1. In its forecast of Gas Distribution Capital Expenditures, SoCalGas proposes replacement of Leak Detection Equipment in Exhibit 4 CWP, pp. 224-227. The Business Justification statement on p. 224 states the lifespan of electrical and optical components in existing leak detection technology is 7 to 8 years.
   
a. Regarding handheld leak detection equipment, discussed on p. 224 of Exh. 4 CWP,
   
i. Please provide the age, or distribution of ages of the handheld leak detection equipment, or other existing leak detection equipment, which the handheld equipment would replace. Please identify and describe the number of units and the capabilities of the leak detection equipment being replaced.
   
ii. Please provide all analysis conducted by SoCalGas in determining the reduction in costs or increase in leak detection efficacy or efficiency due to purchase of the new handheld equipment.
   
iii. When would SoCalGas have the technology available to utilize the Bluetooth capability of the proposed new equipment? Please provide all analysis of the cost savings resulting from that capability and identify each location in this application of any additional costs related to implementing it.
   
b. Regarding multi-gas detectors and support equipment discussed on p. 225 of Exh. 04 CWP,
   
i. Please provide the number and age or distribution of ages of the leak detection equipment which the handheld equipment would replace.
   
ii. Please identify and explain the material differences in capabilities between the existing equipment being replaced and the proposed multi-gas replacement units.
   
iii. Please provide all analysis conducted by SoCalGas regarding cost savings resulting from replacing existing equipment with the multi-gas detectors.
   
iv. Please provide all analysis conducted by SoCalGas regarding the increase in leak detection efficacy or efficiency from replacement of the existing leak detectors with the multi-gas detectors.
Question 1 (Continued)

c. Regarding the GIS-Based Leak Survey Tracker, discussed on p. 227 of Exh. 04 CWP
   i. Please provide the results of all analysis conducted by SoCalGas regarding cost savings and safety improvement resulting from application of this equipment.
   ii. Are there any other costs or forecasted expenditures related to implementation of this technology? If so, please indicate where each such expenditure is addressed or identified in this application, and the forecast cost of each such expenditure.

d. Please describe and explain the conditions under which field personnel use a multi-gas detector, and the conditions under which those personnel use a leak detector.

SoCalGas Response:

a. The information below relates to leak detection equipment, which is discussed on page FBA-136 of Exhibit SCG-04.

   i. Please refer to the separately provided file titled ORA-SCG-DR-030-DAO_Q2.xlsx for the ages of the current leak detection equipment.

   Approximately 375 leak detection units will be replaced.

   This handheld unit is the primary leak detection instrument utilized by Gas Distribution when performing leakage survey activities.

   ii. Gas Distribution has not completed any analysis on cost reduction, efficacy, or efficiency. This purchase is not driven by a cost reduction, but instead by operational benefits. The manufacturer has made significant performance improvements to the DP-IR leak detection units since they were implemented in 2007, making some of the units more than seven years old. The details regarding the improvements are listed in the confidential document, ORA-SCG-DR-030-DAO_Q1_CONFIDENTIAL.pdf, provided in response to Question 2 below. The Bluetooth capabilities of the new leak detection equipment will allow it to be used with the GIS-based leak survey tracker.
iii. The Bluetooth capability of the new leak detection equipment will be utilized with the GIS-based leak survey tracker. It will take some time to set up our existing systems to integrate the new technology and test that integration, so 2016 is anticipated to be the earliest that this technology could be rolled out to the company.

Please refer to Question 1.c. below for information on cost savings and additional costs related to the GIS-based leak survey tracker.

b. The information below relates to multi-gas detectors, which are discussed on page FBA-135 of Exhibit SCG-04.

i. It is assumed that this question is related to the existing multi-gas detection equipment, since the new multi-gas detectors will not replace Gas Distribution’s leak detection equipment.

