1. **Overview of the PG&E QA/QC program. SED understands that PG&E has created a new organization to focus on Quality Assurance and Quality Improvement of gas operations. SED would like to see the charter for this program that explains its purpose, how it's functions and they key processes involved.**

The Quality & Improvement (Q&I) organization was formed in 2012 and includes three primary functions: Quality Control activities, Quality Assurance activities, and administration of gas operation's Corrective Action Program. Each function is explained further below.

The purpose of the Q&I programs are to monitor operations internally, perform formal audits at scheduled intervals or upon request of another department, recommending opportunities for improvement, and highlighting where gaps or risks to the business could exist.

- **Quality Control (QC)** – QC assessments are primarily focused on measuring the quality of work in the field for transmission and distribution maintenance and construction activities. These assessments are either performed in real-time (as the work is being performed) or after-the-fact.

  Each QC program generally follows the same structure and steps below:

  1. Define regulations, policies, standards, work procedures governing the work
  2. Develop a risk-based scorecard
  3. Identify the population of in progress or completed work
  4. Perform real time or after-the-fact field assessments on a random sampling basis
  5. Communicate findings
  6. Develop local or system corrective actions for any findings as appropriate
  7. Adjust the sampling based on findings

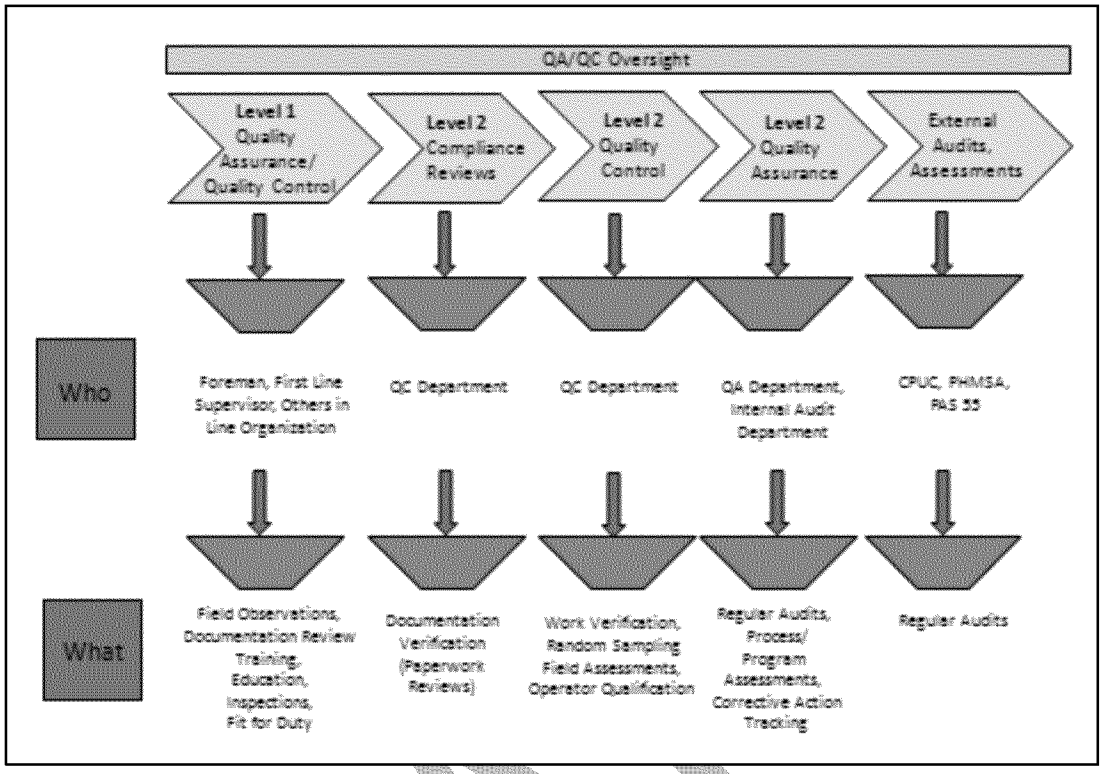
  Below is a table of the formal QC programs PG&E actively has in place and those that are under development. See #2 for more details on each QC program.

