. IX-1 to IX-4.

<sup>35</sup> NorthStar Report, pp. IX-5 to IX-15.

<sup>36</sup> NorthStar Report, pp. IX-16 to IX-38.

<sup>37</sup> NorthStar Report, p. IX-38.

- 1 • Develop a consistent basis for measuring, tracking, and trending  
2 employee attitudes regarding safety culture;
- 3 • Develop and implement programs similar to Electric T&D’s Reach Every  
4 Employee Program in Power Generation and Gas Operations; and
- 5 • Assess the effectiveness of the 2016 Speak Up Culture campaign,  
6 particularly among field resources.

7 PG&E supports all four of these recommendations and has implemented  
8 three. A strategic communications plan is in place to support the One PG&E  
9 Occupational Health & Safety Plan and metrics have been established for  
10 tracking safety culture. The impact of the 2016 Speak Up Culture campaign  
11 has been assessed and the results indicate the effort garnered high  
12 awareness, recall and relevance among employees, and strongly supported  
13 the safety culture they believe exists at PG&E. In addition, the Reach Every  
14 Employee Program will be implemented enterprise-wide by June 2018.

## 15 **9. Safety Reporting/Corrective Action**

16 Chapter X of the NorthStar Report addresses PG&E’s safety reporting  
17 and Corrective Action Program (CAP), including the mechanisms for  
18 reporting employee injuries, motor vehicle incidents, near-hits, serious injury  
19 or fatalities, and corrective actions.<sup>38</sup> The Report provides helpful insight  
20 into ways to improve the effectiveness of the programs, including  
21 nine specific recommendations:<sup>39</sup>

- 22 • Evaluate the adequacy of the information captured by various tracking  
23 systems;
- 24 • Track the costs and relative safety benefits of the CAP and Near-Hit  
25 Programs;
- 26 • Develop an evaluation program to maximize the benefits from CAP and  
27 Near Hit Reporting;
- 28 • Develop an evaluation program for Serious Incident Investigations to  
29 include periodic audits by Internal Audit;

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<sup>38</sup> NorthStar Report, pp. IX-5 to IX-15.

<sup>39</sup> NorthStar Report, pp. X-16 to X-40.

- 1 • Improve documentation of corrective actions for incidents and near hits  
2 subject to a Work Group Evaluation, Apparent Cause Evaluation, Root  
3 Cause Evaluation;
- 4 • Report and track incidents in a consistent manner;
- 5 • Develop a protocol involving concise, targeted, timely communications  
6 to notify other crews, work locations, or LOBs of incidents or  
7 corrective actions;
- 8 • Develop a single, consistent enterprise Causal Evaluation standard; and
- 9 • Compare all LOB Causal Evaluation standards to ensure the processes  
10 are consistent and all required elements are defined.

11 PG&E agrees with all nine recommendations and has implemented  
12 two of them: integration of the Safety and Environmental Management  
13 System and CAP systems to simplify the experience of managing  
14 responses to injuries, motor vehicle incidents and near hits; and developing  
15 the evaluation program for CAP and near hits. The remaining seven  
16 recommendations will be addressed by June 2018.

## 17 **10. Contractor Safety**

18 Chapter XI of the NorthStar Report addresses PG&E’s contractor safety  
19 program.<sup>40</sup> The Report concludes that the Corporate Contractor Safety  
20 group “is properly executing its responsibilities...and is adequately staffed  
21 with personnel with safety experience,” that PG&E’s “prequalification  
22 process is an effective approach to screening contractors based on their  
23 safety records and documented safety policies and programs,” and that  
24 PG&E “communicates lessons learned from contractor...investigations to  
25 PG&E management and to its contractors.”<sup>41</sup> The Report identifies room for  
26 improvement, however, as reflected in its six contractor safety-specific  
27 recommendations:<sup>42</sup>

- 28 • Corporate Contractor Safety should select the projects for review rather  
29 than the LOBs;

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40 NorthStar Report, pp. XI-1 to XI-9.

41 NorthStar Report, pp. XI-9 to X-16.

42 NorthStar Report, pp. XI-17 to XI-36.

- 1 • Determine whether it is feasible to update the language in contracts to  
2 remove all references to the contractor being “solely responsible” for  
3 performing work in a safe manner;
- 4 • Develop formal criteria to close contractor Serious Safety Incident action  
5 items in ISN;<sup>43</sup>
- 6 • Facilitate the sharing of best practices and lessons learned;
- 7 • Update LOB contractor safety procedures to clarify responsibilities and  
8 reflect current organizations and processes; and
- 9 • Institute a contractor on-boarding test in Power Generation.

10 PG&E supports all six recommendations and has implemented five of  
11 them. Unannounced inspections of contractor work are being performed  
12 and have been incorporated into work procedures. Standard contract  
13 language has been modified to remove “solely responsible” references.  
14 Annual safety forums for sharing best practices have been established, one  
15 for PG&E and its contractors and another for benchmarking with peer  
16 California utilities and their contractors. Finally, Power Generation has  
17 implemented an on-boarding process including knowledge checks. The  
18 remaining recommendation will be addressed by June 2018.

19 **E. Question 1: Should the Commission Adopt the Recommendations in the**  
20 **NorthStar Report? If So, What Method or Process Should the Commission**  
21 **Use to Implement Those Recommendations? If So, What Method or**  
22 **Process Should the Commission Use to Monitor Implementation of Those**  
23 **Recommendations?**

24 As described in detail in Section D above, PG&E agrees with all of the  
25 NorthStar recommendations directed at PG&E. PG&E also supports all eight of  
26 the “critical recommendations,” with the caveat that three require further  
27 Commission action and cannot be implemented unilaterally by PG&E. Further,  
28 PG&E supports all of the recommendations directed at the Commission, again  
29 with the caveat that most should be addressed in the appropriate proceedings.

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<sup>43</sup> ISN is the common reference for ISNetworld, a company providing services to contractors and the companies who hire them.

1 PG&E recommends an annual report to SED on implementation status,  
2 including evidence of completion.<sup>44</sup>

3 **F. Question 2: Should the Commission Take Any Action Based on the**  
4 **Findings in the NorthStar Report That Were Not Specifically Set Forth in**  
5 **the Recommendations?**

6 PG&E does not recommend any additional actions be taken by the  
7 Commission in this proceeding based on the findings in the NorthStar Report.  
8 NorthStar's assessment was extensive, and its findings align with its  
9 recommendations.

10 While PG&E is supportive of the recommendations in the NorthStar Report,  
11 its focus on safety culture and governance should not and does not end with this  
12 proceeding. In the spirit of continuous improvement and customer affordability,  
13 PG&E recommends that the Commission review the sustainability and  
14 effectiveness of the NorthStar recommendations and PG&E's actions in ongoing  
15 regulatory proceedings such as the RAMP and/or GRC proceedings.

16 **G. Question 3.1: PG&E Should Specify What Is Being Implemented Currently,**  
17 **How the Recommendations Are Being Prioritized, and the Schedule and**  
18 **Manner of Future Implementation of Each Recommendation**

19 After an initial assessment of the recommendations, PG&E met with  
20 NorthStar to confirm the intent of their recommendations and discuss alignment  
21 between NorthStar's recommendations and PG&E's planned approach for  
22 addressing NorthStar's recommendations. None of the recommendations were  
23 in conflict with the Company's safety vision or plans under development in the  
24 2017 Integrated Planning Process; therefore, it was determined to implement the  
25 recommendations as quickly as possible.

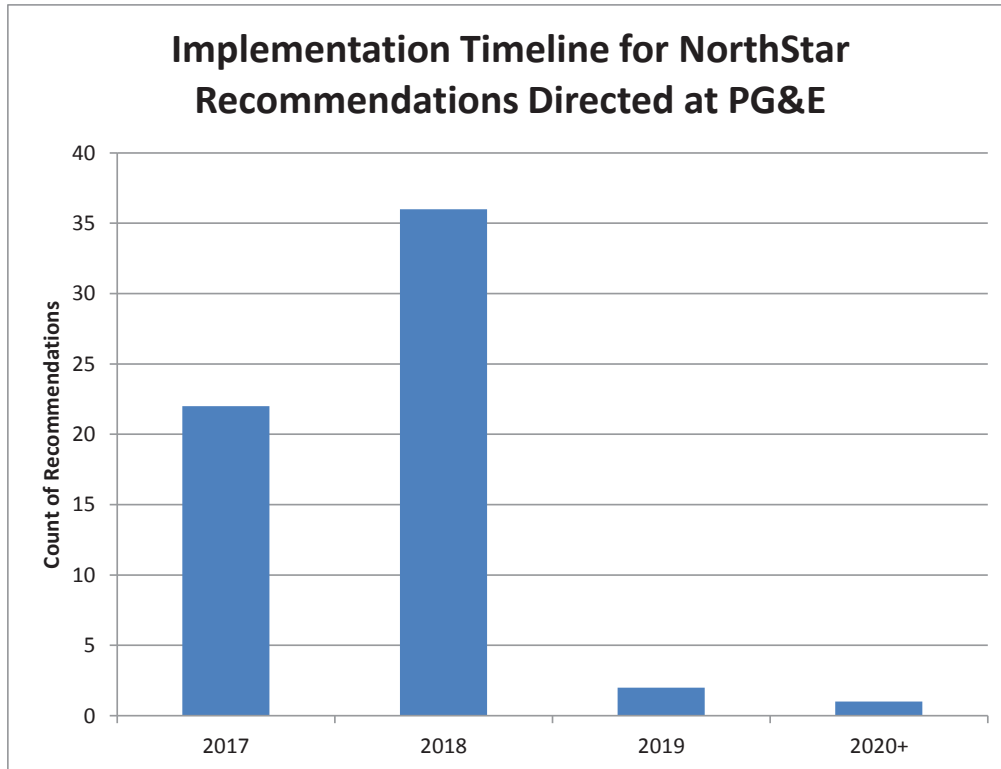
26 Timing of implementation for each recommendation reflects alignment with  
27 in-progress activities and alignment with activities planned for 2018-2019 as part  
28 of the Integrated Planning Process. As shown in Figure 2-1, 36 percent of the  
29 61 NorthStar recommendations directed at PG&E were addressed in 2017 and  
30 95 percent will be addressed by the end of 2018.

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<sup>44</sup> Specific details about recommended evidence of completion are contained in PG&E's 51 Implementation Plans. The 51 Implementation Plans are attached as Appendix 2-A.



FIGURE 2-1  
SUMMARY OF PG&E IMPLEMENTATION PLAN TIMELINES



1 Appendix 2-A provides 51 Implementation Plans (some of which address  
2 multiple recommendations), the high-level implementation timeline, and the  
3 criteria by which completion and will be assessed and sustainability will  
4 be ensured.

5 PG&E has established a PMO charged with ensuring timely implementation  
6 of the NorthStar recommendations. The PMO provides governance for each  
7 implementation plan, aids in issue resolution and supports status reporting on a  
8 regular basis. The PMO reports directly to me.

9 **H. Questions 3.2 and 3.3: PG&E Indicated That Some of the**  
10 **Recommendations “Require Further Evaluation and Discussion,”**  
11 **Particularly Those Related to Executive Incentive Compensation and**  
12 **Performance Based-Ratemaking. (RT PHC August 1, 2017 at 11.) PG&E**  
13 **Shall Specify Its Concerns About These Recommendations and How the**  
14 **Utility Proposes to Address These Concerns.**

15 PG&E believes that the six recommendations directed at the Commission—  
16 namely, eliminating penalties for self-reporting of safety-related incidents;

1 working with all California IOUs to develop a listing and consistent definitions of  
2 key safety-related metrics; considering the implementation of PBR; assessing  
3 the 2017 STIP and LTIP metrics; performing periodic audits of the safety  
4 programs and culture of PG&E and possibly other major California IOUs; and  
5 creating a multi-agency hot line that PG&E and other IOUs can call—should be  
6 evaluated in a separate proceeding or proceedings appropriate to the subject  
7 matter such as S-MAP.

8 NorthStar recommends the Commission “consider implementation of a  
9 performance-based ratemaking mechanism with a fixed component based on  
10 traditional ratemaking principles and a variable adder based on safety  
11 performance.”<sup>45</sup> To the extent the Commission is interested in pursuing a PBR  
12 mechanism for PG&E specifically, PG&E believes that the appropriate forum  
13 would be its 2020 GRC. PG&E supports the consideration of variable adders—  
14 often referred to as targeted performance mechanisms—and believes that a  
15 discussion of such a mechanism in the 2020 GRC would allow for a thorough  
16 evaluation. Important considerations include: mechanism design and ensuring  
17 the mechanism achieves desired outcomes and that there are no unintended  
18 consequences; targeted performance levels and likelihood of achievement; and  
19 predictability of results. Additionally, it is important to ensure alignment between  
20 safety goals and the budgets needed to achieve them, as well as to develop the  
21 relative levels of any rewards and penalties in view of the overall cost of service.  
22 Evaluation in the 2020 GRC would allow all relevant factors to be considered  
23 together.

24 Similarly, PG&E believes that any further discussion of recommendations  
25 regarding compensation are also better evaluated in the context of PG&E’s  
26 2020 GRC, where compensation issues have historically been addressed in a  
27 holistic manner. This is supported by the language quoted in Section D.6.a,  
28 above, from PG&E’s 2017 GRC decision.

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**45** PG&E understands the “fixed” component of NorthStar’s PBR ratemaking recommendation to be the conventional return on equity (ROE) that the Commission adopts in cost of capital proceedings, and the “variable adder” to be rewards or penalties that result from actual safety performance. The variable adders can either increase or decrease the utility’s earned ROE, hence tying performance to earnings.

1 **I. Conclusion**

2 NorthStar has created a comprehensive and thoughtful Report that provides  
3 helpful feedback on PG&E's activities related to employee and contractor safety  
4 and safety culture.

5 As described in detail above, PG&E has committed to supporting  
6 implementation of all 67 of the recommendations in the Report. PG&E commits  
7 to be completed with 95 percent of the 61 recommendations directed at PG&E  
8 by the end of 2018. PG&E also commits to reporting annually to the  
9 Commission's SED on the status of implementation, and urges the Commission  
10 to continue monitoring the effectiveness of the recommendations in PG&E's  
11 future RAMP or GRC proceedings.

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 2**  
**APPENDIX 2-A**  
**PG&E'S IMPLEMENTATION PLAN**

**PG&E Implementation Plan  
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Item Number	Implementation Plan Title	Recommendations	Reference ID
1	F-1_OII Implementation Plan	Development of an implementation plan for NorthStar's recommendations, to be submitted to the CPUC. PG&E should also provide periodic updates on its implementation status. This information shall be used by SED to ensure timely and effective implementation of NorthStar's recommendations.	F-1
2	F-2_Supv in the Field_includes V-4_V-6	<p><b>F-2:</b> The need for clear definition of supervisory requirements, including an assessment of workload requirements, ongoing field monitoring efforts and time requirements, and associated staffing levels.</p> <p><b>V-4:</b> Reevaluate staffing, roles, responsibilities and work requirements to increase Supervisor's time in the field supervising crews.</p> <p><b>V-6:</b> Reevaluate the travel requirements placed on employees to reduce the overall mileage driven. Accelerate the use of mobile technology and electronic information exchange. PG&amp;E employees drive a significant number of miles per year and are frequently called upon to support workload at great distances from their normal assigned locations.</p>	F-2
3	F-3_SLD_includes VIII-1	<p><b>F-3:</b> Expedited completion of the safety leadership training for crew leads and foremen.</p> <p><b>VIII-1:</b> Accelerate crew foremen safety leadership training.</p>	F-3

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<p>4</p>	<p>F-4_Comprehensive Safety Strategy_includes III-2_III-3_V-3</p>	<p><b>F-4:</b> Development of a comprehensive safety strategy, with associated timelines/ deliverables, resource requirements and budgets, personnel qualifications, clear delineation of roles and responsibilities; action plans, assignment of responsibility for initiatives, and associated metrics to assess effectiveness. This should be followed with the identification of necessary corporate and LOB safety resource requirements and development of an appropriate organization structure. Also shared with SED.</p> <p><b>III-2:</b> Reassess and stabilize the safety culture change initiatives. The rigor applied to the integrated planning process (discussed in Chapter VI: Budgeting and Spending) should be applied to safety culture. The overwhelming number of initiatives and constant shifting of priorities is detrimental to a stable, consistent safety culture.</p> <p><b>III-3:</b> Develop a comprehensive safety plan (by the end of 2017) that incorporates LOB and Corporate Safety activities to eliminate duplication, prevent gaps and appropriately prioritize expenditures. The plan should address culture, employee health and wellness, contractor safety, employee safety and public safety. Solicit input from throughout the organization, particularly the field, in the development of the plan. The environmental function was removed for the Safety, Health &amp; Environment organization. It should have its own plan The plan should be updated annually for at least two years and then at least every three years thereafter, with quarterly/annual monitoring of progress relative to the plan. The comprehensive plan should include all safety plans and programs of the Company, except for specific asset-related safety plans (such as asset management plans, leak survey programs or vegetation management) that should continue to be the responsibility of the various LOBs. The plan should be approved by the NOS Committee and the Boards, and endorsed and supported by executive management and the CPUC. The plan must be clearly communicated throughout the organization.</p> <p><b>V-3:</b> Perform a broad reassessment of all safety programs and initiatives to: evaluate overall effectiveness and make improvements, and eliminate scope overlap (e.g., the Corrective Action Program (CAP) vs. the Safety and Environmental Management System (SEMS) follow-up responsibility).</p>	<p>F-4</p>
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Appendix 2-A

**PG&E Implementation Plan  
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5	F-5_Best Practice Coordination_includes IV-5_IV-6_IV-7_V-1_V-2_V-5	<p><b>F-5:</b> Greater coordination among the LOBs and with Corporate Safety to increase consistency, improve efficiencies, minimize operational gaps, and facilitate sharing of best practices.</p> <p><b>IV-5:</b> Improve the safety credentials of personnel in PG&amp;E’s safety functions and organizations.</p> <p><b>IV-6:</b> Simplify and clarify the roles and responsibilities of the Corporate Field Safety Specialists (FSS) vis-à-vis the LOB FSS to eliminate duplication, and align activities with the respective skill sets. Work with the LOBs to determine service levels and staffing requirements.</p> <p><b>IV-7:</b> Establish, and adhere to, minimum qualifications for Corporate and LOB FSS. Establish training requirements for LOB FSS to ensure they are up to date on current methods and procedures and have a working knowledge of key regulatory requirements.</p> <p><b>V-1:</b> Improve processes used to evaluate and translate best practices and techniques from one LOB organizational unit to others. Focus LOB FSS roles and responsibilities on integrating best practices among all LOBs, facilitating the implementation of corporate safety initiatives, and improving safety practices and awareness across all organizational units.</p> <p><b>V-2:</b> NorthStar does not believe the FSS can be effective even in significantly great numbers given the geographic challenges associated with PG&amp;E’s service territory and the diverse job requirements. A more effective use of the FSS would be to have them focus on and support the first-line supervisors – foremen and crew leads.</p> <p><b>V-5:</b> Increase the training requirements for LOB FSS. Existing OSHA training is somewhat generic and not sufficiently related to PG&amp;E’s public and occupational hazards.</p>	F-5
6	F-6_Metrics Reporting	Meaningful, consistent routine reporting of safety performance and metrics to the CPUC (all major California Investor-Owned Utilities (IOUs)).	F-6
7	F-7_Non-punative Reporting System	A non-punitive system for reporting actual and potential safety incidents to the CPUC to encourage reporting and facilitate lessons learned sharing among all California utilities. To the extent that the utilities are made aware of incidents or potential incidents in other states this information could also be shared.	F-7
8	F-8_PBR Mechanism	A Performance-Based Ratemaking (PBR) mechanism that includes a safety element to be considered in the rate design phase of the TY2017 PG&E General Rate Case (A.15-09-011). The PBR mechanism should include a traditional rate of return component and a variable safety-related component based on pre-defined criteria and the discretion of the CPUC. Incidents in other states this information could also be shared.	F-8

Appendix 2-A

**PG&E Implementation Plan  
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9	III-1_Board Qualifications	Add safety to the list of qualifications used in selecting Independent Directors to the Board(s) of PG&E Corp. and PG&E. Periodically revisit the qualifications matrix and requirements for Independent Director as the industry and requirements change. Add Independent Directors to the Board who have experience with safety, perhaps in another industry such as aviation.	III-1
10	III-5_IA Safety Role	Internal Audit should play a more active role in auditing safety controls, programs and processes.	III-5
11	IV-1_CSO Experience	Appoint a Corporate Safety Officer who has both operations and professional safety experience. NorthStar is aware that Mr. Higgins replaced Mr. Bell as Corporate Safety Officer on March 1, 2017. While Mr. Higgins has operating experience with National Grid, PG&E and other utilities, he does not have professional safety training or experience. Mr. Higgins should undertake a professional training program that will provide him with the necessary skills as soon as possible.	IV-1
12	IV-2_CSO Org Position	The Corporate Safety Officer should report to the COO of the Utility and to the NOS Committee of the Board in the same manner that the head of Internal Audit reports to the Audit Committee of the Board in most public companies. (It is NorthStar’s understanding that this has been implemented.)	IV-2
13	IV-3_Safety Dept Roles and Responsibilities_includes IV-4	<b>IV-3:</b> Examine workload levels, potential morale issues and other demands to understand and mitigate the reasons for the high turn-over at the Sr. Director, Safety and Health position and throughout the Corporate Safety organization. <b>IV-4:</b> Following the development of the safety strategy, review the structure, reporting relationships and staffing levels of the Corporate Safety organization to ensure PG&E has the resources necessary for strategy execution and proper coordination with/support for the LOBs.	IV-3
14	VI-1_Separate Safety Expenditures-RAMP	Develop a method of separating “safety” expenditures from routine reliability and integrity expenditures. This may occur as part of the CPUC’s Risk Assessment Mitigation Phase (RAMP) process.	VI-1
15	VI-2_Safety IPP_includes III-4	<b>VI-2:</b> Develop business case support and a record of management approval for safety initiatives in accordance with PG&E’s Project Approval Procedure. <b>III-4:</b> Clearly define and articulate any new initiatives to improve safety culture. Perform cost-benefit analyses of these initiatives and identify performance measures. Corporate Safety recently produced an analysis of lost work days that might serve as a starting point for the thought process and analytics involved.	VI-2



Appendix 2-A

**PG&E Implementation Plan  
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16	VI-3_Risk and Bus Case Planning_includes VI-1	Develop a method for weighting the value of management initiated safety programs comparable to the Risk Informed Budget Allocation (RIBA) but focused on management and training.	VI-3
17	VI-4_PPM for Power Gen	Move forward with planned implementation of the Power Generation IPP Portfolio Planning and Management (PPM) system for all operational LOBs.	VI-4
18	VI-5_Session D Link to Sessions 1 and 2	Continue efforts to better link IPP Session D to the Session 1 and 2 processes.	VI-5
19	VII-1_STIP and LTIP Metrics_includes VII-4_VII-5	<p><b>VII-1:</b> None of the KPIs currently considered for use in measuring safety culture should be included as an incentive measure (i.e., included as part of the Short-Term Incentive Program (STIP) or the Long-Term Incentive Program (LTIP). This will only serve to provide artificially inflated results or drive unintended consequences. Most of the proposed metrics are based on either employee surveys or near hit/CAP reporting. Incentives tied to employee submittals will ensure targets are met and may minimize the value of the submittals (for example, a sudden influx of not particularly meaningful submittals prior to the end of a reporting period). Similarly, an incentive tied to survey results will drive positive reporting rather than true results,</p> <p><b>VII-4:</b> Reevaluate the appropriateness of the Earning from Operations component of the STIP due to its lack of transparency and the ongoing adjustments for Items Impacting Comparability.</p> <p><b>VII-5:</b> Revisit all STIP metrics and targets in light of the enterprise-wide safety plan recommended by NorthStar. Set multi-year targets to drive performance. Include a contractor safety metric in the STIP. Following the development of the enterprise safety plan, PG&amp;E should develop STIP and BPR metrics that measure plan implementation/ adoption and the effectiveness of the various initiatives identified in the plan. PG&amp;E should continue monitor and report lagging OSHA metrics (i.e., DART, LWD, MVI, fatalities) as part of the BPR process.</p>	VII-1
20	VII-2_Former STIP metric tracking	Continue to track metrics eliminated from STIP as part of the Business Performance Review (BPR) process to allow trending.	VII-2
21	VII-3_LTIP Safety Weight	Increase the weighting of safety in the LTIP to more closely align safety performance and executive compensation.	VII-3

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22	VII-6_BPR Metrics	Develop a more robust and comprehensive set of BPR metrics addressing all aspects of safety such as public, employee and contractor safety; facility, infrastructure/asset and cyber security; environmental safety; public awareness; and, safety culture.	VII-6
23	VII-7_Expanded Best Practice Sharing	Improve the internal sharing of best practices. Increase the level of involvement by different groups and employee levels. As an example, NorthStar performed a management audit of National Grid Gas' New York operations a few years ago for the New York Public Service Commission. The utility had a fairly robust process improvement program. NorthStar's report describing the process is available on the New York State Department of Public Service's website.	VII-7
24	VIII-2_Field-first Training Profiles	Profile training participants so that individuals in office-based organizations generally do not receive field-oriented safety training ahead of field organizations.	VIII-2
25	VIII-3_SLD 360	Complete the second 360-Degree Survey assessment for the Safety Leadership Development program participants and compare to the first assessment results to determine the effectiveness of the training and identify any gaps to be addressed.	VIII-3
26	VIII-4_Mandatory Refresher Training	Conduct mandatory refresher training for Electric T&D, Gas Operations and Power Generation field resources on fundamental safety-related topics such as confined space, safety at heights and personal protective equipment.	VIII-4
27	VIII-5_Human Performance Training	Profile employees to receive Human Performance training.	VIII-5
28	VIII-6_OQ Status Reporting	Develop a monthly operator qualifications (OQ) status report for the Senior Vice President of Gas Operations and the President of Gas Operations. Include such information as number and type of examinations conducted; pass fail rates, number of qualifications expiring (in 90, 60, 30 and 5 days), the number of OQ scans conducted and the results.	VIII-6
29	VIII-7_2014 OQ Review	Conduct a review of 2014 OQs to determine if contract employees were working on PG&Es system with other expired OQs. Conduct additional re-inspections as necessary.	VIII-7

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30	VIII-8_OQ Feasibility Study	Perform a feasibility study of PG&E training and testing of contractor employees for OQs. The study should consider the volume of students, the cost charged per unit, the availability of resources at PG&E and analysis of advantages and disadvantages.	VIII-8
31	VIII-9_PwrGen Apprentice Program	Power Generation should continue to update its apprentice programs.	VIII-9
32	VIII-10_PwrGen Training Completion	Power Generation should work with the Academy to improve the timeliness of training completion.	VIII-10
33	VIII-11_PwrGen Refresher Training	Power Generation should develop a refresher training program, similar to that of Electric T&D and Gas Operations.	VIII-11
34	IX-1_Safety Communication	Develop and implement a strategic communications plan that does not overwhelm employees with too much information, but effectively addresses the issues identified in the January 2015 Monitor 360 Study, the 2016 Premier Survey (and PG&E's narrative analysis.)	IX-1
35	IX-2_Safety Culture Metrics	Develop a consistent basis for measuring, tracking and trending employee attitudes regarding safety culture.	IX-2
36	IX-3_Reach Every Employee	Develop and implement programs similar to Electric T&D's Reach Every Employee program in Power Generation and Gas Operations. Reach every employee is an annual documented safety discussion with each employee.	IX-3
37	IX-4_Speak Up Effectiveness	Assess the effectiveness of the 2016 Speak Up Culture campaign, particularly among field resources.	IX-4
38	X-1_SEMS-CAP Integration	Evaluate the adequacy of the information captured by various incident tracking systems (SEMS, CAP) to ensure it is sufficient to understand the causes of incidents, perform trending analyses and other analytics, and provide timely information. Improve CAP, near hit and incident tracking and reporting systems to increase the clarity of the information, ensure the appropriate level of causal evaluation has been assigned and that all required actions have been taken before an item is closed.	X-1
39	X-2_CAP-NH Costs and Benefits	Track the costs and relative safety benefits of the CAP and Near Hit Programs. Increase efficiencies or modify programs as warranted.	X-2

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40	X-3_CAP-NH Reporting Benefits	Develop an evaluation program to maximize the benefits from CAP and Near Hit Reporting.	X-3
41	X-4_IA Review of Serious Incident Investigations	Develop an evaluation program for Serious Incident Investigations to include periodic audits of the processes by Internal Audit.	X-4
42	X-5_WGE Documentation Improvement	Improve documentation requirements for corrective actions for incidents and near hits subject to a Work Group Evaluation (WGE), as well as for incidents subject to an Apparent Cause Evaluation (ACE) and Root Cause Evaluation (RCE).	X-5
43	X-6_Central Repository for Investigation info	Report and track incidents in a consistent manner such that appropriate information may be shared across the enterprise. Develop a central repository for this information which should include an executive summary, corrective actions taken, any materials developed and the effectiveness evaluations.	X-6
44	X-7_Safety Communication Protocol	Develop a protocol involving concise, targeted, timely communications to notify other crews, work locations and LOBs of incidents or corrective actions that are applicable to that group.	X-7
45	X-8_Cause Evaluation Process_includes X-9	<b>X-8:</b> Develop a single, consistent enterprise causal evaluation standard combining Utility Standard: SAFE-1004S (Serious Investigation Standard) and the Enterprise Causal Evaluation Standard (Utility Standard: GOV-6102S). Incorporate the specified improvements. <b>X-9:</b> Compare all LOB Causal Evaluation Standards to ensure the processes are consistent and all required elements are defined. As an example the Power Generation Procedure includes a discussion of the WGE process. Electric T&D and Gas Operations procedures do not. Gas Operations procedures do not include an RCE process timeline and appear to group RCE and ACE. The RCE communications plan for all procedures should include the communications process for follow-up on the Effectiveness Review Plan. Establish guidelines for communication of the corrective actions and the effectiveness reviews, as these are currently tracked separately by LOB.	X-8
46	XI-1_Surprise Inspections for Cont Safety	Corporate Contractor Safety should select the projects for review rather than the LOBs, and conduct “surprise” field visits to assess contractor safety practices.	XI-1
47	XI-2_Solely Responsible Cont Language	Determine whether it is feasible to update the language in contracts to remove all references to the contractor or consultant being “solely responsible” for performing work in a safe manner.	XI-2

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48	XI-3_Cont Incident Closure Criteria	Develop formal criteria to close contractor serious safety incident action items in ISN.	XI-3
49	XI-4_Cont Safety best Practice Sharing	Facilitate the sharing of best practices and lessons learned regarding the LOBs' implementation of the Contractor Safety Standard, addressing both organizational and procedural issues.	XI-4
50	XI-5_LOB Guidelines for Cont Safety	Update LOB contractor safety procedures to clarify responsibilities and reflect current organizations and processes. Include guidelines regarding the frequency of field observations.	XI-5
51	XI-6_PwrGen Contractor On-boarding	Institute a contractor on-boarding test in Power Generation.	XI-6

1. Critical Recommendations: F-1

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>												
A	Reference ID	F-1										
B	Recommendation	Development of an implementation plan for NorthStar’s recommendations, to be submitted to the California Public Utilities Commission (CPUC or Commission). Pacific Gas and Electric Company (PG&E) should also provide periodic updates on its implementation status. This information shall be used by Safety Enforcement Division (SED) to ensure timely and effective implementation of NorthStar’s recommendations.										
C	Key Term Definitions	<p><u>Implementation Plan</u>: The deliverables, interim milestones, resource requirements and associated completion/effectiveness metrics that address a recommendation in this Order Instituting Implementation (OII).</p> <p><u>Project Management Office (PMO)</u>: This team is responsible for monitoring progress and documenting completion of all Implementation Plans.</p>										
D	Implementation Plan	The NorthStar Report (the Report) was received by PG&E on May 8, 2017. Initial implementation plans were developed by June 30, 2017. Program management resources were identified and processes put in place over the July-September 2017 timeframe. These processes track progress of each plan, support issue identification and resolution, completion documentation and status reporting. The PMO will be in place as long as necessary to ensure completion of all implementation plans.										
E	Implementation Timeline	<table border="0"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Jun. 2017</td> <td>Preliminary Implementation Plans developed</td> </tr> <tr> <td>Aug. 2017</td> <td>PMO established</td> </tr> <tr> <td>Sep. 2017</td> <td>PMO processes operating sustainably</td> </tr> <tr> <td>Ongoing</td> <td>Milestone tracking, issue resolution, documentation</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Jun. 2017	Preliminary Implementation Plans developed	Aug. 2017	PMO established	Sep. 2017	PMO processes operating sustainably	Ongoing	Milestone tracking, issue resolution, documentation
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Ongoing	Milestone tracking, issue resolution, documentation											
F	Implementation Status	Complete										

G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion:</u> The PMO structure will be defined and formal kick-off meetings will be held for stakeholders.</p> <p>Evidence of Completion:</p> <ul style="list-style-type: none"> <li>• Meeting request(s) and invitee list(s)</li> <li>• Materials discussed at kick-off meeting(s)</li> </ul> <p>Sustainability: Evidence of Sustainability:</p> <ul style="list-style-type: none"> <li>• 6 x PMO meeting summaries</li> <li>• 6 x Implementation plan status reports</li> </ul>
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1. Critical Recommendations: F-2

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	F-2 (Master Plan for V-4 and V-6)
B	Recommendation	<p><b>F-2:</b> The need for clear definition of supervisory requirements, including an assessment of workload requirements, ongoing field monitoring efforts and time requirements, and associated staffing levels.</p> <p><b>V-4:</b> Reevaluate staffing, roles, responsibilities and work requirements to increase Supervisor’s time in the field supervising crews.</p> <p><b>V-6:</b> Reevaluate the travel requirements placed on employees to reduce the overall mileage driven. Accelerate the use of mobile technology and electronic information exchange. PG&amp;E employees drive a significant number of miles per year and are frequently called upon to support workload at great distances from their normal assigned locations.</p>
C	Key Term Definitions	N/A



D	Implementation Plan	<p>Using internal and benchmarking data, develop a plan to improve the clarity of supervisor responsibilities, the appropriateness of staffing levels and travel requirements, and the impact supervisors have on the safety of their employees. A cross-functional team representing lines of business with field responsibilities will develop a single plan applicable to all stakeholder lines of business. The Team Lead will be responsible for both the development and approval of the plan as well as ensuring appropriate governance is in place over the execution process.</p> <p>This is a continuation, and expansion, of work started in Gas Operations. Gas Operations recognized a need for more and better quality field oversight. A study performed indicated that supervisors were reporting that they spend an average of 16 hours in the field each week. PG&amp;E anticipates that similar results will be found for other work groups. Starting with the theory that increased supervisor/crew contact will improve safety, quality and productivity, the following actions will be undertaken as part of this initiative:</p> <ul style="list-style-type: none"> <li>• Review opportunities to transfer administrative tasks from Supervisor to the office-based staff. Several office-based tasks, such as scheduling of work, training and paperwork review, should all be evaluated for reassignment.</li> <li>• Move completed work review to the jobsite, allowing for immediate feedback before electronic records and paperwork are finalized.</li> <li>• Periodically deploy, on an as-needed basis, seasoned supervisors to travel the system, coaching and mentoring less experienced supervisors.</li> <li>• Use field technology, such as Telogis and Safetynet, to monitor time in field. Provide contact time data and safety observation data to leaders in the organization.</li> <li>• Evaluate the effectiveness of our safety observation training for supervisors.</li> <li>• Evaluate strategies to reduce supervisory travel for meetings and training.</li> </ul>														
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F	Implementation Status	In Progress														

G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion:</u></p> <ul style="list-style-type: none"><li>• Document work assignment modifications for each functional area.</li><li>• Develop reports to identify supervisor/crew contact time.</li><li>• Develop reports to document safety observation quality.</li></ul> <p><u>Sustainability:</u> Provide metrics to senior leadership that demonstrate crew contact time relative to benchmarking; share safety observation volume and quality; share related safety results.</p>
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1. Critical Recommendations: F-3

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>												
A	Reference ID	F-3 (Master for VIII-1)										
B	Recommendation	<p><b>F-3:</b> Expedited completion of the safety leadership training for crew leads and foremen.</p> <p><b>VIII-1:</b> Accelerate crew foremen safety leadership training.</p>										
C	Key Term Definitions	N/A										
D	Implementation Plan	<p>Accelerate Crew Lead Safety Leadership Training such that all Crew Leads in a Crew Lead position prior to 9/1/18, complete the training by 12/31/2018. This accelerates scheduled completion by one year.</p> <p>Update Crew Lead Safety Leadership Training based on feedback from 2017 participants and review of the curriculum to increase relevance to Crew Leads.</p>										
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Dec. 2018	All targeted crew leads complete Safety Leadership Training.											
F	Implementation Status	In Progress										
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Assessment of completion:</u> All Crew Leads or Foremen hired into a position at this level on a regular basis before September 1, 2018, who were not off work during the year for an extended leave of absence (greater than three weeks), or who have an approved exception will complete the training. This is estimated to be approximately 98% of the target population.</p> <p><u>Sustainability of Program:</u> This course will continue and be profiled for all crew leads, following PG&amp;E's established training governance process</p>										

1. Critical Recommendations: F-4

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	F-4 (Master Plan for III-2, III-3, V-3)
B	Recommendation	<p><b>F-4:</b> Development of a comprehensive safety strategy, with associated timelines / deliverables, resource requirements and budgets, personnel qualifications, clear delineation of roles and responsibilities; action plans, assignment of responsibility for initiatives, and associated metrics to assess effectiveness. This should be followed with the identification of necessary corporate and Line of Business (LOB) safety resource requirements and development of an appropriate organization structure. Also shared with SED</p> <p><b>III-2:</b> Reassess and stabilize the safety culture change initiatives. The rigor applied to the integrated planning process (IPP) (discussed in Chapter VI: Budgeting and Spending) should be applied to safety culture. The overwhelming number of initiatives and constant shifting of priorities is detrimental to a stable, consistent safety culture.</p> <p><b>III-3:</b> Develop a comprehensive safety plan (by the end of 2017) that incorporates LOB and Corporate Safety activities to eliminate duplication, prevent gaps and appropriately prioritize expenditures. The plan should address culture, employee health and wellness, contractor safety, employee safety and public safety. Solicit input from throughout the organization, particularly the field, in the development of the plan. The environmental function was removed for the Safety, Health and Environment organization. It should have its own plan. The plan should be updated annually for at least two years and then at least every three years thereafter, with quarterly/annual monitoring of progress relative to the plan. The comprehensive plan should include all safety plans and programs of the Company, except for specific asset-related safety plans (such as asset management plans, leak survey programs or vegetation management) that should continue to be the responsibility of the various LOBs. The plan should be approved by the NOS Committee and the Boards, and endorsed and supported by executive management and the CPUC. The plan must be clearly communicated throughout the organization.</p> <p><b>V-3:</b> Perform a broad reassessment of all safety programs and initiatives to: evaluate overall effectiveness and make improvements, and eliminate scope overlap (e.g., the Corrective Action Program (CAP) vs. the Safety and Environmental Management System (SEMS) follow-up responsibility).</p>

C	Key Term Definitions	<p>PG&amp;E’s Integrated Planning Process is defined broadly by five major activities:</p> <ol style="list-style-type: none"> <li>1. <u>Executive Guidance</u>: 5-year goals set by CEO and President.</li> <li>2. <u>Session D</u>: Identifies risks and compliance priorities for the business and each LOB, risk portfolio analysis/insight, goals/commitments, Senior Management support for risk mitigation.</li> <li>3. <u>Session 1</u>: Operational planning: 5-year operational plan, benchmark informed goals for each LOB, preliminary inputs for Rate Case Filings.</li> <li>4. <u>Session C</u>: Establishes leadership succession plans.</li> <li>5. <u>Session 2</u>: Resource allocation: 2-year work plan with budgets, include safety and operational metrics (with targets), targeted set of continuous improvement projects, list of technology projects, personnel goals linked to LOB/Enterprise goals.</li> </ol>
D	Implementation Plan	<p>A comprehensive safety strategy is an output from the Integrated Planning Process.</p> <p>The output includes an assessment of all safety programs to improve effectiveness and impact, to prioritize the initiatives and expenditures that will be undertaken to allow for sustainability and consistency of execution of the plan, insights from throughout the organization to develop the plan, identification of necessary corporate and LOB safety resource requirements and development of an appropriate organization structure and communication of the plan throughout the organization. Communication of the plan began in 2017, as the plan was in development and will continue through 2018 and beyond. Examples of communication forums where the plan was communciated include the Integrated Planning Process and the Board meetings while the Plan was in development.</p> <p>Quarterly alignment meetings with the LOBs to monitor the progress and effectiveness of the Plan were scheduled. These sessions allowed for review of PG&amp;E’s safety performance by line of business and included the opportunity to share best practices and course correct, if necessary.</p> <p>The process formally began with the issuance of Executive Guidance, which established PG&amp;E’s goals over the next five years. The process then progressed to Session D, the identification of key risks and compliance issues for the business. The next stage of the process was Session 1 (S-1) and the identification of top focus areas and 5-year goals for the One PG&amp;E Occupational Health and Safety Plan and continued to progress with greater detail and refinement throughout the Session 2 (S-2) process.</p> <p>Key components of developing the comprehensive safety strategy included collaboration and partnership with LOB partners throughout, reevaluation of all safety programs and initiatives for improvement opportunities and ways to increase overall effectiveness. This included the review of the safety culture-related initiatives.</p> <p>The process included all of the suggestions delineated in recommendations F-4, III-2, III-3 and V-3.</p>

E	Implementation Timeline	<p>The One PG&amp;E Occupational Health and Safety Plan will be approved for 2018-2019 implementation by the end of 2017. PG&amp;E’s Board of Directors will review the plan at its February meeting.</p> <table border="1"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Mar. 2017</td> <td>Session D</td> </tr> <tr> <td>Mar. 2017</td> <td>S-1 Kickoff</td> </tr> <tr> <td>May 2017</td> <td>One PG&amp;E Occupational Health and Safety Plan Working Meeting</td> </tr> <tr> <td>May 2017</td> <td>S-1 Mid-Cycle Check In</td> </tr> <tr> <td>Jun. 2017</td> <td>S-1 Final Financials Due</td> </tr> <tr> <td>Jun./Jul .2017</td> <td>One PG&amp;E Occupational Health and Safety Plan Meeting (pre-S-2)</td> </tr> <tr> <td>Jun. 2017</td> <td>S-1 Final Draft Due (document includes One PG&amp;E Occupational Health and Safety Plan (actions by LOB))</td> </tr> <tr> <td>Jul. 2017</td> <td>Vice President (VP) and Sr. Director Session 1 meetings</td> </tr> <tr> <td>Jul. 2017</td> <td>One PG&amp;E Occupational Health and Safety Plan Working Meeting</td> </tr> <tr> <td>Jul. 2017</td> <td>Senior Vice President (SVP) Session 1 meeting</td> </tr> <tr> <td>Jul. 2017</td> <td>S-2 Kickoff</td> </tr> <tr> <td>Aug. 2017</td> <td>Session C meetings</td> </tr> <tr> <td>Sep. 2017</td> <td>One PG&amp;E Occupational Health and Safety Plan Working Meeting</td> </tr> <tr> <td>Sep. 2017</td> <td>Board of Director</td> </tr> <tr> <td>Oct. 2017</td> <td>S-2 Financials Due</td> </tr> <tr> <td>Oct. 2017</td> <td>S-2 Final Draft Due</td> </tr> <tr> <td>Oct/Nov. 2017</td> <td>Session 2 meetings</td> </tr> <tr> <td>Dec. 2017</td> <td>Final delivery of One PG&amp;E Occupational Health and Safety Plan to internal stakeholders</td> </tr> <tr> <td>Q1 2018</td> <td>Board of Director</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Mar. 2017	Session D	Mar. 2017	S-1 Kickoff	May 2017	One PG&E Occupational Health and Safety Plan Working Meeting	May 2017	S-1 Mid-Cycle Check In	Jun. 2017	S-1 Final Financials Due	Jun./Jul .2017	One PG&E Occupational Health and Safety Plan Meeting (pre-S-2)	Jun. 2017	S-1 Final Draft Due (document includes One PG&E Occupational Health and Safety Plan (actions by LOB))	Jul. 2017	Vice President (VP) and Sr. Director Session 1 meetings	Jul. 2017	One PG&E Occupational Health and Safety Plan Working Meeting	Jul. 2017	Senior Vice President (SVP) Session 1 meeting	Jul. 2017	S-2 Kickoff	Aug. 2017	Session C meetings	Sep. 2017	One PG&E Occupational Health and Safety Plan Working Meeting	Sep. 2017	Board of Director	Oct. 2017	S-2 Financials Due	Oct. 2017	S-2 Final Draft Due	Oct/Nov. 2017	Session 2 meetings	Dec. 2017	Final delivery of One PG&E Occupational Health and Safety Plan to internal stakeholders	Q1 2018	Board of Director
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Sep. 2017	Board of Director																																									
Oct. 2017	S-2 Financials Due																																									
Oct. 2017	S-2 Final Draft Due																																									
Oct/Nov. 2017	Session 2 meetings																																									
Dec. 2017	Final delivery of One PG&E Occupational Health and Safety Plan to internal stakeholders																																									
Q1 2018	Board of Director																																									
F	Implementation Status	Complete																																								
G	Assessment of Completion and Sustainability of PG&E’s Implementation Plan	<p><u>Completion:</u></p> <ul style="list-style-type: none"> <li>• Session D, S-1 and S-2 One PG&amp;E Occupational Health and Safety Plan deliverables.</li> <li>• Narrative to accompany One PG&amp;E Occupational Health and Safety Plan deliverables from Integrated Planning Process.</li> </ul> <p><u>Sustainability:</u></p> <ul style="list-style-type: none"> <li>• The Integrated Planning Process is an annual bottoms-up planning process, with sr. officer discussions focused around safety, risk, compliance, goals, strategies, work plans and budgets. Each year the process is evaluated after the conclusion of the planning cycle to identify opportunities for improvement ahead of the next year’s process.</li> </ul>																																								

1. Critical Recommendations: F-5

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan June 2017</b>		
A	Reference ID	F-5 (Master Plan covers V-1, V-2, V-5, IV-5, IV-6 and IV-7)
B	Recommendation	<p><b>F-5:</b> Greater coordination among the LOBs and with Corporate Safety to increase consistency, improve efficiencies, minimize operational gaps, and facilitate sharing of best practices.</p> <p><b>IV-5:</b> Improve the safety credentials of personnel in PG&amp;E’s safety functions and organizations.</p> <p><b>IV-6:</b> Simplify and clarify the roles and responsibilities of the Corporate Field Safety Specialists (FSS) vis-à-vis the LOB FSS to eliminate duplication, and align activities with the respective skill sets. Work with the LOBs to determine service levels and staffing requirements.</p> <p><b>IV-7:</b> Establish, and adhere to, minimum qualifications for Corporate and LOB FSS. Establish training requirements for LOB FSS to ensure they are up to date on current methods and procedures and have a working knowledge of key regulatory requirements.</p> <p><b>V-1:</b> Improve processes used to evaluate and translate best practices and techniques from one LOB organizational unit to others. Focus LOB FSS roles and responsibilities on integrating best practices among all LOBs, facilitating the implementation of corporate safety initiatives, and improving safety practices and awareness across all organizational units.</p> <p><b>V-2:</b> NorthStar does not believe the FSS can be effective even in significantly great numbers given the geographic challenges associated with PG&amp;E’s service territory and the diverse job requirements. A more effective use of the FSS would be to have them focus on and support the first-line supervisors – foremen and crew leads.</p> <p><b>V-5:</b> Increase the training requirements for LOB FSS. Existing Occupational Safety and Health Administration (OSHA) training is somewhat generic and not sufficiently related to PG&amp;E’s public and occupational hazards.</p>
C	Key Term Definitions	<p><b>Safety Credentials:</b> Industry recognized certifications such as the Certified Safety Professional (CSP), Associate Safety Professional, Construction Health and Safety Technician, Occupational Health and Safety Technologist, Certified Industrial Hygienist, Certified Utility Safety Professional.</p>

D	Implementation Plan	<p>Evaluate the current situation to formally identify gaps and opportunities, and develop strategies to address. Develop implementation plans which also combine Northstar recommendations IV-5, IV-6, IV-7, V-1, V-2 and V-5 and address as a single initiative with three tracks: (1) Roles and responsibilities; (2) Credentials and qualifications; and (3) Identification and sharing of best practices.</p> <p>1) <u>Roles and responsibilities</u>: The LOB FSS position will report to into the Corporate Safety organization. Corporate Safety will identify what roles and responsibilities are required of the new combined team, which of these is currently being performed by Corporate Safety Specialists and what gaps exist. The project team will develop a comprehensive list of the roles and responsibilities to be performed by Corporate Safety Specialists and communicate with the affected lines of business.</p> <p>2) <u>Credential and Qualifications</u>: Corporate Safety will determine the qualifications and safety credentials required of all safety professionals at PG&amp;E. Corporate Safety will establish an implementation plan to achieve the appropriate certifications. Qualifications will be addressed using the following approach:</p> <ol style="list-style-type: none"> <li>1. Complete review and assessment of Corporate Safety Specialist job responsibilities</li> <li>2. Determine the skills and qualifications required for the Corporate Safety Specialist Job and the PG&amp;E or third-party training, or assessment required to demonstrate competency.</li> <li>3. Assign/profile training to Corporate Safety Specialists based on the assessment, or as new training is developed.</li> </ol> <p>Annually – review FSS Job functions and confirm or update skills, qualifications and required training and associate training profile.</p> <p>3) <u>Communication of Best Practices</u>: Identify processes and procedures to communicate best practices across organization. Develop an implementation plan where needed.</p>
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E	Implementation Timeline	<table border="1"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestones</u></th> </tr> </thead> <tbody> <tr> <td>Jun. 2017</td> <td>Preliminary Implementation plan developed</td> </tr> <tr> <td>Aug. 2017</td> <td>High Level implementation plan for all 3 tracks completed</td> </tr> <tr> <td>Sep. 2017</td> <td>Team members (SMEs) identified</td> </tr> <tr> <td>Oct. 2017</td> <td>Initial track kickoff meetings held for all 3 tracks</td> </tr> <tr> <td>Nov. 2017</td> <td>Identify gaps and redundancies in current support models</td> </tr> <tr> <td>Nov. 2017</td> <td>Determine qualifications/certifications requirements</td> </tr> <tr> <td>Jan. 2018</td> <td>Determine required future state roles and responsibilities</td> </tr> <tr> <td>Feb. 2018</td> <td>Assign future state roles and responsibilities</td> </tr> <tr> <td>Feb. 2018</td> <td>Final Implementation Plan developed for roles and responsibilities</td> </tr> <tr> <td>Mar. 2018</td> <td>Implement plan, including change management and communication plans.</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestones</u>	Jun. 2017	Preliminary Implementation plan developed	Aug. 2017	High Level implementation plan for all 3 tracks completed	Sep. 2017	Team members (SMEs) identified	Oct. 2017	Initial track kickoff meetings held for all 3 tracks	Nov. 2017	Identify gaps and redundancies in current support models	Nov. 2017	Determine qualifications/certifications requirements	Jan. 2018	Determine required future state roles and responsibilities	Feb. 2018	Assign future state roles and responsibilities	Feb. 2018	Final Implementation Plan developed for roles and responsibilities	Mar. 2018	Implement plan, including change management and communication plans.
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F	Implementation Status	In Progress																						
G	Assessment of Completion and Sustainability	<p><u>Completion:</u></p> <p>Establish objectives and track completion against those objectives including:</p> <ul style="list-style-type: none"> <li>• Transfer LOB Field Safety Personnel into Corporate Safety</li> <li>• Communicate Roles and Responsibilities to all Corporate Safety Specialists and include these as annual performance targets</li> <li>• Communicate required certifications to all Corporate Safety Specialists and track completions</li> <li>• Update Corporate Safety Specialists’ job descriptions to include the required certifications for each level</li> <li>• Include the identified best practices in the monthly leader packet</li> </ul> <p><u>Sustainability:</u></p> <p>Tracking mechanism will be put in place for tracking certifications. Job descriptions will be stored in HR systems to support their use for future candidate selection and on-boarding.</p>																						

**1. Critical Recommendations: F-6**

<b>Safety Culture and Governance OII (I. 15-08-019)</b>		
<b>Safety Assessment Recommendations</b>		
<b>Implementation Plan</b>		
A	Reference ID	F-6
B	Recommendation	Meaningful, consistent routine reporting of safety performance and metrics to the CPUC (all major California Investor-Owned Utilities (IOUs)).
C	Key Term Definitions	N/A

D	Implementation Plan	<p>PG&amp;E reviews employee safety metrics on an annual basis to ensure continuous improvement and to focus on current safety priorities. PG&amp;E will work with the CPUC and other major California IOUs to determine the the appropriate metrics for this purpose, the frequency of reporting, and the process for sharing this information. Employee safety metrics tracked at the corporate level for 2017 include:</p> <ul style="list-style-type: none"> <li>• SIF Corrective Actions Index</li> <li>• SIF Timely Corrective Action Completion (%)</li> <li>• SIF Quality of Corrective Actions</li> <li>• SIF Effectiveness of Corrective Actions</li> <li>• SIF Exposure Rate</li> <li>• SIF Exposure Count</li> <li>• Number of Employee Serious Injuries &amp; Fatalities</li> <li>• Timely Reporting of Injuries</li> <li>• Days Away and Restricted Time (DART) Rate</li> <li>• Lost Work Day (LWD) Case Rate</li> <li>• Lost Work Day Case Count</li> <li>• 24 Month Rolling Avg. LWD Rate</li> <li>• Occupational Safety and Health Administration (OSHA) Injury Rate</li> <li>• Workforce Unavailable Due to Health</li> <li>• Number Contractor Serious Injuries &amp; Fatalities</li> <li>• Number Public Serious Injuries &amp; Fatalities</li> <li>• Serious Preventable Motor Vehicle Incident (SPMVI) Rate</li> <li>• SPMVI Count</li> <li>• Preventable Motor Vehicle Incident (PMVI) Rate</li> <li>• Near Hits Reported</li> <li>• Hard Brake Rate</li> <li>• Driver’s Check Rate</li> </ul> <p>In accordance with D. 17-05-013, PG&amp;E will provide annually the following information to the CPUC, and will work with the CPUC and other stakeholders to determine what additional metrics should be included:</p> <ol style="list-style-type: none"> <li>1) Incidents of wires down</li> <li>2) 911 Emergency Response</li> <li>3) Dig-in reductions</li> <li>4) Gas emergency response</li> <li>5) Diablo Canyon Safety and Reliability Indicators</li> <li>6) Hydro public safety index</li> <li>7) Lost work day case rat</li> <li>8) OSHA recordable rate (injuries per 200,000 production hours)</li> <li>9) Near-hits reported</li> <li>10) preventable motor vehicle accidents</li> <li>11) serious preventable motor vehicle accidents</li> <li>12) contractor lost work days,</li> <li>13) contractor days away,</li> <li>14) contractor OSHA recordable rate,</li> <li>15) number of fires requiring engine response attributed to PG&amp;E operations, and employee fatalities and life-altering injuries attributed to PG&amp;E operations.</li> </ol>
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E	Implementation Timeline	Implementation and milestones will be determined in the CPUC Safety Model Assessment Proceeding (S-MAP) [A.15-05-003].
F	Implementation Status	In Progress
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Implementation will be considered complete upon PG&amp;E's first report as directed by the CPUC.</p> <p><u>Sustainability</u>: Sustainability will be linked to the nature of the CPUC's direction on reporting requirements.</p>

1. Critical Recommendations: F-7

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	F-7
B	Recommendation	A non-punitive system for reporting actual and potential safety incidents to the CPUC to encourage reporting and facilitate lessons learned sharing among all California utilities. To the extent that the utilities are made aware of incidents or potential incidents in other states this information could also be shared.
C	Key Term Definitions	N/A
D	Implementation Plan	<p>PG&amp;E currently tracks actual safety incidents, e.g., injuries, motor vehicle incidents, and potential incidents or near hits. In addition, incidents that meet specific regulatory definitions are reported to regulatory agencies, e.g., the CPUC or California OSHA.</p> <p>The CPUC’s Safety Action Plan includes a proposal to implement a Safety Reporting System. In 2016, SED’s Utility Risk Assessment and Advisory Section staff developed a proposal for applying lessons learned from the aviation and oil industries to encourage electric and gas utilities to participate in a non-punitive “close call” reporting system. SED’s 2017 Work plan includes its intention to work with other Commission entities to support possible development of a utility framework in a rulemaking or other proceeding. PG&amp;E will support such a proceeding to develop this framework and its ultimate implementation strategy.</p>
D	Implementation Timeline	An implementation plan will be developed in accordance with any Commission rulemaking or other proceeding with respect to this recommendation.
E	Implementation Status	Not Started
F	Assessment of Completion and Sustainability of PG&E’s Implementation Plan	<p><u>Completion</u>: The documentation of completion and effectiveness for this recommendation will be determined in accordance with a Commission proceeding to address this recommendation.</p> <p><u>Sustainability</u>: Sustainability will be linked to the nature of the CPUC’s direction on reporting requirements.</p>

1. Critical Recommendations: F-8

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>										
A	Reference ID	F-8								
B	Recommendation	A Performance-Based Ratemaking (PBR) mechanism that includes a safety element to be considered in the rate design phase of the TY2017 PG&E General Rate Case (A.15-09-011). The PBR mechanism should include a traditional rate of return component and a variable safety-related component based on pre-defined criteria and the discretion of the CPUC.								
C	Key Term Definitions	<u>Variable Safety Related Component</u> : This type of PBR mechanism is sometimes referred to as a targeted performance mechanism. A targeted performance mechanism allows for rewards/penalties if targeted performance levels are surpassed/not achieved, respectively.								
D	Implementation Plan	<p>Consider elements of an appropriate targeted performance mechanism design such that it:</p> <ul style="list-style-type: none"> <li>• results in the desired outcome;</li> <li>• avoids unintended consequences;</li> <li>• is reasonably achievable; and</li> <li>• has predictable and meaningful rewards/penalties.</li> </ul> <p>The appropriate forum for considering a variable safety-related component is Phase 1 of a General Rate Case (GRC) where all relevant factors can be considered, e.g., alignment between safety goals and the budgets needed to achieve them, relative levels of rewards/penalties in view of the overall cost of service, etc.</p> <p>Timing of implementation is dependent on designation of a regulatory forum by the CPUC.</p> <p>To support consideration of a variable safety-related component, PG&amp;E will identify existing best practices where targeted safety performance mechanisms have been an effective driver of safety culture and performance and include testimony regarding a PBR mechanism in its 2020 GRC.</p>								
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TBD	Appropriate regulatory forum is selected by the CPUC									
Jun. 2018	Best practices identified by PG&E									
Aug. 2018	PG&E to address PBR mechanism in its 2020 GRC									
F	Implementation Status	Pending								

G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion:</u> Completion will be determined based on regulatory guidance.</p> <p><u>Sustainability:</u> Sustainability of a PBR mechanism adopted for use at PG&amp;E will be evidenced through the appropriate regulatory proceeding.</p>
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2. Governance and Strategy: III-1

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>						
A	Reference ID	III-1				
B	Recommendation	<p>Add safety to the list of qualifications used in selecting Independent Directors to the Board(s) of PG&amp;E Corp. and PG&amp;E. Periodically revisit the qualifications matrix and requirements for Independent Director as the industry and requirements change. Add Independent Directors to the Board who have experience with safety, perhaps in another industry such as aviation.</p>				
C	Key Term Definitions	N/A				
D	Implementation Plan	<p>Management has recommended that the Boards and their committees consider adding safety qualifications and other industry-appropriate or additional required attributes to the list of characteristics/qualifications to consider when the Boards and their committees: (1) evaluate new director candidates; and (2) assess director candidates (including incumbent directors) for election at the annual shareholder meeting.</p> <p>[NOTE: This plan covers actions that management can take unilaterally. As such, it does not address any Board-level actions required to implement the recommendations]</p>				
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<u>Date</u>	<u>Milestone</u>					
Dec. 2017	Management will recommend that the PG&E Corporation and PG&E Boards consider adding safety experience/expertise to the desired characteristics and qualifications of director candidates.					
F	Implementation Status	Complete				
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion:</u> Documentation of Management's recommendation to the Board in Dec 2017.</p> <p><u>Sustainability:</u> The companies' respective Corporate Governance Guidelines (adopted by each company's Board of Directors) currently require that the Nominating and Governance Committee of the PG&amp;E Corporation Board annually review the appropriate skills and characteristics required of each Board's members, and submit such proposed skills and characteristics to the Board of Directors of each company for approval. A description of the approved skills and characteristics is included in the annual joint proxy statement which is published in connection with each company's annual shareholder meeting.</p>				



2. Governance and Strategy: III-5

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>								
A	Reference ID	III-5						
B	Recommendation	Internal Audit should play a more active role in auditing safety controls, programs and processes.						
C	Key Term Definitions	<u>Audit Plan</u> : Internal Auditing's (IA) annual plan of work approved by the Audit Committees of the Board.						
D	Implementation Plan	<p>To increase its role in auditing safety processes and controls, IA will take the following actions:</p> <ul style="list-style-type: none"> <li>• Hold a mid-year discussion with the VP, Safety &amp; Health to identify additional safety-related audits to perform during 2017.</li> <li>• Incorporate recommendations into 2018 Audit Plan presented to the Audit Committees for approval.</li> </ul>						
E	Implementation Timeline	<table border="0"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Oct. 2017</td> <td>Per Internal Audit's normal reporting process, all quarterly reports to the Audit Committees reflect any revisions to the Audit Plan (Q3 report presented on October 30, 2017)</td> </tr> <tr> <td>Dec. 2017</td> <td>Audit Plan to be presented and approved by the Audit Committee.</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Oct. 2017	Per Internal Audit's normal reporting process, all quarterly reports to the Audit Committees reflect any revisions to the Audit Plan (Q3 report presented on October 30, 2017)	Dec. 2017	Audit Plan to be presented and approved by the Audit Committee.
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Dec. 2017	Audit Plan to be presented and approved by the Audit Committee.							
F	Implementation Status	Complete						
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Documentation will be evidenced through the 2018 Audit Plan that will be completed and approved in December and through any new audits added in 2017 that would be evidenced through our quarterly Audit Committee reports.</p> <p>Evidence that can be provided:</p> <ul style="list-style-type: none"> <li>• Listing of safety specific audits and control advisories performed 2016 vs 2017 to show the increase for the current year.</li> <li>• Comparison of safety specific audits in the 2017 and 2018 audit plans to show the increase from a planning perspective from pre- and post-Safety Implementation Plans.</li> </ul> <p><u>Sustainability</u>: Internal Audit (IA) will sustain this increased focus on auditing safety controls and processes during the annual process to develop the Audit Plan. Part of IA's process is to review year-over-year trends, and this review will ensure that a similar level of coverage exists in future years.</p>						

3. Organization: IV-1

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>												
A	Reference ID	IV-1										
B	Recommendation	<p>Appoint a Corporate Safety Officer who has both operations and professional safety experience. NorthStar is aware that Mr. Higgins replaced Mr. Bell as Corporate Safety Officer on March 1, 2017. While Mr. Higgins has operating experience with National Grid, PG&amp;E and other utilities, he does not have professional safety training or experience. Mr. Higgins should undertake a professional training program that will provide him with the necessary skills as soon as possible.</p>										
C	Key Term Definitions	N/A										
D	Implementation Plan	<p>An on-boarding plan has been created to ensure that any new Corporate Safety Officer (CSO) receives guidance about areas for development which compliment their experience and skills relevant to this position. Key compliance commitments were identified within the scope of the CSO’s organizational responsibility. For each commitment, one or more on-boarding technique was identified, e.g., certification, training, subject-matter expert briefing, The CSO leverages PG&amp;E’s annual development plan process to set goals and track progress toward filling any identified knowledge or skill gaps. The CSO’s immediate supervisor (currently the President and COO) is responsible for monitoring and supporting completions of all development plans.</p> <p>PG&amp;E considered including a requirement that the CSO attend INPO’s annual course for educating non-nuclear executive about aspects of nuclear operations appropriate for those who may find themselves in the chain-of-command for a nuclear power plant. This course is already one elements of PG&amp;E’s senior executive development. Should it be necessary, the CSO may be required to take this course, however, not as an element of standard on-boarding for the position.</p>										
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F	Implementation Status	Complete										

G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<u>Completion</u> : CSO On-Boarding plan is evidence of completion <u>Sustainability</u> : Evidence of attachment of CSO On-boarding plan to the CSO job description is evidence of sustainability
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3. Organization: IV-2

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>								
A	Reference ID	IV-2						
B	Recommendation	The Corporate Safety Officer (COO) should report to the COO of the Utility and to the NOS Committee of the Board in the same manner that the head of Internal Audit reports to the Audit Committee of the Board in most public companies. (It is NorthStar’s understanding that this has been implemented.)						
C	Key Term Definitions	N/A						
D	Implementation Plan	The Corporate Safety Officer reports to the PG&E (Utility) COO. The charters of the PG&E Corporation Safety and Nuclear Oversight Committee (formerly the NOS Committee until 9/2017) and the Utility Safety and Nuclear Oversight Committee document how the Corporate Safety Officer reports to the SNO Committees.						
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<u>Date</u>	<u>Milestone</u>							
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May 2017	Nuclear Operating and Safety Committee charter reflects COO reporting structure. (Same provisions included in Utility Safety and Nuclear Oversight Committee Charter upon adoption in September 2017)							
F	Implementation Status	Complete						
G	Assessment of Completion and Sustainability of PG&E’s Implementation Plan	<p><u>Completion:</u> The Corporate Safety Officer’s reporting relationship to the Utility COO is reflected in the Utility’s internal systems (e.g., Who’s Who).</p> <p><u>Sustainability:</u> The Safety and Nuclear Oversight Committee charters are posted on the PG&amp;E Corporation and Utility website, in the Corporate Governance section (<a href="#">link</a>).</p>						

3. Organization: IV-3

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>																
A	Reference ID	IV-3 (Master Plan for IV-4)														
B	Recommendation	<p><b>IV-3:</b> Examine workload levels, potential morale issues and other demands to understand and mitigate the reasons for the high turn-over at the Sr. Director, Safety and Health position and throughout the Corporate Safety organization.</p> <p><b>IV-4:</b> Following the development of the safety strategy, review the structure, reporting relationships and staffing levels of the Corporate Safety organization to ensure PG&amp;E has the resources necessary for strategy execution and proper coordination with/support for the LOBs.</p>														
C	Key Term Definitions	N/A														
D	Implementation Plan	<p>Multiple strategies have been identified to mitigate challenges with high turnover, staffing levels, structural alignment and coordination of the Corporate Safety and Health roles and responsibilities. These strategies are also necessary to support execution of the One PG&amp;E Occupational Health &amp; Safety Plan.</p> <p>Strategies include processes designed to share information and improve collaboration between employees and the extended leadership team, enhancements to the service delivery model and governance over staffing and department goals.</p>														
E	Implementation Timeline	<table border="0"> <thead> <tr> <th style="text-align: left;"><u>Date</u></th> <th style="text-align: left;"><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>May 2017</td> <td>Begin a daily call with all S&amp;H ELT to communicate key business practices &amp; improve collaboration</td> </tr> <tr> <td>Jun. 2017</td> <td>Evaluation of current-state structure and non-value-add demands</td> </tr> <tr> <td>Sep. 2017</td> <td>Implement an organizational rotation plan to develop future leaders and promote cross-functional learning</td> </tr> <tr> <td>Oct. 2017</td> <td>Develop a staffing plan to fill and track vacancies</td> </tr> <tr> <td>Dec. 2017</td> <td>Develop an annual process to provide guidance and feedback on goals. The process will include looking at alignment with the 5-year strategy, consistency amongst the organization, and evaluation of measurable actions</td> </tr> <tr> <td>Jan. 2018</td> <td>Execution of an agreed upon Safety and Health organizational structure that supports the implementation of the 5-year strategy. –Phase 1 complete on Sep. 2017 – Phase 2 complete on Oct. 2017 – Phase 3 complete on Jan. 2018</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	May 2017	Begin a daily call with all S&H ELT to communicate key business practices & improve collaboration	Jun. 2017	Evaluation of current-state structure and non-value-add demands	Sep. 2017	Implement an organizational rotation plan to develop future leaders and promote cross-functional learning	Oct. 2017	Develop a staffing plan to fill and track vacancies	Dec. 2017	Develop an annual process to provide guidance and feedback on goals. The process will include looking at alignment with the 5-year strategy, consistency amongst the organization, and evaluation of measurable actions	Jan. 2018	Execution of an agreed upon Safety and Health organizational structure that supports the implementation of the 5-year strategy. –Phase 1 complete on Sep. 2017 – Phase 2 complete on Oct. 2017 – Phase 3 complete on Jan. 2018
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F	Implementation Status	In Progress.
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Completion will be assessed for each of the milestones in the plan. Specific documentation will include:</p> <ul style="list-style-type: none"> <li>• Evidence of outlook invites and agenda for the Daily Calls</li> <li>• June2017 Current State presentation materials</li> <li>• Material from the Extended Leadership Team meeting on 8/22/2017 announcement of rotational program</li> </ul> <p><u>Sustainability</u>: The leadership team (Sr. Director and their direct reports) is accountable for the sustainability and continuous improvement of these strategies. Examples of steps they are currently taking to ensure sustainability include:</p> <ul style="list-style-type: none"> <li>• Staffing is on the weekly agenda of the Sr. Director of Corporate Safety &amp; Health.</li> <li>• A report can be run by HR on goals to see the roll-up and roll-down across the entire organization.</li> </ul>

5. Budgeting and Spending: VI-1

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>										
A	Reference ID	VI-1								
B	Recommendation	Develop a method of separating “safety” expenditures from routine reliability and integrity expenditures. This may occur as part of the CPUC’s Risk Assessment Mitigation Phase (RAMP) process.								
C	Key Term Definitions	<p><u>Safety Model Assessment Proceeding (S-MAP)</u>: A regulatory proceeding that undertakes a comprehensive analysis of each utility’s risk-based decision-making approach, compares the different approaches, detects whether there are common elements among the approaches, and assess whether elements of one utility can be adapted for use by other utilities. The S-MAP proceeding provides RAMP direction on the modeling that should be used.</p> <p><u>Risk Assessment Mitigation Phase (RAMP)</u>: A regulatory proceeding that precedes the filing of the GRC. This phase orders utilities to develop a “risk-based decision-making framework to evaluate safety and reliability improvements and revise the rate case plan for energy utilities.” RAMP will be filed once every three years preceding PG&amp;E’s GRC filing. In 2017, PG&amp;E will file its first RAMP Report with the Commission on November 30, 2017.</p> <p><u>GRC</u>: Regulatory filing made every three years to the CPUC for approval of utility funding.</p> <p><u>Safety Reporting</u>: will transparently communicate safety exposure for each risk in a common language, which enables Commission and parties to understand and compare utilities’ safety risk exposure.</p> <p><u>Safety Risk Scoring</u>: will develop common safety risk scores using natural units, which enables Commission and parties to understand and compare utilities’ safety risk profiles.</p> <p><u>Safety Risk Spend Efficiency</u>: will calculate common safety risk spend efficiencies for mitigations, which enables Commission and parties to understand and compare utilities’ efficiency of safety mitigations.</p>								
D	Implementation Plan	In support of the RAMP filing, the company has made adjustments to SAP (PG&E’s Enterprise Resource Planning Information System) to incorporate RAMP related IDs to track mitigation costs to be used in future accountability reporting. Forecasted cost for the years 2018 through 2022, are tagged as “RAMP” and have a field indicating the primary safety risk that this work is associated with reducing. This allows PG&E to more-easily track costs associated with these risk mitigations.								
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F	Implementation Status	Complete
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion:</u> A report from the financial system, filtering for planning orders marked RAMP, and presenting forecasted costs by primary risk being mitigated for the years 2018 through 2022, will provide evidence of completion.</p> <p><u>Sustainability:</u> The use of the RAMP flag has simplified the review process for for Business Finance to ensure that all risk mitigation work proposed in the RAMP filing is also planned in the system and flagged appropriately. Business Finance reviews the amounts planned in the system by safety risk and compares to the amounts proposed in the RAMP filing. Any potential changes to these planning orders are being tracked as versions are being saved off over time.</p>



5. Budgeting and Spending: VI-2

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>								
A	Reference ID	VI-2						
B	Recommendation	Develop business case support and a record of management approval for safety initiatives in accordance with PG&E’s Project Approval Procedure.						
C	Key Term Definitions	<p>An <u>Initiative</u> is a unique undertaking purposed with the design and implementation of strategic changes to organizations and processes. Best practices are codified in Change Leadership and process design principles. Primary constraints are leadership bandwidth, subject matter expertise and stakeholder adoption capacity.</p> <p>A <u>Project</u> is a unique undertaking purposed with designing and constructing equipment, facilities or software and associated processes. Best practices are codified by the Project Management Institute. Primary constraints are capital and time.</p>						
D	Implementation Plan	<p>PG&amp;E’s project approval procedure is designed for project governance as opposed to initiative governance (see Key Terms section for definitions).</p> <p>This proposal applies to initiatives impacting occupational health and safety risks. PG&amp;E proposes designing and implementing a separate Safety Initiative Business Case that utilizes Session D of the integrated planning process as the approval review committee. The scope and scale of items brought to Session D for approval are those with material impacts to the stated risks. Items not expected to have these impacts would not be brought to Session D for approval.</p> <p>Corporate Safety and Health will design a template modeled after PG&amp;E’s Project Approval process and include the template and record of management approval within Session D. Initiatives will be scored using the same risk spend efficiency framework used during the RAMP process and results of that scoring will be a part of the Session D material that is reviewed and approved by senior leadership.</p> <p>Implementation will follow the 2018 integrated planning calendar for the occupational health and safety risks (employee, motor vehicle, and contractor safety risks).</p>						
E	Implementation Timeline	<table border="0"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Feb. 2018</td> <td>Template and Guidance /Procedure complete</td> </tr> <tr> <td>Apr. 2018</td> <td>Session D complete</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Feb. 2018	Template and Guidance /Procedure complete	Apr. 2018	Session D complete
<u>Date</u>	<u>Milestone</u>							
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Apr. 2018	Session D complete							
F	Implementation Status	In Progress						

G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Recommendation implementation will be demonstrated with the completion of final 2018 Session D materials, including the template referenced above. Additionally, evidence of management approval will include the agenda discussed during Session D and any related action items.</p> <p><u>Sustainability</u>: Integrating Planning Process templates are reviewed each year for continuous improvement opportunities.</p>
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5. **Budgeting and Spending: VI-3**

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	VI-3
B	Recommendation	Develop a method for weighting the value of management initiated safety programs comparable to the Risk Informed Budget Allocation (RIBA) but focused on management and training.
C	Key Term Definitions	N/A
D	Implementation Plan	<p>The RIBA process is designed to evaluate the risk of not doing a particular project and to ensure those projects that are highest ranked are given priority consideration for budget allocation.</p> <p>PG&amp;E believes the objective of this recommendation is to ensure that the management-initiated safety programs that have the greatest potential to reduce overall safety risk are given priority consideration for budget allocation.</p> <p>In November 2017, PG&amp;E submitted its first Risk Assessment Mitigation Plan (RAMP) filing to the California Public Utilities Commission and is engaged in settlement discussions as part of the Safety Assessment Mitigation Phase (S-MAP) proceeding – both of which are centered around efficient risk reduction of top safety risks, including employee and contractor safety.</p> <p>PG&amp;E will leverage lessons learned through the RAMP and S-MAP processes to quantitatively evaluate the risk reduction potential of management-initiated safety programs and prioritize those that represent the largest risk reduction potential. Also similar to the RIBA process, management will evaluate the prioritized management-initiated safety programs in light of operational constraints such as overall feasibility, cost, and other factors to establish the final list of approved management-initiated safety programs.</p> <p>The methodology for quantifying risk reduction potential addresses these questions:</p> <ul style="list-style-type: none"> <li>• What is the risk you are trying to reduce?</li> <li>• What are the key risk drivers?</li> <li>• Are the current controls operating consistently across the company?</li> <li>• How effectively are these controls working?</li> <li>• What is the range of consequences associated with the risk?</li> <li>• What additional actions can be taken to further reduce risk, i.e., reducing frequency of a risk driver or limit consequences of an event?</li> </ul> <p>Based on this analysis, overall risk reduction is calculated, options are ranked and constraints applied, and the portfolio of management-initiated safety programs is selected. This process will be applied within the structure of the 2018 Integrated Planning Process.</p>

E	Implementation Timeline	<table border="1"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Mar. 2018</td> <td>Preliminary prioritization analysis for Session D</td> </tr> <tr> <td>Jul. 2018</td> <td>Prioritization analysis for S-1</td> </tr> <tr> <td>Nov. 2018</td> <td>Prioritization analysis for S-2</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Mar. 2018	Preliminary prioritization analysis for Session D	Jul. 2018	Prioritization analysis for S-1	Nov. 2018	Prioritization analysis for S-2
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Jul. 2018	Prioritization analysis for S-1									
Nov. 2018	Prioritization analysis for S-2									
F	Implementation Status	In Progress								
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Inventory of management safety initiatives, guidance of methodology, understanding and plan to address any deficiencies.</p> <p><u>Sustainability</u>: Review of inventory on an annual basis; integration of management safety initiatives into LOB planning for upcoming years.</p>								

5. Budgeting and Spending: VI-4

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	VI-4
B	Recommendation	Move forward with planned implementation of the Power Generation IPP Portfolio Planning and Management (PPM) system for all operational LOBs.
C	Key Term Definitions	<u>PGEN PPM</u> : Power Generation Projects and Portfolio Management.
D	Implementation Plan	<p>PG&amp;E will proceed with the implementation of Enterprise Project Portfolio Management (EPPM) for all of the operational LOB in alignment with the overall Information Technology (IT) EPPM roll-out timeline. In the near term, PG&amp;E will migrate Power Generation over to EPPM.</p> <p>There are two separate technology project requests which represent the scope of this recommendation. They both have LOB sponsors and will be supported through the technology project prioritization process. They are as follows:</p> <p><u>#684 Power Generation (PGEN)</u>: Consolidate PGEN PPM into EPPM, which represents the conclusion of the Power Generation PPM implementation plan; and</p> <p><u>#670 Finance &amp; Risk</u>: Enterprise Project Management (EPM) – Enterprise PM Tools, which represents the five year plan to implement EPPM in the remaining LOBs.</p> <p>The completion of both projects will create a single, enterprise-wide system for portfolio and project management as stated in the recommendation. This will include the following functions:</p> <ul style="list-style-type: none"> <li>• routing project approvals and project/portfolio changes (including contract change orders),</li> <li>• automating the associated transactions</li> <li>• standardizing enterprise reporting.</li> </ul> <p>Note: When Power Generation is complete, PG&amp;E will have completed the implementation of EPPM to the “operational LOBs” as specified in the recommendation. PG&amp;E still intends to complete a full enterprise roll-out of EPPM in accordance with S1 plans.</p>