The current multi-gas detectors were purchased in 2009, 2010, and 2012. 500 units were purchased in 2009, 6 in 2012, and the remaining units were purchased in 2010. Approximately 1,300 multi-gas detectors are being replaced.

ii. Differences between the existing multi-gas detectors and the replacements are listed below.
   • The design of the new multi-gas detector is more rugged.
   • The internal components are more reliable.
   • The calibration equipment is more reliable.
   • The existing units have reliability, performance related issues, and measurement consistency problems that will be mitigated by the replacement units.

iii. SoCalGas has not completed cost savings analysis on the multi-gas detector replacements; however, we expect that there will be avoided repair costs, since the warranty on the existing equipment is ending.

iv. It is assumed that this question is related to the existing multi-gas detection equipment, since the new multi-gas detectors will not replace Gas Distribution’s leak detection equipment.

SoCalGas has not performed efficiency or efficacy analysis on the multi-gas detector replacements.
SoCalGas Response to Question 1, Continued:

c. The information below relates to the GIS-based leak survey tracker, which is discussed on page FBA-137 of Exhibit SCG-04.

   i. SoCalGas has not finalized cost benefit or safety improvement analyses on the GIS-based leak survey trackers. These purchases are not driven by cost benefits, but rather by the operational benefits described on page FBA-137 of Exhibit SCG-04:

   The GIS-based leak survey tracker is a hand-held device that will be used while performing leak surveys. This technology will enable surveyors to geo-tag the position of as-found leaks. Such geo-tag information can then be collected electronically to document the field survey findings. The ability to collect this information electronically with interface to SoCalGas’ existing technologies such as, the GIS and Maintenance & Inspections database, can enhance the ability for abnormal field conditions to be reported, recorded, and followed up accordingly with minimal manual intervention involving data entry. This device will be blue-tooth linked to SoCalGas’ leak detectors and will run on a mid-ware application that will integrate with the GIS and inspection systems.

   The GIS-based leak survey trackers will document leak survey results in near-real time, plot leak locations in GIS sooner, and will help the company verify compliance with leak survey requirements.

   ii. Costs associated with training employees to use the GIS-based leak survey trackers are shown on page FBA-47, under the heading Electronic Leak Survey Tracker. It is estimated to cost $188,000 in TY2016.

   Additional costs estimates have not been finalized; however, Gas Distribution anticipates that there will be future costs associated with purchasing software, annual software fees and support, and wireless data plans for the units, which will offset any data capture administrative efficiencies from using the new tool. As stated previously, the purchases of these tools is not driven by cost benefits, but rather by operational and data accuracy benefits.

d. Customer Services Field personnel use the multi-gas detectors to investigate and identify suspected sources of methane leaks in order to repair them. They also utilize the instrument when investigating potential sources of carbon monoxide when exposure is suspected.

   Leak detection equipment is methane specific, and is generally used by pipeline operations groups, such as Gas Distribution, Gas Transmission, and Storage.
2. Please provide two confidential documents provided to DRA in response to their DR 30:
   a. ORA-SCG-DR-030-DAO_Q1_CONFIDENTIAL.pdf
   b. ORA-SCG-DR-030-DAO_Q4_CONFIDENTIAL.pdf

SoCalGas Response:

Please refer to the separately provided confidential files, ORA-SCG-DR-030-DAO_Q1_CONFIDENTIAL.pdf and ORA-SCG-DR-030-DAO_Q4_CONFIDENTIAL.pdf. These documents were submitted to ORA as *CONFIDENTIAL PURSUANT TO P.U. CODE SECTION 583 & G.O.66-C*. Please treat these documents as *PROTECTED MATERIALS, SUBMITTED PURSUANT TO NON-DISCLOSURE AGREEMENT*. 
3. Regarding Gas Distribution O&M expenses and the Field O&M – Leak Survey forecast on Exh. 04 WP, p. 15:
   a. Please provide the end-of-year leak survey footage on SoCalGas’ system for each year from 2008 through 2013.
   b. For the leak survey footage provided for each year in a. above, please provide the number of feet subject to a five-year survey cycle and the number of feet subject to a three-year survey cycle.

