Docket:	:	R.11-02-019
Exhibit Number	:	DRA-06
Commissioner	:	Florio
ALJ	:	Bushey
Witness	:	Scholz

DIVISION OF RATEPAYER ADVOCATES

CALIFORNIA PUBLIC UTILITIES COMMISSION

DRA REPORT ON THE PIPELINE SAFETY ENHANCEMENT PLAN OF PACIFIC GAS AND ELECTRIC COMPANY

Cost Calculations & Project Review

San Francisco, California

January 31, 2012

574109

TABLE OF CONTENTS

I. Summary of Testimony

Berkeley Engineering And Research, Inc. ("BEAR") has been asked by the Division of Ratepayer Advocates ("DRA") of the California Public Utility Commission ("CPUC") to provide an independent review of the Pacific Gas and Electric Company's ("PG&E") Pipeline Safety Enhancement Plan ("PSEP") that was submitted in compliance with the CPUC's Ruling R. 11-02-019. BEAR was asked to perform three tasks: (1) to verify PG&E's Decision Tree ("Task 1"); (2) to verify the cost models and the costs in the PSEP ("Task 2"); and (3) to examine in detail individual projects to assess the overall quality of the PSEP ("Task 3").

This section of BEAR's report addresses Task 2 and Task 3. Task 1 is submitted independently by the BEAR witness Dr. David Rondinone in Exhibit DRA-04.

BEAR's testimony is summarized as follows:

A) PG&E's cost for replacement is 20% higher than industry standards as found in research studies that represent over 20,000 miles and more than 800 individual projects. Of note, research has shown that California is not the most expensive state to replace pipelines; in fact, California ranks in the bottom half nationwide.

B) PG&E's costs for hydro testing pipelines are in the upper range of industry standards and are 150% higher than the median industry cost. PG&E has not sufficiently explained nor justified its higher cost, especially when considering that half of its hydro tests are on small, 12" diameter pipelines. The high fixed cost of mobilization and demobilization ("mob/demob") have been questioned repeatedly, and PG&E's answers have been essentially unresponsive.

C) PG&E's escalation estimate is "backloaded." Calculations are based on the completion of the project. They should be calculated to the end of the engineering, design and procurement phase when project costs become fixed.

D) PG&E's escalation estimate is based on previous years, when escalation was indeed 3.12% on average. However, projections by both the Congressional Budget Office and the Bureau of Labor Statistics put inflation for the next 3 years at 1.1% to 1.5%. This level of escalation is more appropriate for this 3 year plan.

E) PG&E's Consumer Outreach of $30M, or 2.9% on top of each total project cost, has not been explained sufficiently. It contains costs for three new databases, including the ability to conduct future customer surveys. It also includes $3.6M in Government Relations, to inform Mayors, City Managers and Council Members of PG&E's plans in order to ease permitting. This appears to be lobbying, and should not be part of this plan. Regardless, consumer outreach at a cost of 2.9% on top of each project cost is not acceptable.

F) BEAR conducted a review of several individual projects, and two are highlighted in this testimony. For example, we examined Line 103, and found that some line segments were misclassified as "highly-congested" when in fact they were clearly "semi-congested" areas. This inflated the cost of the project. An adjustment of segments replaced as suggested by BEAR's decision tree, combined with a 20% reduction in cost, reduced the total cost of this project from $24.4M to $9.4M. This is a savings of 61%.

G) The individual project review highlights the need for a more careful development of PG&E's PSEP.

In summary, PG&E's proposed PSEP is a draft that needs to be developed further. BEAR's recommendation is that PG&E submit a PSEP that reflects industry standard costs and has a more thorough budget justification, especially for large budget items, as is commonly required by all Government agencies.

II. Introduction

A. Scope of this Testimony

This testimony reviews PG&E's filings of the PSEP. PG&E engaged Gulf International Engineering ("Gulf") to develop the PSEP. Gulf used an Association for the Advancement of Cost Engineering International ("AACEI") Class 4 (+/-50%) estimate of the capital costs for roughly 350 individual projects that are grouped into replacement and strength-testing or hydro testing and In-Line-Inspection ("ILI").

PG&E's pipeline system consists of roughly 25,000 individual segments that are tracked in a data base. Each segment is characterized by over 30 variables, such as age, testing dates, Class allocation, diameter, etc. Each segment has an outcome derived from PG&E's decision tree. The decision tree outcome leads to the individual project. Projects are then allocated into a yearly work plan, according to an established priority.

B. Analysis Performed

The segment data provided by PG&E were examined and the cost models were analyzed using spreadsheets provided by PG&E as well as spreadsheets developed internally for verification purposes. The first priority was to examine and analyze replacements, and then to analyze hydro testing costs. Data was sought to independently verify the cost models.

Due to the time constraint, the ILI projects were not examined and the costs were not verified. We highly recommend that these projects are examined in detail in the follow up plan.

Escalation and Consumer Outreach were also examined for their reasonableness.

In order to demonstrate the quality of the overall plan, individual projects were examined at the segment level and costs were verified using PG&E assumptions and BEAR assumptions.

Our conclusions are based on the information available at the time of the submittal of this report. If additional information becomes available, we reserve the right to revise this report.

III. Replacement

The main part of the analyses performed consisted of independent verification of costs used in PG&E's assumption matrix for replacement of pipe segments. Several studies were identified, and two were chosen, based on the most relevant cost data those had developed. They are: a study by the Institute of Transportation Studies of the University of California at Davis ("UC Davis Study") and research by the Pacific Northwest National Laboratory ("PNNL"). The studies are described below in detail.

A. UC Davis Study

The objective of the UC Davis study was to develop cost data for a hydrogen infrastructure. Using data from the Oil & Gas Journal ("OGJ"), the authors gathered information from over 20,000 miles of natural gas, oil and petroleum product pipelines, from 893 individual projects, over a 13 year period, to develop cost equations.[1] Once the cost equations were developed, they were adjusted for the higher cost of hydrogen pipelines. For the purpose of comparing costs to PG&E, the equations were used before the adjustments to the higher cost for hydrogen pipelines.

The authors found that construction cost, also referred to as all-in cost, is comprised of a) labor cost which dominated all other costs at 45%, b) material costs at 26%, and, c) the balance of 29% to include ROW, surveying, engineering, supervision, contingencies, allowances and overhead. For all their costs developed, they used a 36" diameter pipe because that had the most data available. They also showed costs for 6" diameter pipe.

Material costs are linearly dependent on length and quadratic on diameter. Labor costs grow linearly with length, but the authors found large variation in labor cost with no discernible pattern in the relationship to diameter.

A cost matrix for the pipe diameters used by PG&E was calculated using the equations the authors derived. We then assumed, that these represent pipes into non-congested areas, which is the cheapest. A percent increase for both the semi-congested and highly congested areas was used, equaling the percent increase calculated from PG&E data. The costs were then escalated to 2011 dollars. Table 1 below shows the summary of the costs derived.

[1] Using Natural Gas Transmission Pipeline Costs to Estimate, Hydrogen Pipeline Costs, Nathan Parker, Institute of Transportation Studies, University of California

Table 1: All-In Cost derived from UC Davis study

Diameter	Non-Congested	Semi-Congested	Highly Congested
10	$ 205	$ 406	$ 672
16	$ 270	$ 492	$ 784
24	$ 391	$ 659	$ 999
36	$ 648	$ 1,007	$ 1,444

Note: These are 2011 dollars.

B. PNNL Study

The Pacific Northwest National Laboratory also used OGJ data to develop a methodology for conceptual capital cost estimates for onshore pipelines. [2] They sought simple equations that would yield a typical cost per mile as a function of pipe diameter.

