



Pacific Gas and
Electric Company®

PG&E Gas Operations Quality Management System



December 2015

PACIFIC GAS AND ELECTRIC COMPANY
GAS OPERATIONS
QUALITY MANAGEMENT SYSTEM MANUAL

TABLE OF CONTENTS

Summary and Purpose	1
Gas Quality Vision	2
Gas Operations Quality Policy	2
Leadership Commitment and Quality and Process Improvement Committee.....	2
The Quality Management System Framework.....	4
I. PLAN.....	5
<i>Embed Quality Efforts in to Organizational Priorities</i>	<i>5</i>
a. Integrated Planning Model	5
b. Risk Analysis.....	6
c. Gas Operations Asset Families.....	7
<i>Process Design and Controls</i>	<i>9</i>
a. Process Management and Controls.....	9
<i>Documented Standards and Procedures.....</i>	<i>10</i>
a. Regulatory Compliance and Codes and Standards	10
b. Gas Technical Teams	10
<i>Employee Training and Qualification</i>	<i>11</i>
a. Gas Training Governance Committee.....	11
b. The PG&E Academy.....	12
c. Operator Qualification	12
d. Sub-Contractor Management and Control	13
e. Management of Change.....	13
II. DO	14
<i>Line Checks for Quality at Key Control Points</i>	<i>14</i>
a. Quality Control	14



PACIFIC GAS AND ELECTRIC COMPANY
GAS OPERATIONS
QUALITY MANAGEMENT SYSTEM MANUAL

TABLE OF CONTENTS
(CONTINUED)

<i>Measure Key Performance Indicators</i>	14
a. Business Plan Review.....	14
b. Strategic Actions and Line of Sight Goals	15
c. Measurement and Metrics.....	16
III. CHECK.....	17
<i>Quality Assurance</i>	17
a. Quality Management.....	17
b. Supplier Quality.....	18
<i>Conduct Internal Audits</i>	19
a. Internal Auditing	19
IV. ACT	19
<i>Quality Improvement</i>	19
<i>Corrective Actions Tracked to Completion</i>	20
<i>Evaluate and Analyze Data for Improvement</i>	20
a. Continuous Quality Improvement.....	20
b. Advanced Analytics.....	21
Glossary of Quality Terms	22



PACIFIC GAS AND ELECTRIC COMPANY GAS OPERATIONS QUALITY MANAGEMENT SYSTEM MANUAL

Summary and Purpose

Pacific Gas and Electric Company (PG&E or the Company), incorporated in California in 1905, is one of the largest combination natural gas and electric utilities in the United States. Based in San Francisco, the Company is a subsidiary of PG&E Corporation.

There are approximately 20,000 employees who carry out Pacific Gas and Electric Company's primary business-the transmission and delivery of energy. The Company provides natural gas and electric service to approximately 15 million people throughout a 70,000-square-mile service area in northern and central California.

PG&E's Gas Operations has a vision of becoming the safest, most reliable gas Company in the United States. Gas Safety Excellence is a strategic framework created to help us achieve this vision. It guides how we operate, conduct and manage all parts of our business. In 2014, PG&E achieved two international certifications that recognize the Company's best-in-class operational standards for asset management. PG&E is one of the first utilities in the world to hold both the International Organization for Standardization (ISO 55001) and Publicly Available Specification (PAS 55) certifications. As we continue to evolve our strategy there is universal acknowledgement that a strong Quality Management System (QMS) also supports the achievement and sustainability of Gas Safety Excellence and complements the overall Gas Asset Management Policy (TD-01). Recognizing that Safety is always our first priority, the establishment of the QMS seeks to elevate quality to an equal significance with reliability, affordability, customer and people. An effective QMS supports the alignment of resources, identification of strengths and opportunities for improvement, improves communication, productivity, and effectiveness, and achievement of strategic goals.

While quality activities are currently ongoing within Gas Operations, the purpose of this document is to define an integrated QMS thereby aligning and enabling the maximum benefit from the quality activities. It is intended to describe the organization's key business processes as well as the mechanisms that have



been and are being put in place for effectiveness and control of these processes. Gas Operations audits, monitors, measures, and analyzes these processes to achieve results based on customer and regulatory requirements, and continually improves the effectiveness of its QMS based on feedback. Therefore this manual is intended to be a living document that will evolve with our QMS.

This QMS Manual applies across Gas Operations and is only intended to provide general information regarding Gas Operations Quality Management System. The content of this QMS Manual is supported by formal and more detailed codes, standards and procedures to which all Gas Operations employees are required to comply.

Gas Quality Vision

- Our work processes are measureable, repeatable, effective and efficient.
- Every employee understands their role in Quality.
- We execute the “right work” the “right way” the first time.
- Our records and our data are accurate, traceable, verifiable, timely, and complete.

Gas Operations Quality Policy

To ensure our actions and words demonstrate a commitment to quality, every Gas Operations employee is responsible for:

- Stopping the job if the work does not meet our standards or cannot be done safely.
- Performing quality checks to ensure work meets our standards.
- Identifying, documenting and resolving quality problems.
- Closing out and properly documenting work in a timely manner.

Leadership Commitment and Quality and Process Improvement Committee

Critical to any successful management system is leadership and management commitment. Clause 4.4.1 of PAS 55 and 5.3 of ISO 55001 reference and reinforce the importance of ensuring thought is given to clearly identifying the structure, authority, and roles and responsibility related to your management system. To this end the Quality and Process Improvement Committee (QPIC) is an executive level steering committee established to oversee and provide direction for quality management activities and process improvement activities.



