# Gas Distribution Issues for Pacific Gas and Electric Company

Prepared testimony of
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**CPUC**
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# Table of Contents

# Tables and Figures

## Tables



## Figures

## Table 1: Summary of Gas Distribution Safety Testimony

PG&E 2014 GRC
TURN Gas Distribution Recommendations
2014 Spending ($000s)

| MWC or MAT | Expenses Description | PG&E | TURN | Difference | TURN Alt | TURN Alt Diff |
|---|---|---|---|---|---|---|
| JSL/JSE | DIMP Risk Assessment | $2,234 | $1,000 | $1,234 | | |
| JSL/JSE | DIMP Data Collection | $600 | $500 | $100 | | |
| JSL | DIMP Program Management | $4,450 | $3,350 | $1,100 | | |
| JSL | Tee Cap Replacement | $7,279 | $0 | $7,279 | | |
| JSK | Cross-Bored Sewer Program | $14,458 | $6,002 | $8,456 | $12,166 | $2,292 |
| JSA | DIMP-Driven Leak Survey | $2,023 | $0 | $2,023 | | |
| JS_NA | Emergent Work - Unallocated | $5,473 | $0 | $5,473 | | |
| FHJ | Raise Low Pressure Vents | $3,959 | $160 | $3,509 | | |
| DE | Leak Survey | $33,800 | $28,280 | $5,520 | | |
| DE | Accelerated Grade 3 Checks | $3,140 | $0 | $3,140 | | |
| FI | Leak Repair | $102,100 | $74,300 | $27,800 | | |
| DDD | Pilot Relights | $31,513 | $24,995 | $6,518 | | |
| | **Total Expenses** | **$211,029** | **$138,587** | **$72,152** | | |

| | | 2014 | | | 2015 | | | 2016 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Capital | PG&E | TURN | PG&E>TURN | PG&E | TURN | PG&E>TURN | PG&E | TURN | PG&E>TURN |
| 74 | Regulator Replacements | $14,440 | $3,610 | $10,830 | $14,861 | $3,715 | $11,146 | $15,296 | $3,824 | $11,472 |
| 14 | Distribution Pipeline Replacement | $329,344 | $304,892 | $24,452 | $335,272 | $310,512 | $24,760 | $342,471 | $315,905 | $26,566 |
| 50B | Reliability Service Replacements | $2,051 | $0 | $2,051 | $2,088 | $0 | $2,088 | $2,141 | $0 | $2,141 |
| 50E | Emergency Shutdown Zone Valves | $27,818 | $13,909 | $13,909 | $28,319 | $14,160 | $14,159 | $29,027 | $14,514 | $14,513 |
| | **Total Capital** | **$373,653** | **$322,411** | **$51,242** | | | **$52,153** | | | **$54,692** |

## *A. Gas Distribution and Safety*

### 1. Introduction

PG&E supports much of the new spending proposed in gas distribution with the argument that the initiatives promote safety. In some cases, PG&E also argues that benefits to system reliability and operational improvements accrue as a result of the spending.

Because of the role that "safety" plays in PG&E's supporting arguments for many of its new and augmented efforts in gas distribution, we briefly discuss TURN's position and public sector considerations regarding safety.

TURN's position is that public and employee safety are of paramount importance, and that safety spending should be effective and efficient. Our discussion below focuses on the role of the public sector in promoting safety, and seeking efficient use of public and utility ratepayer funds for safety.

As important as safety is, it is one of many considerations related to individuals' spending and activities in daily life. In the public sector, the limits on consumer or taxpayer resources require decision-makers to balance the benefits of safety improvements against the costs.

As a result public decision-makers must insure that public funds spent for safety are used as effectively as possible. While ratepayer funds are not usually considered public funds as are tax revenues, few people can realistically live their lives without relying on utility services. Ratepayers pay a fee for service, and have the option of reducing the service to reduce their costs, unlike taxes. However, the prices that determine ratepayers' bills are determined by public decision-makers. TURN believes that those decision-makers have an obligation to seek the most effective and efficient use of these fees, in this case, to reduce risk, and improve safety.

Where information is available on the value of benefits from safety measures, benefit-cost analysis provides a way to determine what the most efficient use of funds may be, and possibly the most efficient level of spending.

Where benefit information is limited, there are alternative, indirect methods for determining the value of safety expenditures. This includes considering what other decision-makers, in their deliberations, have found to be worthwhile efforts. Their decisions provide a "revealed preference" for action, that is a point of reference for other decision-makers.

Where information for indirect valuation of safety, or determining the "revealed preference" of decision-makers, is not available, cost-effectiveness comparisons of alternative investments are useful to determine which programs and activities will provide the greatest safety, or risk reduction benefit available. This is the primary mechanism TURN uses to evaluate several of PG&E's proposed programs. All too often we find that PG&E has proposed a scatter shot approach, rather than evaluating which programs best promote safety, in order to effectively allocate resources.