The study found a strong length-cost effect, such that shorter segments cost more than longer segments, and fixed costs dominate shorter segments. The authors found that pipelines shorter than 0.1 mile average $6.2 million per mile, but those longer than 1 mile average consistently between $1.3 million and $1.9 million per mile.

They also found large regional variations in cost, and California does not rank first. All regions, except the Midwest, the Mountain States and the Southwest, are on average, more expensive than California. The study found that almost all cost increases over the 30 year period examined are a result of increased pipe diameter. Labor cost increased by a factor of 4, suggesting an increase in labor requirement as well as an increase in labor cost.

Using these equations developed by the authors, all-in costs have been calculated. The values derived from these equations were used for non-congested areas, and a percent increase for semi and highly-congested areas was derived from PG&Es cost structure. Table 2 below summarizes the cost data from PNNL.

[2] Daryl Brown, Jim Cabe, Tyson Stout, National Lab Uses OGJ Data to Develop Cost Equations, Pacific Northwest National Laboratory, Richland, Wash., Oil & Gas Journal, Jan. 3, 2011, pp 108-112.

Table 2: All-in Cost derived from PNNL

Diameter	Non-Congested	Semi-Congested	Highly Congested
10	$ 214	$ 370	$ 598
16	$ 278	$ 494	$ 784
24	$ 398	$ 648	$ 978
36	$ 704	$ 1,098	$ 1,577

Note: These are 2011 dollars.

C. Findings in PG&E Cost Proposal

PG&E details its cost in an assumption matrix that is then connected to the Implementation Plan. The assumption matrix is built from the lay rate and land damages allowance, and percentages for engineering, design & survey, ROW, permitting, construction management, owners OH, material burden and an AFUDC rate. These costs are scaled to diameter and congestion level, and PG&E refers to the result as the "all-in" cost. They should actually be called the "all-in" variable cost per mile, since there are significant fixed costs. Table 4 below summarizes PG&E's all-in costs.

Table 4: All-in cost provided by PG&E[3]

Diameter	Non-Congested	Semi-Congested	Highly Congested
10	$ 282	$ 489	$ 790
16	$ 347	$ 618	$ 980
24	$ 515	$ 841	$ 1,268
36	$ 801	$ 1,253	$ 1,799

The fixed costs are per project for move around and mob/demob scaled to diameter and congestion level. Road Bore adders and HDD are added on an as-needed basis for a specific project. In addition, there are separate fixed percentages added for escalation, customer outreach and management.

[3] DR_DRA_016-Q01Atch01 - Assumptions

D. Findings from PG&E Costs Compared to Research Study Data

The tables below show the comparisons of all study data to PG&Es all-in costs. As can be seen, the reduction in cost using OGJ data in the UC Davis and PNNL study averages 20% and 21%. For all comparisons, the highest cost assumptions from the researched information were applied. For the UC Davis and PNNL study, we assumed that these cost equations represented non-congested areas, rather than the more costly semi or highly congested areas. This means that these comparisons yield the smallest cost reductions, and can be thought of as "at least" cost reductions. Table 5 details the percentage differences between PG&E and the two studies reviewed above.

For all-in costs, PG&E is consistently higher, even when using the most generous assumptions. For all comparisons, costs derived from the studies were used as representative of non-congested areas, and then scaled up using the same rate as PG&E.

Table 5:

Percentage differences between PG&E all-in cost and UC Davis and PNNL studies

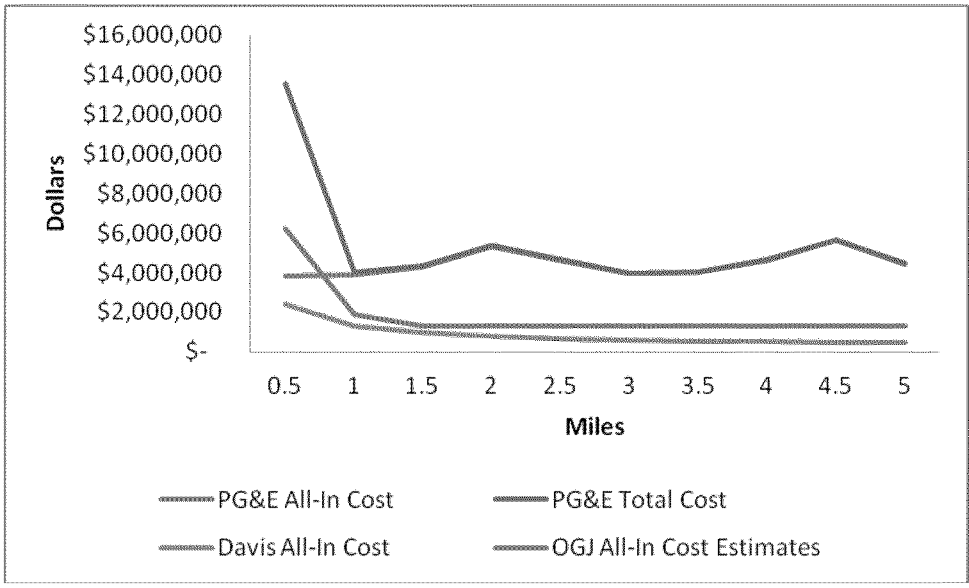
	Non-Congested	Semi-Congested	Highly Congested
	UC Davis compared to PG&E		
Diameter			
10	73%	83%	85%
16	78%	80%	80%
24	76%	78%	79%
36	81%	80%	80%
	PNNL compared to PG&E		
Diameter			
10	76%	76%	76%
16	80%	80%	80%
24	77%	77%	77%
36	88%	88%	88%

E. Findings on Efficiency Gains

PG&E included many sections for efficiency gains. They also included segments that increased pipe diameter, and it is not clear if the referred budget justification for such sections is for economic efficiency gains or for service efficiency gains. As the reviewed studies showed, longer sections are cheaper to install than shorter sections, as there are fixed costs to plan, design and manage a project. For this reason, it is important to verify that including segments for efficiency gains, PG&E actually achieves greater economic efficiency.

Graph 1 below is derived from the actual project data provided by PG&E and compares this to data from the above reviewed studies. At replacements of less than a mile, fixed costs dominate. PG&E does not obtain any efficiency gains beyond a one mile segment, but rather stays consistently at a cost level far above those indicated in the research studies. Unless an individual project has clear economic efficiency gains, adding segments needs to be justified more thoroughly.

Graph 1: *Cost and Length of Replacement*



F. Recommendations and Proposed Alternative Unit Costs

Both the UC Davis and the PNNL studies were large studies using OGJ data, thus giving an accurate representation of industry cost. These studies show all-in costs that are respectively 20% and 21% lower than PG&E's cost assumptions in the PSEP. These lower costs should apply to the PSEP.

The PNNL study showed that California is not the most expensive area to replace gas pipelines, and while California might have unique characteristics, all-in cost is not one of them.

Hydro testing

A major challenge has been to verify PG&E's cost data for hydro testing. One study was conducted by the American Gas Association ("AGA") which yielded a range of hydro testing costs. The INGAA Foundations did a higher level cost analysis to estimate the impact of a DOT rulemaking on strength-testing natural gas transmission lines. Individuals at the US Department of Transportation *Pipeline and Hazardous*

Materials Safety Administration ("PHMSA") were contacted to see if there is unpublished data on hydro test costs.[4] The current proposed federal rulemaking is in the comment period until January 20, 2012[5], and both AGA and INGAA are requesting extensions. Mr. Keener mentioned that there will be a need for a cost/benefit analysis, but this will not occur until the next round of comment period.