The members of the committee include:

- Senior Director, Gas Regulatory Strategy – Chair
- Senior Vice President, Engineering, Operations & Construction
- Vice President (VP), Asset & Risk Management
- VP, Gas Business & Performance Management
- VP, Gas Transmission and Distribution (T&D) Operations
- VP, Gas Major Projects & Programs
- VP, Gas Engineering & Design
- VP, Internal Audit
- Senior Director, Asset Knowledge & Integrity Management
- Senior Director, Enterprise Programs
- Senior Director, Gas T&D Construction
- Senior Director, Gas Systems Operations
- Director, Process Excellence
- Director, Codes, Standards and Training
- Senior Manager, Quality Management
- Senior Manager, Lean 6 Sigma and Advanced Analytics

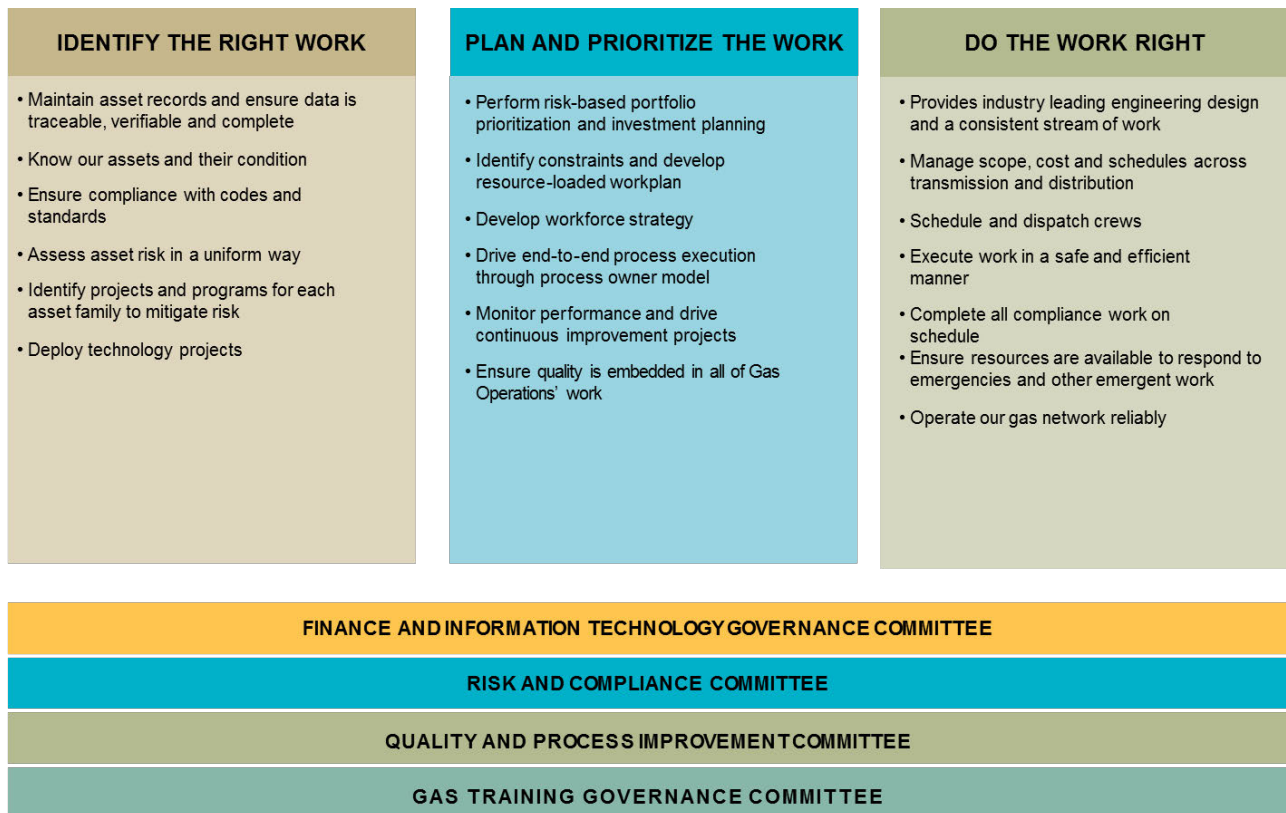
The scope and role of the QPIC encompasses, but is not limited to the following:

- Champion and promote the Quality Vision and Policy
- Drive the development of quality objectives, goals, metrics, timelines
- Oversee and provide direction to Process Improvement initiatives
- Remove barriers to driving quality and process improvement
- Review status of metrics regarding progress towards goals and objectives
- Ensure periodic external review of our QMS

The Gas Operations organization is comprised of three key focus areas:

(1) identify the work (Asset and Risk Management); (2) plan and prioritize the work (Financial and Resource Management); and (3) do the right work (Engineering and Construction Operations). Figure 1 illustrates the role of the QPIC in providing guidance, governance and oversight across Gas Operations.