E	Implementation Timeline	<p>The specific milestones for the implementation plan will follow the dates established by the Integrated Planning team. The deliverable of ‘a prioritized technology projects list’ is a part of their timeline.</p> <table border="1"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Dec. 2017</td> <td>Technology project intake and evaluation – both projects completed all required fields and produced all required documents for prioritization.</td> </tr> <tr> <td>Dec. 2017</td> <td>Technology projects are prioritized for 2018 and a list is produced and shared across the LOBs by mid-QTR4, to allow results to be incorporated into budget planning for 2018. The preliminary list was completed and shared the week of October 12<sup>th</sup>.</td> </tr> <tr> <td>Jan. 2018</td> <td>Per the current plan, the Power Generation project should begin in January. This effort will move PGEN fully to the EPPM and address the stated recommendation.</td> </tr> <tr> <td>Jan. 2018</td> <td> <p>If the current plan is approved and fully resourced, the 2018 scope for Enterprise Project Management (EPM) – Enterprise PM Tools should begin in February and will deliver the following:</p> <ul style="list-style-type: none"> <li>• Deploy Enterprise PM Tools to all Lines of Business not currently using the end-to-end solution; and</li> <li>• Automate Project Governance and Integrated Change Control processes by integrating a workflow and collaboration layer (most likely Primavera Unifier) with Enterprise PM Tools.</li> </ul> </td> </tr> <tr> <td>Dec. 2018</td> <td>Consolidate PGEN PPM into EPPM (Planned Target Date)</td> </tr> <tr> <td>2019-2022</td> <td>EPM – Enterprise PM Tools will repeat the process above to deliver the functionality to the remaining LOBs</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Dec. 2017	Technology project intake and evaluation – both projects completed all required fields and produced all required documents for prioritization.	Dec. 2017	Technology projects are prioritized for 2018 and a list is produced and shared across the LOBs by mid-QTR4, to allow results to be incorporated into budget planning for 2018. The preliminary list was completed and shared the week of October 12 <sup>th</sup> .	Jan. 2018	Per the current plan, the Power Generation project should begin in January. This effort will move PGEN fully to the EPPM and address the stated recommendation.	Jan. 2018	<p>If the current plan is approved and fully resourced, the 2018 scope for Enterprise Project Management (EPM) – Enterprise PM Tools should begin in February and will deliver the following:</p> <ul style="list-style-type: none"> <li>• Deploy Enterprise PM Tools to all Lines of Business not currently using the end-to-end solution; and</li> <li>• Automate Project Governance and Integrated Change Control processes by integrating a workflow and collaboration layer (most likely Primavera Unifier) with Enterprise PM Tools.</li> </ul>	Dec. 2018	Consolidate PGEN PPM into EPPM (Planned Target Date)	2019-2022	EPM – Enterprise PM Tools will repeat the process above to deliver the functionality to the remaining LOBs
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F	Implementation Status	In Progress														

G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: All large technology projects are documented in the approved Book of Work that is governed by the Technology Project Steering Committee (TPSC). The TPSC convenes every month and makes decisions at an enterprise level on all projects in the portfolio.</p> <p>The sign-off of the project exit criteria, as approved through technology project governance requirements, will constitute evidence of completion.</p> <p><u>Sustainability</u>: Based on LOB concurrence provided on 11/6/2017, Power Gen will use its existing planning standard, portfolio planning procedure, and project planning procedure after the migration to EPPM to demonstrate evidence of compliance and sustainability. All committed functionality that IT delivers in the EPPM migration should support the standards and procedures. As EPPM is rolled out to the remaining LOBs, they will be required to produce similar documentation as evidence of sustainability.</p>
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5. Budgeting and Spending: VI-5

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>														
A	Reference ID	VI-5												
B	Recommendation	Continue efforts to better link IPP Session D to the Session 1 and 2 processes.												
C	Key Term Definitions	N/A												
D	Implementation Plan	Integrated Planning risk Templates for top risks for Session 1 and Session 2 will be updated to reflect a tighter connection of resources and detailed plans that were discussed at Session D. Planning teams will integrate the top risk mitigation work into the planning cycle and use the redefined resource rings to highlight any budget challenges for the current year or outer years. The new ring definitions will highlight in year budget challenges that can either be resolved within an LOB (re-prioritization of work) or challenges that need to be resolved at an Enterprise level. Mitigations that show up at Session D for the current year will have gone through the integrated planning process (Session 1 and Session 2) of the previous year.												
E	Implementation Timeline	<p>Implementation is part of the standard Integrated Planning Process. PG&amp;E will revise the current definitions of the resource statuses to help ensure funding discussions are relevant and in line with the integrated planning cycle. Estimated timeline are as follows (as integrated planning calendar has not been developed for outer years yet):</p> <table border="0"> <thead> <tr> <th style="text-align: left;"><u>Date</u></th> <th style="text-align: left;"><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Dec. 2017</td> <td>Redefine resource status definitions</td> </tr> <tr> <td>Mar. 2018</td> <td>New ring definitions included at Session D (as well as an understanding of how financials associated to mitigations fit within LOB portfolio of work)</td> </tr> <tr> <td>Jul. 2018</td> <td>Session 1</td> </tr> <tr> <td>Jul. 2018</td> <td>Session 2 financial targets published</td> </tr> <tr> <td>Oct. 2018</td> <td>Session 2</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Dec. 2017	Redefine resource status definitions	Mar. 2018	New ring definitions included at Session D (as well as an understanding of how financials associated to mitigations fit within LOB portfolio of work)	Jul. 2018	Session 1	Jul. 2018	Session 2 financial targets published	Oct. 2018	Session 2
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F	Implementation Status	In Progress												
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Integrated Planning guidance documents will reflect the improvements to the Integrated Planning Process.</p> <p><u>Sustainability</u>: A comparison of 2017 to 2018 templates and guidance documents will be provided with specific changes noted to reflect the tighter connection. Post S2 (which is the last of the IPP step), we will perform a review of the entire IPP for the year just completed for continuous improvement opportunities, and in that discussion we will include whether there has been improvements in better linking Session D to Session 1 and 2.</p>												



6. Compensation and Performance Management: VII-1

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	VII-1 (Master Plan for VII-4 and VII-5)
B	Recommendation	<p><b>VII-1:</b> None of the KPIs currently considered for use in measuring safety culture should be included as an incentive measure (i.e., included as part of the Short-Term Incentive Program (STIP) or the Long-Term Incentive Program (LTIP). This will only serve to provide artificially inflated results or drive unintended consequences. Most of the proposed metrics are based on either employee surveys or near hit/CAP reporting. Incentives tied to employee submittals will ensure targets are met and may minimize the value of the submittals (for example, a sudden influx of not particularly meaningful submittals prior to the end of a reporting period). Similarly, an incentive tied to survey results will drive positive reporting rather than true results,</p> <p><b>VII-4:</b> Reevaluate the appropriateness of the Earning from Operations component of the STIP due to its lack of transparency and the ongoing adjustments for Items Impacting Comparability.</p> <p><b>VII-5:</b> Revisit all STIP metrics and targets in light of the enterprise-wide safety plan recommended by NorthStar. Set multi-year targets to drive performance. Include a contractor safety metric in the STIP. Following the development of the enterprise safety plan, PG&amp;E should develop STIP and BPR metrics that measure plan implementation/ adoption and the effectiveness of the various initiatives identified in the plan. PG&amp;E should continue monitor and report lagging OSHA metrics (i.e., DART, LWD, MVI, fatalities) as part of the BPR process.</p>
C	Key Term Definitions	<p><u>LTIP</u>: Long Term Incentive Plan.</p> <p><u>STIP</u>: Short Term Incentive Plan.</p> <p><u>Board of Directors</u>: may be the full Board of Directors of PG&amp;E Corporation or a specific committee of the Board of Directors.</p>
D	Implementation Plan	<p>As part of the annual STIP governance process, PG&amp;E will:</p> <ol style="list-style-type: none"> <li>1. Assess safety metrics with the goal of increasing reliance on leading indicators and implements metrics that are not based on surveys or employee submittals unless there are adequate controls.</li> <li>2. Validate the weighting of safety and non-safety-related metrics appropriately reflect the Company’s priorities.</li> <li>3. Validate the chosen financial metric.</li> <li>4. Add a contractor safety metric.</li> </ol> <p>As part of the annual LTIP governance process, PG&amp;E will:</p> <ol style="list-style-type: none"> <li>1. Assess safety metric.</li> <li>2. Validate weighting of safety metric.</li> </ol>

E	Implementation Timeline	<table border="1"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Dec. 2017</td> <td>PG&amp;E Management evaluates and develops proposal for 2018 metrics for the 2018 STIP</td> </tr> <tr> <td>Dec. 2017</td> <td>Presentation to the Board of Directors to determine the 2018 STIP structure and proposed metrics</td> </tr> <tr> <td>Feb. 2018</td> <td>Board of Directors approves 2018 STIP metrics and targets</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Dec. 2017	PG&E Management evaluates and develops proposal for 2018 metrics for the 2018 STIP	Dec. 2017	Presentation to the Board of Directors to determine the 2018 STIP structure and proposed metrics	Feb. 2018	Board of Directors approves 2018 STIP metrics and targets
<u>Date</u>	<u>Milestone</u>									
Dec. 2017	PG&E Management evaluates and develops proposal for 2018 metrics for the 2018 STIP									
Dec. 2017	Presentation to the Board of Directors to determine the 2018 STIP structure and proposed metrics									
Feb. 2018	Board of Directors approves 2018 STIP metrics and targets									
F	Implementation Status	In Progress								
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion:</u> 2018 STIP metrics will be reported to the CPUC as part of PG&amp;E's 2020 General Rate Case filing in September 2018.</p> <p><u>Sustainability:</u> STIP and LTIP are evaluated each year as part of the Board's annual compensation approval process.</p>								

6. Compensation and Performance Management: VII-2

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>						
A	Reference ID	VII-2				
B	Recommendation	Continue to track metrics eliminated from STIP as part of the Business Performance Review (BPR) process to allow trending.				
C	Key Term Definitions	<p><u>The Business Plan Review (BPR)</u>: is the monthly process the Company uses to track performance on key metrics across each LOB. The process culminates in a BPR meeting each month with the SVP team.</p> <p><u>The Short-Term Incentive Plan (STIP)</u>: is an at-risk component of pay that rewards eligible employees for meeting or exceeding performance expectations that in turn drive our financial and operating performance. STIP metrics are part of the BPR process. The STIP award is meant to reinforce PG&amp;E's belief that individual performance has a collective impact on our success as a company. STIP rewards participating employees annually, and is tied to company and individual performance. Thus, award payments are never guaranteed.</p>				
D	Implementation Plan	<p>Continue to track safety metrics eliminated from STIP as part of the Business Plan Review (BPR) process. To ensure this current practice continues, it has been built into the company Business Plan Review standard, Utility Standard: FIN 1130S.</p> <p>The portfolio of STIP metrics is reevaluated each year during the S-2 process. During the process, metrics may be removed the STIP portfolio, for example once certain targets are met and sustained over a sufficient period of time.</p> <p>Going forward, PG&amp;E will continue to track safety metrics that are removed from the STIP portfolio within the broader BPR. During the S-2 process, where LOBs determine their BPR scorecards for the following year, the Integrated Planning Team will ensure that removed STIP safety metrics are still tracked on the appropriate LOB's scorecard. For example, while the Lost Workday metrics is no longer a STIP metric, it continues to be tracked within the Safety LOB BPR scorecard. To ensure this happens, the Integrated Planning Team has built this process into the company Business Plan Review standard, Utility Standard: FIN 1130S. The team will also update the S-2 guidance for LOBs and review metric lists during the S-2 planning process to ensure safety metrics removed from STIP remain in the BPR. The LOBs use this guidance to help them build out their BPR metric portfolios.</p>				
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<u>Date</u>	<u>Milestone</u>					
Oct. 2016	Final 2016 S-2 includes LWD in the 2017 BPR Safety Dashboard after LWD was removed from the 2016 STIP					

F	Implementation Status	Complete
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Completion was demonstrated by comparing the 2016 BPR metrics to the 2017 BPR metrics to show that LWD was removed from STIP but remained in an LOB scorecard.</p> <p><u>Sustainability</u>: The process of continuing to track safety metrics eliminated from STIP as part of the BPR has been built into the company Business Plan Review standard, Utility Standard: FIN 1130S.</p>

6. Compensation and Performance Management: VII-3

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>										
A	Reference ID	VII-3								
B	Recommendation	Increase the weighting of safety in the LTIP to more closely align safety performance and executive compensation.								
C	Key Term Definitions	<p><u>LTIP</u>: Long-Term Incentive Plan</p> <p><u>Compensation Committee</u>: the Compensation Committee of the PG&amp;E Corporation Board of Directors.</p> <p><u>2018 LTIP guidelines</u>: the award mix, performance measures, targets, and terms for LTIP awards to be granted in 2018.</p>								
D	Implementation Plan	<p>PG&amp;E management will submit the LTIP design, including the NorthStar recommendation to the Safety and Nuclear Operations Committee for consideration as part of the annual LTIP review and approval process.</p> <p>The Safety and Nuclear Oversight Committee will then advise the Compensation Committee regarding safety and operational goals.</p>								
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F	Implementation Status	In Progress								
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Annual LTIP metrics will be reported to the CPUC through the process agreed to as a result of recommendation F-6. Annual LTIP metrics will also be disclosed publicly through the annual PG&amp;E Corporation and Pacific Gas and Electric Company joint proxy statement.</p> <p><u>Sustainability</u>: The Compensation Committee review and approval of LTIP is an existing annual process.</p>								

6. Compensation and Performance Management: VII-6

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	VII-6
B	Recommendation	Develop a more robust and comprehensive set of BPR metrics addressing all aspects of safety such as public, employee and contractor safety; facility, infrastructure/asset and cyber security; environmental safety; public awareness; and, safety culture.
C	Key Term Definitions	<p><u>The corporate “BPR”</u> is the Business Plan Review in which the utility president facilitates a meeting with all Senior Vice Presidents and the VP of Safety and Health to review key company metrics.</p> <p><u>The S-1</u> is PG&amp;E’s yearly process for long term (5-year) strategic planning.</p> <p><u>The S-2</u> is PG&amp;E’s process for short term (2-year) detailed planning. It includes setting budget targets, deciding on the BPR metric list for the following year, and setting BPR metric targets.</p>

D	Implementation Plan	<p>Through the 2017 iteration of the Integrated Planning Process (IPP) each Line of Business (LOB) developed a 5-year operational plan (S-1) and a 2-year execution plan (S-2). Concurrently, the Safety &amp; Health organization developed the One PG&amp;E Occupational Health and Safety Plan in partnership with the LOBs.</p> <p>During the S-1 timeframe (March-July), each LOB identified its 5-year goals, major operational strategies, and performance metrics that support those goals and strategies. Given the strong partnership between the LOBs and the Safety &amp; Health organization, during the S-1 process each LOB had a clear plan in place for how it would execute its portion of the overall One PG&amp;E Occupational Health and Safety Plan.</p> <p>During the S-2 timeframe (August-November), each LOB refined its 5-year operational strategy into a 2-year execution plan. Concurrently, the Safety &amp; Health organization continued to develop its One PG&amp;E Occupational Health &amp; Safety Plan in partnership with the LOBs. During the S-2 process the NorthStar recommendations were released, and the Safety &amp; Health organization updated its One PG&amp;E Safety Plan to reflect the acceptance of those recommendations. As a result, the Safety &amp; Health organization worked with each LOB to ensure that their S-2 plans were aligned to the updated One PG&amp;E Occupational Health and Safety Plan, and ultimately to the recommendations (where appropriate).</p> <p>Part of the alignment process included the LOBs receiving direction to incorporate recommendation VII-6. Following the conclusion of S-2 (November), the corporate BPR team partnered with the Safety &amp; Health organization to check in on the status of successfully incorporating recommendations and work with the LOBs to continue to develop a more robust and comprehensive set of BPR safety metrics.</p> <p>ClearPoint, the formal system of record for the SVP BPR meeting, is scheduled to be updated with 2018 metrics during the last week of January 2018 and the first week of February 2018. The central BPR team and the Safety &amp; Health organization will continue to work with the LOBs to ensure that recommendation VII-6 is appropriately incorporated into the SVP BPR process.</p>										
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Feb. 2018	The formal SVP BPR system of record will be updated with approved metrics during the last week of January 2018 and first week of February 2018											

F	Implementation Status	In Progress
G	Assessment of completion and effectiveness of PG&E's Implementation Plan	<p><u>Completion:</u> Evidence of completion will be demonstrated with the 2018 BPR Scorecard with connections to the S1/S2 safety metrics highlighting the links between the IPP and the BPR.</p> <p><u>Sustainability:</u> The continuous improvement of safety metrics in the BPR is evidence of the sustainability of this process.</p>



6. Compensation and Performance Management: VII-7

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	VII-7
B	Recommendation	<p>Improve the internal sharing of best practices. Increase the level of involvement by different groups and employee levels. As an example, NorthStar performed a management audit of National Grid Gas' New York operations a few years ago for the New York Public Service Commission. The utility had a fairly robust process improvement program. NorthStar's report describing the process is available on the New York State Department of Public Service's website.</p>
C	Key Term Definitions	<p><u>Best practices</u>: includes lesson learned</p>
D	Implementation Plan	<p>The North Star Report on National Grid states that National Grid has an effective change management and continuous improvement processes. Their processes include the establishment of process improvement work streams, performance meetings and Key Performance Indicators.</p> <p>PG&amp;E has implemented a Process Owner model for the One PG&amp;E Occupational Health &amp; Safety Plan (Plan). The eight focus areas of the Plan have an Executive Sponsor who is responsible for the consistent implementation across all Lines of Business. Executive Sponsors meet with the Safety &amp; Health Program Managers on program status, assists in the removal of barriers and aligning of resources. Additionally, the Executive Sponsor is responsible for reporting the progress of their focus area at the Safety Committee meetings.</p> <p>Additionally, a cadence of meetings to facilitate the sharing of progress is in place. Safety and Nuclear Oversight Board of Directors (Quarterly):</p> <ul style="list-style-type: none"> <li>• Safety Committee (Monthly)</li> <li>• Line of Business Safety Council (Monthly)</li> <li>• Grassroots Safety Meetings (Monthly)</li> </ul>

E	Implementation Timeline	<u>Date</u> Jun. 2017  Oct. 2017  Nov. 2017  Nov. 2017  Mar. 2018	<u>Milestone</u> Implement monthly calls on lessons from SIF investigations and learning teams.  Complete research (identify, review and investigate) of other companies who are sharing best practices well, including National Grid.  Establish Executive Sponsors for One PG&E Occupational Health & Safety Plan Focus Areas.  Executive sponsorship and reporting responsibilities for safety focus areas complete  Completion evidence collected
F	Implementation Status	In Progress	
G	Documentation of Completion and Sustainability of PG&E's Implementation Plan	<u>Completion:</u> Meeting agendas showing items related to the safety focus areas throughout the regular safety meeting cadence. <u>Sustainability:</u> Governance mechanisms such as group charters and collaborative planning teams ensure that meetings the annual cadence of safety meetings aligns with the annual One PG&E Occupational Health & Safety Plan (which is currently structured around the focus areas mentioned above.)	

7. Training: VIII-2

Safety Culture and Governance OII (I. 15-08-019)								
Safety Assessment Recommendations								
Implementation Plan								
A	Reference ID	VIII-2						
B	Recommendation	Profile training participants so that individuals in office-based organizations generally do not receive field-oriented safety training ahead of field or organization.						
C	Key Term Definitions	<p><u>Profiled</u>: Training assigned through a learner group and governed by Profile Approvers. Assignment decisions are based on regulatory requirements and internal policy.</p> <p><u>Leader Assigned</u>: Training that is viewed as discretionary and is assigned by the leader to the employee directly.</p> <p><u>Workflow Approval</u>: A systematic control to see if an individual is profiled or leader assigned before the employee is allowed to register for training. If they are not, a request will route to their appropriate level of leadership for approval before they can register.</p>						
D	Implementation Plan	<p>Fully leverage My Learning 2.0 profile capabilities to make sure impacted audiences receive training at the most appropriate time.</p> <p>Initiate additional control points in the system to govern registration for non-profiled employees.</p> <p>Annually provide Profile Approvers with a list of courses targeted to field employees.</p>						
E	Implementation Timeline	<table border="0"> <thead> <tr> <th style="text-align: left;"><u>Date</u></th> <th style="text-align: left;"><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Dec. 2017</td> <td>Complete 2018 profile audit to determine if profiles are consistent with intent. Notification issued to all profile leads where profile appears to be inconsistent with intent.</td> </tr> <tr> <td>Dec. 2018</td> <td>Implement workflow Approval for training registration. This control point will ensure those who are not profiled have gone through the appropriate delegation of authority before they are allowed to register for training. Additional system driven control points needed to allow for closed registration scenarios where only those profiled by their LOB Profile Approver designees can attend. Timing is dependent on IT funding approval.</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Dec. 2017	Complete 2018 profile audit to determine if profiles are consistent with intent. Notification issued to all profile leads where profile appears to be inconsistent with intent.	Dec. 2018	Implement workflow Approval for training registration. This control point will ensure those who are not profiled have gone through the appropriate delegation of authority before they are allowed to register for training. Additional system driven control points needed to allow for closed registration scenarios where only those profiled by their LOB Profile Approver designees can attend. Timing is dependent on IT funding approval.
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F	Implementation Status	In Progress
G	Assessment of completion and effectiveness of PG&E's Implementation Plan	<p><u>Completion</u>: Annually as part of regular governance process review all profiled training requirements.</p> <p><u>Sustainability</u>: An ongoing governance process is established to ensure regular review and update of profiling requirements and actual employee training profiles.</p>

7. Training: VIII-3

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	VIII-3
B	Recommendation	Complete the second 360-Degree Survey assessment for the Safety Leadership Development program participants and compare to the first assessment results to determine the effectiveness of the training and identify any gaps to be addressed
C	Key Term Definitions	<p><u>Observation</u>: a single individual recognizing, noting, and measuring an occurrence of a behavior in another individual.</p> <p><u>Assessment</u>: an appraisal of a single leader’s behaviors using a questionnaire sent to the leader’s subordinates, peers, and leadership.</p> <p><u>Survey</u>: an appraisal of an organization’s characteristics using a questionnaire sent to a large number of the organization’s individuals.</p>

D	Implementation Plan	<p>These concerns are:</p> <ol style="list-style-type: none"> <li>1) <u>Validity of results</u>: Several factors affect the validity of the 360-survey results over time, including the total number of respondents to each survey, and personnel changes of those who are asked to complete the surveys. A comparison of a second 360 assessment to the first assessment results is not an effective diagnostic in determining the effectiveness of the training because the opinions may change as sources of input change.</li> <li>2) <u>Sustainability</u>: <ol style="list-style-type: none"> <li>a. As SLD evolves over time, a fixed survey instrument will be less attractive than one that can evolve with the curriculum. Customizing third-party surveys, whether the original Dekra (BST) survey or a competitor such as Korn Ferries, is cost prohibitive, and often not possible, as in the case of the Dekra instrument.</li> <li>b. Impact to the operations was significant for the Dekra instrument. At 93 questions, respondents could not effectively provide quality information due to the repetitive nature and cognitive overload of the assessments.</li> <li>c. The administrative burden on both corporate safety and the LoB in tracking completion and ensuring minimum response rates does not align with the benefits of the survey for this purpose.</li> </ol> </li> </ol> <p>PG&amp;E will use Safety Leadership Coaches to conduct direct observations of SLD participant behaviors in the field. The coaches were specially selected, trained, and qualified to deliver SLD content through workshops, in-field coaching, and 360 assessment results. Over time, additional observers will be trained to conduct the same technique. Observation quality will be managed through careful selection of observers and ongoing quality management techniques. Observation results will be recorded, and direct feedback will be provided to the individual front line leaders by the observer/coach. Observation content will be standardized through the use of an observation checklist with behavioral anchors using the leadership attributes trained in the SLD Program. The benefits of this approach include: Improved quality (validity) of the results by relying on trained observers instead of random and inconsistent employee input. Observer results also consider both the direct observation of the leader and informal interviews with the crew to obtain validation of observation results.</p> <p>Direct alignment with concepts and behaviors taught in SLD training through the use of the checklist.</p> <p>In-field observation and coaching is low impact on LOB resources, and does not require additional administrative resources.</p>
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		<ul style="list-style-type: none"> <li>The following steps will be taken to implement this assessment approach: <ol style="list-style-type: none"> <li>Create initial observation checklist with behavioral anchors.</li> <li>Validate initial observation checklist</li> <li>Implement checklist into new observation system (Predictive Solutions’ Safety Net).</li> <li>Test the checklist to ensure validity and calibrate the observers to ensure quality.</li> </ol> </li> </ul> <p>Establish metrics, measure and analyze organizational patterns to identify and mitigate any gaps to be addressed.</p>														
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Mar. 18	Establish metrics for SLD observations															
F	Implementation Status	In Progress														
G	Assessment of Completion and Sustainability of PG&E’s Implementation Plan	<p><u>Completion Assessment:</u></p> <ol style="list-style-type: none"> <li>The checklist as entered into the observation tool.</li> <li>Data from the SafetNet too to show that the observations are indeed occurring over time.</li> <li>Documentation of metric definition and calculation methodology</li> </ol> <p><u>Sustainability:</u> Expectations for performing these observations will be placed into Coach’s annual goals with a note on linkage to a OII commitment. Evidence will be shown by a screenshot of Coaches’ 2018 goals.</p>														

7. Training: VIII-4

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	VIII-4
B	Recommendation	Conduct mandatory refresher training for Electric T&D, Gas Operations and Power Generation field resources on fundamental safety-related topics such as confined space, safety at heights and personal protective equipment.
C	Key Term Definitions	<p><u>Refresher Training Program</u>: Training program for journey level employees developed each year to focus on specific skills or knowledge based on needs assessment. Refresher training is targeted to journey level employees who perform the work that is the subject of the refresher course.</p> <p><u>Fundamental Safety</u>: foundational safety concepts that may apply in many different situations with specific training varying based on expected scenarios.</p>
D	Implementation Plan	<p>PG&amp;E will address this recommendation as follows:</p> <ol style="list-style-type: none"> <li>1. Include appropriate fundamental safety topics in annual electric and gas journeyman refresher training courses. Over time, confirm that all appropriate fundamental safety topics are covered in refresher training.</li> <li>2. Power Generation refresher training will be developed per the Implementation Plan for VIII-11.</li> <li>3. Confirm that safety training, including courses which cover fundamental safety topics have appropriate repeat intervals assigned.</li> <li>4. Review training profiles and confirm that mandatory compliance training requirements (including refresher courses) is assigned to applicable employees as part of the regular governance process.</li> <li>5. Monitor compliance with training completion timelines.</li> <li>6. Continue to deliver, Gas (via Operator Qualifications) and Electric (via Journeyman Skills Maintenance) annual training to Journeyman field employees that covers a range of concepts, including applicable “fundamental safety-related” topics.</li> </ol>



E	Implementation Timeline	<table border="1"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Mar. 2018</td> <td>Determine 2018 refresher training content. Review content and confirm applicable fundamental safety topics are included.</td> </tr> <tr> <td>Jun. 2018</td> <td>Complete review of repeat interval for courses that include fundamental safety topics and update SAP record as required.</td> </tr> <tr> <td>Sep. 2018</td> <td>Complete development of curriculum for refresher training courses, including fundamental safety topic(s).</td> </tr> <tr> <td>Sep. 2018</td> <td>Review and assign as required profiles for annual refresher training.</td> </tr> <tr> <td>Sep. 2018</td> <td>Complete review of curriculum for Gas Operator Qualification assessments and Electric Skill Maintenance to confirm that appropriate fundamental safety topics are covered in each assessment and applicable remediation plan for employees who fail initial assessment.</td> </tr> <tr> <td>Dec. 2018</td> <td>Complete Delivery of 2018 refresher training, including fundamental safety topic to targeted employees.</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Mar. 2018	Determine 2018 refresher training content. Review content and confirm applicable fundamental safety topics are included.	Jun. 2018	Complete review of repeat interval for courses that include fundamental safety topics and update SAP record as required.	Sep. 2018	Complete development of curriculum for refresher training courses, including fundamental safety topic(s).	Sep. 2018	Review and assign as required profiles for annual refresher training.	Sep. 2018	Complete review of curriculum for Gas Operator Qualification assessments and Electric Skill Maintenance to confirm that appropriate fundamental safety topics are covered in each assessment and applicable remediation plan for employees who fail initial assessment.	Dec. 2018	Complete Delivery of 2018 refresher training, including fundamental safety topic to targeted employees.
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F	Implementation Status	In Progress														
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion:</u></p> <ul style="list-style-type: none"> <li>• Curriculum will be reviewed, prior to delivery to confirm that fundamental safety topics addressed.</li> <li>• Training completion report to measure employee completion of profiled refresher training</li> </ul> <p><u>Sustainability:</u></p> <ul style="list-style-type: none"> <li>• Annual refresher training is an existing, ongoing process in the normal course of business.</li> </ul>														

7. Training: VIII-5

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>										
A	Reference ID	VIII-5								
B	Recommendation	Profile employees to receive Human Performance training								
C	Key Term Definitions	<p><u>Human Performance</u>: Recognize and understand human fallibility and methods to prevent human error.</p> <p><u>Human Performance Tools (HPT)</u>: Tools that can be used to reduce the likelihood of human error causing an event or incident.</p>								
D	Implementation Plan	<p>Prior to profiling employees to Human Performance Training PG&amp;E will refresh the Human Performance Training (develop a WBT).</p> <ul style="list-style-type: none"> <li>• PG&amp;E will update the web based Human Performance Training (WBT).</li> <li>• Employees will be profiled to the updated Human Performance Training.</li> </ul>								
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Dec. 2018	Complete review of refreshed HPT course feedback and update course as required.									
F	Implementation Status	In Progress								
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>:</p> <ul style="list-style-type: none"> <li>• Curriculum Assessment documentation</li> <li>• Training profile records in SAP MyLearning</li> <li>• Training completion records in SAP MyLearning</li> </ul> <p><u>Sustainability</u>: In the regular course of business, PG&amp;E Academy training effectiveness metrics are collected and analyzed for each course with improvement adjustments made as needed.</p>								

7. Training: VIII-6

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>												
A	Reference ID	VIII-6										
B	Recommendation	Develop a monthly operator qualifications (OQ) status report for the Senior Vice President of Gas Operations and the President of Gas Operations. Include such information as number and type of examinations conducted, pass fail rates, number of qualifications expiring (in 90, 60, 30 and 5 days), the number of OQ scans conducted and the results										
C	Key Term Definitions	N/A										
D	Implementation Plan	<p>PG&amp;E's implementation plan provides appropriate Gas operational leaders at the supervisor, superintendent/manager, and/or director level with Qualifications information pertaining to pass/fail rates, qualifications lapse dates, and qualification card scan rates on a frequency no less than monthly.</p> <p>Information on pass rates, OQ card scans and test attendance rates was distributed weekly to OQ leadership and other leaders (based on requests for this information) beginning April 2017 and continues through to the present. A second monthly compilation of OQ information such as number of qualifications expiring in the calendar year, number of qualification exams passed, and number of qualifications removed was completed in May with distribution occurring monthly to the present (excluding August).</p> <p>Feedback from recipients of the report(s) issued to refine report timing and content on an on-going basis.</p>										
E	Implementation Timeline	<table border="1"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Apr. 2017</td> <td>Begin compiling and sharing pass rate, OQ card scan and test attendance information weekly with operational leaders on request</td> </tr> <tr> <td>May 2017</td> <td>Develop template for monthly report with additional information beyond that already being reported weekly (see first milestone)</td> </tr> <tr> <td>Jun. 2017</td> <td>Populate template and share with Gas Qualifications Department Sr. Manager and Manager</td> </tr> <tr> <td>Sep. 2017</td> <td>Implement weekly and monthly report</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Apr. 2017	Begin compiling and sharing pass rate, OQ card scan and test attendance information weekly with operational leaders on request	May 2017	Develop template for monthly report with additional information beyond that already being reported weekly (see first milestone)	Jun. 2017	Populate template and share with Gas Qualifications Department Sr. Manager and Manager	Sep. 2017	Implement weekly and monthly report
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Sep. 2017	Implement weekly and monthly report											
F	Implementation Status	Complete										

G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Completion of implementation will be confirmed by documentation of distribution/posting of OQ status report.</p> <p><u>Sustainability</u>: The development of OQ information will continue to evolve based on usefulness, applicability, and feedback from report recipients.</p>
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7. Training: VIII-7

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	VIII-7
B	Recommendation	Conduct a review of 2014 Operator Qualifications (OQ) to determine if contract employees were working on PG&E’s system with other expired OQs. Conduct additional re-inspections as necessary.
C	Key Term Definitions	<p><u>Appropriate OQs</u> are those Operator Qualifications that pertain to the respective covered task(s) performed on PG&amp;E’s gas system by PG&amp;E contractors in 2014.</p> <p><u>OQs</u> exclude Plastic and Steel Pipe Joining as they were not defined as OQs by the code in 2014.</p> <p><u>A review</u> is an analysis performed using statistical sampling or other means determined by PG&amp;E to yield an accurate representation of contractor OQ compliance in 2014.</p>
D	Implementation Plan	<p>PG&amp;E will conduct a review of covered tasks performed in 2014 OQs by PG&amp;E contractors (excluding atmospheric corrosion inspections) to determine if contract employees were working on PG&amp;E’s system with other appropriate OQs. The exclusion results from the 2014 atmospheric corrosion program that was the subject of a self-report to the CPUC. An extensive cause evaluation was performed and corrective action completed.</p> <p>Analysis will involve research into work performed by contractors, substantiating OQs and determining risk if deficiencies are found. The investigating entity will identify an appropriate scope of review (i.e., which work to review), then attempt to identify the contract company, and, if possible, the personnel responsible for performing the work followed by a review of OQ records to confirm OQ status for the individual(s) performing the covered task(s). Not all work is tracked at the task level, and a significant volume of work is performed and recorded at the “crew” level, rather than the personnel level.</p> <p>Once the task, personnel and date of performance are identified, a review can be done of applicable databases and paper records to identify any potential gaps in the existence of applicable OQs.</p> <p>Based on the review, steps to mitigate/address findings will be taken.</p>

E	Implementation Timeline	<table border="1"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Dec. 2017</td> <td>Identify project lead and data sources</td> </tr> <tr> <td>Feb. 2018</td> <td>Analysis complete</td> </tr> <tr> <td>Mar. 2018</td> <td>Recommend strategies to address contractor qualifications gaps if necessary and assign "Owner(s)"</td> </tr> <tr> <td>Jun. 2018</td> <td>Communicate results of analysis and implementation of mitigation strategies to stakeholders</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Dec. 2017	Identify project lead and data sources	Feb. 2018	Analysis complete	Mar. 2018	Recommend strategies to address contractor qualifications gaps if necessary and assign "Owner(s)"	Jun. 2018	Communicate results of analysis and implementation of mitigation strategies to stakeholders
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F	Implementation Status	In Progress										
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: A copy of the final report including analysis, findings and recommendations will constitute evidence of completion.</p> <p><u>Sustainability</u>: A screenshot of the CAP issues/tasks (with owners and due dates) for the actions resulting from the analysis will indicate PG&amp;E's commitment to follow-through.</p>										

7. Training: VIII-8

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>												
A	Reference ID	VIII-8										
B	Recommendation	Perform a feasibility study of PG&E training and testing of contractor employees for OQs. The study should consider the volume of students, the cost charged per unit, the availability of resources at PG&E and analysis of advantages and disadvantages.										
C	Key Term Definitions	N/A										
D	Implementation Plan	<p>A feasibility study will be completed.</p> <p>The analysis will include operational, financial, contractual, technical and legal advantages and disadvantages between PG&amp;E's current model and an alternative model whereby all training and testing is conducted by PG&amp;E "in house." The analysis will also consider the volume of students, the cost that would be charged per unit, the availability of resources at PG&amp;E to train and evaluate contractor qualifications and analysis of advantages and disadvantages.</p> <p>The final report will include a recommendation related to whether PG&amp;E should begin administering contractor OQs "in house" or whether PG&amp;E should continue its current practices.</p>										
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F	Implementation Status	In Progress										
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Evidence of completions will be a copy of the final report including analysis, findings and recommendations.</p> <p><u>Sustainability</u>: NA.</p>										

7. Training: VIII-9

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	VIII-9
B	Recommendation	Power Generation should continue to update its apprentice programs.
C	Key Term Definitions	<p><u>OJT</u>: on the job training.</p> <p><u>OJE</u>: on the job exposure.</p> <p>OJE and OJT provide Apprentice candidates with repetitions of skills and tasks in a real-world environment under the guidance of qualified Journeymen.</p> <p><u>JATC</u>: Joint Apprentice Training Committee, oversight entity for all formal Apprenticeship programs comprised of members of International Brotherhood of Electric Workers, PG&amp;E Management, including PG&amp;E Academy.</p> <p><u>PG&amp;E Academy Apprentice Program Management Maturity Model</u>: document maintained by Academy Training Program Compliance group to capture the current state of maturity of each apprenticeship program.</p>
D	Implementation Plan	<p>This plan addresses six (6) active Power Generation (Energy Supply) Apprenticeships:</p> <ul style="list-style-type: none"> <li>• Apprentice Hydro Operator in Training (HOIT).</li> <li>• Apprentice Electrical Machinist (Hydro).</li> <li>• Apprentice Water System Repairperson T200 and T300.</li> <li>• Apprentice Electrician GC (shared with Electric Operations).</li> <li>• Apprentice Electrical Technician (shared with Electric Operations).</li> <li>• Apprentice Communication Technician (shared with IT).</li> </ul> <p>PG&amp;E will:</p> <ol style="list-style-type: none"> <li>1) Continue to evaluate and update curriculum within all of the Power Generation apprenticeship programs such that all curriculum is on a review/refresh cycle of no longer than five years.</li> <li>2) Implement the PG&amp;E Academy Apprentice Program Management maturity model for all Power Generation Apprenticeship programs.</li> </ol>



E	Implementation Timeline	<table border="1"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Dec. 2017</td> <td>           Complete review and update of four courses contained within the Power Generation apprentice programs:           <ul style="list-style-type: none"> <li>• PGEN-0102 Basic Electricity for Operators</li> <li>• PGEN-0103 Applied Basic Electricity for Operators</li> <li>• PGEN-0105 Schematics for Operators</li> <li>• PGEN-0146 Advanced Rigging</li> </ul> </td> </tr> <tr> <td>Dec. 2017</td> <td>JATC review of all Power Generation Apprenticeship Programs</td> </tr> <tr> <td>Jun. 2018</td> <td>Complete the Apprentice Program Review Process for all Power Generation Apprenticeship programs (measures effectiveness per the standards established by the California Division of Apprenticeship Standards (DAS))</td> </tr> <tr> <td>Sep. 2018</td> <td>Develop plan to bring all Power Generation programs to “green” status in PG&amp;E Academy Apprentice Program Management Maturity Model. Or, formally document business rationale and obtain JATC concurrence for any areas of discrepancy</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Dec. 2017	Complete review and update of four courses contained within the Power Generation apprentice programs: <ul style="list-style-type: none"> <li>• PGEN-0102 Basic Electricity for Operators</li> <li>• PGEN-0103 Applied Basic Electricity for Operators</li> <li>• PGEN-0105 Schematics for Operators</li> <li>• PGEN-0146 Advanced Rigging</li> </ul>	Dec. 2017	JATC review of all Power Generation Apprenticeship Programs	Jun. 2018	Complete the Apprentice Program Review Process for all Power Generation Apprenticeship programs (measures effectiveness per the standards established by the California Division of Apprenticeship Standards (DAS))	Sep. 2018	Develop plan to bring all Power Generation programs to “green” status in PG&E Academy Apprentice Program Management Maturity Model. Or, formally document business rationale and obtain JATC concurrence for any areas of discrepancy
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F	Implementation Status	In Progress										
G	Assessment of Completion and Sustainability of PG&E’s Implementation Plan	<p><u>Completion:</u> JATC Program reviews and approvals, including program oversight are documented in JATC minutes and via Program Compliance Matrix maintained by Academy Training Program Compliance group.</p> <p>Course curriculum is updated on an ongoing basis; no course is greater than five years since its last review and update.</p> <p><u>Sustainability:</u> The JATC reviews and provides oversight to all PG&amp;E Apprenticeship programs to ensure that DAS requirements are met.</p>										

7. Training: VIII-10

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>												
A	Reference ID	VIII-10										
B	Recommendation	Power Generation should work with the Academy to improve the timeliness of training completion.										
C	Key Term Definitions	<p><u>Actionable Training</u>: training which has been assigned formally to an employee via SAP MyLearning and can be acted upon (registered, completed) at the present time.</p> <p><u>Overdue</u>: as of last calendar day of the month, the count of courses which were not marked “complete” in the SAP MyLearning system of record (aka overdue training assignments).</p> <p><u>Average Days Overdue</u>: for a given month, of the overdue training assignments how long (how many days tardy) was actionable training completed versus the SAP MyLearning assigned completion date.</p> <p><u>SVP BPR</u>: Senior Vice President Business Performance Review.</p> <table border="1"> <thead> <tr> <th colspan="2">RAG KEY</th> </tr> <tr> <th>Metric #1 % Overdue</th> <th>Metric #2 Avg Days Overdue</th> </tr> </thead> <tbody> <tr> <td>≤ 5%</td> <td>≤ 7 Days</td> </tr> <tr> <td>6-9%</td> <td>8-14 Days</td> </tr> <tr> <td>≥ 10%</td> <td>≥ 15 Days</td> </tr> </tbody> </table>	RAG KEY		Metric #1 % Overdue	Metric #2 Avg Days Overdue	≤ 5%	≤ 7 Days	6-9%	8-14 Days	≥ 10%	≥ 15 Days
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Metric #1 % Overdue	Metric #2 Avg Days Overdue											
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≥ 10%	≥ 15 Days											

D	Implementation Plan	<p><u>Infrastructure and Technology</u></p> <p>PG&amp;E deployed MyLearning 2.0 and initiated new reports for training timeliness. New features included:</p> <ul style="list-style-type: none"> <li>• Profiled employees are able to assess their own actionable training via an online dashboard (pie chart) or directly via SAP MyLearning.</li> <li>• SAP MyLearning automatically generates an email to people leaders and individuals regarding training which is coming “due” within 90 days, or currently “overdue”.</li> </ul> <p><u>Governance</u></p> <ul style="list-style-type: none"> <li>• Add training timeliness data reports into the BPR list of metrics.</li> </ul> <p><u>Communications</u></p> <ul style="list-style-type: none"> <li>• PG&amp;E Academy provides regular outbound email communication of “Actionable Training” to stakeholders across the utility.</li> <li>• Leaders within Power Generation, like those in all other lines of business, have access to a detailed monthly report of training timeliness results provided by PG&amp;E Academy.</li> <li>• Regular communications regarding training compliance are shared via PG&amp;E’s corporate Daily Digest and Digital Signage, which may be viewed by all PG&amp;E employees.</li> </ul>						
E	Implementation Timeline	<table border="0"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>3Q 2016</td> <td>My Learning 2.0, including new dashboards and automated emails was deployed.</td> </tr> <tr> <td>Apr. 2017</td> <td>Training timeliness added as a metric to the BPR.</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	3Q 2016	My Learning 2.0, including new dashboards and automated emails was deployed.	Apr. 2017	Training timeliness added as a metric to the BPR.
<u>Date</u>	<u>Milestone</u>							
3Q 2016	My Learning 2.0, including new dashboards and automated emails was deployed.							
Apr. 2017	Training timeliness added as a metric to the BPR.							
F	Implementation Status	Complete						
G	Assessment of Completion and sustainability of PG&E’s Implementation Plan	<p><u>Completion:</u> Power Generation training timeliness performance as of Q2 and Q3 2017 is in line with the overall utility performance, and trending positively month over month.</p> <p><u>Sustainability:</u> Training timeliness is a metric reported to leaders throughout the company each month along with specific messages to employees and leaders where training is due in the next 90 days or is overdue.</p>						

7. Training: VIII-11

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>														
A	Reference ID	VIII-11 (also addresses VIII-4 with respect to Power Generation)												
B	Recommendation	Power Generation should develop a refresher training program, similar to that of Electric T&D and Gas Operations.												
C	Key Term Definitions	<p><u>Refresher Training Program</u>: Training program for journey level employees developed each year to focus on specific skills or knowledge based on needs assessment. Refresher training targeted to journey level employees who perform the work that is the subject of the refresher course.</p> <p><u>Journeyman</u>: a person who has either:</p> <ol style="list-style-type: none"> <li>(1) completed an accredited apprenticeship in his/her craft; or</li> <li>(2) who has completed the equivalent of an apprenticeship in length and content of work experience and all other requirements in the craft which has workers classified as journeyman in the apprentice occupation.</li> </ol>												
D	Implementation Plan	<p>PG&amp;E will:</p> <ul style="list-style-type: none"> <li>• Identify fundamental topics to include in refresher curriculum (or determine that separate fundamental safety refresher training curriculum will be developed).</li> <li>• Develop the training curriculum content to address targeted areas and agreed upon fundamental safety topics.</li> <li>• Profile Power Generation Journeymen to the appropriate refresher training course(s).</li> <li>• Deliver refresher training to Journeymen classifications and assess effectiveness using standard PG&amp;E Academy training effectiveness measures.</li> </ul>												
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F	Implementation Status	In Progress												

G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Power Generation Refresher training curriculum and training completion reports compared to Power Generation journeyman employee population.</p> <p><u>Sustainability</u>: Refresher training will be an annual process, similar to that for gas and electric operations.</p>
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8. Communication: IX-1

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>								
A	Reference ID	IX-1						
B	Recommendation	Develop and implement a strategic communications plan that does not overwhelm employees with too much information, but effectively addresses the issues identified in the January 2015 Monitor 360 Study, the 2016 Premier Survey (and PG&E’s narrative analysis.)						
C	Key Term Definitions	N/A						
D	Implementation Plan	Strategic communication plan will: <ul style="list-style-type: none"> <li>– Evolve the message around Speak Up culture to include listening and follow-up.</li> <li>– Clearly articulate PG&amp;E’s Occupational Health and Safety Plan, so that employees understand the enterprise safety priorities and how they can (and are expected to) take action.</li> <li>– Recognize employees who take action to improve safety for others or themselves.</li> <li>– Better connect processes, procedures, and broader company changes to vision on safety.</li> </ul>						
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Jul. 2017	Draft of enterprise communication plan, which includes Objectives, Key messages, Proposed tactics, Target audiences, High-level budget							
Dec. 2017	Plan approval							
F	Implementation Status	Complete						
G	Assessment of Completion and Sustainability of PG&E’s Implementation Plan	<p><u>Completion:</u> A copy of the approved plan will constitute evidence of completion.</p> <p><u>Sustainability:</u></p> <ul style="list-style-type: none"> <li>• Evidence of execution of specific elements of the plan, e.g., evidence of specific communications, will show sustainable execution of the plan.</li> <li>• On-going revisions to the plan will show continuous improvement.</li> </ul>						

8. Communication: IX-2

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>										
A	Reference ID	IX-2								
B	Recommendation	Develop a consistent basis for measuring, tracking and trending employee attitudes regarding safety culture.								
C	Key Term Definitions	<p>Safety and Speak Up Culture are measured through specific questions on the Premier and quarterly Pulse surveys.</p> <p><u>Premier Survey</u>: Biennial survey of all employees to measure employee engagement, including speak up and safety culture.</p> <p><u>Pulse Survey</u>: Quarterly survey of a sample of employees (typically 25%) to measure the same attributes as the Premier Survey.</p> <p><u>Safety Culture</u>: the extent to which the company encourages a culture of safety throughout the organization.</p> <p><u>Speak Up Culture</u>: the extent to which employees feel PG&amp;E creates a supportive, comfortable environment that fosters open communication about safety, compliance and ethics and challenging the status quo.</p> <p><u>High-Performing Companies</u>: characteristics include:</p> <ul style="list-style-type: none"> <li>• Companies recognized in widely respected reputation lists such as the Fortune’s “Most Admired” and “Best to Work For” lists.</li> <li>• Only a small handful of these companies manage a similar high ratio of represented workers.</li> <li>• Includes: AT&amp;T, United Health Group, WalMart Stores, Home Depot, IBM, CVS Health, Target, Boeing, Walt Disney, Ford Motor, and UPS.</li> </ul>								
D	Implementation Plan	<p>Safety culture is measured through the Speak Up Culture Index based on data from 2016 Premier Survey.</p> <p>PG&amp;E uses the biennial Premier and quarterly Pulse surveys to measure and track changes in safety culture as compared to third quarter 2016 baseline.</p>								
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May 2017	First report summarizing the results of the Speak Up Culture Index, which measures safety culture.									

F	Implementation Status	Complete
G	Assessment of completion and sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Quarterly Pulse and biennial Premier survey reports.</p> <ul style="list-style-type: none"> <li>• Index developed and measurement is ongoing.</li> <li>• First report summarizing results of Speak Up Culture Index, measuring safety culture has been issued to leaders throughout the company.</li> </ul> <p><u>Sustainability</u>: Quarterly review of Pulse survey results and biennial review of Premier survey results.</p>



8. Communication: IX-3

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>																		
A	Reference ID	IX-3																
B	Recommendation	Develop and implement programs similar to Electric T&D’s Reach Every Employee (REE) Program in Power Generation and Gas Operations. Reach every employee is an annual documented safety discussion with each employee.																
C	Key Term Definitions	N/A																
D	Implementation Plan	<p>Consistent with the “One PG&amp;E” approach to safety initiatives, PG&amp;E has expanded the scope of its response to this recommendation to include all employees, not just those in Power Generation and Gas Operations.</p> <p>The basis for the company-wide program design is the 2017 Electric T&amp;D REE Program. A cross-functional team of representatives from all LOBs collaborated to ensure that the program was appropriately designed for the broader scope and that improvements were made, particularly to achieve greater alignment with the Safety Leadership Development Program.</p> <p>Critical activities in 2017 include program design, material development and a pilot. The 2018 implementation is scheduled for completion in June 2018.</p>																
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F	Implementation Status	In Progress																

G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion:</u>  Gas and Generation will implement the same method of tracking and completion of the individual safety conversations as already used by Electric.</p> <p>Specifically, Course code ELEC-T917 will be used by Gas Operations, Generation, and Electric Operations to record completion of the conversations.</p> <p><u>Sustainability:</u>  PG&amp;E will apply continuous improvement methodology each year until a decision is made to discontinue the program.</p>
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8. Communication: IX-4

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>								
A	Reference ID	IX-4						
B	Recommendation	Assess the effectiveness of the 2016 Speak Up Culture campaign, particularly among field resources.						
C	Key Term Definitions	N/A						
D	Implementation Plan	<p>PG&amp;E utilized qualitative research among diverse set of employees (locations, LOBs, job roles, union representation) to assess the effectiveness of the Speak-up Campaign. Effectiveness was determined based on the following criteria:</p> <ol style="list-style-type: none"> <li>1. Awareness of campaign materials</li> <li>2. Relevance of message</li> <li>3. Likelihood to adopt or change behavior</li> <li>4. Overall reaction (positive/negative) to material</li> </ol>						
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Dec. 2017	Assessment approach approved							
Dec. 2017	Assessment complete							
F	Implementation Status	Complete						
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: A copy of the final research report will constitute evidence of completion</p> <p><u>Sustainability</u>: This is a one-time deliverable. The ongoing effectiveness of specific communication tactics in support of the One PG&amp;E Occupational Health &amp; Safety Plan will be assessed in support of the integrated planning process.</p>						

9. Safety Reporting / Corrective Action: X-1

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>								
A	Reference ID	X-1						
B	Recommendation	<p>Evaluate the adequacy of the information captured by various incident tracking systems (SEMS, CAP) to ensure it is sufficient to understand the causes of incidents, perform trending analyses and other analytics, and provide timely information. Improve CAP, near hit and incident tracking and reporting systems to increase the clarity of the information, ensure the appropriate level of causal evaluation has been assigned and that all required actions have been taken before an item is closed.</p>						
C	Key Term Definitions	N/A						
D	Implementation Plan	<p>Integration of SEMS and CAP was completed in July of 2017 when all remaining lines of business had access to CAP, taken together, the data captured by the two systems provides a strong foundation for analysis and metric calculation.</p> <p>PG&amp;E currently uses a third-party data warehousing group in order to perform complex trending and analytics that uses the information collected by the CAP and SEMS systems. PG&amp;E and the third party have developed a safety and health index that will allow for the use of SEMS, CAP, and other safety and health information in order to predict future safety incidents. The information collected by those systems is sufficient in that it allows PG&amp;E to not only understand the events but also have a level of predictability of future events. This predictive model was operational as of 2017.</p> <p>By integrating the SEMS and CAP system PG&amp;E ensures that safety related cause evaluation assignments are performed using the CAP and Serious Injury and Fatality standards. This provides a level of consistency that did not exist prior to system integration. Additionally, recent improvements in the quality of cause evaluations and corrective actions associated with the most serious incidents have been observed and that improvement has been validated by a third party. Integrating SEMS and CAP also allows PG&amp;E to use the CAP audit and quality closure procedures in order to validate that safety incidents are being appropriately assessed and closed.</p>						
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F	Implementation Status	Complete
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: SEMS-CAP integration completion will be documented via a project close-out report from our IT project management team. Initial implementation of the observation tool will be documented via the completion of the web based training as well as the roster of individuals who have downloaded the application.</p> <p>Completion of the safety and health index will be evidenced by a whitepaper detailing the methodology produced by our third-party data warehouse and PG&amp;E.</p> <p><u>Sustainability</u>: Guidance documents related to safety incident management show references to how CAP is used to support that process.</p>

9. Safety Reporting / Corrective Action: X-2

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	X-2
B	Recommendation	<p>Track the costs and relative safety benefits of the Corrective Action Program (CAP) and Near Hit Programs. Increase efficiencies or modify programs as warranted.</p> <ul style="list-style-type: none"> <li>• Continue to monitor CAP backlogs and response times. The Nuclear Industry acknowledges the potential administrative burden associated with Correction Action Programs.               <ul style="list-style-type: none"> <li>○ Shift by station leaders from individual coaching and other programs to reliance on CAP for work tracking or low-level issues.</li> <li>○ Trending all performance issues through CAP instead of considering alternatives.</li> <li>○ Resource intensive causal evaluations performed when not required.</li> <li>○ Excess corrective actions and additional reviews of low risk items in the interest of risk avoidance.</li> </ul> </li> <li>• Improve efficiency of CAP and Near Hits programs as workload levels increase.               <ul style="list-style-type: none"> <li>○ Share efficiency improvements and best practices made by DCPD and Gas Operations with other LoBs.</li> <li>○ Clarify the types of items that should be classified as CAP or near hits, versus other reporting systems.</li> <li>○ Consider alternative reporting mechanism for certain low risk, trend items.</li> <li>○ Potentially eliminate non-work items from the near hit reporting or providing further clarification as to what should be considered a near hit.</li> </ul> </li> </ul>
C	Key Term Definitions	<p><u>Enterprise CAP</u>: provides standardized governance, process guidance, and system tools for line of business CAP teams and PG&amp;E personnel working throughout the organization.</p> <p><u>Near Hit Program</u>: responsible for the engagement of near hit sharing and increased dialogue in all work groups to prevent employee, contractor and public safety incidents.</p>

D	Implementation Plan	<p>In 2016 the Near Hit Program was incorporated within the CAP and now in 2017 is fully integrated with both the system and processes of the CAP Program.</p> <p>By February 2018, Program leads will work together to create a process for tracking high-level program governance costs, and relative program benefits, for both the Near Hits and CAP. Governance costs will be determined by analyzing all labor costs associated with managing the CAP and will not include labor costs associated with maintaining individual CAP Issues. Near Hit governance costs will be measured as a percentage of the total CAP costs taken from the number of Near Hit submissions logged within the CAP Program.</p> <p>Enterprise CAP and Near Hit program managers will conduct an in-depth analysis of their respective programs to seek out both hard and soft benefits relative to safety. Hard benefits will be a combination of actual and approximate values based on best available information and may include industry averages in cases where PG&amp;E data is not yet available. Soft benefits will be measured as non-financial benefits to the company and may consist of improvements to safety conscious work environment, Speak Up, and other related safety culture improvements.</p> <p>By April 2018, program managers will work to engage process improvement specialists within PG&amp;E to perform a comprehensive review of the Corrective Action Program. The study will focus on program inefficiencies and will produce a list of recommended actions that address resource allocations. Improvement suggestions will include both administrative and technological solutions that aim to eliminate program redundancies, incorporate system automation, and to establish guidelines for Department and Issue Owners in the use of Closed to Trend.</p> <p>An evaluation will also be conducted in parallel by program managers to address issue resolution of Low-Risk items by establishing program guidance on how to solve issues using a graded approach. Doing so will ensure that the right level of resources is being allocated to the appropriate level of evaluation based on known risk. To ensure adherence to new program requirements, the CAP will continue to monitor the quality of high, medium, and low risk CAP Issue closure through the use of a graded approach sampling plan and established program guidelines.</p>
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		<p>In an ongoing effort, the Line of Business CAP teams will continue to monitor CAP backlogs and provide additional support for backlog items as a result of legacy issues or those Issues received before program implementation. The Enterprise CAP team will continue to provide program oversight through the use of Key Performance Indicators and performance monitoring. The Enterprise CAP team received Executive approval for the creation of a CAP Health Score Card that outlines specific CAP metrics for monitoring program performance.</p> <p>By April 2018, Enterprise CAP and Near Hit program managers will evaluate the types of CAP and Near Hit issues being submitted to the Corrective Action Program. Following this evaluation, the team leads will work to clarify what kinds of items should be classified as Near Hits entered into the CAP and those that do not. The team will propose recommendations on where employees should be reporting any non-CAP items and develop a communication plan that identifies the specific program changes.</p> <p>By June 2018, in collaboration with Line of Business CAP leads, the Enterprise CAP team will review all guidance documents and training material, including CAP standards and procedures, and determine what updates need to be made within the programming language to classify evaluation levels better. Changes will be agreed upon by the CAP team leads and incorporated into all applicable program guidance documents. A retraining of the CAP team members will be performed in parallel of guidance document revision and will include subject matter experts participating in the CAP Review Teams throughout the company.</p> <p>The Enterprise CAP team also performs scheduled CAP Assessments that are facilitated by Enterprise CAP and conducted by Line of Business CAP team representatives. This peer to peer review is used to gauge the health of the Line of Business CAP Program and is focused on identifying key areas where the team will need to improve to achieve higher program maturity. Maturity is measured against the CAP maturity matrix which was developed using best practices from established programs including both Gas and Diablo Canyon.</p> <p>The Enterprise CAP Program is currently working to develop an auto-routing feature within the CAP Application that will find and classify any issues that belong to other reporting programs. The Enterprise CAP Program Support team will continue to work towards developing machine learning like algorithms that will categorize and close specific low-risk issues and rout them according to the written content within the CAP submission. Items that are auto-routed using this classification model will be further trended and evaluated for accuracy as part of the CAP quality closure process.</p>
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F	Implementation Status	In Progress																
G	Assessment of Completion and Sustainability	<p><u>Completion:</u></p> <p>As proof of completion, the following will be provided:</p> <p>CAP Process Improvement Report: showing CAP processes gaps and/or opportunities and how these were resolved or addressed. Process map will be included whenever possible as well as stating the extent and impact of the change.</p> <p>CAP and Near Hits Cost/Benefits Report: showing overall program costs and benefits to the company.</p> <p><u>Sustainability:</u> Metrics Dashboard currently tracks both the timeliness and backlog of CAP issues assigned throughout the organization. Enterprise Corrective Action Program Standard GOV-6101S and Enterprise Cause Evaluation Standard GOV-6102S will be used to track program enhancements made over time.</p>																

9. Safety Reporting / Corrective Action: X-3

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	X-3
B	Recommendation	<p>Develop an evaluation program to maximize the benefits from CAP and Near Hit Reporting.</p> <ul style="list-style-type: none"> <li>• Perform ongoing quality and compliance reviews of the following:               <ul style="list-style-type: none"> <li>○ Accuracy of the categorization of the submittal.</li> <li>○ Assigned priority level.</li> <li>○ Consistency with procedural requirements.</li> <li>○ The selection of a causal evaluation type (for near hits) and documentation of the decision-making process.</li> <li>○ Quality and timeliness of the causal evaluation.</li> <li>○ For CAP, the quality and timeliness of communications to submitters, notifying them the notification has been received and notifying them of the action(s) taken/resolution.</li> <li>○ Quality and timeliness of the corrective actions taken and the communication of root causes and corrective actions to ensure appropriate communications have taken place and the correct audience has been notified.</li> </ul> </li> <li>• Engage Internal Audit to perform periodic assessments of CAP and the Near Hits reporting program.</li> </ul>
C	Key Term Definitions	N/A
D	Implementation Plan	<p>Ongoing efforts have been underway to improve the reporting processes.</p> <p>The existing reporting and communication process of the CAP Dashboard continues to be improved to provide additional information to the general population.</p> <ul style="list-style-type: none"> <li>• The CAP Dashboard is readily available to all users.</li> <li>• The format has been upgraded to provide an improved user experience.</li> <li>• Information presented within the CAP Dashboard is now “live” data.</li> <li>• Metric Dashboards have been developed to allow for specific process monitoring.</li> <li>• “Live” links have been established to allow users to directly access issue data.</li> </ul> <p>Each of these enhancements supports the evaluation process and program. Improved visibility of issues and actions will aid in the</p>

		<p>realization of the greatest benefits associated with CAP and Near Hit reporting.</p> <p>A new Executive Dashboard has been created for the senior leadership team.</p> <ul style="list-style-type: none"> <li>• The Executive Dashboard is available to senior leadership on a daily basis.</li> <li>• Information presented is “snapshot” of the current state of the Corrective Action Program.</li> <li>• CAP system health is easily monitored by the leadership team.</li> <li>• This monitoring allows leadership to realize the benefits associated with CAP and Near Hit Reporting and issue resolution.</li> </ul> <p>The Executive Dashboard provides easy access to CAP and Near Hit reporting information for members of the leadership team. Visibility of the reporting information will ensure leadership awareness of CAP and Near Hit issues, and provide opportunities for process oversight.</p> <p>To ensure that the processes continue to perform as intended, internal assessments are routinely completed by the ECAP process group. These assessments provide an additional instrument for monitoring program and process quality and compliance.</p> <p>The Internal Audit group has been engaged with the monitoring of the CAP processes and implementation. Oversight has been provided at the LOB level as well as the Enterprise level. Utility Standard: RISK-6102S, “Internal Control Standard” provides the framework utilized by the Internal Audits group to design, implement and monitor internal controls for utility processes.</p> <p>The remaining elements of this recommendation are addressed by existing processes.</p> <p>Existing ECAP process documents provided the basis for the development and implementation of the reporting tools.</p> <p>Utility Policy: GOV-03, “Corrective Action Program Policy” and Utility Standard: GOV-6101S, “Enterprise Corrective Action Program Standard” provide the guidance and requirements for the establishment of the Corrective Action Program at PG&amp;E. Within these documents specific requirements are provided to ensure that Issues are appropriately categorized, prioritized and evaluated.</p> <p>Each LOB has established additional specific CAP procedures and requirements for their respective organizations. These procedures and requirements are consistent with the Enterprise policy and standard, but may provide additional information for their applications.</p> <p>Specific components of these guidance documents which address the recommendation and support the improvements which have been undertaken include:</p>
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		<ul style="list-style-type: none"> <li>• Accuracy of the categorization of the submittal is controlled by Appendix B, “CAP Risk Matrix Tool” of Standard GOV-6101S and the applicable LOB requirements.</li> <li>• Assigned priority levels are validated by each LOB CAP Review Team (CRT) in accordance with Enterprise Standard GOV-6101S and the respective LOB procedures.</li> <li>• Consistency with procedural requirements is monitored by the Enterprise CAP Process LOB liaisons.</li> <li>• The selection of causal evaluation type (for near hits) and documentation of the decision-making process is managed by the LOB CRTs and monitored by the Enterprise CAP Process LOB liaisons.</li> <li>• The quality and timeliness of the causal evaluations is monitored by the LOB CAP Teams as well as the Enterprise Cause Evaluation Center of Excellence LOB liaisons.</li> <li>• Communications to submitters have been automated within the CAP tool. Submitters are notified that their issue has been assigned and accepted by an Issue Owner. Upon resolution of the Issue, the submitter is notified of the action(s) taken/resolution. The submitter is also provided with a Satisfaction Survey. The results of that survey are documented.</li> <li>• For those issues which involve a Serious Injury or Fatality (SIF) or potential Serious Injury or Fatality (SIFp), the final reports are reviewed by a LOB Corrective Action Review Board (CARB). This review provides assurance that reporting quality and compliance with the evaluation process are maintained.</li> <li>• Quality and timeliness of the corrective actions taken are reviewed and evaluated by each LOB utilizing the Quality Closure Review criteria established by the Enterprise. Documentation of the Quality Review is retained within the respective CAP Issue.</li> </ul> <p>The existing guidance in concert with the newly developed reporting tool and improvements to the existing tool, provide assurance that the benefits from CAP and Near Hit Reporting continue to be maximized within the Enterprise Corrective Action Program.</p>
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E	Implementation Timeline	<table border="1"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Mar. 2015</td> <td>Utility Policy GOV-03 published</td> </tr> <tr> <td>2015-2017</td> <td>Utility Standard: GOV-6101S Rev 5 published</td> </tr> <tr> <td>Jun. 2017</td> <td>LOB Standards published</td> </tr> <tr> <td>Sep. 2017</td> <td>Executive Dashboard pilot project initiated</td> </tr> <tr> <td>Oct. 2017</td> <td>Executive Dashboard released for leadership use</td> </tr> <tr> <td>Oct. 2017</td> <td>Updates to the CAP tool Metrics Dashboard to enhance tracking of timeliness</td> </tr> <tr> <td>Dec. 2017</td> <td>Draft closure documentation package to include examples of active monitoring systems</td> </tr> <tr> <td>Dec. 2017</td> <td>Complete final review process for closure package.</td> </tr> <tr> <td>Dec. 2017</td> <td>Final closure package complete</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Mar. 2015	Utility Policy GOV-03 published	2015-2017	Utility Standard: GOV-6101S Rev 5 published	Jun. 2017	LOB Standards published	Sep. 2017	Executive Dashboard pilot project initiated	Oct. 2017	Executive Dashboard released for leadership use	Oct. 2017	Updates to the CAP tool Metrics Dashboard to enhance tracking of timeliness	Dec. 2017	Draft closure documentation package to include examples of active monitoring systems	Dec. 2017	Complete final review process for closure package.	Dec. 2017	Final closure package complete
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F	Implementation Status	Complete																				
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion:</u> CAP Review Team (CRT) training has been completed. This training was intended to ensure consistent application of the standards for categorization, prioritization and assignment of evaluation types. Documentation of the training content, presentation schedule and attendance rosters will be provided.</p> <p>Corrective Action Review Board (CARB) training was completed. This training provided the basis for the consistent review of CAP products. Documentation of the training content, presentation schedule and attendance rosters will be provided.</p> <p>The monitoring of CAP health has been established with the release of the CAP Dashboard and the Executive Dashboard. Snapshots will be provided for each of these products to document completion.</p> <p><u>Sustainability:</u> Training will continue to be provided as new personnel join the organization. As training is completed training content, presentation schedule and attendance rosters will be documented and retained. Direct involvement of the ECAP LOB liaisons will ensure that changes or enhancements to the program are communicated and incorporated in a timely fashion.</p> <p>Maintenance of the CAP Dashboard and the Executive Dashboard will ensure that each of the tools continues to provide appropriate and timely information with regards to the quality of the program.</p>																				

9. Safety Reporting / Corrective Action: X-4

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan June 2017</b>		
A	Reference ID	X-4
B	Recommendation	Develop an evaluation program for Serious Incident Investigations to include periodic audits of the processes by Internal Audit
C	Key Term Definitions	<p><u>Implementation Plan</u>: The deliverables, interim milestones, resource requirements and associated completion/effectiveness metrics that address a NorthStar recommendation.</p> <p><u>Project Management Office (PMO)</u>: This team is responsible for monitoring progress and documenting completion of all Implementation Plans associated with a NorthStar recommendation.</p> <p><u>Serious Injury and Fatality (SIF) Actual</u>: A subset of a Serious Safety Incident that results in any of the following to employees or contractors resulting from work at PG&amp;E:</p> <ul style="list-style-type: none"> <li>• A fatality – work related fatal injury or illness;</li> <li>• A life threatening injury or illness, that if not addressed could lead to a fatality – work related injury or illness that required immediate life-preserving rescue action, and if not applied immediately would likely have resulted in the death of that person; or</li> <li>• A life altering injury or illness, one that results in the loss or permanent impairment of a limb, organ or body function – work-related injury or illness that resulted in a permanent and significant loss of a major body part or organ function.</li> </ul> <p><u>SIF Potential</u>: The outcome of an event has a reasonable and realistic possibility (as per SIF decision logic) to result in an actual SIF, if the SIF Precursors are allowed to continue (includes both injury reports and near-hit reports)</p>
D	Implementation Plan	<p>PG&amp;E has an evaluation program in place focused on the quality of serious incident investigations and corrective actions. SIF Actual and SIF Potential cause evaluations are currently reviewed through the respective LOB Corrective Action Review Boards (CARB) to provide visibility and ensure agreement with the findings, corrective actions and implementation schedule. All final investigation reports for SIF Actual and SIF Potential investigations are also reviewed by an independent, third party (currently Exponent Engineering Consulting) against an established quality rubric. Feedback from this review is provided to the investigation team, the LOB CARB and any other interested stakeholders.</p> <p>The evaluation program will expand to include periodic audits of the process by Internal Audit.</p>

E	Implementation Timeline	<u>Date</u> Jan. 2018 Mar. 2018 Mar. 2018	<u>Milestone</u> Process defined for routine audits of serious incident investigations Begin audit plan implementation Revise SAFE-1004
F	Implementation Status	In Progress	
G	Assessment of completion and Sustainability of PG&E's Implementation Plan	<u>Completion:</u> There will be two parts to evidence of completion for this implementation plan: <ul style="list-style-type: none"> <li>• A copy of the revised standard (SAFE-1004) showing the role of Internal Audit in reviewing the serious incident investigation process</li> <li>• A copy of the 2018 audit plan for this topic</li> </ul> <u>Sustainability:</u> Guidance documents represent a mechanism for ensuring sustainability for process changes.	

9. Safety Reporting / Corrective Action: X-5

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	X-5
B	Recommendation	<p>Improve documentation of corrective actions for incidents and near hits subject to a Work Group Evaluation (WGE), as well as for incidents subject to an Apparent Cause Evaluation (ACE) and Root Cause Evaluation (RCE). At a minimum, documentation should include:</p> <ol style="list-style-type: none"> <li>1. The process/rationale by which the causal evaluation type was selected (i.e RCE, ACE or WGE).</li> <li>2. A description of the corrective action, due date, completion date, responsible party and actions taken.</li> <li>3. If the incident warrants a 5-minute meeting, tailboard or other communication within a workgroup, LOB or to multiple LOBs, such communication should be included as well as the date and evidence that it was communicated.</li> <li>4. Where effectiveness evaluations are required, the results should be linked to the causal evaluation documentation.</li> </ol>
C	Key Term Definitions	N/A



D	Implementation Plan	<p>To address the request for improved documentation of corrective actions for incidents and near hits subject to a Work Group Evaluation (WGE) the following actions will be completed:</p> <ul style="list-style-type: none"> <li>• A standard WGE template will be developed to provide consistent and appropriate elements for this lower level of evaluation.</li> <li>• CORP-6051WBT, "CAP Issue Management" training module will be expanded to provide specific information regarding the resolution and documentation of WGEs.</li> <li>• The development of WGE improvement coordinated effort with the members of the Safety Investigation team.</li> </ul> <p>Cause evaluation type classification and assignment is directed by the requirements established in Utility Policy: GOV-03, "Corrective Action Program Policy" and Utility Standard: GOV-6101S, "Enterprise Corrective Action Program Standard."</p> <ul style="list-style-type: none"> <li>• Guidance and requirements for the establishment of the CAP at PG&amp;E are provided in these documents.</li> <li>• Specific requirements are established to ensure that Issues are appropriately categorized, prioritized and evaluated. Additional specific CAP procedures and requirements are maintained by each LOB. These procedures and requirements are consistent with the Enterprise policy and standard, but may provide additional information for the respective LOB applications.</li> <li>• Within these Policies and Standards, the process for the assignment for the level of causal evaluation is defined.</li> <li>• The LOB CAP Review Teams (CRT) complete the assignment and document the rationale within the CAP Issue including the appropriate type of follow-up evaluation, e.g., WGE, ACE, RCE. Corrective actions, due dates and completion dates for Root Cause Evaluations and Apparent Cause Evaluations are included within the respective reports. Guidance and instructions for this action is specified in the Enterprise Cause Evaluation standard, evaluation templates and LOB procedures. Communications associated with formal cause evaluations are included in the respective reports.</li> </ul>
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E	Implementation Timeline	<table border="0"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestones</u></th> </tr> </thead> <tbody> <tr> <td>Mar. 2015</td> <td>Utility Policy GOV-03 published</td> </tr> <tr> <td>2015-2017</td> <td>Utility Standard: GOV-6101S Rev 5 published</td> </tr> <tr> <td>Jun. 2017</td> <td>LOB Standards published</td> </tr> <tr> <td>Nov. 2017</td> <td>ACE &amp; RCE Template updated with Effectiveness Measure Plan details</td> </tr> <tr> <td>Nov. 2017</td> <td>Summary of current processes</td> </tr> <tr> <td>Dec. 2017</td> <td>Develop Project Plan for additional actions to address WGEs</td> </tr> <tr> <td>Jan. 2018</td> <td>Complete draft WGE Template</td> </tr> <tr> <td>May 2018</td> <td>Finalize the update to CORP-6051WBT, "CAP Issue Management" training module</td> </tr> <tr> <td>May 2018</td> <td>Distribute the completed standard WGE template</td> </tr> <tr> <td>May 2018</td> <td>Complete implementation of Project Plan</td> </tr> <tr> <td>Jun. 2018</td> <td>Complete draft documentation and closure package for review</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestones</u>	Mar. 2015	Utility Policy GOV-03 published	2015-2017	Utility Standard: GOV-6101S Rev 5 published	Jun. 2017	LOB Standards published	Nov. 2017	ACE & RCE Template updated with Effectiveness Measure Plan details	Nov. 2017	Summary of current processes	Dec. 2017	Develop Project Plan for additional actions to address WGEs	Jan. 2018	Complete draft WGE Template	May 2018	Finalize the update to CORP-6051WBT, "CAP Issue Management" training module	May 2018	Distribute the completed standard WGE template	May 2018	Complete implementation of Project Plan	Jun. 2018	Complete draft documentation and closure package for review
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F	Implementation Status	In Progress																								
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion:</u></p> <p>Completion will be demonstrated with:</p> <ul style="list-style-type: none"> <li>• The documentation of WGE training elements incorporated within CORP-6051WBT.</li> <li>• Publication of the standard WGE template.</li> </ul> <p><u>Sustainability:</u></p> <p>Demonstration of sustainability will be accomplished with the monitoring of Quality Closure of CAP Issues.</p> <p>Quality Closure Review is documented within each CAP Issue document.</p> <p>Documentation of sustainability will be provided in the form of examples of completed WGE templates.</p>																								

9. Safety Reporting / Corrective Action: X-6

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	X-6
B	Recommendation	Report and track incidents in a consistent manner such that appropriate information may be shared across the enterprise. Develop a central repository for this information which should include an executive summary, corrective actions taken, any materials developed and the effectiveness evaluations.
C	Key Term Definitions	N/A

D	Implementation Plan	<p>To ensure that reporting and tracking of incident information is completed in a consistent manner the following actions are currently in development:</p> <ul style="list-style-type: none"> <li>• Creation of a standard format for the reporting of incidents and investigation conclusions. The format will include an executive summary, corrective actions implemented or planned, materials developed for learnings and the effectiveness measure plan.</li> <li>• A central repository for Significant Injury or Fatality (SIF) and Potential Significant Injury or Fatality (SIFp) issues will be created. This repository will be available to the general population for reference and learning. Access to issues which contain sensitive or restricted information may be limited.</li> <li>• A formal process for the Enterprise wide dissemination of incident information will be developed and implemented. This process will include instructions for the preparation of communications which will utilize the standard format for the reporting of incidents and investigation conclusions.</li> </ul> <p>The sum of these actions will ensure that Significant Injury or Fatality (SIF) and Potential Significant Injury or Fatality (SIFp) issues are uniformly communicated throughout the Enterprise.</p> <p>Existing processes which provide a foundation for the development of the reporting and tracking systems include:</p> <ul style="list-style-type: none"> <li>• Utility Standard: GOV-6102S, "Enterprise Causal Evaluation" which establishes the enterprise wide framework for the causal evaluation process. This standard, in conjunction with Utility Standard: SAFE-1004S, "Serious Incident Investigation Standard," provide the basis for the development and documentation of executive summaries, corrective actions taken, and the development of effectiveness measure plans.</li> <li>• Utility Policy: GOV-03, "Corrective Action Program Policy" and Utility Standard: GOV-6101S, "Enterprise Corrective Action Program Standard" provide the guidance and requirements for the establishment of the Corrective Action Program at PG&amp;E. Within these documents specific requirements are provided to ensure that Issues are appropriately categorized, prioritized, evaluated and tracked.</li> </ul>
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G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion:</u></p> <p>Completion will be demonstrated with:</p> <ul style="list-style-type: none"> <li>• The documentation of the central repository for cause evaluation information.</li> </ul> <p><u>Sustainability:</u></p> <p>Demonstration of sustainability will be accomplished with the verification of the publication of Enterprise wide communications of incident information.</p>														

9. Safety Reporting / Corrective Action: X-7

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	X-7
B	Recommendation	Develop a protocol involving concise, targeted, timely communications to notify other crews, work locations and LOBs of incidents or corrective actions that are applicable to that group.
C	Key Term Definitions	<p><u>Safety Incident or Event</u>: A work-related injury or discomfort that is reported through PG&amp;E’s incident notification process, including the Nurse Report Line.</p> <p><u>Serious Incident or Fatality (SIF) Actual</u>: An incident that results in any of the following to the employees or contractors from work directed by, or performed by PG&amp;E:</p> <ul style="list-style-type: none"> <li>• Fatal – Work-related fatal injury.</li> <li>• Life-threatening injury – Work-related injury that required immediate life-preserving rescue action, and if not applied immediately, would likely have resulted in the death of that person.</li> <li>• Life-altering injury – Work-related injury that resulted in a permanent and significant loss of a major body part or organ function.</li> </ul> <p><u>SIF Potential</u>: An incident that could have resulted in the above.</p> <p><u>Emergency Notification</u>: defined in terms of situation that warrants <u>immediate</u> notification of a targeted group.</p> <p><u>Incident Communication</u>: defined in terms of a situation that requires timely communication of occurrence, corrective action and/or lessons learned in support of continuous improvement.</p> <p><u>Incident Classification Matrix</u>: classifies incidents based on severity with Level 1 being the least severe (e.g., near hit) and Level 4 the most severe event (hospitalization or fatality).</p> <p><u>Preliminary Factual Report</u>: the report that PG&amp;E’s Corporate Safety Investigations Department develops immediately after reviewing the facts surrounding the event.</p>
D	Implementation Plan	The scope of this implementation plan includes four primary components: (1) Stakeholder Identification; (2) Channels Identification; (3) Notification Process, Content and Timing; and (4) Governance. This plan is expected to become a component of the Corporate Safety Incident Notification Process, which is currently under development.