BEAR is proposing to conduct an independent study to verify hydro testing cost data. As hydro testing will be an on-going maintenance requirement, such a study is essential to ascertain any future budget impact. In the interim we are presenting the findings available for hydro testing pipelines.

AGA Data

In a document developed by AGA for the National Transportation Safety Board ("NTSB"), costs for hydro testing intra-state natural gas transmission pipelines were gathered from 45 companies representing approximately 34,000 miles (76%) of the total 45,000 miles operated by AGA member companies. [6]

Ninety-two percent of those responding to the survey reported pressure-testing costs ranging from less than $100,000 to $600,000 per mile and 60% of respondents reported a cost per mile less than $300,000. The median cost is somewhat less than $200,000. These costs are inclusive of all engineering, design, survey, construction, temporary gas supplies, abandonment, commissioning and restoration costs.

The AGA data is an industry average that is derived from its member data, and the range of $100,000 to $600,000 per mile of hydro can be used to compare to PG&E hydro testing costs. The median of less than $200,000 can be applied to smaller pipe diameters.

Other General Industry Cost Standards for Hydro testing

[4] Zach Barret, State Program Office Oklahoma, Blaine Keener, field Operations Coordinator, and Alan Mayberry, Dept. AA-PHMSA.

[5] Docket PHMSA-2011-0023

[6] Summary of Costs and Factors Impacting In-Line Inspection, Direct Assessment, Pressure Testing and Pipeline Replacements for Natural Gas Transmission Pipelines, AGA, April 4, 2011

A study conducted by Neil Thompson for the Federal Highway Administration as Appendix E looked at hydrostatic testing segments that are 20 to 40 miles long.[7] For these, they had a fixed cost of $50,000 to $100,000 per project. The actual hydro testing ranged between $8,890 and $24,960 per mile.

The INGAA Foundation mentions a general cost of $250,000 to $500,000 per mile for hydro testing to estimate the impact of federal rulemaking.[8] In his testimony on the San Bruno incident, the INGAA Foundation's president and CEO, Donald Santa, quotes a general cost of hydro testing of $250,000 to $500,000 per mile.[9]

In sum, the general industry standards for hydro testing are between $58,000 and $124,000 for interstate transmission lines where long sections are tested, and between $250,000 and $500,000 for intra-state transmission lines. These costs for intra-state transmission lines are similar to the survey results from AGA.

Delfino bottom up calculations

Exhibit DRA-5 provides testimony submitted by Mr. Delfino, who calculates costs for hydro testing bottom up. Table 11 shows the total cost per mile, including mob/demob. For a detailed cost breakdown please refer to Exhibit DRA-5.

Table 11: Delfino bottom up calculations for hydro tests

Diameter	All-in cost per mile including mob/demob
12	$ 182,960

[7] Koch, Gerhardus H., Brongers, Michiel P.H., Thompson, Neil G., Virmani, Y. Paul, and Payer, Joe H., "Corrosion Costs and Preventive Strategies in the United States, Appendix E, Gas and Liquid Transmission Pipeline," report by CC Technologies Laboratories Inc. to Federal Highway Administration, Office of Infrastructure Research and Development, Report FHWA-RD-01-156, September 2001.

[8] Pipelines and Hazardous Materials Administration, U.S Department of Transportation, Advanced Notice of Proposed Rulemaking, Safety of Gas Transmission Pipelines Docket No. PHMSA-2011-0023 RIN 2137–AE72 Interstate Natural Gas Association of America Policy-Level Comments November 2, 2011

[9] Testimony Of Donald F. Santa President And CEO Interstate Natural Gas Association Of America Before The Subcommittee On Surface Transportation And Merchant Marine Infrastructure Committee On Commerce, Science And Transportation United States Senate Hearing Regarding Pipeline Safety Since San Bruno And Other Recent Incidents October 18, 2011

16	$	212,080
24	$	284,760
36	$	431,240

Delfino's hydro test cost calculations fall within the range of those reported by AGA and INGAA.

G. Findings from PG&E Hydro Testing Cost Proposal and Comparison to Industry Standards

PG&E is proposing to test 783 miles in Phase 1 for a total cost of $404M for 165 projects. The average cost per mile tested is $517,000.[10] Of the 783 miles, 390 or half, are less than 12" in diameter.

The average length per project is 4.6 miles. The cost detail presented by PG&E is an all-in rate, a test header charge, a move around charge and a mob/demob charge, all dependent on diameter. The details are in Table 12.

Table 12: Details of PG&E Hydro testing Costs

	12 and under	**14"-20"**	**22"-28"**	**30"-42"**
Cost from PG&E Hydro Test Assumption Matrix $/mile	$ 158,400	$ 205,920	$ 237,600	$ 311,520
Header	$ 15,000	$ 20,000	$ 25,000	$ 40,000
Move Around	$ 200,000	$ 300,000	$ 400,000	$ 500,000
Mob/demob	$ 500,000	$ 500,000	$ 500,000	$ 500,000

The hydrostatic testing all-in rate is calculated from the detailed Level 3 estimate provided by Gulf in DR_DRA_055-Q03Atch01 – Atch04[11] and shows the breakdown of all-in costs in Table 13.

[10] Note that PG&E reports an average of $95 per foot, yielding $501,400 per mile, p3-42.

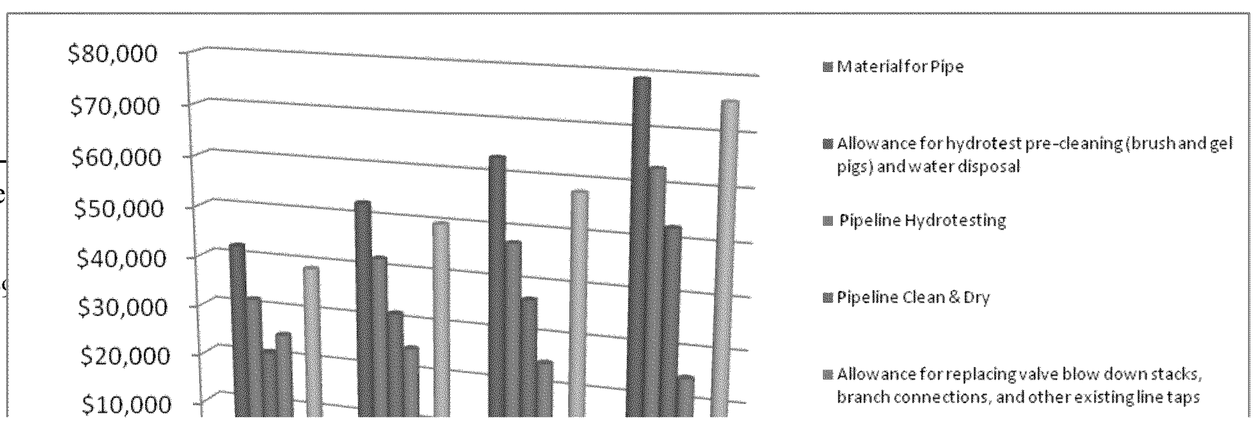
Table 13: Level 3 Estimates from Gulf Data