Table 1. QC Program Overview

QC 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 leak survey maintenance process including whether any Grade 1's were missed
Leak Repair	Operational since 2009	Evaluates completed leak repairs for the presence of gas 90 days post-repair and checks zero'd out leaks
Locate & Mark (L&M)	Operational since 2011	Validates and scores completed L&M 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
Metering	Actively under development	Pilot planned for 2nd quarter. System-wide rollout by end of 2013.
Corrosion Control	Future	Development starting in 2013, pilot scheduled for 2013.
Regulation Maintenance	Future	Development starting in 2013, pilot scheduled for early 2014.
Valve Maintenance	Future	Development starting in 2013, pilot scheduled for early 2014.

- **Quality Assurance (QA)** – QA activities primarily include internal auditing of PG&E's processes and programs for conformance against the regulations, PG&E's procedures, and are also starting to include an evaluation of PG&E's conformance to PAS 55 as gas operations is preparing for accreditation against this risk-based assessment management standard. In contrast to QC, QA audits are more focused on the upstream activities measuring compliance within our processes and programs as opposed to evaluating the field work.

The figure below depicts the different layers of QA/QC oversight for gas operations which include responsibilities from the field up through PG&E's regulatory agencies.



- **Corrective Action Program (CAP)** – CAP is a new program which encompasses the *improvement* aspect of Q&I. CAP was initiated and identified as a key process within gas operations in August 2012. CAP is intended to centrally capture all issues (equipment failures, incidents, near hits, QC results, audit findings, etc..) and subject them to a structured evaluation and process (see below for high level box diagram).

  The purpose of CAP is to perform risk-based analysis on issues to understand the underlying causes in order to develop corrective actions that will not only mitigate the issue, but also prevent recurrence of the same issue. Over time, through advanced trending, CAP is also intended to identify areas of potential concern and proactively address before an issue happens.

  CAP is a key part of the risk-based asset management framework PG&E is implementing in order to drive continuous improvement and effective problem resolution.

CAP High Level Box Diagram

2. PG&E Quality Assurance Plan. SED understands that PG&E has different QA/QC procedures for different types of work/programs. SED staff assumes that there is an overall plan that summarizes how PG&E ensures Quality Assurance and performs Quality Control across different types of activities.

QC PROGRAMS

PG&E currently has six QC programs which are operational and several others that are under development or planned for the future. These centrally administered QC programs provide an additional layer of quality monitoring and oversight in addition to those quality activities that are embedded within the line functions, such as supervisory oversight of the work performed.

These areas where QC programs have established represent gas operation's construction and the major maintenance activities. Other centrally administered QC programs may be established, based on a desire for greater risk reduction, as the need arises.

- **Field Service QC Program (TD-4022P-03)**

  This QC program focuses on the work performed by PG&E's Gas Service Representatives (GSRs) who provide first responder duties to customer calls as well as fulfill schedule appointments for regular maintenance and customer appliance checks. PG&E currently performs at least one Field Service QC assessment on each available GSR annually. These assessments are performed either real-time as the work is being performed by the GSR or during a separate visit after-the-fact.

- **Leak Survey QC Program (TD-4021P-03)**

  This QC program focused on the work performed on PG&E's transmission and distribution facilities by PG&E's leak surveyors. The day following the completion of a routine leak survey, a QC leak surveyor will be dispatched to resurvey the same area. The primary control point is to determine whether a leak surveyor may have left a Grade 1 (immediate hazard) leak behind. Other aspects of the leak survey process are also measured such as employee training and qualifications and calibration records. If a Grade 1 leak happens to be found on the next day QC assessment, then a full investigation is performed to determine if a prudent survey was or was not performed. If a prudent survey is deemed not to have been performed, the QC department will resurvey additional work to ensure no additional hazards are found.

- **Leak Repair QC Program (procedure not developed yet)**

  This QC program performs a leak survey of repaired leak locations 90 days after the leak was repaired. This timeframe allows for any residual gas from the original leak to dissipate to eliminate the chance for a false read. The purpose of this program is to ensure that the leak repair was completed and effective. The other aspect of this program is performing leak survey

behind leaks that were "zero'd out" upon recheck. The QC activity is performed to ensure the surveyors are appropriately downgrading leaks that were previously identified.

- **Locate & Mark (L&M) QC Program (TD-4021P-05)**

  This QC Program performs QC assessments of L&M tickets which have been documented as complete by PG&E locaters. A QC locater is dispatched to the location of the completed tickets in order to verify the existence, accuracy, and correct labeling of the Underground Service Alert (USA) marks. Other aspects of the process are also measured employee training, qualifications, and calibration records.