SoCalGas Response:

a. The 2009 – 2013 leak survey footage is provided in Table FBA-07 on page FBA-21 of Exhibit SCG-04:

   \[
   \begin{array}{|c|c|c|c|c|c|}
   \hline
   \text{Year} & \text{2009} & \text{2010}\text{11} & \text{2011} & \text{2012} & \text{2013} \\
   \hline
   \text{Footage Surveyed} & 117,193,314 & 114,605,127 & 118,945,201 & 122,557,935 & 123,471,709 \\
   \hline
   \end{array}
   \]

11 Note that 2010 was a transition year from a legacy computer tracking system to the new SAP system

In 2008, there were 116,299,385 feet of distribution pipe leak surveyed.

b. Please see the table below for the requested information.

   \[
   \begin{array}{|c|c|c|c|c|c|}
   \hline
   \text{Year} & \text{2008} & \text{2009} & \text{2010} & \text{2011} & \text{2012} & \text{2013} \\
   \hline
   \text{Footage on a 3-Year Leak Survey Cycle} & 11,852,809 & 10,564,585 & 12,214,324 & 10,636,138 & 9,801,535 & 10,484,537 \\
   \hline
   \text{Footage on a 5-Year Leak Survey Cycle} & 37,078,464 & 35,598,343 & 34,543,798 & 35,829,913 & 38,104,681 & 37,208,139 \\
   \hline
   \end{array}
   \]
4. Regarding the Field O&M – Main Maintenance forecast on Exh. 04 WP p. 43:

   a. Please explain the “gas leak backlog” noted on p. 42 under “Forecast Explanations”, including –
      i. The number of located, unrepaired main leaks at the end of each year from 2009 through 2013.
      ii. The number of located, unrepaired main leaks, by grade (1, 2 and 3) at the end of each year from 2009 through 2013.
      iii. The forecast backlog of located, unrepaired main leaks at the end of each year from 2014 through 2018, assumed in SoCalGas funding proposal.
      iv. The forecast number of new leaks found in each year from 2014 through 2018, by grade (1, 2 and 3).

   SoCalGas Response:

   For Questions 4.a.i. and 4.a.ii. please refer to the information provided in the table below.
SoCalGas Response to Question 4.a.i. and 4.a.ii., Continued:

<table>
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<tr>
<th>Year</th>
<th>2009¹</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
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<td>4,472</td>
<td>4,988</td>
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<td><strong>Subtotal</strong></td>
<td><strong>888</strong></td>
<td><strong>1,904</strong></td>
<td><strong>4,926</strong></td>
<td><strong>5,217</strong></td>
<td><strong>5,602</strong></td>
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<tr>
<td><strong>Service Leaks</strong></td>
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<td></td>
</tr>
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<td>116</td>
<td>133</td>
<td>247</td>
</tr>
<tr>
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<td>531</td>
<td>307</td>
<td>185</td>
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<tr>
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<td>1,619</td>
<td>1,951</td>
<td>1,749</td>
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<td><strong>Subtotal</strong></td>
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<td><strong>1,520</strong></td>
<td><strong>2,266</strong></td>
<td><strong>2,391</strong></td>
<td><strong>2,181</strong></td>
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<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Code 2</td>
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<td>-</td>
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<td><strong>709</strong></td>
<td><strong>1,627</strong></td>
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<td>Code 2</td>
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<td><strong>963</strong></td>
<td><strong>264</strong></td>
<td><strong>17</strong></td>
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<tr>
<td>Code 3</td>
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<td>7,594</td>
<td>7,893</td>
<td>8,588</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,247</strong></td>
<td><strong>3,424</strong></td>
<td><strong>8,772³</strong></td>
<td><strong>8,581</strong></td>
<td><strong>9,427</strong></td>
</tr>
</tbody>
</table>

¹ Leak data for 2009 came from a legacy leak tracking system. There is no data available on the leak codes for that year due to differences in how the end of year leaks were calculated in the legacy system.

² Code 1 leaks may be temporarily repaired to eliminate the immediate hazard. During the interim between temporary and permanent repairs the situation is monitored and documented to insure no further hazard exists or develops. For this reason, there may be some pending Code 1 leaks at the end of the year.