		<p>1. Stakeholder Identification</p> <p>Ongoing safety event communications that affect specific types of work and/or work groups will require targeted LOB or work group identification, as well as delivery channel identification.</p> <ul style="list-style-type: none"> <li>• Officers and Directors: For SIF events, we want to ensure that senior leaders have awareness and can immediately address any related work conditions and respond to related issues and questions or concerns from their team members. This plan builds on the process that was put in place in Q3-Q4 2017 to alert Officers and Directors of a SIF event by distributing the SIF Preliminary Factual Report within 24 hours of the event.</li> <li>• All employees: To provide timely information on known facts around the event so employees are aware, can stop or review similar work issues/conditions and can work with leadership moving forward to learn more and prevention.</li> </ul> <p>2. Channels Identification</p> <p>Officers and Directors: Email SIF Preliminary Factual Report.</p> <p>All Employees Channel Options:</p> <ul style="list-style-type: none"> <li>• Determine whether the global text process “Send Word Now”—currently in use for emergency events, is a viable option for sharing SIF events broadly.</li> <li>• Daily Digest.</li> <li>• Email Communication—all employee, LOB or work group distribution lists.</li> <li>• Explore new tools to review or develop such as mobile applications.</li> <li>• Review and leverage existing technology/applications.</li> </ul> <p>3. Notification Process, Content and Timing</p> <p>Officers and Directors</p> <ul style="list-style-type: none"> <li>• SIF event Notification within 24 hours of SIF by distributing the SIF Preliminary Factual Report.</li> </ul> <p>All employees</p> <ul style="list-style-type: none"> <li>• SIF event notification within 24-48 hours of distribution of the SIF Preliminary Factual Report and no more than 48 hours of the event.</li> </ul> <p>The notification process will follow the process outlined in the Corporate Safety Incident Notification Process, including:</p> <p>Initial Notification:</p> <ul style="list-style-type: none"> <li>• Employee notifies supervisor of incident, Supervisor calls PG&amp;E Incident Report Line, Specialist calls supervisor to validate and get facts.</li> </ul>
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		<p>Initial Classification and Response Notification:</p> <ul style="list-style-type: none"> <li>Safety Specialist establishes initial Incident Classification (Level 1-4) and follows the required actions on the Incident Classification Matrix.</li> </ul> <p>For SIF (Level 4) incidents, a safety and health communication lead must be notified of the event and included in the Factual Report distribution to officers and directors, so he/she can then notify all employees of the event.</p> <p>Timing currently targets 24-48 hour notification.</p> <p>5. Governance (roles and responsibilities)</p> <p>Each of the following will play a role in the safety event communication process, including notification that an even that occurred to ensure that people are aware of the event, corrective actions and lessons learned. Specific roles and responsibilities will be detailed, as the plan is further developed.</p>																	
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F	Implementation Status	In Progress																	



G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Completion will be demonstrated by a guidance document including PG&amp;E's notification standard. Once implemented, examples of these communications will be available. In addition, this process will be included in the Corporate Safety Incident Notification Process being led by Corporate Health and Safety.</p> <p><u>Sustainability</u>: Guidance documentation, including PG&amp;E's notification standard, will feature this notification process. PG&amp;E guidance documents are subject to ongoing review and continuous improvement.</p>
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9. Safety Reporting / Corrective Action: X-8

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	X-8 (Master Plan Includes X-9)
B	Recommendation	<p><b>X-8:</b> Develop a single, consistent enterprise causal evaluation standard combining Utility Standard: SAFE-1004S (Serious Investigation Standard) and the Enterprise Causal Evaluation Standard (Utility Standard: GOV-6102S). Incorporate the specified improvements:</p> <ul style="list-style-type: none"> <li>• Determine whether RCEs should be required for: (1) an injury involving inpatient hospitalization for a period in excess of 24 hours for other than medical observations; and (2) a loss of any part of the body (including eye), or any serious degree of permanent disfigurement (includes damage without loss of bone).</li> <li>• Require documentation of the rationale for the selection of the CE type for all incidents, including near hits.</li> <li>• Requires assignment of responsibility for ensuring all corrective actions are thorough, appropriate, have been completed and have been appropriately communicated.</li> <li>• Requires assignment of responsibility for ensuring that effectiveness evaluation has been completed, is thorough and any findings have been effectively addressed.</li> <li>• Include a process flow/timeline that extends to the completion of the effectiveness evaluation, similar to that included in Utility Standard: SAFE-1004S Publication Date: 05/31/2015, Rev: [1].</li> <li>• Provide a summary to all employees for the cause and corrective actions taken/to be taken once an incident investigation is complete (ACE/RCE). All PG&amp;E employees are notified via email within 24 hours of the incident providing a brief summary of the incident. There is no such requirement for closure.</li> </ul> <p><b>X-9:</b> Compare all LOB Causal Evaluation Standards to ensure the processes are consistent and all required elements are defined. As an example the Power Generation Procedure includes a discussion of the WGE process. Electric T&amp;D and Gas Operations procedures do not. Gas Operations procedures do not include an RCE process timeline and appear to group RCE and ACE. The RCE communications plan for all procedures should include the communications process for follow-up on the Effectiveness Review Plan. Establish guidelines for communication of the corrective actions and the effectiveness reviews, as these are currently tracked separately by LOB.</p>
C	Key Term Definitions	N/A

D	Implementation Plan	<p>PG&amp;E will make revisions to multiple guidance documents such that there is a single cause evaluation standard and clarity of processes, roles and responsibilities related to evaluations, incident communication and effectiveness review of corrective actions. To identify needed revisions, an assessment will be done of the following guidance documents:</p> <ul style="list-style-type: none"> <li>○ GOV-6102S</li> <li>○ SAFE-1004S</li> <li>○ SAFE-1100S</li> <li>○ SAFE-1100P-01</li> </ul> <p>Once the assessment has been completed, a plan will be developed to clarify specific changes needed for each guidance document related to the specific elements of NorthStar recommendations X-8 and X-9. In addition to these revisions, a new document will be developed. This new document will be a manual to provide guidance for those conducting cause evaluations. Prior to publication, these documents will be reviewed against related CPUC decisions and orders, e.g., the Kern Oil settlement, to ensure compliance.</p>										
E	Implementation Timeline	<table border="1"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Jul. 2017</td> <td>Begin assessment of current of all published, and in draft, LOB specific Cause Evaluation processes</td> </tr> <tr> <td>Nov. 2017</td> <td>Complete assessment</td> </tr> <tr> <td>Dec. 2017</td> <td>Plan developed to address findings and recommendations</td> </tr> <tr> <td>Mar. 2018</td> <td>Revision to Cause Evaluation Standard and publication of Cause Evaluation Manual Plan implemented</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Jul. 2017	Begin assessment of current of all published, and in draft, LOB specific Cause Evaluation processes	Nov. 2017	Complete assessment	Dec. 2017	Plan developed to address findings and recommendations	Mar. 2018	Revision to Cause Evaluation Standard and publication of Cause Evaluation Manual Plan implemented
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Mar. 2018	Revision to Cause Evaluation Standard and publication of Cause Evaluation Manual Plan implemented											
F	Implementation Status	In Progress										
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Evidence of completion for this implementation plan will revised guidance documents highlighting sections that address NorthStar recommendations X-8 and X-9.</p> <p><u>Sustainability</u>: Guidance documents represent a mechanism for ensuring sustainability for process changes.</p>										

10. Contractor Safety: XI-1

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>		
A	Reference ID	XI-1
B	Recommendation	Corporate Contractor Safety should select the projects for review rather than the Line Of Business (LOBs), and conduct “surprise” field visits to assess contractor safety practices.
C	Key Term Definitions	<u>Unscheduled Field Visit</u> : Contractor Safety Program compliance field visits that the Corporate Contractor Safety Program Leads (PL) perform. This term is preferred rather than the term “surprise” field visits.
D	Implementation Plan	<p>PG&amp;E uses multiple oversight mechanisms to ensure its contractors are working safely and are abiding by safety-related contractual commitments, including those associated with the Contractor Safety Program.</p> <p><u>Field Safety Observations</u></p> <p>These observations:</p> <ul style="list-style-type: none"> <li>• Assess whether work in the field is being done safely and that appropriate controls (administrative, Personal Protective Equipment (PPE), etc.) are in place. These observations are generally conducted with and without warning by LOB representatives and Corporate Safety Specialists. They can also be conducted by members of the Corporate Contractor Safety team during Assessment (see below) or at any other time.</li> <li>• Are required by the LOB procedures (see XI-5), which provide guidelines regarding the frequency of observations for specific types of work, including the portion which should be done with no advance notice.</li> <li>• Provided feedback to the observed crew at the time of the observation.</li> <li>• Are tracked in SafetyNet, PG&amp;E’s safety observation tool, for future analysis and feedback to appropriate stakeholders.</li> </ul> <p><u>Corporate Contractor Safety Assessments</u></p> <p>These assessments:</p> <ul style="list-style-type: none"> <li>• Determine whether LOBs are implementing their Contractor Oversight Procedures. <ul style="list-style-type: none"> <li>○ Some aspects of these assessments are desk-top exercises focused on pre-qualifications, contracts, safety plans and performance evaluations.</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>○ Other aspects are assessed in the field at pre-determined job sites focused on observing contractor safe performance of work and adherence to safety plans.</li> <li>● Are scheduled in advance because of desk-top review requirements and ensure that the LOB lead for overseeing implementation can be present on site to address questions and provide clarification on project details.</li> <li>● Are performed by Corporate Contractor Safety team, Program Leads.</li> <li>● Are established by a written process that provides guidelines regarding the scope and frequency of assessments for specific types of contractors. <ul style="list-style-type: none"> <li>○ Written assessment process: "CSP_LOB_Assessment Process_FINAL."</li> <li>○ Assessment process is supported by a form: "CSI Assessment Form."</li> </ul> </li> </ul> <p>Feedback is provided to LOB Representatives shortly after the assessment and to LOB leadership quarterly with the expectations that any findings are entered into CAP for follow-up as appropriate.</p> <p><u>Proposed Project Execution Strategy</u></p> <p>To address this recommendation, Corporate Contractor Safety incorporated a note into the current assessment process for Contractor Safety that field safety observations may be performed as part of the assessment process. This process is documented in the CSP_LOB_Assessment Process_FINAL guidelines. Additionally, Corporate Contractor Safety performs unannounced field safety observations to support LOB work as requested, such as field safety observations performed on Vegetation Management contractors.</p>								
E	Implementation Timeline	<table border="0"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Sep. 2017</td> <td>Update written process with the guideline for Contractor Safety Program Leads to perform unannounced field safety observations as part of program compliance assessments (see CSP_LOB_Assessment Process_FINAL). Also, update process to include guidelines allowing Contractor Safety Program Leads to be able to choose LOB projects to be assessed.</td> </tr> <tr> <td>Nov. 2017</td> <td>Communicate the updated process guidelines to stakeholders.</td> </tr> <tr> <td>Dec. 2017</td> <td>Begin unscheduled contractor field safety observations based on Contractor Safety selected LOB projects.</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Sep. 2017	Update written process with the guideline for Contractor Safety Program Leads to perform unannounced field safety observations as part of program compliance assessments (see CSP_LOB_Assessment Process_FINAL). Also, update process to include guidelines allowing Contractor Safety Program Leads to be able to choose LOB projects to be assessed.	Nov. 2017	Communicate the updated process guidelines to stakeholders.	Dec. 2017	Begin unscheduled contractor field safety observations based on Contractor Safety selected LOB projects.
<u>Date</u>	<u>Milestone</u>									
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Nov. 2017	Communicate the updated process guidelines to stakeholders.									
Dec. 2017	Begin unscheduled contractor field safety observations based on Contractor Safety selected LOB projects.									

F	Implementation Status	Complete
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion:</u> Evidence of completion includes:</p> <ul style="list-style-type: none"> <li>• An updated written process for performing contractor safety program implementation assessments for the LOBs with additional guidelines consistent with NorthStar's recommendation.</li> <li>• Examples of unannounced field safety observations conducted on contractors outside of the LOB contractor oversight procedure implementation assessment process.</li> </ul> <p><u>Sustainability:</u> The processes that support this recommendation are recorded in a Corporate Contractor Safety Program written process ("Contractor Safety Program Process – Assessment of the Lines of Business Contractor Oversight Procedures"), with both observation and assessment results subject to regular reporting.</p>

10. Contractor Safety: XI-2

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>												
A	Reference ID	XI-2										
B	Recommendation	Determine whether it is feasible to update the language in contracts to remove all references to the contractor or consultant being “solely responsible” for performing work in a safe manner.										
C	Key Term Definitions	N/A										
D	Implementation Plan	<p>The implementation plan was based on updating language in terms and conditions templates for contracts managed through PG&amp;E’s central Supply Chain organization.</p> <p>In accordance with D.15-07-014, as of July 23, 2015, standard contracts were amended. As of this date, all new contracts include new contractor Safety terms and conditions. These new terms and conditions include a reference to a website URL containing specific details related to our Contractor Safety standard. To address current standing contracts containing this language, language was added to on the website URL to address the concerns about holding contractors and consultants “solely responsible” and removing the word “solely.” Upon communication with the contractors via the ISNetwork (ISN) website, the language took effect.</p> <p>Additionally, previous action as of December 31, 2016, all active high and medium risk contracts were amended to reflect the new contractor Safety terms and conditions including the web URL as mentioned above. As of August 2, 2017, all standard General Conditions contract templates were edited, removing the word “solely” as related to contractor safety responsibility.</p> <p>Standing low risk contracts executed prior to July 23, 2015 will be modified as they are renewed to reflect the new language in the general terms and conditions template.</p>										
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F	Implementation Status	Complete
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Copies of the revised contract template sections and screenshots of their generally-accessible locations will constitute evidence of completion.</p> <p><u>Sustainability</u>: Procurement practices call for the use of standard templates in contracting at PG&amp;E. The use of these modified templates constitutes evidence of sustainability.</p>



10. Contractor Safety: XI-3

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>										
A	Reference ID	XI-3								
B	Recommendation	Develop formal criteria to close contractor serious safety incident action items in ISN.								
C	Key Term Definitions	<u>Serious Safety Incident</u> : An incident that lead to life-altering or life-threatening injuries to a member of the public, a contractor or PG&E employee.								
D	Implementation Plan	To address this recommendation, Corporate Contractor Safety wrote a formal process outlining the guidelines for closing Serious Safety Incident Action Items through ISNetwork (ISN), PG&E's Third-party Administrator for contractor safety pre-qualification management.								
E	Implementation Timeline	<table border="1"> <thead> <tr> <th><u>Date</u></th> <th><u>Milestone</u></th> </tr> </thead> <tbody> <tr> <td>Sep. 2017</td> <td>Develop "Process for Closing Contractor Reported Serious Safety Incident Action Items in ISN" by the end of Q3, 2017.</td> </tr> <tr> <td>Oct. 2017</td> <td>Communicate new process to stakeholders.</td> </tr> <tr> <td>Oct. 2017</td> <td>Implement new process.</td> </tr> </tbody> </table>	<u>Date</u>	<u>Milestone</u>	Sep. 2017	Develop "Process for Closing Contractor Reported Serious Safety Incident Action Items in ISN" by the end of Q3, 2017.	Oct. 2017	Communicate new process to stakeholders.	Oct. 2017	Implement new process.
<u>Date</u>	<u>Milestone</u>									
Sep. 2017	Develop "Process for Closing Contractor Reported Serious Safety Incident Action Items in ISN" by the end of Q3, 2017.									
Oct. 2017	Communicate new process to stakeholders.									
Oct. 2017	Implement new process.									
F	Implementation Status	Complete								
G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<u>Completion</u> : A copy of the revised process document, titled "Addressing ISNI Action Items Process_Final" and a copy of its supporting communication constitute evidence of completion <u>Sustainability</u> : This process is in place until it is formally revised or revoked per guidance document procedures, thus sustainable.								

10. Contractor Safety: XI-4

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>								
A	Reference ID	XI-4						
B	Recommendation	Facilitate the sharing of best practices and lessons learned regarding the LOBs' implementation of the Contractor Safety Standard, addressing both organizational and procedural issues.						
C	Key Term Definitions	N/A						
D	Implementation Plan	<p>This recommendation has been addressed in two parts.</p> <p>First, is an annual event to share best practices called the Enterprise Contractor Safety LOB Implementation Forum. The first annual event was held on January 18, 2017.</p> <p>Second, is an annual event to share best practices with PG&amp;E's California peer electric and gas utilities called the CA Electric and Gas Utilities Contractor Safety Benchmarking Session. The first event was held on March 22, 2017 and a second session was held on September 27, 2017. These sessions are intended to take place at least annually, but may include other sessions scheduled throughout the year as appropriate.</p>						
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<u>Date</u>	<u>Milestone</u>							
Jan. 2017	Enterprise Contractor Safety Forum							
Mar. 2017	CA Electric and Gas Utilities Contractor Safety Benchmarking Session							
F	Implementation Status	Complete						

<p>G</p>	<p>Assessment of completion and effectiveness of PG&amp;E's Implementation Plan</p>	<p><u>Completion:</u> PG&amp;E will document implementation of this recommendation through providing the first annual Enterprise LOB Contractor Safety Implementation Best Practices event agenda, the survey feedback and copies of presentation material from that event. Additionally, PG&amp;E will provide evidence of Contractor Safety benchmarking event, including two agendas (there were two sessions in 2017) as supporting documentation with our peer California based utilities.</p> <p>Regarding the PG&amp;E Enterprise Contractor Safety LOB Implementation Forum, supporting documentation includes the event's agenda, presentation material master slide deck, and the feedback survey results from the participants. Also attached is a copy of the agenda.</p> <p>Regarding the California Electric and Gas Utilities Benchmarking Session, supporting documentation includes copies of the events' agenda.</p> <p><u>Sustainability:</u> The Corporate Contractor Safety team's 5-year strategy, which indicates on page 5 that the team will facilitate this forum annually, provides evidence of the sustainability of these forums. These events are subject to continuous improvement.</p>
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10. Contractor Safety: XI-5

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>												
A	Reference ID	XI-5										
B	Recommendation	Update LOB contractor safety procedures to clarify responsibilities and reflect current organizations and processes. Include guidelines regarding the frequency of field observations.										
C	Key Term Definitions	N/A										
D	Implementation Plan	<p><u>Scope Interpretation</u></p> <p>This recommendation is specific to each LOB contractor oversight procedure and their language around how and when to perform field safety observations on their contractors.</p> <p><u>Scope Considerations</u></p> <p>The 13 LOB oversight procedures will be updated to reflect the current organization structure, adding standard guidelines regarding the clarification of responsibilities and determining the frequency of field safety observations.</p> <p>Corporate Contractor Safety will establish standard guidelines and have each LOB incorporate them into their procedures.</p> <p>Corporate Safety and LOB leadership will drive this requirement to the procedure owners to ensure they are prioritized.</p> <p><u>Project Execution Strategy</u></p> <p>Contractor Safety will establish the observation frequency guidelines standard language for each procedure. Due February 28th, 2018.</p> <p>Corporate Contractor Safety will coordinate with the LOB contractor safety procedure owners to incorporating the observation frequency guidelines into their procedures. Each revision will be published in the PG&amp;E Guidance Document Library. Due June 31st, 2018.</p> <p>Additionally, Corporate Contractor Safety will then assess LOB compliance in accordance with their procedure updates.</p>										
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Jun. 2018	Finalize procedure revisions and publish											
F	Implementation Status	In Progress										

G	Assessment of Completion and Sustainability of PG&E's Implementation Plan	<p><u>Completion</u>: Revised LOB procedures that incorporate the standard guidelines for observation frequency will provide evidence of completion.</p> <p><u>Sustainability</u>: Regular reporting of observation outcomes and Contractor Safety Program assessments of LOB compliance with their respective procedures will support sustainability of this process.</p>
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10. Contractor Safety: XI-6

<b>Safety Culture and Governance OII (I. 15-08-019)</b> <b>Safety Assessment Recommendations</b> <b>Implementation Plan</b>										
A	Reference ID	XI-6								
B	Recommendation	Institute a contractor on-boarding test in Power Generation.								
C	Key Term Definitions	<u>Knowledge Check</u> : A process to test for understanding.								
D	Implementation Plan	<p>A knowledge check was implemented for Hydro Generation’s Contractor Safety Orientation Video.</p> <p>Initial implementation was achieved by first developing the knowledge check based on the Orientation Video and then communicating the requirement to administer the knowledge check after contractors view the Orientation Video. Additionally, existing Certificate of Completion and Wallet Card documents issued to contractors after viewing the Orientation Video have been updated to include acknowledgement that the knowledge check.</p> <p>Confirmation that contractors have viewed the Orientation Video and completed the knowledge check is achieved through the existing process of requiring contractor employees to provide their Certificate of Completion or Wallet Card prior to beginning work at any job site. Any contractor employees that do not have a Certificate of Completion or Wallet Card are required to view the Orientation Video and complete the knowledge check before beginning work.</p> <p>The implementation of this requirement is sustained by incorporating the requirement for the knowledge check into the Power Generation Contractor Safety Procedure – Hydro Facilities (PG-2015P-01). Additionally, periodic assessments of Hydro Generation’s compliance with this procedure are performed by Corporate Safety and Health as required by the Contractor Safety Standard (SAFE-3001S).</p>								
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Dec. 2017	Knowledge check incorporated in Power Generation Contractor Safety Procedure PG-2015P-01									
F	Implementation Status	Complete								

<p>G</p>	<p>Assessment of Completion and Sustainability of PG&amp;E's Implementation Plan</p>	<p><u>Completion:</u> The following documents provide evidence of completion:</p> <ol style="list-style-type: none"> <li>1. Knowledge check and answer key. <ul style="list-style-type: none"> <li>○ HYDRO SAFETY VIDEO KNOWLEDGE CHECK (REV 6-27-17).pdf</li> <li>○ Answer Key HYDRO SAFETY VIDEO KNOWLEDGE CHECK.pdf</li> </ul> </li> <li>2. Updated Certificate of Completion and Wallet Card documents acknowledging completion of knowledge check. <ul style="list-style-type: none"> <li>○ Certificate of Completion 20170830.pdf</li> <li>○ Certificate of Completion – Wallet Card 20170830.pdf</li> </ul> </li> <li>3. Email from Power Generation's Manager of Safety requiring implementation of the knowledge check.</li> <li>4. Updated PG-2015P-01 incorporating requirement to implement the knowledge check.</li> </ol> <p>Existing SAFE-3001S requiring periodic assessments of Hydro Generation's compliance with PG-2015P-01.</p> <p><u>Sustainability:</u> An updated version of Generation Contractor Safety Procedure – Hydro Facilities (PG-2015P-01) provides supporting evidence for the sustainability of this action.</p>
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**PACIFIC GAS AND ELECTRIC COMPANY**

**CHAPTER 2**

**APPENDIX 2-B**

**PACIFIC GAS AND ELECTRIC COMPANY LATE-FILED EXHIBIT  
ON EXECUTIVE COMPENSATION AND SAFETY**



Application: 15-09-001  
(U 39 M)  
Exhibit No.: (PG&E-43)  
Date: October 3, 2016  
Witness(es): John Lowe

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**PACIFIC GAS AND ELECTRIC COMPANY**  
**2017 GENERAL RATE CASE**  
**LATE FILED EXHIBIT ON EXECUTIVE COMPENSATION AND SAFETY**  
**EXHIBIT (PG&E-43)**

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PACIFIC GAS AND ELECTRIC COMPANY  
2017 GENERAL RATE CASE  
LATE FILED EXHIBIT ON EXECUTIVE COMPENSATION AND SAFETY  
EXHIBIT (PG&E-43)

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**PACIFIC GAS AND ELECTRIC COMPANY  
LATE FILED EXHIBIT ON  
EXECUTIVE COMPENSATION AND SAFETY**

PACIFIC GAS AND ELECTRIC COMPANY  
LATE FILED EXHIBIT ON  
EXECUTIVE COMPENSATION AND SAFETY

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1                   **PACIFIC GAS AND ELECTRIC COMPANY**  
2                   **LATE FILED EXHIBIT ON**  
3                   **EXECUTIVE COMPENSATION AND SAFETY**

4   **A. Introduction**

5           This late filed exhibit provides additional documentation and explanation of  
6   Pacific Gas and Electric Company's (PG&E or the Company) executive  
7   compensation plans and programs in accordance with Administrative Law Judge  
8   (ALJ) Stephen C. Roscow's request during the September 1, 2016 evidentiary  
9   hearing.<sup>1</sup>

10          In the Assigned Commissioner's Scoping Memo, the California Public  
11   Utilities Commission (Commission) President Michael Picker stated that "this  
12   proceeding will document and review how PG&E finances safety efforts,  
13   particularly how the Commission evaluates compensation of PG&E's executive  
14   leadership around questions of safety."<sup>2</sup> In order to advance that objective, the  
15   purpose of this exhibit is to further document (i) the structure of compensation  
16   for PG&E's executives, including the role that safety plays in PG&E's at-risk  
17   compensation, (ii) how safety metrics included in that compensation are  
18   established and evaluated, and (iii) what portions of executive compensation are  
19   included in PG&E's 2017 General Rate Case (GRC) forecast.

20          In accordance with the ALJ's request, PG&E worked with the Commission's  
21   Safety and Enforcement Division (SED) to determine the documentation that  
22   should be included in this exhibit as well as the organization of the report. The  
23   SED asked that PG&E include a section in this testimony pertaining to  
24   Section 321.1 of the Public Utilities Code.

25          Finally, as directed by the ALJ, a draft of this exhibit was circulated on  
26   September 23, 2016, to all parties, as well as staff of the Energy Division and  
27   SED. SED staff, The Utility Reform Network (TURN), Collaborative Approaches  
28   to Utility Safety Enforcement (CAUSE) and the National Diversity

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1   See Transcript (Tr.) Vol. 12, 972:14 – 974:14.

2   Scoping Memo, p. 7.

1 Coalition (NDC) provided comments on the draft which have been reflected in  
2 this final version.<sup>3</sup>

3 **B. Procedural Background for This Late Filed Exhibit**

4 On September 15, 2015, PG&E filed its GRC Application. Among other  
5 things, PG&E's Application discussed the Company's compensation plans and  
6 programs generally. PG&E also addressed particular programs such as the  
7 Short-Term Incentive Plan (STIP), which include specific safety components that  
8 apply both to executive and non-executive employees. Some parties offered  
9 testimony on PG&E's STIP metrics or on executive compensation generally. In  
10 its GRC Application, PG&E sought rate recovery of STIP for non-executive  
11 employees only. PG&E did not seek rate recovery of STIP for executive  
12 employees or the costs of its Long-Term Incentive Plan (LTIP) for any Company  
13 employees.

14 As mentioned in the Introduction, on December 1, 2015, Commissioner  
15 Picker issued the Scoping Memo, addressing the scope of the proceeding and  
16 other procedural matters. The Scoping Memo stated that "this proceeding will  
17 document and review how PG&E finances safety efforts, particularly how the  
18 Commission evaluates compensation of PG&E's executive leadership around  
19 questions of safety."<sup>4</sup>

20 On August 3, 2016, PG&E and the other settling parties filed a Joint Motion  
21 for Adoption of Settlement Agreement that settled all issues in the case with the  
22 exception of two contested issues.

23 On August 30, 2016, Commissioner Picker and ALJ Roscow held a  
24 workshop to discuss, among other things, "[h]ow does the Settlement comply  
25 with the intent of the Scoping Memo that 'this proceeding will document and

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3 CAUSE has asked PG&E to include the following statement with this testimony:  
"CAUSE observes that Exhibits A, C and D disclose elements of discretion, subjectivity,  
and limits on data quality that were not apparent in earlier testimony. Since the metrics  
influence employee compensation, CAUSE is concerned that this discretion and  
subjectivity could adversely affect how management analyzes data regarding safety  
risks and how comprehensively these risks are communicated to the Board. These  
concerns do not qualify CAUSE's support for the settlement. However, CAUSE asks  
that the Commission, in assessing and mitigating the effect of approving the settlement  
on safety, avoid a determination that the current executive compensation scheme  
provides the appropriate incentive to promote safety, so that the issue can be examined  
without prejudice in future proceedings."

4 Scoping Memo, p. 7.

1 review how PG&E finances safety efforts, particularly how the Commission  
2 evaluates compensation of PG&E’s executive leadership around questions of  
3 safety?’” At the workshop, PG&E addressed the Commissioner and ALJ’s  
4 safety and compensation-related questions. PG&E also provided a 5-page  
5 written presentation, which discussed the structure of executive compensation  
6 generally, as well as the role that safety plays.<sup>5</sup>

7 On September 1, 2016, the Commission held an evidentiary hearing on  
8 various settlement items. With respect to the Commission’s stated intent that  
9 this “proceeding will document and review how PG&E financed the safety  
10 efforts, particularly how the Commission evaluates compensation of PG&E’s  
11 executive leadership around questions of safety,” the Commission noted that the  
12 workshop “went a long way” toward enhancing that documentation.<sup>6</sup> The  
13 Commission also noted, however, that the record would benefit from additional  
14 material with respect to executive compensation.<sup>7</sup> Therefore, the Commission  
15 ordered PG&E and the settling parties to jointly prepare a late filed exhibit  
16 providing that documentation and to work with the Commission’s SED on the  
17 details of the organization of the exhibit.<sup>8</sup> As the ALJ instructed, PG&E has  
18 attempted to keep this document factual and avoid argument in explaining the  
19 way the Company’s executive compensation programs work.<sup>9</sup>

20 On September 3, 2016, ALJ Roscow issued a ruling admitting PG&E’s  
21 August 30, 2016 Workshop materials into the evidentiary record as  
22 Exhibit (PG&E-40).

### 23 **C. Overview of Executive Compensation**

24 A general overview of the structure of PG&E’s executive compensation can  
25 be found in PG&E’s August 30, 2016 Workshop materials entitled, “Pacific Gas  
26 and Electric Company Executive Compensation.”<sup>10</sup> Generally, PG&E’s

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5 This document is included as Attachment A. It was entered into the evidentiary record as Exhibit (PG&E-40) by ALJ Roscow’s September 3, 2016 email ruling.

6 Tr. Vol. 12, 973:5-12.

7 Tr. Vol. 12, 973:12-17.

8 Tr. Vol. 12, 973:18 to 974:5.

9 The record reflects disagreement among parties over the extent to which PG&E safety metrics serve as effective incentives to increase management focus on safety.

10 This document is included as Attachment A.

1 executive compensation consists of two distinct categories—“foundational” and  
2 “at-risk” compensation.

### 3 **1. Foundational Compensation**

4 As defined by PG&E, foundational compensation includes an  
5 employee’s base pay, as well as pension and benefits.<sup>11</sup> This is the portion  
6 of an employee’s compensation designed to provide a stable income, as  
7 well as health, wellness and retirement benefits.<sup>12</sup> Foundation pay, by  
8 design, is not meant to be at-risk.<sup>13</sup> For executive employees, the  
9 foundational piece constitutes about 40 percent of their overall  
10 compensation.<sup>14</sup> Most of the costs of foundational compensation for all  
11 PG&E employees (including executives) are included in PG&E’s 2017 GRC  
12 revenue requirement.<sup>15</sup>

### 13 **2. At-Risk Compensation**

14 As defined by PG&E, at-risk compensation is designed to be  
15 conditioned on one or more aspects of the employee’s and/or the  
16 Company’s level of performance against set goals.<sup>16</sup> For executive  
17 employees, there are two main at-risk components of compensation—the  
18 STIP and the LTIP.<sup>17</sup> Together, these at-risk components of compensation  
19 constitute about 60 percent of compensation for executives.<sup>18</sup> Costs of  
20 at-risk compensation for executives are shareholder funded and are not  
21 included in PG&E’s 2017 GRC revenue requirement.<sup>19</sup>

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11 See Attachment A, p. 2.

12 *Ibid.*

13 See Attachment A, p. 2; Tr. Vol. 11, 98:12-20.

14 See Attachment A, p. 3.

15 *Ibid.*

16 See Attachment A, p. 2; *See generally*, Tr. Vol. 11, 98:21 to 101:10.

17 *Ibid.*

18 See Attachment A, p. 3.

19 *Ibid.*



1           **a. STIP**

2           STIP is PG&E's variable pay program tied to annual company  
3 performance.<sup>20</sup> As described in PG&E's Opening Testimony, STIP is  
4 comprised of Financial, Customer, and Safety metrics.<sup>21</sup> Weight given  
5 to safety measures now constitutes 50 percent of the total STIP  
6 program.<sup>22</sup> It consists of nine individual, public and employee safety  
7 measures.<sup>23</sup> The other 50 percent of PG&E's STIP is made up of a  
8 financial metric that constitutes 25 percent of the total program, and  
9 two customer measures that together comprise another 25 percent of  
10 the program.<sup>24</sup>

11           **1) How STIP Safety Metrics Are Established and Evaluated**

12           STIP metrics are established each calendar year (Plan Year) by  
13 the Compensation Committee of the PG&E Corporation Board of  
14 Directors (Compensation Committee).<sup>25</sup> To be included as a STIP  
15 metric, the metric must be benchmarkable and auditable.<sup>26</sup>

16           The process begins with PG&E's Integrated Planning process,  
17 through which lines of business identify safety issues and potential

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20 At the August 30, 2016 Workshop, PG&E stated that there were approximately 6,000 non-executive, STIP-eligible employees consisting of non-represented employees. (See Tr. Vol. 11, 126:1-12.) The number of non-executive, STIP-eligible employees is closer to 10,000 and also includes some employees represented by the Engineers and Scientists of California and the International Brotherhood of Electrical Workers, Local 1245.

21 Exhibit (PG&E-8), Human Resources, pages 3-11 through 3-18.

22 *Ibid.*; See Attachment A, p. 4. See also Attachment B for a chart showing the measures included in the Safety metric over time and PG&E's performance relative to target from those measures. Please note that over time, some measures have been added or removed from the program; in addition, some measures could reasonably be categorized in more than one way. CAUSE, for example, would consider the System Average Interruption Duration Index (SAIDI) reliability metric to be a Safety measure, while PG&E currently includes it within its Customer metric. Attachment C provides STIP Scorecards from 2010-2016, which show the individual measures, their weighting and categorization for each year.

23 See Attachment A, p. 5 for a list and description of PG&E's current safety metrics included in STIP.

24 See Attachment D, p. 5-6, provided to NDC in discovery (DR\_NDC 002-Q10Atch01) and also included PG&E's workpapers Exhibit (PG&E-8), WP 3-11 through 3-16.

25 Exhibit (PG&E-8), Human Resources, p. 3-12, lines 3-5.

26 Tr. Vol. 11, 105:2-12.

1 metrics to the Company's senior leadership.<sup>27</sup> The Company sets  
2 specific goals for the metrics, which are based on historical  
3 performance, benchmarking data, and other relevant information.

4 Typically, the Company's senior leadership makes  
5 recommendations on which safety metrics should be included in the  
6 STIP in the first quarter of each year. (Many metrics beyond those  
7 ultimately included in the STIP become part of the Business Plan  
8 Review (BPR) process and are monitored by the Company's senior  
9 leadership on a monthly basis.) The STIP metric recommendations  
10 move along parallel tracks to the Nuclear, Operations, and Safety  
11 (NOS) Committee and to the Compensation Committee of the  
12 PG&E Corporation Board. The NOS Committee reviews the metrics  
13 and provides feedback to the Compensation Committee about the  
14 metrics that should be included in the STIP. Ultimately, the  
15 Compensation Committee makes final decisions about which  
16 metrics will be included in the STIP for all executives.

17 The Company evaluates its performance against the goals each  
18 month, and the annual result is used as the basis for the STIP  
19 payout. Goals for the following year are established using the same  
20 process described above.<sup>28</sup> PG&E has provided STIP Scorecards  
21 for each plan year 2010 through 2016 as Attachment C to this  
22 exhibit. Each Scorecard provides key pieces of information about  
23 the metrics that make up the program for the year, including the  
24 weighting of each metric; the threshold, target and maximum payout  
25 target performance goals; the results (i.e., PG&E's actual  
26 performance for the metric); and the overall STIP score for the year.

## 27 **2) How Safety Affects STIP Payout**

28 As discussed above, STIP costs for executive employees are  
29 shareholder funded and are not included in PG&E's 2017 GRC  
30 revenue requirement forecast. However, the same safety metrics

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<sup>27</sup> See Tr. Vol. 11, 105:2 to 107:3 for a general overview of the metric setting and review process.

<sup>28</sup> Tr. Vol. 11, 110:8 to 111:10.

1 apply to executive and non-executive employees. With respect to  
2 safety, both an executive and non-executive employee's STIP  
3 payout is affected by the Company's STIP score (i.e., Company  
4 performance against established safety metrics). The Company's  
5 final STIP performance score is determined by evaluating  
6 achievement of business performance measures based on the  
7 rating scales and standards established at the beginning of each  
8 Plan Year. The STIP Score can range from 0 percent to  
9 200 percent of target each year. Before the final STIP score is  
10 calculated, the Compensation Committee reviews and approves the  
11 results. Notwithstanding the Company performance score, the  
12 Compensation Committee has ultimate discretion when approving  
13 STIP each year for all employees, other than those holding a  
14 President or CEO position. For example, in 2011, the  
15 Compensation Committee of the Board exercised its discretion and  
16 reduced executives' 2010 STIP payout to 0 percent, and the  
17 appropriate full Boards exercised the same discretion and reduced  
18 the 2010 payout to 0 percent for the President and CEO as a result  
19 of the San Bruno accident.<sup>29</sup>

20 Additionally, both an executive and non-executive employee's  
21 STIP payout is impacted by the individual employee's performance  
22 on competencies and individual goals.<sup>30</sup> In addition to affecting the  
23 employee's STIP payout, individual performance can also affect the  
24 amount of an employee's annual base pay or "merit" increase and,  
25 therefore, the amount of the employee's base pay for the following  
26 year.

27 **b. LTIP**

28 LTIP is PG&E's long-term variable pay program. LTIP consists of  
29 two components—Performance-based shares (Performance Shares)  
30 and Restricted Stock Units (RSU). Performance Shares pay out in a  
31 range from zero to 200 percent based predominantly on how well

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<sup>29</sup> See Attachment A, p. 3; Tr. Vol. 11, 99:28 to 100:6.

<sup>30</sup> See Tr. Vol. 11, 124:12-27.

1 PG&E's stock performs compared to a comparator group over a 3-year  
2 period. While LTIP performance is tied primarily to long-term company  
3 value, it also includes a 5 percent safety metric.<sup>31</sup> While the safety  
4 metric accounts for only 5 percent of LTIP, long-term company value,  
5 the primary driver of LTIP performance, can also be affected by safety  
6 issues.<sup>32</sup> For example, following the San Bruno accident, for the  
7 respective 3-year periods corresponding to 2012-2014 payouts, PG&E's  
8 stock underperformed the comparator group, resulting in a zero payout  
9 of Performance Shares in those years.<sup>33</sup> Performance Shares paid out  
10 at 35 percent and 50 percent respectively in 2015 and 2016—  
11 significantly below target.<sup>34</sup>

12 As requested by SED, this exhibit includes additional documentation  
13 of how the LTIP Performance Share payout is calculated. Specifically,  
14 PG&E has provided documentation of the actual calculation of  
15 Performance Share payouts for each year 2011-2016.<sup>35</sup> For each year,  
16 that documentation shows the companies in the Performance  
17 Comparator Group, the 3-year performance for each company, PG&E's  
18 performance by percentile compared to the Performance Comparator  
19 Group, the payout schedule by ranking, and PG&E's actual payout  
20 based on its performance. Also attached to this exhibit is a graph,  
21 showing PG&E's stock performance compared to the Performance  
22 Comparator Group from September 2009 through July 2016.<sup>36</sup>

23 Unlike Performance Shares, RSUs pay out each year  
24 notwithstanding the Company's performance against the Performance  
25 Comparator Group. However, the value of those shares is also affected  
26 by the performance of the Company's stock.

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**31** See Attachment A, p. 2, 3.

**32** See Tr. Vol. 11, 100:7-19.

**33** See Attachment A, p. 3.

**34** *Ibid.* Attachment E includes documentation of the Performance Share payout for each year, 2011-2016.

**35** See Attachment A, p. 3.

**36** See Attachment F for a graph showing PG&E's stock performance compared to the comparator group from September 2009 through July 2016.

1 **D. Public Utilities Code Section 321.1**

2 In pertinent part, Section 321.1 of the California Public Utilities Code states:

- 3 (a) It is the intent of the Legislature that the commission assess the  
4 consequences of its decisions, including economic effects, and assess and  
5 mitigate the impacts of its decision on customer, public, and employee  
6 safety, as part of each ratemaking, rulemaking, or other proceeding, and  
7 that this be accomplished using existing resources and within existing  
8 commission structures. ...
- 9 (b) The commission shall take all necessary and appropriate actions to assess  
10 the economic effects of its decisions and to assess and mitigate the impacts  
11 of its decisions on customer, public, and employee safety.

12 At the August 30, 2016 Workshop, Commissioner Picker and ALJ Roscow  
13 asked PG&E's panel of witnesses a question on a similar point regarding how  
14 the Settlement Agreement would affect PG&E's operations.<sup>37</sup> PG&E explained  
15 that the Settlement Agreement is expected to enable the Company to continue  
16 to improve safety performance and that the level of funding should be sufficient  
17 for PG&E to achieve its safety goals.<sup>38</sup> Despite the reductions in some  
18 operational areas made by the Settlement Agreement, PG&E would be  
19 authorized funding above historic levels in nearly all safety-related Major Work  
20 Categories.<sup>39</sup> (Those that are not above historic levels are either new areas of  
21 work or areas for which a historic comparison is not appropriate.)<sup>40</sup>

22 PG&E's performance expectation is made explicit in the Settlement  
23 Agreement itself in Section 3.2.8.2. It states:

24 PG&E agrees that this Agreement should enable PG&E to comply with its  
25 obligations under Public Utilities Code Section 451 to "furnish and maintain  
26 such adequate, efficient, just, and reasonable service, instrumentalities,  
27 equipment and facilities...as are necessary to promote the safety, health,  
28 comfort and convenience of its patrons, employees, and the public."

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37 Tr. Vol. 12, pp. 74-78.

38 Tr. Vol. 12, 78:13-21.

39 Exhibit (PG&E-38), pp. 15-16, 18-20, and 22.

40 See Exhibit (PG&E-38), pages 16 (Other Support) and 18 (MWC Capacity Programs).

**PACIFIC GAS AND ELECTRIC COMPANY**  
**ATTACHMENT A**  
**EXHIBIT (PG&E-40) PACIFIC GAS AND ELECTRIC COMPANY**  
**EXECUTIVE COMPENSATION**

# Pacific Gas and Electric Company

## Executive Compensation

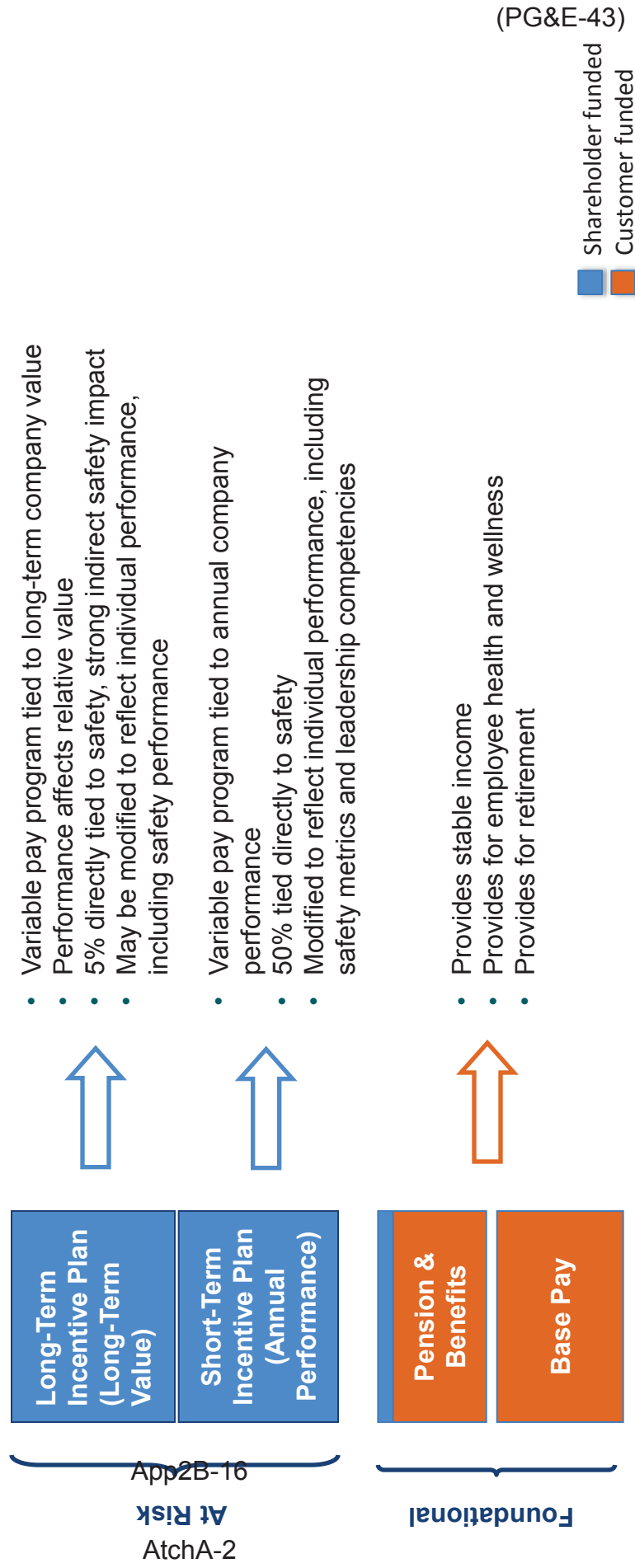
Dinyar Mistry,  
Senior Vice President Human Resources  
Pacific Gas and Electric Company  
August 30, 2016



NOTE: Original filing was made in color.

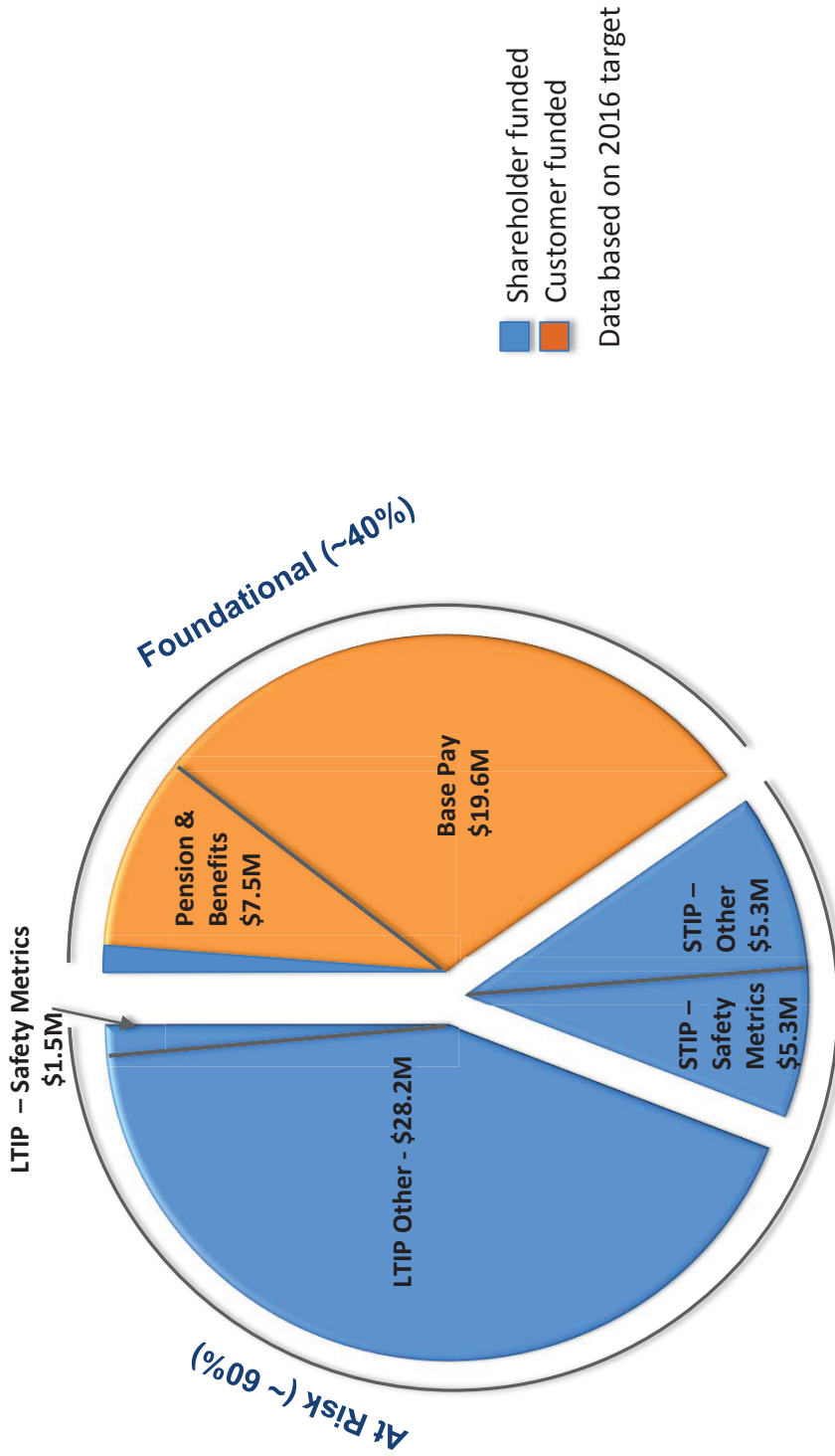
# PG&E Executive Compensation

Executive compensation provides a competitive package of compensation and benefits. The package is market-based and reflects the location where PG&E employees work, the type of work they perform, and provides appropriate performance incentives – including safety.





# PG&E Executive Compensation



(PG&E-43)

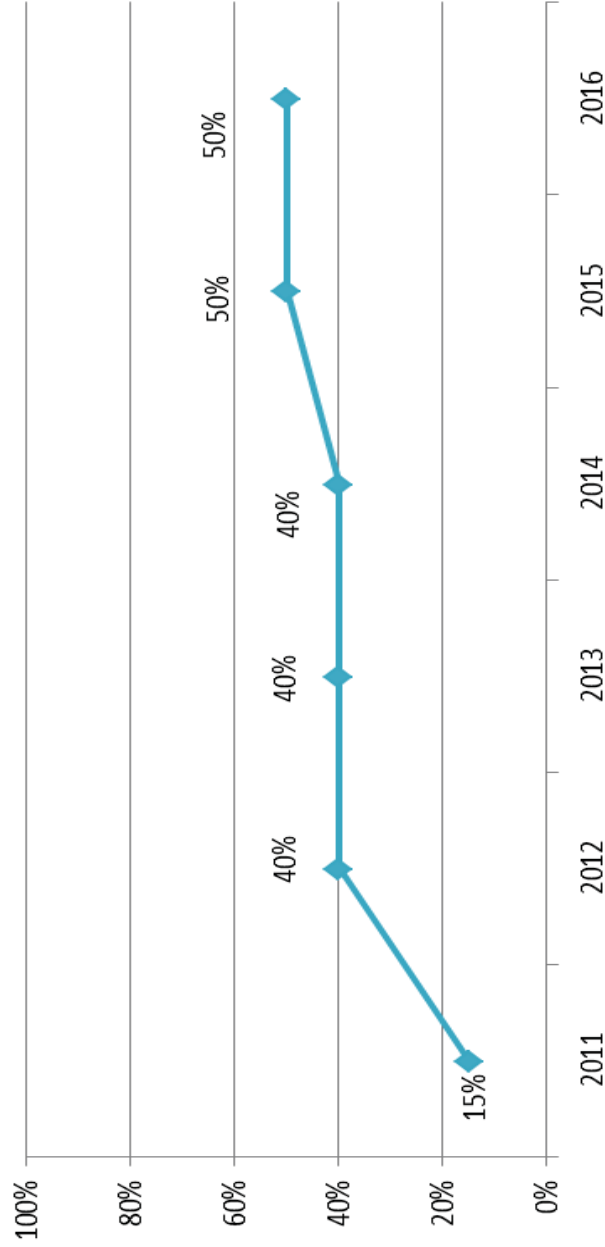
At Risk Compensation – Actual Payout	2011	2012	2013	2014	2015	2016
STIP (payout for the prior year's performance)	0	0.607	1.372	1.116	1.352	1.217
LTIP –Performance Based (payout for performance over the three prior years)	200%	0	0	0	35%	50%
LTIP - RSUs	100%	100%	100%	100%	100%	100%

App2B-17

AtchA-3

# STIP Safety Weighting Trend

## Safety



(PG&E-43)

App2B-18

AtchA-4

# STIP Category – Safety (50% Weighting)

Measures both the public and employee safety of our operations and demonstrates our commitment to serving our communities. PG&E’s overall safety performance will be measured primarily by our achievement of the metrics defined below. The Compensation Committee of the PG&E Corporation Board of Directors, which is ultimately responsible for reviewing and approving our year-end STIP score, will also take into consideration the overall impact our business operations had on public and employee safety.

2016 STIP Measures		Weight	Definition	What’s New in 2016
Nuclear Operations	Diablo Canyon Power Plant (DCPP) Reliability and Safety Indicator Units 1 & 2	8%	The year-end score as reported to INPO for PG&E’s Diablo Canyon Power Plant (DCPP) Units 1 and 2 (equally weighted) based on 12 performance indicators for nuclear power generation, including unit capability, radiation exposure, and safety accident rate.	Same measure and definition as 2015
	Transmission & Distribution (T&D) Wires Down	5%	The number of instances where an electric wire is down resting on the ground or a foreign object (e.g., trees, vehicles, fences, structures).	Same measure and definition as 2015
Electric Operations	911 Emergency Response	5%	The percentage of time that PG&E personnel respond to a 911 call (electric) within 60 minutes.	Same measure and definition as 2015
	Gas In-Line Inspection and Upgrade Index	6%	PG&E’s ability to complete planned in-line inspections and pipeline retrofit projects. Includes two equally weighted components: In-Line Inspections and In-Line Upgrades.	Same measure and definition for 2015
Gas Operations	Gas Dig-ins Reduction <i>Revised definition exclusions to align with benchmarks</i>	5%	The total number of third-party dig-ins to PG&E’s gas assets per 1,000 Underground Service Alert (USA) tickets. A dig-in refers to any damage (impact or exposure) that result in a repair or replacement of an underground facility as a result of an excavation. Minor definition adjustment for 2016: exclusions now include all damages to below-ground facilities that are not from the act of excavation, or if already exposed.	Same measure as 2015 with minor change to definition exclusions to align with benchmarks
	Gas Emergency Response	5%	The average response time that a Gas Service Representative or a qualified first responder (e.g., Gas Crew, Leak Surveyor) takes to respond to the site of an immediate response gas emergency order.	Same measure and definition as 2015
Employee Safety	Lost Workday (LWD) Case Rate	6%	The number of LWD cases incurred per 200,000 hours worked, or for approximately every 100 employees.	Same measure and definition as 2015; weight decreased from 8% to 6%
	Serious Preventable Motor Vehicle Incident (SPMVI) Rate	6%	The total number of SPMVIs that the PG&E driver could have reasonably avoided, per 1 million miles driven. SPMVIs involve significant human error or misconduct, or vehicle damage. Minimum vehicle damage limit is \$5,000.	Same measure and definition as 2015; weight decreased from 8% to 6%
	Timely Reporting of Injuries <i>New measure for 2016</i>	4%	Percentage of work-related injuries reported to the 24/7 Nurse Report Line within one day of the incident.	New measure for 2016

(PG&E-43)

61-2200-19



**PACIFIC GAS AND ELECTRIC COMPANY**  
**ATTACHMENT B**  
**SAFETY METRICS IN PG&E'S SHORT TERM INCENTIVE PLAN**  
**(STIP)**

Safety Metrics in PG&E's STIP Program

Category	Metric	2010	2011	2012	2013	2014	2015	2016	
Public Safety	Diablo Canyon Reliability & Safety								
	Unit 1		1.51	0.00	0.00	0.00	2.00	x	
	Unit 2		2.00	0.00	0.64	0.64	2.00	x	
	T&D Wires Down		0.00	2.00	0.64	0.64	0.79	x	
	911 Emergency Response		1.66	2.00	1.35	2.00	2.00	x	
	Gas In-Line Inspection & Upgrade (Customer metric in 2014)				1.56	1.52	1.52	x	
	Gas Emergency Response (Reliable Energy Delivery metric in 2011)		1.50	2.00	1.37	2.00	1.67	x	
	Gas System Integrity Work (Reliable Energy Delivery metric in 2010)	1.50							
	Leak Repair Performance		2.00	2.00					
	Execute Pipeline Safety Work Index (Customer metric in 2013-14)				0.92				
Employee Safety	Dig in Reduction (Customer metric in 2013)		0.00	0.00	2.00	0.90	0.90	x	
	Lost Workday Case Rate		0.00	0.00	0.00	0.00	0.00	x	
	OSHA Recordable Rate	1.78	0.00						
	Serious Preventable Motor Vehicle Incident rate (Motor Vehicle Incident Rate in 2010 & 2011, Preventable Motor Vehicle Incident Rate in 2012)	0.92	0.00	2.00	0.00	0.00	0.61	x	
	Timely Reporting of Injuries							x	
	<b>Did Not Meet Threshold (Score between 0.0 up to and including 0.5)</b>								
	<b>Target +/- .5 (Score greater than 0.5 up to an including 1.5)</b>								
	<b>Exceeded Target (Score greater than 1.5, up to maximum 2.0)</b>								

**PACIFIC GAS AND ELECTRIC COMPANY**  
**ATTACHMENT C**  
**STIP SCORECARDS 2010 – 2016**

**Overall 2010 STIP Score: 0.864**

2010 STIP Measures	Weight	2010 Performance Scales			2010 Results	2010 STIP Score
		Threshold 0.500	Target 1.000	Maximum 2.000		
<b>1. Earnings from Operations (\$m)</b>	<b>50.0%</b>				<b>1,330.5</b>	<b>0.944</b>
<b>2. Customer Satisfaction and Brand Health Index</b>	<b>15.0%</b>	77.4	77.7	78.3	74.6	0.000
<b>3. Reliable Energy Delivery Index</b>	<b>15.0%</b>	<b>0.500</b>	<b>1.000</b>	<b>2.000</b>	<b>0.902</b>	<b>0.902</b>
System Average Interruption Frequency Index (SAIFI)	(35%)	1.122	1.066	1.002	1.108	0.627
Customer Average Interruption Duration Index (CAIDI)	(35%)	119.70	113.80	109.60	117.77	0.663
Gas System Integrity Work	(30%)	0.980	1.000	NA	1.501	1.501
<b>4. Safety Index</b>	<b>10.0%</b>	<b>0.500</b>	<b>1.000</b>	<b>2.000</b>	<b>1.000</b>	<b>1.000*</b>
OSHA Recordable Rate	(75%)	2.143	2.025	1.786	1.839	1.779
Motor Vehicle Incident Rate	(25%)	2.51	2.37	2.09	2.39	0.915
<b>5. Premier Survey Employee Index</b>	<b>5.0%</b>	<b>67.7</b>	<b>68.7</b>	<b>70.7</b>	<b>69.3</b>	<b>1.300</b>
<b>6. Environmental Leadership Index</b>	<b>5.0%</b>	<b>0.500</b>	<b>1.000</b>	<b>2.000</b>	<b>1.842</b>	<b>1.842</b>
Notice of Violation (NOV) Rate	(50%)	2.25	1.68	1.35	1.10	2.000
Energy Use Reduction	(16.66%)	3.5	4.0	6.0	4.3	1.150
Water Use Reduction	(16.66%)	3.5	4.0	6.0	7.1	2.000
Solid Waste Diversion	(16.66%)	4.0	6.0	8.0	7.8	1.900
<b>Overall 2010 STIP Score</b>	<b>100.0%</b>					<b>0.864</b>

\*As a result of the two on-the-job fatalities in 2010 and in line with the formula for this measure, the Safety Index score was capped at 1.0.



# STIP 2011 Scorecard

2011 STIP Measures	Weight	2011 STIP Annual Performance Scales			2011 Scorecard	
		Threshold	Target	Maximum	Year End	
		0.5	1.0	2.0	Results	Score
<b>1. Earnings from Operations <sup>(1)</sup></b>	<b>50.00%</b>					<b>0.695</b>
<b>2. Operational Excellence Index</b>	<b>25.00%</b>	0.5	1.0	2.0		<b>0.891</b>
<i>Electric Reliable Energy Delivery</i>						1.436
System Average Interruption Frequency Index (SAIFI)	20.00%	1.108	1.052	0.997	0.967	
Customer Average Interruption Duration Index (CAIDI)	20.00%	117.8	111.9	107.7	113.4	
<i>Gas Reliable Energy Delivery</i>						1.582
Gas Transmission and Distribution Leak Survey Quality	10.00%	2.34	1.87	0.93	1.34	
Gas Emergency Response Time	10.00%	96.5	97.0	98.0	97.6	
<i>Safety Performance <sup>(2)</sup></i>						0.000
Occupational Safety and Health Act (OSHA) Recordables Rate	30.00%	1.747	1.600	1.416	1.621	
Motor Vehicle Incident (MVI) Rate	10.00%	2.27	2.15	1.91	2.10	
<b>3. Customer Satisfaction and Brand Health Index</b>	<b>15.00%</b>	75.0	75.3	76.1	73.0	<b>0.000</b>
<b>4. Employee Engagement Index</b>	<b>5.00%</b>	68.59	69.59	71.59	67.23	<b>0.000</b>
<b>5. Environmental Leadership Index</b>	<b>5.00%</b>	0.5	1.0	2.0		<b>0.730</b>
<i>Environmental Compliance</i>						0.000
Notice of Violations (NOVs)	50.00%	8	7	4	10	
<i>Operational Footprint</i>						1.460
Administrative Waste Diversion	16.67%	53.0	55.0	60.0	59.5	
Energy Use Reduction	16.67%	3.2	4.2	7.2	4.8	
Water Use Reduction	16.67%	4.7	5.7	8.7	6.0	
<b>Overall 2011 STIP Score</b>						<b>0.607</b>

- (1) Our EFO target is not publicly reported but is consistent with the guidance range originally provided for 2011 EPS from operations of \$3.65 to \$3.80. The publicly disclosed lowered guidance range for 2011 EPS from operations is \$3.45 to \$3.60. Unbudgeted items impacting comparability (such as changes in accounting methods) will be excluded.
- (2) The Safety Performance component was given a zero score due to the company's overall safety performance in 2011. While there was improvement in our performance in the MVI rate and OSHA recordables rate, we missed the mark in the most important areas of employee safety with three employee fatalities in 2011.

The Compensation Committee of the PG&E Corporation Board of Directors has complete discretion to determine and pay all STIP awards to officers and non-officer employees.



# 2012 STIP Performance Targets & Results

2012 STIP Measures	Weight	2012 STIP Year-End Performance Targets			2012 Year-End	
		Threshold	Target	Maximum	Results	Score
<b>Safety</b>	<b>40%</b>	<b>0.5</b>	<b>1.0</b>	<b>2.0</b>		<b>1.316</b>
Institute of Nuclear Power Operations (INPO) Performance						
Unit 1	4%	2 <sup>nd</sup> Quartile	1 <sup>st</sup> Quartile	99.0 or 1 <sup>st</sup> Decile		1.506
Unit 2	4%	2 <sup>nd</sup> Quartile	1 <sup>st</sup> Quartile	99.0 or 1 <sup>st</sup> Decile		2.000
Transmission & Distribution (T&D) Wires Down	4%	2,728	2,687	2,604	3054	0.000
911 Emergency Response	4%	74.5%	77.0%	87.8%	84.1%	1.656
Leak Repair Performance	4%	90% by Dec. 31	100% by Dec. 31	100% by Oct. 31	100% by Oct 31	2.000
Gas Emergency Response						
Within 30 minutes	2%	60% in 4 <sup>th</sup> Quarter	75% in 4 <sup>th</sup> Quarter	75% in 3 <sup>rd</sup> & 4 <sup>th</sup> Quarters	85.3% in 3 <sup>rd</sup> & 4 <sup>th</sup> Quarters	2.000
Within 60 minutes	2%	98% in 4 <sup>th</sup> Quarter	99% in 4 <sup>th</sup> Quarter	99% in 3 <sup>rd</sup> & 4 <sup>th</sup> Quarters	99.2% in 3 <sup>rd</sup> & 4 <sup>th</sup> Quarters	2.000
Lost Workday Case Rate	8%	0.251	0.240	0.221	0.319	0.000
Preventable Motor Vehicle Incident (MVI) Rate	8%	1.994	1.952	1.889	1.787	2.000
<b>Customer</b>	<b>30%</b>					<b>1.547</b>
Customer Satisfaction Score	10%	73.7	74.1	75.1	74.5	1.400
System Average Interruption Duration Index (SAIDI)	10%	137.7	133.1	126.5	131.5	1.242
Gas Asset Mapping	10%	35	30	20	20	2.000
<b>Financial</b>	<b>30%</b>					<b>1.272</b>
Earnings from Operations (\$M) <sup>(1)</sup>						
<b>2012 STIP Score</b>						<b>1.372</b>

(1) Our EFO target is not publicly reported but is consistent with the guidance range provided for 2012 EPS from operations of \$3.10 to \$3.30. Unbudgeted items impacting comparability (such as changes in accounting methods) will be excluded.



# STIP 2013 Scorecard

2013 STIP Measures		Weight	2013 STIP Year-End Performance Targets			2013 Year-End Results	
			Threshold 0.5	Target 1.0	Maximum 2.0	Results	Score
<b>Safety</b>		<b>40%</b>					<b>0.295</b>
Public Safety	Institute of Nuclear Power Operations (INPO) Performance						
	Unit 1	4%	2 <sup>nd</sup> Quartile Median	1 <sup>st</sup> Quartile Minimum	99.0 or 1 <sup>st</sup> Decile	93.0	0.000
	Unit 2	4%	2 <sup>nd</sup> Quartile Midpoint	1 <sup>st</sup> Quartile Minimum	96.7 or 1 <sup>st</sup> Decile	85.3	0.000
	Transmission & Distribution (T&D) Wires Down <sup>(1)</sup>	4%	2,998	2,938	2,778	2,400	2.000
	911 Emergency Response	4%	86.2%	88.3%	91.2%	92.2%	2.000
	Leak Repair Performance <sup>(1)</sup>	4%	1,500	1,000	500	151	2.000
	Gas Emergency Response	4%	23.50	22.00	20.00	21.26	1.370
Employee Safety	Lost Workday Case Rate <sup>(1)</sup>	8%	0.296	0.240	0.223	0.326	0.000
	Serious Preventable Motor Vehicle Incident (SPMVI) Rate	8%	0.300	0.280	0.250	0.381	0.000
<b>Customer</b>		<b>35%</b>					<b>0.408</b>
Customer Satisfaction Score		10%	74.8	75.2	76.0	75.4	1.250
Gas & Electric Dig-ins Reduction		5%	4.11	3.90	3.41	4.46	0.000
System Average Interruption Duration Index (SAIDI) <sup>(1)</sup>		10%	128.9	121.6	115.5	116.8	1.789
Gas Asset Mapping Duration		5%	100.00	90.00	60.00	89.0	1.033
Execute Gas Pipeline Safety Work Index		5%	0.50	1.00	2.00	1.04	1.040
<b>Financial</b>		<b>25%</b>					<b>0.413</b>
Earnings from Operations (\$M) <sup>(2)</sup>							
<b>2013 STIP Score</b>							<b>1.116</b>

(1) Our EFO target is not publicly reported but is consistent with the guidance range provided for 2013 EPS from operations of \$2.55 to \$2.75. Unbudgeted items impacting comparability (such as changes in accounting methods) will be excluded.

The Compensation Committee of the PG&E Corporation Board of Directors has complete discretion to determine and pay all STIP awards to officers and non-officer employees. This includes discretion to reduce the final score on any and all measures downward to zero.



# 2014 YEAR END - STIP Scorecard

2014 STIP Measures	Weight	STIP Performance Targets			Results			
		Threshold 0.5	Target 1.0	Maximum 2.0	Results	Quartile	Unweighted Score	Weighted Score
<b>Safety</b>	<b>40%</b>							<b>0.266</b>
Transmission & Distribution (T&D) Wires Down	4%	2,700	2,400	2,250	2,615	1st	0.642	<b>0.026</b>
911 Emergency Response	4%	92.2%	93.6%	95.0%	94.09%	2nd	1.350	<b>0.054</b>
Gas Emergency Response	4%	21.30	21.00	20.00	19.95	1st	2.000	<b>0.080</b>
Gas Dig-ins Reduction	4%	2.74	2.60	2.47	2.42	1st	2.000	<b>0.080</b>
ISCPP Performance Indicator – Unit 1	4%	90.000	94.000	98.000	84.220	4th	0.000	<b>0.000</b>
ISCPP Performance Indicator – Unit 2	4%	83.000	88.000	93.000	84.430	4th	0.643	<b>0.026</b>
Lost Workday Case Rate	8%	0.310	0.271	0.245	0.376	3rd	0.000	<b>0.000</b>
Serious Preventable Motor Vehicle Incident (SPMVI) Rate	8%	0.235	0.221	0.214	0.274	--	0.000	<b>0.000</b>
<b>Customer</b>	<b>35%</b>							<b>0.598</b>
Customer Satisfaction Score	10%	75.5	75.7	76.0	76.5	2nd	2.000	<b>0.200</b>
In-Line Inspection (ILI) Inspection and Upgrade Index	5%	0.500	1.000	2.000	1.560	--	1.560	<b>0.078</b>
Execute Gas Pipeline Safety Work Index	5%	0.500	1.000	2.000	0.920	--	0.920	<b>0.046</b>
System Average Interruption Duration Index (SAIDI)	10%	116.80	115.00	108.50	110.21	2nd	1.737	<b>0.174</b>
Gas Asset Mapping Duration	5%	34	32	30	28.93	1st	2.000	<b>0.100</b>
<b>Financial</b>	<b>25%</b>							<b>0.488</b>
Earnings from Operations (\$M)								<b>0.488</b>
<b>2014 STIP Score</b>	<b>100.00%</b>							<b>1.352</b>

PG&E (43)

Our EFO target is not publicly reported. Unbudgeted items impacting comparability (such as changes in accounting methods) will be excluded.

The Compensation Committee of the PG&E Corporation Board of Directors has complete discretion to determine and pay all STIP awards to officers and non-officer employees. This includes discretion to reduce the final score on any and all measures downward to zero.



# 2015 Year-End STIP Update

## Key Points

We were successful in hitting our year-end targets for **six of our eleven** Short-term Incentive Plan (STIP) measures. As a result of our performance, the overall PG&E 2015 STIP score is 1.217. A detailed interpretation of the STIP 2015 Scorecard follows with an explanation of our final results.

## STIP 2015 Scorecard

2015 STIP Measures	Weight	STIP Performance Targets			Results			
		Threshold 0.5	Target 1.0	Maximum 2.0	Results	Quartile	Unweighted Score	Weighted Score
<b>Safety</b>	<b>50%</b>							<b>0.568</b>
DCPP Reliability and Safety Indicator – Unit 1	4%	91.200	94.200	97.200	99.44	1st	2.000	0.080
DCPP Reliability and Safety Indicator – Unit 2	4%	91.200	94.200	97.200	99.83	1st	2.000	0.080
Gas In-Line Inspection (ILI) and Upgrade Index	6%	0.500	1.000	2.000	1.52	--	1.520	0.091
Gas Dig-ins Reduction	5%	2.30	2.06	1.94	2.11	2nd	0.896	0.045
Gas Emergency Response	5%	21.50	21.00	20.00	20.33	1st	1.670	0.084
Transmission & Distribution (T&D) Wires Down	5%	2,615	2,540	2,400	2,572.0	1st	0.787	0.039
911 Emergency Response	5%	94.1%	95.0%	96.0%	97.14%	1st	2.000	0.100
Lost Workday Case Rate 0.25 may be added for zero serious incidents	8%	0.376	0.330	0.305	0.000	3rd	0.000	0.000
Serious Preventable Motor Vehicle Incident (SPMVI) Rate	8%	0.274	0.239	0.218	0.266	--	0.614	0.049
<b>Customer</b>	<b>25%</b>							<b>0.200</b>
Customer Satisfaction Score	15%	76.7	77.2	77.7	75.5	3rd	0.000	0.000
System Average Interruption Duration Index (SAIDI)	10%	110.20	106.60	102.60	96.33	2nd	2.000	0.200
<b>Financial</b>	<b>25%</b>							<b>0.449</b>
Earnings from Operations (\$M)	25%							0.449
<b>Overall YTD 2015 STIP Score</b>	<b>100.00%</b>							<b>1.217</b>

Our EFO target is not publicly reported. Unbudgeted items impacting comparability (such as changes in accounting methods) will be excluded.

The Compensation Committee of the PG&E Corporation Board of Directors has complete discretion to determine and pay all STIP awards to officers and non-officer employees. This includes discretion to reduce the final score on any and all measures downward to zero.

# 2016 STIP Performance Targets

Weight	2016 STIP Measure	2016 STIP Performance Targets		
		Threshold	Target	Maximum
<b>50%</b>	<b>Safety</b>	<b>0.5</b>	<b>1.0</b>	<b>2.0</b>
	<i>Public Safety</i>			
	<i>Nuclear Operations</i>			
	Diablo Canyon Power Plant Reliability and Safety Indicator			
4%	DCPP Unit 1 Score	94.20	98.70	100.00
4%	DCPP Unit 2 Score	94.20	98.70	100.00
	<i>Electric Operations</i>			
5%	Transmission & Distribution (T&D) Wires Down	3,000	2,572	2,400
5%	911 Emergency Response	95.0%	97.5%	98.5%
	<i>Gas Operations</i>			
6%	Gas In-Line Inspection and Upgrade Index	0.500	1.000	2.000
5%	Gas Dig-ins Reduction	2.18	2.03	1.96
	<i>Definition exclusions adjusted slightly to align with benchmarks</i>			
5%	Gas Emergency Response	22.0	21.0	20.0
	<i>Employee Safety</i>			
<b>6%</b>	Lost Workday (LWD) Case Rate	0.353	0.320	0.275
<b>6%</b>	Serious Preventable Motor Vehicle Incident (SPMVI) Rate	0.252	0.239	0.226
<b>4%</b>	<b>Timely Reporting of Injuries</b>	64.0%	67.1%	70.2%
	<i>New metric for 2016</i>			
<b>25%</b>	<b>Customer</b>			
15%	Customer Satisfaction Score	75.5	75.7	76.3
10%	System Average Interruption Duration Index (SAIDI)	101.10	96.30	93.90
<b>25%</b>	<b>Financial</b>			
25%	Earnings from Operations (EFO) (\$M)	--	--	--

Changes from 2015 highlighted in red.

- (1) Scores are evenly distributed (linear) between the points on the scales above, except EFO which utilizes the performance scale
- (2) Our EFO target is not publicly reported but is consistent with the guidance range for 2016 EPS from operations. Unbudgeted items impacting comparability (such as changes in accounting methods) will be excluded.

**PACIFIC GAS AND ELECTRIC COMPANY**  
**ATTACHMENT D**  
**2015 STIP PERFORMANCE MEASURES & TARGETS**

# 2015 Short Term Incentive Plan (STIP) Performance Measures & Targets

App2B-31

AtchD-1

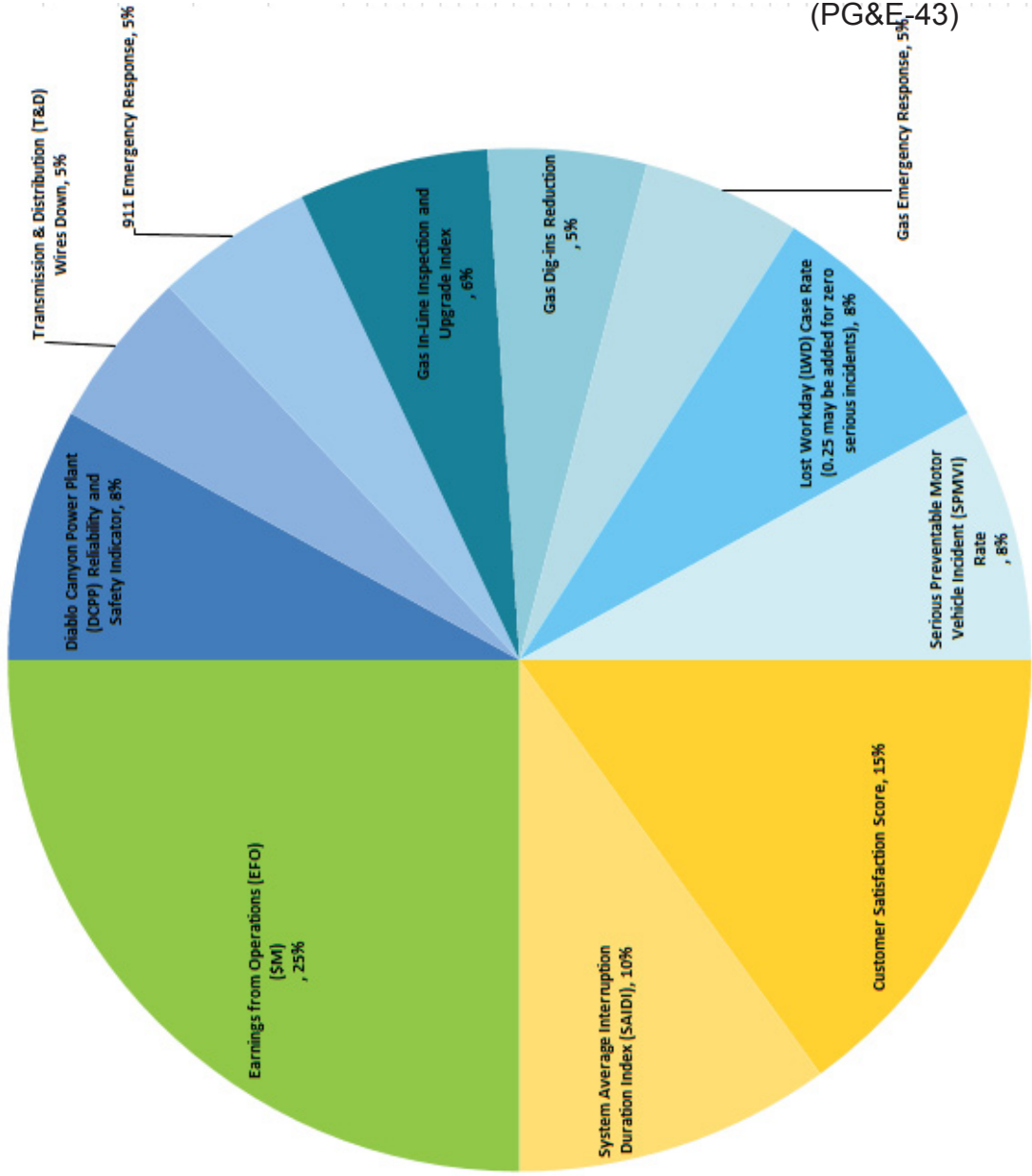


(PG&E-43)  
*These performance measures and targets have been approved by the Compensation Committee of the PG&E Corporation Board of Directors, which retains complete discretion to determine and pay all STIP awards to officers and non-officer employees.*



### 2015 STIP Structure

- Further emphasize our focus on improving public and employee safety, and customer satisfaction
- Category weighting:
  - ✓ Safety - 50 percent
    - Public
    - Employee
  - ✓ Customer - 25 percent
    - Customer Satisfaction
    - Power Reliability
  - ✓ Financial - 25 percent
- Targets are established to continue our drive for 1<sup>st</sup> quartile performance
- STIP is an at-risk component of our pay that rewards us annually for company and individual performance
- Contact your leader or HR Business Partner with questions.



(PG&E-43)



# 2015 STIP Performance Targets

(PG&E-43)

Weight	2015 STIP Measures	2015 STIP Performance Targets <sup>(1)</sup>		
		Threshold	Target	Maximum
50%	<b>Safety</b>	0.5	1.0	2.0
	<i>Public Safety</i>			
	<i>Nuclear Operations</i>			
	Diablo Canyon Power Plant Reliability and Safety Indicator			
4%	DCPP Unit 1 Score	91.2	94.2	97.2
4%	DCPP Unit 2 Score	91.2	94.2	97.2
	<i>Electric Operations</i>			
5%	Transmission & Distribution (T&D) Wires Down	2,615	2,540	2,400
5%	911 Emergency Response	94.1%	95.0%	96.0%
	<i>Gas Operations</i>			
6%	Gas In-Line Inspection and Upgrade Index	0.500	1.000	2.000
3%	<i>Customer Metric in 2014</i>			
5%	Gas Dig-ins Reduction	2.30	2.06	1.94
5%	Gas Emergency Response	21.5	21.0	20.0
	<i>Revised definition for 2015</i>			
	<i>Employee Safety</i>			
8%	Lost Workday (LWD) Case Rate	0.376	0.330	0.305
	<i>0.25 may be added for zero serious incidents</i>			
8%	Serious Preventable Motor Vehicle Incident (SPMVI) Rate	0.274	0.239	0.218
	<b>Customer</b>			
15%	Customer Satisfaction Score	76.7	77.2	77.7
10%	System Average Interruption Duration Index (SAIDI)	110.2	106.6	102.6
	<b>Financial</b>			
25%	Earnings from Operations (EFO) (\$M) <sup>(2)</sup>			

(1) Scores are evenly distributed (linear) between the points on the scales above, except EFO which utilizes a specific performance scale  
(2) Our EFO target is not publicly reported but is consistent with the guidance range for 2015 EPS from operations. Unbudgeted items impacting comparability (such as changes in accounting methods) will be excluded.