		Less than 12"	14"-20"	22"-28"	30"-42"
1.1 Line Pipe		$ 500	920	4480	8200
2.6 Construction - Hydro testing					
Allowance for hydro test pre-cleaning (brush and gel pigs)		$ 42,240	52800	63360	79200
Pipeline Hydro testing		$ 31,680	42240	47520	63360
Pipeline Clean & Dry		$ 21,120	31680	36960	52800
Allowance for replacing valve blow down stack, branch connections, and other existing line taps		$ 25,000	25000	25000	25000
Subtotal Construction - Hydro test		**$ 120,040**	**$ 151,720**	**$ 172,840**	**$ 220,360**
3.0 Commissioning	1%	$ 1,205	$ 1,526	$ 1,773	$ 2,286
4.1 Customs Duties, Freight & Taxes					
Materials, 9.5%, Freight 12%	9.50%	$ 108	198	963	1763
5.1 Engineering, Design & Survey	10%	$ 12,200	15400	18000	23300
6.1 Land ROW, Construction Easements & Environmental Mitigation	6%	$ 7,320	9240	10800	13980
7.1 Regulatory Permits	3%	$ 3,660	4620	5400	6990
8.1 Construction Management & QA/QC	5%	$ 6,100	7700	9000	11650
9.1 Owners Overhead					
PG&E Labor (10% Engineering & construction Mgmt.), Material Burden (15% of Material Cost, AFUDC Cost (5.24% of Total Cost)	10%	$ 9,928	$ 12,575	$ 15,209	$ 20,048
Total Cost From Level 3 Estimates		**$ 161,061**	**$ 203,900**	**$ 238,465**	**$ 308,576**

Note the difference between Gulf Level 3 and PG&E Assumption Matrix for all-in cost. At this point we have not requested an explanation for this.

Graph 2 illustrates the cost details. Allowances for hydro test pre-cleaning, the red bar, dominate all other costs. Note, at this point we have not requested an explanation for the high pre-cleaning costs.

Graph 2: PG&E Breakdown of Costs for Hydro Testing



[11] The

57410

When all mob/demob, move around, header, bores and HDD, as well as customer outreach, management and escalation costs are added, PG&E's cost per mile reaches $517,000. This cost falls into the high range of industry standards, even though half of the pipes tested are small, 12" diameter.

A closer examination of mob/demob costs revealed that there is some confusion about what these costs represent. In response to DRA_026-Q06[12], PG&E states that this "represents the fixed costs of performing the entire hydro test, regardless of line length or diameter. This estimate covers the fixed price for the strength test, pipe cleaning, water handling/storage/disposal, bell-hole excavations, and drying of the pipeline ... " But, in PG&E's Testimony, cost per foot includes pre-cleaning, in-line tools, line filling as well as post test cleaning. [13]

A request for further clarification is detailed in DRA-061-Q04.[14] The data request is as follows:

> *PG&E states that the cost per foot models developed include pre-cleaning, in-line tools, line filling, as well as post test cleaning. (Testimony p. 3-41.) In your response to DRA_026-06 you describe the mob/demob cost to include pipe cleaning, water handling/storage/disposal and drying of pipeline (GasPipelineSafety OIR_DR_DRA_026Q06). Please clarify which portions*

---

[12] See Attachment A for details

[13] PG&E Testimony p. 3-41

[14] See Attachment A for details

of the model (per foot or mob/demob) include which of these costs.

The response is as follows:

> *The strength testing project cost models were based on total job costs, normalized by pipe diameter and length of test, and escalated to 2011-2014 costs, using PG&E historical strength testing project costs (see PG&E's response to GasPipelineSafety OIR_DR_DRA_026-Q01Atch02 (tab "sheet 1"), Gulf Interstate Engineering (GIE) experience, and unit rate costs provided by ARB, Inc. PG&E's historical hydrotesting costs include the costs for all phases of the strength test, including but not limited to, engineering design and estimating, temporary land acquisition, permitting for excavating and test water disposal, mobilization of material and equipment, bell hole excavations, isolating and clearing the pipeline, securing water, pre-cleaning, test pigs, pipeline filling, testing, post line cleaning, water handling storage and disposal, pipeline drying, tie-ins, re-pressurization, site clean-up and restoration. Analysis of the historical PG&E hydrotesting projects costs confirmed that the function between job scope (diameter and length) and cost was not linear, but rather there was a baseline cost for all projects regardless of the scope size. Many of the project tasks and resulting costs referenced above are fixed/baseline, meaning these costs will be roughly the same for a 2,000 foot hydrotest or a 2 mile hydrotest. The variable cost components are volumetric based, such as the time to clean a pipeline, volume of test water required, water storage tanks, water treatment & disposal, time to fill a line, time to dewater, and time to dry a line.*
>
> *Once the concept of the baseline costs were understood, we developed an approximate linear relationship between scope and incremental unit cost on a price per foot. From this concept we were able to identify the cost factors listed in Chapter 3 testimony on page 3E-16 (Chapter 3, Attachment 3E, Appendix 3.3). The baseline cost is shown as the "Mob/Demob Charge" and the linear portion of the model is shown as the "Hydrostatic Testing All-in Rate ($/ft)". From past experience, we understood that if a project required multiple tests, each additional site would not require the same initial set up cost as the first test, so we captured this with a "Move Around / Test Section Charge" which comes in less expensive than the "Mob/Demob Charge" except for the 30" to 42" size classification.*

This lacks explanation and is not responsive to the data requested. A budget item for $500,000 needs a thorough justification.

H. Recommendations for PG&E's Hydro Testing Costs

PG&E has a fixed cost of mob/demob to initiate any hydro test project. This large fixed cost is the main reason why PG&E's costs fall in the higher end of the range of hydro test costs found in the AGA industry survey. Given that half of PG&E's hydro tests are on small pipe diameter, these fixed costs need a thorough budget justification. Most industries surveyed by AGA report a test cost per mile of less than $200,000. PG&E proposes an average cost of over $500,000 per mile hydro tested. This is 150% more than the industry median cost.

IV. Other Costs

A. Escalation

PG&E calculates escalation based on project completion. This must be an oversight, as costs are known at the planning stage and procurement is completed before the project begins, and there should not be additional inflation carried through to the completion of the project. We recommend that escalation be carried forward to the completion of design and engineering, and not to the completion of the project.

According to the Congressional Budget Office ("CBO"), the Consumer Price Index ("CPI") is projected at an annual average of between 1.1% and 1.5% for the years 2012 to 2014.[15]

The Bureau of Labor Statistics ("BLS") projects that inflation will remain restrained while the economy is expected to expand at a steady pace to 2014.[16]

Since changes in steel prices could affect costs for replacement, information from industry analysts was obtained in order to assess the potential impact on the PSEP and the potential bearing on escalation. Steel prices are expected to remain flat through 2016, although there could be local bottlenecks according to one source.[17] The Financial Times[18] reported that analysts projected steel prices to jump by 66 % in 2011. In 2004,

[15] www.cbo.gov/ftpdocs/108xx/doc10871/Chapter2.shtm

[16] bls.gov/opub/mlr/2005/11/art2full.pdf

[17] http://www.steelonthenet.com/pricing_model.html

[18] http://www.ft.com/cms/s/0/758d30da-2720-11e0-80d7-00144feab49a.html#axzz1h23FmbEj

the price of steel went up 70%. But other analysts had different projections. Credit Suisse predicted a 41% increase in 2011 with prices peaking in 2012. Voestalpine predicted a 13% increase. There has been a significant increase in the output of steel, with a global average increase of 32.2%, and this has helped to stabilize prices. According to the Steel Business Briefing, steel prices went down in 2011, so all predictions of a sharp up-rise in 2011 were wrong.[19] The price index globally dropped from 195.5 to 176.6 between Dec 2010 and Nov 2011.[20] This shows that predictions for steel prices are precarious and not very reliable and hence should not be used as a potential measure for escalation. If steel prices rise unexpectedly, the increased cost should be captured in contingencies.