**2. Federal Pipeline Safety Regulations in this Ratecase**

The federal government applies a formal process for considering the benefits and costs of proposed regulations, including those proposed to improve public safety. The goal of this effort is to direct resources toward the greatest social good.[1]

Even in safety regulations, the federal agency developing the proposal must consider the costs of the regulations against the benefits that they expect to result. The goal is to "provide decision maker with a clear indication of the most efficient alternative – that is, the alternative that generates the largest net benefits to society..."[2]

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[1] "Guidelines to Standardize Measures of Costs and Benefits and the Format of Accounting Statements, Memorandum M-00-08, Office of Management and Budget, March 22, 2000, p. 2 http://www.whitehouse.gov/sites/default/files/omb/assets/omb/memoranda/m00-08.pdf

[2] Regulatory Impact Analysis: Final Rule, Pipeline Safety: Integrity Management Program for Gas Distribution Pipelines, PHMSA-RSPA-2004-19854, Oct. 29, 2009, p. 8

Specifically the federal Pipeline Hazardous Material Safety Administration's (PHMSA) Integrity Management Program for Gas Distribution Pipelines (DIMP) encourages pipeline operators to pursue cost-effective steps to improve safety, given their safety resources. The regulations state:

> "Operators devote resources to comply with the core pipeline safety regulations. These safety resources can be made available for other purposes where a low level of risk makes a longer interval acceptable. Applying those resources to other safety tasks to address higher risks can result in an overall improvement in safety".[3]

**3. Gas Pipeline Safety Analysis**

Related directly to the case at hand is PHMSA's evaluation of its most recent DIMP regulations. That agency considered a variety of alternative approaches to reduce risk from potential incidents on gas distribution pipelines, with the intention of selecting the alternative with the highest probable net benefits.[4] The DIMP requirements chosen, which play a central role in PG&E's gas distribution investment and expense proposals, are backed by an economic analysis of the new requirements, adopted in 2009.

The DIMP rule is intended to provide cost-effective improvements in safety and operations of natural gas distribution systems. The benefits of the rules include reductions in deaths, injuries and property damage from accidents, as well as reduced costs of emergency response, evacuations, lost natural gas and excess flow valve notification requirements.[5]

The costs that PHMSA estimated for the rules and their technical feasibility were reviewed and approved by the Technical Pipeline Safety Standards Committee, a mandated PHMSA advisory committee, which includes operator representatives.

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[3] Federal Register, Vol. 74, No. 232, Dec. 4, 2009, p. 63906.

[4] Op Cit, Regulatory Impact Analysis: PHMSA, p. 10

[5] ID, pp. 18, 39

**4. Benchmarking and Safety Cost-Effectiveness**

The costs upon which the DIMP regulations were evaluated provide a useful baseline against which to evaluate the cost of PG&E's DIMP planning and management activities that are directly linked to those requirements. Where PG&E's proposals directly reflect activities the PHMSA evaluated for their DIMP regulations, TURN uses that analysis to form its recommendations.

Where the data for benefit-cost analysis are not available, TURN applies cost-effectiveness comparisons where possible, looking for a less expensive option for reaching a risk reduction goal, leaving funds to further reduce risk.

**5. PG&E's Gas Distribution Testimony**

PG&E notes in a reply to TURN that "it has a rigorous process in place to ensure that it applies appropriate, cost-effective solutions consistent with its goal of being the safest utility in the United Sates."[6]

In PG&E's gas distribution testimony there is little evidence that PG&E is making an effort in this rate case to measure effectiveness, or use cost-effectiveness to guide its expenditures on risk reduction. Even though PG&E has some tools and information to use cost-effectiveness to guide its efforts, it does not apply them broadly to make allocation decisions in its forecast spending. PG&E's approach to safety appears disjointed, including programs with varying time frames to achieve their goals, parallel activities that do not appear to be coordinated, and funding levels that appear arbitrary, apparently unrelated to the potential for risk reduction.

While being the safest utility in the country may be a worthy goal, PG&E says nothing about the cost to get there. Unevaluated safety initiatives can be inefficient or ineffective uses of funds.

In this rate case, as opposed to PG&E's 2011 GRC testimony, gas distribution safety dominates the discussion and is used to justify large increases in forecast spending. Unfortunately, there is little analysis behind the proposed spending increases, to

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[6] TURN DR 15-7b

demonstrate that this set of initiatives, or that the allocation of funds between initiatives, represents efficient use of ratepayer funds to reduce risk.

PG&E has a model to evaluate risk, and allocate effort in its steel pipe replacement program.[7] PG&E did not expand the model to consider risk-based allocation of funds for plastic pipe, nor for iron and steel gas Distribution Reliability pipe replacements. There is no evidence that PG&E has expanded the use of the model to other parts of the system, even as a stopgap effort to direct funds to the greatest risk reduction opportunities.