Measures both the public and employee safety of our operations and demonstrates our commitment to serving our communities. PG&E's overall safety performance will be measured primarily by our achievement of the metrics defined below. The Compensation Committee of the PG&E Corporation Board of Directors, which is ultimately responsible for reviewing and approving our year-end STIP score, will also take into consideration the overall impact our business operations had on public and employee safety.

2015 STIP Measures		Weight	Definition	What's New in 2015
Public Safety	Nuclear Operations			
	Diablo Canyon Power Plant (DCPP) Reliability and Safety Indicator Units 1 & 2	8%	The year-end score as reported to INPO for PG&E's Diablo Canyon Power Plant (DCPP) Units 1 and 2 (equally weighted) based on 12 performance indicators for nuclear power generation, including unit capability, radiation exposure, and safety accident rate.	Same measure and definition as 2014
	Transmission & Distribution (T&D) Wires Down	5%	The number of instances where an electric wire is down resting on the ground or a foreign object (e.g., trees, vehicles, fences, structures).	Same measure and definition as 2014
	911 Emergency Response	5%	The percentage of time that PG&E personnel respond to a 911 call (electric) within 60 minutes.	Same measure and definition as 2014
	Gas In-Line Inspection and Upgrade Index	6%	PG&E's ability to complete planned in-line inspections and pipeline retrofit projects. Includes two equally weighted components: In-Line Inspections and In-Line Upgrades.	Same measure and definition for 2014 Move from Customer Metric in 2014
	Gas Dig-ins Reduction	5%	The total number of third-party dig-ins to PG&E gas assets per 1,000 Underground Service Alert (USA) tickets. A dig-in refers to any damage (impact or exposure) that result in a repair or replacement of an underground facility as a result of an excavation.	Same measure and definition as 2014
	Gas Emergency Response <b>Revised definition for 2015</b>	5%	The average response time that a Gas Service Representative or a qualified first responder (e.g., Gas Crew, Leak Surveyor) takes to respond to the site of an immediate response gas emergency order.	Revised definition for 2015
	Lost Workday (LWD) Case Rate <b>0.25 may be added for zero serious incidents</b>	8%	The number of LWD cases incurred per 200,000 hours worked, or for approximately every 100 employees. For threshold or greater performance, the final score to be increased 0.25, up to a maximum of 2.0, if zero serious incidents (as defined by Cal/OSHA regulations) occur in 2015.	Same measure and definition as 2014 <b>(PG&amp;E-43)</b>
	Serious Preventable Motor Vehicle Incident (SPMVI) Rate	8%	The total number of SPMVIs that the PG&E driver could have reasonably avoided, per 1 million miles driven. SPMVIs involve significant human error or misconduct, or vehicle damage. Minimum vehicle damage limit is \$5,000.	Same measure and definition as 2014
	Employee Safety			

App 2B-34

Measures customer satisfaction with our services and the reliability of our gas and electric operations.

2015 STIP Measures		Weight	Definition	What's New in 2015
Customer	Customer Satisfaction Score	15%	The overall satisfaction of customers with the products and services offered by PG&E, as measured through an ongoing quarterly survey.	Same measure and definition as 2014
	System Average Interruption Duration Index (SAIDI)	10%	The total time that the average customer is without electric power during a given time period (measured in number of minutes). Includes all planned and unplanned sustained outages.	Same measure and definition as 2014

Measures the financial performance of our ongoing core operations.

Financial	2015 STIP Measures	Weight	Definition	What's New in 2015
	Earnings from Operations (EFO) (\$M)	25%	Net income excluding items impacting comparability, which represent income or expenses associated with events or circumstances considered unusual and not part of ongoing core operations. The measurement is non-GAAP.	Same measure and definition as 2014

**PACIFIC GAS AND ELECTRIC COMPANY**  
**ATTACHMENT E**  
**PG&E CORPORATION LONG TERM INCENTIVE PLAN**  
**2011 – 2016 PAYOUT CALCULATION**

**CALCULATION OF 2011 PERFORMANCE SHARE PAYMENTS**

<b><u>Performance Comparator Group</u></b>	<b><u>Cumulative Three-Year TSR<sup>1</sup> (2008-2010)</u></b>	<b><u>Rank</u></b>	<b><u>Payout Scale</u></b>		
			<b><u>Rank</u></b>	<b><u>Performance Percentile</u></b>	<b><u>Rounded Payout</u></b>
<b>PG&amp;E Corporation</b>	<b>25.53%</b>	<b>1</b>	<b>1</b>	<b>100%</b>	<b>200%</b>
TECO Energy	22.08%	2	2	92%	170%
Xcel Energy Inc.	20.49%	3	3	83%	130%
Consolidated Edison	19.94%	4	4	75%	100%
Pinnacle West Capital	17.33%	5	5	67%	90%
Southern Company	14.86%	6	6	58%	75%
NiSource Inc.	12.85%	7	7	50%	65%
CenterPoint Energy, Inc.	8.41%	8	8	42%	50%
Progress Energy Inc.	7.89%	9	9	33%	35%
American Electric Power	-10.52%	10	10	25%	25%
NextEra Energy, Inc. <sup>2</sup>	-14.76%	11	11	17%	0%
Entergy Corporation	-33.71%	12	12	8%	0%
Ameren Corporation	-37.36%	13	13	0%	0%

**Sample Calculation**

2008 performance shares vest on March 1, 2011		1,000
Percent of vested shares to be paid	x	200
Average closing price for the last 30 calendar days of 2010	x	\$47.7367
Performance share payment		\$95,473
Accrued dividend equivalents (total of \$5.06 per share for the three-year period)		\$10,120
Total payment		<u>\$105,593</u>

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<sup>1</sup> TSR: Total Shareholder Return

<sup>2</sup> Previously called FPL Group.

**CALCULATION OF 2012 PERFORMANCE SHARE PAYMENTS**

<u>Performance Comparator Group</u>	<u>Cumulative Three-Year TSR</u>		<u>Payout Scale</u>		
	<u>(2009-2011)</u>	<u>Rank</u>	<u>Rank</u>	<u>Performance Percentile</u>	<u>Rounded Payout</u>
NiSource Inc.	159.75%	1	1	100%	200%
CenterPoint Energy, Inc.	86.77%	2	2	92%	170%
Consolidated Edison	86.25%	3	3	83%	130%
TECO Energy	82.07%	4	4	75%	100%
Pinnacle West Capital	77.69%	5	5	67%	90%
Xcel Energy Inc.	70.87%	6	6	58%	75%
Progress Energy Inc.	69.05%	7	7	50%	65%
Southern Company	45.77%	8	8	42%	50%
American Electric Power	44.84%	9	9	33%	35%
NextEra Energy, Inc. <sup>3</sup>	35.73%	10	10	25%	25%
<b>PG&amp;E Corporation</b>	<b>20.65%</b>	<b>11</b>	<b>11</b>	<b>17%</b>	<b>0%</b>
Ameren Corporation	18.66%	12	12	8%	0%
Entergy Corporation	0.12%	13	13	0%	0%

<sup>3</sup> Previously called FPL Group.

**CALCULATION OF 2013 PERFORMANCE SHARE PAYMENTS**

<b><u>Performance Comparator Group</u></b>	<b><u>Cumulative Three-Year TSR (2010-2012)</u></b>	<b><u>Rank</u></b>	<b><u>Payout Scale</u></b>		
			<b><u>Rank</u></b>	<b><u>Performance Percentile</u></b>	<b><u>Rounded Payout</u></b>
NiSource Inc.	86.23%	1	1	100%	200%
Pinnacle West Capital	61.08%	2	2	92%	170%
Progress Energy/Duke <sup>4</sup>	59.67%	3	3	83%	130%
CenterPoint Energy, Inc.	52.22%	4	4	75%	100%
Southern Company	47.86%	5	5	67%	90%
NextEra Energy, Inc.	47.15%	6	6	58%	75%
Xcel Energy Inc.	42.67%	7	7	50%	65%
American Electric Power	42.02%	8	8	42%	50%
Consolidated Edison	40.22%	9	9	33%	35%
Ameren Corporation	29.09%	10	10	25%	25%
TECO Energy, Inc.	19.65%	11	11	17%	0%
<b>PG&amp;E Corporation</b>	<b>2.11%</b>	<b>12</b>	<b>12</b>	<b>8%</b>	<b>0%</b>
Entergy Corporation	-10.43%	13	13	0%	0%

<sup>4</sup> TSR represents the combined return for Progress Energy (pre-merger) and Duke (post-merger).



**CALCULATION OF 2013 PERFORMANCE SHARE PAYMENT**(For Anthony Earley's September 13, 2011 Award, Vesting December 31, 2013)<sup>5</sup>

<b><u>Performance Comparator Group</u></b>	<b>Cumulative TSR 9/13/2011 through 12/31/2013</b>		<b><u>Rank</u></b>	<b><u>Payout Scale</u></b>		
				<b><u>Rank</u></b>	<b><u>Performance Percentile</u></b>	<b><u>Rounded Payout</u></b>
NiSource Inc.	68.95%	1	1	100%	200%	
DTE Energy	49.58%	2	2	92%	170%	
Wisconsin Energy Corp.	45.04%	3	3	83%	130%	
American Electric Power	39.13%	4	4	75%	100%	
Northeast Utilities	37.65%	5	5	67%	90%	
Pinnacle West Capital	37.27%	6	6	58%	75%	
Progress Energy/Duke <sup>26</sup>	36.94%	7	7	50%	65%	
Duke Energy	35.27%	8	8	42%	50%	
SCANA Corp.	34.34%	9	9	33%	35%	
Xcel Energy Inc.	28.56%	10	10	25%	25%	
<b>PG&amp;E Corporation</b>	10.50%	11	11	17%	0%	
Southern Company	9.67%	12	12	8%	0%	
Consolidated Edison	8.77%	13	13	0%	0%	

<sup>5</sup> Mr. Earley received an additional grant of performance shares on September 13, 2011 that will vest on September 13, 2014.

<sup>6</sup> TSR represents the combined return for Progress Energy (pre-merger) and Duke (post-merger).

**CALCULATION OF 2014 PERFORMANCE SHARE PAYMENTS**

<b><u>Performance Comparator Group</u></b>	<b><u>Cumulative Three-Year TSR (2011-2013)</u></b>	<b><u>Rank</u></b>	<b><u>Payout Scale</u></b>		
			<b><u>Rank</u></b>	<b><u>Performance Percentile</u></b>	<b><u>Rounded Payout</u></b>
NiSource Inc.	109.58%	1	1	100%	200%
DTE Energy	66.25%	2	2	92%	170%
Progress Energy/Duke <sup>7</sup>	60.22%	3	3	83%	130%
Wisconsin Energy Corp.	55.47%	4	4	75%	100%
American Electric Power	49.22%	5	5	67%	90%
Duke Energy	49.20%	6	6	58%	75%
Northeast Utilities	47.39%	7	7	50%	65%
Pinnacle West Capital	45.18%	8	8	42%	50%
Xcel Energy Inc.	33.67%	9	9	33%	35%
SCANA Corp.	31.90%	10	10	25%	25%
Consolidated Edison	26.65%	11	11	17%	0%
Southern Company	23.02%	12	12	8%	0%
<b>PG&amp;E Corporation</b>	<b>-4.27%</b>	<b>13</b>	<b>13</b>	<b>0%</b>	<b>0%</b>

<sup>7</sup> Ibid.

**CALCULATION OF 2014 PERFORMANCE SHARE PAYMENT****(For Anthony Earley's September 13, 2011 Award, Vesting September 13, 2014)<sup>8</sup>**

<b><u>Performance Comparator Group</u></b>	<b><u>Cumulative Three-Year TSR (9/13/2011- 9/13/2014)</u></b>	<b><u>Rank</u></b>	<b><u>Payout Scale</u></b>		
			<b><u>Rank</u></b>	<b><u>Performance Percentile</u></b>	<b><u>Rounded Payout</u></b>
NiSource Inc.	104.80%	1	1	100%	200%
DTE Energy	74.89%	2	2	92%	170%
American Electric Power	60.95%	3	3	83%	130%
Wisconsin Energy Corp.	58.95%	4	4	75%	100%
Pinnacle West Capital	51.49%	5	5	67%	90%
Progress Energy/Duke <sup>9</sup>	49.83%	6	6	58%	75%
Northeast Utilities	48.56%	7	7	50%	65%
Duke Energy	48.01%	8	8	42%	50%
SCANA Corp.	47.29%	9	9	33%	35%
Xcel Energy, Inc.	46.72%	10	10	25%	25%
<b>PG&amp;E Corporation</b>	<b>29.80%</b>	<b>11</b>	<b>11</b>	<b>17%</b>	<b>0%</b>
Southern Company	19.90%	12	12	8%	0%
Consolidated Edison	14.90%	13	13	0%	0%

	<b><u>Performance Shares Granted 9/13/2011</u></b>	<b><u>Payout Percentage</u></b>	<b><u>Performance Shares Vested 9/13/2014<sup>2</sup></u></b>
Anthony F. Earley, Jr.	86,245	0%	0

<sup>8</sup> Mr. Earley received an additional grant of performance shares on September 13, 2011 that vested on December 31, 2013.

<sup>9</sup> TSR represents the combined return for Progress Energy (pre-merger) and Duke (Post-Merger).

**CALCULATION OF 2015 PERFORMANCE SHARE PAYMENTS**

<b><u>Performance Comparator Group</u></b>	<b><u>Cumulative Three-Year TSR (2012-2014)</u></b>	<b><u>Payout Scale</u></b>		
		<b><u>Rank</u></b>	<b><u>Performance Percentile</u></b>	<b><u>Rounded Payout</u></b>
NiSource Inc.	96.47%	1	100%	200%
DTE Energy	77.95%	2	92%	170%
CMS Energy	76.41%	3	83%	130%
Wisconsin Energy Corp.	67.05%	4	75%	100%
American Electric Power	66.86%	5	67%	90%
Northeast Utilities	64.83%	6	58%	75%
Pinnacle West Capital	60.03%	7	50%	65%
SCANA Corp.	51.85%	8	42%	50%
<b>PG&amp;E Corporation</b>	<b>46.18%</b>	<b>9</b>	<b>33%</b>	<b>35%</b>
Xcel Energy Inc.	45.89%	10	25%	25%
Duke Energy	44.74%	11	17%	0%
Southern Company	21.42%	12	8%	0%
Consolidated Edison	20.82%	13	0%	0%

**Sample Calculation**

2012 performance shares granted and outstanding		1,000 shares
Percentage of shares to be paid	x	35%
Performance share payment		350 shares
Accrued dividend equivalents (total of \$5.46 per share for the three-year period)		\$1,911

**CALCULATION OF 2016 PERFORMANCE SHARE PAYMENTS**

<b><u>Performance Comparator Group</u></b>	<b><u>Cumulative Three-Year TSR (2013-2015)</u></b>	<b><u>Payout Scale</u></b>		
		<b><u>Rank</u></b>	<b><u>Performance Percentile</u></b>	<b><u>Rounded Payout</u></b>
NiSource Inc.	117.91%	1	100%	200%
CMS Energy	64.55%	2	92%	170%
Wisconsin Energy Corp.	54.60%	3	83%	130%
American Electric Power	53.74%	4	75%	100%
Xcel Energy Inc.	50.76%	5	67%	90%
SCANA Corp.	49.89%	6	58%	75%
DTE Energy	49.12%	7	50%	65%
<b>PG&amp;E Corporation</b>	<b>48.68%</b>	<b>8</b>	<b>42%</b>	<b>50%</b>
Eversource Energy	44.94%	9	33%	35%
Pinnacle West Capital	42.15%	10	25%	25%
Consolidated Edison	31.36%	11	17%	0%
Duke Energy	27.43%	12	8%	0%
Southern Company	25.75%	13	0%	0%

**Sample Calculation**

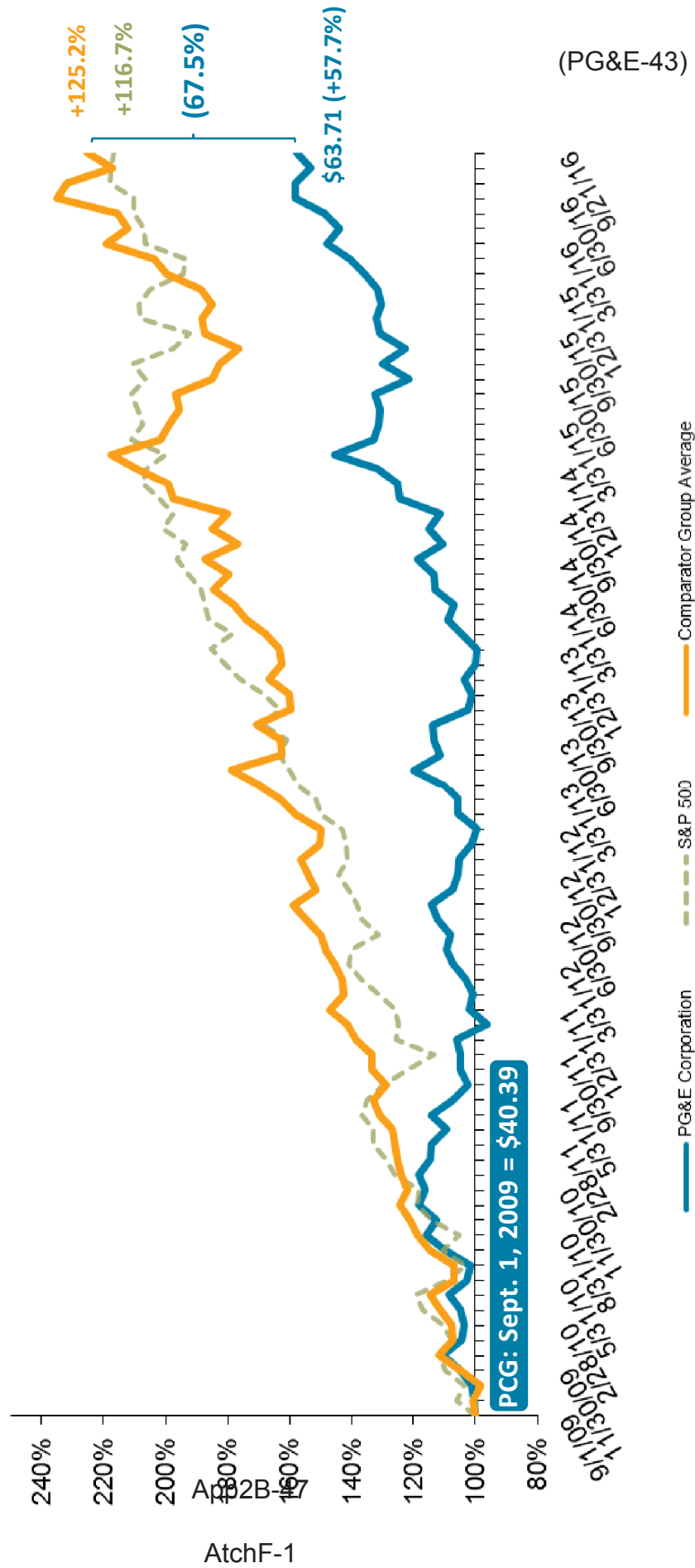
2013 performance shares granted and outstanding	1,000 shares
Percentage of shares to be paid	x <u>50%</u>
Performance share payment	500 shares
Accrued dividend equivalents (total of \$5.46 per share for the three-year period)	\$2,730

**PACIFIC GAS AND ELECTRIC COMPANY  
ATTACHMENT F  
PG&E'S STOCK PERFORMANCE  
COMPARED TO THE COMPARATOR GROUP FROM  
SEPTEMBER 2009 THROUGH JULY 2016**



# PCG Stock Relative to Comparator Group\*

PG&E Stock Relative to Comparator Group, 9/1/2009 - 9/21/16



**Market Cap Differential: \$13.5 billion**  
 (PCG versus Comparator Group Performance)

\*Based on 2016 comparator group

**PACIFIC GAS AND ELECTRIC COMPANY**

**CHAPTER 3**

**THE ONE PG&E OCCUPATIONAL HEALTH AND SAFETY PLAN**

**AND NORTHSTAR DATA REQUEST 144**



PACIFIC GAS AND ELECTRIC COMPANY  
CHAPTER 3  
THE ONE PG&E OCCUPATIONAL HEALTH AND SAFETY PLAN AND  
NORTHSTAR DATA REQUEST 144

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Appendices

1                                   **PACIFIC GAS AND ELECTRIC COMPANY**  
2   **CHAPTER 3**  
3                   **THE ONE PG&E OCCUPATIONAL HEALTH AND SAFETY PLAN**  
4                                   **AND NORTHSTAR DATA REQUEST 144**

5   **A. Introduction**

6           My name is Todd Hohn, I am the Senior Director of Safety and Health at  
7   Pacific Gas and Electric Company (PG&E or the Company). In that capacity,  
8   I am responsible for creating and executing strategies to improve the  
9   occupational safety and health of PG&E employees and contractors.

10          The purpose of my testimony is to respond to Questions 4 through 7.3 of the  
11   Assigned Commissioner’s Ruling dated November 17, 2017. These questions  
12   pertain to two topics: the *One PG&E Occupational Health and Safety Plan* (“the  
13   Plan”),<sup>1</sup> and NorthStar Data Request 144.<sup>2</sup>

14          In summary, PG&E’s responses to Questions 4 through 7.3 are as follows:

15               **Question 4:** *How has PG&E’s The One PG&E Safety Action Plan*  
16   *addressed each of the recommendations in the NorthStar Report? Specifically,*  
17   *how has PG&E’s The One PG&E Safety Action Plan addressed the NorthStar*  
18   *Report’s recommendation to develop a comprehensive safety plan contained on*  
19   *pages I-10 through I-16 of the NorthStar Report?*

20          Prior to issuance of the NorthStar Report, PG&E had begun work on an  
21   integrated occupational health and safety plan and leveraged PG&E’s Integrated  
22   Planning Process (IPP). Once the NorthStar Report was issued, PG&E  
23   reviewed the recommendations and determined how best to address them within  
24   the context of the Plan. The Plan is a comprehensive view for improving  
25   employee and contractor safety and health over the next five years. Of the

---

1   The “One PG&E Safety and Health Plan” referenced at the Prehearing Conference has  
  been renamed to “One PG&E Occupational Health and Safety Plan” to clarify that it is  
  the plan for improving employee and contractor safety.

2   A copy of the *One PG&E Occupational Health and Safety Plan* is attached as  
  Appendix 3-A and a matrix of the 63 safety initiatives in the original Data Request 144 is  
  attached as Appendix 3-C.

1 61 NorthStar recommendations directed at PG&E (see Chapter 2, Table 2.1),  
2 almost all are addressed in or complement the Plan.<sup>3</sup>

3 **Question 5:** *Regarding PG&E's The One PG&E Safety Action Plan, PG&E*  
4 *should explain how it prioritized actions for implementation and the metrics used*  
5 *to measure the effectiveness of actions implemented.*

6 PG&E prioritized actions for implementation by benchmarking and  
7 assessing which programs and initiatives would provide the maximum benefit  
8 towards accomplishment of PG&E's 5-year health and safety objectives for  
9 2018-2022, which were set in PG&E's 2017 IPP. The metrics used to measure  
10 the effectiveness of actions implemented are set forth in the Plan itself.

11 **Question 6:** *Regarding the One PG&E Safety Action Plan, PG&E should*  
12 *identify NorthStar Recommendations not addressed in The One PG&E Safety*  
13 *Action Plan and provide that analysis for how and when it intends to address*  
14 *those gaps.*

15 Six of NorthStar's recommendations are not expressly addressed in PG&E's  
16 Plan. Two pertain to qualifications for members of PG&E's and PG&E  
17 Corporation's Boards of Directors or to long-term incentive compensation, which  
18 PG&E does not believe are appropriate for inclusion in a safety plan. Four  
19 pertain to operator qualifications or portfolio planning and management systems  
20 that PG&E believes are better addressed in other operating plans and not in a  
21 companywide occupational health and safety plan.

22 **Question 7.1:** *Do any of these safety initiatives described in PG&E's*  
23 *Response to NorthStar Data Request 144 relate to concerns raised by the*  
24 *NorthStar Report?*

25 Yes, nearly all of the safety initiatives described in PG&E's response to Data  
26 Request 144 relate to concerns raised in the NorthStar Report and, with few  
27 exceptions, have been completed and incorporated into PG&E's operational  
28 processes.

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<sup>3</sup> A list of NorthStar's recommendations directed to PG&E and their relationship to the One PG&E Occupational Health and Safety Plan are attached as Appendix 3-B.

1           **Question 7.2:** *Are any of these initiatives being prioritized and evaluated*  
2 *for effectiveness and if so, how?*

3           Yes, these initiatives have been prioritized and will be evaluated for  
4 effectiveness as part of PG&E’s annual IPP.

5           **Question 7.3:** *Whether PG&E will or has ended any of these safety*  
6 *initiatives, including the process by which PG&E determined which initiative*  
7 *to end.*

8           While most of the safety initiatives are now incorporated into PG&E’s  
9 operational processes, some have been completed and others have been  
10 refined and/or incorporated into other programs.<sup>4</sup>

11 **B. Witness Qualifications**

12           I am a Certified Safety Professional and have a broad range of safety and  
13 health industry affiliations, including U.S. Delegate for the ISO 45001 Global  
14 Health and Safety Standard, Board Delegate to the National Safety Council and  
15 Professional Member of the American Society of Safety Engineers. I have a  
16 Bachelor of Science degree in Safety from Illinois State University and hold  
17 certificates in executive development and leadership from Yale University and  
18 the University of Pennsylvania.

19           I have been in the position as Senior Director of Safety and Health at PG&E  
20 since November 2016. Immediately prior, I served as Executive Director of the  
21 Integrated Health and Safety Institute for Underwriters Laboratory Incorporated  
22 (UL), the first private sector not-for-profit institute dedicated to advancing the  
23 integration of workplace health and safety programs. I also held the position of  
24 Global Director of Workplace Health and Safety for UL, where I led the  
25 development of health and safety forums in emerging economies. Previously,  
26 I was Assistant Vice President of Risk Control for CNA Insurance, where I built  
27 CNA’s Construction Risk Control practice and developed and implemented  
28 CNA’s large-scale safety training program, the School of Risk Control  
29 Excellence.

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4 A matrix of PG&E’s 63 safety initiatives, their status and relationship to the NorthStar Report is attached as Appendix 3-C.

1 **C. Background**

2 Development of the *One PG&E Occupational Health and Safety Plan* was  
3 begun prior to issuance of the NorthStar Report and leveraged PG&E’s IPP,  
4 which is conducted on an annual basis. After the NorthStar Report was issued,  
5 PG&E made sure that the Plan was both informed and influenced by the  
6 findings, conclusions, and recommendations contained therein.

7 The NorthStar Report contains an accurate description of the IPP,<sup>5</sup> but this  
8 testimony highlights a few key elements and describes at a high level how the  
9 NorthStar Report is reflected in PG&E’s Plan.

10 **1. PG&E’s Integrated Planning Process Generally**

11 The IPP was first utilized in 2012 to help PG&E better identify and  
12 mitigate business risks on an enterprise-wide basis. The IPP consists of  
13 four essential steps, which are undertaken every year:

- 14 • Executive Guidance (January), in which the Chief Executive Officer and  
15 President of PG&E Corporation (PG&E’s parent corporation) establishes  
16 corporate-wide goals and objectives over the next 5-year planning  
17 horizon.
- 18 • Session D (March/April) provides the forum for PG&E’s and PG&E  
19 Corporation’s senior officers to discuss, among other things: (1) the top  
20 risks for PG&E and each line of business; (2) risk reduction or mitigation  
21 progress to date; (3) strategies to manage any risk mitigation  
22 challenges; (4) future risk management plans; and (5) areas where  
23 collaboration across lines of business (LOBs) or additional resources  
24 may be required to manage risk.<sup>6</sup>
- 25 • Session 1 (March to July) requires each LOB to develop a 5-year  
26 operating plan (also known as an S-1 submission) to achieve PG&E’s  
27 and that particular LOB’ strategic goals.
- 28 • Session 2 (August to November) requires each LOB to develop a  
29 detailed 2-year work plan to execute goals, strategies, and priorities  
30 agreed upon during the S-1 process, with the ultimate objective being a  
31 final set of work and budget targets for each LOB for the coming year.

---

5 NorthStar Report, pp. VI-1 to VI-3.

6 Session D also addresses enterprise compliance issues.

1 As part of the IPP, PG&E uses certain structured processes to evaluate  
2 and prioritize risks; namely: the Risk Evaluation Tool, which uses categories  
3 of qualitative and quantitative criteria to determine a total risk score to serve  
4 as inputs for Session D;<sup>7</sup> and the Risk Informed Budget Allocation (RIBA),  
5 which captures data regarding three risk areas—Safety, Environmental, and  
6 Reliability—to help evaluate and prioritize work portfolios for operational  
7 LOBs for consideration in Session 1 and Session 2.<sup>8</sup>

8 Recently, the California Public Utilities Commission (Commission) has  
9 established two new proceedings to help inform the General Rate Case  
10 (GRC) process with respect to utilities’ funding requests for safety-related  
11 activities: (1) the Safety Model Assessment Proceeding (SMAP), which  
12 allows parties to understand, and the Commission to establish standards for,  
13 the models that utilities such as PG&E use to prioritize programs and  
14 projects intended to mitigate safety and other risks; and (2) the Risk  
15 Assessment Mitigation Phase (RAMP) filing, in which each utility must  
16 describe how it plans to assess, mitigate, and minimize its risks.<sup>9</sup> PG&E  
17 submitted its RAMP report (I.17-11-003) on November 30, 2017.

## 18 **2. Relationship Between the Plan and PG&E’s 2017 IPP**

19 In early 2017, PG&E’s top risks and mitigation objectives were identified  
20 in its Session D process.<sup>10</sup> These objectives were reviewed and approved  
21 by PG&E’s and PG&E Corporation’s senior leadership and set the  
22 foundation for 5-year strategic planning in Session 1.

23 The 5-year health and safety objectives for 2018-2022 planning are:

- 24 1. Achieve first quartile Lost Work Day performance;
- 25 2. Achieve 35 percent reduction in Days Away, Restrictions and Transfers  
26 rate;
- 27 3. Reduce severity of musculoskeletal disorders;
- 28 4. Reduce percentage of workforce unavailable due to health by 8 percent;

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7 NorthStar Report, pp. VI-3 to VI-6.

8 NorthStar Report, pp. VI-6 to VI-9.

9 NorthStar Report, pp. VI-9 to VI-10.

10 Future Session D’s will leverage the quantitative risk analysis techniques developed through the RAMP process. The 2017 Session D established the list of risks that were included in the 2017 RAMP filing, including the top safety risks.

- 1 5. Expand safety education beyond current workshops;
- 2 6. Achieve 80 percent of prime contractors with “A” grade;
- 3 7. Achieve first quartile preventable motor vehicle incidents performance;
- 4 and
- 5 8. Achieve conformance with an independent occupational safety and
- 6 health standard such as American National Standards Institute Z10.

7 The above objectives were defined considering the following  
8 eight focus areas:

- 9 1. Musculoskeletal Disorder, Sprains and Strains
- 10 2. Safety Leadership
- 11 3. Serious Injury and Fatality Prevention
- 12 4. Injury Management
- 13 5. Health and Wellness
- 14 6. Contractor Safety
- 15 7. Motor Vehicle Safety
- 16 8. Safety Management System

17 After these objectives and focus areas were set, PG&E held working  
18 sessions that included both senior and front line operational leaders, with  
19 the purpose of prioritizing programs and initiatives for maximum benefit  
20 towards goal performance.

21 To support consistent implementation of these eight focus areas, PG&E  
22 held more working sessions during the Session 2 process to develop a  
23 framework for roles and responsibilities, to facilitate alignment on resource  
24 needs between corporate safety functions and operating LOBs, and to  
25 identify appropriate metrics. Session 2 culminated with senior leadership  
26 review and approval of the operating plans for all LOBs, which in turn  
27 informed capital and expense budgets.

28 In 2016, PG&E began the process of creating a “One PG&E” safety and  
29 health plan and used the 2017 IPP as a governance tool to obtain senior  
30 officer input and approvals during the plan’s development. NorthStar’s  
31 release of its Report in May 2017 coincided with the latter part of the  
32 Session 1 process. Immediately upon receipt of the NorthStar Report,  
33 PG&E representatives from across the Company reviewed the

1 recommendations to determine whether they were already addressed in the  
2 safety plan, and if not, how to best incorporate them.

3 PG&E's Plan provides a comprehensive view for improving employee  
4 and contractor safety and health over the next five years. It is consistent  
5 with the 5-year health and safety objectives for 2018-2022 planning set forth  
6 as part of PG&E's 2017 Session 1, as well as the eight focus areas and  
7 implementation plans approved by senior leadership as part of PG&E's 2017  
8 Session 2 for the next two years (2018-2019).

9 In addition to addressing the IPP objectives and focus areas, almost all  
10 NorthStar's 61 recommendations directed at PG&E, are addressed in or  
11 complement the Plan.<sup>11</sup>

12 **D. Question 4: How Has PG&E's *The One PG&E Safety Action Plan***  
13 **Addressed Each of the Recommendations in the NorthStar Report?**  
14 **Specifically, How Has PG&E's *The One PG&E Safety Action Plan***  
15 **Addressed the NorthStar Report's Recommendation to Develop a**  
16 **Comprehensive Safety Plan Contained on Pages I-10 Through I-16 of the**  
17 **NorthStar Report?**

18 As described in Section C above, prior to issuance of the NorthStar Report,  
19 PG&E's Plan was being developed and senior leadership input and approvals  
20 were being obtained through the IPP. Once the NorthStar Report was issued,  
21 PG&E reviewed the recommendations and determined how best to address  
22 them within the context of the Plan. The Plan is a comprehensive view for  
23 improving employee and contractor safety and health over the next five years.

24 As discussed in Chapter 2, PG&E has established a Program Management  
25 Office (PMO) charged with ensuring timely implementation of all  
26 67 recommendations in the NorthStar Report. The PMO provides governance  
27 for each implementation plan, aids in issue resolution and supports status  
28 reporting on a regular basis. The Chief Safety Officer oversees both the PMO  
29 and the execution of the One PG&E Occupational Health and Safety Plan. As a  
30 result of this ongoing active oversight and management framework, essential to

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<sup>11</sup> As described in Chapter 2, Appendix 2-A contains PG&E's Implementation Plans to address recommendations in the NorthStar Report.

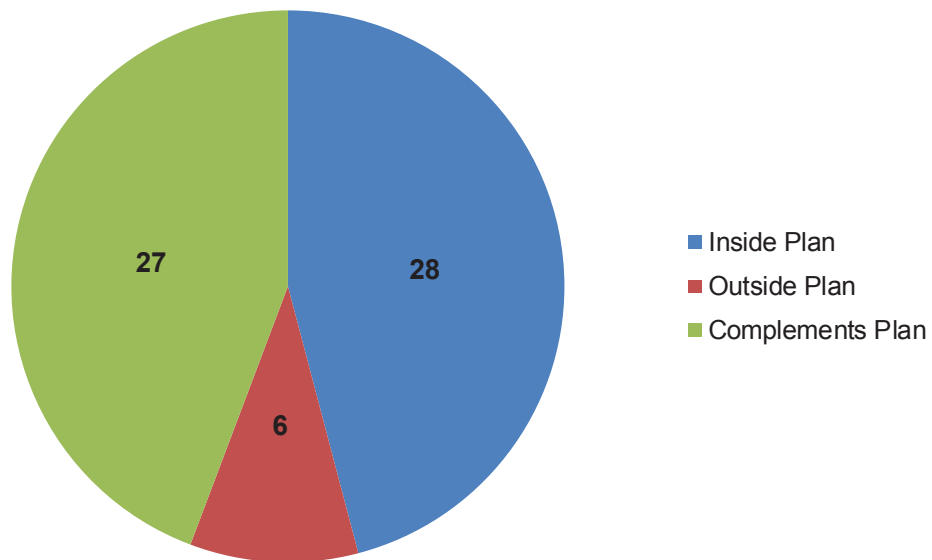


1 successful implementation, the Plan is a “living” document that is constantly  
2 adjusted and amended as appropriate.

3 Of the 61 NorthStar recommendations directed at PG&E, 28 are addressed  
4 in the One PG&E Occupational Health and Safety Plan, 27 complement and  
5 support the Plan and 6 are expressly not reflected in the Plan. Examples of  
6 recommendations that complement the One PG&E Occupational Health and  
7 Safety Plan include recommendations related to compensation, improvements to  
8 the IPP and recommendations for specific LOBs. Of the six outside of the One  
9 PG&E Occupational Health and Safety Plan, two pertain to qualifications for  
10 members of PG&E’s and PG&E Corporation’s Boards or to long-term incentive  
11 compensation, which PG&E does not believe are appropriate for inclusion in an  
12 enterprise safety plan and four pertain to operator qualifications or portfolio  
13 planning and management systems that PG&E believes are better addressed in  
14 operational plans.

15 Figure 3-1 illustrates the relationship of the 61 recommendations directed at  
16 PG&E to the One PG&E Occupational Health and Safety Plan.<sup>12</sup>

**FIGURE 3-1**  
**RELATIONSHIP OF 61 RECOMMENDATIONS DIRECTED AT PG&E TO THE**  
**ONE PG&E OCCUPATIONAL HEALTH AND SAFETY PLAN**



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<sup>12</sup> PG&E’s Implementation Plans F-2, F-3, F-4, and F-5 address multiple recommendations.

1 PG&E's touchstone for finalizing the Plan was Recommendation III-3 in the  
2 NorthStar Report, which stated in pertinent part:

3 Develop a comprehensive safety plan (by the end of 2017) that incorporates  
4 LOB and Corporate Safety activities to eliminate duplication, prevent gaps  
5 and appropriately prioritize expenditures. The plan should address culture,  
6 employee health and wellness, contractor safety, employee safety and  
7 public safety. Solicit input from throughout the organization, particularly the  
8 field, in the development of the plan. The environmental function was  
9 recently removed from the Safety Health and Environment organization.  
10 Environmental should have its own plan. Elements of the plan should  
11 include:

- 12 • Clear definition of the problem
- 13 • An in-depth, data-driven evaluation of the current as-is state
- 14 • Definition of the to-be state (i.e., what does good look like)
- 15 • Roles and responsibilities of corporate safety vis-a-via LOB  
16 personnel
- 17 • Tangible goals and objectives
- 18 • Staffing/resource requirements and personnel qualifications
- 19 • Clear assignment of responsibilities
- 20 • Realistic timeline
- 21 • Metrics to assess effectiveness
- 22 • Defined budget
- 23 • Action plans
- 24 • Communications and change management plan.

25 PG&E's Plan is comprised of two parts: a narrative plan that addresses each  
26 of the eight focus areas identified as part of PG&E's IPP, and individual tactical  
27 plans for each focus area created as part of the Safety and Health organization's  
28 Session 2 submission. Together, these documents are intended to comply with  
29 the requirements set forth in NorthStar Recommendation III-3 related to culture,  
30 employee health and wellness, contractor safety, and employee safety. Asset  
31 management plans and other elements of public safety are currently addressed  
32 by each operational LOB, but will be unified across the enterprise under the  
33 Enterprise Safety Management System.

34 PG&E's specific plans for implementing each of NorthStar's 61  
35 recommendations directed at PG&E and 3 of the recommendations directed at  
36 the CPUC are described in Chapter 2 and Appendix 2-A.

37 **E. Question 5: Regarding PG&E's The One PG&E Safety Action Plan, PG&E**  
38 **Should Explain How It Prioritized Actions for Implementation and the**  
39 **Metrics Used to Measure the Effectiveness of Actions Implemented**

40 As described in Section C above, PG&E initially prioritized implementation of  
41 its Plan based on the maximum benefit towards safety performance of the

1 5-year objectives set forth in PG&E's 2017 Session D process, which were  
2 informed by industry benchmarking. Once the NorthStar Report was issued,  
3 PG&E reviewed the recommendations and determined how best to address  
4 them within the context of the Plan. Beginning in 2018, the prioritization process  
5 will be informed by a process comparable to the RIBA framework to prioritize  
6 and allocate funding for new management-initiated safety mitigations.

7 The effectiveness of PG&E's Plan will be assessed in a number of ways.  
8 First, the Plan will be assessed on a continual basis through various governance  
9 forums and annually as part of the IPP. At the highest level, PG&E tracks  
10 progress toward the 5-year objectives through the monthly Business Plan  
11 Review (BPR) process. Where performance is not meeting expectations,  
12 evaluations into the underlying causes and development of mitigation strategies  
13 are a routine part of the process. This process is designed to identify one or  
14 more focus areas that are the source of the underperformance.

15 Second, the Plan itself contains specific metrics and timelines for each of  
16 the eight focus areas. The BPR and other PG&E governance processes provide  
17 visibility to the overall performance within the focus area and can help identify  
18 opportunities for improvement.

19 Finally, each health and safety program within the eight focus areas of the  
20 Plan has associated metrics that are used to monitor the effectiveness of the  
21 program. The BPR and other PG&E governance processes provide visibility to  
22 the overall performance of each program and can help identify opportunities for  
23 improvement.

24 **F. Question 6: Regarding The One PG&E Safety Action Plan, PG&E Should**  
25 **Identify NorthStar Recommendations Not Addressed in The One PG&E**  
26 **Safety Action Plan and Provide That Analysis for How and When It Intends**  
27 **to Address Those Gaps**

28 As described in Chapter 2, PG&E agrees with all 61 of the  
29 recommendations directed at PG&E, and supports their adoption by  
30 the Commission.

31 The vast majority of NorthStar's recommendations concern improvements to  
32 PG&E's occupational health and safety programs. Accordingly, there is a clear  
33 link between these recommendations and PG&E's programs in the Plan. For  
34 example, NorthStar Recommendation F-3 and VII concern acceleration of

1 PG&E’s Safety Leadership Development (SLD) training to crew leads. The  
2 SLD Program is a component of the Safety Leadership focus area in the Plan.

3 As discussed above in Section D, six of NorthStar’s recommendations  
4 are not expressly reflected in the Plan. Two pertain to qualifications for  
5 members of PG&E’s and PG&E Corporation’s Boards or to long-term incentive  
6 compensation, which PG&E does not believe are appropriate for inclusion in a  
7 safety plan and four pertain to operator qualifications or portfolio planning and  
8 management systems that PG&E believes are better addressed in  
9 operational plans.

10 **G. Question 7.1: Do Any of These Safety Initiatives Described in PG&E’s**  
11 **Response to NorthStar Data Request 144 Relate to Concerns Raised by the**  
12 **NorthStar Report?**

13 NorthStar Data Request 144 requested a matrix describing the PG&E safety  
14 initiatives that were discussed in a series of meetings between NorthStar, the  
15 Safety Enforcement Division and PG&E in April and May of 2016, along with  
16 their respective implementation timelines.

17 Appendix 3-C to this chapter contains the 63 safety initiatives in the original  
18 Data Request 144, along with cross references to the specific findings and  
19 recommendations in the NorthStar Report. Of the 63 safety initiatives, 60 are  
20 specifically referenced in NorthStar’s findings and/or recommendations. The  
21 nature of NorthStar’s comments were positive or neutral for two-thirds of the  
22 safety initiatives. NorthStar’s comments for the remaining third of the safety  
23 initiatives focused on opportunities for improvement.

24 Table 3-1 presents a summary of the current status of NorthStar Data  
25 Request 144’s initiatives.

**TABLE 3-1  
SUMMARY OF THE CURRENT STATUS OF NORTHSTAR DATA REQUEST 144 INITIATIVES**

Line No.	Current Status	Number of DR 144 Initiatives
1	Complete/Incorporated Into Operational Processes <sup>(a)</sup>	50
2	Complete/Discontinued or Replaced <sup>(b)</sup>	3
3	In-Progress <sup>(c)</sup>	10

(a) Initiative has been completed and any associated process changes are incorporated into current practices.

(b) Initiative has been completed and subsequent process and system changes have replaced the initiative's objective.

(c) Initiative is in progress.

1 **H. Question 7.2: Are Any of These Initiatives Being Prioritized and Evaluated**  
 2 **for Effectiveness and if So, How?**

3 To the extent that most of these initiatives are incorporated into operational  
 4 processes or in-progress, the resources to support their completion and  
 5 sustainability are allocated through the IPP. How this process took place in  
 6 2017 is described in Sections C-2 and E of this testimony. Additionally, the  
 7 concept of risk spend efficiency, which reflects the mitigation benefits measured  
 8 in a risk reduction value, relative to its cost, was introduced as part of PG&E's  
 9 2017 RAMP filing. This process will continue to evolve in future IPPs.

10 Examples of completed initiatives that have been incorporated into  
 11 operational processes include:

- 12 • The 2012 change in discipline policy remains in effect;
- 13 • The percentage of the Short-Term Incentive Plan tied to safety performance  
 14 increased from 15 percent in 2011 to 50 percent in 2015, where it has  
 15 remained through 2017;
- 16 • The 24/7 Nurse Report Line remains the primary avenue for employees to  
 17 report work-related discomfort or injury; and
- 18 • Near-Hit sharing is encouraged through the Corrective Action Program  
 19 (CAP) system rather than a separate system.

1 **I. Question 7.3: Whether PG&E Will or Has Ended Any of These Safety**  
2 **Initiatives, Including, the Process by Which PG&E Determined Which**  
3 **Initiative to End**

4 While most of the safety initiatives are now integrated into PG&E's  
5 operational processes, some have been completed and others have been  
6 refined and/or incorporated into other programs.

7 Examples of completed or discontinued initiatives include:

- 8 • Rapid Incident Notification (RIN) – the RIN functionality was incorporated  
9 into the CAP; and
- 10 • Napa Earthquake Response – this was a one-time event that was  
11 completed in 2014.

12 A matrix of PG&E's 63 safety initiatives and current status is attached as  
13 Appendix 3-C.

14 **J. Conclusion**

15 PG&E was already developing its *One PG&E Occupational Health and*  
16 *Safety Plan* prior to release of the NorthStar Report. After its issuance, PG&E  
17 incorporated the Report's recommendations into the Plan, which represents a  
18 comprehensive view for improving employee and contractor safety over the next  
19 five years.

20 PG&E has prioritized implementation of the Plan's specific elements by  
21 benchmarking and assessing which programs and initiatives would provide the  
22 maximum benefit towards accomplishment of PG&E's 5-year health and safety  
23 objectives for 2018-2022. PG&E commits to tracking the metrics on a regular  
24 basis through its BPR and other governance processes, and to report on the  
25 effectiveness of the actions as part of its future RAMP and GRC proceedings.

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 3**  
**APPENDIX 3-A**  
**ONE PG&E OCCUPATIONAL HEALTH AND SAFETY PLAN**

PACIFIC GAS AND ELECTRIC COMPANY

# **One PG&E Occupational Health and Safety Plan**

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**As of December 2017**



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## One PG&E Occupational Health and Safety Plan

### Executive Summary

Pacific Gas and Electric Company (PG&E) is committed to strengthening its safety culture and improving safety performance in a way that is consistent with our Company's Mission, Vision and Culture (Figure 1).

**FIGURE 1  
PG&E'S MISSION, VISION AND CULTURE STATEMENTS**



To achieve our desired results, we need to improve the comprehensiveness, consistency and integration of our safety efforts. This will include:

- **Robust asset management and process safety** in operations, designed to reduce the risk of incidents impacting the PG&E system, while improving the safety of the public and of the employees and contractors who operate and maintain that system.
- **A safety culture** where we communicate with each other, hold each other accountable, learn from incidents, and perform in-depth follow-through.
- Rigor in the **identification and analysis of occupational safety and health risks** to employees and contractors, along with the programmatic response to those risks, each of which are critical for the prevention of injuries.
- Active **management of potential environmental impacts** from PG&E operations, as well as physical and virtual asset security.

These four areas compose the foundation of our Enterprise Safety Management system (Figure 2), which is currently being developed and will be implemented across the enterprise by 2021.

**FIGURE 2  
ENTERPRISE SAFETY MANAGEMENT SYSTEM**



A Safety Management System provides a systematic approach to managing PG&E’s business processes—policies, procedures and governance—and ensures safety is at the forefront of our decisions. It also requires rigorous evaluation that the system is working as designed. This is achieved via a “Plan-Do-Check-Act” model, which provides a continuous feedback loop to identify deficiencies and make improvements to processes and programs. The PDCA model is the foundation for many Safety Management Systems (SMS).<sup>1</sup>

PG&E implemented a safety management system with this feedback loop in Gas Operations (codified in API 1173 and known as PG&E’s Gas Safety Excellence program). This comprehensive approach demonstrably improved the safety performance and safety culture of Gas Operations, and will inform the development of PG&E’s enterprise-wide system.

One key component of the Enterprise Safety Management System is the One PG&E Occupational Health and Safety Plan (the Plan or PG&E’s Plan) – PG&E’s comprehensive plan to prevent injuries to employees and contractors. The following sections describe the approach PG&E has taken in developing it, and describing the key components of our Plan.

**Developing the One PG&E Occupational Health and Safety Plan**

The working team for the Plan was composed of representatives from Corporate Safety & Health and PG&E’s operational lines of business. This cross-functional working team ensured that a broad range of input was factored into the Plan, including issues that were raised or items that were negotiated with the Union. The development and approval of the plan occurred within the framework of PG&E’s risk-based Integrated Planning Process. The steps within that process (Session D,

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<sup>1</sup> Including the ANSI Z10 standard for occupational health and safety, the Federal Aviation Administration’s SMS, and our own Gas Safety Excellence program

Session 1, and Session 2) were used to obtain senior leadership approval and direction with respect to the Plan.

The process for development included seven steps:

### **1. Conduct internal and external benchmarking to determine current performance gaps.**

PG&E conducted studies that included peer utilities,<sup>2</sup> best in class safety performers,<sup>3</sup> and available national statistics compiled by the Bureau of Labor. Additionally, PG&E performed internal benchmarking on those same lagging indicators to determine which work groups within PG&E were finding it difficult to achieve targeted safety performance. This analysis was used in design of the Plan to address the needs and challenges of those work groups who need the most safety assistance.

### **2. Develop Meaningful and Actionable Goals**

PG&E then socialized information on performance gaps with senior leaders and the Plan working team. Through these discussions, PG&E set forth the following goals:

- Achieve 1<sup>st</sup> quartile Lost Work Day (LWD) performance
- Achieve 35 percent reduction in DART rate
- Reduce severity of musculoskeletal disorders
- Reduce percentage of workforce unavailable due to health by 8%
- Expand safety education beyond current workshops
- Achieve 80 percent of prime contractors with “A” grade
- Achieve 1<sup>st</sup> quartile PVMI performance
- Achieve conformance with an independent occupational safety and health standard such as ANSI Z10

The current state and future state goals for benchmarkable measures are in Table 1.

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<sup>2</sup> Includes once a year roundtable for CA utilities to share insights and best practices to decrease the number of incidents and twice a year peer industry group of outside safety professionals to focus on the prevention of serious injuries and fatalities

<sup>3</sup> Based on AGA and EEI safety performance benchmarking reports

**TABLE 1  
SELECT LIST OF METRIC BENCHMARKS – CURRENT AND FUTURE STATE**

<b>Metric</b>	<b>Current State</b>	<b>Future State by 2022</b>
DART Rate	Last Company in Peer Group	4 <sup>th</sup> quartile
Lost Work Day	3 <sup>rd</sup> quartile	1 <sup>st</sup> quartile
PMVI Rate	3 <sup>rd</sup> quartile	1 <sup>st</sup> quartile
Workforce Unavailable due to Health	Bottom of 3 <sup>rd</sup> quartile	3 <sup>rd</sup> quartile
Contractor Safety Grade	2 <sup>nd</sup> quartile	1 <sup>st</sup> quartile

### **3. Develop Objectives and Identify Focus Areas**

Plan working team members met over the course of several months to discuss gaps in performance, and how best to address those. The discussions included senior and front line operational leaders, and were focused on prioritizing efforts to optimize results. This resulted in the development of eight focus areas, five of which fall under the umbrella of Employee Safety and Health:

- Employee Safety and Health
  - Musculoskeletal Disorders, Sprains and Strains (Employee Safety and Health)
  - Safety Leadership (Employee Safety and Health)
  - Serious Injury and Fatality Prevention (Employee Safety and Health)
  - Injury Management (Employee Safety and Health)
  - Health and Wellness (Employee Safety and Health)
- Contractor Safety
- Motor Vehicle Safety
- Safety Management System

The discussions also helped to form the timeline for achievement of the milestones within each of the eight focus areas.

### **4. Determine Roles and Responsibilities for Implementing Program and Process Initiatives**

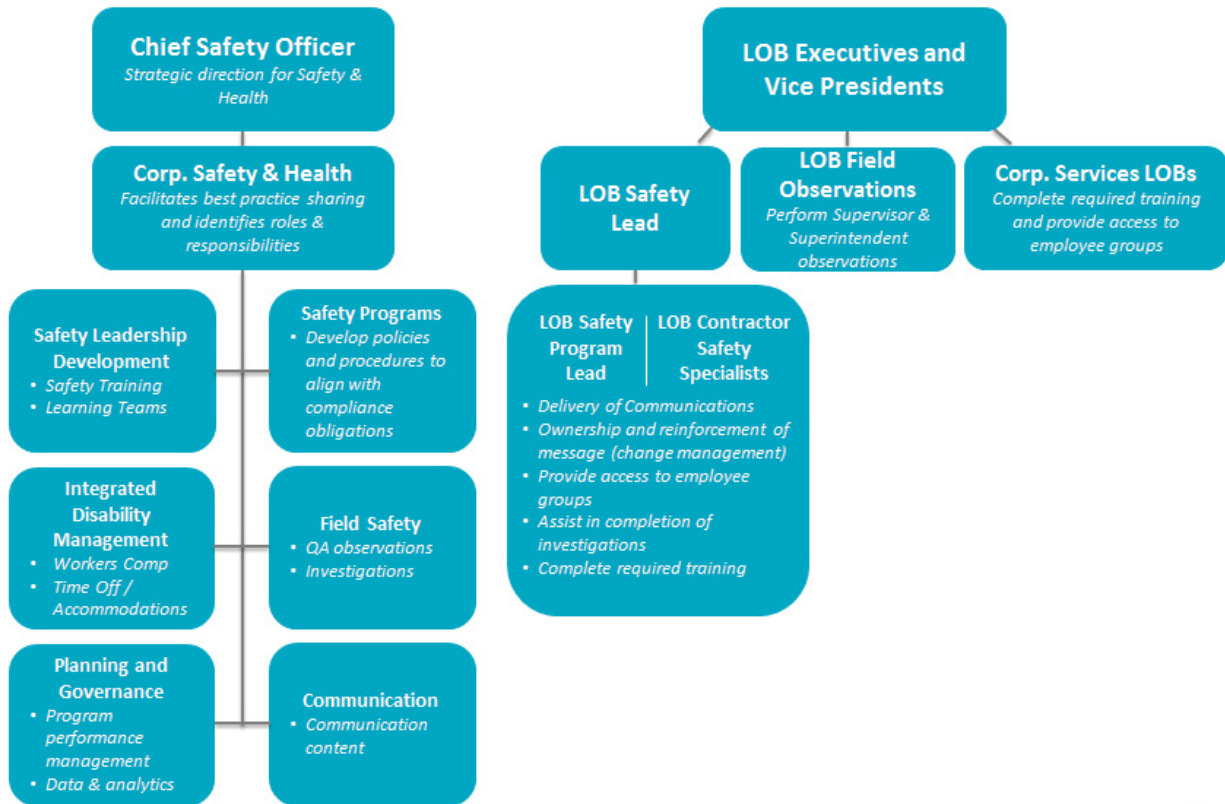
To ensure that there is consistent implementation of the eight focus areas, the Plan working team developed a roles and responsibilities framework (Figures 3 and 4). This service delivery model maximizes the strengths of the respective teams involved. For instance, Corporate Safety & Health has extensive safety expertise, knowledge of industry best practices and data analysis competency, while the lines of business have

deep connections with their employees and understanding of the work that allow them to more successfully communicate with their teams and perform quality control.

**FIGURE 3  
SAFETY & HEALTH SERVICE DELIVERY MODEL**



**FIGURE 4  
ORGANIZATIONAL VIEW OF SAFETY & HEALTH'S SERVICE DELIVERY MODEL**



4

## 5. Communication and Change Management

PG&E’s communications are essential to the effective and timely execution of the Plan, which is why PG&E developed a roles and responsibilities model for communicating the Plan and its component focus areas. Corporate Safety & Health, in concert with Corporate Marketing & Communications, will create the communication content and expectations for delivery. The individual lines of business will then use that content to communicate with their employees within their channels. This division of responsibility ensures that each part of the business is focused on the areas in which they can provide the most value to the organization. It also provides flexibility, allowing the lines of business to integrate safety messages into their existing channels where it can be received more effectively. The development of the communication and change management plans are in progress and are continuously reviewed and updated to reflect the most up to date information and actions related to the Plan.

## **6. Determine Appropriate Metrics and Measurements to Assess Progress Towards Goal Achievement**

For each of the eight focus areas, PG&E established key performance indicators that are statistically correlated to PG&E's safety goals. A list of these measures is included in the detailed discussion of each focus area in the One PG&E Occupational Safety and Health Plan by Focus Area section as well as in Attachment A.

The Plan will be assessed on a continual basis through various governance forums (e.g. SNO, BPR, Enterprise Safety Committee, LOB Safety Councils) and annually as part of the Integrated Planning Process. Additionally, there are executive sponsors identified for each focus area. The role of the sponsors include removing barriers for the corporate safety program leads and connecting them to LOB resources where necessary.

## **7. Establish Budget, Staffing, and Resource Requirements**

Following the Integrated Planning Process, the approved Corporate Safety & Health department budget for 2018 expense is \$25.8 million. The budget for 2018 capital is \$0.2 million. The Plan also incorporates Corporate Items expense. Year-to-date actuals are shown in Table 4, as final 2018 budgets for Corporate Items are not yet finalized.

The budget includes the necessary headcount and resources required for 2018 to execute on the Plan. The major drivers of this expense are headcount of the Safety & Health department personnel.

Safety personnel qualifications and requirements are currently being evaluated through review and assessment of job responsibilities, skills and qualifications, or assessment required to demonstrate competency. To sustain improved safety performance, PG&E needs to ensure the right individuals – with the necessary training and skills – are in the appropriate roles. The implementation plan to achieve the appropriate professional certifications will be established and communicated in 2018.

Please refer to Tables 2, 3, and 4 for details of the budget, distributed by the Plan's focus areas.



TABLE 2  
ONE PG&E OCCUPATIONAL HEALTH & SAFETY BUDGET  
2018 EXPENSE  
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Focus Area / Department	2018 Budget
1	Serious Injury and Fatality Prevention	\$8.05
2	Musculoskeletal Disorder, Sprains and Strains*	\$1.14
3	Health and Wellness*	\$1.21
4	Safety Leadership	\$1.74
5	Injury Management	\$1.16
6	Motor Vehicle Safety	\$1.27
7	Contractor Safety	\$1.34
8	Safety Management System	\$1.53
9	Communication	\$0.97
10	Integrated Disability Management*	\$7.41
11	Total	\$25.83

\* Total budget includes Corp Items funding

TABLE 3  
ONE PG&E OCCUPATIONAL HEALTH & SAFETY BUDGET  
CAPITAL  
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Focus Area	2018 Budget
1	Health and Wellness	0.20
2	Total	\$0.20

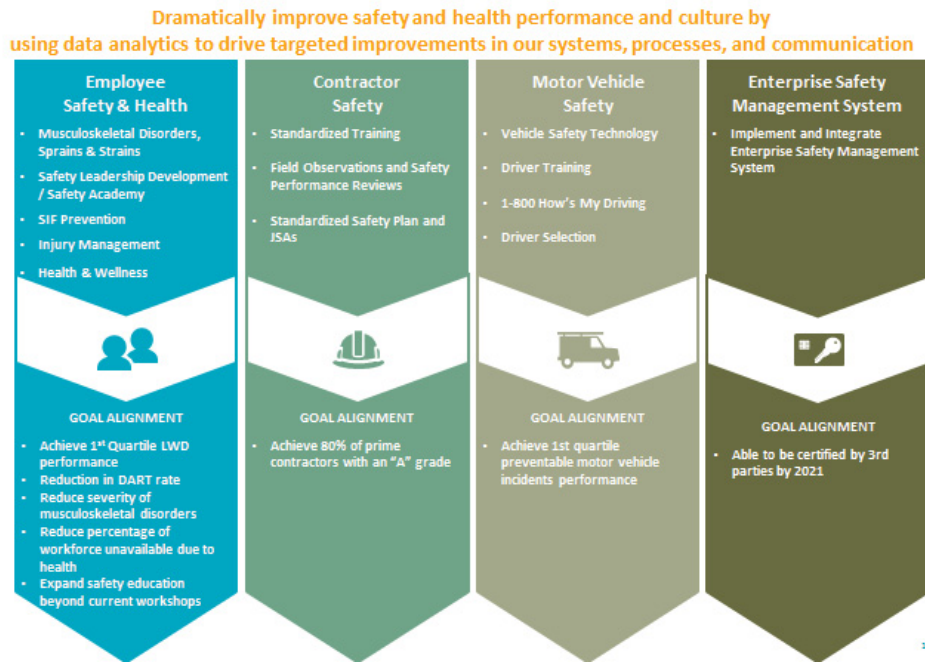
TABLE 4  
ONE PG&E OCCUPATIONAL HEALTH & SAFETY BUDGET  
CORPORATE ITEMS  
(MILLIONS OF NOMINAL DOLLARS)

Line No.	Description	Nov 2017 YTD Actuals
1	Health and Wellness	\$5.59
2	Employee Assistance Program	\$1.38
3	STD & Leave Mgmt, LTD, Paid Family Leave	\$43.29
4	Workers Comp	\$25.23
5	Total	\$75.49

## One PG&E Occupational Safety and Health Plan, by Focus Area

The Plan—encompassing employee safety and health, contractor safety, motor vehicle safety and the safety management system—is a comprehensive blueprint for improving employee and contractor safety over the next five years. An illustrative diagram of the One PG&E Occupational Health and Safety Plan is shown in Figure 5.

**FIGURE 5  
ONE PG&E OCCUPATIONAL HEALTH AND SAFETY PLAN SUMMARY**



Following are summaries of each of the focus area plans, specific actions, roles and responsibilities, and metrics for 2018 – 2019. For the full details of the plans by focus area, refer to Attachment A.

## Musculoskeletal Disorders, Sprains and Strains

### Summary

Musculoskeletal Disorders (MSDs) and sprains and strains are caused by over-use or exertion on the body. The result can be long-term injuries. These types of injuries currently account for 64 percent of all employee injuries at PG&E.

To address this risk, PG&E will be taking a proactive approach to assess job tasks for ergonomic hazards and working to remove the hazards. Additionally, when discomfort is identified, PG&E will work with individuals to address and resolve discomfort early.

Four programs will be enhanced and expanded to provide pre- and post-injury intervention for employees at risk of these injuries, namely:

- Office ergonomics
- Industrial athlete
- Industrial ergonomics
- Vehicle ergonomics

These programs collectively aim to prevent and/or reduce the severity of injuries by:

- Proactively working with individuals to assess, address and resolve discomfort early
- Evaluating the physical demands of job tasks to identify and mitigate such demands
- Assessing and addressing mismatches between workers and the work

### Tactics, Responsibilities and Key Measures of Success

One PG&E Tactics	Key 2018-2019 CS&H Responsibilities	Key 2018-2019 LOB Responsibilities
Office Ergonomics	Pilot RSI Guard functionality for better tracking and reporting; educate employees on 30/30, sit/stand desk and hotkeys solutions	Communicate plans associated with office ergonomic solutions
Industrial Athlete	Expand Onsite Prevention Services (OPS) to include Office Ergonomics for discomfort cases at facilities that they serve	Communicate expanded OPS where applicable
Industrial Ergonomics	Perform ergonomic assessments based on injury data to reduce risk exposures	Provide access to employees for assessments and implement recommendations
Vehicle Ergonomics	Continue vehicle evaluation recommendations focused on providing objective and quantitative data vs. recommending a vehicle model	Participate in vehicle planning by using vehicle evaluation recommendation data for vehicle decision making

Key Measures of Success	2017	2018	2019
Lost Work Day Case Count	124	98	85
DART Count	489	395	374
Total Number of DART days	25,545	24,269	23,056
Timely Reporting of Injuries	69.2%	71.3%	73.5%
% of Recommendations Implemented (Ind. Ergo)	N/A	Track Only	TBD

## Safety Leadership

### Summary

Leadership in safety is essential to an effective safety culture. Leaders drive culture change and accountability.

Accordingly, PG&E will accelerate and improve the Crew Leader Training, enhance its coaching and observations program, use observations to target areas where follow-up is necessary, and introduce the concept of operational learning where it can be effective.

Learning Teams, which is an example of Operational Learning, bring together skilled facilitators and employees that perform the work to develop innovative and sustainable solutions to on-going safety issues. The solutions cover areas such as procedures, tooling and pre-job safety briefs. A major component of Learning Teams is to shift what we do with the recommendations that come out of these events. This type of early involvement helps ensure that employees are fully committed to the solutions that are ultimately implemented.

Continued integration of the skills and language from the Safety Leadership Development (SLD) Program<sup>4</sup> into the new and improved programs described earlier will reinforce PG&E’s desired safety culture.

### Tactics, Responsibilities and Key Measures of Success

One PG&E Tactics	Key 2018-2019 CS&H Responsibilities	Key 2018-2019 LOB Responsibilities		
<b>Safety Leadership Development Training</b>	Deliver Leading Forward – Program 2: Safety Leadership to Crew Leaders and Above	Ensure employee availability to attend trainings and completion of OJT assignments during Crew Leader training		
<b>Coaching</b>	Provide in-Field Coaching for Supervisors and Superintendents to assist in effective adoption of skills taught in workshops	Ensure Supervisor and Superintendents are taking advantage of coaching opportunities		
<b>Operational Learning</b>	Drive awareness and adoption of Learning Teams and Post-Job Debriefs	Utilize Learning Teams as they are initiated		
<b>Safety Academy</b>	Establish curriculum and certification requirements	Awareness and engagement in recommendations for training and certification plan		
Key Measures of Success	2017	2018	2019	
% SLD Crew Lead Workshop Completion	25%	97+%	Program Complete	

<sup>4</sup> Examples of skills and language taught in the SLD program include: how leadership behavior shapes the level of safety exposure; exposures are systems, equipment and behaviors that, if not controlled, can lead to injury; how to conduct effective safety observations and illustrative examples of how to change the safety conversation. Reference: PG&E Safety Leadership Playbook

## Serious Injury and Fatality Prevention

### Summary

PG&E’s SIF Prevention program focuses on the specific exposures which have led to serious injuries at PG&E in the recent past. Initial analysis of SIF data found 22 such exposure factors, many of which are common across lines of business. Focusing our investigative resources on incidents with SIF potential aids understanding of these situations and development of corrective actions to reduce the likelihood of recurrence. This same process is applied to actual SIF events.

PG&E identifies incidents with SIF potential through the review of all injuries and near hits, subjecting them to the same in-depth cause evaluation as actual SIF incidents. The results of these investigations and the identified corrective actions are monitored through the Corrective Action Program (CAP) to ensure timely completion and effectiveness.

PG&E is currently enhancing its Observation Program through better tools, governance, oversight, and reporting. By recording specific data (e.g., at-risk behaviors observed, SIF exposure factors identified), reporting the findings and the opportunities for improvement, the ability to learn from observations is multiplied.

### Tactics, Responsibilities and Key Measures of Success

One PG&E Tactics	Key 2018-2019 CS&H Responsibilities	Key 2018-2019 LOB Responsibilities		
Investigations	Collaborate with LOB to identify employees to participate in training <ul style="list-style-type: none"> <li>• <i>Electric &amp; Gas: 10 individuals</i></li> <li>• <i>All Other LOBs: 5 individuals</i></li> </ul>	Identify and train supervisor/manager level employees to be trained and conduct Apparent Cause – Potential / Apparent Cause / work Group evaluations		
	Revise standard and procedure documents incorporating Safety/CAP procedures into one document	Communicate and deliver change management for roll out of revised standard and procedure documents		
Observations	Upgrade to enhanced observation tool – SafetyNet	Delivery of communication and ownership of change management		
	Enhance strategy and goals for observation program; communicate expectations associated with enhanced reporting functionality	Engage with CS&H to define observation strategy		
Key Measures of Success	2017	2018	2019	
SIF Exposure Rate	0.267	Track Only	Track Only	
Observation Quality Index	N/A	Track Only	TBD	
Length of Investigations	N/A	45 days	30 days	

## Injury Management

### Summary

One of the most important leader roles is to ensure the safety of our employees. Injury management is essential to employee safety. Injury management is important because it shows employees that their leaders are concerned with their well-being; promotes healing and early return to work; and ensures quality and appropriate medical care for the employee. Early injury reporting and early return to work is essential to Injury Management.

Effective injury management helps employees and contractors get the care they need so that they can heal and return to work. To address the risk of prolonged injury due to the lack of proper, timely care and/or adequate reporting, PG&E is enhancing its Injury Management programs. According to RAND (a nonprofit, nonpartisan research organization that helps improve policy and decision making through research and analysis) study completed in 2010, it found that having a return to work program is associated with a fifteen week reduction in the average injury duration.

PG&E has established a job task bank that allows PG&E employees to accommodate any medical restrictions associated with an injury that might otherwise prevent them from working. In addition, PG&E will enhance its overall management of an employee's journey from initial notification of an injury to his/her return to work through physician and employee outreach about alternative work assignments.

### Tactics, Responsibilities and Key Measures of Success

One PG&E Tactics	Key 2018-2019 CS&H Responsibilities	Key 2018-2019 LOB Responsibilities		
<b>Timely Reporting</b>	Nurse Report Line Improvement strategy: <ul style="list-style-type: none"> <li>• Continue targeted Leader conversations across Enterprise based on NRL Heat Map</li> <li>• Focus groups and Grass Roots level involvement</li> </ul>	Communicate importance of seeking immediate access to a trained medical professional for discomfort, pain or are injured on the job; improve the engagement of employees in Nurse Report Line		
<b>Physician Outreach Program</b>	<ul style="list-style-type: none"> <li>• Conduct Physician Outreach meetings with MPN (Kaiser on the Job) clinics with focus on improved knowledge of KOJ and PG&amp;E RTW philosophy</li> <li>• Focus on future clinic visits will focus on engagement of Leaders in high frequency areas</li> </ul>	Communicate meeting schedule and attend KOJ outreach meetings		
<b>Return to Work (RTW) Task Program</b>	<ul style="list-style-type: none"> <li>• Conduct meetings with LOB stakeholders to review Transitional Return to Work Task Program opportunities</li> <li>• Improve RTW opportunities by placement of employees into RTW Task Program</li> </ul>	Communicate benefits and establish expectation for utilization of program		
<b>Key Measures of Success</b>		<b>2017</b>	<b>2018</b>	<b>2019</b>
Timely Reporting of Injuries		69.2%	71.3%	73.5%
Lost Work Day Case Count		124	98	85
Total Number of Work Days Lost		5,873	5,579	5,300

## Health and Wellness

### Summary

PG&E's health and wellness programs use employee education and engagement to help prevent illness and manage chronic conditions. The Company has determined that 5 percent of our workforce accounts for 55 percent of medical spending, 50 percent have at least one chronic condition, and individuals with at least one chronic condition are up to three times more likely to be injured on the job.

To address this risk, PG&E plans to expand the target population in a program that provides targeted healthcare decision-support for this population from 5 percent to 20 percent. PG&E will also encourage and measure employee participation in annual health screenings, increased use of health coaching to support healthy habits and changes, and use of clinics and telemedicine kiosks for immediate care.

### Tactics, Responsibilities and Key Measures of Success

One PG&E Tactics	Key 2018-2019 CS&H Responsibilities	Key 2018-2019 LOB Responsibilities
Health Coaching	Expand On-Site Health Coaching program in Fresno area	Communicate and encourage participation in On-Site Health Coaching program
Health Screenings	Maintain > 80% Health Screening Participation	Communicate and promote health screening participation
Mental Health Support	Integrate mental health screenings as part of existing employee health assessments and ensure referrals are to appropriate care resources	Communicate enhancements to employee health assessments
Health Promotion	Grow number of Wellness Ambassadors within LOBs with lower wellness program participation rates	Identify Wellness Ambassadors in organization
On-site Care / Telemedicine	Engagement/communications plan for GO on-site primary care clinic	Promote utilization of on-site clinic

Key Measures of Success	2017	2018	2019
Workforce Unavailable due to Health	7.3%	7.0%	6.8%
Health Screenings Participation	88%	88%	88%
Health Coaching Utilization	4.7%	5.5%	6.0%
Clinic Utilization	30%	TBD	TBD

## Contractor Safety

### Summary

PG&E implemented a Contractor Safety Program as part of the Kern Oil Settlement Agreement and continues to enhance the program with the goal of reaching 1st quartile contractor safety performance over the next several years. There are four primary components to the program:

- Pre-Qualification – Ensure that all prime contractors and subcontractors sourced for medium and high-risk work at PG&E meet minimum safety qualifications prior to contract execution and commencement of work.
- Safety Planning – Ensure that all medium and high risk work activities have safety factored into the job plan from start to finish.
- Oversight – Ensure that all medium and high-risk work activities are governed by qualified PG&E oversight and that all work follows the safety plan designed for the job.
- Evaluation – Conduct post-job evaluations to capture contractor safety performance, including lessons learned to pursue continuous improvement and identify quality problems. Improvements are planned in all aspects of this program, including quarterly Contractor Safety Program compliance assessments, contractor field-safety observations, and a contractor badging system to track training and qualifications.

### Tactics, Responsibilities and Key Measures of Success

One PG&E Tactics	Key 2018-2019 CS&H Responsibilities	Key 2018-2019 LOB Responsibilities
Training and Qualifications	Implement new training requirements for PG&E employees and contractors	Communicate and deliver change management on new training requirements
Field Observations and Performance Review	Increase Safety oversight in the field  Expand safety observation program to contractors	Conduct periodic safety performance reviews with Contractor (Alliance Model)  Engagement with program roll out
Enhance Program Scope / Contractor Management	Evaluate MVI records / fleet requirements	Communicate MVI record and fleet requirements
Standardize Safety Plans / Templates	Develop systematic approach for communicating PG&E hazards	Execute on approach for communicating PG&E hazards

Key Measures of Success	2017	2018	2019
% of Assessments that Include Non-Conformance Findings	Track Only	Track Only	Track Only
Percent of "A" grade contractors	68%	69%	71%



## Motor Vehicle Safety

### Summary

PG&E's Motor Vehicle safety efforts are focused on identifying and mitigating exposure that may result in injuries or fatalities for employees or the public, property damage, and regulatory fines and citations. Since 94 percent of Motor Vehicle Incidents are due to driver behaviors (including distracted driving, risky driving behaviors, and fatigue), most of PG&E's actions are driving towards reducing that risk.

To address this risk, PG&E is enhancing its coaching programs, as well as its line of businesses' accountability for driver safety. PG&E is also focused on delivering consistent, timely, and targeted Driver Training; adopting and implementing Vehicle Safety Technology; expanding employee motor vehicle record validation beyond those mandated by the Department of Transportation (DOT); and introducing a Driver Selection process that uses all data points to create a driver risk profile.

### *Tactics, Responsibilities and Key Measures of Success*

One PG&E Tactics	Key 2018-2019 CS&H Responsibilities	Key 2018-2019 LOB Responsibilities	
<b>Vehicle Safety Technology (VST)</b>	Collaborate with Fleet to install and activate VST technology in remaining fleet vehicles	<ul style="list-style-type: none"> <li>• <b>Fleet:</b> Install and activate VST into all PG&amp;E vehicles by 2018</li> <li>• Change management in areas where technology is installed</li> </ul>	
<b>Driver Selection</b>	<p>Implement license and insurance verification plan for employees who are not part of the commercial driver pool</p> <p>Integrate all sources of information to assess individual driver risk</p>	<ul style="list-style-type: none"> <li>• <b>Labor:</b> Based on California privacy laws, may require labor bargaining</li> <li>• Communicate license and insurance verification process to all employees impacted</li> </ul> <p>Deliver communication and create awareness of driver selection process</p>	
Key Measures of Success	2017	2018	2019
Serious Preventable Motor Vehicle Incident (SPMVI) Rate / Count	0.211 / 32	0.180 / 27	0.173 / 26
Preventable Motor Vehicle Incident (PMVI) Count	371	365	328
Driver Check Complaint Rate	9.4	8.0	7.6
Hard Brake Rate	3.7	3.5	3.3

## Safety Management System

### Summary

The One PG&E Occupational Health & Safety Plan will be a component of the enterprise-wide safety management system and will provide an approach to safety that is both uniform and rigorous. As discussed, PG&E is designing an Enterprise Safety Management System (ESMS) that will include controls and governance for a comprehensive set of safety and health-related processes and will focus on public, employee and contractor safety. The ESMS, to be certified by a 3<sup>rd</sup> party, establishes the guidelines and sets a foundation to manage PG&E’s safety-related policies, processes and procedures. The ESMS is a focus area of the Plan until it is fully implemented by 2021, where then the ESMS becomes the governing process for the Plan. PG&E remains focused on public safety through its lines of business plans until the ESMS is fully implemented by 2021.

Moving to an ESMS will help PG&E manage our assets and processes to reduce the safety and environmental risks for all stakeholders, foster continuous learning and continuous improvement, and help connect the behavior of our employees and contractors to our desired safety culture.