In summary, with an adjustment of escalation to be carried through to the engineering, design and procurement stage, and a realignment of escalation to conform to projections by the CBO and the BLS, the total escalation costs should be significantly lower.

B. Consumer Outreach

For Consumer Outreach, PG&E used an estimate that was based on the instances of customer outreach, data base requirements and data research costs, temporary customer relocation, and labor for outreach.[21] This amounted to an overall adder to each project of 2.9%.

The total budget for Consumer Outreach is $29.5M. There are $5.696M allotted to "Database Operations/Support," "Database," and "CAS Database." In DRA_048_Q001, PG&E provides the following explanation for these expenditures: “For each PSEP project, customer data needs to be pulled for use in mailing letters, IVR calls, canvassing … This process is currently manual and requires quality control to ensure the data is formatted properly and meets the criteria given for each type of outreach…. "

---

[19] http://www.worldsteelprices.com/

[20] http://www.steelbb.com/

[21] GasPipelineSafetyOIR_DR_DRA_008-Q15Atch01, not in Attachment A as it is a spreadsheet.

A CAS Database (Oracle), managed by Targetbase, will be used at a cost of $900,000. When verifying CAS costs from DRA-008-Q15Atch01, they add up to $1.2M and not to $900K as reported later in DRA_048_Q001.

PG&E further explains that the Database Operations/Support determines how many customers are contacted for each project using a GIS map and pulling data from a Reporting Solution System (RSS) Database. The GIS generated map is used to walk the line to verify customer outreach and special situations, and to make a poster board where customers can get more information in open houses. This database work is estimated at $1.5M as per DRA_048-Q001, and again, differs from that reported in DRA-008-Q15Atch01, which shows this at $2M.

In addition, according to PG&E, a complete new database is required to track customer outreach, including surveys of customer satisfaction, for a total cost of $1.872M as per DRA_048-Q001, or $2.496M DRA-008-Q15Atch01.

The information provided in the two responses differs significantly. Table 16 below summarizes the differences between the two data request responses.

Table 16: Differences in Costs for Customer Outreach Data Bases from two Data Responses.

	DRA-008-Q15Atch01	DRA-048-Q001
CAS	$ 1,200,000	$ 900,000
Database Operations/Support	$ 2,000,000	$ 1,500,000
New Database for tracking	$ 2,496,000	$ 1,872,000
Total	**$ 5,696,000**	**$ 4,272,000**
Difference		**$ (1,424,000)**

Similarly, a difference in cost was found for Government relations as shown in Table 17.

Table 17: Differences in Cost for Government Relations from two Data Responses

	DRA-008-Q15Atch01	DRA-048-Q001
Government Relations	$ 3,607,604	$ 3,033,000
Difference		$ (574,604)

In addition, there is an item called Customer Insight Research for $500,000, another $2M for database operations support, an a $700,000 agency fee - and these are just the big ticket items.

In total, there are over $20M in the budget for Consumer Outreach that are mostly related to databases and database queries, data research and government relations.

In its DRA-048-Q001, PG&E suggests that government relations with the Mayor, City Manager, Council Members, etc is invaluable to obtain permits. Permitting should be included in project costs, not named here as an additional cost. Due to the San Bruno explosion, the public is well aware of the issue of pipeline safety. Public officials should be very sensitive to the need for this work and be willing to help PG&E through normal channels.

C. Conclusion

In conclusion, the assumptions made for both escalation and customer outreach reveal insufficient justification.

The PSEP's escalation is similar to the CPI of the past 10 years, but the CBO projects a CPI increase for the next 3 years of 1.1% to 1.5%. More importantly, escalation calculations are based on project completion rather than on project commencement, when design and engineering, as well as procurement, have established the true cost of a project. This back-loading adds unsubstantiated costs to the overall plan.

The Customer Outreach budget does not provide a clear picture of its effectiveness and raises many questions on individual budget items. Three more databases and more Government relations do not lend credibility to PG&E's vision for effective public relations.

We recommend that PG&E re-evaluates how it uses escalation and at what level, and re-focuses its customer outreach program.

Sample Evaluations

In order to provide DRA with a clear view of the quality of the PSEP, 2 projects were chosen and examined in detail for this testimony. These are L-103[22] and L-108[23]. Overall, we looked at perhaps 20 projects and found their quality to be similar to the ones presented here. The two projects presented are a random selection. After examining many projects, it was decided to pick two projects that had not been looked at, and to analyze these for the testimony. When these projects were picked, the outcomes of the analyses were not known and there is no a prior bias in the selection of these two projects.

L-103 Replacements and Hydro Tests.

L-103 comprises 25.2 miles and 122 segments, that run from East to West outside of San Juan Bautista and then in a South-Westerly direction across a wilderness region to Salinas. The northern part of the line consists of 23 segments for replacement, totaling 7.8 miles. The southern part consists of 17 segments that are being hydro tested, totaling 2.5 miles.

As detailed in Testimony DRA-04, BEAR took out some sections, but added others. In total, BEAR recommends 17 replacement segments for 5.7 miles and 5 segments for hydro testing totaling 0.1 miles. In addition, BEAR recommends remaining life assessment on some segments. Table 18 details the changes. As can be seen, BEAR's changes amount to a reduction of replacements to 2.1 miles, or roughly 20 percent.

[22] WP3-46 – 48, with Map at WP3-591

[23] WP 3-63 – 65, with Map at WP3-595 - 597

Table 18: PG&E versus BEAR replacements on L-103

103	105.3	12.75	176	12.75	REPL	REPL
103	105.9	12.75	399	12.75	REPL	REPL
103	108	12.75	771	12.75	REPL	REPL
103	109	12.75	5280	12.75	REPL	REPL
103	110	12.75	5280	12.75	REPL	REPL
103	111	12.75	4605	12.75	REPL	REPL
103	113	12.75	5140	12.75	REPL	REPL
103	114	12.75	1682	12.75	REPL	REPL
103	115.1	12.75	147	12.75	REPL	REPL
103	115.5	12.75	1266	12.75	REPL	REPL
103	120	12.75	5280	12.75	REPL	
103	121	12.75	5280	12.75	REPL	
103	122.6	12.75	1173	12.75	REPL	REPL
103	123.8	12.75	1558	12.75	REPL	REPL
103	126.09	12.75	106	12.75	REPL	REPL
103	126.1	12.75	230	12.75	REPL	
103	126.2	12.75	283	12.75	REPL	REPL
103	126.3	12.75	482	12.75	REPL	REPL
103	126.4	12.75	116	12.75	REPL	REPL
103	128	12.75	1572	12.75	REPL	REPL
103	135	12.75	55	12.75	REPL	
103	138.7	6.625	17	12.75	REPL	
103	139	12.75	25	12.75	REPL	
				Feet	**40923**	**30036**
				Miles	**7.75**	**5.69**

Next, we examined the Class of the segments replaced, as this impacts cost significantly. Table 19 shows PG&E's classification from WP 3-48, and BEAR's reclassification using the map in WP3-591 and additionally verifying this map with a Google map.

Table 19: PG&E Class and BEAR reclassification

103	105.3	2	2
103	105.9	2	2
103	108	2	2
103	109	2	2
103	110	2	2
103	111	2	2
103	113	2	1
103	114	2	1
103	115.1	2	1
103	115.5	2	1
103	120	2	
103	121	2	
103	122.6	1	1
103	123.8	1	1
103	126.09	3	2
103	126.1	3	
103	126.2	3	2
103	126.3	3	2
103	126.4	3	2
103	128	3	2
103	135	3	
103	138.7	3	
103	139	3	

Class verification showed a mismatch between Project Summary WP 3-46 and Project Detail Worksheet, WP 3-48. Table 20 shows the details and the impact this has on costs, using the same cost assumptions as PG&E. Using the cost recommended by BEAR, a cost reduction of 61% can be achieved.