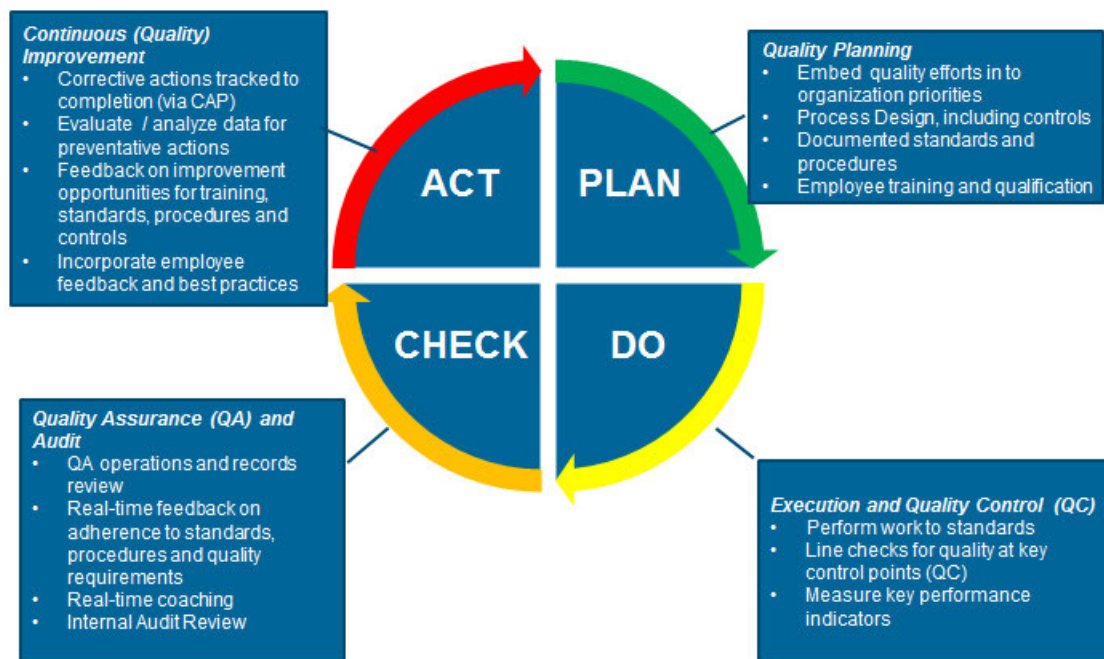
FIGURE 1 – RELATION OF QPIC TO GAS OPERATIONS



The Quality Management System Framework

The “Plan, Do, Check, Act” (PDCA) cycle is instrumental to our implementation of Gas Safety Excellence and due to its simplicity and familiarity we have selected this framework to define and align our QMS. PDCA is an iterative four-step management method used in business for the control and continuous improvement of processes and products. Just as a circle has no end, the PDCA cycle should be repeated again and again for continuous improvement.

FIGURE 2 – PDCA QMS FRAMEWORK



I. PLAN

The “Plan” phase includes:

- Embed quality efforts in to organizational priorities
- Process Design, including controls
- Documented standards and procedures
- Employee training and qualification

Embed Quality Efforts in to Organizational Priorities

Ultimately the output of the long-term planning processes helps to establish and validate our priorities within our QMS in regards to process design or redesign as well as employee training and qualification.

a. Integrated Planning Model

Integrated Planning is an evolutionary multi-year process PG&E uses to plan the strategy for our business operations. This process was adopted from best practices used at General Electric and DTE Energy. The intent of the Integrated Planning Process is to manage the Company to one plan that includes all the operating activities and initiatives from each line of business (LOB).

- Planning is done annually and builds from the work completed in the previous year to apply lessons learned and develop greater capabilities. The plan will serve as the Company's operating rhythm by integrating benchmarking, continuous improvement, planning, budgeting, succession planning, risk management and governance into the annual cycle.

Session D identifies compliance, operational, and enterprise risks that are then incorporated into the planning process.

- LOB proposals are put forth in Session 1 (S-1); based upon these, senior leadership will determine the Company's strategic approach to the 2017 General Rate Case (GRC).
- Risk Informed Budget Allocation ensures that operational and enterprise risks are linked and incorporated into the work plans and funding requests
- Session 2 (S-2) creates the multi-year detailed execution plans needed for the application and work papers a refinement period in early 2015 will allow true-up of any issues before the Notice of Intent filing.

The Integrated Planning Process is creating the Company's goals, operational strategies, and underlying work plans for GRC applications.

A key utilized in Gas Operations to support the planning process is our Hazard Identification and Risk Analysis methodologies.

b. Risk Analysis

The Gas Operations organization has adopted a risk management process that provides a repeatable and consistent method to identify, assess, rank, and mitigate risk. This risk management process is an element of PG&E's Integrated Planning Process to ensure risk informs the identified strategies, which in turn drives the allocation of resources. Gas Operations is applying the risk management framework (Figure 3) and roadmap built by the Enterprise and Operational Risk Management (EORM) team to work towards achieving best-in-class operational risk management. As part of the risk management framework, the inherent risk, current residual risk, and the forecasted residual risk (for proposed mitigations) are identified. The risk review and refresh process is performed at the enterprise level on an annual basis.