³ In the DOT Gas Distribution system annual report for 2011, the number of known system leaks at the end of the year scheduled for repair was shown to be 1,178. This number excluded the code 3 leaks. Including code 3 leaks, the total is 8,772, as shown in the table above.
SoCalGas Response to Question 4, Continued:

iii. Please refer to the separately provided file, ORA-SCG-DR-004-DAO_Q3_Tab3.d.vii-viii.xlsx for the data and assumptions used in the leakage backlog reduction calculations.

iv. Gas Distribution did not explicitly forecast the total number of new leaks found in each year from 2014 to 2018.

Instead, the forecast for the leak reduction effort was based on the backlog that existed at the end of the year 2013. Additionally, the total forecast for Main Maintenance and Service Maintenance was not based on a quantity of leaks forecasted, but instead on historical spending levels and what it will take to reduce the backlog.
5. Regarding the Field O&M – Service Maintenance forecast on Exh. 04 WP p. 53:

   a. Please explain the “gas leak backlog” noted on p. 53 under “Forecast Explanations”, including –
      i. The number of located, unrepaired service leaks at the end of each year from 2009 through 2013.
      ii. The distribution of located, unrepaired service leaks, by grade (1, 2 and 3) at the end of each year from 2009 through 2013.
      iii. The forecast backlog of located, unrepaired service leaks at the end of each year from 2014 through 2018, assumed in SoCalGas funding proposal.
      iv. The forecast number of new service leaks found in each year from 2014 through 2018, by grade (1, 2 and 3).

SoCalGas Response:

Please refer to the responses provided in Question 4 above.
6. Regarding the Field O&M – Field Support forecast on Exh. 04 WP p. 63: SoCalGas’ forecast of Field Support FTE in the 2012 GRC, Exh. 2 WP, p. 115 included 198 FTE in 2012, a figure that was 8 to 18 FTE over the FTE recorded figures for 2012 and 2013 as presented in the 2016 GRC. SoCalGas’ workpapers refer to “increased regulatory pressures” (2016 GRC Exh. 04 WP p. 62) occurring since the 2012 forecast was made.
   
a. Please explain how SoCalGas completed the additional work outlined in its 2012 GRC workpapers (2012 GRC Exh. 02 WP p. 115) and absorbed the “increased regulatory pressures” noted in this filing with the lower staffing levels as compared to the 2012 GRC forecast.

b. Please explain how SoCalGas incorporated these efficiencies into its current forecast of FTE required for these functions.

SoCalGas Response:

In SoCalGas’ 2012 GRC forecast for Field Support, we included FTEs associated with incremental Support Training for New Technology. Information on this incremental activity can be found in the 2012 GRC exhibits SCG-02-R, pages GOM-35 – GOM-36 and SCG-02-WP pages 128 – 129. The 2012 forecast included 25.0 incremental FTEs related to this support training activity; however, this activity was expected to decrease after 2012. In the 2012 GRC Master Data Request, Question 9, SoCalGas provided the following information:

> While initial training is scheduled to be completed during 2012, training will be required into the future to address system changes and/or product enhancements (major or minor). SoCalGas projects this need to be roughly 8 hours per year for each impacted employee. In addition, there will be limited future costs associated with training new employees and/or those new to the position on the use of the mobile data terminal for receiving and recording of work assignments. SoCalGas projects this need to be roughly 1 hour per trainee. In total, SoCalGas estimates post 2012 training costs related to this technology to be $519,000.