### *Tactics, Responsibilities and Key Measures of Success*

One PG&E Tactics	Key 2018-2019 CS&H Responsibilities	Key 2018-2019 LOB Responsibilities		
<b>Deep Dive Assessment</b>	Complete LOB eSMS deep dive assessment	Provide access to employees and participate in deep dive assessments		
<b>eSMS Gap Closure</b>	Complete gap closure for all LOBs	Provide access to employees and necessary resources to close gaps		
<b>Governance</b>	Develop control and governance for all safety and health-related processes	Develop internal maintenance programs (e.g. Gas Safety Excellence)		
Key Measures of Success		2017	2018	2019
Able to be certified by 3rd parties by 2021		On Track	On Track	On Track

**ATTACHMENT A  
ONE PG&E OCCUPATIONAL HEALTH & SAFETY ACTION  
PLANS BY FOCUS AREA: 2017-2019**

## Musculoskeletal Disorders, Sprains & Strains

Focus Area Description	Tactic	Tactic Description
<p>Musculoskeletal Disorders are caused by repetitive over use or exertion on the body. The result can be long term injuries.</p> <p>Four programs in PG&amp;E, 1.) vehicle ergonomics, 2.) Industrial ergonomics, 3.) office ergonomics and 4.) Industrial Athlete) collectively aim to prevent and/or reduce the severity of such injuries by:</p> <ul style="list-style-type: none"> <li>• Proactively working with individuals to assess and address and resolve discomfort early</li> <li>• Evaluating the physical demands of job task to identify and mitigate such demands</li> <li>• Assess and address mismatches between workers and the work</li> </ul> <p>In 2017-2018 We are enhancing processes, expanding services, implementing metrics and engaging the front-line employees.</p> <p>Corporate Safety Program Manager: Laurie Climenhaga</p>	<p>Industrial Athlete: Expand Onsite Prevention Services to include Office Ergonomics for discomfort Cases at facilities they serve</p> <p>Industrial Athlete: Early Symptom Intervention (ESI)- Services and reporting</p> <p>Industrial Athlete: Post Offer Physical Assessment (POPA) - Revalidations</p>	<p>Expand the scope of work of the Onsite Prevention Specialist to include conducting office work stations evaluations for individuals in discomfort at the facilities they serve.</p> <p>Revise Service model for ESI in the field for better tracking, reporting, saturation and vendor performance</p> <p>This is the last step in the candidate process prior to employment. Each prospective employee in the jobs approved for a POPA are tested for physical capacity against the validated physical demands of the job. It is a pass/fail test. If he/she fails, the individual has a wait time of 90 days to prepare to retest. If they fail a second time the offer is rescinded. Administered by Work Steps (contractor)</p> <p>Office ergonomics has several components: preventative measures, education (training), work station evaluations and resolution of discomfort cases.</p> <ul style="list-style-type: none"> <li>• Preventative measures include the annual online assessment that identifies discomfort and risk level, work station tools and provides reminders to move or stretch.</li> <li>• Training includes the annual online training, supervisor training and internal consultant training.</li> <li>• Internal Consultants are employees who complete a 2 day course and provide work station assessments for new hires and workstation moves.</li> </ul> <p>Internal PG&amp;E consultants for New Hires and Moves; External Contractors for Discomfort cases</p>
	<p>Office Ergonomics- Revise process</p>	

	<b>Tactic</b>	<b>Tactic Description</b>
	Industrial (Field) Ergonomics- revise process	Evaluate task and jobs considered to have high or moderate potential hazards that will cause injuries to workers. NOTE: Field ergonomics does not evaluate an individual, it evaluates the hazards-demands-forces required to do the work.
	Vehicle Ergonomics – revise process	Preventative: <ul style="list-style-type: none"> <li>Educate individuals who drive company vehicles about effects of prolonged usage, good body mechanics, work-rest recovery cycles, and good vehicle ergonomics.</li> </ul> Discomfort: <ul style="list-style-type: none"> <li>Individually assess and address individuals and vehicle to mitigate contributing factors to discomfort through education, assisted devices (e.g. lumbar pillows) and adjustments on vehicles.</li> </ul>

<b>Key Metrics / Shared Success Measures</b>	<b>Description / Calculation</b>	<b>2017 Target</b>	<b>2018 Target</b>	<b>2019 Target</b>
# of recommendations implemented (Industrial Evaluations)	Number of recommendations made and agreed to by LOB are implemented	-	Track Only	TBD
% of Encounters in Industrial Athlete Program	Percentage of encounters (interactions) occurring with the physical workforce utilizing the services of the Onsite Prevention Specialists. Note: a single individuals may have several encounters			
# of employees participating in IA program	Number of employees in the physical work force who have sought at least one encounter			In progress: Working with HCMS to determine most impactful to preventing injuries
% RSI Guard Break Compliance	Percentage of break compliance			
% of Employees who have RSI Guard Active	Percentage of employees with RSI Guard installed on their workstation			

**2017 – 2019 Plan**

Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)
Office Ergonomics	Integrate RSI Guard functionality (30 days after completed IT review)	All	Office employees	Sept. 1, 2017	Q3 2018	Corporate Safety
	RSI Guard business case and secure IT funding	All	Office employees	Dec 2016	Sep 2017 (complete)	Corporate Safety / IT
	Deploy Case Manager	All	Office employees	2017	Jan 2018	Corporate Safety
	New office ergonomics process – governing document approved for enterprise	All	Office employees	2017	Mar 2018	Corporate Safety
	Pilot RSI Guard functionality for better tracking and reporting; along with education on 30/30, sit/stand desk education and hot keys	Cust Care	Fresno Contact Center – CSRs	TBD	3 months post start	Corporate Safety / CC
	Perform quality assurance and quality control of ergo evaluations from both internal and external providers	All-Vendors	Office	Aug 2017	Q3 2018	Corporate Safety
	Develop a plan to improve the purchase order/payment process for ergo evaluations.	All	Office employees	Oct 2017	Oct 2017 (complete)	Corporate Safety / Sourcing
	Streamline ordering of equipment and furniture through process re-design	All	Office employees	June, 2017	Mar 2018	Corporate Safety
	Determine and manage process of internal evaluators (optimal number, skills requirements, locations)	All	Office employees	August 2017	Jan 2018	Corporate Safety
	Enhanced Dashboard for drill down at PCC level	All	Physical work force	Feb 2017	December 2018	Corporate Safety
Industrial Athlete	Compare loss analysis to current OPS sites and review for opportunities	All	Physical work force	July, 2017	Jan 2018	Corporate Safety
	Develop and implement a single intake and reporting requirements for both vendors	All	Physical work force	Jul 2017	Sep 2017 (complete)	Corporate Safety

Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)
Industrial (Field) Ergonomics	Performing assessments <ul style="list-style-type: none"> <li>• 30 assessments per classification</li> </ul>	EO / GO	T-man, Linemen, Gas Service Rep	Jul 2017	Sep 2017 (complete)	Corporate Safety
	Work with LOB on mitigation risks from industrial ergonomic assessments	EO/GO	T-man, Linemen, Gas Service Rep	Oct 2017	Mar 2018	Corporate Safety
	Revise and broaden ergonomics program to risk based approach addressing musculoskeletal health hazards	EO/GO	T-man, Linemen, Gas Service Rep	Oct 2017	Mar 2018	Corporate Safety
Vehicle Ergonomics	Vehicle evaluations recommendation will focus on providing the objective, quantitative data (measurements) vs. recommending a vehicle model	All	All drivers	Jul 2017	Aug 2017 (complete)	Corporate Safety
	Assessment of the resources and skills required for internal evaluators	All	Corp Safety	Aug 2017	Aug 2017 (complete)	Corporate Safety
	Revise process, evaluation forms and procedure to meet modification process.	Fleet & Corp. Safety	Fleet & Corp. Safety	Aug 2017	Nov 2017 (complete)	Corporate Safety
	Implement QA process prior to submission to CAP	Corp Safety	Corp Safety	Aug 2017	Mar 2018	Corporate Safety
	External Consultants (forecasted) work with discomfort cases from a holistic approach using first aid techniques and devices to mitigate discomfort.	All	All drivers	Sept 2017	Jan 2018	Corporate Safety
Create and Maintain Community of practice	Create central repository for tracking and reporting on all reviews	Corp. Safety	Corp. Safety	Jul 2017	Aug 2017 (complete)	Corporate Safety
		All	Internal and External Consultants	Aug 2017	Oct 2017 (complete)	Corporate Safety

## Safety Leadership

Focus Area Description	Tactic	Tactic Description
<p>Increase knowledge and practice of relevant safety leadership development skills for O&amp;D to Crew Leaders; Develop and deliver leading safety, observations and coaching; Establish sustainable metrics; Increase operational learning capabilities within the LOBs</p> <p>Corporate Safety Program Manager: David Wichner</p>	Safety Leadership Training	1,700 Crew Leader participants: create awareness of key skills for leaders with operational teams to practice and coach improved methods to increase exposure identification, reduction, and elimination
	Coaching	Safety leadership coaching consists of 1:1 coaching with a safety leadership coach. Coaching gives each leader to have a candid review of how well they are practicing the skills they learned in the workshops and includes consultation, feedback and guidance. Coaching reinforces key skills necessary for the leader to create a personal safety vision and sustain the desired culture within their team.
	Operational Learning	Learning Teams and Post-Job Debriefs are examples of Operational Learning. The major component is to shift what we do with the recommendations that come out of these events.

Key Metrics / Shared Success Measures	Description / Calculation	2017 Target	2018 Target	2019 Target
% SLD Crew Lead Workshop Completion	Total number of Crew Leads that have completed the Safety Leadership Program is compared to the total target required to complete the program	25%	97+%	Program Complete
Workshop quality and effectiveness	Level 1: Reaction, Predictive Level 3: Effectiveness, Focus Groups, Pre-post knowledge check.	4.33	4.40	Program Complete
# of Facilitators in LOB	# of Facilitators in LOB	Track Only	Track Only	Track Only



2017 – 2019 Plan						
Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)
Safety Leadership Development Training	<ul style="list-style-type: none"> <li>Deliver Leading Forward – Program 2: Safety Leadership to Crew Leaders and above:               <ul style="list-style-type: none"> <li>Electric / Fleet</li> <li>Gas / Aviation</li> <li>Generation</li> <li>Customer Care / CRESS</li> <li>IT / Supply Chain</li> <li>Corporate Services / L&amp;EM</li> </ul> </li> </ul>	All LOBs	Leaders	Aug. 2014	Dec 2018	Corporate Safety / HR Academy
	<ul style="list-style-type: none"> <li>Complete backlog of Supervisors and superintendents who did not complete the old program (2014-16) and new leaders.</li> </ul>	All LOBs	Leaders	Aug. 2014	Dec 2018	Corporate Safety / HR Academy
	<ul style="list-style-type: none"> <li>Continue delivery of one day O&amp;D workshop for new O&amp;D until completion of Crew Leader workshops</li> </ul>	All LOBs	Leaders	Aug. 2014	Jan 2018	Corporate Safety / HR Academy
	<ul style="list-style-type: none"> <li>Accept OIL recommendation to accelerate Crew Leader Training. Program will be accelerated with more delivery capacity, in more locations to reduce travel and revising curriculum to 2 days by removing redundant material and increasing engagement activities.</li> </ul>	All LOBs	Leaders	Q3 2017	Jan 2018 (complete)	Corporate Safety / HR Academy
Coaching	Provide In-Field Coaching for Supervisors and Superintendents to assist in effective adoption of skills taught in workshops	All LOBs	Leaders	2015	Dec 2018	Corporate Safety
	Increase level of expectation in current workshops for leaders to schedule and complete coaching	All LOBs	Leaders	Q3 2017	Sept 2017 (complete)	Corporate Safety
	Increase sr. leader inquiry to S/S about completion and action plans	All LOBs	Leaders	Q1 2018	Q3 2018	Corporate Safety

**2017 – 2019 Plan Continued**

Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)
Observations	Develop Observation checklist and support material	Safety	Leaders	Q1 2017	Oct 2017 (complete)	Corporate Safety
	Test and revise checklist and support processes, e.g. reporting, next level discussions	Safety	Leaders	Q3 2017	Dec 2017 (complete)	Corporate Safety
	Pilot Observations in SafetyNet (Predictive Solutions)	Safety	Leaders	Q4 2017	Mar 2018	Corporate Safety
	Implement formal observations and Evaluate extending SLD checklists to other groups	Safety	Leaders	Q1 2018	Apr 2018	
Operational Learning	Operational Learning: Drive awareness and adoption of Learning Teams and Post-Job De-briefs. Benefits of LT besides improving safety and risk reduction through direct identification of proximate and systemic exposures and solutions: a) increase CAP adoption, b) improve SIF investigation recommendation quality and timeliness, c) improved engagement, d) eventually reduce quantity of investigations, reduce impact on labor.		Leaders	In Progress	Dec 2018	Corporate Safety
	Todd Conklin and Bob Edwards are leading a variety of LTs.	All LOBs	Pilot population	Q2 2017	Q1 2018	Corporate Safety
	Train SLCs to be internal / regional TTT/QA/support.		SLCs	Q2 2017	Mar 2018	Corporate Safety
	Create two classes of internal training for 1) LOB coordinators, 2) LOB facilitators. Create additional communication for leadership support.		Corp Safety/Academy	Q3 2017	2018	Corporate Safety
	Develop Standard for use of LT as a recommended practice for CAP WGE and above.		Corp Safety / CAP	Q3 2017	Jun 2018	Corporate Safety
	LOBs identify Coordinators and Facilitators		LOB Safety Leads	Q3 2017	Q1 2018	Corporate Safety

**2017 – 2019 Plan Continued**

Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)
Operational Learning	Establish Learning Team coordinating group	All LOBs	Identified population	Feb 2018	Feb 2018	Corporate Safety
	Begin training of Leaders, Coordinators, Facilitators		Identified population	Q1 2018	Sep 2018	Corporate Safety

## Serious Injury & Fatality Prevention

Focus Area Description	Tactic	Tactic Description
<p>A SIF (Serious Injury and Fatality) is any incident that results, or could potentially result, in any of the following to employees or directly supervised contractors resulting from work performed for PG&amp;E:</p> <ol style="list-style-type: none"> <li>1) Work related fatal injury or illness</li> <li>2) Work-related injury or illness that required immediate life-preserving rescue action, and if not applied immediately would likely have resulted in the death of that person</li> <li>3) Work-related injury or illness that resulted in a permanent and significant loss of a major body part or organ function</li> </ol> <p>Corporate Safety Program Managers: Jim Kent, Peter Labberton</p>	Observations	Observed and documented safety systems, conditions and behaviors to recognize and reinforce safe behaviors in order to minimize exposure to risk
	Investigations	<ul style="list-style-type: none"> <li>• Improve quality of investigations/cause evaluations, documentation and CA's</li> <li>• Improve timeliness of SIF response to capture initial incident information</li> <li>• Improve efficiency and skill sets of safety and LOB personnel in managing and conducting SIF investigations/cause evaluations                             <ul style="list-style-type: none"> <li>• Work with eCAP and Academy to enhance CE training, development of workshops</li> <li>• Revise standard and procedures documents, one procedure across enterprise</li> <li>• CSI team oversight/mentoring process</li> </ul> </li> </ul>

Key Metrics / Shared Success Measures	Description / Calculation	2017 Target	2018 Target	2019 Target
SIF: Quality of Corrective Actions	Quality is determined by assessing whether or not the corrective actions address all incident causes identified, extent of condition, hierarchy of controls, if the corrective action's effectiveness is measurable, and if the corrective actions have appropriate timelines for completion.	8.0	12.0	12.5
SIF: Timely Corrective Actions Completed %	The total number of SIF corrective actions completed on time (as measured by the due date accepted by Line of Business Corrective Action Review Boards (CARB)) divided by the total number of SIF corrective actions past due or completed.	85%	90%	95%
Investigation duration	Measured in days for length of time	-	45 days	30 days
Observation Quality Metric	Safety observations documented in Predictive Solution's SafetyNet tool will be scored using proprietary algorithm that includes observation quantity and safe vs. at risk findings.	N/A	Track Only	TBD

### 2017 – 2019 Plan

Tactic	Description	LOBs Impacted	Job Classification /	Estimated Start	Estimated Implementation	LOB Owner(s)

		Work Group			Date	Complete
Investigations	Implement an effective and consistent process for performing SIF potential causal evaluations	All LOBs	Identified population	2017	Mar 2018	Corporate Safety
	Work with eCAP and Academy to enhance CE training, development of workshops	All LOBs	Identified population	August 2017	Apr 2018	Corporate Safety
	Revise standard and procedures documents, Safety/eCAP one procedure across enterprise	All LOBs	Identified population	August 2017	Mar 2018	Corporate Safety
	Identify and train supervisor/manager level employees to be trained and conduct Apparent Cause - Potential / Apparent Cause / Work Group Evaluations. Electric & Gas: 10 individuals All other LOBs: 5 individuals	Electric, Gas, Generation, Customer Care, IT/SC	Supervisors/Managers	October 2017	Q1 2018	Corporate Safety
Observations	LOB to schedule HFACS, eCAP-001, -002, -003 training	All LOBs	Identified population	October 2017	Feb 2018	Corporate Safety
	Enhance observation tool; transition to SafetyNet Observation tool	EO, GO, PG, CC, IT, S&H	LOB safety managers/leads, Contractor Safety, Veg Mgmt, SLD Participants	Aug 2017	Jun 2018	Corporate Safety
	Establish and communicate goals and expectations associated with the enhanced reporting functionality associated with SafetyNet	EO, GO, PG, CC, IT, S&H	LOB safety managers/leads, Contractor Safety, Veg Mgmt, SLD Participants	Q3 2017	Mar 2018	Corporate Safety
	Expand initial target population observers for new SafetyNet Observation tool	EO, GO, PG, CC, IT, S&H	TBD	Jan 2018	Jun 2018	Corporate Safety

2017 – 2019 Plan Continued						
Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)
Observations	Develop and implement Observations skills training	EO, GO, PG, CC, IT, S&H	TBD	Jan 2018	Dec 2018	Corporate Safety

## Injury Management

Focus Area Description	Tactic	Tactic Description
<p>One of the most important leader roles is to ensure the safety of our employees and injury management is essential to providing employee safety.</p> <p>Injury management is important because it shows employees that we care about them; promotes healing and early return to work; ensures quality and appropriate medical care for the employee.</p> <p>Early injury reporting and early return to work is key to Injury Management.</p> <p>Corporate Safety Program Managers: Heather Hornbrook, Todd Torres, Ingrid Blackwell</p>	<p>Nurse Report Line (NRL)</p>	<ul style="list-style-type: none"> <li>• Nurse Report Line timely reporting improvement strategies</li> <li>• Targeted Leader conversations with lower performing organizations (Heat Map)</li> <li>• Provide NRL and Injury Management training to new supervisors</li> <li>• Provide weekly NRL LOB updates and updated communications</li> <li>• Meet with focus groups and leverage Grass Roots level involvement</li> <li>• Injury Management Leader Packets scheduled for LOB distribution in September</li> </ul>
	<p>Physician Outreach Program</p>	<ul style="list-style-type: none"> <li>• Outreach to physicians within PG&amp;E's Medical Provider Network.</li> <li>• Kaiser on the Job is at the Core of the Network.</li> <li>• Ensure appropriate care</li> </ul>
	<p>Transitional RTW Task Program</p>	<ul style="list-style-type: none"> <li>• Transitional Return-to-Work (RTW) Task Program for injured employees whose temporary work restrictions cannot be accommodated in their base classification.</li> <li>• The RTW Task Bank program will provide a temporary, transitional task assignment for injured employees for up to 6 months.</li> </ul>
	<p>Return to Work (RTW)</p>	<ul style="list-style-type: none"> <li>• To ensure PG&amp;E's employees can safely stay at work and return to work to perform their essential job functions.</li> <li>• If unable to return to full duty, IDM will work with the employee to find suitable modified duty in their base department or in temporary transitional assignment.</li> <li>• RTW Escalation Process for employees released to modified duty but not accommodated within their base classification. The goal is to confirm if modified duty is available within the department. If not, will refer employee to RTW Task Program for transitional RTW.</li> <li>• Nurse Case Management – Involves assigning nurses on all surgery and lost time cases to assist with employee recovery and return to work</li> </ul>

Key Metrics / Shared Success Measures	Description / Calculation	2017 Target	2018 Target	2019 Target
Timely Reporting of Injuries	Total number of work-related injury calls to the 24/7 Nurse Report Line within one day of incident divided by total number of calls.	71.3%	71.3%	73.5%
Number of Lost Work Day (LWD) cases	This measures the number of Lost Workday (LWD) cases incurred for employees and staff augmentation (excluding contractors) per 200,000 hours worked, or for approximately every 100 employees.	105	98	85
Number of Lost Time Cases Where an Accommodation was not made	Number of cases where the department was not able to accommodate the temporary work restrictions for industrial and non-industrial cases. Currently 15 (8 industrial, 7 non-industrial) cases companywide where the department was not able to accommodate the temporary work restrictions for industrial and non-industrial cases. – Impacts Workforce Unavailable	YTD: 15	TBD	TBD
Total # of Work Days Lost	Total Lost Work Days Enterprise wide in addition to current LWD Case metric. Includes tracking LWD claims for current and prior years. This data may also be available for non- industrial cases, we need to confirm.	5,648	5,579	5,300



2017 – 2019 Plan

Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)
Timely Reporting	<ul style="list-style-type: none"> <li>• Nurse Report Line Improvement project including benchmarking::                             <ul style="list-style-type: none"> <li>○ Improve employee experience</li> <li>○ Improve communication on the benefits of early reporting</li> <li>○ Insight into areas of opportunity</li> </ul> </li> <li>• Leader conversations – Continued targeted Leader conversations across the Enterprise based on NRL Heat Map</li> <li>• Injury Management training and Leader Packet</li> <li>• Updated communications including weekly NRL dashboard to LOBs, Daily Digest, 5MM and success stories</li> <li>• Focus groups and Grass Roots level involvement</li> </ul>	Enterprise	All	January 2017	Dec 2017 (complete)	Corporate Safety
Physician Outreach Program	<ul style="list-style-type: none"> <li>• Conduct Physician Outreach meetings with MPN (KOJ) clinics with a focus on improved knowledge of KOJ and PG&amp;E Return to Work philosophy</li> <li>• Focus for future clinic visits will focus on engagement of Leaders in high frequency areas.</li> <li>• Goal is to increase LOB attendance at regular physician outreach visits</li> <li>• KOJ to provide Quarterly ongoing training to LOB and IDM</li> </ul>	Enterprise	All	January 2017	Dec 2017 (complete)	Corporate Safety
RTW Task Program	<ul style="list-style-type: none"> <li>• Conduct meetings with LOB stakeholders to review Transitional Return to Work Task Program opportunities</li> <li>• Assess priorities for task work</li> <li>• Schedule and conduct on-site visits to define and document task work assignments.</li> <li>• Improve RTW opportunities by placement of employees into RTW Task Program.</li> </ul>	Enterprise	All	August 2017	Dec 2018	Corporate Safety

## Health and Wellness

Focus Area Description	Tactic	Tactic Description
<p>Programs and resources to support and improve our workforce's health by focusing on prevention and condition management through education and engagement.</p> <p>Corporate Safety Program Managers: Jeremy Martins, Tammy Watts</p>	<p>Health Screenings</p> <p>Health Promotion</p> <p>Health Coaching</p> <p>Mental Health Support</p> <p>On-site Care/Telemedicine</p> <p>Condition Management</p>	<p>Free annual health screenings to employees to help employees determine if they are at risk for developing serious conditions like heart disease or diabetes with linkage to appropriate resources for those at high risk</p> <p>Employee health tools , support and resources including PG&amp;E Health &amp; Wellness portal, Fitness Discount Program, Team Competitions, Wellness Ambassador Network, trainings and seminars for employees.</p> <p>Lifestyle management support provided over the phone or on-site at select locations by a certified Health Coach. Employees received personalized support covering topics such as stress management, weight management, nutrition counseling, physical activity, tobacco cessation and health maintenance.</p> <p>Mental and emotional health support and resources including Employee Assistance Program (EAP), Peer Volunteer Program (PVP), and MyBrainSolutions.</p> <p>Accessible, convenient health care for employees and their family members provided by the PG&amp;E Health Center at GO, telemedicine kiosks available at select locations throughout PG&amp;E's service territory, and applications that enable live visits with a doctor from one's computer, mobile device or tablet.</p> <p>A personal health service offered by PG&amp;E for all active employees with Anthem or Kaiser HAP plans. Comprised of a team of highly experienced nurses, pharmacists, research librarians and certified diabetes experts work with employees to provide access to health information and support them in making the best health decisions possible.</p>

Key Metrics / Shared Success Measures	Description / Calculation	2017 Target	2018 Target	2019 Target
Health Screening Participation	Percentage of HAP Enrolled employees completing the annual health screening.	88%	88%	88%
Health & Wellness Program Participation	Percentage of employees participating in one or more Health & Wellness programs	30%	30%	30%
Health Coaching Utilization	Percentage of employees utilizing Provant's Health Coaching program	4.7%	5.5%	6.0%
Clinic Utilization	Successfully meet a penetration rate (number of unique eligible patients who utilize the health center at least once – flu shots excluded)	30%	TBD	TBD
Human Capital Risk Index (HUI) Score	Calculated by HCMS; takes into account more than 300 medical diagnoses	1.3	Track Only	Track Only

**2017 – 2019 Plan**

Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)
Health Screenings	Maintain > 80% Health Screening participation by: <ul style="list-style-type: none"> <li>• Providing 350+ on-site screening events annually</li> <li>• Expand awareness of LabCorp and physician form screening alternatives</li> <li>• Launch Health Screenings option at GO Health Center</li> </ul>	All LOBs	All employees	Oct 2017	Sep 2018	Corporate Safety
Health Coaching	Expand On-Site Health Coaching program in Fresno area	Customer Care / Gas / Electric	Employees in Fresno area	Dec 2017	Jun 2018	Corporate Safety
Health Promotion	Develop and launch quarterly Team Competitions	All LOBs	All employees	Jul 2017	Dec 2018	Corporate Safety
	Expand and enhance platform with new user interface, tools and support	All LOBs	All employees	Aug 2017	Mar 2018	Corporate Safety / IT

**2017 – 2019 Plan Continued**

Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)
Health Promotion	Migrate Team Competitions to Health & Wellness platform for integrated tools, trackers and user experience	All LOBs	All employees	Aug 2017	Mar 2018	Corporate Safety / IT
	Enable single-sign on to Health & Wellness Portal	All LOBs	All employees	Oct 2017	Mar 2018	Corporate Safety / IT
	Launch new Health & Wellness platform communication and engagement strategy by LOB and enterprise-wide	All LOBs	All employees	Jan 2018	Dec 2018	Corporate Safety
	Grow number of Wellness Ambassadors within LOBs with lower wellness program participation rates.	Power Generation / Electric / Gas	All employees	Jan 2018	Dec 2018	Corporate Safety
Mental Health Support	Integrate mental health screenings as part of existing employee health risk assessments (e.g., Annual Health Screening, Ergonomic evaluations, Health Risk Assessments etc.) and ensure referrals to appropriate care resources (EAP, Health Coaching, PVP, etc.)	All LOBs	All employees	Jan 2018	Sep 2018	Corporate Safety
	Deploy new mindfulness/mental resilience tools and resources	All LOBs	All employees	Jan 2018	Dec 2018	Corporate Safety
	Maintain/grow Peer Volunteer Program support to cover all Divisions/LOBs	All LOBs	All employees	Jul 2017	Dec 2018	Corporate Safety

**2017 – 2019 Plan Continued**

Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)
	Launch engagement/communications plan for GO onsite primary care clinic	LOBs at GO	All	Jan 2017	Dec 2018	Corporate Safety and Health / Corp Comms
On-site Care/Telemedicine	Continue rollout of onsite telemedicine kiosks (Winters/Stockton CCO move)	CRESS, Academy, Corp IT, CCO	All	Q3 2017	Sep 2017 (complete)	Corporate Safety and Health/ CRESS
	Launch engagement/communications plan for comprehensive telemedicine program	All LOBs, and dependents	All	June 2017	Jul 2017 (complete)	Corporate Safety & Health
Condition Management	Expand KnowaSolutions program for high iHUI risk scores from top 5% to top 20% (any medical condition) to include spouses/domestic partners and dependents	All LOBs + employee families	All	Aug 2017	Feb 2018	Corporate Safety and Health

## Contractor Safety

Focus Area Description	Tactic	Tactic Description
<p>The Corporate Contractor Safety Program was fully implemented as of 12/31/2016 to meet California Public Utilities Commission (CPUC) deliverables related to the Kern Settlement Agreement (Kern OII). PG&amp;E needs to implement additional program initiatives to improve contractor safety performance and to ensure compliance are maintained with the program requirements throughout the enterprise.</p> <p>Corporate Safety Program Contact: Collette Nida-Brown, Manager</p>	Training and Qualifications	Develop and implement Contractor Safety Program onboarding training for employees/contractors, establish minimum qualifications for observing work, manage contractor training/qualifications through ISN's badging system.
	Field Observations and Performance Review	Increase field observations/contractor oversight, implement Predictive Solutions as the observation platform for both employees/contractors.
	Enhance Program Scope/Contractor Management	Expand Contractor Safety Program scope, expanding contractor pre-qualification population and pre-qualification requirements.
	Standardize Safety Plans/Templates	Standardize Safety Plans, JSA/JHA, etc. template across the LOBs, incorporate minimum requirements into all templates for JSA/JHA, etc.

Key Metrics / Shared Success Measures	Description / Calculation	2017 Target	2018 Target	2019 Target
Number of Conformance Assessments	Overall number of assessments performed on the LOB to evaluate adherence to the Contractor Safety Standard SAFE-3001S and their contractor oversight procedures.	160	180	180
% of Assessments that Include Non-Conformance Findings	Overall percentage of assessments with a non-conformance identified on a quarterly basis, that requires the LOB to review and rectify to be in compliance with their LOB Contractor Oversight Procedures.	Track Only	Track Only	Track Only
Percent of "A" grade contractors	Percent of "A" grade prime contractors in ISNnetwork (ISN)	68%	69%	71%

2017 – 2019 Plan

Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)
Training and Qualifications	Develop Contractor On-boarding WBT	All LOBs	LOB safety managers/leads, Contractor Safety	2017	Q1 2018	Corporate Safety
	Develop PG&E Employee WBT Training	All LOBs	LOB safety managers/leads, Contractor Safety	2017	Q1 2018	Corporate Safety
	Develop additional training criteria for PG&E employees and contractors	All LOBs	LOB safety managers/leads, Contractor Safety	2017	Dec 2017 (complete)	Corporate Safety
Field Observations and Performance Review	ISN Badging-Track Training	All LOBs	LOB safety managers/leads, Contractor Safety	2017	Dec 2018	Corporate Safety
	Implement new training requirements for PG&E employees and contractors	All LOBs	LOB safety managers/leads, Contractor Safety	2018	Dec 2018	Corporate Safety
	Utilize Predictive Solutions Tool (Phase 1)	Corporate Safety/Veg Mgt.	LOB safety managers/leads, Contractor Safety	2017	Dec 2017 (complete)	Corporate Safety
Field Observations and Performance Review	Enhance Post-Job Evaluation criteria	All LOBs	LOB safety managers/leads, Contractor Safety	2017	July 2018	Corporate Safety
	Implement Predictive Solutions enterprise-wide for LOB contractor observations by PG&E employees	All LOBs	Contractor Safety/Supply Chain	2018	Dec 2018	Corporate Safety
	Require Contractors to Have Safety Officers on projects per an established criteria	All LOBs	LOB safety managers/leads, Contractor Safety	2018	Dec 2018	Corporate Safety
	LOBs conduct periodic safety performances reviews with Contractor (Alliance Model)	All LOBs	LOB safety managers/leads, Contractor Safety	2018	Dec 2018	Corporate Safety
Field Observations and Performance Review	Development model for reporting contractor Near-hits/Good Catches	All LOBs	LOB safety managers/leads, Contractor Safety	2018	Dec 2018	Corporate Safety

**2017 – 2019 Plan**

Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)
	Increase Safety oversight in the field (LOB, Corp. Safety, contractors)	Corporate Safety	LOB safety managers/leads, Contractor Safety	2018	Dec 2018	Corporate Safety
	CAP requirements for contractor findings & causal evaluations	All LOBs	LOB safety managers/leads, Contractor Safety	2019	Dec 2019	Corporate Safety
	Implement predictive solutions enterprise-wide for contractors	All LOBs	LOB safety managers/leads, Contractor Safety	2019	Dec 2019	Corporate Safety
Enhance Program Scope/Contractor Management	Utilize ISN to track rapid company growth	Corporate Safety	LOB safety managers/leads, Contractor Safety	2017	Dec 2017 (complete)	Corporate Safety
	Include low risk contractors that perform field work in scope of program	All LOBs	Contractor Safety/Supply Chain	2018	Dec 2018	Supply Chain
	Evaluate MVI Records / Fleet requirements	Corporate Safety/DOT Compliance	Contractor Safety/DOT Compliance	2019	Dec 31, 2018	Corporate Safety
Standardize Safety Plans/Templates	Increase supplier pool of eligible suppliers	Supply Chain	Contractor Safety/Supply Chain	2019	Dec 31, 2019	Supply Chain
	Standardize Safety Plan and JSA Templates	All LOBs	LOB safety managers/leads, Contractor Safety	2017	July 31, 2018	Corporate Safety
	Develop Systematic approach for communicating PG&E hazards			2019	Dec 31, 2019	Corporate Safety



## Motor Vehicle Safety

Focus Area Description	Tactic	Tactic Description
Identify and mitigate motor vehicle incident exposures that may result in injuries or fatalities for employees or the public, property damage, and regulatory fines and citations. Corporate Safety Program Manager: Steve Dumont	1800 - How's My Driving	1800 - How's My Driving Safe Driver Coaching Program allows PG&E to obtain and analyze insights into the driving behaviors of our employees while on the road, address any patterns of unsafe trends, or risk behaviors as well as recognizing employees that have demonstrated positive driving behaviors
	Driver Training	Timely completion of mandatory driver training requirements
	Motor Vehicle Reports	Enrollment of non-mandated drivers into the Employer Pull Notice Program to allow the ongoing review of Department of Motor Vehicle reports and records for all drivers. Based on California privacy laws this may require labor bargaining.
	Vehicle Safety Technology	In-cab coaching technology, GPS based and provides real-time, audible feedback to driver when risk behaviors occur (e.g. speeding, hard acceleration, hard braking)
	Driver Selection	Using all available driver information including personal and company motor vehicle records, training records, telematics records, and 1-800 – How's My Driving records to determine qualified and valid drivers

Key Metrics / Shared Success Measures	Description / Calculation	2017 Target	2018 Target	2019 Target
PMVI Rate / Count	Total number of preventable motor vehicle incidents (PMVIs) for which the driver could have reasonably avoided, per 1 million miles driven.	Track Only	2,432 / 365	2,185 / 328
SPMVI Rate / Count	Total number of serious preventable motor vehicle incidents (SPMVI) for which the driver could have reasonably avoided, per 1 million miles driven.	0.239 / 35	0.180 / 27	0.173 / 26
1800 – How's My Driving Complaint Rate	Total number of 1800 – How's My Driving complaint calls received per 1 million miles driven by vehicles included in the Driver Check program.	9.5	8.0	7.6
Hard Brake Rate	Total number of hard braking events per thousand miles driven in a given period.	3.8	3.5	3.3

Key Metrics / Shared Success Measures	Description / Calculation	2017 Target	2018 Target	2019 Target
Hard Acceleration Rate	Total number of hard acceleration events per thousand miles driven in a given period.	Track Only	3.86	3.66
Over 80 MPH Rate	Total number of over 80 MPH events per thousand miles driven in a given period.	Track Only	0.50	0.48
% Driver Training Completed (Tech-0081WBT)	Percentage of mandatory driver training that has been completed	100%	100%	100%

**2017 – 2019 Plan**

Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)
Driver Training / Driver Selection	Revise all employee web based training to include an acknowledgement statement for positive confirmation that the employee must have a valid license for the class of vehicle they drive on company business and are aware that they must notify their supervisor if their license status changes for any reason.	All LOBs	All employees	Nov 2016	Feb 2017 (complete)	Corporate Safety
1800 – How's My Driving / Vehicle Safety Technology	Use motor vehicle safety technology (VST) data and 1-800 How's My Driving to identify risky drivers and build an automated accountability structure.	All LOBs	Employees who drive company vehicles	Nov 2016	June 2017 (complete)	Corporate Safety
Vehicle Safety Technology	Install and activate VST technology in 2000 vehicles in 2017 and an additional 2000 in 2018. <ul style="list-style-type: none"> <li>Gas T&amp;D Const: 638 vehicles (01/2017 – 06/2017)</li> <li>Medium Duty: 136 vehicles (01/2017 – 06/2017)</li> <li>Electric Distribution: 1160 vehicles (06/2017 – 09/2017)</li> <li>Capital Replacement: 66 vehicles (throughout 2017)</li> <li>2018: TBD</li> </ul>	All LOBs	Employees who drive company vehicles	Jan 2017	Dec 2018	Corporate Safety / Transportation Services (TS)
	Deploy Vehicle Safety Technology in personal vehicles	All LOBs	TBD	TBD	Dec 2020	Corporate Safety / TS

2017 – 2019 Plan							
Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)	
Driver Selection	Integrate all sources of information to create a holistic assessment of individual driver risk, including but not be limited to motor vehicle records, PG&E motor vehicle incident records, vehicle safety technology records, training records, and DriverCheck records.	All LOBs	All employees	2017	Dec 2020	Corporate Safety	
	Implement license and insurance verification plan for employees who are not a part of the commercial driver pool. Based on California privacy laws this may require labor bargaining. <ul style="list-style-type: none"> <li>Management Employees (completion: 12/31/18)</li> <li>Bargaining Unit Employees (completion: 12/31/19)</li> </ul>	All LOBs	All employees	2018	Dec 2019	Corporate Safety / Labor	
	Implement comprehensive Motor Vehicle Safety programmatic management system modeled after PDCA management methodology.	All LOBs	All employees	TBD	Dec 2021	Corporate Safety	

## Safety Management System

### Focus Area Description

The Enterprise Safety Management System will provide an approach to safety that is both uniform and rigorous. The ESMS will include controls and governance for a comprehensive set of safety and health-related processes and will focus on public, employee and contractor safety.

Corporate Safety Program Manager:  
James Merriman

Key Metrics / Shared Success Measures	Description / Calculation	2017 Target	2018 Target	2019 Target
3 <sup>rd</sup> Party Certification	Able to be certified by 3 <sup>rd</sup> parties by 2021	On Track	On Track	On Track

### 2017 – 2019 Plan

Tactic	Description	LOBs Impacted	Job Classification / Work Group	Estimated Start Date	Estimated Implementation Complete	LOB Owner(s)
Safety Management System	Publish an Enterprise Safety Management System (ESMS)	All LOBs	All employees	2017	Jan 2018	Corporate Safety
	Commence Safety Compliance Audits program to perform gap analysis and begin closing gaps.	All LOBs	All employees	2018	Mar 2018	Corporate Safety
	Job Hazard Analysis: Develop a system for managing job hazards analysis data which is an integral part of the ESMS foundation and integrate a communication and education plan for hazard awareness and avoidance.	All LOBs	All employees	TBD	Dec 2019	Corporate Safety
	Enhance the safety and health communication strategy to support the ESMS.	All LOBs	All employees	TBD	Dec 2019	Corporate Safety

**PACIFIC GAS AND ELECTRIC COMPANY**

**CHAPTER 3**

**APPENDIX 3-B**

**THE ONE PG&E OCCUPATIONAL HEALTH AND SAFETY PLAN  
AND NORTHSTAR DATA REQUEST 144**

**Appendix 3-B  
NorthStar Recommendations Directed at PG&E and Relationship to the One PG&E Occupational Health and Safety Plan**

Master Implementation Plan Reference ID	Recommendation(s)	Alignment with One PG&E Occupational Health and Safety Plan
F-1	<p><b>F-1:</b> Development of an implementation plan for NorthStar's recommendations, to be submitted to the CPUC. PG&amp;E should also provide periodic updates on its implementation status. This information shall be used by SED to ensure timely and effective implementation of NorthStar's recommendations.</p>	Complements the plan
F-2	<p><b>F-2:</b> The need for clear definition of supervisory requirements, including an assessment of workload requirements, ongoing field monitoring efforts and time requirements, and associated staffing levels.</p> <p><b>V-4:</b> Reevaluate staffing, roles, responsibilities and work requirements to increase Supervisor's time in the field supervising crews.</p> <p><b>V-6:</b> Reevaluate the travel requirements placed on employees to reduce the overall mileage driven.</p> <p><b>F-3:</b> Accelerate the use of mobile technology and electronic information exchange. PG&amp;E employees drive a significant number of miles per year and are frequently called upon to support workload at great distances from their normal assigned locations.</p>	In plan
F-3	<p><b>F-3:</b> Expedited completion of the safety leadership training for crew leads and foremen.</p> <p><b>VIII-1:</b> Accelerate crew foremen safety leadership training.</p>	In plan

**Appendix 3-B  
NorthStar Recommendations Directed at PG&E and Relationship to the One PG&E Occupational Health and Safety Plan  
(Continued)**

Master Implementation Plan Reference ID	Recommendation(s)	Alignment with One PG&E Occupational Health and Safety Plan
F-4	<p><b>F-4:</b> Development of a comprehensive safety strategy, with associated timelines/ deliverables, resource requirements and budgets, personnel qualifications, clear delineation of roles and responsibilities; action plans, assignment of responsibility for initiatives, and associated metrics to assess effectiveness. This should be followed with the identification of necessary corporate and LOB safety resource requirements and development of an appropriate organization structure. Also shared with SED.</p> <p><b>III-2:</b> Reassess and stabilize the safety culture change initiatives. The rigor applied to the integrated planning process (discussed in Chapter VI: Budgeting and Spending) should be applied to safety culture. The overwhelming number of initiatives and constant shifting of priorities is detrimental to a stable, consistent safety culture.</p> <p><b>III-3:</b> Develop a comprehensive safety plan (by the end of 2017) that incorporates LOB and Corporate Safety activities to eliminate duplication, prevent gaps and appropriately prioritize expenditures. The plan should address culture, employee health and wellness, contractor safety, employee safety and public safety. Solicit input from throughout the organization, particularly the field, in the development of the plan. The environmental function was removed for the Safety, Health &amp; Environment organization. It should have its own plan The plan should be updated annually for at least two years and then at least every three years thereafter, with quarterly/annual monitoring of progress relative to the plan. The comprehensive plan should include all safety plans and programs of the Company, except for specific asset-related safety plans (such as asset management plans, leak survey programs or vegetation management) that should continue to be the responsibility of the various LOBs. The plan should be approved by the NOS Committee and the Boards, and endorsed and supported by executive management and the CPUC. The plan must be clearly communicated throughout the organization.</p> <p><b>V-3:</b> Perform a broad reassessment of all safety programs and initiatives to: evaluate overall effectiveness and make improvements, and eliminate scope overlap (e.g., the Corrective Action Program (CAP) vs. the Safety and Environmental Management System (SEMS) follow-up responsibility).</p>	In plan

**Appendix 3-B  
NorthStar Recommendations Directed at PG&E and Relationship to the One PG&E Occupational Health and Safety Plan  
(Continued)**

Master Implementation Plan Reference ID	Recommendation(s)	Alignment with One PG&E Occupational Health and Safety Plan
F-5	<p><b>F-5:</b> Greater coordination among the LOBs and with Corporate Safety to increase consistency, improve efficiencies, minimize operational gaps, and facilitate sharing of best practices.</p> <p><b>IV-5:</b> Improve the safety credentials of personnel in PG&amp;E’s safety functions and organizations.</p> <p><b>IV-6:</b> Simplify and clarify the roles and responsibilities of the Corporate Field Safety Specialists (FSS) vis-à-vis the LOB FSS to eliminate duplication, and align activities with the respective skill sets. Work with the LOBs to determine service levels and staffing requirements.</p> <p><b>IV-7:</b> Establish, and adhere to, minimum qualifications for Corporate and LOB FSS. Establish training requirements for LOB FSS to ensure they are up to date on current methods and procedures and have a working knowledge of key regulatory requirements.</p> <p><b>V-1:</b> Improve processes used to evaluate and translate best practices and techniques from one LOB organizational unit to others. Focus LOB FSS roles and responsibilities on integrating best practices among all LOBs, facilitating the implementation of corporate safety initiatives, and improving safety practices and awareness across all organizational units.</p> <p><b>V-2:</b> NorthStar does not believe the FSS can be effective even in significantly great numbers given the geographic challenges associated with PG&amp;E’s service territory and the diverse job requirements. A more effective use of the FSS would be to have them focus on and support the first-line supervisors – foremen and crew leads.</p> <p><b>V-5:</b> Increase the training requirements for LOB FSS. Existing OSHA training is somewhat generic and not sufficiently related to PG&amp;E’s public and occupational hazards.</p>	In plan
III-1	<p><b>III-1:</b> Add safety to the list of qualifications used in selecting Independent Directors to the Board(s) of PG&amp;E Corp. and PG&amp;E. Periodically revisit the qualifications matrix and requirements for Independent Director as the industry and requirements change. Add Independent Directors to the Board who have experience with safety, perhaps in another industry such as aviation.</p>	Outside plan
III-5	<p><b>III-5:</b> Internal Audit should play a more active role in auditing safety controls, programs and processes.</p>	Complements the plan



**Appendix 3-B  
NorthStar Recommendations Directed at PG&E and Relationship to the One PG&E Occupational Health and Safety Plan  
(Continued)**

Master Implementation Plan Reference ID	Recommendation(s)	Alignment with One PG&E Occupational Health and Safety Plan
IV-1	<p><u>IV-1:</u> Appoint a Corporate Safety Officer who has both operations and professional safety experience. NorthStar is aware that Mr. Higgins replaced Mr. Bell as Corporate Safety Officer on March 1, 2017. While Mr. Higgins has operating experience with National Grid, PG&amp;E and other utilities, he does not have professional safety training or experience. Mr. Higgins should undertake a professional training program that will provide him with the necessary skills as soon as possible.</p>	Complements the plan
IV-2	<p><u>IV-2:</u> The Corporate Safety Officer should report to the COO of the Utility and to the NOS Committee of the Board in the same manner that the head of Internal Audit reports to the Audit Committee of the</p>	Complements the plan
IV-3	<p><u>IV-3:</u> Examine workload levels, potential morale issues and other demands to understand and mitigate the reasons for the high turn-over at the Sr. Director, Safety and Health position and throughout the Corporate Safety organization. <u>IV-4:</u> Following the development of the safety strategy, review the structure, reporting relationships and staffing levels of the Corporate Safety organization to ensure PG&amp;E has the resources necessary for strategy execution and proper coordination with/support for the LOBs.</p>	In plan
IX-1	<p><u>IX-1:</u> Develop and implement a strategic communications plan that does not overwhelm employees with too much information, but effectively addresses the issues identified in the January 2015 Monitor 360 Study, the 2016 Premier Survey (and PG&amp;E's narrative analysis.)</p>	In plan
IX-2	<p><u>IX-2:</u> Develop a consistent basis for measuring, tracking and trending employee attitudes regarding safety culture.</p>	Complements the plan
IX-3	<p><u>IX-3:</u> Develop and implement programs similar to Electric T&amp;D's Reach Every Employee program in Power Generation and Gas Operations. Reach every employee is an annual documented safety discussion with each employee.</p>	In plan
IX-4	<p><u>IX-4:</u> Assess the effectiveness of the 2016 Speak Up Culture campaign, particularly among field resources.</p>	In plan
VI-1	<p><u>VI-1:</u> Develop a method of separating "safety" expenditures from routine reliability and integrity expenditures. This may occur as part of the CPU's Risk Assessment Mitigation Phase (RAMP) process.</p>	Complements the plan

**Appendix 3-B  
NorthStar Recommendations Directed at PG&E and Relationship to the One PG&E Occupational Health and Safety Plan  
(Continued)**

Master Implementation Plan Reference ID	Recommendation(s)	Alignment with One PG&E Occupational Health and Safety Plan
VI-2	<p><u>VI-2:</u> Develop business case support and a record of management approval for safety initiatives in accordance with PG&amp;E's Project Approval Procedure.</p> <p><u>III-4:</u> Clearly define and articulate any new initiatives to improve safety culture. Perform cost-benefit analyses of these initiatives and identify performance measures. Corporate Safety recently produced an analysis of lost work days that might serve as a starting point for the thought process and analytics involved.</p>	Complements the plan
VI-3	<p><u>VI-3:</u> Develop a method for weighting the value of management initiated safety programs comparable to the Risk Informed Budget Allocation (RIBA) but focused on management and training.</p>	Complements the plan
VI-4	<p><u>VI-4:</u> Move forward with planned implementation of the Power Generation IPP Portfolio Planning and Management (PPM) system for all operational LOBs.</p>	Outside plan
VI-5	<p><u>VI-5:</u> Continue efforts to better link IPP Session D to the Session 1 and 2 processes.</p>	Complements the plan
VII-1	<p><u>VII-1:</u> None of the KPIs currently considered for use in measuring safety culture should be included as an incentive measure (i.e., included as part of the Short-Term Incentive Program (STIP) or the Long-Term Incentive Program (LTIP)). This will only serve to provide artificially inflated results or drive unintended consequences. Most of the proposed metrics are based on either employee surveys or near hit/CAP reporting. Incentives tied to employee submittals will ensure targets are met and may minimize the value of the submittals (for example, a sudden influx of not particularly meaningful submittals prior to the end of a reporting period). Similarly, an incentive tied to survey results will drive positive reporting rather than true results,</p> <p><u>VII-4:</u> Reevaluate the appropriateness of the Earning from Operations component of the STIP due to its lack of transparency and the ongoing adjustments for Items Impacting Comparability.</p> <p><u>VII-5:</u> Revisit all STIP metrics and targets in light of the enterprise-wide safety plan recommended by NorthStar. Set multi-year targets to drive performance. Include a contractor safety metric in the STIP. Following the development of the enterprise safety plan, PG&amp;E should develop STIP and BPR metrics that measure plan implementation/ adoption and the effectiveness of the various initiatives identified in the plan. PG&amp;E should continue monitor and report lagging OSHA metrics (i.e., DART, LWD, MVIs, fatalities) as part of the BPR process.</p>	Complements the plan

**Appendix 3-B  
NorthStar Recommendations Directed at PG&E and Relationship to the One PG&E Occupational Health and Safety Plan  
(Continued)**

Master Implementation Plan Reference ID	Recommendation(s)	Alignment with One PG&E Occupational Health and Safety Plan
VII-2	<u>VII-2:</u> Continue to track metrics eliminated from STIP as part of the Business Performance Review (BPR) process to allow trending.	In plan
VII-3	<u>VII-3:</u> Increase the weighting of safety in the LTIP to more closely align safety performance and executive compensation.	Outside plan
VII-6	<u>VII-6:</u> Develop a more robust and comprehensive set of BPR metrics addressing all aspects of safety such as public, employee and contractor safety; facility, infrastructure/asset and cyber security; environmental safety; public awareness; and, safety culture.	Complements the plan
VII-7	<u>VII-7:</u> Improve the internal sharing of best practices. Increase the level of involvement by different groups and employee levels. As an example, NorthStar performed a management audit of National Grid Gas' New York operations a few years ago for the New York Public Service Commission. The utility had a fairly robust process improvement program. NorthStar's report describing the process is available on the New York State Department of Public Service's website.	In plan
VIII-10	<u>VIII-10:</u> Power Generation should work with the Academy to improve the timeliness of training completion.	Complements the plan
VIII-11	<u>VIII-11:</u> Power Generation should develop a refresher training program, similar to that of Electric T&D and Gas Operations.	Complements the plan
VIII-2	<u>VIII-2:</u> Profile training participants so that individuals in office-based organizations generally do not receive field-oriented safety training ahead of field organizations.	Complements the plan
VIII-3	<u>VIII-3:</u> Complete the second 360-Degree Survey assessment for the Safety Leadership Development program participants and compare to the first assessment results to determine the effectiveness of the training and identify any gaps to be addressed	In plan
VIII-4	<u>VIII-4:</u> Conduct mandatory refresher training for Electric T&D, Gas Operations and Power Generation field resources on fundamental safety-related topics such as confined space, safety at heights and personal protective equipment.	Complements the plan
VIII-5	<u>VIII-5:</u> Profile employees to receive Human Performance training.	Complements the plan

**Appendix 3-B  
NorthStar Recommendations Directed at PG&E and Relationship to the One PG&E Occupational Health and Safety Plan  
(Continued)**

Master Implementation Plan Reference ID	Recommendation(s)	Alignment with One PG&E Occupational Health and Safety Plan
VIII-6	<u>VIII-6:</u> Develop a monthly operator qualifications (OQ) status report for the Senior Vice President of Gas Operations and the President of Gas Operations. Include such information as number and type of examinations conducted, pass fail rates, number of qualifications expiring (in 90, 60, 30 and 5 days), the number of OQ scans conducted and the results.	Outside plan
VIII-7	<u>VIII-7:</u> Conduct a review of 2014 OQs to determine if contract employees were working on PG&Es system with other expired OQs. Conduct additional re-inspections as necessary.	Outside plan
VIII-8	<u>VIII-8:</u> Perform a feasibility study of PG&E training and testing of contractor employees for OQs. The study should consider the volume of students, the cost charged per unit, the availability of resources at PG&E and analysis of advantages and disadvantages.	Outside plan
VIII-9	<u>VIII-9:</u> Power Generation should continue to update its apprentice programs.	Complements the plan
X-1	<u>X-1:</u> Evaluate the adequacy of the information captured by various incident tracking systems (SEMS, CAP) to ensure it is sufficient to understand the causes of incidents, perform trending analyses and other analytics, and provide timely information. Improve CAP, near hit and incident tracking and reporting systems to increase the clarity of the information, ensure the appropriate level of causal evaluation has been assigned and that all required actions have been taken before an item is closed.	In plan
X-2	<u>X-2:</u> Track the costs and relative safety benefits of the CAP and Near Hit Programs. Increase efficiencies or modify programs as warranted.	Complements the plan
X-3	<u>X-3:</u> Develop an evaluation program to maximize the benefits from CAP and Near Hit Reporting.	Complements the plan
X-4	<u>X-4:</u> Develop an evaluation program for Serious Incident Investigations to include periodic audits of the processes by Internal Audit.	Complements the plan
X-5	<u>X-5:</u> Improve documentation requirements for corrective actions for incidents and near hits subject to a Work Group Evaluation (WGE), as well as for incidents subject to an Apparent Cause Evaluation (ACE) and Root Cause Evaluation (RCE).	Complements the plan

**Appendix 3-B  
NorthStar Recommendations Directed at PG&E and Relationship to the One PG&E Occupational Health and Safety Plan  
(Continued)**

Master Implementation Plan Reference ID	Recommendation(s)	Alignment with One PG&E Occupational Health and Safety Plan
X-6	<u>X-6:</u> Report and track incidents in a consistent manner such that appropriate information may be shared across the enterprise. Develop a central repository for this information which should include an executive summary, corrective actions taken, any materials developed and the effectiveness evaluations.	Complements the plan
X-7	<u>X-7:</u> Develop a protocol involving concise, targeted, timely communications to notify other crews, work locations and LOBs of incidents or corrective actions that are applicable to that group.	In plan
X-8	<u>X-8:</u> Develop a single, consistent enterprise causal evaluation standard combining Utility Standard: SAFE-1004S (Serious Investigation Standard) and the Enterprise Causal Evaluation Standard (Utility Standard: GOV-6102S). Incorporate the specified improvements. <u>X-9:</u> Compare all LOB Causal Evaluation Standards to ensure the processes are consistent and all required elements are defined. As an example the Power Generation Procedure includes a discussion of the WGE process. Electric T&D and Gas Operations procedures do not. Gas Operations procedures do not include an RCE process timeline and appear to group RCE and ACE. The RCE communications plan for all procedures should include the communications process for follow-up on the Effectiveness Review Plan. Establish guidelines for communication of the corrective actions and the effectiveness reviews, as these are currently tracked separately by LOB.	In plan
XI-1	<u>XI-1:</u> Corporate Contractor Safety should select the projects for review rather than the LOBs, and conduct “surprise” field visits to assess contractor safety practices.	In plan
XI-2	<u>XI-2:</u> Determine whether it is feasible to update the language in contracts to remove all references to the contractor or consultant being “solely responsible” for performing work in a safe manner.	Complements the plan
XI-3	<u>XI-3:</u> Develop formal criteria to close contractor serious safety incident action items in ISN.	In plan

**Appendix 3-B  
NorthStar Recommendations Directed at PG&E and Relationship to the One PG&E Occupational Health and Safety Plan  
(Continued)**

Master Implementation Plan Reference ID	Recommendation(s)	Alignment with One PG&E Occupational Health and Safety Plan
XI-4	<u>XI-4:</u> Facilitate the sharing of best practices and lessons learned regarding the LOBs' implementation of the Contractor Safety Standard, addressing both organizational and procedural issues.	In plan
XI-5	<u>XI-5:</u> Update LOB contractor safety procedures to clarify responsibilities and reflect current organizations and processes. Include guidelines regarding the frequency of field observations.	In plan
XI-6	<u>XI-6:</u> Institute a contractor on-boarding test in Power Generation.	Complements the plan

**PACIFIC GAS AND ELECTRIC COMPANY**

**APPENDIX 3-C**

**CROSS REFERENCE: NORTHSTAR DATA REQUEST 144 AND  
ASSIGNED COMMISSIONER RULING QUESTION 7**

**Appendix 3-C  
Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7**

NorthStar Data Response 144		ACR Question 7 Responses	
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation
1	Safety Culture Assessment	<p>These assessments provide a baseline by which to measure progress toward improved safety and safety culture, identify opportunities for improvement, and implement corrective actions based on findings.</p>	<p>Finding: 3.7, 3.8, 5.4, 6.11, 8.7, 9.3</p> <p>Recommendations: VIII-3, III-2</p> <p>NorthStar supports implementation of a specific safety culture assessment methodology, the 360-degree feedback assessment for participants in Supervisor Leadership Development training.</p>
			<p>Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion</p> <p>While assessment of PG&amp;E's safety culture continues, the use of DEKRA's Organizational Culture Diagnostic Instrument (OCDI) as the assessment tool has been discontinued. Safety culture assessment is currently based on an observation checklist used to assess the behaviors of leaders who have taken the SLD/leading Forward: Leading Safety workshops to determine if employees are utilizing the skills they learned.</p> <p>Concerns regarding affordability, accuracy, and sustainability led to replacement of the OCDI with current safety culture assessment methodology.</p>
2	Developed Safety Principles, Commitments and Keys to Life	<p>In 2011, PG&amp;E redeveloped its set of safety principles and further defined its commitment to safety. PG&amp;E replaced its "Rules to Live By" with a more comprehensive and affirmative "Keys to Life".</p>	<p>Findings: 5.9, 9.1</p> <p>Recommendations: V-5</p> <p>NorthStar recommends increasing training requirements for LOB Field Safety Specialists related to the Keys to Life</p>
			<p>The Keys to Life have replaced the Rules to Live by as a centerpiece of training and guidance document development. Standards were established for activities related to each of the Keys to Life. Field Safety Specialist training includes OSHA 30-hour construction safety training, field assessments and evaluations which are also focused on the Keys to Life. Keys to Life are also integrated in the Serious Injury and Fatality (SIF) Checklists that form the core of the observation program, the SIF Field Guide and the SIF Program.</p>



# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
3	Change in Discipline Policy	PG&E previously relied on incident-based disciplinary actions to deter unsafe behaviors and reconfigured its discipline practices to a behavior-based discipline.	Findings: 5.4 Recommendations: None NorthStar acknowledges PG&E's change in discipline policy as supportive of the desired safety culture, specifically one where employees are encouraged to speak up about safety incidents.	Changes made to PG&E's discipline policy relative to safety in 2012 remain in place.
4	Increased Short-Term Incentive Plan (STIP) Percentage of Pay at Risk Tied to Safety Performance	The Executive Safety Panel identified PG&E's use of safety metrics as an important component of a successful overall safety culture and encouraged consideration of metrics that would not adversely impact incident reporting. PG&E has changed its STIP in two ways. First, it moved toward measurements such as Lost Work Days and Serious Preventable Motor Vehicle Incidents, which are less likely to be under-reported. Second, it increased the weighting of public and employee safety from 15 percent of the overall calculation in 2011 to 50 percent currently. PG&E will continue to evaluate and incorporate leading safety indicators into the STIP.	NorthStar suggests specific characteristics of safety metrics for use in the Short-term Incentive Program (STIP.) These characteristics include the use of safety metrics that support an enterprise safety plan, the inclusion of contractor safety metrics, avoiding metrics based on surveys or employee submittals, setting multi-year targets for safety metrics and continued tracking of safety metrics removed from STIP. NorthStar also recommended reevaluating the use Earnings from Operations in the STIP design.	Safety (employee, contractor and public) performance metrics currently represent 50% of the STIP program weight.
5	24/7 Nurse Line Established	The 24/7 Nurse Report Line is an injury and illness management system that provides PG&E employees with 24/7 telephonic access to nurses and physicians.	Findings: 5.5, 7.2, 6.10,10.3 Recommendations: None NorthStar notes the 24/7Nurse Report Line facilitates early reporting and may serve to minimize the severity of injuries; however additional monitoring /modification would promote an improved user experience, higher data quality and sustained use. NorthStar did not find adequate project justification for this program.	The 24/7 Nurse Line process is the primary means for reporting work-related discomfort and injuries. The call volume has nearly tripled since the inception of the program (1,379 calls in 2013 and ~4,000 in 2017). Reporting injuries within 1 day has increased from 60.5% in 2013 to ~69% in 2017. Several on-site clinics and telemedicine facilities have been established on a pilot basis and also provide a mechanism for reporting work-related injury or discomfort, especially in work locations not in close proximity to Medical Provider Network clinics.

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
6	Developed Enterprise Near-Hit Program	Near-hit sharing, used in a preventative, non-punitive manner, can potentially reduce employee, contractor, and public safety incidents and injuries. This approach can also help create a safety climate where we employees and contractors look out for one another and prevent incidents from occurring to co-workers, contractors, and the public.	Findings: 5.5, 9.12, 10.1, 10.2, 10.5, 10.10  Recommendations: p.I-1, p.I-16, X-1, X-2, X-3, X-5  NorthStar endorses the Near Hit Program as supportive of the desired safety culture and employee safety awareness.	The Near Hits Program has transitioned to use the Corrective Action Program system and processes. Near hits can be submitted directly into CAP from the main company intranet page, or identified with a check-box on any CAP submittal. Reporting leverages existing reports as well as CAP tools and assessment. Investigation and follow-through procedures leverage CAP procedures.
7	Discontinued Occupational Safety and Health Administration (OSHA) recordables as Performance Metric	PG&E is continuously evaluating its safety metrics to encourage a strong safety culture and avoid unintended and adverse incentives. OSHA recordables and Preventable Motor Vehicle Incidents were eliminated from PG&E's STIP metrics and replaced with metrics that focus on more serious incidents.	Findings: 7.1, 7.2  Recommendations: VII-2, VII-5, VII-6  NorthStar supports continual evaluation of metrics to use to measure culture change. As many initiatives are in the infancy, the effectiveness of the potential measures cannot yet be assessed. Some metrics may prove more useful than others.	The OSHA Recordable metric continues to be tracked but is no longer used for performance incentives.
8	Kickoff of Safety Leadership Workshops	These workshops are designed to provide leadership with practical information and guidance to increase their competence and confidence to be a good safety leader.	NorthStar supports PG&E's Safety Leadership Development workshop program, ultimately recommending an acceleration of the crew lead training portion.	Safety Leadership Development (SLD) Workshops are a core element of PG&E's current safety culture program. Many aspects of SLD Workshops have been integrated into operational processes, e.g., managing course registration, course delivery and course continuous improvements. This program is still considered in the roll-out phase since not all target audiences have participated in the workshops. The course has been renamed to Leading Forward: Leading Safety.

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
9	Engaged Behavioral Sciences Technology (BST) on Safety Roadmap	PG&E collaborated with Behavioral Science Technology (BST) in 2013, and developed a more comprehensive safety leadership training that would establish the structures, activities, and change approach to enable PG&E to create a self-reinforcing safety culture.	Findings: 3.8, 3.9 Recommendations: III-3 NorthStar suggests that the decision to select a particular vendor/consultant to support safety culture change was premature when done in advance of a comprehensive, enterprise-wide safety strategy.	BST's (now called Dekra) engagement with PG&E ended in December 2016.  The work performed with BST was instrumental in improving our safety culture post San Bruno, those improvements, particularly in safety performance results, had clearly plateaued by 2016. Recognizing the on-going need for a roadmap, now called the "One PG&E Occupational Health and Safety Plan", PG&E continues to engage with peer companies and consultants to continue the safety journey.
10	Launched Enterprise Correction Action Program (CAP)	The CAP process enables potential safety issues to be categorized, assessed for risk, and assigned to an owner to implement effective corrective actions to prevent recurrence. Employees can identify safety hazards or equipment problems and the CAP team tracks the issue until the appropriate corrective action is completed.	Findings: 10.1, 10.2, 10.4, 10.6, 10.7, 10.8, 10.10 Recommendations: X-1, X-2, X-3, X-5, X-6, X-7, X-8, X-9 NorthStar describes PG&E's Corrective Action Program (CAP) in favorable terms and makes specific recommendations about expansion and improvement of the program.	CAP was deployed to all remaining lines of business in June 2017. All PG&E personnel now have access to CAP.
11	Telogis	The primary goal of this initiative is to help PG&E drivers become safer drivers through the application of real-time feedback, self-corrective actions, and regular online reporting to identify trends and address safety risks. This program has been installed in approximately 1,000 vehicles in the top four high risk areas and job classifications in Electric, Gas, and Customer Care.	Findings: 3.7, 5.3, 6.10.7.2 Recommendations: None NorthStar refers to Telogis in exhibits listing specific safety measures used in PG&E. No recommendations are focused on this program.	As of Nov 30 2017, Telogis technology is currently installed in 6,594 PG&E vehicles out of a target population of 9,097 vehicles. How the data is used to improve driving behaviors, and reduce motor vehicle incidents continues to evolve.

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
12	Operational Leaders Participating in Series of 6 Workshops. 360 and 1:1 Safety Coaching	Beginning in 2013, more comprehensive safety leadership training was developed in collaboration with BST. Additionally, in 2016, PG&E, in conjunction with union representation and BST, will begin designing the additional safety development courses for non-management field leadership (e.g., crew foreman).	Findings: 6.11.8.3.8.4; 8.5, 8.6, 8.7 Recommendations: I-F-3; VIII-1, VIII-2 NorthStar supports PG&E's Safety Leadership Development workshop program, ultimately recommending an acceleration of the crew lead training with priority given to crew foremen.	This initiative is now part of the Safety Leadership Development (SLD) program described in line 8.
13	Contractor Safety Program Established	The Contractor Safety Program was developed in 2015 and contains a pre-qualification process focusing on safety, enhanced contract terms to hold contractors accountable for safety, oversight procedures, and a post-job evaluation. In 2016, the pre-qualification process was rolled out to subcontractors, who are now subject to the same requirements as prime contractors.	Findings: 11.1 thru 11.16 Recommendations: XI-1, XI-2, XI-3, XI-4, XI-5, XI-6 NorthStar describes the Contractor Safety Program in positive terms and makes specific improvement recommendations to include surprise field visits to assess contractor safety practices, updating LOB contractor safety procedures to clarify responsibilities to reflect current organizations and processes, where feasible remove all contract language that contractor is "solely" responsible for performing work in safe manner and facilitate sharing of best practices and lessons learned.	The Contractor Safety Program is firmly established and in the operational and continuous improvement phase.

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
14	Standard Roles and Responsibilities Established in Field Safety	<p>PG&amp;E recognized a need to increase the skills and knowledge of the corporate safety specialists. PG&amp;E identified a technical safety knowledge and leadership gap amongst Corporate Safety Delivery safety specialists and LOB. A new safety operating model was created using benchmarking and past business results to ensure consistency and visibility among Field Safety.</p>	<p>Findings: 4.7, 5.1, 5.2, 5.7, 5.8, 5.9</p> <p>Recommendations: IV-6, V-1, V-2, V-3, V-5, V-6</p> <p>NorthStar points out that a 2014 effort to clarify roles and responsibilities among organizations affecting field safety was not sufficiently successful and recommends that PG&amp;E should endeavor to re-clarify these roles and responsibilities and increase training.</p>	<p>The roles and responsibilities initiative described in NorthStar Data Request #144 was completed and implemented.</p> <p>Subsequent organizational changes and collaborative efforts such as the One PG&amp;E Occupational Health &amp; Safety Plan require continuous adjustment to the roles and responsibilities of stakeholders in safety.</p>
15	Enhanced Safety Governance Structure	<p>The Chairman's Safety Council (CSC) membership included the PG&amp;E Corporation Chief Executive Officer, and PG&amp;E Presidents, senior officers, and union leaders. In early 2016, a new enterprise committee structure was established that included the Safety and Risk Committee. The Safety and Risk Committee incorporated the Chairman's Safety Council. The CSC provides oversight of enterprise safety strategy and standards and approves enterprise safety initiatives and programs. Also, each major LOB established a safety council comprised of senior leaders, grassroots safety leaders, and union representatives. The councils promote safety culture, are responsible for safety programs and performance, and escalate items, as appropriate, to the CSC. This governance structure ensures PG&amp;E alignment on safety strategy, standards, and results.</p>	<p>Findings: None</p> <p>Recommendations: III-3</p> <p>NorthStar addresses safety governance more broadly than the committee structure referenced in this initiative. Multiple governance recommendations are made, none related to PG&amp;E's internal committee structure.</p>	<p>The governance structure described in NorthStar Data Request #144 was completed and implemented.</p> <p>The safety governance structure has been revised to better suit PG&amp;E's current organization and business needs.</p>
16	Safety Re-Organization to include Health and Environment	<p>In 2011, PG&amp;E began several workforce health initiatives that are currently in various stages of maturity, including the Industrial Athlete program, 24/7 Nurse Report Line, and forthcoming initiatives such as On-Site Healthcare and Clinics. These initiatives are designed to link a culture of health with safety culture. PG&amp;E recently combined the Workforce Health team in Human Resources with the Corporate Safety team in Shared Services to better link these efforts.</p>	<p>Findings: 4.4, 4.8</p> <p>Recommendations: IV-4</p> <p>NorthStar positively references the recent integration of health and wellness programs with safety programs while recommending that strategic plans related to safety and health should be separate from strategic plans concerning the environment.</p>	<p>The organization structure described in NorthStar Data Request #144 was completed and implemented.</p> <p>The current organization structure maintains the organizational relationship between health and wellness. Environmental functions have been separated from safety, health and wellness since expected synergies from the previous combination did not develop as expected.</p>

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
17	Phone-Free Driving Commitment	Distracted driving is a behavior that exposes employees and the public to potential serious injuries and fatalities. Recent statistics show that cell phone distractions currently account for 26 percent of accidents nationwide. The CSC approved PG&E's adoption of a phone-free driving standard that went into effect January 1, 2016. Under the standard, employees are prohibited from using cell phones (except under limited emergency exceptions) while driving on company business or while driving a company- owned or leased vehicle unless they are stopped in a safe and legal parking location.	<p>Findings: 3.7</p> <p>Recommendations: None</p> <p>NorthStar references the Phone-Free Driving Commitment in exhibits however it makes no specific recommendations related to this initiative.</p>	The phone-free driving standard remains one of PG&E's enterprise standards.
18	Serious Injury and Fatality (SIF) Prevention Program	The SIF Prevention Program allows PG&E to better understand and control exposure by focusing on identifying, analyzing, and mitigating/removing incidents and near-misses that had the potential to be worse. PG&E expects the use of the SIF checklists and observation tools to mitigate the most serious employee exposures and promote an environment where speaking up for safety becomes a cultural norm.	<p>Findings: 3.7, 3.8, 10.7, 10.8, 10.9, 11.7</p> <p>Recommendations: X-1, X-4, X-8, X-9</p> <p>NorthStar refers to the Serious Injury &amp; Fatality (SIF) program in multiple contexts including discussion about positive changes to PG&amp;E's processes for handling the immediate response and investigations related to SIF incidents as well as alignment with contractors with how PG&amp;E responds to SIF incidents. NorthStar recommends development of an evaluation program for SIF to include periodic audits of the processes by Internal Audit.</p>	SIF initiative deliverables have been incorporated into numerous operational processes including, field observations, the SIF Prevention Field Guide, and serious incident management processes.

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
19	Safety Index in Premier Survey	At an enterprise level, the Premier Survey provides insight about employee sentiments of priorities such as safety, efficiency, customer focus, continuous improvement, empowerment, engagement, ethics and compliance. Results provide actionable insights for leaders and program stakeholders to identify focus areas and monitor progress. A Safety Index has been included in our insights in various ways since 2011	Findings: 9.4 Recommendations: IX-2, IX-4  NorthStar references the Premier Safety Index in the context of various measures of safety culture ultimately recommending development of a consistent basis for measuring, tracking and trending employee attitudes regarding safety culture.	The safety culture index described in NorthStar Data request #144 was completed and implemented. Subsequent enhancements have been made as part of the continuous improvement process.
20	Corporate Safety Service Level Agreements (SLAs)	Corporate SLAs were developed to clarify the partnership and division of duties between the Corporate Safety Department and the LOBs. The Agreement provides guidance on which parties are responsible, accountable, consulted, and/or informed for primary work tasks.	Findings:4.7 Recommendations: IV-6  NorthStar references Service Level Agreements (SLAs) in the context of describing the status quo and recommendations relating to clarity of safety-related roles and responsibilities. NorthStar points out that a 2014 effort to clarify roles and responsibilities among organizations affecting field safety was not sufficiently successful and recommends that PG&E should endeavor to re-clarify these roles and responsibilities.	The SLAs described in NorthStar Data Request #144 were completed and implemented.  The on-going roles and responsibilities described in initiative #14 have replaced SLAs due the more collaborative nature of the process of developing roles and responsibilities.
21	Grass Roots Safety Teams	The purpose of the Grass Roots Safety Teams (GRST) is to have employee-owned/led safety programs that eliminate incidents and share information, ideas, and innovations for the development and continuous improvement of Safety and Health and Wellness programs.	Findings: 9.4 Recommendations: IX-2, IX-4  NorthStar acknowledges the benefits of Grass Roots Safety Teams while pointing out some inconsistency in maturity levels and effectiveness of teams across lines of business. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.	Grass Roots Safety Teams remain a critical tool in identifying and resolving safety issues.

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
22	Field Safety Specialists	Field Safety Specialist positions were created to provide field employees with subject matter experts in both safety and technical field work. They conduct field observations, provide corrective coaching and/or positive reinforcement to the crew, answer any questions the crew may have, and follow-up on any remaining questions.	Findings: 5.6, 5.7 Recommendations: IV-6, IV-7 NorthStar mentions Field Safety Specialists in a number of contexts, particularly related to the clarity of roles and responsibilities between corporate and field functions and inconsistency in skills, knowledge and credentials among employees in these positions.	Field Safety Specialists remain a critical component of PG&E's overall safety program. Their organizational reporting structure, skill requirements and development, and roles and responsibilities continue to evolve in support of operational and safety program needs.
23	Nuclear Safety Culture Monitoring Panel (NSCMP)	The NSCMP reviews the inputs most indicative of the health of the nuclear safety culture to identify potential concerns that merit additional attention by the organization. The panel also identifies organizational behaviors and practices that are strengths for fostering a strong nuclear safety culture. The panel meets at least three times a year.	Findings: 3.7, 5.1 Recommendations: III-3 NorthStar references the NSCMP in the context of illustrations of inconsistent and overlapping initiatives across lines of business. Recommendations related to an enterprise safety plan and elimination of duplicative efforts related to are this initiative.	NSCMP is part of routine monitoring and oversight of organization safety culture health, allowing intervention and correction of behaviors indicative of an unhealthy safety culture. The results are published monthly in the DCPD Plant Performance Improvement Report. NSCMP processes are subject to continuous improvement and change periodically based on needs and experiences.



# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
24	Emergency Plan Rulemaking	<p>PG&amp;E updated the Emergency Plan at DCPD in response to the rulemaking "Enhancements to Emergency Preparedness Regulations". This rulemaking codified certain voluntary protective measures that appear in U.S. Nuclear Regulatory Commission (NRC) Bulletin 2005-02, "Emergency Preparedness and Response Actions for Security-Based Events," dated July 18, 2005, and generically applicable requirements similar to those previously imposed by NRC orders. In addition, the final rule amends other licensee emergency plan requirements based on a comprehensive review of the NRC's Emergency Preparedness (EP) regulations and guidance. The requirements (1) enhance a licensee's ability to prepare and take certain EP actions and protective measures in the event of a radiological emergency; (2) address, in part, security-related EP issues identified after the terrorist events of September 11, 2001; (3) clarify regulations to effect consistent emergency plan implementation among licensees; and (4) modify certain EP requirements to be more effective and efficient.</p>	<p>Findings: 5.1</p> <p>Recommendations: None</p> <p>NorthStar references the DCPD's Emergency Plan Rulemaking in the context of illustrations of inconsistent and overlapping initiatives across lines of business. Recommendations related to an enterprise safety plan and elimination of duplicative efforts relate to this initiative.</p>	<p>Processes implemented in response to the Emergency Plan Rulemaking remain an integral element of PG&amp;E's emergency response program at Diablo Canyon Power Plant.</p>

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
25	Nuclear Generation Facilitative Leadership and Crucial Conversations	<p>Facilitative Leadership is a two day training course presented in a workshop environment that is facilitated by certified workshop leaders. The purpose of the workshop is twofold. The first purpose is to develop skills and tools for tapping the creativity, experience, and commitment of the people with whom you work. The second purpose is to provide a forum to explore challenges and aspirations as a leader. Crucial Conversations® is a two day training course presented in a workshop environment that is facilitated by certified workshop leaders. The purpose of the workshop is to teach skills for creating alignment and agreement by fostering open dialogue around high-stakes, emotional, or risky topics. Please refer to NorthStar Data Request 157 for additional information.</p>	<p>Findings: 3.7, 5.1 Recommendations: III-3</p> <p>NorthStar references the DCP's Facilitative Leadership and Crucial Conversations Programs in the context of illustrations of inconsistent and overlapping initiatives across lines of business. Recommendations related to an enterprise safety plan and elimination of duplicative efforts relate to this initiative.</p>	<p>The leadership and communication programs described in NorthStar Data request #144 have been completed and implemented. This initiative has demonstrated its capability to enable leaders to engage workers to solve problems and work effectively as a team, creating an environment that encourages people to speak up.</p>
26	Risk Informed Budget Allocation (RIBA)	<p>PG&amp;E introduced a new RIBA framework to evaluate and prioritize the work portfolios for the core operational LOBs: Electric Operations, Gas Operations, Power Generation, and Nuclear Generation. The RIBA process informs the prioritization of budgets for risk mitigation, compliance requirements, and other work in the LOB portfolio.</p>	<p>Findings: 6.2, 6.3 Recommendations: VI-3</p> <p>NorthStar uses RIBA as illustrative of desirable, quantitative prioritization methodologies and recommends adoption of a similar process for safety programs focused on management and training.</p>	<p>The RIBA methodology described in NorthStar Data Request #144 was completed and implemented. It remains a core element of the capital budgeting process for asset-based elements of the business.</p>

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
27	Safety Engagement and Coaching Policy	<p>The purpose of the policy as stated is: Leaders, by commitment and example, inspire, motivate, and align our organization to achieve safe and reliable operation. (Institute for Nuclear Power Operations 12-013, Performance Objective Leadership Fundamental); and Time in the field as well as Engagement and Coaching ensures we have time set aside to engage with our workers and achieve this objective. This policy provides the expectations for Engagement and Coaching and Time in the Field. Please refer to NorthStar Data Request 158 for additional information.</p>	<p>Findings: 5.9 Recommendations: None</p> <p>NorthStar did not provide specific recommendations for this program but acknowledged that supervisor presence in the field is critical for continued awareness and work/safety coaching. NorthStar noted several inconsistent and overlapping initiatives across lines of business. To the extent possible, safety programs should be uniform across LOB field operations.</p>	<p>The safety engagement and coaching policy described in NorthStar Data Request #144 was completed and implemented for the Diablo Canyon power plant. It is subject to continuous improvement.</p>
28	Power Generation Lockout-Tagout (LOTO) fully implemented	<p>Power Generation implemented Lock Out Tag Out (LOTO) vs Man-On-Line tags for creating safety clearances to ensure that assets are de-energized prior to work being performed on them. This was consistent with best practices implemented in the independent power industry and improved safety protection for crews performing work.</p>	<p>Findings: 6.10 Recommendations: VI-2</p> <p>NorthStar did not provide specific recommendations for this program. NorthStar recommended separating "safety" expenditures from routine reliability and integrity expenditures which may occur as part of the CPU's RAMP process. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.</p>	<p>The Power Generation Lock-Out-Tag-Out program described in NorthStar Data request #144 was completed and implemented. It is subject to continuous improvement.</p>

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
29	Power Generation's Generation Risk Information Tool (GRIT)	GRIT is a customized software database used in managing Power Generation's non-linear hydroelectric assets. The tool facilitates asset testing and inspections through its integration with the SAP Work Management tool, as well as calculates and stores risk scores in line with Corporate Risk Evaluation Tool (RET). Please refer to NorthStar Data Request 097 for additional details on GRIT.	Findings: 6.10 Recommendations: VI-2 NorthStar did not provide specific recommendations for this program. NorthStar recommended separating "safety" expenditures from routine reliability and integrity expenditures which may occur as part of the CPUC's RAMP process. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.	The GRIT tool described in NorthStar Data Request #144 was completed and implemented. It is subject to the continuous improvement process.
30	Hydro Enterprise Risk Management Gaps Closed	Through the ERM process, Power Generation identified, evaluated, and addressed seven gaps. The assessment included controls identification and adequacy evaluations. Please refer to NorthStar Data Request 064 for additional information	Findings: 6.10 Recommendations: VI-2 NorthStar did not provide specific recommendations for this program. NorthStar recommended separating "safety" expenditures from routine reliability and integrity expenditures which may occur as part of the CPUC's RAMP process.	The Hydro Enterprise Risk Management program described in NorthStar Data Request #144 was completed and implemented. On-going enterprise risk management efforts continue to identify opportunities which are then addressed as part of the integrated planning process.
31	Power Generation Facilitative Leadership	Described in item above on Nuclear Generation Facilitative Leadership and Crucial Conversations.	Findings: 3.7, 6.10 Recommendations: III-2, III-3, VI-2 NorthStar did not provide specific recommendations for this program. NorthStar cites to PG&E's numerous corporate and LOB initiatives directed at improving safety but notes PG&E does not have a stand-alone comprehensive enterprise wide safety improvement plan. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.	This initiative is part of the Generation Facilitative Leadership and Crucial Conversations described on line 25 due to the organizational combination of nuclear and non-nuclear generation.