FIGURE 3 – RISK MANAGEMENT FRAMEWORK



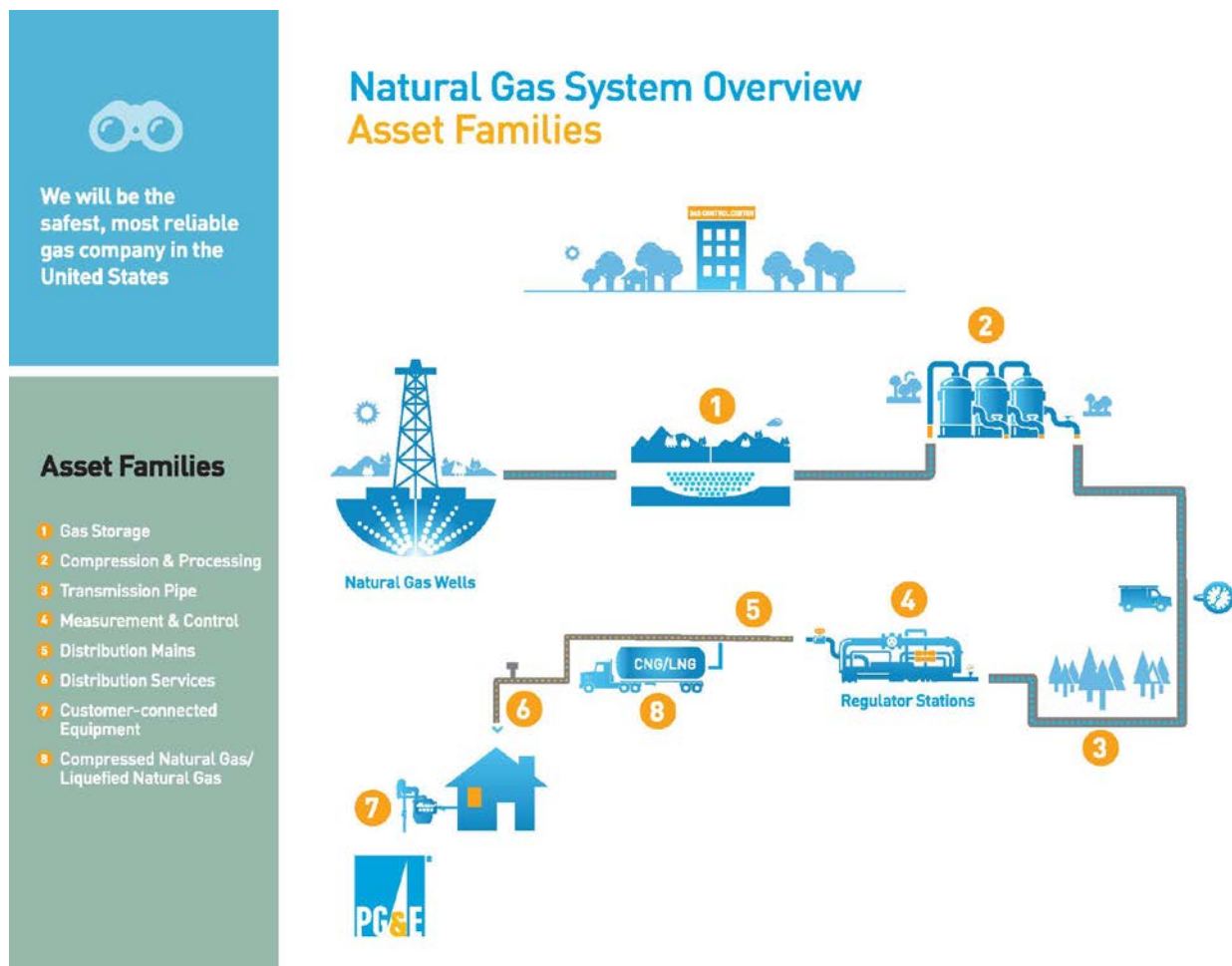
In addition, Gas Operations has established a Risk and Compliance Committee (RCC) (Figure 1), chaired by the SVP of Gas Operations. This committee meets monthly and reviews and approves Session D materials in addition to monitoring compliance and risk management activities. Risks are managed within and across eight Gas Operations asset families. Each Asset family has an Asset Family Owner (AFO) who is responsible for working with Subject Matter Experts (SME) to identify and manage risks and develop risk-based asset management plans. (TD-4011S, TD-4011P-01). Furthermore, AFOs present approximately twice-a-year on progress, issues, and next steps in their Asset Management Plans. Details of the structure, roles, and responsibilities of the RCC are available in the Gas Operations Risk and 22 Compliance Committee Charter (GOV-1012S).

c. Gas Operations Asset Families

PG&E identified eight asset families within Gas Operations. Figure 4 illustrates the interconnection between each asset family. Since these assets can face different types of risk, the asset family structure recognizes and manages these differences, yet drives consistency in the way PG&E thinks about and addresses risks. Each asset family has an AFO who is responsible

for working with SMEs to identify, assess, and manage risks within their asset family, and develop risk-based asset management plans. The overarching objectives of this asset management process include: understanding, maintaining/improving asset condition; achieving compliance with regulatory requirements; improving and reducing management of unplanned outages; improving emergency response capabilities; and improving completeness and accuracy of our digital asset data. The Asset Family strategy and objectives are detailed in Attachment 1.

FIGURE 4 – ASSET FAMILY STRUCTURE



PG&E documents the management of each asset family through an Asset Management Plan. The Asset Management Plan for each asset family describes: the physical characteristics and location of the assets, asset health indices reflecting the condition, the risk assessment process, the overall maturity, comprehensiveness and quality of data used to assess the threats and

risks, and a vision for the desired state of the assets. The plan identifies the potential threats particular to that family of assets as well as the mitigation programs to reduce the risks posed by such threats. The Asset Management Plans also include Key Performance Indicators, which are metrics intended to measure progress and improvement in asset performance and the effectiveness of mitigation programs. These Asset Management Plans are living documents, evolving as new data becomes available.

The Integrated Planning Process; hazard assessment and risk mitigation methodology; and the asset management plans output becomes the input used to validate and prioritize ongoing and future quality planning and quality improvement activities. Similarly, an evolved QMS ensures accurate information is captured and available as a key input to the integrated planning process.

Process Design and Controls

a. Process Management and Controls

Process Management & Controls is the set of activities that are executed to ensure key processes are managed, measured and improved. PG&E Gas Operations' approach begins by defining the roles of Process Owners, Process Users, and other Key Stakeholders, establishing the expectations for each role. Key Processes are prioritized based on operational importance and risk impact.

Processes are managed through execution of the PG&E Gas Operations Process Management approach which consists of the following seven steps:

1. Determine the appropriate Process Owner.
2. Identify Suppliers, Inputs, Process Elements, Outputs and Customers (SIPOC).
3. Map the Process.
4. Assess current metrics, controls, control plans and process performance.
 - Are metrics and controls appropriate, effective and sufficient?
 - Can the process be improved?
5. Identify, prioritize, and implement Improvements in the process, metrics, controls and/or control plans.
6. Continue to measure and assess the process.
7. Repeat as appropriate.