These cost savings are before HDD, Bore, move around and mob/demob. For this particular project, PG&E books $431,000 in bore costs, 4 move arounds and one mob/demob. Customer Outreach for this project is $724,768, and project management is $624,800. Because the majority of this project will be completed in 2014, project escalation amounts to $2.5M. These latter three charges can be significantly reduced.

Table 20: Class and Cost allocations

	Non-Congested	Semi-Congested	Highly Congested	Total
WP3-46 actual used	4,763	18,253	17,907	40,923
WP3-48	2,731	35,306	2,886	40,923
BEAR new DT and Reclassified	10,966	19,070		30,036
				Total
WP3-47 actual budget	$ 1,343,166	$ 8,925,717	$ 14,146,530	$ 24,415,413
IF WP3-48 is applied	$ 770,142	$ 17,264,634	$ 2,279,940	$ 20,314,716
If BEAR is applied	$ 3,092,412	$ 9,325,230	$ -	$ 12,417,642
Using BEAR Cost	$ 2,346,724	$ 7,055,900		$ 9,402,624
			% reduction	61%

Table 20 illustrates how this project is inflated by putting more miles in the highly congested category than what is listed in PG&E's database. Such hidden inflationary costs translate into further increases when the percentages for escalation, customer outreach and management are added. Additionally, when Class is verified, we found it to be different from both PG&Es database and the use in the project budget. This lack of attention to detail at the project level is astonishing and remarkable.

When examining the next section on that same line, there is a hydro test scheduled for the segments listed in Table 21 (see WP 3-812). According to BEAR's decision tree outcome, none of these sections need to be hydro tested, but a remaining life assessment is recommended. This is a savings of $1.2M. This project is for 2.45 miles on a 12" diameter pipe. This project has both a mob/demob charge of $500,000 and a move around charge of $200,000. If a median industry cost of $200,000 per mile would be applied to this project, the total cost would be roughly $500,000 or 66% less than budgeted.

Table 21: L-103 Hydro Test Segments

ROUTE	SEGMENT_NO	OD	FOOTAGE	Prop_OD	PG&E Prj_Type	BEAR Project Type
103	143	8.625	792		TEST	
103	144	10.75	2047		TEST	RLFA
103	144.3	10.75	349		TEST	RLFA
103	144.6	10.75	3042		TEST	RLFA
103	145	10.75	485		TEST	
103	145.3	10.75	850		TEST	
103	145.8	10.75	249		TEST	
103	146	10.75	558		TEST	RLFA
103	146.3	10.75	502		TEST	RLFA
103	146.4	10.75	348		TEST	RLFA
103	146.6	10.75	122		TEST	RLFA
103	147.3	10.75	483		TEST	RLFA
103	147.5	10.75	70		TEST	RLFA
103	147.7	10.75	492		TEST	RLFA
103	148	10.75	2139		TEST	RLFA
103	148.8	10.75	395		TEST	RLFA
103	151	8.625	12		TEST	TEST

In summary, L-103 with sections for replacement and hydro testing show:

- A change of segments replaced from a total of 40,923 feet to 30,036 feet applying BEAR's decision tree.
- A mismatch between Class in the PSEP, escalating price by over $4M just for the all-in cost.
- A misclassification of all segments when verified on map, resulting in a doubling of the all-in cost.
- An all-in cost savings of 61% when Decision Tree, Class and Cost are adjusted.
- No hydro test.

D. L-108 Replacements and Hydro Tests

This Line is in the northern part of the central valley and comprises several projects. L-108-1 are three segments around Stockton, L-108-2 is north of Thornton, along HWY5, and L-108-3 is in the Southern Suburbs of Sacramento. As can be seen in

Table 22, BEAR's decision tree outcome recommends 14.13 miles of replacement, much more than in the PSEP, which slated 6.7 miles for replacement.

All lines are either classified as Class 2 or Class 3, even though most of the sections clearly lie in Class 1 areas. But then at the project cost level, L-108-1 is classified and costed at the non-congested rate. Similarly, for L-108-2, Class is assigned one way on WP 3-63, and another way in project cost on WP 3-63. The same mismatch occurs on L-108-3. Overall, all mismatches are costed at a lower congestion level than indicated in the detailed workbooks for each project. A closer examination resulted in a further reclassification by BEAR.

Table 22: PG&E Class and BEAR reclassification

108	110	24	1320			TEST
108	122	16	74			TEST
108	122.1	16	2257			REPL
108	122.3	16	100			REPL
108	123	16	1637			REPL
108	123.7	16	169			REPL
108	123.8	16	444			REPL
108	124	16	550			REPL
108	124.3	16	260			REPL
108	124.6	16	100			REPL
108	125	16	185			REPL
108	125.05	16	162			REPL
108	125.1	16	1973			REPL
108	125.3	16	100			REPL
108	126	16	2640			REPL
108	126.3	16	100			REPL
108	127	16	2168			REPL
108	127.3	16	72			REPL
108	142	16	520			REPL
L – 108-1	143	16	1469	24	REPL	REPL
108	141	16	5179			REPL
L – 108-1	143.3	16	3245	24	REPL	REPL
L – 108-1	144	16	880	24	REPL	REPL
108	145	16	4554			REPL
108	146	16	839			REPL
108	146.3	16	142			REPL
108	146.35	16	168			REPL
108	146.6	16	100			REPL
108	147	16	1291			REPL
108	147.05	16	680			REPL
108	147.3	16	183			REPL
108	148	16	905			REPL
108	148.3	16	100			REPL
108	149	16	2569			REPL
108	150	16	875			REPL
108	151	16	4890			REPL
108	151.3	16	100			REPL
108	152	16	2912			REPL
108	153	16	600			REPL
108	154	16	832			REPL
108	154.1	16	1984			REPL
L-108-2	162.2	16	92	24	REPL	REPL
L-108-2	162.3	16	17	24	REPL	

L-108-2	162.4	16	200	24	REPL	REPL
L-108-2	162.6	16	180	24	REPL	REPL
L-108-2	163	16	1196	24	REPL	REPL
L-108-2	163.2	16	193	24	REPL	REPL
L-108-2	163.3	16	88	24	REPL	
L-108-2	163.6	16	399	24	REPL	REPL
L-108-2	164	16	721	24	REPL	
L-108-2	164.3	16	242	24	REPL	RLFA
L-108-2	165	16	491	24	REPL	REPL
L-108-2	165.1	16	802	24	REPL	REPL
L-108-2	165.2	16	1032	24	REPL	REPL
L-108-2	165.3	16	462	24	REPL	
L-108-2	166	16	150	24	REPL	
L-108-2	166.3	16	5517	24	REPL	
L-108-2	167	16	1788	24	REPL	
L-108-2	167.1	16	31	24	REPL	
108	178.91	16	310			REPL
108	179.01	16	1885			REPL
108	179.1	16	536			REPL
108	179.3	16	1917			REPL
108	179.5	16	3831			REPL
108	179.7	16	1127			REPL
L-108-3	180.7	16	300	24	REPL	REPL
L-108-3	181.7	16	912	24	REPL	REPL
L-108-3	180	16	52	24	REPL	
L-108-3	180.5	16	2481	24	REPL	REPL
L-108-3	181	16	1987	24	REPL	REPL
L-108-3	181.3	16	234	24	REPL	
L-108-3	181.6	16	271	24	REPL	REPL
L-108-3	181.9	16	82	24	REPL	
L-108-3	183	16	1147	24	REPL	REPL
L-108-3	184	16	5384	24	REPL	REPL
L-108-3	184.3	16	112	24	REPL	RLFA
L-108-3	184.6	16	5	24	REPL	
L-108-3	196	16	3213	24	REPL	RLFA
				Total	**35375**	**74607**
				Miles	**6.70**	**14.13**

The big cost driver on these three projects is replacing 16" pipe with 24" pipe. It is not clear why there is a need for a diameter increase, as all adjacent sections are 16". Scaling down each project to 16" pipe and using BEAR decision tree on those three projects with BEAR costs yields significant savings as detailed in Table 23.

