TURN DATA REQUEST
TURN-SCG-DR-17
SOCALGAS 2016 GRC – A.14-11-004
SOCALGAS RESPONSE
DATE RECEIVED: MAY 4, 2015
DATE RESPONDED: MAY 8, 2015

1. In Exhibit SCG-04, p. 100, regarding Main Replacements (Budget Code 00252.0), SoCalGas states, "SoCalGas replaced an average of 55 miles of pipe per year under this work category during the period 2009 through 2013." Based on capital spending shown in Exh. 04-CWP, p. 68, these replacements cost an average of $47.234M/year from 2009 through 2013 in 2013 constant dollars. In Exhibit SCG-08-CWP, p. 39, 55.36 miles of main replacements appear to cost $65.775M.

    a. Are the costs shown for DIMP main replacements on p. 39 of Exh. 08-CWP in 2013 constant dollars? If not, please replicate that page using 2013 constant dollars.
    b. Please identify and describe each factor that results in the cost per mile of DIMP pipe replacements to be approximately $1.188M, ($65.775M/55.3 miles), while the cost per mile to replace main in Distribution Capital (from Exh. 04) is approximately $0.859M (calculated as $47.234M/55 miles).

SoCalGas Response 1:

a. The costs shown for DIMP main replacements on p. 39 of Exh. SCG-08-CWP are not in 2013 constant dollars. The table replicated using 2013 constant dollars:

Main Replacement	2012	2013	Total
Total Length (feet)	127,761	51,982	179,743
Total Cost	28,419,551	11,938,967	$40,358,518
Avg. Cost per feet			$225
Escalation to $2013	-110,836		
Total Cost $2013	28,308,715	11,938,967	$40,247,682
Avg Cost per feet $2013			$224

b. Please refer to the table provided in Part a for the values and calculations used to develop the DIMP main replacement cost estimate. The estimate was based on similar replacement jobs in 2012 and 2013.

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SoCalGas Response to Question 1b, Continued:

For the 2009 – 2013 historical period, Gas Distribution's average cost per mile of pipeline installed in the Main Replacements category was $0.866 million per mile. This average is higher than the cost provided in the question above since the average number of miles installed per year was actually 54.56 miles (rounded to 55 miles in Exhibit SCG-04-R, page FBA-100). Gas Distribution's average cost per mile is reflective of the historical mix of pipe material, pipeline diameters, and installation conditions for the Gas Distribution Main Replacements category. Please note that Gas Distribution's forecast for Main Replacements was not based on an average cost per mile, but rather a five-year 2009 – 2013 historical average total cost.

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2. In SoCalGas Exh. 04, p. 99, the discussion of Distribution Main Replacement refers to the factors that result in main replacements under that program, including leakage, anticipated leakage maintenance expense, cost of installing or maintaining cathodic protection, condition of material or wrap/coating, or corrosion or other defect. These factors are used by technical staff to "identif[y] and prioritiz[e] pipeline segments requiring replacement." In SoCalGas' response to TURN DR 07-7b, the factors used to identify and prioritize replacements under DREAMS are similar.

    a. Please explain how SoCalGas' technical staff prioritizes pipeline segments requiring replacement as set forth in Main Replacements (Exh. 04). Pl
    b. Please explain how SoCalGas prioritizes pipeline segments requiring replacement through the DREAMS effort.
    c. Please identify and briefly describe any material difference between how SoCalGas prioritizes pipeline segments identified as requiring replacement through Main Replacements as compared to pipeline segments identified as requiring replacement through DREAMS.
    d. Please briefly describe how SoCalGas coordinates the two programs, to insure that the highest risk pipe is given priority for replacement. Please be as detailed as necessary.

SoCalGas Response 2:

a. The category of "Main Replacement" as presented within Exhibit SCG-04-R – Gas Distribution, addresses the routine main replacement activities that the operating regions face on a daily basis. Reaction to specific local situational information drives the need for "routine" main replacement. This situational information is described on page FBA-99 of Exhibit SCG-04-R:

> *These replacements are often due to leakage that impacts the integrity of the pipe, an anticipated increase in leakage maintenance expenses, the relative cost to install and/or maintain cathodic protection, or the deterioration of pipe material, pipe wrap, or coating. Other criteria taken into consideration are whether the steel pipe meets cathodic protection mandates, or the main is found to have active corrosion. In addition, the pipeline may be deemed unsafe or unfit for service due to manufacturing or other defects. Based on information collected during various O&M activities and field observations, technical staff identifies and prioritizes pipeline segments requiring replacement.*