Documented Standards and Procedures

a. Regulatory Compliance and Codes and Standards

PG&E has numerous standards, policies, and procedures in place to support Gas Operations, and to ensure work performed by employees and contractors is done safely and consistently. PG&E's gas standards, including Operations and Maintenance procedures, are developed to comply with federal and state pipeline safety regulations. The Regulatory Compliance organization monitors and tracks changes to legislation and regulatory requirements to ensure timely implementation. The Codes and Standards organization is responsible for documenting changes so that policies, standards, procedures, practices, and training materials are updated in a timely fashion to meet federal and state requirements.

PG&E follows its gas guidance document development and update process to publish its documents. Published documents have assigned SMEs that perform assessments of guidance documents to determine the need for developing or altering the document.

b. Gas Technical Teams

The Company maintains gas technical teams composed of cross functional representatives to cover each team's assigned subject matter. The gas technical teams meet, as necessary, to ensure that Company guidance documents, tools, training, qualifications, and technologies used in their assigned areas of expertise remain current to ensure code compliance and public and personnel safety.

**TABLE 1
GAS TECHNICAL TEAMS**

Team No.	Technical Team	Categorization/Manuals
1	Plastic	Plastic (published)
2	Steel	Steel Pipeline, Steel Welding, Steel Pressure Control
3	Distribution Engineering and Estimating	Distribution Engineering and Estimating, Inspection
4	Transmission Engineering and Design	Transmission Engineering and Estimating
5	Asset Knowledge Management	Asset Knowledge Management
6	Construction Methods	HDD, Vacuum Excavation
7	Environmental and Safety	Environmental and Safety, Excavation and Safety
8	Damage Prevention	Damage Prevention (published)
9	Leak Survey and Response	Leak Survey and Response
10	Major Stations	Major Stations
11	Measurement and Regulation	Measurement and Regulation
12	Gas T&D Operations	Gas System Operations
13	Corrosion Control	Corrosion Control (Published)
14	Field Services and Dispatch	Field Services and Dispatch (Published)
15	Maintenance Processes	Maintenance Processes
16	Integrity Management	Integrity Management
17	Codes and Standards	Codes and Standards
18	Standards Governance Steering	Standards and Policies

Employee Training and Qualification

a. Gas Training Governance Committee

Our people are arguably our greatest asset. There is universal acknowledgement that a workforce comprised of three different generations creates a complex landscape for ensuring our employees receive all necessary training and in a form that resonates for them. Additionally, PG&E acknowledges that as we strive to become the safest, most reliable gas company in the United States, we have a real opportunity to improve our current training portfolio.

In order to provide the strategic direction that is needed for training, a Gas Training Governance Committee was established with a focus on the following:

- Developing the long-term strategic view of the priorities and goals for training in Gas Ops to get us to what “good” looks like.
- Developing long range plans to address the gaps and work towards the strategic goals.
- Properly implementing the plans, and continually evaluating the effectiveness of our training programs in supporting employees.
- Providing direction on priorities when limited resources will not support every initiative.
- Ensuring that training plans are coordinated with related efforts, including issuing new or revised guidance documents.
- Ensuring that annual training requirements are understood so that work plans incorporate the appropriate training hours.

The committee is comprised of leaders across Gas Operations and also includes: Engineering; Codes and Standards; Union Representation; as well as the PG&E Academy.

Employee Training and Qualification is developed and administered through a partnership between our PG&E Academy, within our Human Resources organization; and Operator Qualification Department within our Asset and Risk Management organization.

b. The PG&E Academy

The PG&E Academy facilitates development and delivery of required technical training. Prioritization of training program improvements is determined and driven by regulatory changes, new tools and instruments, standards and policy changes and strengthened Operator Qualification (OQ) requirements.

c. Operator Qualification

The OQ program promotes personnel and public safety and operates in accordance with Code of Federal Regulations (CFR) Title 49, § 192, Subpart N—Qualification of Pipeline Personnel, which requires that gas personnel performing covered tasks are qualified.

The qualification process evaluates the knowledge and skill of personnel to perform covered tasks, as well as to identify and react to abnormal operating

conditions. Personnel performing covered tasks are required to obtain their qualification through an appropriate evaluation method. The Operator Qualification Department provides oversight to the OQ programs and ensures any necessary updates, changes and improvements are made swiftly.

d. Sub-Contractor Management and Control

In addition to ensuring quality in the work executed by our own employees a significant amount of our overall portfolio is executed by sub-contractors. Therefore in order to achieve our vision of building quality in to everything we do, we have standards, policies and resources allocated within the organization to provide governance and oversight. (TD-4009S).

e. Management of Change

Gas Operations requirements for Management of Change (MoC) are outlined in Utility Standard: TD-4014S – Management of Change for the Gas Asset System. This utility standard provides requirements for MoC activities within gas operations, including requirements for identification, prioritization, risk assessment, decision making, and documentation of changes impacting the PG&E gas operations asset system. Additional specific procedures for various types of MoC activities are also identified and referenced in this standard. MoC is also a fundamental element that is being implemented as part of Process Safety.

The specific changes that are considered to have the potential for significant impact and covered by this standard are:

1. Changes to PG&E Gas Operations gas asset management: policy; strategy; objectives; and asset plans.
2. Changes to Gas Operations organizational structure; and roles and responsibilities.
3. New design, installation, modification, or introduction of gas assets, gas asset systems, technology, equipment, software, or tools that, hold or carry gas, or manage information related to assets that hold or carry gas.
4. Changes to work methods, processes, and procedures for management of assets or information about assets that hold or carry gas.
5. New gas operations contractors who work on PG&E gas assets or asset systems that hold or carry gas.