As BEAR's decision tree yielded much more replacement than PG&E has planned for Line 108, we added these additional costs separately and this is summarized in Table 24.

Table 23: Class and Cost allocations

	Non-Congested	Semi-Congested	Highly Congested	Total
WP3-58	5,594	-	-	5,594
BEAR new DT and Reclassified	5,594	-		5,594
				Total
WP3-59	$ 2,880,910	$ -		$ 2,880,910
Using BEAR Cost	$ 2,774,624	$ -		$ 2,774,624
If Same Pipe Diameter And BEAR Cost	$ 1,851,614			$ 1,851,614
			% reduction	36%
	Non-Congested	Semi-Congested	Highly Congested	Total
WP3-61	11,439	800	1,362	13,601
BEAR new DT and Reclassified	3,695	890		4,585
				Total
WP3-62	$ 5,891,085	$ 672,800	$ 1,727,016	$ 8,290,901
Using BEAR Cost	$ 1,832,720	$ 720,900		$ 2,553,620
If Same Pipe Diameter And BEAR Cost	$ 1,223,045	$ 524,210		$ 1,747,255
			% reduction	79%
	Non-Congested	Semi-Congested	Highly Congested	Total
WP3-64	12,614	353	3,213	16,180
BEAR new DT and Reclassified	12,482			12,482
				Total
WP3-65	$ 6,496,210	$ 296,873	$ 4,074,084	$ 10,867,167
Using BEAR Cost	$ 6,191,072	$ -		$ 6,191,072
If Same Pipe Diameter And BEAR Cost	$ 4,131,542	$ -		$ 4,131,542
			% reduction	62%

Table 24: Additional replacements from Bear Decision Tree

	All-In cost for BEAR added segments			Total
Assuming semi congested		51946		51946
Same OD, BEAR Cost		$ 30,596,194		$ 30,596,194
			Miles Proposed	All-in Cost
Total Cost of Replacement on L-108 by PG&E			6.7	$ 22,038,978
Total Cost of Replacement on L-108 by BEAR			14.13	$ 38,326,605

In conclusion, L108 is a line that comprises three projects. The detailed examination of this line revealed the following:

- A change of segments replaced from a total of 35,375 feet to 74,607 feet applying BEAR's decision tree.
- A mismatch between Class in the PSEP and a misclassification of all segments when verified on map, resulting in large increases of the all-in cost in the original project.
- An increase in diameter from 16" to 26" increasing costs significantly.

V. Conclusion

In order to verify PG&E's PSEP replacement costs, three major studies were reviewed. The research conducted by UC Davis' Institute of Transportation Studies and the Pacific Northwest National Laboratory used data from the Oil & Gas Journal to establish all-in cost for gas pipelines replacement. The UC Davis study used 893 projects totaling 20,000 miles, and the INNL study used 2,000 segments. The size of these studies and data used are representative of the all-in cost for gas pipeline replacement and reflect an industry standard that should be followed in PG&E's PSEP.

Based on these studies, PG&Es costs were found to be much higher and we recommend a reduction of 20% of replacement costs in the PSEP. This would be more in line with industry standards.

Overall, PG&E's cost for hydro testing are significantly higher than those found by AGA or INGAA. Of particular interest were the move around and mob/demob charges which seem to more than double the cost per foot tested. PG&E provided an insufficient explanation for these fixed costs.

Since hydro testing will become an integral part of PG&E's safety management plan, it will be important to have a clear idea how costs are driven in such a plan. One would need to know what is included in the details of the actual test and what is included in mob/demob. The same applies for move around.

These findings suggest that PG&E re-examine its cost structure for hydro testing its pipelines and consider a search for suppliers of this service that provide an estimate more in line with industry standards.

The detailed project review of Line 103 and 108 revealed that PG&E used higher congestion levels than necessary and this increased project costs significantly. For Line 103, this resulted in a $4M increase in cost. For Line 108, an increased pipe diameter increased costs considerably, and it is not clear why a larger diameter is used there as all adjacent segments are 16" diameter. Applying the BEAR decision tree outcomes revealed that some segments did not need to be replaced and some did not need testing, while other segments did need replacement. These two lines reviewed illustrate the need for a more thorough development of PG&E's safety enhancement plan.

ATTACHMENT A

PACIFIC GAS AND ELECTRIC COMPANY Gas Pipeline Safety
OIR Rulemaking 11-02-019 Data Response

PG&E Data Request No.:	DRA_026-06		
PG&E File Name:	GasPipelineSafetyOIR_DR_DRA_026-Q06		
Request Date:	November 18, 2011	Requester DR No.:	026 (TCR-8)
Date Sent:	December 5, 2011	Requesting Party:	Division of Ratepayer Advocates
PG&E Witness:	Todd Hogenson	Requester:	Tom Roberts

QUESTION 6

Hydrotest project mob/demob cost of $500k appears high compared to PG&Es estimated mob/demob for replacement projects, which range from $45k to $95k per project. Explain the reason these cost estimates are so different.

ANSWER 6

Both cost estimates were derived from models used to predict future costs of pipeline projects based on the aggregate totals of previous projects. Although both line items are called "mob/demob costs," they are not the same, and an apples-to-apples comparison cannot be made. The mob/demob cost of $500K for hydro test work represents the fixed costs of performing the entire hydro test, regardless of line length or diameter. This estimate covers the fixed price for the strength test, pipe cleaning, water handling/storage/disposal, bell-hole excavations, and drying of the pipeline, all of which take approximately 3 to 5 weeks to complete. The mob/demob costs for the pipe replacement projects represent the movement of excavation, welding, and pipe movement equipment and manpower to and from the project site. All the other variables of completing the pipe replacement are included in the construction price per foot, not in the "mob/demob" line item.

PACIFIC GAS AND ELECTRIC COMPANY Gas Pipeline Safety OIR Rulemaking 11-02-019 Data Response

PG&E Data Request No.:	DRA_061-04		
PG&E File Name:	GasPipelineSafetyOIR_DR_DRA_061-Q04		
Request Date:	January 11, 2012	Requester DR No.:	061 (TCR-25)
Date Sent:	January 23, 2012	Requesting Party:	Division of Ratepayer Advocates
PG&E Witness:	Todd Hogenson	Requester:	Tom Roberts

QUESTION 4

PG&E states that the cost per foot models developed include pre-cleaning, in-line tools, line filling, as well as post test cleaning. (Testimony p. 3-41.) In your response to DRA_026-06 you describe the mob/demob cost to include pipe cleaning, water handling/storage/disposal and drying of pipeline (GasPipelineSafetyOIR_DR_DRA_026Q06). Please clarify which portions of the model (per foot or mob/demob) include which of these costs.