- **Transmission Construction QC Program (TD-4021P-01)**

This QC program focuses on performing QC assessments on site for PG&E's gas transmission construction work while the work is being performed. These QC assessments are in addition to the inspection work performed during construction. Transmission QC assessments focus on seven key aspects of the overall process: project initiation, welding, surface preparation, protective coatings, trenching/backfill/compaction, strength testing, and as-built documentation.

- **Distribution Construction (Re-Dig) QC Program (procedure not yet developed, draft process attached)**

This QC program focuses on assuring the quality of short-cycle distribution construction work (such as leak repairs or small installation work). Recently completed work is randomly selected and re-excavated utilizing keyhole technology before final paving is complete. The excavated work is evaluated against PG&E's governing policies, standards, and procedures. In addition to the physical work, other aspects of the process are evaluated such as pre/post job package quality and as-built drawings. In addition to the Re-Dig program, there is also a Distribution QC program under development (TD-4021P-02) which assesses the work in real-time (as opposed to digging after-the-fact) and will target larger distribution construction jobs which are not currently covered underneath the Re-Dig program.

- **The remainder of these programs are underdevelopment per Table 1**

  Rotary Meter QC Program (TD-4022P-04)

  Valve Installation and Maintenance QC Program (TD-4022P-05)

  District Regulator Station Maintenance QC Program (TD-4022P-06)

  Corrosion Maintenance QC Program (TD-4022P-07)

QA PROGRAM

As mentioned above, PG&E's primary QA activity is in the form of auditing. PG&E has both an Internal Auditing (IA) department which resides corporately as well as a dedicated QA audit team within gas operations.

In alignment with the requirements of PAS 55, gas operations is in the process of developing a risk-based approach to the overall audit program which incorporates the results of PG&E's Risk Register as well as the results of past audits. Additionally, to support CAP, PG&E has started to audit the completeness and effectiveness of former corrective actions which have been documented as completed.

The procedures which cover the QA Audit Program are listed below:

- TD-4023S-00 (Auditing Standard, Gas Operations Quality & Improvement)
- TD-4023P-01 (Auditing Annual Schedule, Gas Operations Quality & Improvement)
- TD-4023P-02 (Auditing Procedure, Gas Operations Quality & Improvement)
- TD-4023P-03 (Auditing Metrics, Gas Operations Quality & Improvement)

Below is the 2013 Audit plan which represents both IA and QA audits as well as some that will be jointly performed:

Table 2. Internal and Quality Audits **planned or in process** for 2013

Audit Topic (planned or in-process)	Quarter/Status
Pipeline Centerline Survey (PLCL) Project (Part 2)	Q2'13 *in-process*
Corrosion Control Program	Q2'13 *in-process*
Compression and Processing Asset Audit	Q2'13 *in–process*
Pathfinder – testing of Pilot Results	Q2'13 *planned*
ROW/Management of Patrols	Q2'13 *planned*
Gas Safety Plan—assess the effectiveness of processes and control commitments included in the Gas Ops Safety Plan	Q3'13 *planned*
Operational Review	Q3'13 *planned*

Table 3. Internal and Quality Audits **planned or in process** for 2013

Audit Topic (completed)	Quarter
Valve Maintenance Process – system-wide audit encompassing transmission and	Q1'13

distribution. (*Final Report completed)*	
Pipeline Safety Enhancement Plan – Welding and Radiography Procedures.*(Final Report Completed)*	Q1'13
Gas Asset Mapping Metric – Testing of 2012 Year-End Results. *(Final Report Completed)*	Q1'13
IGIS – review of potential issues associated with downgrading/closing ofleaks. (*Final Report Completed)*	Q1'13
Safety Phase Protocols and Procedures /SFFD commitments– evaluate newly implemented procedures/controls. (*Final Report Completed)*	Q1'13
Gas Leak Survey – Tablet Computer Technology. (*Final Report Completed)*	Q2'13
Pipeline Centerline Survey (PLCL) Project (Part 1).(*Final Report Completed)*	Q2'13
Pipeline Replacement and Valve Automation Environmental Permit Compliance.(*Final Report Completed)*	Q2'13
Non-Major Capital Projects (Utility-wide audit that will include review of some Gas Operations projects).	Q2'13
Gas Emergency Response Plan (GERP)- evaluate effectiveness of response to Level 1, 2, and 3 events	Q2'13
Gas Storage – assess management of contracted work, including procedures, qualifications, oversight, and quality of work	Q2'13