6. New gas operations suppliers of materials that hold or carry gas used in the PG&E gas system.

II. DO

The “Do” phase includes:

- Perform work to standards
- Line checks for quality at key control points
- Measure key performance indicators

Line Checks for Quality at Key Control Points

a. Quality Control

Quality Control (QC) is a function that provides routine and consistent checks during the course of executing work to ensure integrity and correctness of a product or service. QC is intended to prevent and/or correct errors. The primary and most effective form of QC is for each employee to perform review and validation of their own work. It is also carried out by people directly involved in the process; activities can include quality verifications through field assessments either in real-time (as work is being performed) or after-the-fact as well as data and records reviews. QC is an iterative process therefore the control activities will continue to be evaluated and updated relative to system safety and compliance risks in order to continuously improve our ability to identify risks. Identifying, evaluating and strengthening controls is a major area of focus throughout the Gas Operations organization. Resources are being dedicated to key processes to administer the identified controls. This will be a significant area of growth in the next two to five years.

Measure Key Performance Indicators

Critical to advancing our QMS is ensuring performance related to quality is visible to senior leadership. In 2015 the Quality Index was added to our Gas Operations Business Process Review (BPR).

a. Business Plan Review

BPR is the process by which the Company’s senior leadership team reviews Company performance utilizing key metric and project updates. This process culminates each month with a meeting between the Chief Executive Officer, President, Executive Vice Presidents, and Senior Vice Presidents to review the BPR summary report around company performance. The BPR

process is part of the Integrated Planning process, providing greater alignment between the execution plans and key metrics discussed in S-2 of the Integrated Planning Process with the Business Plan Review.

PG&E uses an online system to house metric data and produce BPR reports; providing data accuracy, data transparency, and process efficiency.

In 2015, as part of executing on our Line of Sight (LOS) goal to “ensure quality management best practices are embedded” across the organization, the BPR metrics were revised to include the Quality Index. In the process of developing the index, all Quality Management reviews were evaluated and seven of the highest priority processes were selected to establish the index. For each process a metric was developed based on highest risk activity that was reviewed and targets identified. A normalized performance band (2.0, 1.0, .5, 0) was included for each metric in order to create the index. A weighting for each metric was determined based on risk. Finally the Quality Index score was established.

The processes identified include:

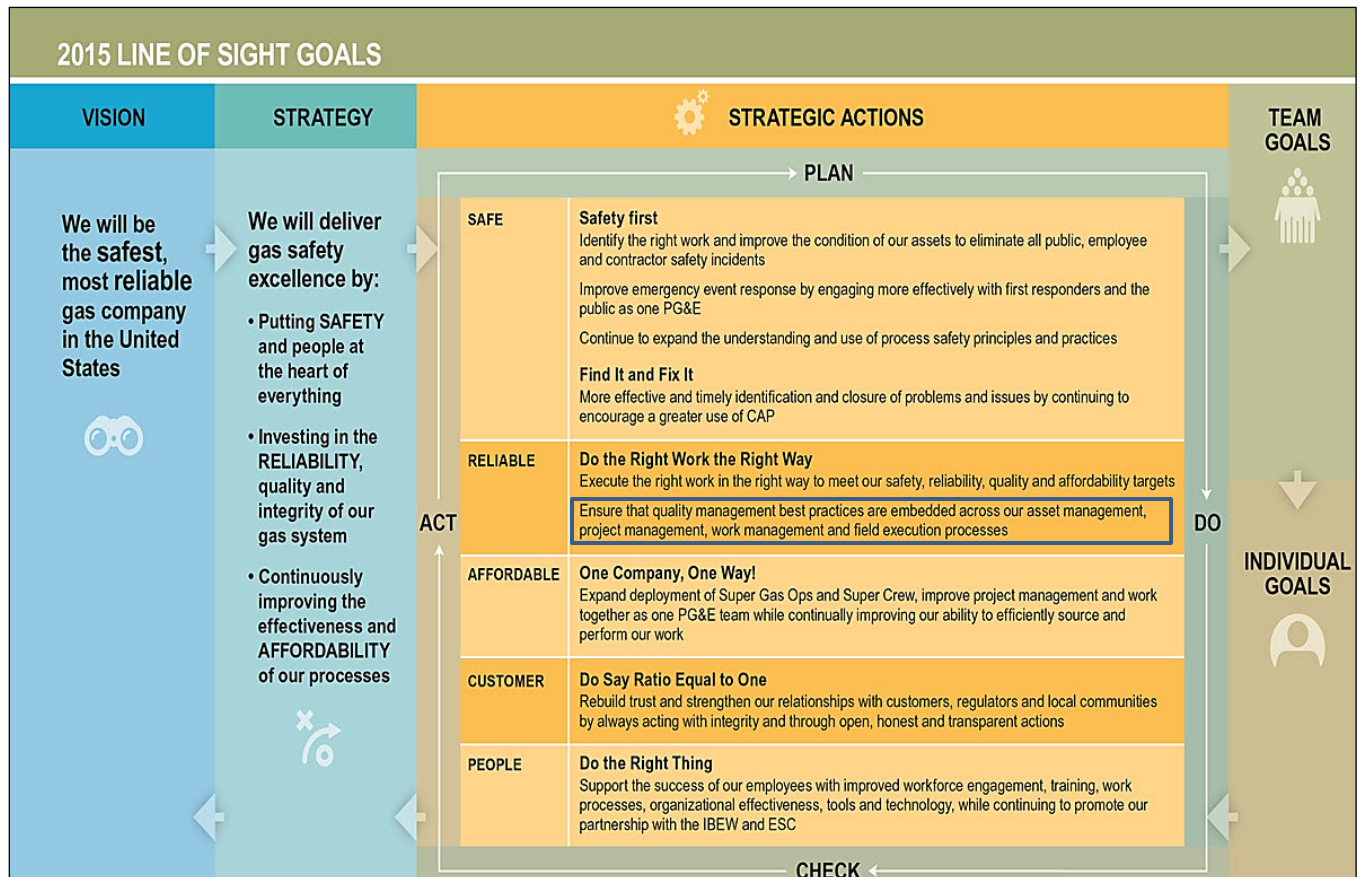
1. Transmission Construction – # Coating Defects/Coating Attribute Sampled transmission construction quality coating assessments.
2. Leak Survey – Grade 1 Leaks left behind/10,000 Services quality assessed.
3. Repaired Leaks – Leak Findings/100 locations quality checked (including both above ground and below ground).
4. Locate & Mark – # of mismarks and no marks/100 tickets quality assessed.
5. Distribution Construction – Major findings (high risk)/100 quality assessments.
6. Valves & Regs – Major findings (high risk)/100 quality assessments
7. Field Service Gas Service Representative assessment findings – Hazard and Leak findings/100 employee’s assessed.