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
32	Generation Safety Council	<p>The purpose of the Generation Safety Council is to provide overall governance of safety for the Generation organization, guide Generation safety strategy, ensure compliance with Company safety standards, execute safety council directives, and promote positive safety culture change. The Council reviews department safety performance, monitors progress of safety initiatives, ensures that initiatives adequately address identified risks and opportunities, provides resources for safety initiatives and activities, supports safety culture change efforts, escalates items to the Safety and Risk Enterprise Committee (SREC) as appropriate, and removes barriers faced by department safety teams.</p>	<p>Findings: 3.7, 6.10 Recommendations: III-3, VI-2</p> <p>NorthStar did not provide specific recommendations for this program. NorthStar cites to PG&amp;E's numerous corporate and LOB initiatives directed at improving safety but notes PG&amp;E does not have a stand-alone comprehensive enterprise wide safety improvement plan.</p>	<p>This initiative is part of the Enhanced Safety Governance Structure described in line 15.</p>
33	Reach Every Employee	<p>The Reach Every Employee (REE) Initiative was created to improve communication between management and bargaining unit employees. The goal of the initiative was to reaffirm management's commitment to employee and public safety and prioritize safety-related programs through the one-on-one safety discussions that each employee had with their leadership. The REE document is revised each year based on feedback and alignment to company initiatives. The document is distributed via email with the expectation that every supervisor have a one-on-one discussion with each of their direct reports to review the commitments within the document. Employees and supervisors are asked to sign the documents (or agree that they've reviewed the document for those who do not wish to sign). Completions are tracked using the course code ELEC-T914. Both employees and supervisors retain a copy of the REE commitment document.</p>	<p>Findings: 3.7, 6.10, 9.10 Recommendations: IX-3, p. IX-38</p> <p>NorthStar notes that Reach Every Employee is a good program to ensure leaders have annual documented safety discussions with each of their employees and recommends expansion of this program to Generation and Gas Operations. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.</p>	<p>The Reach Every Employee initiative is fully implemented in Electric Operations. Planning is in progress to expand this program to all lines of business. The program is subject to continuous improvement.</p>

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
34	Electric Operations Safety Council	<p>Electric Operations created a LOB Safety Council to develop the department's safety philosophy and strategy, approve department safety initiatives, remove barriers to success; identify items for escalation to the CSC, promote safety culture, and assure continuous improvement in safety performance. The Safety Council also provides an avenue for grass roots leads to elevate issues that they're not able to resolve on their own through their regular monthly team meetings. The Council began as an Electric Distribution Safety Council and was reformatted to an Electric T&amp;D Council following a reorganization which combined both Transmission and Distribution under Electric in November 2015.</p>	<p>Findings: 3.7, 5.1, 6.10</p> <p>Recommendations: III-3</p> <p>NorthStar referred to Safety Councils favorably. NorthStar noted several inconsistent and overlapping initiatives across lines of business. To the extent possible, safety programs should be uniform across LOB field operations. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.</p>	<p>This initiative is part of the Enhanced Safety Governance Structure described in line 15.</p>
35	Ergonomics Office and Industrial	<p>Strains and sprains are the leading cause of injuries in Electric T&amp;D (previously Electric Operations). Between 2008 and 2012, 63 percent of all injuries reported were ergonomic strains/sprains. Electric T&amp;D's objective is to reduce these type of injuries in the work place. Electric T&amp;D Grass Roots Safety Team employees created workgroup-specific ergonomic teams to address these issues. These ergonomic teams identify ergonomic risks/exposures and implement short and long-term solutions. Targeted areas include data analysis, benchmarking, task analysis, materials labeling, tools/equipment analysis, educations/awareness, and training.</p>	<p>Findings: 5.1, 6.10</p> <p>Recommendations: None</p> <p>NorthStar referred to office and industrial ergonomic programs favorable. NorthStar noted several inconsistent and overlapping initiatives across lines of business. To the extent possible, safety programs should be uniform across LOB field operations. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.</p>	<p>The office and industrial ergonomics program described in NorthStar Data Request #144 is complete and implemented. It is subject to continuous improvement.</p>

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
36	Employee Knowledge / Skill	<p>The Employee Knowledge &amp; Skills (EK&amp;S) Program was established by a company-union agreement which developed a program to assess employee knowledge (written technical knowledge) as well as physical skills needed to safely perform their jobs. The assessments are done by classification and are managed by a team of company and union representatives. Employees are required to take a written test, as well as perform a field task which is observed by a team of assessors. The physical task portion of the evaluation allows the employee to demonstrate their ability to perform a task (routine to their classification) safely and per company guidelines and procedures.</p>	<p>Findings: 3.7, 8.20, 8.21</p> <p>Recommendations: None</p> <p>NorthStar reference to this program was favorable as it helps to ensure experienced qualified electric workers (QEWs) are performing work properly and safely. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.</p>	<p>The Employee Skill &amp; Knowledge program described in NorthStar Data Request #144 is complete and implemented. It is subject to continuous improvement.</p>
37	Wires Down Reporting	<p>PG&amp;E began development of the "Wires Down" metric in 2011, escalating it to a company metric in 2012. The program is set up so that wire down reports are recorded appropriately in the outage reporting system. Most events caused by vegetation contact or equipment failure are investigated by company personnel and key information is added to a database to allow more detailed analysis and trending. Work plans are developed through the investigation process that support the prevention of re-occurrence and overall reduction of wires-down.</p>	<p>Findings: 5.1</p> <p>Recommendations: None</p> <p>NorthStar referred to Electric Operations' Wires Down Reporting program in neutral and favorable terms. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.</p>	<p>The Wires Down Reporting processes described in NorthStar Data request #144 are complete and implemented. These processes are subject to continuous improvement.</p>

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
38	Industrial Athlete	<p>The Industrial Athlete program is designed to reduce injuries and improve the physical and mental resilience of employees working in the highest-risk and most physically demanding positions. The majority of the lost workday injuries experienced in those jobs are sprains, strains, or musculoskeletal injuries.</p>	<p>Findings: 5.1</p> <p>Recommendations: None</p> <p>NorthStar includes the Industrial Athlete Program in a list of successes since San Bruno. NorthStar cites to adequate program justification for this safety program. NorthStar noted several inconsistent and overlapping initiatives across lines of business. To the extent possible, safety programs should be uniform across LOB field operations.</p>	<p>The Industrial Athlete program described in NorthStar Data request #144 is complete and implemented. This program is subject to continuous improvement.</p>
39	Rapid Incident Notification	<p>The Distribution Rapid Incident Notification (RIN) was developed in early 2013 as an enhancement to the new Event Reporting Engine (ERE) database used to house safety incident data. The RIN function of the program allows the system to send an email with a brief description of the incident as well as a link to the full report to a select distribution list. The expectations around reporting were that incidents would be reported and entered into the ERE within 24 hours of the supervisor being notified of an incident. When the "distribute report" button in the system is selected, an email is sent to the "Elec Ops DO Safety Call" distribution list which currently contains 1,251 recipients. The 24-hour reporting expectation was calculated based on when the report was distributed.</p>	<p>Findings: 3.7, 5.5, 6.10, 10.1</p> <p>Recommendations: None</p> <p>NorthStar referred to the Rapid Incident Notification program in favorable terms while pointing out its overlap with the Corrective Action program (CAP) and the potential for confusion due to the number of safety related initiatives rolled out since San Bruno. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.</p>	<p>The RIN process has been replaced by similar functionality in the CAP program. The CAP process is subject to continuous improvement.</p> <p>The decision was made to incorporate RIN functionality into CAP in order to consolidate software platforms and provide a single point of entry and resolution for employees with regard to issue reporting and management.</p>



# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
40	Driver's Skill / Knowledge	<p>The Driver's Skill and Knowledge program was developed to reduce Motor Vehicle Incidents (MVIS). The plan is a 5-year continuous plan which incorporated training (hands-on and web-based), evaluation of employee driving skills, and supervisor observation training. The observation of employee driving skills and supervisor observation training components were never implemented due to other initiatives which accomplished the same goals. Observation training was part of the Safety Leadership Program workshops.</p>	<p>Findings: 6.10</p> <p>Recommendations: None</p> <p>NorthStar referred to Electric Operations' Driver Skill/Knowledge program has having adequate project justification. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.</p>	<p>The training mechanisms of the Driver Skills &amp; Knowledge program have been integrated into the current Motor Vehicle Safety program. This is a result of continuous improvement.</p>
41	Safety Culture Initiative	<p>The objective of this initiative is to improve the conversations being had about safety with employees and increase the feedback leadership receives and gives to its field teams, as well as reinforce safe behaviors. The focus is to make sure there is alignment among leaders on how to lead with safety, how to hold safety conversations in the field, and what hazards and exposures should be focused on. This alignment began with a series of Safety Leadership Program workshops.</p>	<p>Findings: 3.7 5.5, 6.10, 6.11</p> <p>Recommendations: VI-1, VI-2, VI-3</p> <p>NorthStar referred to the Electric Operations' 2014 Safety Culture Initiative in the context of discussion and recommendations for more rigorous prioritization of programs and tracking of expenditures.</p>	<p>The Safety Culture program remains a core element of the One PG&amp;E Occupational Health &amp; Safety Plan. The program described here has been integrated with the SLD program described in line 8.</p>

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
42	Truck Rodeos	<p>Truck Rodeos were developed and are run by the Grass Roots Safety teams as a way for employees to conduct peer truck and tool inspections and ensure company vehicles are in safe operating condition. Vehicles are checked for current tools and required inspections, as well as all required safety equipment. Safety and Workforce Excellence helped to develop a guidance document to assist employees who wished to coordinate their own truck rodeo. Grass Roots Safety teams schedule their truck rodeos and bring all vehicles through a series of stations. These stations focus on a variety of different things including tool / housekeeping inspections as well as hands-in behind-the-wheel exercises that raise awareness on the footprint and handling of an employee's individually assigned company vehicle.</p>	<p>Findings: 3.7, 5.1, 6.10 Recommendations: VI-1, V-3</p> <p>NorthStar referred to the Electric Operations' Truck Rodeos in the context of discussion and recommendations for more rigorous prioritization of programs and tracking of expenditures. NorthStar noted several inconsistent and overlapping initiatives across lines of business. To the extent possible, safety programs should be uniform across LOB field operations. NorthStar noted several inconsistent and overlapping initiatives across lines of business. To the extent possible, safety programs should be uniform across LOB field operations.</p>	<p>Truck Rodeos are an on-going part of the Motor Vehicle Safety program managed by the Grass Roots Safety Teams. They are subject to continuous improvement.</p>

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
43	911 Standby Response	<p>Electric T&amp;D centralized the control and handling of 911 response calls for events such as downed power lines. The intent was to free up emergency services providers as quickly as possible so they could focus on public safety. Troublemakers (T-Men) are the primary responders while Restoration Supervisors, SP&amp;M supervisors and crews, Electric Meter Operations, and GSR's are utilized when T-Men are not available to respond. 911 agencies are contacted to verify the emergency location and verify if a 911 agency is onsite for quicker response. This program uses out-of-division resources to respond to 911 requests (previously just ran callout within division). Finally, a scalable plan was developed for storms and other widespread outage events using multiple disciplines within Gas and Electric to respond to wire down and other emergencies where first responders are standing by.</p>	<p>Findings: 6.10</p> <p>Recommendations: None</p> <p>NorthStar referred to Electric Operations' 911 Standby Response program in neutral and favorable terms. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.</p>	<p>Centralized 911 response is an on-going element of PG&amp;E's operations. It is subject to continuous improvement.</p>
44	Safety Conversations	<p>The goal of this initiative is to reaffirm Electric T&amp;D's commitment to employee and public safety and prioritize safety-related programs through one-on-one safety discussions with leadership/supervision and each employee. The opinions and views shared during these discussions provide an avenue for open and honest communications and two-way dialog.</p>	<p>Findings: 3.7, 6.10</p> <p>Recommendations: None</p> <p>No specific recommendations for this program. NorthStar references PG&amp;E's many safety initiatives that contribute to PG&amp;E's overall safety cultures. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.</p>	<p>Safety Conversations are facilitated through the Reach Every Employee initiative described in line 33.</p>

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
45	Keys Meeting	<p>Gas Operations holds an all-day, monthly meeting called the "Keys to Success" meeting, or "keys" meeting for short. Attendees include officers and directors within Gas Operations as well as leaders from key support organizations such as Human Resources, Information Technology, Government Relations, Law, and Corporate Communications. As part of that meeting, each organization prepares a report of its status against goals, metrics, accomplishments, challenges, and next steps. Please refer to responses to NorthStar Data Requests 081 and 166 for additional information.</p>	<p>Findings: 3.7, 5.1, 5.2.6.10 Recommendations: None</p> <p>No specific recommendations for this program. NorthStar references the many safety initiatives that contribute to PG&amp;E's overall safety culture. NorthStar noted several inconsistent and overlapping initiatives across lines of business. To the extent possible, safety programs should be uniform across LOB field operations. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.</p>	<p>The Keys Meeting is an on-going element of the Gas Operations operational management process. It is subject to continuous improvement.</p>
46	Gas Operations Risk and Compliance Committee	<p>The Gas Operations Risk and Compliance Committee (RCC) is chaired by the Gas Operations President and includes the Gas Operations Senior Vice President, all Gas Operations Vice Presidents, and all Gas Operations Senior Directors. This Committee meets monthly and reviews and approves Session D materials in addition to monitoring compliance and risk management activities. Please refer to the response to NorthStar Data Request 160 for additional information.</p>	<p>Findings: 3.7 Recommendations: None</p> <p>No specific recommendations for this program. NorthStar references the many safety initiatives that contribute to PG&amp;E's overall safety culture.</p>	<p>Risk and Compliance Committees (RCC) are part of the on-going governance structure for all lines of business. They are subject to continuous improvement. For example, in 2017, the Gas Operations RCC was modified due to company-wide reorganization. The Committee continues to review and approve Session D materials and meets monthly to monitor compliance and risk management activities.</p>

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
47	Picarro Testing	The Picarro Surveyor technology is 1,000 times more sensitive than traditional leak survey technology. PG&E was one of the first utilities to use Picarro and modified the leak management process to leverage the technology (Super Crew). See response NorthStar Data Request 164 for a discussion of Super Crew.	Findings: 3.5, 5.4 Recommendations: None No specific recommendations for this program. NorthStar cites to adequate project justification for this program and references the many safety initiatives that contribute to PG&E's overall safety culture.	Success of Picarro technology pilot testing led to the integration of this tool, enterprise-wide, as part of the leak survey program. This tool is subject to continuous improvement.
48	Centerline Survey	This project involved walking all 7,000 miles of gas transmission pipelines and obtaining GPS data of alignment and depth.	Findings: 3.7, 5.1 Recommendations: None No specific recommendations for this program. NorthStar references adequate project justification for this program and notes the many safety initiatives that contribute to PG&E's overall safety culture.	The Centerline Survey was a one-time project to collect gas pipeline centerline data and is now complete.
49	Gas Matters Newsletter	The Gas Matters Newsletter is a Gas Operations-focused newsletter published on a periodic basis with stories and information relevant to field employees and others within Gas Operations. Please refer to the response to NorthStar Data Request 178 for copies of Gas Matters newsletters published since inception.	Findings: 3.7, 5.1, 5.12 Recommendations: None NorthStar references the many safety initiatives that contribute to PG&E's overall safety culture while specific projects less than \$20 million do not have adequate project justification	The Gas Matters Newsletter continues distribution to an expanded audience. It is subject to continuous improvement.

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
50	Eight Gas Asset Families	Gas Operations completed comprehensive asset management plan for each of eight asset families. Please refer to the response to NorthStar Data Request 085 for additional information, including a description of the eight asset families	Findings: 3.7 Recommendations: None No specific recommendations for this program.	The Eight Gas Asset Families continue to provide a basis for risk assessment, budget and work planning. Processes that leverage the asset families are subject to continuous improvement.
51	New Control Center / Dispatch	The state of the art gas transmission control center, gas distribution control center, and gas dispatch centers were opened in August 2013. These co-located facilities allow PG&E to monitor 7,000 miles of transmission pipeline, 42,000 miles of distribution pipeline, and all the information about the health of that system in real time is brought to this one location.	Findings: 8.18 Recommendations: None NorthStar referred to the Gas Operations' New Control Center/Dispatch as a significant success since San Bruno.	The Control and Dispatch center described in NorthStar Data Request 144 is complete and operational. Work processes based there are subject to continuous improvement.
52	Gas Operations Daily Calls	A best practice taken from Alaska Airlines was a Gas Operations wide daily operating call where standing topics include safety, system performance, asset family reports, compliance, IT, and related topics. Calls take place each work day at 0730.	Findings: 3.7, 5.1 Recommendations: None NorthStar referred to the Gas Operations' Daily Calls as not having adequate project justification.	Gas Operations Daily Briefing calls are an on-going element of Gas Operations. It is an opportunity to reflect on the previous day's work execution and progress, capture key learnings, support continuous improvements, and inform the organization of any issues impacting the day's work.

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
53	Super Gas Ops / Super Crew	<p>Gas Operations initiated "Super Gas Ops" in the 2nd quarter of 2014 as a means to ensure safe and reliable service across the entirety of PG&amp;E's gas service territory by implementing a holistic management system to improve the way employees do their work, from the field to the Executive Team. Please refer to the response to NorthStar Data Request 163 for additional information on Super Gas Ops. In 2014, PG&amp;E created a process optimization pilot team known as the "Super Crew." Historically, the end-to-end process to move non-emergency leaks through a work stream to a crew took 60 days or more, and repairs could take months. By using improved processes and technology, the Super Crew can move non-emergency leaks through a work stream to a crew in a shorter time frame than using traditional means. Please refer to the response to NorthStar Data Request 164 for additional information on Super Crew.</p>	<p>Findings: None</p> <p>Recommendations: None</p> <p>No specific findings or recommendations related to Gas Super Ops.</p>	<p>Super Crew was a process used to execute Picarro leak survey throughout a percentage of the service territory. After successfully rolling out the technology, the leak survey process was integrated into each division within the Gas M&amp;C department. The separate roving team, Super Crew, is no longer utilized to complete this work.</p>
54	PAS 55 / ISO 550 Certification	<p>PAS 55 / ISO 55001 are industry leading standards for asset management. Gas Operations is currently certified in meeting both standards. Please refer to the response to NorthStar Data Request 005 for copies of PAS 55 / ISO 55001 standards.</p>	<p>Findings: 3.5, 5.4</p> <p>Recommendations: None</p> <p>NorthStar referred to the Gas Operations' PAS 55/ISO 550 as not having adequate project justification.</p>	<p>PAS 55 / ISO 55001 Certification was re-certified in May 2017. Most recently, PG&amp;E successfully conducted a 6 month surveillance assessment against both the standards in Nov 2017.</p>
55	Napa Earthquake Response	<p>This item is not a safety initiative. In August of 2014 the Napa area experienced an earthquake causing significant gas and electric infrastructure damage. The response to this event highlighted many of the new processes and tools implemented since San Bruno (e.g., gas centralized transmission and distribution control centers and dispatch, Picarro surveyor, and emergency response training).</p>	<p>Findings: None</p> <p>Recommendations: None</p> <p>No specific findings or recommendations related to PG&amp;E's Napa Earthquake Response.</p>	<p>The Napa Earthquake Response was a one-time event that was completed in 2014.</p>

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
56	CAP Mobile Application	CAP was implemented in Gas Operations in fall of 2013. In order to reach all workers in a manner that allowed them an easy way to create CAP notifications, the CAP mobile application was later implemented in October 2014.	Findings: 5.5 6.10 Recommendations: None NorthStar referred to the Gas Operations' CAP program favorably and as having adequate project justification. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.	The CAP App is an integral part of the CAP program, allowing mobile employees to submit issues from the field. It is subject to continuous improvement and is part of the CAP program referenced in line 10.
57	Cast-iron Removal Complete	The last identified section of cast iron pipeline in PG&E's gas service territory was removed from use in December 2014. The Gas Pipeline Replacement Program (GPRP) was initiated in the mid-1980's and eventually lead to removal of all cast iron pipe.	Findings: None Recommendations: None No specific findings or recommendations related to PG&E's Cast-Iron Pipe Removal initiative.	As described in NorthStar Data Request 144, this program is complete as no cast iron pipe remains within PG&E's system. With the completion of the deactivation of all cast iron pipe in 2014, the GPRP is now focused on replacing pre-1940 steel pipe.
58	American Gas Association (AGA) Peer Review	PG&E participates in peer reviews with other AGA members. These peer reviews include discussing a variety of topics, sharing ideas, and providing insights into the host utility's processes. Please refer to the response to NorthStar Data Request 165 for additional information.	Findings: 6.10 Recommendations: None NorthStar cites inadequate business case documentation or other project approval for safety initiative expenditures	PG&E continues to participate in AGA peer review. Key recommendations or observations coming out of a peer-to-peer review are entered into CAP for follow-up.
59	Pathfinder Implemented	Gas Operations Gas Distribution GIS system (GDGIS) is referred to by the name Pathfinder. This foundational technology allows employees easier access to distribution maps and data through mobile technology.	Findings: 6.10 Recommendations: None NorthStar referred to the Gas Operations' Pathfinder program as having adequate project justification. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.	The Gas Distribution GIS system (Pathfinder) is an integral part of on-going gas operations and management processes. It is subject to continuous improvement.



# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
60	API 1173 Certification	API 1173 is the new industry gold standard for pipeline safety and safety culture. Please refer to the response to NorthStar Data Request 005 for a copy of the API 1173 standard.	Findings: 3.5, 6.10 Recommendations: None NorthStar notes that PG&E has developed numerous corporate and LOB initiatives directed at improving safety. NorthStar refers to API 1173 as having inadequate project justification.	API 1173 Certification of compliance was received in Nov 2015. Most-recently, an annual surveillance assessment against API 1173 was successfully conducted in Nov 2017.
61	Ground Breaking Winters Training Facility	This facility expands hands-on employee training on field-related work. A team of Gas Operations employees including IBEW, ESC, and management visited newly constructed gas training facilities and identified a portfolio of training needs and designs to be implemented at PG&E. The Gas Operations Technical Training Center (GOTTC) officially broke ground in the fall of 2015 and is expected to be ready for training employees by the end of 2016. The focus of the facility is to provide hands-on training for all field employees whether they are a new hire or a seasoned veteran.	Findings: 6.10 Recommendations: None NorthStar referred to the Gas Operations' Winters Training Facility favorably and as having adequate project justification. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.	The Winters Training Facility is operational and an integral element of Gas operations' training programs. It is subject to continuous improvement.
62	11th of 12 National Transportation Safety Board (NTSB) Recommendation Closed	After the San Bruno incident, the NTSB made 12 recommendations to PG&E. Gas Operations has been aggressively implementing each of the recommendations and by the end of 2015 had successfully completed 11 of the 12.	Findings: 3.1 Recommendations: None NorthStar referred to the Gas Operations' response to the NTSB recommendations favorably.	Progress on the last open NTSB recommendation is ongoing, updates are provided to the NTSB on an annual basis.

# Cross Reference: NorthStar Data Request 144 and Assigned Commissioner Ruling Question 7 (Continued)

NorthStar Data Response 144		ACR Question 7 Responses		
Line Item	Safety Initiative	Description	Citation and Nature of NorthStar Citation	Description of Current Status and Rationale if Discontinued, Replaced or Ended Prior to Completion
63	Mariner Implemented	Gas Operations Gas Transmission GIS system (GTGIS) is referred to by the name Mariner. This foundational technology allows employees easier access to distribution maps and data through mobile technology.	<p>Findings: 3.7, 6.10</p> <p>Recommendations: None</p> <p>NorthStar referred to the Gas Operations' Mariner program as having adequate project justification. NorthStar noted the need for more rigorous prioritization of programs and tracking of expenditures.</p>	The Gas Transmission GIS system (Mariner) is an integral part of on-going gas operations and management processes. It is subject to continuous improvement.

**PACIFIC GAS AND ELECTRIC COMPANY**

**CHAPTER 4**

**BOARD OF DIRECTORS**

PACIFIC GAS AND ELECTRIC COMPANY  
CHAPTER 4  
BOARD OF DIRECTORS

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Appendices

1                                   **PACIFIC GAS AND ELECTRIC COMPANY**  
2   **CHAPTER 4**  
3   **BOARD OF DIRECTORS**

4   **A. Introduction**

5           My name is Linda Y.H. Cheng. I am the Vice President, Corporate  
6   Governance and Corporate Secretary of both Pacific Gas and Electric Company  
7   (PG&E) and PG&E Corporation. In that capacity, I am responsible for support of  
8   each company's Board of Directors and senior management, corporate  
9   governance advice, corporate governance compliance, annual meetings of  
10   shareholders and proxy statements, and shareholder services.

11           The purpose of this testimony is to respond to Questions 7.4 through 9 of  
12   the Assigned Commissioner's Ruling (ACR) dated November 17, 2017. These  
13   questions pertain to the Boards of Directors of PG&E and PG&E Corporation as  
14   they relate to recommendations in the NorthStar Report.

15           In summary, PG&E's and PG&E Corporation's responses to Questions 7.4  
16   through 9 are as follows:

17           **Question 7.4:** *Provide documentation of specific Board actions or initiatives*  
18   *taken in response to the NorthStar report and recommendations, including but*  
19   *not limited to: new committees/subcommittees to address areas of concern;*  
20   *changes in agenda items or Board functions; and, changes in frequency of*  
21   *meetings related to safety topics.*

22           Attached as Appendices 4-A to 4-D is documentation of the Board actions  
23   taken in response to the NorthStar Report, including amending the governance  
24   documents for both PG&E and PG&E Corporation to enhance and clarify the  
25   Boards' responsibility for overseeing the corporate safety function. The Boards  
26   have also taken action to describe and formalize requirements for  
27   communications between the Boards (and certain Board committees) and  
28   executives responsible for safety matters, to emphasize the role of Board  
29   committees in overseeing safety matters at both companies, to enhance safety  
30   expertise of the Boards as a whole and of individual Board members (Directors),  
31   and to confirm Board-level authority to consider safety performance when  
32   establishing executive compensation.

1           **Question 8:** *Several Board members are nearing or have exceeded the*  
2 *stated age limit. Provide PG&E’s plan for recruitment and replacement and*  
3 *describe how to increase safety-related expertise of Board members.*

4           The Boards have a regular cadence for reviewing Director candidates for  
5 election at the annual shareholder meetings, as well as for annually reviewing  
6 desired Director characteristics. In order to increase the safety experience of  
7 the Boards, “safety experience” has been added to the list of skills and  
8 characteristics desired from Board candidates. Furthermore, additional safety  
9 education is planned for existing Directors.

10           **Question 9:** *Provide evidence of Board direction or guidance to executive*  
11 *management in response to the NorthStar report/recommendations.*

12           The documentation provided in response to Question 7.4 serves as  
13 evidence that the Boards of PG&E and PG&E Corporation have taken action in  
14 response to the NorthStar Report, including enhancing their governance  
15 documents to address regular reporting on safety matters from executives to the  
16 Boards (including Board committees).

17 **B. Witness Qualifications**

18           I received a juris doctor degree from Stanford Law School in 1983.  
19 I received a Bachelor of Arts degree in Political Science from Stanford University  
20 in 1980.

21           I have been Corporate Secretary of both PG&E and PG&E Corporation  
22 since May 2001 and a Vice President of both PG&E and PG&E Corporation  
23 since January 2005. My title changed from Vice President and Corporate  
24 Secretary to Vice President, Corporate Governance and Corporate Secretary in  
25 January 2006. From January 1995 to April 2001, I held various Assistant  
26 Corporate Secretary positions at PG&E and PG&E Corporation.

27           I joined the PG&E Law Department in December 1989. As an attorney in  
28 the corporate section of the Law Department, I was responsible for securities,  
29 corporate governance, financing, stock transfer, employee benefit, and other  
30 corporate matters. I was an Attorney at the law firm of Wilson, Sonsini,  
31 Goodrich & Rosati from 1983 to 1987 and from 1988 to December 1989 in the  
32 corporate litigation and corporate securities areas. I was a Research Attorney at  
33 the Harvard University Office of the General Counsel from 1987 to 1988.

1 **C. Background**

2 The Boards of PG&E and PG&E Corporation have always held safety as an  
3 important part of their responsibilities, but as the NorthStar Report states,  
4 PG&E’s Board became more actively involved in safety issues following the San  
5 Bruno accident in September 2010.<sup>1</sup> The Boards’ heightened involvement  
6 included (1) multiple special Board meetings regarding the San Bruno accident,  
7 (2) creation of Special Review Committees of the PG&E and PG&E Corporation  
8 Boards to conduct a review relating to the San Bruno accident, (3) review and  
9 discussion of the Independent Review Panel Report and the National  
10 Transportation Safety Board recommendations, and (4) creation of the Nuclear,  
11 Operations, and Safety Committee of the PG&E Corporation Board.<sup>2</sup>

12 In its Report, NorthStar acknowledges that “interviews with Board members  
13 confirmed their commitment to improving safety at PG&E and they have fully  
14 supported the numerous initiatives brought to them for approval.”<sup>3</sup> An example  
15 cited in the Report is the Boards’ approval of “spending related to the Pipeline  
16 Safety Enhancement Program in advance of regulatory approvals,  
17 understanding that recovery was potentially at risk.”<sup>4</sup>

18 The Boards’ commitment to safety is also reflected in actions taken relative  
19 to compensation. As the NorthStar Report states, the Boards have “discretion to  
20 adjust the amount of the STIP [Short-Term Incentive Plan] payments” to officers.  
21 In fact, the Boards have used this discretion to adjust STIP payments to all  
22 employees. “In February 2011, the [PG&E Corporation] Compensation  
23 Committee exercised its discretion and eliminated the 2010 STIP payments to  
24 Officers.”<sup>5</sup> In 2015, the Compensation Committee added a safety component to  
25 the Long-Term Incentive Plan (LTIP), and in February 2016, the Compensation

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1 NorthStar Report, p. III-11.

2 NorthStar Report, pp. III-11 to III-14.

3 NorthStar Report, p. III-14.

4 NorthStar Report, p. III-14.

5 NorthStar Report, p. VII-15. At the time, the Board did not have the discretion to reduce the STIP rating for non-officer employees. The following year, however, STIP documents and PG&E communications were revised to clearly communicate the Compensation Committee’s discretion to reduce STIP payments and ratings for all employees.

1 Committee reduced the score on one of the STIP employee safety metrics to  
2 zero for all employees in light of an employee fatality.<sup>6</sup>

3 PG&E's and PG&E Corporation's incentive compensation programs  
4 generally lead the industry with respect to incorporation of safety into  
5 performance metrics. For the STIP, safety metrics have comprised 50 percent  
6 of the total weight since 2015 (compared to an average of 9.6 percent at PG&E's  
7 comparator companies).<sup>7</sup> For the LTIP, safety metrics have comprised  
8 5 percent of the total weight for performance-based awards since 2015. By  
9 comparison, only one utility peer had a higher safety weighting in its 2016  
10 long-term incentive plan metrics, and 83 percent of PG&E's peers (20 out of 24)  
11 did not report any safety measure in their 2016 long-term incentive plans.  
12 Starting with the 2018 LTIP awards, the relative weight of safety measures will  
13 be further increased.

14 Following the issuance of the NorthStar Report in May 2017, the PG&E and  
15 PG&E Corporation Boards received a presentation from NorthStar regarding its  
16 report and recommendations. The Board members asked NorthStar  
17 representatives, as well as management, questions and discussed the NorthStar  
18 Report and recommendations.

19 The NorthStar Report contains numerous recommendations that require  
20 some Board action. These recommendations and PG&E's responses thereto  
21 are summarized below.

- 22 • Recommendation III-1: *“Add safety to the list of qualifications used in*  
23 *selecting Independent Directors to the Board(s) of PG&E Corp. and*  
24 *PG&E. Periodically revisit the qualifications matrix and requirements for*  
25 *Independent Director as the industry and requirements change. Add*  
26 *Independent Directors to the Board who have experience with safety,*  
27 *perhaps in another industry such as aviation.”*

28 PG&E and PG&E Corporation have completed this recommendation. In  
29 December 2017, management proposed that the PG&E Corporation Nominating  
30 and Compensation Committee recommend, and that the PG&E and PG&E

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6 NorthStar Report, p. VII-15.

7 Based on information disclosed in the 2017 proxy statements for peer utility companies that the Boards have selected to comprise PG&E Corporation's and PG&E's 2018 pay comparator group and performance comparator group.



1 Corporation Boards of Directors approve, the addition of safety experience to the  
2 list of skills and characteristics that the Boards consider when assessing  
3 candidates for the Boards. The Boards approved this addition. Each company's  
4 Board-approved Corporate Governance Guidelines also require that the Boards  
5 annually review and approve the appropriate skills and characteristics required  
6 of Board members in the context of the current composition of that Board. Each  
7 company's Board will review these lists of skills and characteristics, including  
8 safety experience, as it seeks nominees for election at the annual shareholder  
9 meeting, and during the year as new candidates are considered.

- 10 • Recommendation III-3: *“Develop a comprehensive safety plan (by the*  
11 *end of 2017) .... The plan should be approved by the NOS [Nuclear,*  
12 *Operations, and Safety] Committee and the Boards, and endorsed and*  
13 *supported by executive management and the CPUC.”*

14 PG&E and PG&E Corporation are on target to complete this  
15 recommendation by the first quarter of 2018. *The One PG&E Occupational*  
16 *Health and Safety Plan*<sup>8</sup> was discussed with the PG&E Corporation Nuclear,  
17 Operations, and Safety Committee in May 2017, was finalized by management  
18 in late December 2017, and will be proposed for approval by the PG&E and  
19 PG&E Corporation Safety and Nuclear Oversight Committees<sup>9</sup> and the PG&E  
20 and PG&E Corporation Boards at their respective meetings in February 2018.

- 21 • Recommendations IV-1 and IV-2: *“Appoint a Corporate Safety Officer*  
22 *who has both operations and professional safety experience. ... The*  
23 *Corporate Safety Officer should report to the COO of the Utility and to*  
24 *the NOS Committee of the Board in the same manner that the head of*  
25 *Internal Audit reports to the Audit Committee of the Board in most public*  
26 *companies.”*

27 PG&E and PG&E Corporation have completed this recommendation. As  
28 NorthStar states in its Report, “Corporate Safety now reports directly to the  
29 President of PG&E with a direct reporting relationship to the NOS Committee as

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<sup>8</sup> A copy of the *One PG&E Occupational Health and Safety Plan* is provided as Appendix 3-A to Chapter 3.

<sup>9</sup> In September 2017, the NOS Committee of the PG&E Corporation Board was renamed as the Safety and Nuclear Oversight Committee, and a new Safety and Nuclear Oversight Committee of the PG&E Board was established, with duties that are substantially similar to the PG&E Corporation Safety and Nuclear Oversight Committee.

1 recommended by NorthStar,” and a “new lead safety officer with operational  
2 experience was selected as part of the organizational change.”<sup>10</sup> In May 2017,  
3 the charter of the PG&E Corporation Nuclear, Operations, and Safety  
4 Committee was amended to reflect the revised reporting relationship between  
5 the Chief Safety Officer and that Committee. This revised reporting relationship  
6 is reflected in the respective charters of the PG&E and PG&E Corporation  
7 Safety and Nuclear Oversight Committees.

- 8 • Recommendation VII-1: *“None of the KPIs [key performance metrics]  
9 currently considered for use in measuring safety culture should be  
10 included as an incentive measure (i.e., included as part of the STIP or  
11 LTIP). ... Most of the proposed metrics are based on either employee  
12 surveys or near hit/CAP [Corrective Action Program] reporting.”*

13 PG&E and PG&E Corporation have completed this recommendation. The  
14 current metrics for the 2017 STIP and 2017 LTIP awards are not tied to  
15 employee surveys or near-hit/CAP reporting.

- 16 • Recommendation VII-3: *“Increase the weighting of safety in the LTIP to  
17 more closely align safety performance and executive compensation.”*

18 PG&E and PG&E Corporation have completed this recommendation. At the  
19 December 2017 meetings of the PG&E Corporation Compensation Committee  
20 and the PG&E and PG&E Corporation Safety and Nuclear Oversight  
21 Committees, each Committee’s members considered design of LTIP awards and  
22 approved increasing the weighting of safety metrics for the 2018 LTIP awards, to  
23 more closely align safety performance and executive compensation. Details  
24 regarding the specific safety measures will be approved by the Compensation  
25 Committee in February 2018, as part of the annual review process for  
26 establishing the LTIP award structure each year.

- 27 • Recommendations VII-4 and VII-5. *“Reevaluate the appropriateness of  
28 the Earning from Operations component of the STIP due to its lack of  
29 transparency and the ongoing adjustments for Items Impacting*

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<sup>10</sup> NorthStar Report, pp. IV-20 to IV-21. According to the Report, “Mr. John Higgins, the new Lead Safety Officer has a strong operational background and apparent passion for safety. He is supported by Mr. Todd Hohn, a newly hired Senior Director of Safety and Health who, while not a utility expert, has strong safety credentials.”

1                    *Comparability. Revisit all STIP metrics and targets in light of the*  
2                    *enterprise-wide safety plan recommended by NorthStar.”*

3                    PG&E and PG&E Corporation are in the process of completing this  
4                    recommendation.

5                    Management is continuing to assure alignment between STIP metrics  
6                    proposed to the PG&E Corporation Compensation Committee and the  
7                    *One PG&E Occupational Health and Safety Plan*. At the September 2017 and  
8                    December 2017 meetings of the PG&E Corporation Compensation Committee,  
9                    and at the December 2017 meeting of the PG&E and PG&E Corporation Safety  
10                    and Nuclear Oversight Committees, each Committee’s members considered  
11                    design of STIP awards, including the appropriate identity and weighting of  
12                    applicable performance measures, and the extent to which such measures  
13                    should reflect safety performance. The Compensation Committee will make final  
14                    decisions regarding 2018 STIP metrics in February 2018, as part of the annual  
15                    review process for establishing the STIP structure each year.

16                    **D. Question 7.4: Provide Documentation of Specific Board Actions or**  
17                    **Initiatives Taken in Response to the NorthStar Report and**  
18                    **Recommendations, Including But Not Limited to: New Committees/**  
19                    **Subcommittees to Address Areas of Concern; Changes in Agenda Items or**  
20                    **Board Functions; and, Changes in Frequency of Meetings Related to**  
21                    **Safety Topics**

22                    PG&E’s and PG&E Corporation’s respective Boards of Directors have taken  
23                    the following actions that address findings in the NorthStar Report (some of  
24                    which are described in Section C above):

- 25                    • In May 2017, the PG&E Corporation Board amended the charter of the  
26                    Nuclear, Operations, and Safety Committee (which later was renamed as  
27                    the Safety and Nuclear Oversight Committee) to formalize and clarify the  
28                    structure of, and add transparency regarding, the Chief Safety Officer’s  
29                    reporting relationship to the Nuclear, Operations, and Safety Committee,  
30                    and to describe the Committee’s role in overseeing the corporate safety  
31                    function and serving as a channel of communication between the Chief  
32                    Safety Officer of PG&E and PG&E Corporation and the Boards of  
33                    Directors of PG&E and PG&E Corporation. The amended charter also  
34                    reflects that the Chief Safety Officer reports to the Nuclear, Operations,

1 and Safety Committee in the same manner that the head of Internal  
2 Audit reports to the Audit Committee of the Board in most public  
3 companies. Attached as Appendix 4-A is the amended charter of the  
4 Nuclear, Operations, and Safety Committee of the PG&E Corporation  
5 Board, as approved in May 2017.

- 6 • In September 2017, the PG&E Corporation Board amended the Nuclear,  
7 Operations, and Safety Committee charter to: (1) rename the Committee  
8 as the Safety and Nuclear Oversight Committee; (2) clarify the scope of  
9 the Committee's responsibility regarding safety oversight; (3) specifically  
10 authorize the Committee to request reports from any member of senior  
11 management; and (4) make other clarifications and changes regarding  
12 resources, reporting obligations, and procedures.
- 13 • Also in September 2017, the PG&E Board adopted a charter establishing  
14 a new Safety and Nuclear Oversight Committee of the PG&E Board, with  
15 duties that are substantially similar to the PG&E Corporation Safety and  
16 Nuclear Oversight Committee, and whose initial membership is identical  
17 to that of the PG&E Corporation Safety and Nuclear Oversight  
18 Committee.
- 19 • In furtherance of the PG&E and PG&E Corporation Boards' enhanced  
20 focus on safety matters, both the amended PG&E Corporation Safety  
21 and Nuclear Oversight Committee charter and the new PG&E Safety and  
22 Nuclear Oversight Committee charter require, among other things, that  
23 each Safety and Nuclear Oversight Committee meet at least six times a  
24 year and that such meetings include at least semiannual joint meetings  
25 with the PG&E and PG&E Corporation Audit Committees and the PG&E  
26 Corporation Compliance and Public Policy Committee to discuss the  
27 companies' compliance program and any other topics agreed upon by  
28 those committees. Previously, the Nuclear, Operations, and Safety  
29 Committee charter required only one such joint meeting each year.  
30 Attached as Appendix 4-B are the current charters of the Safety and  
31 Nuclear Oversight Committees of the PG&E Corporation and PG&E  
32 Boards, as approved in September 2017.
- 33 • Although the September 2017 actions described above are consistent  
34 with terms of the settlement resolving the shareholder derivative litigation

1 relating to the San Bruno accident, they also address the NorthStar  
2 Report and recommendations.

- 3 • In September 2017, the PG&E Corporation Board amended the  
4 charter of the Compensation Committee to clarify and confirm the  
5 Committee’s authority to adjust executive compensation, including  
6 downward, to reflect performance with respect to safety. Although  
7 this action is consistent with the terms of the shareholder derivative  
8 litigation settlement, it also addresses the NorthStar Report and  
9 recommendations. Attached as Appendix 4-C is the amended charter  
10 of the Compensation Committee of the PG&E Corporation Board, as  
11 approved in September 2017.
- 12 • In December 2017, the PG&E and PG&E Corporation Boards approved  
13 the addition of safety experience to the list of skills and characteristics  
14 that the Boards consider when assessing candidates for the Boards.  
15 Attached as Appendix 4-D is the approved revised list of desired Director  
16 skills and characteristics, reflecting the addition of “safety experience.”

17 **E. Question 8: Several Board Members Are Nearing or Have Exceeded the**  
18 **Stated Age Limit. Provide PG&E’s Plan for Recruitment and Replacement**  
19 **and Describe How to Increase Safety-Related Expertise of Board**  
20 **Members.<sup>11</sup>**

21 As part of ongoing Board succession planning, the PG&E Corporation  
22 Nominating and Governance Committee and the PG&E and PG&E Corporation  
23 Boards have engaged, and continue to engage, in the following activities, among  
24 others: (1) at least annually identifying the appropriate skills and characteristics  
25 (such as safety experience) to consider when evaluating new Director  
26 candidates and assessing candidates for election to the Boards at annual  
27 shareholder meetings, (2) identifying possible skills and characteristics on which  
28 to focus when searching for candidates to fill upcoming vacancies on the  
29 Boards, based on the current composition and needs of the Boards, and  
30 (3) identifying and evaluating potential Director candidates.

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11 In December 2017, the Boards of PG&E and PG&E Corporation each amended its Board of Directors retirement policy to increase the retirement age from 72 to 75. Under the revised retirement policy, each Board will target an average tenure for all Directors of 10 years or less.

1 In December 2017, management proposed that the PG&E Corporation  
2 Nominating and Compensation Committee recommend, and the PG&E and  
3 PG&E Corporation Boards of Directors approve, the addition of safety  
4 experience to the list of skills and characteristics that the Boards consider when  
5 assessing candidates for the Boards. The Boards approved this addition.

6 The Nominating and Governance Committee and the PG&E and PG&E  
7 Corporation Boards of Directors can reference these identified Director skills and  
8 characteristics during both (1) annual reviews of candidates to nominate for  
9 election at the annual meeting of shareholders, and (2) periodic reviews of  
10 candidates identified during the year from a variety of sources, including  
11 third-party search firms, existing Directors and officers, and shareholders.

12 Safety education also is expected to be offered to existing Board members  
13 regarding PG&E's and PG&E Corporation's approach to safety as well as safety  
14 culture and safety leadership and governance. In that regard, at the  
15 December 2017 meeting of the PG&E and PG&E Corporation Boards, nationally  
16 recognized safety expert Dr. Todd Conklin briefed the Board members on safety  
17 culture, safety leadership, methods for open communication and review that  
18 support PG&E's efforts to foster and reinforce safety improvements through a  
19 learning culture, and the Board's role in safety leadership and governance.

20 **F. Question 9: Provide Evidence of Board Direction or Guidance to Executive**  
21 **Management in Response to the NorthStar Report/Recommendations**

22 Evidence of the Boards' direction or guidance to executive management in  
23 response to the NorthStar Report is provided in Appendices 4-A to 4-D. Much of  
24 the direction or guidance provided to executive management by the Boards may  
25 be provided orally and may not be memorialized in specific documents. As  
26 noted in response to Question 7.4 above, the PG&E and PG&E Corporation  
27 Safety and Nuclear Oversight Committees oversee safety at PG&E and PG&E  
28 Corporation, and serve as a channel of communication with the Chief Safety  
29 Officer regarding the corporate safety function. The Safety and Nuclear  
30 Oversight Committees may provide direction and guidance during the Chief  
31 Safety Officer's reports regarding, for example: (1) the status of PG&E's and  
32 PG&E Corporation's policies, practices, standards, goals, issues, risks, and  
33 compliance relating to safety; (2) activities relating to creation and instillation of  
34 safety culture at PG&E and PG&E Corporation; and (3) activities relating to

1 establishment of and performance on safety metrics. At each Safety and  
2 Nuclear Oversight Committee meeting, there is opportunity for dialogue between  
3 the Committee members and the Chief Safety Officer as well as other  
4 executives of PG&E and PG&E Corporation, including pursuant to the  
5 Committees' authority to request reports from senior management.

6 **G. Conclusion**

7 The PG&E and PG&E Corporation Boards have clarified and strengthened  
8 the governance structure regarding Board-level oversight of safety, provided a  
9 more direct line of reporting for the Chief Safety Officer to the Safety and  
10 Nuclear Oversight Committees to enhance the flow of information to the Boards,  
11 and explicitly called out Board-level authority for the corporate safety function, so  
12 that Board involvement occurs as part of safety planning, and not just in reaction  
13 to safety issues.

14 These efforts, coupled with ongoing efforts to increase the safety expertise  
15 of the Board members themselves, demonstrate the PG&E and PG&E  
16 Corporation Boards' strong and continuing engagement in safety matters.

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 4**  
**APPENDIX 4-A**  
**NUCLEAR, OPERATIONS, AND SAFETY COMMITTEE**  
**RESOLUTION OF THE BOARD OF DIRECTORS OF PG&E**  
**CORPORATION**  
**MAY 31, 2017**



**Nuclear, Operations, and Safety Committee**

**RESOLUTION OF THE  
BOARD OF DIRECTORS OF  
PG&E CORPORATION**

May 31, 2017

BE IT RESOLVED that the Board of Directors hereby establishes a Nuclear, Operations, and Safety Committee of this Board, to consist of at least three directors, one of whom shall be appointed as the Committee's chair, and all of whom shall satisfy independence and qualification criteria established by this Board of Directors, as set forth in this corporation's Corporate Governance Guidelines; and

BE IT FURTHER RESOLVED that the basic responsibility of the Nuclear, Operations, and Safety Committee shall be to advise and assist this Board and the Board of Directors of Pacific Gas and Electric Company (the "Utility") with respect to the oversight and review of (i) significant safety (including public and employee safety), operational performance, and compliance issues related to the Utility's nuclear, generation, gas and electric transmission, and gas and electric distribution operations and facilities ("Operations and Facilities"), and (ii) risk management policies and practices related to such Operations and Facilities. This role is one of oversight and in no way alters management's authority, responsibility, or accountability. More specifically, with respect to such Operations and Facilities, the Nuclear, Operations, and Safety Committee shall, among other things:

1. Review significant policies and issues related to safety, operational performance, and compliance.
2. Review with management the principal risks related to or arising out of the Utility's Operations and Facilities (including risks that are identified through the corporation's enterprise risk management program and that are selected in consultation with this Board of Directors, the Board of Directors of the Utility, and their respective committees, as applicable), and assess the effectiveness of the Utility's program to manage or mitigate such risks, including with respect to:
  - (a) the safe and reliable operation of any nuclear facilities owned by the Utility;

- (b) integrity management programs for the Utility’s gas operations and facilities; and
  - (c) asset management programs for the Utility’s electric operations and facilities.
- 3. Review and discuss how the Utility can continue to improve its safety practices and operational performance.
- 4. Review and discuss the results of the Utility’s goals, programs, policies, and practices with respect to promoting a strong safety culture.
- 5. Review the impact of significant changes in law and regulations affecting safety and operational performance.
- 6. Advise the Compensation Committee on appropriate safety and operational goals to be included in executive compensation programs and plans.
- 7. At least annually, meet jointly with the Audit Committee, the Utility’s Audit Committee, and the Compliance and Public Policy Committee to discuss the corporation’s compliance program.
- 8. (a) Review the adequacy and direction of the corporate safety function, including the appointment and replacement of the chief safety officer of this corporation or the Utility (together, the “Companies”) (or any officer who is similarly given direct responsibility for overseeing enterprise-wide safety matters at this corporation or the Utility) (the “Chief Safety Officer”), (b) review with the Chief Safety Officer the responsibilities, budget, and staffing of the corporate safety function, (c) periodically review the corporate safety and health functions, goals, and objectives represented in the Companies’ five-year planning process, and (d) periodically review reports provided to management by the Chief Safety Officer.
- 9. Serve as a channel of communication between the Chief Safety Officer and the respective Boards of Directors of this corporation and the Utility.
- 10. Meet separately with the Chief Safety Officer from time to time, at the discretion of the Chair of the Nuclear, Operations, and Safety Committee.

11. Report regularly to the Boards of Directors on the Committee's deliberations and actions taken.

BE IT FURTHER RESOLVED that the members of the Nuclear, Operations, and Safety Committee shall periodically visit the Utility's nuclear and other operating facilities; and

BE IT FURTHER RESOLVED that the Chief Safety Officer shall regularly provide reports to the Nuclear, Operations, and Safety Committee regarding (1) the status of the Companies' policies, practices, standards, goals, issues, risks, and compliance relating to safety, (2) activities relating to creation and instillation of safety culture at the Companies, (3) activities relating to establishment of and performance on safety metrics, and (4) such other topics as may be requested by the Committee; and

BE IT FURTHER RESOLVED that the Nuclear, Operations, and Safety Committee shall fix its own time and place of meetings and shall, by a majority vote of its members, and subject to the California Corporations Code and this corporation's Articles of Incorporation and Bylaws, prescribe its own rules of procedure; and

BE IT FURTHER RESOLVED that the Nuclear, Operations, and Safety Committee shall have the right to retain or utilize, at this corporation's expense, the services of such firms or persons as the Committee deems necessary or desirable to assist it in exercising its duties and responsibilities; and

BE IT FURTHER RESOLVED that, unless otherwise designated by the Committee, the Corporate Secretary of this corporation, or an Assistant Corporate Secretary, shall serve as secretary to the Nuclear, Operations, and Safety Committee; and

BE IT FURTHER RESOLVED that the resolution on this subject adopted by this Board on June 17, 2015 is hereby superseded.

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 4**  
**APPENDIX 4-B**  
**PG&E CORPORATION SAFETY AND**  
**NUCLEAR OVERSIGHT COMMITTEE**  
**RESOLUTION OF THE BOARD OF DIRECTORS OF**  
**PG&E CORPORATION**  
**SEPTEMBER 19, 2017**

**PG&E Corporation Safety and Nuclear Oversight Committee**

**RESOLUTION OF THE  
BOARD OF DIRECTORS OF  
PG&E CORPORATION**

September 19, 2017

WHEREAS, in connection with the settlement resolving the consolidated shareholder derivative litigation seeking recovery on behalf of PG&E Corporation and Pacific Gas and Electric Company (the “Utility”) (together, the “Companies” or “PG&E”) for alleged breaches of fiduciary duty by certain current and former officers and directors, the Companies agreed to implement certain corporate governance therapeutics, including therapeutics relating to establishment of safety oversight committees of the Companies’ respective Boards of Directors;

NOW, THEREFORE, BE IT RESOLVED that, effective immediately, the Nuclear, Operations, and Safety Committee of this Board of Directors is renamed as the Safety and Nuclear Oversight Committee; and

BE IT FURTHER RESOLVED that the Safety and Nuclear Oversight Committee shall consist of at least three directors, one of whom shall be appointed as the Committee’s chair; and

BE IT FURTHER RESOLVED that all members of the Safety and Nuclear Oversight Committee shall satisfy independence and qualification criteria established by this Board of Directors, as set forth in this corporation’s Corporate Governance Guidelines, and shall be “independent” as defined by standards established by any stock exchange on which securities of this corporation or the Utility are traded; and

BE IT FURTHER RESOLVED that the basic responsibility of the Safety and Nuclear Oversight Committee shall be to advise and assist this Board of Directors with respect to the oversight and review of (i) policies, practices, goals, issues, risks, and compliance relating to safety (including public and employee safety), and compliance issues related to PG&E’s nuclear, generation, gas and electric transmission, and gas and electric distribution operations and facilities (“Operations and Facilities”), (ii) significant operational performance and other compliance issues related to such Operations and Facilities, and (iii) risk management policies

and practices related to such Operations and Facilities. This role is one of oversight and in no way alters management's authority, responsibility, or accountability. More specifically, with respect to such Operations and Facilities, the Safety and Nuclear Oversight Committee shall, among other things:

1. Review significant policies and issues related to safety, operational performance, and compliance.
2. Review with management the principal risks related to or arising out of PG&E's Operations and Facilities (including risks that are identified through PG&E's enterprise risk management program and that are selected in consultation with this Board of Directors and its committees, as applicable), and assess the effectiveness of PG&E's programs to manage or mitigate such risks, including with respect to:
  - (a) the safe and reliable operation of any nuclear facilities owned by PG&E;
  - (b) integrity management programs for PG&E's gas operations and facilities; and
  - (c) asset management programs for PG&E's electric operations and facilities.
3. Review and discuss how PG&E can continue to improve its safety practices and operational performance.
4. Review and discuss the results of PG&E's goals, programs, policies, and practices with respect to promoting a strong safety culture.
5. Review the impact of significant changes in law and regulations affecting safety and operational performance.
6. Advise this corporation's Compensation Committee on appropriate safety and operational goals to be included in PG&E's executive compensation programs and plans.
7. Meet at least six times per year. Such meetings shall include at least semiannual joint meetings with the Utility's Safety and Nuclear Oversight Committee, this corporation's Audit Committee, the Utility's Audit Committee, and the corporation's Compliance and

Public Policy Committee to discuss PG&E's compliance program and any other topics agreed upon by those committees.

8. (a) Review the adequacy and direction of PG&E's corporate safety functions, including the appointment and replacement of any chief safety officer of this corporation (or any officer who is similarly given direct responsibility for overseeing enterprise-wide safety matters at the corporation) (the "Chief Safety Officer"), (b) review with the Chief Safety Officer the responsibilities, budget, and staffing of the corporation's safety function, (c) periodically review PG&E's corporate safety and health functions, goals, and objectives represented in PG&E's five-year planning process, and (d) periodically review reports provided to management by the Chief Safety Officer and any chief safety officer of the Utility (or any officer who has direct responsibility for overseeing safety matters at the Utility).
9. Serve as a channel of communication between the Chief Safety Officer and this Board of Directors.
10. Meet separately with the Chief Safety Officer from time to time, at the discretion of the Chair of the Committee.
11. Report regularly (and at least semiannually) to this Board of Directors on deliberations and actions taken by the Committee, and issues considered and addressed as part of the Committee's oversight responsibilities.

BE IT FURTHER RESOLVED that the members of the Safety and Nuclear Oversight Committee shall periodically visit PG&E's nuclear and other operating facilities; and

BE IT FURTHER RESOLVED that the Chief Safety Officer shall regularly provide reports to the Safety and Nuclear Oversight Committee regarding (1) the status of PG&E's policies, practices, standards, goals, issues, risks, and compliance relating to safety, (2) activities relating to creation and instillation of safety culture at PG&E, (3) activities relating to establishment of and performance on safety metrics, and (4) such other topics as may be requested by the Committee; and

BE IT FURTHER RESOLVED that this corporation's Chief Ethics and Compliance Officer shall regularly provide reports to the Safety and Nuclear Oversight

Committee regarding activities relating to establishment of and performance on compliance and ethics metrics related to PG&E's Operations and Facilities; and

BE IT FURTHER RESOLVED that the Safety and Nuclear Oversight Committee also may request reports from any member of senior management of PG&E, that such reports shall be provided within a reasonable time of the request, and that any dispute or unreasonable delay with respect to such a request shall be documented in the Committee's minutes; and

BE IT FURTHER RESOLVED that the Safety and Nuclear Oversight Committee shall be empowered to act independently of other committees of this Board of Directors and shall not be subject to direction or limitation by any other committee of this Board, subject to applicable legal restrictions and stock exchange standards; and

BE IT FURTHER RESOLVED that the Safety and Nuclear Oversight Committee shall fix its own time and place of meetings and shall, by a majority vote of its members, and subject to the California Corporations Code and this corporation's Articles of Incorporation and Bylaws, prescribe its own rules of procedure; and

BE IT FURTHER RESOLVED that the Safety and Nuclear Oversight Committee shall have the right to retain or utilize, at this corporation's expense, the services of such firms or persons, including independent counsel or other advisors, as the Committee deems necessary or desirable to assist it in exercising its duties and responsibilities; and

BE IT FURTHER RESOLVED that the Safety and Nuclear Oversight Committee shall have the right to request and receive from this Board of Directors reasonable resources to assist it in exercising its duties and responsibilities, and that such requests, and any failure to provide such requested resources, shall be documented and explained in the minutes of the Committee and this Board; and

BE IT FURTHER RESOLVED that, unless otherwise designated by the Committee, the Corporate Secretary of this corporation, or an Assistant Corporate Secretary, shall serve as secretary to the Safety and Nuclear Oversight Committee; and

BE IT FURTHER RESOLVED that the resolution on this subject adopted by the Board of Directors on May 31, 2017 is hereby superseded.



**Pacific Gas and Electric Company Safety and Nuclear Oversight Committee**

**RESOLUTION OF THE**  
**BOARD OF DIRECTORS OF**  
**PACIFIC GAS AND ELECTRIC COMPANY**

September 19, 2017

WHEREAS, in connection with the settlement resolving the consolidated shareholder derivative litigation seeking recovery on behalf of PG&E Corporation and Pacific Gas and Electric Company (the “Utility”) (together, the “Companies”) for alleged breaches of fiduciary duty by certain current and former officers and directors of the Companies, the Companies agreed to implement certain corporate governance therapeutics, including therapeutics relating to establishment of safety oversight committees of the Companies’ respective Boards of Directors;

NOW, THEREFORE, BE IT RESOLVED that this Board of Directors hereby establishes a Safety and Nuclear Oversight Committee, to consist of at least three directors, one of whom shall be appointed as the Committee’s chair; and

BE IT FURTHER RESOLVED that all members of the Safety and Nuclear Oversight Committee shall satisfy independence and qualification criteria established by this Board of Directors, as set forth in this company’s Corporate Governance Guidelines, and shall be “independent” as defined by standards established by any stock exchange on which securities of this company or its parent, PG&E Corporation (the “Corporation”), are traded; and

BE IT FURTHER RESOLVED that the basic responsibility of the Safety and Nuclear Oversight Committee shall be to advise and assist this Board of Directors with respect to the oversight and review of (i) policies, practices, goals, issues, risks, and compliance relating to safety (including public and employee safety), and compliance issues related to the Utility’s nuclear, generation, gas and electric transmission, and gas and electric distribution operations and facilities (“Operations and Facilities”), (ii) significant operational performance and other compliance issues related to such Operations and Facilities, and (iii) risk management policies and practices related to such Operations and Facilities. This role is one of oversight and in no way alters management’s authority, responsibility, or accountability. More specifically, with

respect to such Operations and Facilities, the Safety and Nuclear Oversight Committee shall, among other things:

1. Review significant policies and issues related to safety, operational performance, and compliance.
2. Review with management the principal risks related to or arising out of the Utility's Operations and Facilities (including risks that are identified through PG&E's enterprise risk management program and that are selected in consultation with this Board of Directors and its committees, as applicable), and assess the effectiveness of the Utility's programs to manage or mitigate such risks, including with respect to:
  - (a) the safe and reliable operation of any nuclear facilities owned by the Utility;
  - (b) integrity management programs for the Utility's gas operations and facilities; and
  - (c) asset management programs for the Utility's electric operations and facilities.
3. Review and discuss how the Utility can continue to improve its safety practices and operational performance.
4. Review and discuss the results of the Utility's goals, programs, policies, and practices with respect to promoting a strong safety culture.
5. Review the impact of significant changes in law and regulations affecting safety and operational performance.
6. Advise the Corporation's Compensation Committee on appropriate safety and operational goals to be included in PG&E's executive compensation programs and plans.
7. Meet at least six times per year. Such meetings shall include at least semiannual joint meetings with the Corporation's Safety and Nuclear Oversight Committee, the Utility's Audit Committee, the Corporation's Audit Committee, and the Corporation's Compliance and Public Policy Committee to discuss PG&E's compliance program and any other topics agreed upon by those committees.

8. (a) Review the adequacy and direction of the Utility's corporate safety function, including the appointment and replacement of any chief safety officer of the Utility (or any officer who is similarly given direct responsibility for overseeing enterprise-wide safety matters at the Utility) (the "Chief Safety Officer"), (b) review with the Chief Safety Officer the responsibilities, budget, and staffing of the Utility's safety function, (c) periodically review the Utility's safety and health functions, goals, and objectives represented in PG&E's five-year planning process, and (d) periodically review reports provided to management by the Chief Safety Officer.
9. Serve as a channel of communication between the Chief Safety Officer and this Board of Directors.
10. Meet separately with the Chief Safety Officer from time to time, at the discretion of the Chair of the Committee.
11. Report regularly (and at least semiannually) to this Board of Directors on deliberations and actions taken by the Committee, and issues considered and addressed as part of the Committee's oversight responsibilities.

BE IT FURTHER RESOLVED that the members of the Safety and Nuclear Oversight Committee shall periodically visit the Utility's nuclear and other operating facilities; and

BE IT FURTHER RESOLVED that the Chief Safety Officer shall regularly provide reports to the Safety and Nuclear Oversight Committee regarding (1) the status of the Utility's policies, practices, standards, goals, issues, risks, and compliance relating to safety, (2) activities relating to creation and instillation of safety culture at the Utility, (3) activities relating to establishment of and performance on safety metrics, and (4) such other topics as may be requested by the Committee; and

BE IT FURTHER RESOLVED that the Utility's Chief Ethics and Compliance Officer shall regularly provide reports to the Safety and Nuclear Oversight Committee regarding activities relating to establishment of and performance on compliance and ethics metrics related to the Utility's Operations and Facilities; and

BE IT FURTHER RESOLVED that the Safety and Nuclear Oversight Committee also may request reports from any member of senior management of the Utility, that such reports shall be provided within a reasonable time of the request, and that any dispute or unreasonable delay with respect to such a request shall be documented in the Committee's minutes; and

BE IT FURTHER RESOLVED that the Safety and Nuclear Oversight Committee shall be empowered to act independently of other committees of this Board of Directors and shall not be subject to direction or limitation by any other committee of this Board, subject to applicable legal restrictions and stock exchange standards; and

BE IT FURTHER RESOLVED that the Safety and Nuclear Oversight Committee shall fix its own time and place of meetings and shall, by a majority vote of its members, and subject to the California Corporations Code and this company's Articles of Incorporation and Bylaws, prescribe its own rules of procedure; and

BE IT FURTHER RESOLVED that the Safety and Nuclear Oversight Committee shall have the right to retain or utilize, at this company's expense, the services of such firms or persons, including independent counsel or other advisors, as the Committee deems necessary or desirable to assist it in exercising its duties and responsibilities; and

BE IT FURTHER RESOLVED that the Safety and Nuclear Oversight Committee shall have the right to request and receive from this Board of Directors reasonable resources to assist it in exercising its duties and responsibilities, and that such requests, and any failure to provide such requested resources, shall be documented and explained in the minutes of the Committee and this Board; and

BE IT FURTHER RESOLVED that, unless otherwise designated by the Committee, the Corporate Secretary of this company, or an Assistant Corporate Secretary, shall serve as secretary to the Safety and Nuclear Oversight Committee.

**PACIFIC GAS AND ELECTRIC COMPANY**

**CHAPTER 4**

**APPENDIX 4-C**

**CHARTER OF THE PG&E CORPORATION BOARD OF  
DIRECTORS COMPENSATION COMMITTEE, AS AMENDED ON  
SEPTEMBER 19, 2017**

**Compensation Committee**

**RESOLUTION OF THE  
BOARD OF DIRECTORS OF  
PG&E CORPORATION**

September 19, 2017

BE IT RESOLVED that, effective January 1, 2008, a Compensation Committee of this Board of Directors was established, consisting of at least three directors, appointed by and serving at the pleasure of the Board of Directors, one of whom shall be appointed by this Board of Directors as the Committee's chair; and

BE IT FURTHER RESOLVED that all members of the Compensation Committee shall satisfy independence and qualification criteria established by the Securities and Exchange Commission and any stock exchange on which securities of this corporation of Pacific Gas and Electric Company are traded, including the requirement that this Board of Directors affirmatively determine whether the members are "independent" with reference to any appropriate general categorical or other standards established by the Board as may be set forth in this corporation's Corporate Governance Guidelines and with any additional requirements pertaining specifically to compensation committee members; and that, to the extent practicable, at least two members of the Committee shall also qualify as "outside" directors within the meaning of Section 162(m) of the Internal Revenue Code of 1986, as amended, and as "non-employee" directors within the meaning of Rule 16b-3 under the Securities Exchange Act of 1934, as amended (the "Exchange Act"); and

BE IT FURTHER RESOLVED that the basic responsibility of the Compensation Committee shall be to advise and assist this Board, the Board of Directors of Pacific Gas and Electric Company, and the Board of Directors of any other subsidiary with non-employee directors with respect to the compensation of directors; certain policies and practices regarding employment, compensation, and benefits; and the development, selection, and compensation of policy-making officers. The Compensation Committee shall have the sole authority to select, retain, and terminate any firm as it deems necessary or appropriate to assist the Committee in exercising its duties and responsibilities, including assisting the Committee in the evaluation of the compensation of the Chief Executive Officer and other elected officers of PG&E Corporation, Pacific Gas and Electric Company, and any subsidiaries with non-employee

directors, and to approve such firm's fees and other retention terms, taking into account such firm's independence from management. More specifically, the Compensation Committee shall:

1. (a) Review and discuss with management the Compensation Discussion and Analysis ("CD&A") required by the Securities and Exchange Commission ("SEC") and, based on such review and discussion, recommend to this Board whether the CD&A should be included in the corporation's annual proxy statements or annual reports on Form 10-K filed with the SEC; and (b) perform a similar function for Pacific Gas and Electric Company and any other subsidiary with non-employee directors.
2. (a) Produce a Compensation Committee Report for inclusion in this corporation's annual proxy statements or annual reports on Form 10-K filed with the SEC, indicating whether the Committee has reviewed, discussed, and recommended the CD&A; and (b) perform a similar function for Pacific Gas and Electric Company and any other subsidiary with non-employee directors.
3. Review and recommend to this Board the amount and form of compensation and benefits to be received by directors of this corporation who are not employees of this corporation or of a subsidiary or affiliate, including benefits under incentive compensation plans and equity-based plans, and perform a similar function with respect to the compensation and benefits to be received by such directors of Pacific Gas and Electric Company and any other subsidiary with non-employee directors.
4. Review and approve the overall compensation philosophy and objectives of this corporation, and review certain employee compensation and benefits policies and practices of this corporation and its subsidiaries.
5. (a) Review and, as applicable, approve (or recommend that this Board or the Boards of Directors of subsidiary companies approve) (i) executive compensation and benefits plans and arrangements, (ii) short-term incentive plans that include officers, (iii) tax-qualified pension plans, (iv) equity-based plans for employees, (v) funded welfare benefit plans, and (vi) any other compensation plan or arrangement to the extent board-level approval is required for such plans; and (b) approve amendments to such plans as may be designated by this Board or by the Board of Directors of a subsidiary.

6. Review the employee compensation policies and practices for PG&E Corporation, Pacific Gas and Electric Company, and their subsidiaries, with respect to whether or not such policies and practices are reasonably likely to have a material adverse impact on the respective company. Such review should consider, among other things, the relationship between compensation policies and practices, and risk management activities and risk-taking incentives.
  
7. (a) Annually review and approve the corporate goals and objectives of the Chief Executive Officer of this corporation, and evaluate the performance of the Chief Executive Officer in light of the approved performance goals and objectives; (b) based on such evaluation, review and recommend to the independent members of this Board of Directors the salary and other compensation of the Chief Executive Officer of this corporation, including determining the long-term incentive component of the Chief Executive Officer's compensation after considering this corporation's performance and relative shareholder return and the value of similar incentive awards granted to chief executive officers of comparable companies and the incentive awards granted to the Chief Executive Officer in past years; (c) review and act upon the recommendations of the Chief Executive Officer of this corporation concerning salaries and other compensation of all other "officers" of this corporation, as defined in Rule 16a-1(f) under the Exchange Act ("Section 16 Officers"); and (d) review and act upon the recommendations of the Chief Executive Officer of this corporation concerning salaries and other compensation of all remaining officers of this corporation (other than Assistant Corporate Secretaries and Assistant Treasurers) who are not Section 16 Officers; provided, however, that the Committee may, at its discretion and through a formal action of the Committee that is duly noted in a Committee resolution or the Committee's meeting minutes, delegate to the Chief Executive Officer of PG&E Corporation the authority to approve salary and other compensation of officers of this corporation (except Section 16 Officers) whose responsibilities or level of compensation the Committee deems to be more appropriate to be approved by the Chief Executive Officer. Approval of compensation also must be consistent with requirements set forth in applicable plan documents.
  
8. (a) Annually review and approve the corporate goals and objectives of the Chief Executive Officer (or, if that office is not filled, the President) of Pacific Gas and Electric Company, and evaluate the performance of that officer in light of the approved performance goals and objectives; (b) based on such evaluation, review and recommend



to the independent members of the Board of Directors of Pacific Gas and Electric Company the salary and other compensation of the Chief Executive Officer (or, if that office is not filled, the President) of that company; (c) review and act upon the recommendations of the Chief Executive Officer of PG&E Corporation and the Chief Executive Officer (or, if that office is not filled, the President) of Pacific Gas and Electric Company concerning salaries and other compensation of all other Section 16 Officers of Pacific Gas and Electric Company except individuals who are not officers of Pacific Gas and Electric Company; (d) review and act upon the recommendation of the Chief Executive Officer of PG&E Corporation and the Chief Executive Officer (or, if that office is not filled, the President) of Pacific Gas and Electric Company concerning salaries and other compensation of all remaining officers of Pacific Gas and Electric Company (other than Assistant Corporate Secretaries and Assistant Treasurers) who are not Section 16 Officers; provided, however, that the Committee may, at its discretion and through a formal action of the Committee that is duly noted in a Committee resolution or the Committee's meeting minutes, delegate to the Chief Executive Officer of PG&E Corporation or the Chief Executive Officer (or, if that office is not filled, the President) of Pacific Gas and Electric Company the authority to approve salary and other compensation of officers of Pacific Gas and Electric Company (except Section 16 Officers) whose responsibilities or level of compensation the Committee deems to be more appropriate to be approved by the officer to whom such authority is delegated; and (e) perform a similar function with respect to compensation paid to chief executive officers, Section 16 Officers, and other officers of the other subsidiaries with non-employee directors, with similar power of delegation to the Chief Executive Officer of PG&E Corporation. Approval of compensation also must be consistent with requirements set forth in applicable plan documents.

9. Review and act upon the recommendations of the Chief Executive Officer of PG&E Corporation concerning the salaries and other compensation of the officers of all other subsidiaries (other than Assistant Corporate Secretaries and Assistant Treasurers); provided, however, that the Committee may, at its discretion and through a formal action of the Committee that is duly noted in a Committee resolution or the Committee's meeting minutes, delegate to the Chief Executive Officer of PG&E Corporation the authority to approve salary and other compensation of officers whose responsibilities or level of compensation the Committee deems to be more appropriate to be approved by the Chief Executive Officer. Approval of compensation also must be consistent with requirements set forth in applicable plan documents.

10. (a) Oversee the evaluation of the management of this corporation; (b) review long-range planning for officer development and succession; and (c) perform a similar function for Pacific Gas and Electric Company.
11. Conduct an annual performance evaluation of the Committee.
12. Report regularly to this Board of Directors and the Board of Directors of Pacific Gas and Electric Company, as appropriate, on the Committee's deliberations and actions taken, and deliberations or actions taken by any formal subcommittees that may be established by the Committee.

BE IT FURTHER RESOLVED that this Board of Directors hereby clarifies and confirms that the Compensation Committee may consider various items when exercising its authority to establish or adjust executive compensation, including consideration of, without limitation, performance with respect to safety, compliance, and ethics; and

BE IT FURTHER RESOLVED that the Compensation Committee may, in its sole discretion, retain or obtain the advice of a compensation consultant, independent legal counsel, or other advisor, and that the Committee shall be directly responsible for the appointment, compensation, and oversight of the work of any such compensation consultant, independent legal counsel, or other advisor; provided, however, that before selecting such advisor (other than in-house legal counsel), the Committee must take into consideration all factors relevant to that person's independence from management, including any required factors enumerated in applicable rules promulgated by the Securities and Exchange Commission, stock exchanges, and other authorities; and

BE IT FURTHER RESOLVED that this corporation shall provide appropriate funding, as determined by the Compensation Committee, in the Committee's capacity as a committee of the Board of Directors, for payment of reasonable compensation to any such compensation consultants, independent legal counsel, or other advisors retained by the Committee; and

BE IT FURTHER RESOLVED that the Compensation Committee is authorized to establish one or more subcommittees vested with any authority held by the Committee, and shall establish appropriate charters and procedures for operation of any such subcommittees; and

BE IT FURTHER RESOLVED that the Compensation Committee shall fix its own time and place of meetings and shall prescribe its own rules of procedure; and

BE IT FURTHER RESOLVED that, unless otherwise designated by the Committee, the Corporate Secretary of this corporation, or an Assistant Corporate Secretary, shall serve as a secretary to the Compensation Committee; and

BE IT FURTHER RESOLVED that the resolution on this subject adopted by the Board of Directors on July 10, 2015 is hereby superseded.

**PACIFIC GAS AND ELECTRIC COMPANY**

**CHAPTER 4**

**APPENDIX 4-D**

**SUMMARY OF FACTORS CONSIDERED FOR BOARD  
MEMBERSHIP, PG&E CORPORATION AND PACIFIC GAS AND  
ELECTRIC COMPANY, AS OF DECEMBER 20, 2017**

## **SUMMARY OF FACTORS CONSIDERED FOR BOARD MEMBERSHIP**

### **PG&E CORPORATION AND PACIFIC GAS AND ELECTRIC COMPANY**

**As of December 20, 2017**

#### **Skills and Characteristics**

- Senior executive
- Other public board service
- Legal
- Governmental service/public policy
- Energy/utility industry
- Safety experience
- Community affairs
- Information technology
- Environmental affairs
- Business operations, marketing, customer service
- Pacific Gas and Electric Company customer
- Financial literacy
- Audit/accounting/finance
- Executive compensation
- Strategic planning/M&A
- Risk management
- Corporate governance
- Media relations/investor relations
- Crisis response/management

#### **Other Factors**

- Independence
- Age
- Tenure on the PG&E Corporation and/or Pacific Gas and Electric Company Boards of Directors
- Gender
- Diversity (ethnicity)

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 5**  
**PG&E'S CORRECTIVE ACTION PROGRAM**

PACIFIC GAS AND ELECTRIC COMPANY  
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PG&E'S CORRECTIVE ACTION PROGRAM

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Appendices

1                                   **PACIFIC GAS AND ELECTRIC COMPANY**  
2   **CHAPTER 5**  
3                                   **PG&E'S CORRECTIVE ACTION PROGRAM**

4   **A. Introduction**

5           My name is Gary R. Close. I am Director of the Enterprise Corrective Action  
6           Program (ECAP) at Pacific Gas and Electric Company (PG&E or the Company).  
7           In that capacity, I am responsible for the governance and successful operation of  
8           the Company's Corrective Action Program (CAP), which includes oversight of  
9           line of business (LOB) CAP programs to effectively and efficiently identify and  
10          resolve issues as well as providing processes, tools and training to facilitate  
11          cause evaluation and CAP issue resolution.

12          The purpose of my testimony is to respond to Questions 10 through 13 of the  
13          Assigned Commissioner Ruling's dated November 17, 2017. These questions  
14          pertain to PG&E's CAP.

15          In summary, PG&E's responses to Questions 10 through 13 are as follows:

16           **Question 10:** *PG&E shall provide the current status of implementing its*  
17           *Corrective Action Program across all lines of business.*

18          As of June 2017, the CAP has been deployed to all LOBs within PG&E.

19           **Question 11:** *How is the transition of the existing Corrective Action*  
20           *Program in Electric Operations to the new program being evaluated?*

21          Prior to CAP, Electric Operations used two separate systems to track and  
22          report certain electric asset and safety issues: the Event Report Engine (ERE)  
23          and the Rapid Incident Notification (RIN). CAP was deployed to Electric  
24          Operations in November 2016. PG&E evaluated the transition from ERE and  
25          RIN to CAP based on established criteria to ensure: (1) business requirements  
26          were met; and (2) any unintended negative consequences were mitigated.  
27          Based on this evaluation, PG&E has identified additional improvements planned  
28          for 2018.

29           **Question 12:** *Provide any evidence that the "lessons learned" from the*  
30           *Corrective Action Program are shared across lines of business.*

31          The sharing of knowledge and lessons learned across LOBs occurs at  
32          two points during the life of a CAP issue: early in the evaluation process when  
33          an Extent of Condition, (i.e., to determine if the issue exists in other locations or



1 LOBs), is performed and later when the causes and corrective actions have  
2 been documented and reviewed by a leadership committee. Evidence of  
3 sharing “Lessons Learned” through CAP are provided in Appendices 5-C to 5-E.

4 **Question 13:** *Provide an assessment of whether the resources being*  
5 *devoted to the Corrective Action Program are showing results in terms of safety*  
6 *performance, new policies or areas of additional training for field employees and*  
7 *contractors.*

8 CAP has been available enterprise-wide since June 2017. Since full  
9 deployment, CAP is having a positive impact on safety culture, and has laid a  
10 good foundation for continuous improvement in the future. While it is still early  
11 for meaningful metrics, PG&E had identified positive impacts within three CAP  
12 focus areas: (1) Issue Submission and Assessment; (2) Issue Resolution; and  
13 (3) Issue Recurrence Prevention.

#### 14 **B. Witness Qualifications**

15 I received a Bachelor of Science degree in Industrial Engineering from  
16 California Polytechnic University, San Luis Obispo in 1989. I have over 25 years  
17 of experience in the nuclear industry and extensive experience with the nuclear  
18 industry’s mandated CAP.