SoCalGas Response to Question 2a. (Continued):

Some additional examples include the following:

- Replacement of steel pipe with plastic due to a problematic cathodic protection area of ongoing shorts and interference.
- Replacement of pipe found in poor condition during leak repair, where repairs would be difficult due to conditions, and replacement would be more appropriate.
- Acceleration of scheduled pipe replacement ahead of street improvements, while the opportunity arises during a municipal activity, allowing for shared costs and avoiding street moratoriums.

b. Under the DIMP program, a performance based pipe replacement program (DREAMS) has been established utilizing the attributes outlined in the response to TURN-SCG-DR 07, Question 7b. This replacement program is incremental to the routine main replacement activities. It is a systematic evaluation of pipe attributes to prioritize replacement of pipe segments that have not historically performed as well as others. The intent of the program is to prioritize these segments and proactively replace them before additional leakage occurs.

The information provided in TURN-SCG-DR-07, Question 7b is copied below for convenience:

Plastic Algorithm - Probability	
Attribute	**Description**
Historical Failure Trend	Historical Failure Trend factor is a function of the leak rate and the failure type. Failure types include axial failures, rocky soil, and compaction among others
Material Factor	The Material Factor takes into account the vintage of the pipe and the plastic type used for installation.
Construction Factor	The Construction Factor takes into account the soil type and method of installation to show the performance of the pipe segment in different environments and using different installation methods.
Length Normalization Factor	number of leaks per 100 feet of segment length

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SoCalGas Response to Question 2.b., (Continued):

Steel Algorithm - Probability	
Pipe Age Factor	Pipe Age factor is a function of the pipe install year with respect to the current year, pipe wrap (external pipe coating) constant, and the number of integrity relevant leaks present on the segment.
Pipe Wrap Factor	Condition of the pipe wrap at the time of the leak repair.
Leakage Factor	The Leakage Factor is a function of the leak year with respect to the current year, condition of the pipe, condition of the Cathodic Protection (CP) on the pipe and the number of integrity relevant leaks.
Pipe Condition Factor	This factor looks at the amount of rust and pitting on the pipe and the condition of the wrap.
Cathodic Protection Factor	The CP factor is a depiction of the presence of cathodic protection on the pipeline.
Consequence	
Line Pressure	Pressure the line is operating at.
Proximity to structures	Proximity to structures are estimated with the assumption that all leaks on above ground MSAs are the closest to structure while leaks on services are medium distance, and leaks on mains are further away. This is based on the fact that, with a few exceptions, MSAs tend to be set up close to the house line and near the structure while services approach the structure as they connect the main to the MSA, and mains are typically found in the streets away from the structure.
Population Density	The Population Density is obtained by looking at county zoning plots.
Pipe Diameter	The consequences of failure on large diameter pipe tend to be higher versus smaller diameter pipes. The pipe sizes are grouped by service, main, high pressure transmission.
Number of Leaks and Common Leak Code	For every segment the number integrity relevant of leaks are counted along with their associated leak codes. The leak code with the highest number of leaks is then determined and used for this factor.
PHMSA Serious Injury Factor	The Pipeline and Hazardous Material Safety Administration (PHMSA) publishes the total number of leaks by cause in Gas Distribution industry wide. One of the published reports is the Serious Incidents and contained in this report is the number of fatalities by cause in the previous 20 years. The percentage for Corrosion, 3.85%, is used for the steel evaluation model while percentage for material defects, 2.45%, is used for the plastic evaluation model.

SoCalGas Response to Question 2, (Continued):

c. The routine main replacements are typically more reactionary in nature and are driven by observed pipeline conditions, such as those described in response to part a, above. The DREAMS program is a systematic evaluation of pipe attributes to identify and prioritize pipe replacement. Please refer to part b for the attributes used in the DREAMS program.

d. The two programs are independent, with different Planning groups who are responsible for their own projects. The project list for the DREAMS Planning group is based on the relative risk evaluation completed as part of DREAMS which allows the group to focus on the highest relative risk pipe independent of routine replacements. Planners working on Gas Distribution Main Replacement work will coordinate with the DREAMS Planning group before initiating new replacement project to avoid overlapping projects.