b. Strategic Actions and Line of Sight Goals

The Quality Index becoming part of BPR accomplishes Senior Leadership visibility but making quality real to every employee involves linking it within their LOS goals. LOS goals are developed annually in a process that highlights the key strategic actions that if delivered, will advance the strategy and performance of the business to continue to make progress towards achieving PG&E’s vision. These goals are linked upwards to the overall strategy of the

Company—being safe, reliable and affordable, and then through a cascade process, linked to gas operations departments, teams, and individuals. By introducing and embedding LOS goals (Figure 5), the connections are made clearer.

FIGURE 5 – 2015 LINE OF SIGHT GOALS



c. Measurement and Metrics

Additionally, Gas Operations' Process and Quality Excellence group identifies and measures programs and initiatives aligned with the organization's strategic objectives. The intent of each measurement is to demonstrate achievement of desired goals or to identify areas in need of additional resources and to assess whether proper controls within the process are in place. Ideally, metric development incorporates industry benchmarks to ensure a target of world-class performance and specific and measureable quality objectives are present.



Metric visibility is facilitated at many levels of the organization beginning with corporate strategy-related metrics for each LOB and cascading down throughout the organization with “Line of Sight” metrics defining how each team supports the corporate objectives. Data collection and distribution occurs as frequently as daily for operations and follows a standard monthly cadence other metrics up to executive level.

III. CHECK

The “Check” phase includes:

- Quality Assurance (operations and records review).
- Real-time feedback on adherence to standards, procedures and quality requirements.
- Real-time coaching.
- Internal Audit Review.

Quality Assurance

Quality Assurance (QA) is a process that runs independent of QC and is conducted by people not directly involved in the process. It validates that the controls within the process are effective in ensuring the quality of product or service meets the specified requirements.

a. Quality Management

The Quality Management organization within Gas Operations is tasked with strengthening controls within the critical work processes and performing assessments to ensure these controls are effective and being used as they were intended. The QA activities can include quality verifications through field assessments either in real-time (as work is being performed) or after-the-fact, as well as data and records reviews. In 2014, PG&E had fully operational QA programs for Leak Survey, Leak Repair, Locate and Mark, Distribution Construction, Transmission Construction, Field Service, Regulator Station Maintenance, Valve Maintenance, Rotary Meter Maintenance, and Corrosion Control. The approach consists of using a combination of random statistical sampling and targeted sampling of work across our service territory to evaluate the effectiveness of key controls for each program. QA programs and activities will continue to evolve as we incorporate the improved controls that are being defined by QC.

b. Supplier Quality

A key enabler to provide safe, reliable, and affordable services is ensuring that all of the materials that we install meet specification; to this end, PG&E has a dedicated Supplier Quality Assurance (SQA) organization within Supply Chain Management. SQA has documented standards and procedures and manages the suppliers throughout the Supplier Lifecycle.

SQA assures purchased material meets all engineering requirements by qualifying supplier sites to an ISO 9001 standard. The supplier's manufacturing processes are qualified to a part qualification plan and material is routinely inspected. Non-compliances and continuous improvement requirements are addressed via corrective action requests, quality roadmaps and scorecard reviews. Per our terms and conditions, suppliers not meeting these requirements are removed from the Qualified Suppliers List.

TABLE 2
QA PROGRAMS OR IN PROGRESS

QA Program	Status	Description
Field Services	Operational since the 1990's	Performs in field quality control reviews of Gas Service Rep completed tags including customer appliance inspections and leak investigations
Leak Survey	Operational since 2009	Measures the quality of the leak survey maintenance process and whether any hazardous leaks were missed
Leak Repair	Operational since 2009	Evaluates completed leak repairs for the presence of gas typically 90 days post repair and checks zero'd out leaks
Locate and Mark	Operational since 2011	Validates and scores quality for completed locate and mark tags including "no conflict" tags
Transmission Construction	Operational since 2011	Focuses on measuring the quality of transmission construction work performed by PG&E employees and contractors as the work is being performed
Distribution Construction (Re-Dig)	Operational since 2013	Focuses on measuring the quality of short cycle distribution installation and leak repair work performed by PG&E employees and contractors after the work has been completed
Distribution Construction	Pilot underway	Focuses on measuring the quality of distribution construction work performed by PG&E employees and contractors as the work is being performed
Rotary Meters	Pilot Completed 2013	Pilot completed Q2 2013 - To be fully implemented by year end 2013
Corrosion Control	Pilot Completed 2013	Pilot completed Q3 2013 – To be fully implemented starting 2014
Regulator Station Maintenance	Pilot starting Q4 2013	Pilot starting Q4 2013 – to be fully implemented starting 2014
Valve Maintenance	Pilot starting Q4 2013	Pilot starting Q4 2013 – to be fully implemented starting 2014