19 From 1990-2013, I worked at PG&E’s Diablo Canyon Nuclear Power Plant  
20 (DCPP) in various roles. In 2014, I left DCPP to design and implement PG&E’s  
21 ECAP and have served as the Director of ECAP since its inception.

22 Prior to joining ECAP, I spent four years managing and overseeing DCPP’s  
23 CAP, first as the Manager of Problem Identification and Resolution at DCPP,  
24 which included oversight of CAP, and then as Director of Site Services which  
25 included oversight of the Performance Improvement and CAP programs. In  
26 2009 and 2010, I was on loan to the Institute of Nuclear Power Operations  
27 (INPO) as a Senior Evaluator in Performance Improvement. INPO sets industry-  
28 wide performance objectives, criteria, and guidelines for nuclear power plant  
29 operations that are intended to promote safety and operational excellence and to  
30 improve the sharing of best practices and common weaknesses between  
31 nuclear power plants. In my role at INPO, I participated in team evaluations of  
32 numerous United States and international nuclear power plants, including  
33 evaluations of their CAPs. Prior to my work at INPO, I held a series of positions

1 of increasing responsibility at DCP, in Engineering, Licensing and Operations,  
2 and in 2005, I received a certification as a Senior Reactor Operator.

### 3 **C. CAP Overview**

4 PG&E's Enterprise CAP is based on the CAP Program at DCP, which  
5 must comply with federal standards as governed by the Nuclear Regulatory  
6 Commission. In addition to the nuclear industry, CAPs are typically found in  
7 high-risk industries such as aviation and chemical manufacturing to reduce  
8 significant risks.

9 PG&E's CAP enables PG&E employees and contractors to easily report,  
10 prioritize, track and resolve safety and non-safety related issues. PG&E's  
11 CAP Program:

- 12 • Enables employees to identify and track equipment and safety issues,  
13 ineffective and inefficient work processes and procedures, and provide  
14 suggestions on how to do things better;
- 15 • Enables employees to use their experience and expertise to promptly raise  
16 and address operational issues related to PG&E assets and operations;
- 17 • Establishes a framework and provides a variety of tools and methods to  
18 communicate the issues and resolutions;
- 19 • Ensures issues are routed to the correct department within PG&E for review  
20 and resolution;
- 21 • Allows PG&E to find and fix issues before they become a significant  
22 problem;
- 23 • Allows PG&E to prevent the recurrence of issues; and
- 24 • Provides PG&E with the ability to identify trends and take proactive action  
25 on potential safety issues.

26 Additional information on PG&E's CAP Program can be found in  
27 Appendix 5-A.

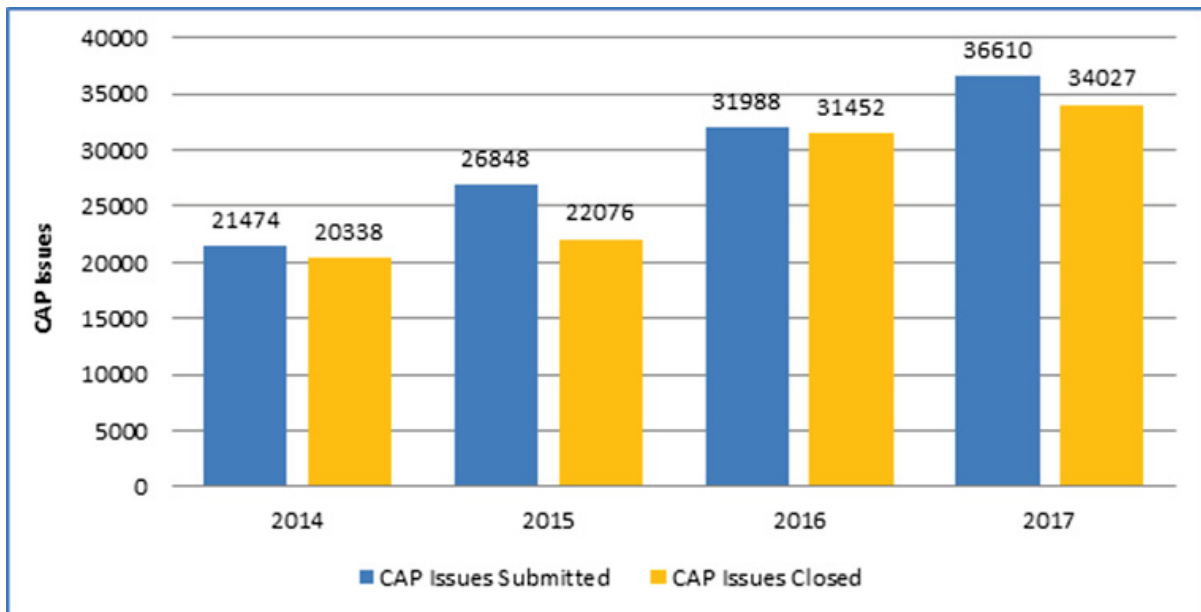
### 28 **D. Question 10: PG&E Shall Provide the Current Status of Implementing Its** 29 *Corrective Action Program Across All Lines of Business*

30 As of June 2017, CAP has been deployed enterprise-wide. All employees  
31 and contractors with access to PG&E's computer network have access to CAP  
32 via multiple platforms: the web, mobile application, phone, and paper.

1 Contractors without access to PG&E’s computer network can submit CAP issues  
2 via phone and paper.

3 As of November 30, 2017, PG&E’s CAP has received over 36,000 safety  
4 and non-safety CAP issues year to date and closed over 34,000 issues.  
5 In 2017, approximately 17 percent of the total issues submitted by LOBs other  
6 than DCPD have been safety related.

**FIGURE 5-1**  
**CAP ISSUE VOLUMES (AS OF NOVEMBER 30, 2017)**



7 Today, CAP’s core processes, technology and training programs have been  
8 established, including issue identification, risk assessment, cause evaluation  
9 and quality resolution.

10 As the program is still in its infancy on an enterprise-wide basis,  
11 mechanisms to monitor and improve the overall health of the program have also  
12 been established, including:

- 13 • Periodic LOB CAP program assessments where cross-functional CAP team  
14 members assess an LOB CAP program’s processes and overall quality of  
15 issue resolution. Recommended program changes are tracked through  
16 completion in CAP.
- 17 • Monthly LOB CAP leadership meetings (CAP Governance Committee)  
18 where LOB CAP Managers share best practices and collectively review and  
19 approve programmatic changes.

1 • Periodic LOB CAP maturity evaluations to monitor the continued evolution  
2 and refinement of each LOB CAP program.

3 Going forward, PG&E is continuing to refine and expand CAP processes,  
4 technology and training in 2018, including changes aligned with  
5 recommendations in the NorthStar Report,<sup>1</sup> with improvements such as:

- 6 • Continued integration of CAP and Safety and Health Department processes  
7 and software systems to streamline cause evaluations and corrective  
8 actions for safety issues;
- 9 • Expanded lessons learned sharing program;
- 10 • Expanded metrics, trending and reporting capabilities;
- 11 • Development of the Executive CAP Dashboard to bring visibility to key  
12 program health metrics;
- 13 • Improved mobile app for submissions and updates to CAP;
- 14 • Expanded effectiveness review process; and
- 15 • Streamlined, automated CAP and Cause Evaluation processes and  
16 technology.

17 **E. Question 11:** *How Is the Transition of the Existing Corrective Action Program in*  
18 *Electric Operations to the New Program Being Evaluated?*

19 Prior to CAP, Electric Operations used two separate systems to track and  
20 report certain electric asset and safety issues: the ERE and the RIN.<sup>2</sup> Both the  
21 RIN and ERE systems were identified as solutions that could be replaced with  
22 the expansion of CAP to Electric Operations in November 2016.

---

1 NorthStar Report, pp. I-15 to I-16.

2 RIN and ERE were separate systems implemented by different work groups, at different times, for different work purposes. ERE was a database used for tracking grid reliability; RIN is a separate e-mail distributor that uses some data from ERE.

The ERE was implemented over ten years ago to comply with mandatory federal reporting requirements for transmission level outages and equipment failures. The causes of these events, and the response and restoration were also documented in ERE.

RIN was implemented a couple of years ago to inform crew leaders of injuries, near-hits, motor vehicle incidents (MVI), human performance events, and switching errors. Most of the data came from PG&E's safety system (Safety and Environmental Management System) for injuries, MVI, and Near-Hits. ERE data for human performance events, switching errors, and tool problems would be sent out to Supervisors via e-mail as well.

1 PG&E evaluated the transition from these systems to CAP based on the  
2 following criteria:

- 3 1. Have the desired business benefits been successfully delivered?
- 4 2. Have negative unintended consequences been successfully mitigated?

5 PG&E determined that the retirement of the RIN and ERE systems and  
6 transition to CAP resulted in the following benefits:

- 7 • Standardized Issue Management and Corrective Actions – one process and  
8 oversight mechanism for managing and reporting issues and determining  
9 effectiveness of corrective actions;
- 10 • Standardized Cause Evaluation Process – one process for executing and  
11 approving Cause Evaluations;
- 12 • Standardized Cause Codes – supports enterprise trending and reporting;
- 13 • Centralized CAP Database – leverages existing Information Technology (IT)  
14 framework to improve business capabilities and stream line process  
15 (e.g., CAP Dashboard, Web, Mobile);
- 16 • Reduced IT Footprint – eliminates stand-alone systems supporting similar  
17 processes;
- 18 • Improved Transparency and Accountability – CAP information and system  
19 tools accessible to all employees; and
- 20 • Improved Employee Engagement – CAP is tied to PG&E’s Speak Up  
21 culture; the CAP process includes a feedback loop for engaging staff and  
22 anonymous submissions.

23 For evaluation criteria 2, PG&E’s CAP team proactively worked with  
24 business stakeholders to ensure CAP functionality met operational and reporting  
25 requirements to ensure a successful transition.

26 Once CAP was deployed, training and technology support was provided to  
27 Electric Operations to address any immediate concerns and all high-priority  
28 issues were identified and addressed in 2017. The Enterprise CAP team is  
29 continuing to add functionality to CAP in 2018.

30 **F. Question 12:** *Provide Any Evidence That the “Lessons Learned” From the*  
31 *Corrective Action Program Are Shared Across Lines of Business*

32 The sharing of knowledge and lessons learned across LOBs occurs at  
33 two points during the life of a Serious Injury or Fatality (SIF) CAP issue: early in  
34 the evaluation process when an Extent of Condition is performed, and later in

1 the process when the causes and corrective actions have been documented and  
2 reviewed by a leadership committee.

### 3 **1. Extent of Condition**

4 A critical feature of the CAP Program is to assess CAP issues for  
5 “extent of condition,” i.e., to determine if the issue exists in other locations or  
6 LOBs and if so, establish corrective actions to address the extent of the  
7 issue and not just the reported issue. Extent of Condition reviews involve  
8 other LOBs early in the issue resolution process to ensure they are included  
9 in any corrective actions to prevent known issues from occurring in their  
10 locations.

11 The following serious injury serves as an example of how an Extent of  
12 Condition review can provide valuable lessons learned to other LOBs. In  
13 2016, a Water System Repairman in the Power Generation LOB was  
14 seriously injured while attempting to open a radial gate using a specific tool  
15 at one of PG&E’s dams. As the incident investigation and evaluation began,  
16 an Extent of Condition evaluation was conducted. The intent of the  
17 evaluation was to determine if there was currently a risk of a similar  
18 occurrence elsewhere in the enterprise. The evaluation determined that  
19 other LOBs may have been at risk of similar occurrences based on their  
20 usage of the specific tool. As a result of this determination, actions were  
21 initiated for other LOBs to identify potential exposure to similar risks and to  
22 establish mitigating actions as required. As a result of this analysis, Gas  
23 Operations recognized a similar risk and implemented immediate actions to  
24 limit the use of the tool until the cause was understood and final corrective  
25 actions put in place.

### 26 **2. Cross Functional Cause Evaluation Review Committee**

27 An additional feature of the CAP Program is sharing cause evaluation  
28 findings across LOBs after an event has occurred.

29 All Root Cause Evaluations (RCE) for SIF are reviewed by the Cross  
30 Functional Cause Evaluation Review Committee, as stipulated in PG&E’s  
31 Cause Evaluation standard. The purpose of the Committee is to review  
32 RCE Reports to identify potential trends in performance and to monitor the  
33 quality of completed reports. Documentation includes executive summaries,

1 extent of condition concerns, corrective actions taken, and the development  
2 of effectiveness evaluations.

3 A Charter was developed to administer the Cross Functional Cause  
4 Evaluation Review Committee. The composition of the Committee is  
5 specified within the Charter and includes directors from Electric, Gas,  
6 Nuclear, IT, Customer Care, Safety and Health, ECAP, Risk and  
7 Compliance.<sup>3</sup>

8 Committee meeting frequency is specified by the Charter to be on a  
9 quarterly basis, or more frequently if determined to be necessary. The first  
10 meeting of the Cross Functional Cause Evaluation Review Committee was  
11 held on July 30, 2015. The initial meeting established the committee and  
12 introduced the members to the new committee review process. Subsequent  
13 meetings have addressed specific RCE Reports associated with Serious  
14 Safety Incidents.<sup>4</sup>

15 Once the Cross Functional Cause Evaluation Review Committee has  
16 completed a SIF review, the results of the SIF Review are communicated to  
17 the LOB directors for distribution within their respective organizations.<sup>5</sup>

18 A virtual meeting led by Corporate Safety is also held to share the  
19 investigation findings with all LOB Safety partners and other LOB leaders.

20 **G. Question 13:** *Provide an Assessment of Whether the Resources Being*  
21 *Devoted to the Corrective Action Program Are Showing Results in Terms of*  
22 *Safety Performance, New Policies or Areas of Additional Training for Field*  
23 *Employees and Contractors*

24 Although CAP has only been deployed enterprise-wide for six months, CAP  
25 is having a positive impact on safety culture, and has laid a good foundation for  
26 continuous improvement in the future. As a result of CAP, PG&E had identified  
27 positive impacts within three CAP focus areas: (1) Issue Submission and  
28 Assessment; (2) Issue Resolution; and (3) Issue Recurrence Prevention.

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3 A copy of the Committee's Charter is attached as Appendix 5-B.

4 Appendix 5-C provides a listing of the Meetings which have been conducted to date with a brief summary of the primary review topic.

5 An example of a SIF Review communication and final report is attached as Appendix 5-D and Appendix 5-E.

1 **1. Issue Submission and Assessment**

2 Identifying issues that need to be addressed is the first step in improving  
3 safety. CAP provides employees with a positive venue to raise issues and  
4 concerns. CAP also provides Safety Specialists the ability to identify and  
5 respond to SIF and SIF potential issues quickly.

6 **a. Increased Safety Issue Submissions**

7 CAP has made the reporting of safety issues is simple.  
8 Consequently, average safety submissions increased from 2016-2017  
9 by 42 percent.

**FIGURE 5-2  
INCREASE IN SAFETY CAP SUBMISSIONS FOR 2016-2017**



10 CAP also allows employees to submit CAP issues anonymously.  
11 In 2017, the average anonymous submission rate was 2 percent of all  
12 issues submitted to CAP. Of the issues submitted to CAP that were  
13 related to safety, only 0.2 percent were anonymous. CAP's low  
14 anonymous submission rate is an early indicator that employees are  
15 supporting PG&E's Speak Up culture especially when it comes to issues  
16 related to safety.



1           **b. Integrated Serious Injury or Fatality Review Process**

2           In 2017, the SIF and CAP review processes were integrated so that  
3           all CAP issues are reviewed for SIF implications during the initial issue  
4           review. If the LOB Safety Specialist determines a CAP issue meets the  
5           criteria for a SIF Actual or SIF Potential, the CAP issue is tagged in the  
6           system for further review. Corporate Safety is then able to review the  
7           issue and finalize the SIF classification. Because the safety issues are  
8           tracked in CAP, all corrective actions can be tracked to completion in  
9           one centralized database.

10          This streamlined process and centralized tracking system have  
11          provided Corporate Safety with an ability to identify and address SIFs  
12          enterprise wide via the same tracking system used by the LOBs,  
13          capability that did not exist prior to CAP.

14          **2. Timely Issue Resolution**

15          In addition to identifying and correcting system wide issues with Extent  
16          of Condition reviews, CAP issues have resulted in modified work  
17          environments, processes and/ or systems to improve employee and public  
18          safety in specific locations or instances.

19          CAP issues that address safety issues in specific instances are  
20          numerous and, while their impact is generally localized, in the aggregate  
21          these smaller safety actions will help mitigate risks at the enterprise level.

22          Examples of site-specific safety issues include:

- 23          • A Materials Handler in Fresno identified safety concerns created by a  
24          temporary storage/inventory warehouse tent. As a result of the CAP  
25          submission, the temporary warehouse was reconfigured to reduce  
26          potential physical and ergonomic injuries.

27          A reprographics operator in San Francisco identified a  
28          malfunctioning, industrial-sized paper puncher that was causing a major  
29          safety risk by sending shrapnel sized pieces of metal at the operator and  
30          others near the machine. He received an e-mail response from safety  
31          and health engineering within hours of submitting a CAP item. The  
32          department sent a technician to repair the machine and eliminate the  
33          safety risk.

1 Examples of regional Extent of Condition issues include:

- 2 • A Gas Distribution Engineer noticed a Gas Service Representative in  
3 the field using pipe thread sealant that was no longer approved for use.  
4 (Pipe thread sealant is applied to pipe and fitting threads to effectively  
5 seal the threads from leaking.) The product was immediately removed  
6 from the truck and the local inventory. The CAP issue ensured that the  
7 product was coded 'Do Not Purchase' in the materials ordering  
8 database and all existing inventory was removed from inventories in  
9 other maintenance yards.
- 10 • A Materials Handler in Fresno noticed that the trash compactor was  
11 continually malfunctioning, which posed a safety hazard for employees.  
12 An Extent of Condition analysis led to inspecting all 121 of these  
13 compactors in various locations and repairing or replacing 76 of them.

### 14 **3. Issue Recurrence Prevention**

15 As a result of CAP, PG&E has implemented standardized processes  
16 and training to improve the quality of Cause Evaluations and Corrective  
17 Actions. Together, these changes will prevent or reduce the likelihood of  
18 issue recurrence for the same basic cause(s), which will have a long-term  
19 impact on safety performance. A summary of current prevention-related  
20 indicators include:

- 21 a. Improved Cause Evaluations
- 22 b. Improved Corrective Actions/Hierarchy of Controls Methodology
- 23 c. New and Revised Standards and Procedures
- 24 d. New and Revised Training

#### 25 **a. Improved Cause Evaluations**

26 Prior to the establishment of Enterprise CAP in 2015, PG&E did not  
27 have a consistent Cause Evaluation process.

28 The CAP Program created a consistent enterprise-wide Cause  
29 Evaluation Standard (GOV-6102S) and standardized Cause Evaluation  
30 procedures for all LOBs. The standard and procedures are designed  
31 such that all cause evaluations are conducted consistently and with high  
32 quality. Templates and job aids for RCE and ACE provide the  
33 necessary tools for thorough and consistent analyses and

1 documentation. Cause Evaluators receive consistent and industry-  
2 accepted Cause Evaluation training that has been added to the PG&E  
3 Academy Training Program.<sup>6</sup>

4 Quality Cause Evaluations are also a result of PG&E's newly  
5 established Corrective Action Review Boards (CARB). Each LOB has a  
6 CARB which is comprised of LOB senior directors and directors.

7 CARBs review LOB RCEs, ACEs for SIF Potentials, Final SIF RCE  
8 and ACE effectiveness reviews and other ACEs as determined by the  
9 CARB chairperson.

10 The CARB reviews RCEs and ACEs for accuracy, completeness  
11 and alignment of the problem, causes and corrective actions. CARB  
12 also reviews corrective actions to prevent recurrence. Because CARB  
13 membership includes directors representing a cross section of the  
14 LOB's, CARBs facilitate the sharing of lessons learned within an LOB  
15 and ensure executive engagement in the cause evaluation process  
16 (Appendix 5-I).

17 **b. Improved Corrective Actions/Hierarchy of Controls Methodology**

18 In addition to improvements from a formalized Cause Evaluation  
19 process and CARB review, PG&E is focusing on improving the quality of  
20 corrective actions to prevent the recurrence of issues. CAP ensures SIF  
21 Corrective Actions are reviewed for appropriate level of controls to  
22 minimize or eliminate exposures to hazards. This approach, known as a  
23 Hierarchy of Controls, is a widely accepted industry standard promoted  
24 by numerous safety organizations, including the National Institute for  
25 Occupational Safety and Health.

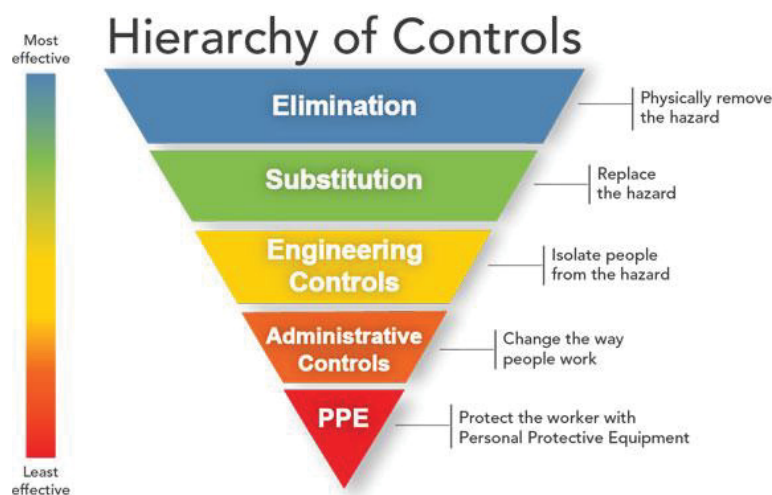
26 The premise of hierarchy of controls is to reduce the reliance on  
27 human behavior in incident prevention. Where possible, it is always  
28 best to first eliminate the hazard if possible, and then apply lower level  
29 controls as appropriate. The most effective method of control is  
30 complete elimination of the hazard to remove the exposure. The least  
31 effective measures of control are administrative controls (procedures,

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<sup>6</sup> RCE Template is attached as Appendix 5-F. Apparent Cause Evaluation (ACE) Template is attached as Appendix 5-G. Materials related to the Cause Evaluation training are attached as Appendix 5-H.

1 training) and the provision of personal protective equipment. These  
2 controls are entirely dependent upon individual performance. See  
3 Appendix 5-J for Hierarchy of Control definitions and examples. The  
4 level of control specified in a corrective action needs to balance cost,  
5 time to implement and practicality.

**FIGURE 5-3**  
**HIERARCHY OF CONTROLS<sup>(a)</sup>**



(a) Source: National Institute for Occupational Safety and Health.

6 PG&E SIF Cause Evaluations are currently reviewed by an  
7 independent third party to validate the quality of PG&E's cause  
8 evaluations and corrective actions. Corrective Actions are scored  
9 against the Hierarchy of Controls. The focus on Hierarchy of Controls is  
10 helping PG&E implement the right level of controls to eliminate or  
11 minimize issue recurrence.

12 CAP's establishment of a standardized Cause Evaluation Program,  
13 CARB, and a focus on Hierarchy of Controls has greatly increased the  
14 quality of CAP's issue resolution. Long term this should result in an  
15 overall reduction in serious incidents.

16 **c. New or Revised Standards and Procedures**

17 CAP issues have resulted in changes to existing standards and  
18 procedures which directly or indirectly impact safety for targeted

1 populations of employees. A sample list of revised procedures can be  
2 found in Appendix 5-K.

**TABLE 5-1**  
**NUMBER OF CAP ISSUES RESULTING IN NEW OR REVISED STANDARDS OR PROCEDURES**

Line No.	Year	# of CAP Issues
1	2017	24
2	2016	16
3	2015	1
4	2014	2
5	2013	1
6	2013-2017	44

3 CAP provides a central repository for corrective actions and ensures  
4 procedures are updated. Prior to CAP, PG&E did not have a consistent  
5 tracking tool used by all personnel to identify and track completion of  
6 corrective actions such as procedure changes.

7 Examples of CAP issues resulting in changes to safety-related  
8 standards and procedures include:

- 9 • An environmental remediation program manager saw a potential  
10 gap in hazardous materials testing during the demolition of retired  
11 concrete transformer pads at an electrical substation. His CAP  
12 issue resulted in a procedure change to address the demolition of  
13 approximately 80 cement pads annually, adding supplemental  
14 hazardous material tests to ensure proper identification and disposal  
15 of the concrete and to ensure employees have appropriate personal  
16 protection equipment.
- 17 • A Power Generation Inspector in Auburn found 11 new trucks  
18 delivered to Auburn had the wrong tires installed—with tire pressure  
19 ratings of 50 per square inch (psi) instead of the 80 psi  
20 recommended by the car manufacturer. The tires were being  
21 operated at 75 psi, which eventually would cause the tires to fail and  
22 potentially lead to employee and/or public injury. This CAP issue  
23 resulted in replacing the tires of all 11 trucks; revising the truck  
24 purchasing process to install tires at the manufacturer instead of the  
25 dealership; and revising inspection procedures to increase

1 inspection frequency (inspect tires at delivery and after  
2 maintenance activities).

3 **d. Training Changes**

4 CAP has resulted in creation or modification of training-related  
5 materials and/or classes, including job aids, Five Minute Meetings,  
6 bulletins and PG&E Academy classes. A sample list of changes is  
7 included in Appendix 5-L.

8 CAP has also established a formal process to validate requests for  
9 new training with the PG&E Academy. This process validates whether  
10 training solutions are an appropriate corrective action for the issue, and  
11 if so, to design appropriate training to address the needs of the target  
12 audience. Prior to CAP, the need for “training” was often cited as a  
13 solution, without validation from learning specialists at the PG&E  
14 Academy. CAP ensures that training is appropriately identified, created  
15 and delivered where needed.

16 Examples of CAP Issues resulting in training related corrective  
17 actions include:

- 18 • A Chico-based safety specialist filed a CAP issue, noting that he  
19 and other safety specialists were finding defective rigging and slings  
20 on bucket trucks. In addition to pulling the equipment from the  
21 trucks, the specialist created a CAP submission calling for refresher  
22 training in methods and procedures, as well as a Safety Stand Down  
23 to review rigging rules.
- 24 • A CAP issue identified a group of Meter Maintenance Technicians  
25 who have very physically demanding jobs, but were not identified to  
26 take specific safety training that others with similar jobs are required  
27 to take. In the past five years this group has experienced a high  
28 number of ergonomic/body mechanic related injuries. The CAP  
29 issue resulted in an evaluation of a broad array of work groups, not  
30 just the group in question, and two additional training assignments  
31 were identified for several work groups, including the group in  
32 question. The review also included ergonomic assessments for  
33 drivers of new vehicles; a campaign to engage field employees in  
34 the Industrial Athlete Program; and an expansion of the Industrial

1 Athlete Program to create a back injury prevention program  
2 expressly designed to prevent ergonomic-related back injuries  
3 based on specific work tasks.

4 **H. Conclusion**

5 PG&E's CAP Program is a critical component in achieving operational and  
6 safety excellence. CAP enables employees and contractors to report issues and  
7 concerns and ensures the issues are risk assessed and addressed. CAP  
8 processes are bringing a new rigor to PG&E's Cause Evaluations and Corrective  
9 Actions that in the long run should result in the reduction or elimination of  
10 recurring issues. PG&E believes CAP is having a positive impact on PG&E's  
11 safety culture and expects to see more results as the program matures.

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 5**  
**APPENDIX 5-A**  
**CORRECTIVE ACTION PROGRAM OVERVIEW**



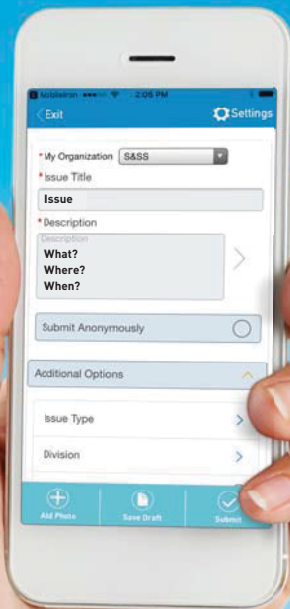


Together, Building  
a Better California

# Corrective Action Program (CAP)

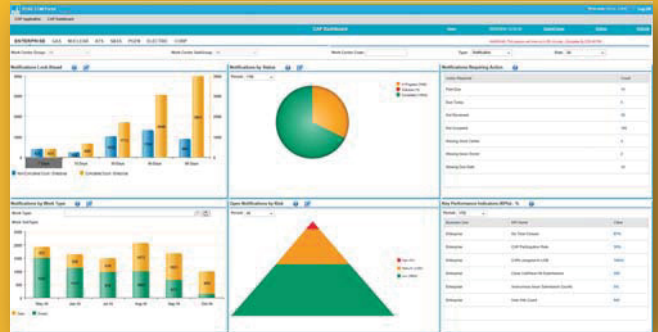
## CAP App

**SUBMIT ISSUES  
ANYTIME,  
ANYWHERE!**



## CAP Dashboard

**REAL TIME ISSUE TRACKING**



App5A-1

<http://CAP>



# Empowering PG&E employees to make a difference

If you have questions, contact the CAP Help Desk at 855-85-GO-CAP or [CAPHelp@pge.com](mailto:CAPHelp@pge.com)

To learn more about CAP, visit <http://CAP>

## Contents

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# CAP Overview

## What is CAP?

The Corrective Action Program (CAP) enables employees to identify and track equipment and safety issues, ineffective and inefficient work processes and procedures, and provide suggestions on how to do something better.

### 1) Identify

CAP provides employees with a process to **identify** and **document** issues

### 2) Evaluate

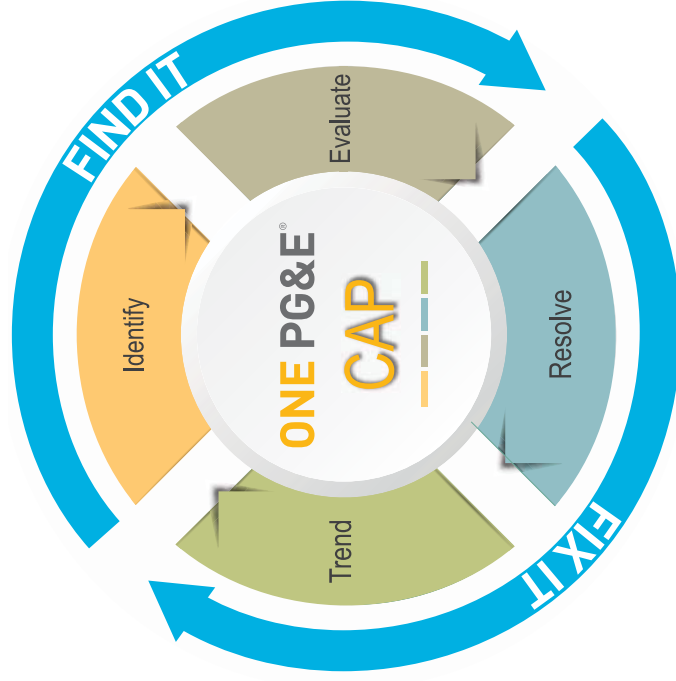
All issues are **evaluated** and assessed for risk

### 4) Trend

Data is used to identify **trends** and preventive opportunities

### 3) Resolve

Any resulting **corrective** and **preventive** actions are documented and tracked to closure



# Find it and Fix it!

# CAP Overview continued

## Why is CAP important?

CAP enables employees to use their experience and expertise to promptly raise and address actual or potential issues related to PG&E assets and operations.

CAP ensures that all identified issues are considered; necessary corrective actions are taken, and “lessons learned” are communicated throughout the enterprise to help prevent recurrence.

CAP establishes a framework and provides a variety of tools and methods to communicate the issues and resolutions. You may have heard or seen the phrase “**Find It and Fix It**”, and that’s exactly what CAP does!

- CAP allows us to find and fix issues before they become a significant problem
- CAP allows us to prevent the recurrence of issues
- CAP gives us the ability to identify trends and take proactive action

By utilizing CAP, we will become the safest, most reliable utility company in the nation.

## What is an issue?

With CAP, you can report near hits, equipment and safety issues, ineffective and inefficient work processes and procedures, and provide suggestions on how to do something better.

## How do I submit an issue?

There are several ways to submit an issue in CAP—use whichever method is most convenient for you.

- Web: <http://CAP>
- Mobile: **CAP App\***
- Phone: **855-85-GO-CAP (854-6227)**
- Mail: **CAP Paper Form (61-0636)\***

The CAP App enables employees to submit issues using any PG&E-issued or company-approved smartphone. Through the app, you can flag any issues and report them anytime, anywhere.

In the case of an emergency, follow your emergency procedures, and then submit an issue in CAP.

# CAP Overview continued

## When do I submit an issue?

If you see a situation in your daily work that may put public or employee safety at risk, make the situation safe and follow your emergency procedure first, then report it in CAP.

If the issue observed is specific, and could not be incorporated into another system (i.e. TSC, FMO, MPR, etc.), then it should be entered in CAP. **If in doubt, submit the issue in CAP and it will be assessed by the CAP team and redirected as appropriate.**

## What information is required?

Only three fields are required:

- **My Organization:** The line of business you belong to
- **Issue Title:** Clearly state the problem or request
- **Issue Description:**
  - **WHAT** happened
  - **WHERE** it happened
  - **WHEN** it happened
- Any immediate actions that were taken



The more detail that is provided, the sooner the issue can be assessed and addressed.

## What happens after I submit an issue?

- The Issue Initiator receives an issue number to track online.
- A team of subject matter experts representing key departments—CAP Review Team (CRT)—will evaluate, categorize and risk assess each issue; and then route it to a proposed department for resolution.
- An Issue Owner may assign actions to others (Action Owners) to address/fix the issue.
- Issue Initiators should participate in the process from start to finish. At each step, the Issue Initiator will be able to see who the issue is assigned to and the current status.
- Initiators are encouraged to contact the Issue Owner to ensure they understand the issue and suggested solutions.
- Issue Owners are encouraged to contact Issue Initiators to gather more specifics about the issue as the review begins.
- The CRT has two ways to classify an issue: “Fix” or “Close to Trend.” When an issue is closed to trend, no action is taken. However, the issue report will remain in the CAP database and available for historical trending analysis. When there are many similar trending issues, they may be aggregated and addressed as one issue.
- The Issue Initiator will be notified when the issue is closed and will have the opportunity to provide a satisfaction rating.

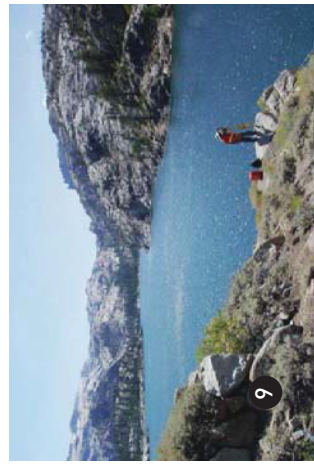
# CAP Overview continued

## How can I check the status of my issue?

You can check the status of your issue in “My Dashboard.”  
Go to: <http://CAP> > CAP Dashboard button > CAP Dashboard > My Dashboard.

## Who funds the corrective actions needed to address an issue?

The organization that owns the issue is responsible for obtaining funding for the corrective actions required to fix the issue.



## What is the CAP Review Team (CRT)?

CRT is comprised of representatives from various departments in the organization and CAP team members who meet regularly each week to review all issues and ensure they are assigned for resolution.

Each CRT meeting is facilitated by a “reader” who reviews each issue for the purpose of gaining consensus on the critical fields, and a “recorder” who documents action items, progress and updates the CAP program with any changes.

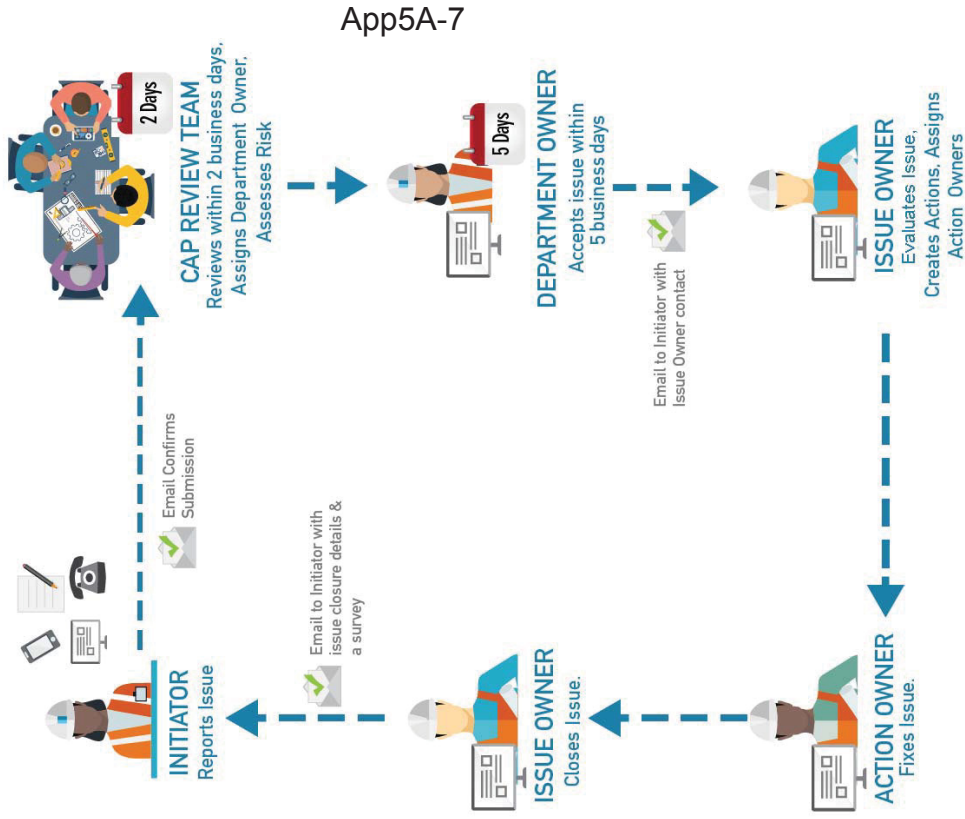
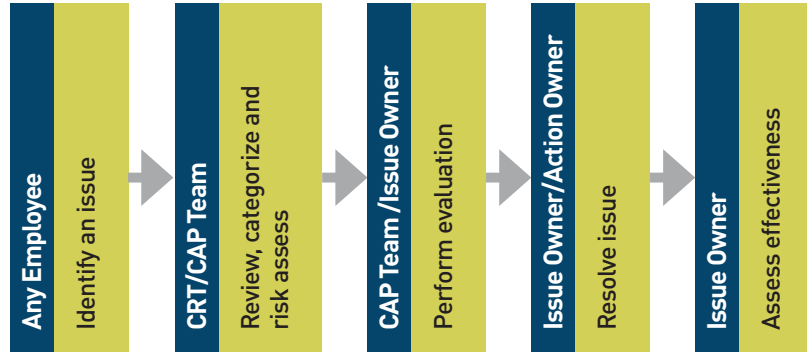
Issues are:

- Reviewed and updated for completeness
- Risk ranked for level of cause evaluation
- Assigned appropriate ownership
- Reviewed for trends

# CAP Overview continued



## CAP Process



# CAP Overview continued

## CAP Dashboard

### Tracking and Monitoring Issues in Real Time

The CAP Dashboard is a web-based application that improves visibility of issue information and provides employees with a real time reporting tool.

Dashboard features include:

- Issues Look Ahead—Improves work planning by due dates
- Issues by Status—Overdue, In Progress, and Complete
- Issues Requiring Attention
- Issues by Issue Type
- Open Issues by Risk—high, medium, or low
- CAP Key Performance Indicators—Provides visibility to CAP health
- Interactive email alerts that improve collaboration

To access the CAP dashboard, visit <http://CAP>





# CAP Overview continued

## CAP App

The CAP mobile application (CAP App) is available for use with all PG&E issued or company-approved smartphones. It contains all the features you find on the CAP web submission page, along with some additional features.

Submit CAP issues anytime, anywhere!

1. Attach photos of your issues
2. Call the CAP help desk **(855-85-GO-CAP)**
3. Start a draft to finish later



# Issue Types

## Issues NOT SUBMITTED in CAP

The issue types listed below do not get submitted in CAP. They should be reported in the correlating work management system.

Issue Types	Reported In
Information Technology (IT) issues normally requested through TSC	Technology Service Center (TSC)
Ethics	Compliance and Ethics Helpline
Work-related Discomfort or Injury	24/7 Nurse Report Line*
Motor Vehicle Incidents	MVI Intake Form*
Facility Issues	Facility Management Office (FMO)
Defect on Material	Material Problem Reports (MPR)

# Issue Types continued

## Issues to Submit in CAP

Issue Type	Description
Company Relations	(1) Issues involving advertising, informational materials, and other media that represents the company or its partnerships, or (2) Issues reported to media outlets and social media channels
Compliance	Non-compliance or possible violation of quality assurance or audit processes; or concerns related to risk, or regulatory compliance
Customer Trust	Customer experience and PG&E community leadership issues
Engineering	Engineering design, program, product quality, or issues needing further evaluation
Environmental	Issues around air quality, biology compliance, storage tanks, fuel islands and environmental permitting QA/QC. Also, hazardous materials, wastes, and releases

Issue Type	Description
Emergency Management	Planned or unplanned emergency incidents, emergency exercises or business continuity incidents
Equipment	Issues or concerns that effect the different types of equipment used by PG&E, including requests for further evaluation of potential deficiencies
Facilities	Issues related to non-CRESS sites
Financial	Issues or suggestions on affordability, business expenses or travel, financial costs or payment services
Guidance Documentation	Policies, standards, or procedures which are inadequate, unavailable, conflicting, or outdated
Information Technology	IT issues related to: system release impacts, process improvements, ineffective or inefficient work processes, human performance, or IT system outages; or any IT issue where normal escalation has not been effective

# Issue Types continued

## Issues to Submit in CAP

Issue Types	Description
Operations	Operation issues related to system or infrastructure capabilities
Program/Process	Performance or process improvement suggestions or employee concerns
Records	Issues that consist of records availability, accessibility, or integrity
Reliability	Issues related to unplanned outages, asset management, dig-ins, or maintenance that impacts system operations



Issue Types	Description
Safety	Safety issues: employee or contractor safety, public safety, personal protective equipment, industrial hygiene, ergonomics, or vehicle safety
Security	Physical, informational, and/or cybersecurity issues
Supply Chain	Issues related to: Administration of contracts, materials management, purchasing, warehouse management, and material logistics & planning records
Training	Issues caused by inadequate training/qualifications at all levels of the organization



# Evaluation Types

Cause Evaluation (CE) is a structured process used to determine, document, and communicate the cause or reason why an incident, issue, or error occurred. CEs are necessary to prevent or minimize the probability of an issue recurring, and to apply continuous improvement.

Cause evaluations range from extremely formal and complex to informal and simple. Each issue is assigned an evaluation type, usually based on level of risk.

## Root Cause Evaluation (RCE)

Root Cause Evaluations are sometimes referred to as Root Cause Analysis [RCA]. This is a formal and rigorous investigation that uses industry-accepted analysis methods to determine the root cause(s) of a problem. The RCE identifies required corrective actions that prevent, or reduce the likelihood of a problem with the same root cause recurring.



## Apparent Cause Evaluation (ACE)

An Apparent Cause Evaluation is based on readily available information. It provides reasonable assurance that the cause of a problem is determined and will be corrected. This evaluation type is used when management decides a formal but less rigorous cause determination is necessary.

## Common Cause Evaluation (CCE)

Common Cause Evaluation is an analysis methodology that can be used in an ACE to identify common underlying elements between different, unique, but similar events or issues. The underlying elements may be anything from a common failure mode to a common cause that may or may not require further investigations.

## Work Group Evaluation (WGE)

Work Group Evaluations are logical evaluations that help identify reasonable corrective or preventive actions needed to resolve an issue.

# Evaluation Types continued

## Evaluation Application and Timeliness:

Type of Evaluation	Risk*	Typical Completion Time
<b>Root Cause Evaluation (RCE)</b>	Typically High	2-3 weeks
<b>Apparent Cause Evaluation (ACE)</b>	Some High/Med	10-30 hrs
<b>Common Cause Evaluation (CCE)</b>	Some Med/Low	10-30 hrs
<b>Work Group Evaluation (WGE)</b>	Med/Low	< 10 hrs

Approval Time	Involvement	Intent of Corrective Action
45-90 days	The team includes: CE Lead, LOB SMEs, a qualified CE evaluator, legal, safety, risk, and compliance and representation as appropriate	Prevent recurrence
≤ 30 days	One evaluator coordinates investigation and prepares eval	Minimize recurrence
30 days	CAP Specialist or Subject Matter Expert	Assess potentially common, underlying elements of issue
N/A	Subject Matter Expert and Supervisor	Broke/Fix

# CAP Terminology

**Action Owner:** Individual responsible for completing actions related to an evaluation or resolution of an issue

**CAP Specialist:** Line of business CAP Team member

**Corrective Action Review Board (CARB):** CARB is comprised of line of business senior leaders who provide management oversight reviews of cause evaluations. This includes concurring with the root or apparent cause(s), corrective actions, corrective action(s) to prevent recurrence (CAPRs), and the effectiveness review plan in RCE reports and ACE reports for Serious Injury or Fatality (SIF) incidents.

**Close to Trend:** An issue that does not require action or is addressed by another process. Classification data for each closed to trend issue is made available for analytical purposes, monitoring and determination of adverse trends.

**Department:** Department within an organization that has the authority to assign an Issue Owner and monitor progress on the corrective actions

**Department Owner:** Manager level employee, or above, department lead

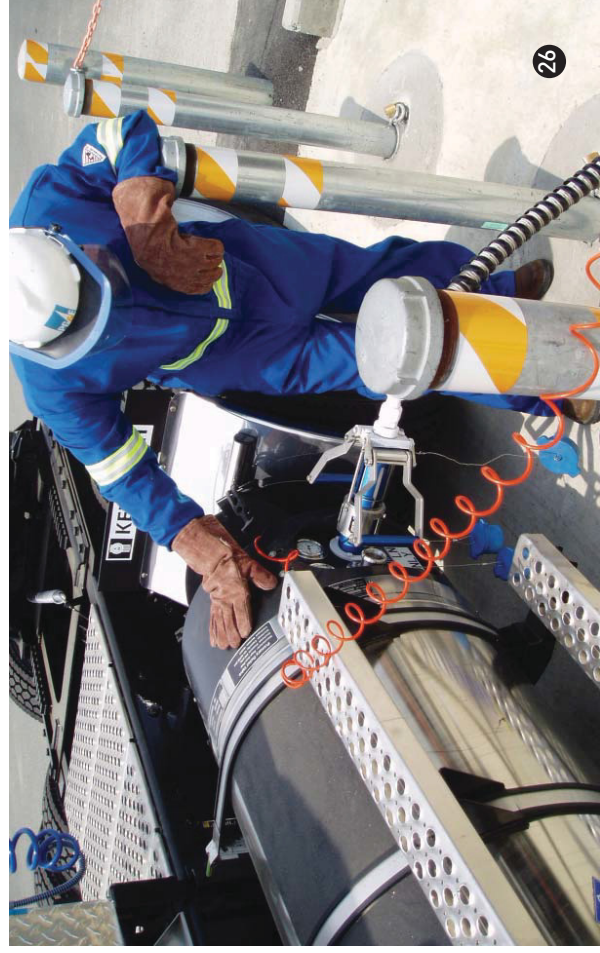
**Division/District:** Where the issue/event occurred

**Issue Initiator:** The individual who submits the issue

**Issue Owner:** Individual responsible for ensuring the issue is addressed

**Near Hit:** Near Hits are unplanned occurrences or conditions that may have, but did not result in harm. This includes hazardous conditions or potentially hazardous conditions that can result in injury, illness, death, or property damage

**Trend Analysis:** The analysis of historical data to identify patterns or trends. Trend analysis may be used to identify hazards, to monitor the success of the program, or to evaluate controls by measuring changes in adverse outcomes such as injuries or property loss



# Acronyms

## **ACE: Apparent Cause Evaluation**

An evaluation based on readily available information that provides reasonable assurance that the cause of a problem is determined and will be corrected; used when management determines a formal but less rigorous cause determination is necessary.

## **CA: Corrective Action**

(1) A solution meant to reduce or eliminate an identified problem, including any action taken to resolve a finding or issue, or (2) Restores an unacceptable or adverse condition to an acceptable condition or capability.

## **CAP: Corrective Action Program**

CAP is a risk-informed, risk-driven process by which the organization learns from its mistakes and its successes. It is the process for identifying, evaluating, and resolving problems, issues, and concerns.

## **CAPR: Corrective Action to Prevent Recurrence**

An action taken to prevent an event from occurring again as a result of the same failure mechanism.

## **CARB: Corrective Action Review Board**

CARB is comprised of line of business senior leaders who provide management oversight reviews of cause evaluations. This includes concurring with the root or apparent cause(s), corrective actions, corrective action(s) to prevent recurrence (CAPRs), and the effectiveness review plan in RCE and ACE SIF Potential reports.

## **CC: Contributing Causes**

The event or condition not directly responsible for the problem, but the existence of which complicated the problem or made the consequences more severe than if only the root cause existed.

## **CE: Cause Evaluation**

Is a structured process used to determine, document, and communicate the cause or reason why an incident, issue, or error occurred. CEs are necessary to identify the cause of the incident, issue, or error to prevent or minimize the probability of recurrence and to apply continuous improvement.

# Acronyms continued

## **CGC: CAP Governance Committee**

- Serves as the enterprise governing body for CAP.
- Comprised of LOB CAP process owners and the enterprise CAP process owner.
- Maintains a charter to guide the committee's activities.
- Oversees periodic assessments of program health.
- Reviews and recommends changes to guidance documents for the enterprise.
- Reviews and recommends changes to technology supporting CAP processes.
- Promotes CAP continuous improvement through benchmarking, assessments, and implementation of industry best practices.
- Ensures PG&E executive leadership has visibility into the status and details surrounding all significant issues.
- Ensures executive leadership has visibility into key enterprise and LOB CAP metrics to monitor overall program health, and to ensure successful adoption and execution of corrective actions at the LOB level.

## **CRT: CAP Review Team**

CRT is comprised of representatives from various departments in the organization and CAP team members who meet regularly each week to review all issues and ensure they are assigned for resolution.

Each CRT meeting is facilitated by a "reader" who reviews each issue for the purpose of gaining consensus on the critical fields, and a "recorder" who documents action items, progress, and updates the CAP program with any changes.

## **HFA: Human Factors Analysis**

An aid to determine the level of individual or organizational culpability in events or near misses caused by human error.

## **MORT: Modified Management Oversight and Risk Tree**

A comprehensive analytical process that provides a method for structuring an investigation, determining the cause factors and root causes of an incident. This is accomplished through the use of the ABS Consulting 'SOURCE' analysis process.



# Acronyms continued

**OE: Operating Experience**

Documented events that occur to others and/or ourselves. People can learn/improve from these events without experiencing them first hand.

**PHA: Process Hazard Analysis**

A standard methodology to assess potential hazards related to an industrial process. PHA is required for compliance with OSHA (Occupational Safety & Health Administration) regulations.

**RCE: Root Cause Evaluation**

Sometimes referred to as Root Cause Analysis (RCA). A formal and rigorous investigation that uses industry-accepted analysis methods to determine the root cause(s) of a problem. The RCE identifies required corrective actions that prevent, or reduce the likelihood of a recurrence of the problem for the same or similar root cause(s).

**SIF: Serious Injury or Fatality**

An injury or illness that is work related and is either: (1) fatal, or (2) requires immediate life-preserving rescue action, and if not applied immediately would have likely resulted in death of that person, or (3) resulted in a permanent and significant loss of a major body part or organ function

**SME: Subject Matter Expert**

Somebody who has the knowledge and expertise in a particular area or topic. For example, a CAP SME is an individual who has an in-depth knowledge of the corrective action process.

**SMART: Specific, Measurable, Achievable, Realistic and Timely**

SMART is the criteria used to describe effective corrective actions.

**WGE: Work Group Evaluations**

A logical evaluation of an issue to identify reasonable corrective or preventive actions needed to resolve an issue.

# Resources

## Web-Based Trainings:

### **CORP-6050 Introduction to CAP Web-Based Training**

Introduction to the Corrective Action Program (CAP) processes and roles and how to monitor your assigned CAP items. Sign up on My Learning. (30 min to 1 hour)

### **CORP-6010 Introduction to Cause Evaluations Web-Based Training** *\*prerequisite for ECAP-01*

Introduction to the cause evaluation process. Sign up on My Learning. (45 min to 2 hours)

## In-Person Trainings:

### **CORP-6051 CAP Issue Management Classroom Training**

Recommended training for all CAP Department Owners, Issue Owners and Action Owners. Sign up on My Learning. (4 hours)

### **ECAP-01 Apparent Cause Evaluation Classroom Training**

*\*prerequisite CORP-6010*  
Beginning Apparent Cause Evaluation training  
Sign up on My Learning. (1 day)

## In-Person Trainings continued:

### **ECAP-02 Cause Evaluator Classroom Training**

*\*prerequisite ECAP-01*  
Intermediate cause evaluator training  
Sign up on My Learning. (3 days)

### **ECAP-03 Cause Evaluator Classroom Training**

*\*prerequisite ECAP-02*  
Advanced cause evaluator training  
Sign up on My Learning. (2 days)

## Coaching

Where individual training is incomplete, your LOB CAP team or Enterprise CAP team can help coach you in CAP and evaluation processes.

## Webpages:

**CAP:** <http://CAP>

**Enterprise CAP:** <http://ECAP>

**CAP Knowledge Connect:**

<http://pgweb/company/KnowledgeConnect/Pages/CAP>

# Find it and Fix it!



<http://CAP>

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 5**  
**APPENDIX 5-B**  
**CROSS FUNCTIONAL CAUSE EVALUATION REVIEW**  
**COMMITTEE (CFCERC) CHARTER**

**PURPOSE:**

The purpose of the Cross Functional Cause Evaluation Review Committee is to review Root Cause Evaluation (RCE) reports performed for Serious Safety Incidents and other RCEs as selected by the Enterprise Corrective Action Program director to identify Enterprise-wide trends and monitor Enterprise performance of RCEs.

**CROSS FUNCTIONAL CAUSE EVALUATION REVIEW COMMITTEE COMPOSITION:**

The Cross Functional Cause Evaluation Review Committee is comprised of the following Line of Business directors and their alternates:

Electric Operations/Power Generation

Mike Jones/Steve Royall

Electric Operations/Distribution

Jeff Borders/Laura Selheim

Electric Operations/Transmission

John Parks/Ken Wells

Gas Operations

Andre Da Costa/Bennie Barnes

Nuclear

Tom Baldwin/Dennis Petersen

Information Technology

Dana Docherty/Alex Victor

Customer Care

Phil Balistreri/Kevin McCoy

Safety and Shared Services

Lawrence Kazmierski/ Diane Thurman

Safety

Lawrence Kazmierski/ Diane Thurman

Risk

Janaize Markland/Ashley Matsu

Compliance

Megan Smith Janis

Enterprise Corrective Action Program

Gary Close/Wayne Edmiston

**CROSS FUNCTIONAL CAUSE EVALUATION REVIEW COMMITTEE RESPONSIBILITIES:**

1. Oversee the implementation of the Enterprise Causal Evaluation Standard.
2. Validate compliance with the Enterprise Causal Evaluation Standard.
3. Identify opportunities for continued improvement in cause evaluation performance.
4. Look for trends in company events.
5. Identify if additional communication of learnings from an event is needed for certain audiences.

**MEETINGS:**

Frequency: The Cross Functional Cause Evaluation Review Committee will meet quarterly or as needed to perform their function

Attendance: Members are encouraged to attend each meeting in person. Alternates may attend the meeting in cases where the primary member is not available. In the event a member cannot attend in person a call in number will be provided.

**COMMUNICATION:**

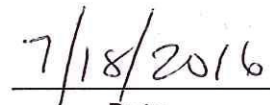
1. All Cross Functional Cause Evaluation Review Committee materials will be accessible to Committee members on a SharePoint Site.

APPROVED:



Gary Close(Chair)

Director, Enterprise Corrective Action Program



Date

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 5**  
**APPENDIX 5-C**  
**CFCERC MEETING SUMMARIES**

## **Cross Functional Cause Evaluation Review Committee Meeting Summaries**

- 07-30-2015 Discuss Kern OII settlement and resulting Cause Evaluation Procedures
- 10-28-2015 Review RCE reports for compliance with the Enterprise Causal Evaluation Standard. Apply grading sheet to RCE #50686760 - walkthrough
- 01-28-2016 Review completed grading of RCE report 110802454 Redding RCE- Iron Mountain Serious Safety Incident
- 04-27-2016 Review completed grading of RCE report 111154554 Willow Creek Contractor Tree Trimmer Fatality.
- 08-03-2016 Conduct a review of Effectiveness Review Plan for Issue#: 110802454 Redding RCE- Iron Mountain Serious Safety Incident  
  
Conduct a review of additional Effectiveness Review Action for Issue#: 111154554 Willow Creek Contractor Tree Trimmer Fatality
- 12-12-2016 Conduct a review of RCE report # 11825005 Marysville Motor Vehicle Fatality.
- 06-28-2017 Identify opportunities for continued improvement from RCE report # 112386258 Greeley Hills Contractor Fatality
- 09-25-2017 Identify opportunities for continued improvement from RCE report #112633748 Folsom Valve – Gas Operations SIF Incident



**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 5**  
**APPENDIX 5-D**  
**SAMPLE SERIOUS INCIDENT FATALITY (SIF) EVENT**  
**SUMMARY EMAIL**

Example of Lessons Learned Email to Officers and Directors

 Send	To...
 Cc...	
Subject:	FW: Final Communication on March 6 Balch Camp MVI SIF
Attached:	 Final Communication_Balch_Camp_MVI_SIF_For_Distribution.pdf (2 MB)

**From:** Halpin, Ed

**Sent:** Thursday, September 21, 2017 11:20 AM

**To:** Officers and Directors - All

**Subject:** Final Communication on March 6 Balch Camp MVI SIF

Officers and Directors:

On March 6 of this year, two of our Power Generation General Construction employees suffered minor injuries in a winter weather-related vehicle accident that easily could have ended a lot worse - their PG&E truck slid on an icy Balch Camp Road and plummeted 130 feet off a cliff, landing in the Kings River. Attached is our final communication document which was prepared following completion of the apparent cause evaluation for this motor vehicle incident (MVI) with clear serious injury/fatality (SIF) potential.

I am thankful our employees were not more seriously injured, I'm grateful to the employees who came to their aid and I appreciate the efforts of those who had any hand in compiling the data and completing this report. It is my hope that lessons-learned and associated corrective actions from this incident will prevent any recurrence, and I ask for your support in persuasively communicating the findings and actions in this report to your organizations.

A Five-Minute Meeting concerning this motor vehicle incident was distributed in the August Safety and Health Leader Packet by the Safety and Health organization. The attached report provides even greater detail about the findings and corrective actions which have been implemented.

I thank you for your part in supporting safety as our highest value, supporting our people in the effort it takes to maintain vigilance - proactively and continuously searching for potential hazards, to avoid them and sustain the spirit of emotional safety to encourage speaking-up about any concerns.

Thank you for keeping safety at the forefront.

Ed

**PACIFIC GAS AND ELECTRIC COMPANY**

**CHAPTER 5**

**APPENDIX 5-E**

**SAMPLE SIF EVENT SUMMARY EMAIL ATTACHMENT**

**Incident Date: March 6, 2017****Balch Camp Motor Vehicle Incident SIF****Officers and Directors**

The apparent cause evaluation of the motor vehicle incident that occurred on March 6, 2017, in the Balch Camp area of Fresno County, California is complete. The incident findings are detailed in this communication and include the corrective actions to prevent recurrence.

The causal evaluation team conducted a comprehensive review and analysis of the incident to determine learnings from this event.

It is important that we continuously work to improve our ability to identify and mitigate hazards and exposures that exist in the work we do. Power Generation is sharing this Final Serious Incident Communication across PG&E in an effort to increase awareness of potential hazards and share lessons learned with our colleagues.

**Incident Summary**

On March 6, 2017, two hydro generation general construction (GC) employees were traveling on Balch Power House road when the PG&E utility body truck they were driving encountered an icy patch of pavement, exited the road, and came to rest in the North Fork Kings River, sustaining major vehicle damage and minor injuries.

On the morning of the event, economic dispatch of Haas, Balch, and Kings River Powerhouses (PH) resulted in water spilling over the Balch PH afterbay dam. A spray/mist caused by the controlled spill, along with sub-freezing temperature and a prevailing wind toward the roadway, resulted in ice that covered an approximate 180 feet section of roadway surface near the after bay.

There were at least two other previous instances where it was noticed that the area of this incident was slippery however, it was not considered abnormal enough to bring it to the attention of others.

Apparent causes and corrective actions can be found in the table below.

**What Happened**

On the morning of March 6, 2017, economic dispatch of Haas, Balch, and Kings River Powerhouses resulted in water spilling over the Balch PH afterbay dam. The Balch afterbay is a small reservoir that acts as the forebay for Kings River Powerhouse. It receives water that has been discharged from Lake Wishon, through Haas Powerhouse then through Balch Powerhouse. Water may be discharged from Lake Wishon in this fashion for energy production and/or water management. The afterbay dam may operate in spill condition for a variety of planned or unplanned reasons. For example, spill at this location will occur when:

- Natural inflows (storm or spring runoff) exceed the outflow demand for Kings River Powerhouse operation,
- The combination of natural inflows and regulated flows from Haas and Balch Powerhouse operation exceed the outflow demand for Kings River Powerhouse operation, or
- Kings River Powerhouse is out of service for planned or unplanned reasons while Haas and Balch Powerhouses operate

Four GC crew members met at the Balch Camp Guest House #1 (used as an assembly point) to pick up their PG&E Utility work trucks, as is the typical start of the work day. The typical practice is to discuss driving safety prior to driving on Company business, but they did not recall doing so that day. However, records of daily tailboards occurring at the PH showed safe driving was discussed. A PG&E Apprentice Electrician (E1 - Driver) was driving a Company utility body truck with a PG&E Journeyman Electrician (E2 - Passenger) in the front passenger seat. They left about 0655 hours to travel up the Balch PH road to their work location at the PH. Two other crew members, a GC Electrician (E-3), and a GC Apprentice Electrician (E-4) followed approximately 1 minute behind in their PG&E vehicle.

They drove approximately 1.8 miles east, from the Balch Camp Headquarters (BC-HQ) toward the Balch PH along Ferguson Road, which is in Eastern Fresno County, with an approximate ambient air temperature of 26 °F.

At 0703 hours as the E-1 & E-2 vehicle entered a right curve in the roadway at approximately 19 mph (as recorded in the vehicle control module), E1 felt/noticed the vehicle slide as it encountered an icy patch of pavement. Consistent with his training, he attempted to counter steer along with pumping his brakes to maintain steering control but was unable to control the vehicle. The vehicle proceeded down a steep embankment coming to rest in the plunge pool (i.e. a small body of water, downstream from the PH after bay) approximately 130 feet below the roadway.

The vehicle slid off the north roadway pavement edge, overturned on the near-vertical rock/dirt embankment and landed upright in the plunge pool below. Both the driver-side and passenger-side curtain airbags deployed prior to the final impact. The 38 degree F temperature water began to immediately fill the vehicle as the windshield had popped out. As the vehicle came to rest, the employees (E1 & E2) exited the vehicle and swam to the north shore or the opposite side canyon of the plunge pool and climbed onto a rock large enough for both. The water in the plunge pool was abnormally high due to the amount of regulated water spilling over the after bay dam into the North Fork Kings River.

E1, E2, E3, and E4 were part of a five-person GC crew. The fifth crew member, a Sub-foreman (Sub 1) had arrived at the PH approximately one hour prior to the incident. Sub 1 had noticed the icy condition at the incident site but did not consider it abnormal enough to bring it to the attention of others. E3 & E4, following E1 and E2, identified vehicle tire marks exiting the roadway and stopped their vehicle to investigate. They walked to the road's north shoulder and noticed the PG&E vehicle in the water below. E3 stayed on-site while E4 drove to Balch PH to notify Sub 1 of the incident.

Upon arrival at Balch PH, E4 notified Sub 1 and also notified the Fresno Operations Center (FOC). The FOC, per standard procedure, notified emergency response. Also, the FOC contacted the BC-HQ, who in-turn advised the FOC to stop spilling water over the after bay in order to lessen the flow and lower the water level for the safety of the employees awaiting rescue. Sub 1 and E4 drove back to the incident scene approximately five minutes later.

Shortly after, PG&E Crew 2 (Sub 2 – Working Foreman A & WSR - Water System Repairperson) arrived at the incident location and offered assistance. E3 and WSR climbed down the embankment to help E1 and E2. They walked along the roadway downstream approximately two hundred yards where the embankment descent lessened (i.e. 38 degree slope) and hiked down to the river. They made their way upstream along the south bank toward E1 and E2.

Meanwhile, E2 swam across the plunge pool, to the south side river bank (i.e. road-side) and was able to crawl out onto the river bank. A rope was thrown down to E2 and he tossed it across the pool to E1. E1 tied the rope around himself and swam across the plunge pool, with the assistance of E2 pulling the rope. E1 was able to crawl out onto the south side river bank.

During the rescue, Sub 2 & E4 along with other on-site employees brought additional supplies to support the rescue effort. E3 and WSR brought dry clothes, blankets, "Hot Hand" warmers, and hot coffee to E1 and E2. They helped E1 and E2 remove their wet clothes/boots and put on the dry clothes and awaited further rescue.

Approximately two and one-half hours from when the incident occurred, a California Highway Patrol (CHP) Helicopter arrived on-site and safely hoisted/rescued the employees one at a time. E3 and WSR walked back downstream to where they had originally hiked down and climbed back up with the assistance of two vertical life lines.

E1 and E2 were transported via helicopter to the BC-HQ Landing Zone (LZ), where they were examined and released by a Paramedic. As a precautionary measure, the employee's supervisor drove E1 and E2 to St. Agnes Medical Center Emergency Room in Fresno for further evaluation. Both employees were evaluated, treated and released from the hospital with no serious injuries. E1 and E2 returned to work the next day with limited work restrictions. E1 had further complications which resulted in additional time away from work until March 22, 2017.

### **Immediate Corrective Actions Taken**

- ICA-1.** An interim barrier was installed at the incident location until a permanent barrier can be evaluated, engineered, and installed. **Complete:** March 20, 2017
- ICA-2.** Hydro Maintenance sanded the road in the immediate area of the incident. **Complete:** March 6, 2017
- ICA-3.** Senior Management released a communication to all employees in PG describing the incident and provided information on winter weather related driving conditions. **Complete:** March 6, 2017
- ICA-4.** Hydro Maintenance initiated early morning patrols to evaluate roadway conditions. **Complete:** March 7, 2017
- ICA-5.** Hydro Operations installed temporary "Slow" warning signage in the immediate area of the incident and at the after bay (i.e. A-Bay) boat ramp. **Complete:** March 7, 2017
- ICA-6.** PG Leadership conducted two all hands safety stand downs at 0700 hours and 0900 hours and shared driving best practices. **Complete:** March 7, 2017
- ICA-7.** Based on lessons learned from the PG all hands safety stand downs, each Hydro O&M Area Senior Manager put in place the following: **Complete:** March 7, 2017.
  - Pre-drive Job Safety Analysis (JSA) for all workers involved in the job throughout the service territory (Operations, General Construction, Contractors).

- Any time there is a potential for abnormal hazardous road conditions including storm events, sub-freezing temperatures that may result in icy road conditions (including those operational conditions identified in this report), and high winds, the following actions will be taken, as appropriate, to mitigate or eliminate the hazard:
  - PG Hydro O&M to drive the hazardous access roads early mornings to understand condition and report out any abnormal hazards founds prior to work crews driving in the area. Use knowledge learned for pre-drive JSA and mitigate hazards immediately if possible.
  - Complete a post workday pre-return drive tailboard to review the JSA with entire team. Barricade road (where possible) until confident that road conditions are safe to drive.
  - Caravan crew vehicles when possible.
  - Confirm there is a communication plan in place for drivers and verify when they depart/arrive. If they don't arrive, have a plan to go look for them.
  - Install icy road condition signage at locations identified having the potential for road icing.

Findings	Corrective Action
<b>AC1</b> – There was no barrier along the road way to prevent the vehicle from exiting it.	<b>CA-1:</b> Engineer, permit, and install best evaluated barrier solution for the location of the incident. <sup>1</sup>
<b>AC-2:</b> The road surface was ice covered at the incident location as a result of the combination of the Balch PH operational condition (regulated spill) with the sub-freezing ambient weather and this resulted in E1 losing vehicle control.	<p><b>CA-2:</b> Revise the Balch operating procedure to reflect the following actions when sub-freezing ambient temperatures are anticipated or present:</p> <ol style="list-style-type: none"> <li>1. If operating conditions allow, do not initiate spilling or suspend spilling at the Balch Afterbay Dam,</li> <li>2. If spilling is required, ensure dynamic icy road signs and other forms of notification notifying travelers that the road may be hazardous and appropriate mitigations have been put in place (i.e. road sanding, etc.)</li> </ol> <p><b>CA-3:</b> Install dynamic icy road hazard signs at entrance to the Balch PH road and at the PH for the return commute to the HQ to warn drivers when the conditions may induce icy road conditions (i.e. signs that can be flipped up when not in use to prevent "sign blind").</p>
<b>CC-1:</b> There were at least two other previous instances where it was noticed that the area of this incident was slippery however, it was not considered abnormal enough to bring it to the attention of others.	<p><b>CA-4:</b> Develop and implement an interactive learning activity which emphasizes the "Speak-up" culture that the organization supports. The PG&amp;E Code of Safe Practices, Basic Safety Requirements specify that employees are responsible to look for and act to resolve unsafe situations or conditions. This learning activity will discuss the recognition of hazardous or unsafe conditions and the importance of communicating that information with our coworkers. The interactive learning will be completed by an initial all hands stand down call where this issue will be presented and discussed with all Power Generation team members. Follow-up reinforcement will be provided by preparing and discussing the lessons learned with a 5 minute meeting about this incident with each group within the Power Generation organization. The CAP tool will be used to develop and track the completion of the follow-up reinforcement actions.</p> <p>Within the Power Generation organization, we are routinely exposed to potentially hazardous conditions. This may lead to a situation where we do not immediately recognize unique hazards or imminent danger. (e.g. unexpected icy road conditions)</p>

### Lessons to be Learned

The following are lessons learned from this evaluation:

- ✓ Our ability to maintain awareness of our environment and associated hazards is essential not only to our safety, but also to the safety of our coworkers and the general public. All employees should continually reinforce Situational Awareness and utilize the Human Performance Tools (e.g. Two Minute Rule, Self-Checking/STAR and Questioning Attitude) as referenced in the Safety and Performance Fundamentals Handbook.

<sup>1</sup> In the meantime, there is a robust temporary barrier made up of K-rails at the location of the incident which reduces the risk to an acceptable level and intended to stay in place until a permanent barrier is installed. This temporary barrier will be evaluated as an acceptable final solution as well.

**Closing Comments:**

It must be our top priority to ensure each and every one of us returns home from work safely each day as our families and loved ones are depending on us. Every employee is expected to identify and control hazardous exposures for themselves and each other. We must commit to performing all tasks safely every time and we must be willing to pause any job that appears unsafe. There is nothing more important than the safety of our employees, contractors and the public.

Please share and discuss this important information with your coworkers to help prevent incidents like this from ever occurring again.

**Michael Jones**  
**Sr. Director – Power Generation Projects and Asset Management**

**Jonathan Maring**  
**Sr. Director – Power Generation Project Execution**

**Todd Hohn**  
**Sr. Director –Safety & Health**

**Team Members**

- |  |  |
|--|--|
| Jon Maring, Team Director Lead                             | Jeremy Micallef, Power Generation Safety Specialist              |
| Luke Williams, Hydro Construction Southern Area Supervisor | Jeremy Yager, Southern Area Project Manager (Roadway Specialist) |
| Lyndon Jesmin, Safety Incident Investigator, Expert        | Subject Matter Experts (SME) as needed                           |



**Figure 1** View of incident location from above. Note: California Highway Patrol (CHP) helicopter image was taken post incident and enhanced with information received by causal evaluation team for added clarity.



**Figure 2** Post Incident: Temporary concrete barriers and traffic mirror installed along incident road curve location. *Note: Direction of photo is facing east and the sand on the roadway was laid down after the incident.*



**Figure 3** Vehicle exited road while traveling east (Note: Direction of photo is facing east and the sand on the roadway was laid down after the incident).





**Figure 4** View of vehicle from above facing west (Note: River water level was much higher at the time the incident occurred).



**Figure 5** Photo taken on day of incident from the dam facing south west (Note: River water level was much higher at the time the incident occurred).



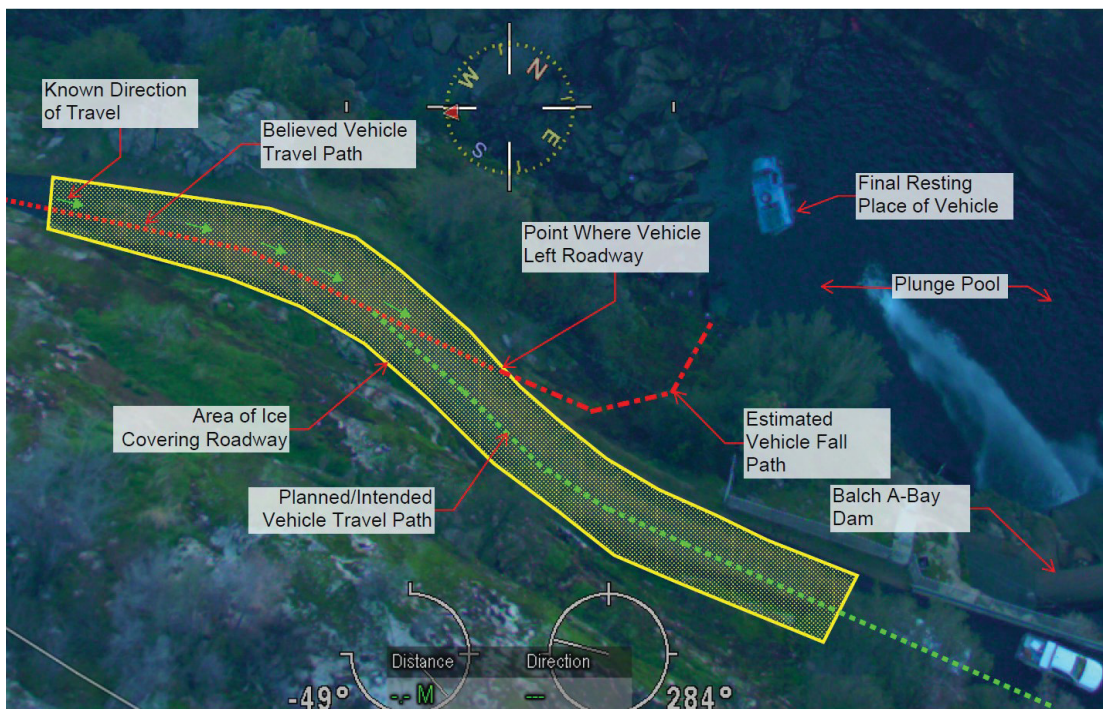
**Figure 6** Vicinity map of incident location (Vehicle traveled eastward from Balch Camp Headquarters toward Balch Power House).



**Figure 7** Aerial map showing approximate extent of localized icy road conditions. Vehicle traveled eastward from Balch Camp HQ toward Balch PH. Note: The plunge pool water level was approximately 20 feet higher than depicted in figure 6 & 8 below at the time of the incident due to the spill topping over the Balch A-Bay dam.



**Figure 8** View of Incident Location from Above (Note: California Highway Patrol (CHP) Helicopter image was taken post incident and enhanced with information received by causal evaluation team for added clarity).

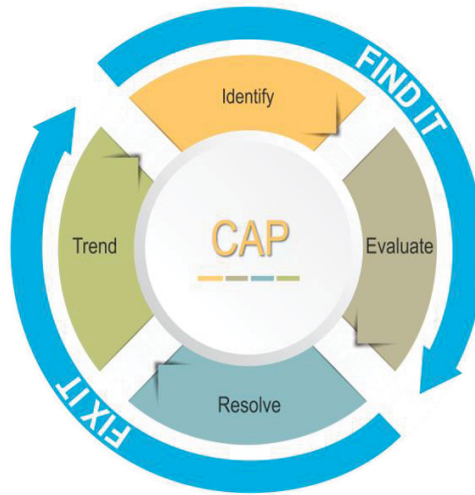


**Figure 9** Enlarged view of incident location from above. The estimated length of vehicle travel on ice prior to exiting the road surface was  $\pm 70$  feet. The estimated total length of the localized icy road condition was  $\pm 180$  feet. (Note: California Highway Patrol (CHP) Helicopter image was taken post incident and enhanced with information received by causal evaluation team for added clarity).

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 5**  
**APPENDIX 5-F**  
**ENTERPRISE ROOT CAUSE EVALUATION (RCE) TEMPLATE**



# Root Cause Evaluation Report



**Title: Insert Here**

Issue No.: Insert here CAP Issue No

Report Rev: 00

Team Lead	_____	_____	_____
		Signature	Date
Cause Evaluator	_____	_____	_____
		Signature	Date
Sponsor Approval	_____	_____	_____
		Signature	Date



### **Executive Summary**

Write a brief summary that describes the incident, the cause(s) and corrective actions; listing action owners and action due dates.

### **Discussion:**

- Executive summary should be one page or less in length, easy to read, and understand

### **Problem Statement**

Write the Problem Statement to include the following specific elements:

1. **Requirement or Expectation:** If known, list the requirement that governs the process or management expectation of what should have occurred. A requirement may come from a standard, procedure, policy, manual, or management expectation.
2. **Deviation or Defect:** Deviation from the requirement or expectation in the actual performance or condition identified in this issue/event (what happened, when did it happen, where, and how if known).
3. **Consequences of Deviation or Defect:** Describe the (immediate pain) resulting from this deviation from the standard
4. **Significance of Deviation or Defect:** Describe the (potential future pain) of the undesirable or unacceptable deviation or defect from the standard if the condition were to remain uncorrected

### **Discussion:**

- Problem statement provides the focus for the investigation efforts, a clear picture of the problem to be solved.
- Aids in the scope definition, focus of the analysis, and defines appropriate limits for the scope of an evaluation
- Provides a clear explanation of the undesirable or unacceptable consequences, conditions, methods or results

### **Immediate, Compensatory, or Interim Actions**

This section contains documentation for those actions taken immediately following discovery of the event to stop the event, mitigate the event, or make the event less likely to reoccur while evaluation of the condition is in progress and until completion of final corrective actions.

### **Discussion:**

- SIF RCEs should list or describe any immediate and interim corrective action(s) the line of business has taken and will stay in place until the corrective action(s) to prevent recurrence are completed, if applicable.



### **Extent of Condition**

The extent of condition is about **here and now**.

- a. Answer the questions:
  1. Is it likely that the same condition that proved consequential in this incident (e.g., a failed valve, inadequate procedure, or improper human action) currently exists undetected in other processes, equipment or human performance?
  2. Is the line of business presently at risk of a similar condition?
- b. Focus the extent of condition on the actual issue (i.e., the problem under investigation) and determine the extent to which that issue exists, or may exist, with other processes, equipment, or human performance.
  - **Same Object – Same Defect:** Identify and list same program [e.g., CAP] or Process [e.g., Surveillance Scheduling] or system [Gas Line Protection] with the same kind of problem/error/failure or defect.
  - **Same Object – Similar (Different) Defect:** Identify and list same program [e.g., CAP vs. SEMS] or Process [e.g., Surveillance Scheduling vs. 13-Week Scheduling] or System [Gas Line Protection vs. Compressor Stations] with a similar kind of problem/error/failure or defect.
  - **Similar Object – Same Defect:** Identify and list same program [e.g., CAP vs. SEMS] or Process [e.g., Surveillance Scheduling vs. 13-Week Scheduling] or System [Gas Line Protection vs. Compressor Stations] with the same kind of problem/error/failure or defect.
  - **Similar (Different) Object – Similar (Different) Defect:** Identify and list similar program [e.g., CAP vs. SEMS vs. Risk & Compliance] or Process [e.g., Surveillance Scheduling vs. 13-Week Scheduling vs. WM] or system [Gas Line Protection vs. Compressor Stations vs. Distribution line] with a similar kind of problem/error/failure or defect.
- c. The extent of condition may be bounded to ensure that the investigation has an end point.