The number of FTEs associated with the post-2012 new technology training was 4.9 FTEs, which was a reduction of 20.1 FTEs from the 2012 forecast. With this reduction in training time, SoCalGas estimated that the total Field Support forecast would decrease from 198.1 FTEs in 2012 to 178.0 FTEs in 2013. As shown in the calculations below, in 2012, there were 8 FTEs less than the 2012 GRC forecast; and in 2013, there were 2 FTEs more than the 2012 GRC estimate for 2013.
SoCalGas Response to Question 6.a., Continued:

Comparison of Actual 2012 Field Support FTEs to 2012 FTEs Forecasted in the 2012 GRC
= (2012 GRC Forecasted Field Support FTEs for 2012) – (Actual FTEs in 2012)
= 198.1 FTEs – 189.8 FTEs
= 8.3 FTEs

Comparison of Actual 2013 Field Support FTEs to 2013 FTEs Estimated in the 2012 GRC
= (2012 GRC Estimated Field Support FTEs for 2013) – (Actual FTEs in 2013)
= (198.1 FTEs in 2012 – 20.1 FTE Reduction in 2013) – (179.7 FTEs)
= 178.0 FTEs – 179.7 FTEs
= –1.7 FTEs

a. Field Supervision is one of the groups in the Field Support workgroup. They are described on page FBA-43 of Exhibit SCG-04 (2016 GRC):

Field supervisory positions are critical to providing daily management of frontline employees and inspecting contractors that work directly on the gas distribution system, as well as for interacting directly with customers, public agencies, and the general public. As described in Section I.B (Summary of Activities), SoCalGas’ service territory is extensive, covering approximately 20,000 square miles stretching from Visalia in the north, to the Mexico border in the south and as far east as the California/Nevada border. Supervisors are responsible for providing daily work direction and inspecting contractor work at 52 operating bases throughout the service territory. These employees also have on-call responsibilities to respond to off-hour emergencies such as gas line breaks, damaged gas facilities, and gas leak investigations. They are in a leadership role and provide training, coaching, and mentoring to SoCalGas’ frontline employees and third-party contractors. These supervisors encourage and counsel employees to work safely, follow Company procedures, deliver superior customer support, and build and maintain a safe and reliable natural gas delivery system.

As management employees, the field supervisors routinely work more than eight hours a day, but they are only paid for their overtime in certain situations. When work levels increase before incremental new Field Supervisors can be hired, the existing supervisors must put in extra hours to keep up with the critical work; however, this is not reflected in the historical costs or FTEs. While Field Supervisors can temporarily cover this incremental work, it was not sustainable.
SoCalGas Response to Question 6a, Continued:

The increased regulatory pressures noted in Exhibit SCG-04-WP of the 2016 GRC are related to the 2016 GRC forecast method (a five-year linear trend), not the 2012 GRC forecast. Pages FBA-44 – FBA-45 of Exhibit SCG-04 of the 2016 GRC discuss the upward pressures affecting the Field Support workgroup:

*Generally, the services provided within the Field Support workgroup are driven by the amount of field work to be completed, the need for contractor support, the complexity of jobs, the number of employees, and incremental operations, compliance, and safety requirements that impact the Gas Distribution workforce.*

*SoCalGas is experiencing an increase in regulatory pressures, such as additional CPUC audits, which result in more record-keeping and research activities. Furthermore, SoCalGas anticipates an increase in supervisor time to comply with 49 CFR 192.615 and Senate Bill 44, which require that SoCalGas maintain a liaison and meet with fire, police, and other public officials.*

*With the projected incremental work in Gas Distribution field O&M categories; there will be an increase in work activities within this workgroup, such as clerical, dispatch, training, and supervision. Furthermore, SoCalGas expects that employee training will increase due to additional Operator Qualification requirements and increased employee turnover.*

*As previously discussed, there has been an increase in requests to remove abandoned pipe long after the associated capital project closed, resulting in an O&M pressure that will continue to increase costs in this workgroup.*

*Given these diverse and growing influences, SoCalGas determined that a five-year (2009 through 2013) historical linear trend best reflects future requirements for this workgroup. The trend will capture the growth in work activities, which is anticipated to continue. Using an average forecasting method would under-estimate the obvious increases that are occurring and will result in insufficient funding for this workgroup. This base forecast methodology results in a $3,192,000 increase over the 2013 adjusted recorded base in TY2016.*

b. Please see the response to 6.a. above. The differences between the 2012 GRC forecast for Field Support and the actual FTEs were not related to efficiencies.

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