Conduct Internal Audits

a. Internal Auditing

The mission of Internal Auditing (IA) is to provide PG&E Corporation, Pacific Gas and Electric Company (each a company, and together, the Companies), and their subsidiaries, with independent, objective assurance over the adequacy of processes and controls to manage business risk and to provide control advisory services. IA will follow a standardized, disciplined approach to help management evaluate and improve the effectiveness of risk management, control, and governance processes. IA's scope of work is to determine whether management's processes, as designed, are adequate to ensure that: (a) key risks are identified and managed commensurate with the risk; (b) financial, managerial, and operating information is accurate, reliable, and timely; (c) Company resources are adequately protected; (d) employees act in compliance with policies, standards, procedures, and applicable laws and regulations; and (e) interaction with appropriate internal governance occurs.

IA will adhere to the Institute of the Internal Auditors' International Standards for the Professional Practice of Internal Auditing, Code of Ethics and Definition of Internal Auditing.

As necessary to accomplish its mission and scope, IA is authorized to audit all functions, processes, and systems, and to have access to all records and business documents of PG&E Corporation and Pacific Gas and Electric Company, and their subsidiaries.

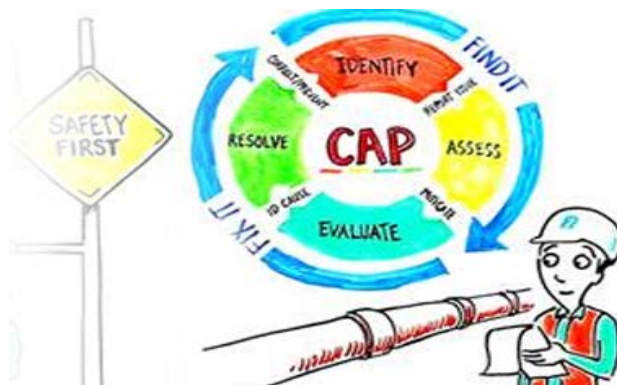
IV. ACT

Quality Improvement

- Corrective Actions tracked to completion (via Corrective Action Program (CAP)). Incorporate employee feedback and best practices.
- Evaluate and analyze data for preventative action
- Feedback on improvement opportunities for training, standards, procedures and controls
- Incorporate employee feedback and best practices

Corrective Actions Tracked to Completion

As part of PG&E's Gas Safety Excellence strategy PG&E implemented a risk-based CAP in 2013.



CAP is the process that provides PG&E personnel—both employees and contractors—with the ability to identify and document issues found within the Gas System. CAP is also the means by which an employee can submit comments about the current state of the Gas Safety Plan. Employees have three methods to submit CAP items: (1) Employees can enter CAP items through a Toll-Free number; (2) web-portal via PG&E intranet; or (3) by paper submission.

CAP collects all gas-related issues, concerns, and ideas (including operational events, audit findings, employee feedback and improvement ideas) in a central place. Issues submitted to CAP undergo a risk-based evaluation to determine the underlying cause. The issues are then prioritized based on the risk assessment tool, and tasks are tracked in CAP through to completion. Each closed issue brings PG&E one step closer to achieving our goal of being the “safest and most reliable utility in the nation.” (TD-4020S)

Evaluate and Analyze Data for Improvement

a. Continuous Quality Improvement

Continuous improvement is the mindset we are developing throughout Gas Operations. It is operationalized through the methods, and tools used to measure and improve the performance of our services, and processes over time. PG&E's model for Continuous Improvement is based on the Plan, Do, Check, Act (PDCA) model. Our approach involves all of our employees in identifying issues and opportunities for improvement, as well as developing and implementing solutions. Process improvement projects are chartered and



teams use PDCA, as well as the Lean Six Sigma methodology to resolve issues and improve processes. Teams use appropriate tools and methods to work through the Lean Six Sigma Define, Measure, Analyze, Improve and Control methodology. In addition, Gas Operations utilizes Communities of Practice (CoP) made up of individuals performing similar work or cross-functional teams to solve problems, share best practices and facilitate continuous improvement.

b. Advanced Analytics

Advanced analytical techniques are used by a specialized group of applied mathematicians/operations research analyst to support to support PG&E Gas Operations Continuous Improvement activities through the development of sophisticated models to predict future outcomes. The analytical techniques are primarily: predictive analytics; simulation; and optimization.

Glossary of Quality Terms

Quality – The standard of a product or service as measured against requirements; the degree of excellence. Quality also means the freedom from deficiencies, from errors that require doing work over or errors that result in failures.

Quality Control (QC) – A function that provides routine and consistent checks within the process to ensure integrity and correctness of a product or service. It is part of the process and works to identify, correct and prevent errors. This is carried out by people directly involved in the process.

Quality Assurance (QA) – A process that runs independent of QC and is conducted by people not directly involved in the process. It validates that the controls within the process are effective in ensuring the quality of product or service meets the specified requirements.

Quality Management System (QMS) – A system by which an organization aims to reduce and eventually eliminate non-conformance to specifications, standards, and customer expectations in the most cost effective and efficient manner.

Quality Planning – Systematic process that translates quality policy into measurable objectives and requirements, and lays down a sequence of steps for realizing them within a specified timeframe.

Quality Improvement – A formal approach to the analysis of performance and systematic efforts to improve it. PDCA and Six Sigma are among the most commonly used models utilized to improve performance.