### **Discussion:**

- SIF RCEs extent of condition corrective actions should be broad enough in scope to capture all examples of the problem (e.g. apply corrective action in other lines of business i.e. Electric, Gas, DCCP, IT, etc. if relevant)





**Event Description**

This section is a chronological description of the sequence of events and conditions that led to the problem under analysis. It is a story of what conditions existed and how the events occurred.

- a. Provide a chronological description of the facts and conditions that led to the problem.
- b. Document any relevant system, component, process, historical, and other information needed to provide the context necessary to understand the analysis.

**Discussion:**

- This section provides the "story" of how the event happened.
- This section should provide the reader with the necessary fundamental understanding of the facts that **lead up** to the event.

**Investigation**

**Methodology**

This section the actions taken in the course of the investigation including personnel interviewed, documents reviewed, analyses techniques, data and any major assumptions made during the analysis.

- a. The following analysis methodologies may be applied.

**PG&E Preferred Methodologies**

Methodology	Description
Comparative Timeline	A tabular, most chronological, presentation of the evidence and other relevant information related to an event.
Hazard Barrier (Target) Analysis	A process for finding out what is keeping people from behaving in a specified (desired) way
Fault Tree (Cause and Effect)	A Fault Tree is a failure analysis in which an undesired state of a system is analyzed using a system of logical thought to combine a series of lower level events.
Factor Tree	A representation similar to an organization chart that shows the chains of factors affecting a particular consequence. The tree begins with the consequence and continues through the direct and intermediate factors to the deepest identifiable underlying factors.
Human Factored Analysis and Classification System (HFACS)	A method designed to identify factors that influence task performance. This method is not intended to be used as a stand-alone tool, but should be included with another method for human-factor-related events only.
Modified Management Oversight and Risk Tree (MORT)	A comprehensive, analytical process that provides a method for structuring an investigation and determining the cause factors and root cause(s) of an incident. This is accomplished by using the ABS Consulting 'SOURCE' analysis process.
"Why" Staircase	The "Why" Staircase consists of describing the problem in very specific terms, then asking why it happened repeatedly until the questions no longer yield any useful information.



**Discussion:**

- Other recognized causal evaluation tools may be used e.g. Event and Causal Factors Chart, TapRoot, Common Cause Analysis

**Analysis:**

This section describes the analysis performed. The breadth and depth of the analysis should be commensurate with the significance of the problem. The analysis should consider human performance and process issues. In order to minimize duplicate research, document the investigative efforts that do not lead to a cause.

**Discussion:**

- Section should include a training analysis to evaluate training adequacy or explain why an examination of training was not needed, if applicable.

**Results:**

This section describes the results of the investigation. This should not be a reiteration of the root and contributing causes, but should be an overview of what the analysis found.

**Root and Contributing Causes**

**Root Cause(s):**

This section contains the precise root cause(s). The root cause is determined during the analysis to be a fundamental cause(s) that, if corrected, will prevent recurrence of an event or an adverse condition.

**Discussion:**

- If there are multiple root causes, identify them as RC-1, RC-2, etc.

**Contributing Cause(s):**

This section contains the contributing causes. These are factors that interact with the root cause to increase the likelihood or worsen the outcome of a problem.

**Discussion:**

- If there are multiple contributing causes, identify them as CC-1, CC-2, etc.

**Decision Tree Factors & Prevention Measures**

➤ **Note: This section applies to SIF RCEs only\***

This section contains the identified SIF Decision Tree Factors (DTFs) and Prevention Measures that were not in place (also called Precursors) for the incident. The possible values for DTFs and Prevention measures can be found at this [link](#).

- a. Decision Tree Factors & Prevention Measures section is only required for SIF Investigation only
- b. Each SIF RCE must have at least one assigned DTF and each DTF must have at least one Prevention Measure.

## Title: of Root Cause Evaluation



- c. In addition to completing the table below, a short explanation about why the particular DTFs and Prevention Measures were selected should be included here.

	Cause(s)	Missing Prevention Measures
DTF-1	State each identified Decision Tree Factor	May list more than one PM in this cell
DTF-2	State each identified Decision Tree Factor	May list more than one PM in this cell
	-additional rows as needed	

### Corrective Actions for Root and Contributing Causes

Corrective Actions are required to address all identified root cause and contributing causes

- a. Establish a direct tie between the corrective action and the associated root cause and contributing cause(s)
- b. Corrective Actions to Prevent Recurrence (CAPR) must address the stated root cause and are implemented to prevent recurrence, or reduce the likelihood of a recurrence of the problem for the root cause(s).
- c. Corrective Actions to address Contributing Causes (CC) are for improvement and implemented to mitigate the identified problems. These actions may not prevent recurrence of the event but they can help decrease the likelihood of a problem/cause.
- d. Ensure that Corrective Actions are **Specific, Measurable, Achievable, Realistic, and: Timely** (S.M.A.R.T.)
  - S.M.A.R.T corrective actions mean:
    1. **Specific:** Describes exactly what is to be done.
    2. **Measurable:** The present and proposed output must be able to be calculated either qualitatively or quantitatively
    3. **Achievable:** Actions can be completed within a designated time period.
    4. **Realistic:** Thought should be given to addressing the cause in the most cost/resource effective way
    5. **Timely:** The due date should be such that a corrective action can be implemented prior to the incident happening again
- e. SIF RCE corrective actions require an explanation (justification) of how the timeline for the corrective actions represents the fastest, reasonable approach to getting mitigation action deployed.
  - The explanation should include the factors considered in the setting of the corrective action(s) due dates, for example, a detailed discussion of tasks and resources required to meet the target date and a discussion of any barriers that may prevent meeting the target date.



- f. Corrective Actions assigned to another line of business, the assigned line of business Action Owner should concur with the corrective action and its due date prior to approval of the report.
- g. Corrective Actions are required to address all incident causes identified for SIF incidents.
- h. Develop Corrective Actions considering the “Hierarchy of Control” to determine the most effective feasible method to eliminate, substitute, or control the risks associated with the exposure. The different hierarchy action levels listed from most effective to least effective are:

**Hierarchy of Control**

Elimination

- Completely redesign the system to remove the exposure
- Exposure eliminated

Substitution

- Switch out a process step with a less hazardous step; use a low voltage system rather than a high voltage; replace a toxic material with a non-toxic material
- Exposure significantly reduced

Engineering Controls

- Isolate hazard; install guards and/or interlocks; build barriers; use light curtain; develop new tool
- Exposure possible during maintenance operations and emergencies.

Administrative Controls

- Post signs and warnings; write procedures and rules; train employees
- Exposure controlled IF employees rigorously comply and IF culture supports compliance and IF leadership maintains commitment to oversight

Personal Protective Equipment

- Provide protective equipment for employees (e.g., hard hats, respirators)
- Use when hazard is unpredictable or pervasive; control is dependent on proper selection and use

**Discussion:**

- SIF Potential S.M.A.R.T corrective actions are specific and measurable and contain hierarchy language having greatest value, such as, “Eliminate the exposure by...”

**Corrective Action Matrix**

	Cause(s)	CAPR/CA #	CAPR/CA Description	Action Owner	Due Date
RC-1	State each identified Root Cause from the report	CAPR-1:	State CAPR for the Root Cause		
CC-1	State each identified Contributing Cause from the report	CA-1:	State CA for Contributing Cause		
	-additional rows as needed				



**Discussion:**

- If there are multiple Root Causes, Contributing Causes identify them as RC-1, RC-2, CC-1, CC-2, etc.

**Extent of Root Cause(s)**

This section is the extent to which the root cause(s) of an identified problem may impact other plant processes, equipment, or human performance. Is the line of business at risk of a similar cause elsewhere?

- a. The extent of cause may be bounded to ensure that the investigation has an end point

**Operating Experience**

**Internal Review**

- a. This Internal Review section provides a description of all pertinent line of business experience, and includes discussions of past events that are similar to the problem under investigation. Previous corrective actions, and their effectiveness, should be analyzed and reported.

**Industry Review (Optional)**

- a. This Industry Review section provides a description of all pertinent industry experience, and includes discussions of past events that are the same as the problem under investigation. Previous corrective actions, and their effectiveness, should be analyzed and reported.

**Effectiveness Review Plan**

This section contains the table to use to document the effectiveness review plan for corrective actions.

- a. Effectiveness Review Plan contains effectiveness measures and associated success criteria after an optimal time period.
- b. Effectiveness Review Plan describes the methods and evidence that will be used to verify corrective actions effectiveness in preventing the problem from recurring.
- c. Effectiveness Review Plan references the **new** CAP issue initiated for tracking completion of the effectiveness review plan.
  - The **new** CAP Issue Owner is the person who will be responsible for performing the effectiveness review to ensure the validity of the outcome.
  - CUT AND PASTE Effectiveness Review Plan in the **new** CAP issue.

**Discussion:**

- The intent of the effectiveness review plan is to determine if the corrective actions have prevented recurrence of the problem and to what confidence, **NOT** if the corrective actions have been completed.



**EFFECTIVENESS REVIEW PLAN – Action Matrix (Documented in the Cause Evaluation Report)**

<b>Effectiveness Review Plan</b>	
<b>Criteria</b>	<b>Plan: Description</b>
<b>Problem Statement</b>	List the cause evaluation problem statement.
<b>Methods</b>	Describe the method(s) that will be used to verify that the actions taken met the desired outcome. <ol style="list-style-type: none"> <li>1. Methods could include performance of an evaluation, metrics, assessments, walk-through, observations, document review, direct observations, audits, inspections, test, trending, and follow-up discussions with personnel.</li> </ol>
<b>Attributes</b>	Describe the particular attributes to be monitored or evaluated <ol style="list-style-type: none"> <li>1. Specify the attributes or characteristics that are to be evaluated. (e.g. successful completion of a new process or task.</li> <li>2. Ensure that attributes selected measure behaviors of performance that provide indication of sustainable change. (e.g., process timeliness, component alignment or position, system performance, etc.).</li> </ol>
<b>Success</b>	Describe specific action that will be performed and what does success look like (i.e. field observations, data review, surveys, etc.). Absence of recurrence is not proof of effectiveness. <ol style="list-style-type: none"> <li>1. Establish quantitative and/or qualitative acceptance criteria which can be used for monitoring or evaluating the attributes.                             <ol style="list-style-type: none"> <li>a. Observations can be initiated and completed 6 months after closure of final corrective actions from RCE.</li> </ol> </li> </ol>
<b>Timeliness</b>	Define the optimum time to perform the Effectiveness Review. <ol style="list-style-type: none"> <li>1. The timing of the review should allow sufficient time for corrective actions to be implemented and for overall performance to change. A typical period of time is approximately six (6) months following the implementation of the corrective actions.</li> </ol>
	New CAP Issue # Issue Owner: Due Date:



**Attachments**

In addition to the cause analysis write-up, the following are examples of items that should be included, as appropriate, in the cause analysis package as attachments:

**Discussion:**

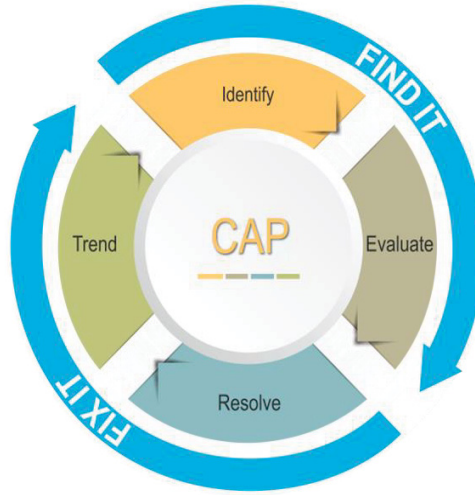
- Attachments could include photographs, charts, or other non-textual exhibits, a timeline of the event, listing of people contacted during the investigation, as appropriate, Cause Evaluation Analysis tools, document references, RCE Charter, and other supporting documentation.

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 5**  
**APPENDIX 5-G**  
**ENTERPRISE APPARENT CAUSE EVALUATION (ACE)**  
**TEMPLATE**





# Apparent Cause Evaluation Report



**Title: Insert Here**

Issue No.: Insert here CAP Issue No

Report Rev: 00

Cause Evaluator \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Issue Owner \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_



### **Executive Summary**

Write a brief summary that describes the incident, the cause(s) and corrective actions; listing action owners and action due dates.

- a. An executive summary is only required for Serious Injury or Fatality (SIF) Potential ACEs.

### **Discussion:**

- Executive summary should be one page or less in length, easy to read, and understand
- An executive summary for other safety, quality and performance ACEs may be used at LOB discretion

### **Problem Statement**

Write the Problem Statement to include the following specific elements:

1. **Requirement or Expectation:** If known, list the requirement that governs the process or management expectation of what should have occurred. A requirement may come from a standard, procedure, policy, manual, or management expectation.
2. **Deviation or Defect:** Deviation from the requirement or expectation in the actual performance or condition identified in this issue/event (what happened, when did it happen, where, and how if known).
3. **Consequences of Deviation or Defect:** Describe the undesirable or unacceptable consequences (actual or potential).
4. **Significance of Deviation or Defect:** Describe the (potential future pain) of the undesirable or unacceptable deviation or defect from the standard if the condition were to remain uncorrected

### **Discussion:**

- Problem statement provides the focus for the investigation efforts, a clear picture of the problem to be solved.
- Aids in the scope definition, focus of the analysis, and defines appropriate limits for the scope of an evaluation
- Provides a clear explanation of the undesirable or unacceptable consequences, conditions, methods or results

### **Immediate, Compensatory, or Interim Actions**

This section contains a list or description of those actions taken immediately following discovery of the event to stop the event, mitigate the event, or make the event less likely to reoccur while evaluation of the condition is in progress and until completion of final corrective actions.



**Discussion:**

- Not required for ACE but may be used at LOB discretion.
- SIF Potential ACEs should list or describe any immediate and interim corrective action(s) the line of business has taken and will stay in place until the SIF potential safety events corrective action(s) are completed, if applicable.

**Extent of Condition:**

The extent of condition is about **here and now**.

- a. Answer the questions:
  1. Is it likely that the same condition that proved consequential in this incident (e.g., a failed valve, inadequate procedure, or improper human action) currently exists undetected in other processes, equipment or human performance?
  2. Is the line of business presently at risk of a similar condition?
- b. Focus the extent of condition on the actual issue (i.e., the problem under investigation) and determine the extent to which that issue exists, or may exist, with other processes, equipment, or human performance.
  - **Same Object – Same Defect** Identify and list same program [e.g., CAP] or Process [e.g., Surveillance Scheduling] or system [Gas Line Protection] with the same kind of problem/error/failure or defect.
  - **Same Object – Similar (Different) Defect** Identify and list same program [e.g., CAP vs. SEMS] or process [e.g., Surveillance Scheduling vs. 13-Week Scheduling] or system [Gas Line Protection vs. Compressor Stations] with a similar kind of problem/error/failure or defect.
- c. The extent of condition may be bounded to ensure that the investigation has an end point.

**Discussion:**

- SIF Potential ACEs extent of condition corrective actions should be broad enough in scope to capture all examples of the problem (e.g. apply corrective action in other lines of business i.e. Electric, Gas, DCP, IT, etc. if relevant)

**Event Description:**

This section is a chronological description of the sequence of events and conditions that led to the problem under analysis. It is a story of what conditions existed and how the events occurred.

- a. Provide a chronological description of the facts and conditions that led to the problem.
- b. Document any relevant system, component, process, historical, and other information needed to provide the context necessary to understand the analysis.



**Discussion:**

- Not required for ACE but may be used at LOB discretion.
- This section provides the "story" of how the event happened.
- This section should provide the reader with the necessary fundamental understanding of the facts that **lead up** to the event.

**Discussion:**

**Cause Analysis**

**Methodology**

This section documents the actions taken in the course of the investigation including personnel interviewed, documents reviewed, analyses techniques, data and any major assumptions made during the analysis.

- The following analysis methodologies may be applied.

**PG&E Preferred Methodologies**

Methodology	Description
“Why” Staircase	The “Why” Staircase consists of describing the problem in very specific terms, then asking why it happened repeatedly until the questions no longer yield any useful information.
Factor Tree	A representation similar to an organization chart that shows the chains of factors affecting a particular consequence. The tree begins with the consequence and continues through the direct and intermediate factors to the deepest identifiable underlying factors.
Comparative Timeline	A tabular, most chronological, presentation of the evidence and other relevant information related to an event.
Hazard Barrier (Target) Analysis	A process for finding out what is keeping people from behaving in a specified (desired) way
Fault Tree (Cause and Effect)	A Fault Tree is a failure analysis in which an undesired state of a system is analyzed using a system of logical thought to combine a series of lower level events.
Human Factored Analysis and Classification System (HFACS)	A method designed to identify factors that influence task performance. This method is not intended to be used as a stand-alone tool, but should be included with another method for human-factor-related events only.
Modified Management Oversight and Risk Tree (MORT)	A comprehensive, analytical process that provides a method for structuring an investigation and determining the cause factors and root cause(s) of an incident. This is accomplished by using the ABS Consulting ‘SOURCE’ analysis process.

**Discussion:**

- Other recognized causal evaluation tools may be used e.g. Event and Causal Factors Chart, TapRoot, Common Cause Analysis



**Analysis:**

This section describes the analysis performed. The breadth and depth of the analysis should be commensurate with the significance of the problem. The analysis should consider human performance and process issues. In order to minimize duplicate research, document the investigative efforts that do not lead to a cause.

This section should include a training analysis to evaluate training needs or explain why an examination of training was not needed.

**Results:**

This section describes the results of the investigation. This should not be a reiteration of the apparent and contributing causes, but should be an overview of what the analysis found.

**Apparent Cause and Contributing Causes**

**Apparent Cause(s):**

This section contains the apparent cause(s). The apparent cause is determined during the analysis to be a fundamental cause(s) that, if corrected, will minimize or lower probability of occurrence of an event or an adverse condition.

**Discussion:**

- If there are multiple apparent causes, identify them as AC-1, AC-2, etc.

**Contributing Cause(s):**

This section contains the contributing causes. These are factors that interact with the apparent cause to increase the likelihood or worsen the outcome of a problem.

**Discussion:**

- If there are multiple contributing causes, identify them as CC-1, CC-2, etc.

**Decision Tree Factors & Prevention Measures**

- ***Note: This section applies to SIF Potential ACEs only\****

This section contains the identified SIF Decision Tree Factors (DTFs) and Prevention Measures that were not in place (also called Precursors) for the incident. The possible values for DTFs and Prevention measures can be found at this [link](#).

- a. Decision Tree Factors & Prevention Measures section is only required for SIF Potential ACEs
- b. Each SIF Potential ACE must have at least one assigned DTF and each DTF must have at least one Prevention Measure.

## Title: of Apparent Cause Evaluation



- c. In addition to completing the table below, a short explanation about why the particular DTFs and Prevention Measures were selected should be included here.

	Cause(s)	Missing Prevention Measures
DTF-1	State each identified Decision Tree Factor	May list more than one PM in this cell
DTF-2	State each identified Decision Tree Factor	May list more than one PM in this cell
	-additional rows as needed	

### **Corrective Actions for Apparent and Contributing Causes**

Corrective Actions are required to address all identified apparent cause and contributing causes

- a. Establish a direct tie between the corrective action and the associated apparent cause and contributing cause(s)
- b. Ensure that Corrective Actions are **S**pecific, **M**easurable, **A**chievable, **R**ealistic, and: **T**imely (S.M.A.R.T.)
  - S.M.A.R.T corrective actions mean:
    1. **Specific:** Describes exactly what is to be done.
    2. **Measurable:** The present and proposed output must be able to be calculated either qualitatively or quantitatively
    3. **Achievable:** Actions can be completed within a designated time period.
    4. **Realistic:** Thought should be given to addressing the cause in the most cost/resource effective way
    5. **Timely:** The due date should be such that a corrective action can be implemented prior to the incident happening again
- c. SIF Potential ACEs require an explanation (justification) of how the timeline for the corrective actions represents the fastest, reasonable approach to getting mitigation action deployed.
  - The explanation should include the factors considered in the setting of the corrective action(s) due dates, for example, a detailed discussion of tasks and resources required to meet the target date and a discussion of any barriers that may prevent meeting the target date.
- d. Corrective Actions assigned to another line of business, the assigned line of business Action Owner should concur with the corrective action and its due date prior to approval of the report.



- e. Develop Corrective Actions considering the “Hierarchy of Control” to determine the most effective feasible method to eliminate, substitute, or control the risks associated with the exposure. The different hierarchy action levels listed from most effective to least effective are:

**Hierarchy of Control**

Elimination

- Completely redesign the system to remove the exposure
- Exposure eliminated

Substitution

- Switch out a process step with a less hazardous step; use a low voltage system rather than a high voltage; replace a toxic material with a non-toxic material
- Exposure significantly reduced

Engineering Controls

- Isolate hazard; install guards and/or interlocks; build barriers; use light curtain; develop new tool
- Exposure possible during maintenance operations and emergencies

Administrative Controls

- Post signs and warnings; write procedures and rules; train employees
- Exposure controlled IF employees rigorously comply and IF culture supports compliance and IF leadership maintains commitment to oversight

Personal Protective Equipment

- Provide protective equipment for employees (e.g., hard hats, respirators)
- Use when hazard is unpredictable or pervasive; control is dependent on proper selection and use

**Discussion:**

- SIF Potential S.M.A.R.T corrective actions are specific and measurable and contain hierarchy language having greatest value, such as, “Eliminate the exposure by...”

**Corrective Action Matrix**

	Cause(s)	CA #	CA Description	Action Owner	Due Date
AC-1	State each identified Apparent Cause from the report	CA-1	State corrective action for the Apparent Cause		
CC-1	State each identified Contributing Cause from the report	CA-2	State corrective action for Contributing Cause		
	-additional rows as needed				



**Discussion:**

- If there are multiple Apparent/Contributing causes, identify them as AC-1, AC-2, CC-1, CC-2 etc.

**Attachments**

In addition to the cause analysis write-up, the following are examples of items that should be included, as appropriate, in the cause analysis package as attachments:

**Discussion:**

- Attachments could include photographs, charts, or other non-textual exhibits, a timeline of the event, listing of people contacted during the investigation, as appropriate, Cause Evaluation Analysis tools, document references, ACE Charter, and other supporting documentation.

**Effectiveness Review Plan**

This section contains a table to use to document effectiveness review plan for corrective actions to SIF Potential ACEs.

- a. Effectiveness Review Plan is only required for SIF Potential ACEs
- b. Effectiveness Review Plan contains effectiveness measures and associated success criteria after an optimal time period.
- c. Effectiveness Review Plan describes the methods and evidence that will be used to verify corrective actions effectiveness
- d. Effectiveness Review Plan references the **new** CAP issue initiated for tracking completion of the effectiveness review plan.
  - The **new** CAP Issue Owner is the person who will be responsible for performing the effectiveness review to ensure the validity of the outcome.
  - CUT AND PASTE Effectiveness Review Plan in the **new** CAP issue.
- e. An effectiveness review plan for other safety, quality and performance ACEs may be used at LOB discretion

**Discussion:**

- The intent of the effectiveness review is to determine if the corrective actions have prevented recurrence of the problem and to what confidence, **NOT** if the corrective actions have been completed.





**EFFECTIVENESS REVIEW PLAN – Action Matrix (Documented in the Cause Evaluation Report)**

<b>Effectiveness Review Plan</b>	
<b>Criteria</b>	<b>Plan: Description</b>
<b>Problem Statement</b>	List the cause evaluation problem statement.
<b>Methods</b>	Describe the method(s) that will be used to verify that the actions taken met the desired outcome. <ol style="list-style-type: none"> <li>1. Methods could include performance of an evaluation, metrics, assessments, walk-through, observations, document review, direct observations, audits, inspections, test, trending, and follow-up discussions with personnel.</li> </ol>
<b>Attributes</b>	Describe the particular attributes to be monitored or evaluated <ol style="list-style-type: none"> <li>1. Specify the attributes or characteristics that are to be evaluated. (e.g. successful completion of a new process or task.</li> <li>2. Ensure that attributes selected measure behaviors of performance that provide indication of sustainable change. (e.g., process timeliness, component alignment or position, system performance, etc.).</li> </ol>
<b>Success</b>	Describe specific action that will be performed and what does success look like (i.e. field observations, data review, surveys, etc.). Absence of recurrence is not proof of effectiveness. <ol style="list-style-type: none"> <li>1. Establish quantitative and/or qualitative acceptance criteria which can be used for monitoring or evaluating the attributes.                             <ol style="list-style-type: none"> <li>a. Observations can be initiated and completed 6 months after closure of final corrective actions from ACE.</li> </ol> </li> </ol>
<b>Timeliness</b>	Define the optimum time to perform the Effectiveness Review. <ol style="list-style-type: none"> <li>1. The timing of the review should allow sufficient time for corrective actions to be implemented and for overall performance to change. A typical period of time is approximately six (6) months following the implementation of the corrective actions.</li> </ol>
	New CAP Issue # Issue Owner: Due Date:

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**CAUSE EVALUATION TRAINING PROGRAM SUMMARIES**

# Cause Evaluation Training Program Overview

## ECAP-01 Apparent Cause Evaluation

Participants will learn and use proven techniques of Comparative Timeline, Hazard Barrier Analysis, and Fault Tree used by high reliability organizations for conducting focused and effective causal analysis reports for events, conditions or trends that have high consequences and/ or high significance outcomes. Students will engage with the essential investigation skills necessary to enable that the direct and underlying event and organizational factors have been sufficiently and effectively investigated; and that specific, measurable, attainable, relevant, and timely corrective actions have been developed, with the intent of significantly reducing the probability of recurrence of the same or similar event.

## ECAP-02 Root Cause Evaluation (RCE 2)

This three- day Root Cause Analysis (RCA) and incident Investigation with a focus on Factor Tree and Modified MORT course is designed for Cause Evaluators. Pre-analysis tasks are covered, including securing the site, classifying the incident, forming an investigation team, and gathering investigation resources. This course explains how and when to apply these techniques to analyze the available raw data and aspects of the situation to reconstruct the incident scenario. Realistic industry examples and workshops are used extensively throughout the course to illustrate key points and to allow participants to practice new skills.

## ECAP-03 Root Cause Evaluation (RCE 3)

This intensive 2-day workshop for Cause Evaluators includes "hands on" exercises using the Human Factor Analysis and Classification System (HFACS) and the Human Factors Intervention Matrix (HFIX). Upon completion of this workshop, attendees will have the fundamental skills needed to begin applying HFACS/HFIX to incidents that occur during the daily operations in the field. Textbooks and workbooks will be provided and attendees will receive a certification of course completion.

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**CORRECTIVE ACTION REVIEW BOARD (CARB) CHARTER**

# Enterprise Cause Evaluation Standard

## Attachment 1, Corrective Action Review Board (CARB) Charter

### 1. MISSION

The Corrective Action Review Board (CARB) provides senior management oversight of the corrective action program (CAP). Each Line of Business (LOB) must establish a CARB Charter.

The CARB is responsible for the review of the following:

- All Root Cause Evaluations (RCEs)
- Apparent Cause Evaluations (ACEs) for Serious Injury or Fatality (SIF) Potential
- RCE and ACE SIF Potential Effectiveness Reviews
- Other ACEs as determined by the CARB chairperson

CARB reviews should focus on the completeness and comprehensiveness of the investigation, and alignment of the problem, cause analysis and corrective actions.

- CARB reviews include corrective action quality assessment to ensure corrective actions are appropriate in hierarchy of control, Specific, Measurable, Achievable, Realistic, and Timely (S.M.A.R.T.) and the time to complete the corrective action(s) is reasonable and justified.

Each LOB may establish additional LOB CARB Charter requirements but, at a minimum, comply with this enterprise charter.

### 2. TEAM MEMBERS

The CARB Chair is the LOB CAP Senior Director/Director and may be delegated.

CARB Members are LOB Senior Director or Directors. Alternate CARB members consist of LOB Directors or Managers.

The minimum quorum to conduct business consists of the chair and three CARB Members that are not delegates.

CARB Members must be present for cause evaluations that impact areas of responsibility.

#### CARB

Title	Organization	Role	Quorum Member
Senior Director/Director, CAP (example)		Chair	Yes
Senior Director/Director (example)		Member	Yes
Senior Director/Director (example)		Member	Yes
Senior Director/Director (example)		Member	Yes
LOB Manager, CAP		Coordinator	No

CARB members and alternate members should complete the CAP Overview Web Based Training (WBT), CORP-6050WBT.

### 3. AUTHORITY AND EXPECTATIONS

The CARB Chairperson presides over the meeting having final decision authority when CARB members do not reach a consensus on an issue and is responsible for ensuring that the CARB fulfills its mission.

## Enterprise Cause Evaluation Standard

### Attachment 1, Corrective Action Review Board (CARB) Charter

- CARB Chairperson may elect CARB to review other safety, quality, and performance ACEs.
- CARB does not determine causes
- CARB may require additional analysis if a cause analysis or corrective actions are believed to be inaccurate or incomplete.
- CARB may make requests for report enhancements to improve understanding of the issue.

Enterprise CAP Executive Sponsor or designee is responsible for being the primary process advisor to the LOB CARBs.

#### 4. CONDUCT OF BUSINESS

LOB CARB meetings may be conducted face to face or by conference call. Some CARB administrative decisions, such as evaluation downgrades, may be conducted by email vote.

LOB CARB meets as necessary. CARB meetings may be cancelled if there are no topics requiring CARB review.

The LOB CAP Manager or designee acts as the CAP subject matter expert and CARB Secretary and performs the following:

- Ensure that minimum CARB quorum requirements are met.
- Ensure items submitted for CARB review meet appropriate cause evaluation procedural requirements.
- Prepare LOB CARB agenda. Agenda items include the following:
  - Verify quorum.
  - Review CARB products
  - Prepare CARB agenda
  - Distribute agenda and reports for review prior to the scheduled meeting.
  - Record and provide meeting minutes for CARB approval, and distribute minutes.
    - CARB final decisions for the products reviewed at the meeting should be recorded on the applicable RCE or ACE review sheet.
    - Details should be provided for any CARB opinion which results in a less than a consensus agreement.
- Track action items assigned by CARB.

#### 5. REVIEW OF EVALUATION REPORTS

LOB RCE sponsor, RCE Team Lead and Lead Cause Evaluator are responsible for presenting their report to the CARB.

- CARB reviews are performed **BEFORE** the RCE sponsor has approved the RCE.
- RCE CARB Review Sheet should be used for RCE review, REFER to Attachment 2, "RCE Review Sheet"

## Enterprise Cause Evaluation Standard

### Attachment 1, Corrective Action Review Board (CARB) Charter

LOB ACE Department Owner, Issue Owner and Cause Evaluator, if applicable, are responsible for presenting their report to the CARB.

- CARB reviews are performed **AFTER** the ACE Department Owner has approved the ACE
- ACE CARB Review Sheet should be used for ACE review, REFER to Attachment 3, "ACE Review Sheet"

CARB consensus agreement is obtained for final concurrence.

- Concur
- Concur with Comments (minor editorial) - CARB concurrence may be withheld until the required changes are verified to meet the intent of the CARB comments. This verification may be performed by the CARB chairperson or a designated CARB member.

#### 6. RECORDS

CARB meeting minutes are processed per Enterprise Records and Information Management Standard, GOV-7101S.

#### REVISION NOTES

Where?	What Changed?
<b>Mission Section</b>	Clarified wording to improve understanding
<b>Team Members Section</b>	Clarified wording, Deleted "voting member from Line of Business (LOB) Safety" as a requirement for minimum quorum composition to improve meeting efficiency
<b>Authority and Expectations Section</b>	Clarified wording and section modified consolidating "Authority" and "Member Expectations" requirements to improve efficiency without changing the technical content.
<b>Conduct of Business Section</b>	Clarified wording and section modified adding, CARB final decisions for the products reviewed at the meeting should be recorded on the applicable RCE or ACE review sheet" and "Details should be provided for any CARB opinion which results in a less than a consensus agreement" to improve efficiency and ensure CARB meetings, when conducted, meet the minimum requirements
<b>Review of Evaluation Reports Section</b>	Based on CAP Governance Committee feedback CARB reviews are performed BEFORE the RCE sponsor has approved the RCE and CARB reviews are performed AFTER the ACE Department Owner has approved the ACE to improve efficiency, Changed the word "may" to "should" to denote CARB Review Sheets a "preferred" requirement
<b>Definitions Section</b>	Deleted "Definitions Section" definitions located in ECAP Cause Evaluation Standard

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**HIERARCHY OF CONTROLS**



# Hierarchy of Controls - Descriptions

Source: Dr. Mark Fleming, Saint Mary's University, Nova Scotia, Canada

	Description
<b>Hierarchy of Control</b>	<p><b><u>Elimination</u></b></p> <ul style="list-style-type: none"> <li>• Completely redesign the system to remove the exposure</li> <li>• Exposure eliminated</li> </ul>
	<p><b><u>Substitution</u></b></p> <ul style="list-style-type: none"> <li>• Switch out a process step with a less hazardous step; use a low voltage system rather than a high voltage; replace a toxic material with a non-toxic material</li> <li>• Exposure significantly reduced</li> </ul>
	<p><b><u>Engineering controls/isolation</u></b></p> <ul style="list-style-type: none"> <li>• Isolate hazard; install guards and/or interlocks; build barriers; use light curtain; develop new tool</li> <li>• Exposure possible during maintenance operations and emergencies</li> </ul>
	<p><b><u>Administrative controls</u></b></p> <ul style="list-style-type: none"> <li>• Post signs and warnings; write procedures and rules; train employees</li> <li>• Exposure controlled <b>IF</b> employees rigorously comply and <b>IF</b> culture supports compliance and <b>IF</b> leadership maintains commitment to oversight</li> </ul>
	<p><b><u>Personal protective equipment</u></b></p> <ul style="list-style-type: none"> <li>• Provide protective equipment for employees (e.g., hard hats, respirators)</li> <li>• Use when hazard is unpredictable or pervasive; control is dependent on proper selection and use</li> </ul>
	<p><b><u>Lack of appropriate controls</u></b> or only using informational controls (e.g., be careful)</p> <ul style="list-style-type: none"> <li>• Employee is viewed as the cause of the exposure and simply requires more motivation; no actual change in exposure</li> </ul>

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**SAMPLE LIST OF PROCEDURES MODIFIED**

5-K Sample List of Procedure Changes

CAP Issue Number	Procedure Standard Number	Procedure Standard Name	Rev Date	Issue Description	Year
7016832	TD-4640P-01	GDA for TD-4640P-01	Sep-17	Hot Work Permit Procedure	2017
7014374	TD-4441P-20	GDA for TD-4441P-20	Oct-15	Line of Fire Awareness	2016
7000074	TD-4430P-04	GDA for TD-4430P-04	Jan-14	OBS07 - Valve torque limits	2013
7018807	TD-4170P-41	GDA for TD-4170P-41	Jul-17	Electro fusion D-DEB-15-1701	2015
7003042	TD-4110P-09	GDA for TD-4110P-09	Jun-17	Non-Conforming Procedures	2014
7013025	TD-4020P-02	GDA for TD-4020P-02	Aug-17	CE procedure 2015/2016 enhancements	2017
112707384	TD-2337M	Electric Restoration Supervisor Manual	Aug-17	Old SIF 16-004 CA's 01 thru 07	2017
113038340	SCM-2110P-01	Document Control Procedure	Sep-17	SQA Internal Audit Finding 2017FD04	2017
110840023	SCM-2106P-04	Quarantine and Purge Procedure	Aug-15	GT-Material Purge Process Incomplete	2016
113038349	SCM-2106P-02	Supplier Corrective Action Request and Failure Analysis Procedure	Nov-17	SQA Internal Audit Finding 2017FD05	2017
111912052	SCM-2105P-05	Supplier Change Request Procedure	Dec-16	Supplier Change Request Criteria	2016
112179344	SCM-2105P-05	Supplier Change Request Procedure	Dec-16	Supplier Change Request Criteria	2016
111975242	SCM-2105P-02	Supplier Quality Audit Procedure	Nov-17	Timely response on ISO audit results	2017
7005694	SCM-2105M	Supplier Qualification Manual	Oct-14	Env/Func Testing-2014GasQA05-OF19	2014
111710467	SCM-2003P-01	Material Code Change Request Procedure	Sep-16	Guid Doc SME Approv-2014GasQA05-OF112	2016
7031759	SAFE-3001P-07	Contractor Safety Oversight Procedure - Gas Operations	Oct-17	JSSA-General Guidelines	2016
7031830	SAFE-3001P-07	Contractor Safety Oversight Procedure - Gas Operations	Oct-17	Contractor JSSA Policy Definition	2016
7031836	SAFE-3001P-07	Contractor Safety Oversight Procedure - Gas Operations	Oct-17	JSSA Site Walks	2016
112783735	SAFE-1101P-01	Serious Injury and Fatality (SIF) Procedure	Mar-17	Procedure discrepancy SAFE-1100 & 1002S	2017
7022971	SAFE-1038S	Dog Bite Prevention Standard	May-17	Dog Safety Training	2017
112953814	SAFE-1037S	Safety and Health Tailboard Topics	Jun-17	Safety Tailboards Written by Unqualified	2017
112710393	SAFE-1004S	Motor Vehicle Safety Standard	Jun-17	CWA Standards and Docs are not to date	2017
111014100	SAFE-1002S	Serious Safety Incident Investigation Standard	Jan-16	SAFE-1004S, Serious Safety Incident	2016
113209258	RISK-7501S	Pressure Vessel Program Standard	Aug-17	RISK-7501S Document Unclear/Incomplete	2017
111991528	PG-4004P-01	Managing Contractor Safety at Fossil/Solar Facilities	Jan-16	Contractor Safety Plans	2016
111939435	PG-1617B-A-001	Settings and Maintenance Testing Requirements for WECC Protective Devices - New Requirements	Apr-17	Standard PG-1617S needs modification	2017
111836326	PG-1099P-01	New Employee Orientation Procedure and Checklist	Oct-16	Procedure Retrieval Via PGE Web Site	2016
112640630	IT-2013S	End-User Services Standard	Nov-17	GAP in IT governance process of TSC	2017
113103032	IT-2013S	End-User Services Standard	Nov-17	Tech. Services Test Equipment Hold up	2017
113761066	GOV-7105S	Enterprise Records and Information Management Digital Imaging Standard	Nov-17	GOV-7105S, R3 Comments	2017
113148644	GOV-7101S	Enterprise Records and Information Management Standard	Nov-17	Identify all Quality Management(QM) reco	2017
7038389	GOV-7101S	Enterprise Records and Information Management Standard	Aug-17	Leak Repair PHMSA Alignment, GOV-7101S	2016
7038390	GOV-7101S	Enterprise Records and Information Management Standard	Aug-17	Leak Repair PHMSA Alignment, GOV-7101S	2016
112856541	GOV-6102P-054	Safety and Corporate Services Cause Evaluation Process	Oct-17	Safety and Corp Services CAP Procedures	2017
111097477	GOV-6102P-05	Power Generation Cause Evaluation Procedure	Jun-16	Casual Evaluation - Guidance Document	2016
7020982	GOV-6102-B002	Enterprise Cause Evaluation Standard Bulletin	Jan-17	GOV-6102S, Enterprise Causal Evaluation	2017
113077069	GOV-6102-B002	Enterprise Cause Evaluation Standard Bulletin	Jan-17	LOBs CARB Charter Tracking CAP Item	2017
7011898	GOV-6102-B002	Enterprise Cause Evaluation Standard Bulletin	Jan-17	Annual review of GOV-6102S	2016

5-K Sample List of Procedure Changes

113163894	GOV-2001S	Guidance Document Management Standard	Oct-17	GDM Standard, GOV-2001S	2017
113163849	GOV-2001S	Guidance Document Management Standard	Oct-17	GDM Standard, GOV-2001S	2017
113236577	FIN-2210SP	Arranging Travel and Reimbursing Business Expenses Procedure	Jul-17	FIN-2210P-01 Same Rev Different Dates	2017
112635914	FIN-2210S	Employee Business Expenses and Travel Standard	Oct-17	GA\$-Conflicting Stnds w/Affordability	2017
113055800	FIN-2210S	Employee Business Expenses and Travel Standard	Oct-17	Conflicting standards on expenses	2017
111413600	ENV-4000P-07	Treated Wood Waste Management Procedure	Jun-16	Process For Sampling Abandoned Poles	2016

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**SAMPLE LIST OF TRAINING CHANGES**

Sample List of Training Related Changes and Associated Procedures

IssueNumber	ProcedureStandard Numl	Procedure Standard Name	Rev Date	Issue Description	Year
110811839	SAFE-1005s	Hand Protection	Nov-15	9.3.2015 FtRoss Contact Issue	2016
111758588	TECH-0083	Driving Laws	Oct-16	DRIVING LAWS TRAINING	2016
7016090	SAFE-0395	Utility Worker training	Feb-16	Ergo Training @ Utility Worker School	2016
7034728	SAFE-0133	Asbestos Pipe & Gaskets	Jan-17	Field Service Asbestos	2017
7016922	SAFE-1019S	Other Confined Space Standard)	May-17	Four Gas Monitor/Air Monitor Issue	2016
112541777	SAFE-3296	Risk Assessments for JHAs	Nov-17	JHA request-GC Crews in Confined Space	2017
112692881	SAFE-1001	Safe Access, Emergency Standby	Apr-17	JSA/TSA documentation	2017
113127583	SAFE-1012	Tie Off/Fall Protect	Oct-17	Power Gen 100% Fall Protection Training	2017
112783735	SAFE-1100S/1002S	Utility Standard SAFE-1100S/SAFE-1002S	Feb-17	Procedure discrepancy SAFE-1100 & 1002S	2017
111014100	SAFE-1004S	Serious Safety Incident Investigation	Dec-15	SAFE-1004S, Serious Safety Incident	2016
112583973	SAFE-1511	Arc Flash & FR Clothing DVD	Mar-17	SAFE-1511 Tailboard Error	2017
112554828	SAFE-1001S	SeriousInjury or Fatality (SIF) Field guide	Jul-17	Safety & Performance Fundamentals Book	2017
112912291	GOV-6101S	SIF Potential Activities Checklist	Jun-17	SIF Potential & SIF Program differences	2017
113186947	SAFE-2008S	Silica Standard	Sep-17	Silica Standard	2017
7039697	SAFE-1002S	Utility Standard - Business Use of Motor Vehicle	Dec-16	Utility Standard SAFE-1002S	2016

**PACIFIC GAS AND ELECTRIC COMPANY**

**CHAPTER 6**

**SAFETY INCIDENTS**

PACIFIC GAS AND ELECTRIC COMPANY  
CHAPTER 6  
SAFETY INCIDENTS

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Appendix



1                                   **PACIFIC GAS AND ELECTRIC COMPANY**  
2   **CHAPTER 6**  
3   **SAFETY INCIDENTS**

4   **A. Introduction**

5           My name is Todd Hohn, Senior Director of Safety and Health at Pacific Gas  
6           and Electric Company (PG&E). In that capacity, I am responsible for creating  
7           and executing strategies to improve the occupational safety and health of PG&E  
8           employees and contractors.<sup>1</sup>

9           The purpose of my testimony is to respond to Questions 14.1 through 14.6  
10          of the Assigned Commissioner’s Ruling (ACR) dated November 17, 2017. The  
11          questions pertain to five safety incidents identified in the ACR that occurred in  
12          2013, 2014, and 2015.

13          In summary, PG&E’s responses to Questions 14.1 through 14.6 are as  
14          follows:

15                **Question 14.1:** *What analysis has been done to identify the cause of the*  
16                *incident? Does the method and/or type of analysis vary by the type of safety*  
17                *incident and, if so, describe that variance and how it applies?*

18          Post-incident analysis is the cornerstone for learning from safety incidents.  
19          Analysis techniques range from in-depth, root cause evaluations to informal  
20          work group evaluations. In general, the type of cause evaluation is assigned  
21          based on the risk associated with the incident.

22          PG&E’s analysis of the five incidents shows that consistent with PG&E’s  
23          guidance in effect at the time a root cause evaluation (RCE, PG&E’s term  
24          analogous to RCA or root cause analysis) was performed for incidents A, B and  
25          C, which involved serious injuries to PG&E employees.<sup>2</sup> Incident D involved a  
26          contractor injury, and PG&E worked with the contractor who performed an  
27          investigation.

28          Incident E involved a San Francisco Water Department employee who  
29          damaged a plastic PG&E gas service line causing a release of gas and a fire  
30          while working on adjacent water facilities in the same excavation trench. The

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1   Witness qualifications are included in Chapter 3.

2   Details about each of the five incidents, including detailed responses to each of the questions posed in the ACR, are provided in Appendix 6-A.

1 fire was extinguished and the gas was shut in by a PG&E Gas Service  
2 Representative (GSR). It was reported that the water department employee  
3 suffered a minor injury for which treatment was declined. PG&E did not conduct  
4 an investigation and is not aware of any other investigations related to this  
5 incident.

6 **Question 14.2:** *What is the chain of command for responding to the*  
7 *specific incident?*

8 Pursuant to PG&E's then-current guidance, serious employee injuries were  
9 investigated under the sponsorship of a director. This was done in the case of  
10 Incidents A–C. Since PG&E did not conduct investigations related to incidents D  
11 and E, there was no relevant investigation chain of command. For Incident D,  
12 PG&E worked with the contractor who conducted an investigation and  
13 performed corrective actions. At the time of Incident E, PG&E submitted a  
14 420 gas incident report to the California Public Utilities Commission (CPUC or  
15 Commission) due to media coverage, even though the injury was minor and  
16 property damage did not appear to meet the reporting threshold.

17 **Question 14.3:** *Was there a Safety Initiative or Preventative Plan in place*  
18 *to address this or similar incidents when it occurred? What Safety Initiatives or*  
19 *Preventative Plans are now in place that relate to this incident that were not in*  
20 *place when it occurred?*

21 In the 2013-2015 timeframe, when the five incidents occurred, PG&E had  
22 two enterprise-wide safety initiatives that are noteworthy: the Keys to Life  
23 Program and the Contractor Safety Program. Other key programs affecting  
24 PG&E's safety culture, however, either did not exist or were in their initial stages  
25 of deployment: specifically, the Supervisor Leadership Development (SLD)  
26 Program, the Corrective Action Program (CAP), and the Serious Injury and  
27 Fatality (SIF) Program. Those programs are now fully in place. In addition, at  
28 the time each of the incidents occurred, PG&E had specific procedures  
29 applicable to the work being performed and the assets in question. Following  
30 these incidents, corrective actions were identified by PG&E for Incidents A-C  
31 and by the contractor for Incident D. As noted earlier, no investigation was  
32 performed for Incident E. This was consistent with the then-current procedures  
33 of PG&E's Dig-in Reduction Team (DiRT) because the incident was not defined  
34 as a dig-in. Today, DiRT's scope has expanded to include investigation of

1 incidents, like Incident E, where even though the accident was not the result of  
2 the excavation, it occurred while work was being done in an excavated trench.

3 **Question 14.4:** *How are Incidents such as these communicated to the*  
4 *Board of Directors?*

5 Serious injuries and fatalities generally are reviewed and discussed as part  
6 of: (1) oral or written reports provided by the Chief Safety Officer to the Safety  
7 and Nuclear Oversight Committees of the PG&E and PG&E Corporation Boards  
8 of Directors;<sup>3</sup> (2) the Utility Business Report and other oral or written reports  
9 provided to the full Boards; and (3) the oral reports that the Safety and Nuclear  
10 Oversight Committee Chair provides to each Board following Safety and Nuclear  
11 Oversight Committee meetings.

12 **Question 14.5:** *Has the Board of Directors provided any guidance or*  
13 *direction to management about how to address this incident or to prevent similar*  
14 *incidents in the future?*

15 PG&E has not found any record of the PG&E or PG&E Corporation Boards  
16 providing guidance or direction to management about these five incidents in  
17 particular.

18 As a general matter, in the case of fatalities and certain other serious safety  
19 incidents, material is presented to the Boards that provides a factual description  
20 of the event, results of the investigation, and the status and details of any  
21 corrective actions associated with the event. Guidance or direction may be  
22 provided to management as a result of these discussions.

23 **Question 14.6:** *Did PG&E make any changes to such programs or to*  
24 *training as a result of these incidents?*

25 Examples of corrective actions taken in response to the five incidents are  
26 provided in section E below. A comprehensive summary of the actions taken in  
27 response to each of the incidents is included in Appendix 6-A.

## 28 **B. Background**

29 My testimony will provide high-level responses to the ACR's six questions  
30 about the five incidents, as well as a description of PG&E's current practices and  
31 protocols to reduce the probability that such incidents will happen again. More

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3 Prior to September 19, 2017, this committee existed at PG&E Corporation only, and was known as the Nuclear, Operations, and Safety Committee.

1 detailed responses to the questions for each incident are provided in  
2 Appendix 6-A.

3 **C. Question 14.1:** *What analysis has been done to identify the cause of the*  
4 *incident? Does the method and/or type of analysis vary by the type of safety*  
5 *incident and, if so, describe that variance and how it applies?*

6 Post-incident analysis is the cornerstone for learning from safety incidents.  
7 Analysis techniques range from in-depth RCEs to informal work group  
8 evaluations. In general, the type of cause evaluation is assigned based on the  
9 risk associated with the incident. When the incident is a serious injury or fatality,  
10 there are additional guidelines that specify the default cause evaluation  
11 assignment and many aspects of managing the incident response such as:  
12 leadership for the investigation and cause evaluation, types of cause evaluation  
13 methodologies to apply and communication protocols.<sup>4</sup>

14 Appendix 6-A shows that an RCE was performed for incidents A, B and C,  
15 each of which resulted in serious injuries to PG&E employees, consistent with  
16 PG&E’s guidance in effect at the time of the incidents.

17 In the case of Incident D, where a contractor was injured, PG&E did not  
18 conduct a formal RCE since the injury sustained by the contract employee was  
19 not a qualifying injury under SAFE 1004S.<sup>5</sup> Instead PG&E worked with the  
20 contractor who conducted an investigation and performed corrective actions.  
21 The Commission’s Safety and Enforcement Division also conducted an  
22 investigation of Incident D and concluded that no General Order violations had  
23 been committed by PG&E.

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4 A copy of PG&E’s current guidance—SAFE-1004S, Serious Safety Incident Standard and GOV-6101S, Enterprise Causal Evaluation Standard—is attached to this chapter as Appendix 6-B. In response to NorthStar Recommendations X-8 and X-9, PG&E is integrating guidance documents related to cause evaluations into a single standard that complements the Corrective Action Program standard to reduce potential confusion. See Chapter 2, Appendix 2-A for implementation plan details.

5 SAFE-1004S in effect at the time of Incident D states: “This standard applies to the following incidents: A serious safety incident resulting in a Life-Threatening or Life-Altering Injury, or a fatality, to the public, employees or contractors resulting from work on or caused by a failure or malfunction of PG&E facilities; An injury involving inpatient hospitalization for a period in excess of 24 hours for other than medical observation; A loss of any part of the body (including eye), or any serious degree of permanent disfigurement (includes tissue damage without loss of bone).”

1 In the case of Incident E, a San Francisco Water Department employee  
2 reportedly received minor injuries (the employee declined treatment) after  
3 damaging PG&E gas facilities while working on water facilities in the same  
4 excavation trench. The damage to PG&E's gas service line caused a fire that  
5 was extinguished. PG&E was called to the site to shut off the gas and carry out  
6 repairs to restore service. Consistent with then-current guidance, PG&E  
7 submitted a 420 report to the CPUC but did not conduct an investigation.

8 As discussed earlier, under current guidance the DiRT team would perform  
9 an investigation of an incident like Incident E, even though the damage was not  
10 caused by excavation, to determine the direct cause and provide support for  
11 third-party cost-recovery analysis.

12 **D. Question 14.2:** *What is the chain of command for responding to the specific*  
13 *incident?*

14 There are a number of activities encompassed in the immediate response to  
15 a serious safety incident including internal communication, external notifications,  
16 investigation team designation, and initial fact gathering. Guidance documents  
17 establish protocols for these activities at PG&E. PG&E's response to incidents  
18 A-E followed the guidance in effect at the time of each incident.

19 Pursuant to PG&E's then-current guidance, serious employee injuries were  
20 investigated under the sponsorship of a director. This was done in the case of  
21 Incidents A–C. At the time of Incident D, PG&E worked with the contractor who  
22 conducted an investigation of the incident. Incident E met criteria requiring  
23 CPUC notification and did not require further investigation, and therefore, a  
24 sponsor assignment was not made.

25 For serious safety incidents today, SAFE-1004S requires director-level  
26 leadership for the investigation team, and oversight of the investigation by senior  
27 management of the line of business and the Safety and Health organization.  
28 Officer-level oversight is required for incidents involving a fatality.

1 **E. Question 14.3:** *Was there a Safety Initiative or Preventative Plan in place to*  
2 *address this or similar incidents when it occurred? What Safety Initiatives or*  
3 *Preventative Plans are now in place that relate to this incident that were not in*  
4 *place when it occurred?*

5 **1. Safety Initiatives and Preventative Procedures Were in Place at the**  
6 **Time of the Five Incidents**

7 As described in the NorthStar Report, following the San Bruno incident  
8 in 2010, “PG&E developed two cornerstones of its new safety culture,  
9 ‘Safety Principles’ and ‘Keys to Life.’ These were primarily presented in the  
10 initial Safety Leadership Workshops which were held from 2012 to 2014.  
11 About 4,700 employees from crew foreman to the Chief Executive Officer  
12 attended these workshops.”<sup>6</sup>

13 In 2012 PG&E’s “Keys to Life” (shown in Exhibit IX-12 of the NorthStar  
14 Report) replaced the “Rules to Live By” and reflected the change in  
15 emphasis in leadership and communication techniques for PG&E’s leaders.  
16 The Keys to Life Program was intended to instill the importance of protecting  
17 PG&E’s employees, its contractors and the public and is an example of the  
18 changes PG&E made to shift from a rules-based approach to safety, to one  
19 where employees take responsibility for their personal safety.<sup>7</sup>

20 During the general timeframe of the five incidents, PG&E also  
21 implemented a contractor safety program, consistent with the requirements  
22 of the settlement in the Commission’s investigation into a 2012 fatality at the  
23 decommissioned Kern Power Plant. The 2015 decision adopting the  
24 settlement required PG&E to implement a corrective action plan on a  
25 companywide basis that includes a contractor safety program and an  
26 Enterprise Causal Evaluation Standard.<sup>8</sup>

27 In addition to the enterprise-wide safety initiatives, PG&E had specific  
28 procedures applicable to the work being performed and the assets in  
29 question. For example, PG&E had guidance related to the appropriate live

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6 NorthStar Report, p. IX-16.

7 NorthStar Report, p. IX-17.

8 See Commission’s decision approving the Kern Oil Settlement (D.15-07-014) and NorthStar Report, p. XI-2.

1 line tools and grounding procedures that were applicable to Incident A.  
2 PG&E also had guidance related to the use of hand lines, caring for ropes,  
3 and installing and removing conductors and rigging practices that were  
4 applicable to Incident B. PG&E’s safety practices prohibited standing on the  
5 top platform of step ladders, which was the cause of the injury in Incident C.

6 PG&E had multi-grounding practices applicable to the contractor that  
7 would have protected the contractor’s employees in Incident D had they  
8 been followed by the contractor.

9 With respect to Incident E, PG&E’s mark and locate program was in  
10 place as a prevention measure against dig-ins and was successfully  
11 followed by SF Water. As a result, no gas lines were damaged during the  
12 excavation process.

## 13 **2. Since the Five Incidents Occurred, PG&E has Strengthened its Safety** 14 **Initiatives and Preventative Procedures**

15 In the 2013-2015 timeframe, several key safety programs did not exist  
16 or were in their initial stages of deployment. Two of the most important of  
17 these are the SLD Program<sup>9</sup> and the CAP,<sup>10</sup> both critical elements  
18 supporting speak-up culture. Safety leadership has evolved since its early  
19 focus on the Keys to Life and Rules to Live By. Today, leaders are trained  
20 in how to speak with employees about safety and how to create an  
21 environment where employees are comfortable speaking up about safety  
22 issues. These behaviors in leaders and employees contribute to prevention  
23 of injuries and to the reporting of near hits. CAP has a similar impact and is  
24 described more thoroughly in Chapter 5.

25 Furthermore, PG&E’s SIF Program, which was not in effect at the time  
26 of the incidents, coupled with the observation program is also designed to  
27 prevent serious injuries. Through the SIF Program, precursors to common  
28 serious injuries—prevention measures—have been identified and

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<sup>9</sup> The SLD Program was a more comprehensive safety leadership training program implemented after the Safety Leadership Workshops. SLD began delivery in 2014. NorthStar Report, p. VIII-9.

<sup>10</sup> As described in Chapter 5, while CAP had long been implemented at Diablo Canyon Power Plant at the time of the incidents, CAP was not implemented enterprise-wide until June 2017.

1 communicated to PG&E's field workforce via the SIF Prevention Field  
2 Guide. The observation program provides a framework for safety  
3 professionals and leaders to collect data about the work they observe and  
4 provide feedback to employees. A set of observation checklists relating to  
5 SIF exposure factors and prevention measures forms the core of the  
6 program. Skills acquired in the SLD Program can then be leveraged to  
7 provide the appropriate type of feedback relative to the type of behavior  
8 observed.

9 In addition, corrective actions were identified and undertaken by PG&E  
10 for incidents A-C, and by the contractor for Incident D. For example,  
11 following Incident A in which an employee received serious burns to his  
12 hands, PG&E modified its live line procedures to require the use of gloves  
13 and flash guards when using live line tools, added annual cable splicer skills  
14 maintenance training for all employees performing this work, and changed  
15 its crew foremen selection process to focus less on seniority and more on  
16 the leadership, and technical ability/qualifications of candidates. In addition,  
17 a "Serious Incident Communication" was shared with all Electric Operations  
18 employees and an "All Hands" call was held to discuss the incident.

19 With respect to Incident C, where a GSR was injured when he fell from a  
20 step ladder, a Field Services stand down and supplemental "tailboard"  
21 communication was conducted on ladder safety, ladder safety training was  
22 changed from optional to mandatory for all personnel using ladders as part  
23 of their work assignment, and ladder availability and use was clarified.

24 With respect to Incident E, PG&E's current practice is to investigate  
25 all incidents occurring while digging or working in trenches with PG&E gas,  
26 electric and/or fiber optic facilities, whether or not the incident is caused by  
27 the excavation. If the incident involves PG&E or one of its contractors, a  
28 CAP issue is created and subsequent action is determined based on the  
29 CAP procedures. If the incident involves a third party, a CAP issue is  
30 created only if PG&E was at fault, e.g., faulty mark and locate.

31 **F. Question 14.4:** *How Are Incidents such as these Communicated to the Board*  
32 *of Directors?*

33 Serious injuries and fatalities generally are reviewed and discussed as part  
34 of: (1) oral or written reports provided by PG&E's Chief Safety Officer to the



1 Safety and Nuclear Oversight Committees of the PG&E and PG&E Corporation  
2 Boards of Directors; (2) the Utility Business Report, the Financial and Business  
3 Highlights, and other oral or written reports provided to the full Boards; (3) the  
4 oral reports that the Safety and Nuclear Oversight Committee Chair provides to  
5 the full Boards following Safety and Nuclear Oversight Committee meetings, and  
6 (4) review of PG&E performance with respect to safety-related measures in the  
7 Short Term Incentive Plan (STIP) and the Long Term Incentive Plan (LTIP).

8 Members of the PG&E Corporation and the PG&E Boards also are notified  
9 of fatalities and certain other serious safety incidents in several ways ranging  
10 from committee agenda items to informal email notification after an  
11 incident occurs.

12 At each meeting of the Safety and Nuclear Oversight Committees, the  
13 Committees receive an update on the number of employee, contractor, and  
14 public serious injuries and fatalities that have occurred since the last Committee  
15 meeting, as well as year-to-date as a part of the “Safety Update” agenda  
16 item. Additionally, in the case of fatalities and certain other serious safety  
17 incidents, material is presented to the Boards that provides a factual description  
18 of the event, results of the investigation, and the status and details of any  
19 corrective actions associated with the event.

20 In addition to the foregoing, management—usually the PG&E Corporation  
21 Chief Executive Officer and President, the PG&E President and Chief Operating  
22 Officer, and/or the Corporate Secretary—typically notifies the Boards of the  
23 occurrence of fatalities and certain other serious safety incidents via email or an  
24 oral or written report.

25 **G. Question 14.5:** *Has the Board of Directors provided any guidance or direction*  
26 *to management about how to address this incident or to prevent similar incidents*  
27 *in the future?*

28 PG&E has not found any record of the Boards providing guidance or  
29 direction to management about the five incidents in particular.

30 As a general matter, as described in Section F above, PG&E’s management  
31 provides updates to the Safety and Nuclear Oversight Committees and the  
32 Boards regarding fatalities and certain serious safety incidents, including a  
33 factual description of the event, results of the investigation, and the status and

1 details of any corrective actions associated with the event. Guidance may be  
2 provided as a result of these discussions.

3 The Boards, as part of their general oversight for safety and compliance,  
4 support PG&E's efforts to continue to promote a "speak up" culture that  
5 emphasizes learning from safety incidents and identifying potential issues before  
6 a serious incident occurs. Safety measures in the 2017 STIP also reflect  
7 PG&E's focus on leading indicators rather than lagging indicators, by  
8 incorporating a metric on the timeliness and quality of corrective actions for  
9 serious injuries and fatalities. In addition, the 2017 LTIP includes an  
10 effectiveness of corrective action metric, based on the repeat number of serious  
11 injuries and fatalities. Finally, as part of management's ongoing safety dialogue  
12 with the Boards and PG&E's efforts to provide safety-related education and  
13 training to the Directors, the Boards have been informed of, and have discussed:  
14 trends in safety culture/leadership, methods for open communication and review  
15 that support PG&E's efforts to foster and reinforce safety improvements through  
16 a learning culture, and the Board's role in safety leadership and governance.

17 **H. Question 14.6:** *Did PG&E make any changes to such programs or to training*  
18 *as a result of these incidents?*

19 PG&E is continually improving its safety programs. The key programs and  
20 corrective actions described in response to Question 14.3 are some of the ways  
21 that PG&E has learned from and responded to the five incidents.

22 Lessons learned from serious safety incidents contribute to improvements in  
23 two fundamental ways.

24 First, actions identified as a result of cause evaluation can change how a  
25 particular work group does a specific task. For example, as a result of  
26 Incident A, procedures were amended to require gloves and flash guards on live  
27 line tools when performing underground electric distribution work.

28 Second, and more importantly, such actions can result in broader changes  
29 to procedures, training, or how a job is engineered that can have companywide  
30 impacts. For example, following Incident A, PG&E changed the selection  
31 process for electric crew foreman to focus more on the leadership and technical  
32 ability/qualifications of candidates, and less on seniority.

1 **I. Conclusion**

2 PG&E continually strives for an injury-free workplace. For PG&E, even one  
3 injury is one injury too many. Serious safety incidents provide learning  
4 opportunities at all levels and in all aspects of the business. Responding to and  
5 learning from serious incidents have always been a part of PG&E's operating  
6 procedures. PG&E is continually improving tools and guidance for how to learn  
7 from these incidents. Finally, as speak-up culture becomes more broadly and  
8 deeply engrained in the culture, there will be greater learning potential both  
9 before an incident occurs and after.

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 6**  
**APPENDIX 6-A**  
**SUMMARY OF SAFETY INCIDENTS**

Appendix 6-A: Summary of Safety Incidents A-E – Evaluation, Chain of Command, Corrective and Preventative Actions

Description	Incident A	Incident B	Incident C	Incident D	Incident E
	<p><b>May 5, 2013 Bertha Lane Arc Flash</b></p> <p>On May 5, 2013, a PG&amp;E Apprentice Cable Splicer received serious burns to his hands while in the process of removing installed grounds as part of a job to replace a failed, single phase, 50 kilovolt-ampere sub-surface transformer.</p>	<p><b>October 18, 2014 Harkins Road Re-Conductor Swivel Snap Recoil Incident</b></p> <p>On October 18, 2014, at approximately 1:45 p.m., a line crew was in the process of replacing two spans of overhead primary conductor. To raise the conductors, the crew attached the snap of the hand line to a grip on the conductor and tied the opposite end to a company vehicle. The rope was run through the sheave of the hand line attached to the cross arm. As the company vehicle was moving forward raising the conductor, the Klein swivel snap elongated and detached from the grip. This caused the swivel snap and rope to recoil back, striking a lineman who was positioned in a bucket.</p>	<p><b>February 4, 2013 GSR Ladder Fall Incident</b></p> <p>On February 2, 2013, a Gas Service Representative sustained broken ribs after falling from a non-company issued 6' fiberglass step (A-Frame) ladder onto the carpeted concrete floor. After completing the task, the employee began to back out of the attic but was having difficulty placing his feet onto the top cap of the ladder. The owner assisted the employee in placing his foot/feet onto the top cap but employee lost balance during the transition from the attic to the ladder.</p>	<p><b>October 2, 2015 Contractor Induction Incident</b></p> <p>On October 2, 2015, a PG&amp;E contractor (Hot Line Construction) received a shock while working a 230-kilovolt overhead conductor (Newark-Tassajara). The individual was taken to a hospital. One person involved and one bodily injury was reported.</p>	<p><b>June 30, 2015 SF Water Department Gas Line Damage Incident</b></p> <p>On June 30, 2015, an incident occurred at 2400 Great Hwy, San Francisco. A SF Water Department employee damaged the one inch distribution plastic service line, causing an unintentional release of natural gas and its subsequent ignition while using a torch to solder a water service pipe. The gas service line was exposed by the excavation of the water pipe, gas was released. One injury to the SF Water Department employee was reported.</p>
<p>ACR 1.4.1: Cause Evaluation Methodology Selection</p>					
<p>Applicable Analysis Standard</p>	<p>SAFE-1004S (5/13/2013 Version): "This standard applies to all employee work-related serious incidents meeting the California Occupational Safety Health Administration (Cal/OSHA) definition for a serious injury or illness."</p>	<p>SAFE-1004S (5/13/2013 Version): "This standard applies to all employee work-related serious incidents meeting the California Occupational Safety Health Administration (Cal/OSHA) definition for a serious injury or illness."</p>	<p>SAFE-1004S (5/31/2015 Version): "This standard applies to the following incidents:</p> <ul style="list-style-type: none"> <li>A serious safety incident resulting in a Life-Threatening or Life-Altering Injury, or a fatality, to the public, employees or contractors resulting from work on or caused by a failure or malfunction of PG&amp;E facilities;</li> <li>An injury involving inpatient hospitalization for a period in excess of 24 hours for other than medical observation; and</li> <li>A loss of any part of the body (including eye), or any serious degree of permanent disfigurement (includes tissue damage without loss of bone)."</li> </ul>	<p>SAFE-1004S (5/31/2015 Version) would not apply since the injury was minor (see standard set forth under Incident D).</p> <p>The incident was recorded in Gas Corrective Action Program (CAP). However, Gas CAP Procedures TD-4020P-01 and TD-4020P-02 at the time of this incident did not require a formal cause evaluation because it was a third-party incident.</p> <p>At the time of this incident, PG&amp;E's Dig-in Reduction Team (DIRT) procedures did not define this incident as a dig-in and therefore no investigation was conducted.</p>	

	Incident A	Incident B	Incident C	Incident D	Incident E
Assigned Cause Evaluation Methodology	This injury was determined to be serious and so a Root Cause Evaluation (RCE) was assigned.	This injury was determined to be serious and so a RCE was assigned.	This injury was determined to be serious and so a RCE was assigned.	(a) PG&E did not conduct a formal root cause analysis under SAFE 1004S. However, PG&E worked with the contractor who conducted an investigation of the incident and identified and implemented corrective actions.  (b) The CPUC's Safety and Enforcement Division performed an investigation of the incident and found that PG&E had not committed any General Order violations.	No investigation performed by PG&E.
Reporting to CPUC	Reported to the CPUC (Report No. EI 130505A).	Reported to the CPUC (Report No. EI 141018A).	Not reported to the CPUC because not a reportable gas incident.	Reported to the CPUC (Report No. EI 151002A).	Reported to the CPUC (Initial electronic notification on June 30, 2015; initial "420" report provided on July 1, 2015; Follow up letter sent on July 30, 2015).
<b>ACR 14.2: Chain of Command</b>					
Responsibility for Investigation of The Specific Incident	SAFE-1004: "Serious Incident Analysis Team 1. A team is developed to: • Gather incident information • Analyze and interpret facts and evidence • Conduct root cause • Construct corrective actions • Facilitate the serious incident analysis process. 2. At a minimum, the serious incident analysis team will include: • LOB Lead (Minimum: Director-Level)."	SAFE-1004S: "Serious Incident Analysis Team 1. A team is developed to: • Gather incident information • Analyze and interpret facts and evidence • Construct corrective actions • Facilitate the serious incident analysis process. 2. At a minimum, the serious incident analysis team will include: • LOB Lead (Minimum: Director-Level)."	SAFE-1004S: "Serious Incident Analysis Team 1. A team is developed to: • Gather incident information • Analyze and interpret facts and evidence • Conduct root cause • Construct corrective actions • Facilitate the serious incident analysis process. 2. At a minimum, the serious incident analysis team will include: • LOB Lead (Minimum: Director-Level)."	SAFE-1004S. No formal root cause evaluation performed by PG&E (see above).	No investigation performed. However, PG&E submitted an incident report to the CPUC (see above).
Assigned Incident Investigation Lead	Director	Director	Director	No RCE performed by PG&E.	No RCE performed by PG&E.

	Incident A	Incident B	Incident C	Incident D	Incident E
<p>ACR 14.3 &amp; 14.6: Safety Initiatives and Preventative Plans in Place at the Time of the Incident and Currently Related Safety Initiatives and Prevention Plans in Place at the Time of the Incident</p>	<p>At the time of the incident, numerous safety procedures and requirements applicable to this incident were in place, including:</p> <ul style="list-style-type: none"> <li>(a) Tail boarding procedures, Code of Safe Practices, General Rules.</li> <li>(b) Stop work authority. TD-2345M, "Protective Grounding Manual" Section 3.3 B.</li> <li>(c) Distribution Hot Stick Requirements. TP-2032P-01.</li> <li>(d) Dead Break Elbow operating procedures. WP-2303 10/2008.</li> <li>(e) Grounding procedures. TD-2345M, "Protective Grounding Manual" 02/2010.</li> <li>(f) Man-On-Line Tag procedures. TD-1403P-04, Tags dated 5/21/12.</li> <li>(g) Flame retardant clothing requirements. TD 2509P-01.</li> </ul> <p>In addition, the following enterprise-wide safety programs were in place:</p> <ul style="list-style-type: none"> <li>• Keys to Life</li> <li>• Safety Leadership Workshops</li> </ul>	<p>At the time of the incident, procedures specific to this incident existed including:</p> <ul style="list-style-type: none"> <li>(a) Requirements and procedures for tail boarding, to identify and mitigate hazards. Code of Safe Practices (CSP) Rule 1 A, B, and C – Tailboard Briefing.</li> <li>(b) Guidance and requirements for the use of hand lines, caring for ropes, installing and removing conductors and rigging practices were in place at the time of the incident (WP2327-01, Using and Caring for Rope, Knots and Splices; and CSP Section 4, Rule 416 – Hand Lines).</li> <li>(c) Guidance for Installing or Removing Conductors/Line. CSP Section 4, Rule 422 A, B, and C.</li> </ul> <p>In addition, the following enterprise-wide safety programs were in place:</p> <ul style="list-style-type: none"> <li>• Keys to Life</li> <li>• Safety Leadership Development Program</li> </ul>	<p>At the time of the incident, the following specific procedures were in place:</p> <ul style="list-style-type: none"> <li>(a) Code of Safe Practices prohibited standing on the top platform of step ladders unless specifically constructed for this purpose and there are members of the structure that provide a firm handhold. Code of Safe Practices, Section 1 General Rules, 10 Ladders Subsection (b) (3), (9).</li> <li>(b) Ladder Safety training was available.</li> <li>(c) Other applicable procedures: <ul style="list-style-type: none"> <li>• TD-6435P-02, Establishing Gas Service</li> <li>• TD-6436P-32, Gas Burning Appliance and Equipment Inspection/Service</li> <li>• TD-6436P-34, Roof/Attic Mounted Gas Appliances</li> </ul> </li> </ul> <p>In addition, the following enterprise-wide safety programs were in place:</p> <ul style="list-style-type: none"> <li>• Keys to Life</li> <li>• Safety Leadership Workshops</li> </ul>	<p>At the time of the incident, the following specific procedures were in place:</p> <ul style="list-style-type: none"> <li>(a) Multi point grounding as required by PG&amp;E's Protective Grounding Manual.</li> <li>(b) PG&amp;E's Contractor Safety Program.</li> </ul>	<p>At the time of the incident, the following specific procedures were in place:</p> <ul style="list-style-type: none"> <li>(a) SF Water requested "locate and mark" and this was performed prior to excavation.</li> <li>(b) As noted above, at the time of the incident PG&amp;E's DIRT program was in place; however, this incident was not investigated by the DIRT team since it did not meet the definition of a dig-in.</li> <li>(c) As noted above, this item was recorded in Gas CAP at the time. However, CAP procedures did not require a root cause analysis.</li> </ul>
<p>Related Safety Initiatives and Prevention Plans Currently in Place</p>	<p>The following actions were taken in response to this incident:</p> <ul style="list-style-type: none"> <li>(a) Procedures were amended to require gloves and flash guards on live line tools for performing underground work. Utility Procedure: TD-2032P-01.</li> <li>(b) The Electric Employee Knowledge and Skills</li> </ul>	<p>The following actions were taken in response to this incident:</p> <ul style="list-style-type: none"> <li>(a) Revised Utility Work Procedure WP2327-01, Using and Caring for Rope, Knots, and Splices, to clarify that a hand line is not to be used to raise or lower loads with the aid of mechanical devices such as capstans,</li> </ul>	<p>The following actions were taken in response to this incident:</p> <ul style="list-style-type: none"> <li>(a) A Field Services stand down and re-tailboard was conducted on ladder safety including a review of the 5-Minute Meeting "Situational Awareness".</li> <li>(b) Ladder Safety training (SAFE-1290) has been changed</li> </ul>	<p>The contractor's incident report states that the following actions were taken by the contractor in response to this incident:</p> <ul style="list-style-type: none"> <li>(a) Perform "after incident review" with all incident involved crew members.</li> <li>(b) Perform "after incident review" with all incident involved crew members and Union Representatives.</li> </ul>	<p>The following actions were taken in response to this incident:</p> <p>No changes to PG&amp;E procedures were made in response to this incident. However, since the incident the scope of dig-in related investigations has expanded: PG&amp;E's current practice is to investigate all incidents occurring while digging or</p>

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	<p>Underground Assessment program was created.</p> <p>(c) Yearly cable splicer skills maintenance training is now required for all employees performing this work.</p> <p>(d) This incident led to development of a crew foremen selection process focused less on seniority and more on the leadership and technical ability/qualifications of candidates who apply.</p> <p>(e) If a supervisor is concerned about the safety knowledge and skills of an employee, the employee is assessed and required to undergo retraining in any deficient areas. Subsequent to this incident, but not in direct response to it, to improve efficiency, responsibility for this process was moved to the Employee Knowledge and Skills Department.</p> <p>(f) In 2016, a safety component was added to the supervisor observation and feed-back program.</p> <p>(g) While not a direct result of this incident, PG&amp;E's began actively working on an updated Employee Records standard with associated processes in 2013. The new Standard that replaced USP 7 was published in June of 2016.</p> <p>(h) A "Final Serious Incident Communication" dated July 31, 2013 was sent to all Electric Operations employees and an Electric Distribution Operations "All Hands" call was held August 1, 2013.</p>	<p>vehicles, etc. A similar change is in the process of being made to PG&amp;E's Code of Safe Practices.</p> <p>(b) A Road Show was developed and presented by the investigation team members to share the events in detail, proper use of controls, speaking up, and the importance of thorough tail boarding.</p> <p>(d) A 5-minute meeting briefing document regarding Hand Line Care and Use was created and distributed.</p> <p>(e) An All Hands call was conducted with Electric Operations employees to discuss the incident.</p> <p>(f) The content of the Safety Leadership Development Training, and its successor Learning Forward program were reviewed to address relevant findings from this incident</p> <p>(g) A presentation made to the Chairman's Safety Council on April 21, 2015.</p> <p>In addition, the following enterprise-wide programs are in place that were not in place at the time of the incident:</p> <ul style="list-style-type: none"> <li>• SIF Program</li> <li>• CAP Program</li> </ul>	<p>from optional to mandatory for all existing and new employees who use ladders as part of their work assignment. To date, over 8,600 employees have received training. Gas Operations is in the process of revising the training profiles for employees who use ladders to require a refresher training every three years. PG&amp;E will evaluate whether employees in other LOBs should also be required to undergo refresher training.</p> <p>(c) Field Services Safety reviewed the current policy and recommended appropriate steps for standardization of ladder availability and usage in Field Services.</p> <p>(d) Field Services purchased "Werner Multi-Ladders" and disseminated to each Gas Service Representative (GSR). A training video was created and GSR's were tail-boarded/shown this video upon receipt of the new ladders.</p> <p>(e) Customer Contact Center "General Reference Access Issues" document used to provide information to customers was revised to be consistent with Field Services policies regarding ladder use and safety.</p> <p>(f) A presentation was made to the Chairman's Safety Review Committee on May 2, 2013.</p> <p>In addition, the following enterprise-wide programs are in place that were not in place at the time of the incident:</p> <ul style="list-style-type: none"> <li>• SIF Program</li> </ul>	<p>(c) Updated and reviewed contractor "Best Practices" and issued wire mics to crews.</p> <p>(d) Safety Stand down for all Transmission and Distribution (T&amp;D) employees: included incident review, fall protection and transmission grounding during incident.</p> <p>(e) Expedited consultant contract to provide training package on grounding procedures.</p> <p>(f) All T&amp;D employees attend refresher training on PG&amp;E's Grounding Manual.</p> <p>(g) Contracted with consultant to develop a training package to cover grounding procedures contained in the new grounding procedures manual.</p> <p>(h) Provide Induction Hazard Awareness training based on information from consultant.</p>	<p>working in trenches with PG&amp;E gas, electric and/or fiber optic facilities. Thus, this incident, if it occurred today, would be investigated by PG&amp;E's DIRT Team even though the incident did not result from the excavation.</p>



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	<p>(i) A presentation made to the Chairman's Safety Review Committee.</p> <p>In addition, the following enterprise-wide programs are in place that were not in place at the time of the incident:</p> <ul style="list-style-type: none"> <li>• SIF Program</li> <li>• CAP Program</li> <li>• Safety Leadership Development Program</li> </ul>		<ul style="list-style-type: none"> <li>• CAP Program</li> <li>• Safety Leadership Development Program</li> </ul>		
ACR 14.4 & 14.5: Related Board of Directors Guidance and Direction	<p>PG&amp;E has not found any record of the PG&amp;E or PG&amp;E Corporation Boards providing guidance or direction to management about this incident.</p>	<p>PG&amp;E has not found any record of the PG&amp;E or PG&amp;E Corporation Boards providing guidance or direction to management about this incident.</p>	<p>PG&amp;E has not found any record of the PG&amp;E or PG&amp;E Corporation Boards providing guidance or direction to management about this incident.</p>	<p>PG&amp;E has not found any record of the PG&amp;E or PG&amp;E Corporation Boards providing guidance or direction to management about this incident.</p>	<p>PG&amp;E has not found any record of the PG&amp;E or PG&amp;E Corporation Boards providing guidance or direction to management about this incident.</p>