ANSWER 4

The strength testing project cost models were based on total job costs, normalized by pipe diameter and length of test, and escalated to 2011-2014 costs, using PG&E historical strength testing project costs (see PG&E's response to GasPipelineSafetyOIR_DR_DRA_026-Q01Atch02 (tab "sheet 1"), Gulf Interstate Engineering (GIE) experience, and unit rate costs provided by ARB, Inc. PG&E's historical hydro testing costs include the costs for all phases of the strength test, including but not limited to, engineering design and estimating, temporary land acquisition, permitting for excavating and test water disposal, mobilization of material and equipment, bell hole excavations, isolating and clearing the pipeline, securing water, pre-cleaning, test pigs, pipeline filling, testing, post line cleaning, water handling storage and disposal, pipeline drying, tie-ins, re-pressurization, site clean-up and restoration. Analysis of the historical PG&E hydro testing projects costs confirmed that the function between job scope (diameter and length) and cost was not linear, but rather there was a baseline cost for all projects regardless of the scope size. Many of the project tasks and resulting costs referenced above are fixed/baseline, meaning these costs will be roughly the same for a 2,000 foot hydro test or a 2 mile hydro test. The variable cost components are volumetric based, such as the time to clean a pipeline, volume of test water required, water storage tanks, water treatment & disposal, time to fill a line, time to dewater, and time to dry a line.

Once the concept of the baseline costs were understood, we developed an approximate linear relationship between scope and incremental unit cost on a price per foot. From this concept we were able to identify the cost factors listed in Chapter 3 testimony on page 3E-16 (Chapter 3, Attachment 3E, Appendix 3.3). The baseline cost is shown as the "Mob/Demob Charge" and the linear portion of the model is shown as the "Hydrostatic Testing All-in Rate ($/ft)." From past experience, we understood that if a project required multiple tests, each additional site would not require the same initial set up cost as the first test, so we captured this with a "Move Around / Test Section Charge" which comes in less expensive than the "Mob/Demob Charge," except for the 30" to 42" size classification.

PG&E Data Request No.:	DRA_048-01		
PG&E File Name:	GasPipelineSafetyOIR_DR_DRA_048-Q01		
Request Date:	December 20, 2011	Requester DR No.:	048 (TCR-21)
Date Sent:	January 5, 2012	Requesting Party:	Division of Ratepayer Advocates
PG&E Responder:	Greg Hoaglin	Requester:	Tom Roberts

PACIFIC GAS AND ELECTRIC COMPANY Gas Pipeline Safety OIR
Rulemaking 11-02-019 Data Response

QUESTION 1

In PG&E's response to DRA 008-Q15Atch01, PG&E provides a detail cost breakdown of the estimated outreach costs and calculates a 2.9% rate for Pipeline Modernization, totaling $29.5 Million. There are items database operations/support, data base and CAS data base listed under base customer outreach costs and data research costs not associated with a specific phase, totaling almost $6 Million. (See F31-I31, F35-I35 and F36-I37). Additionally, there are $3.6 Million allocated to Government Relations. Please define the following, compare to each other (a-c only), and provide examples of the expected expenditures:

a. Database Operations/support,

b. Data Base,

c. CAS Data Base,

d. Government Relations,

ANSWER 1

The estimated customer outreach costs are for all of the gas pipeline projects, including hydrotests, pipeline replacements, in-line inspections, and valve automation projects. Each of these projects requires some type of data to be pulled, compiled, and formatted for use to ensure each outreach focuses on the appropriate mix of customers.

For each PSEP project, customer data needs to be pulled for use in mailing letters, Interactive Voice Response (IVR) calls, canvassing, and notification of gas venting activities. This process is currently manual and requires quality control to ensure the data is formatted properly and meets the criteria given for each type of outreach. The specific types of expenditures referenced in this data request are discussed below.

CAS (Customer Analytical System) Database

The CAS Database is an Oracle database that sources data from Customer Care and Billing (CC&B), Field Automated System (FAS), Outage Information System (OIS), Web, IVR, and Marketing Decision Support System (MDSS). CAS also sources residential customer demographic information from Acxiom, an external data aggregator. This database, managed by Targetbase, is utilized for generating customer data for customer letters, IVR calls, and other customer communications, as well as pertinent demographic data for use in determining if there is a need for communications to be translated in to non-English languages.

Customer data from this system is properly formatted for use in the IVR system and mail system for customer letters.

The estimated cost of this database work is $1,879 per project, or $900,000 for 479 total projects estimated for 2012-2014.

Database Operations/Support

For each project, we need to determine how many customers to contact within a predetermined proximity. In 2011, PG&E contacted customers located within at least 500 feet of the pipeline segment being tested. This required us to first generate a Geographic Information System (GIS) map of the pipeline segment, as well as a GIS-based list of customers. To achieve this, customer data needs to be pulled from the Reporting Solution System (RSS) Database which then needs to be formatted to be used by the GIS Database to generate a map of the pipeline segment, along with a list of the customers within 500 feet of the project. The expectation is that, on average, there will generally be 227 customers per mile who are within 500 feet of a given pipeline project. The GIS map is utilized for two purposes.

First, the GIS map with customers is utilized for walking the pipeline segment to identify any potential customer impacts that may require additional communications. Examples include potential notification of: interruption of gas service or need to arrange temporary gas service supplied via Compressed Natural Gas (CNG) or Liquefied Natural Gas (LNG) mobile units; property damage due to need to dig on or near customers' property; need for temporary customer relocation for safety purposes; and impacts on ingress and regress to customers' property.

Second, the GIS map for each project is turned into a poster board that is used for 1-2 open houses for each project, where customers are invited to come and get more information on the project in their area and to ask questions.

We also utilize the RSS and GIS databases to generate what is known as a "cloud map." The "cloud map" is generated prior to every gas venting operation and enables us to expand communications beyond the 500 foot proximity for the gas pipeline projects to customers located within 1-2 miles from the gas venting location. This GIS customer data is then cross-checked with the CAS Database, and formatted for use to send out a gas venting IVR call to 10,000 – 30,000 customers.

(GasPipelineSafetyOIR_DR_DRA_048-Q01 Page 2)
The estimated cost of this database work is $3,131 per project, or $1.5 million for 479 projects estimated for 2012-2014.

Database

Using the existing database systems discussed above requires data to be pulled from several database sources for each pipeline project and compiled into the appropriate format to generate the appropriate GIS map, "cloud map," IVR calls, letters, and other communication needed to outreach to the appropriate customers.

At the time this customer outreach estimate was compiled in July 2011, it was determined that a new and separate database system could be beneficial to track and archive customer outreach. This will enable to us keep a record of which customers were contacted and when, as well as what type of contact (letter, IVR call, door-hangers, in-person, or canvassing) each customer received. This data can then be utilized for future reporting and to establish a list of customers for periodic customer surveys to monitor the effectiveness of our outreach efforts.

The estimated cost of this database work is $3,908 per project or $1.872 million for 479 projects estimated for 2012-2014.

Government Relations

Government Relations plays a critical role in the outreach for gas pipeline projects. Before each gas project, Government Relations communicates directly with City officials, including the Mayor, City Manager, City Council Members, Director of Public Works, and other local leaders. The purpose of these communications is to ensure the public officials are aware of the gas projects PG&E has planned in that community. This proactive communications has proven invaluable to obtaining permits and permissions for access to certain areas in a timely manner. During the project, Government Relations keeps the various public officials informed on progress and facilitates resolutions of any local public affairs or governmental issues that may arise. After a project is completed, Government Relations communicates back to the various public officials on the results of the test or other work that was completed.

There is $3.033 million estimated for 2012-2014, which is for 5 FTE's of labor at a $116 per hour fully loaded rate.
(GasPipelineSafetyOIR_DR_DRA_048-Q01 Page 3)