PG&E plans to improve its risk assessment models. However, PG&E will use the results to focus on additional efforts and spending. PG&E does not plan to use new information to review their currently proposed spending, to determine if these are the best use of ratepayer funds to reduce risk and promote safety.[8]

It is against this backdrop that TURN considers PG&E's gas distribution proposals, many of which are ostensibly safety-related, in its 2014 GRC testimony.

## *B. Chapter 4: Gas Distribution Integrity Management Program –*

### 1. MWC: JS

**Table 2: DIMP Management**

| MWC JS: DIMP Management Program ($000s) | | | |
|---|---|---|---|
| Activity | PG&E | TURN 2014 | 2014 |
| | 2014 Forecast | Recommendation | PG&E>TURN |
| Leak Survey Enhancements | $2,023 | 0 | $2,023 |
| Damage Prevention Team | $1,418 | $1,418 | $0 |
| QA/QC Program | $4,267 | $4,267 | $0 |
| Aldyl-A and Plastic Program | $1,220 | $603 | $617 |
| Cross Bored Sewer Project | $14,458 | $6,002 | $8,456 |
| Program Management | $13,560 | $5,698 | $7,862 |
| SAP WM Enhancement | $359 | $359 | $0 |
| Emergent Work | $10,000 | $4,527 | $5,473 |
| **Total:** | **$47,305** | **$22,874** | **$24,431** |

[7] PG&E Exhibit WP3, p WP 8-98

[8] TURN DR 15-21

Some of PG&E's proposed expenditures are expressly presented to meet the requirements of the federal Distribution Integrity Management Program. The Rule took effect in February 2010.

In its background analysis, supporting the DIMP rules, PHMSA estimated rule implementation costs for small and large utilities. This is a central part of the "Regulatory Impact Analysis" (Impact Analysis) required of federal agencies, including the benefit/cost analysis that PHMSA undertook, for adopting the DIMP rule. The analysis estimates program implementation costs. The Impact Analysis does not estimate costs for risk mitigation activities. PHMSA expresses its expectation "that operators will perform the most cost-effective mitigation activities to fulfill the requirements." [9]

A number of the program development, information gathering and risk estimation activities that PHMSA included in its analysis correspond to elements of PG&E's DIMP initiatives in MWC JS. This provides us with a starting point to evaluate the reasonableness of PG&E's costs of undertaking these elements of DIMP, in comparison to the federal estimates.

*a. Adjusting PHMSA's estimates for PG&E*

In order to apply the PHMSA cost estimates of implementing DIMP project management as a benchmark for PG&E, TURN has adjusted the federal cost estimates to match the timing of this rate case and the size and location of PG&E.

i. Adjusting for Time

PHMSA's cost estimates were developed originally using 2004 data. TURN has adjusted the costs to inflate them to 2011 dollars using inflation rates the PG&E presents in its TY 2011[10] and 2014[11] GRCs.

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[9] Op Cit, Final Regulatory Impact Analysis: PHMSA, p. 45, 50

[10] PG&E 2011 GRC, Exhibit 8, pp. 3-3 through 3-7

[11] PG&E 2014 GRC, Exhibit 10, pp. 3-3 through 3-6

ii. Adjusting for Size

PG&E is also much larger than the average large utility that PHMSA uses for its analysis. PG&E has 8 times the miles of distribution main and 11.5 times the number of gas services of PHMSA's "average" large utility. TURN assumes no economies of scale in this spending, to avoid underestimating appropriate spending. We multiply each of the PHMSA average large utility cost estimates by 8, and by 11.5. This establishes a range of costs for implementing DIMP that reflects PG&E's size.

iii. Adjusting for Regional Costs

PG&E operates in a high cost part of the nation. TURN used the income multiplier adopted in PG&E's Total Compensation Study to adjust national labor costs to those in the San Francisco Bay Area.[12] This is the area in which the PG&E's DIMP planning, analysis and management efforts are likely to take place. TURN is using the highest cost area in PG&E's compensation study to avoid underestimating the PG&E costs that compare with the PHMSA estimates.

PG&E's costs of implementing DIMP are significantly above the adjusted PHMSA estimates.

*b. MAT JSL and MAT JSE: DIMP Program Management and Plastic Program, including Aldyl*

PG&E accounts separately for DIMP/risk assessment spending (in DIMP Program Management) and Aldyl-A pipe algorithm and documentation spending, although both efforts' objective is risk assessment for the gas distribution system. TURN combines them in evaluating "risk assessment" spending .

i. Risk Models

TURN's first step is to review the Risk Assessment activities in light of the PHMSA's assessment. PHMSA broke out its estimates by initial costs, to establish the Program in 2011, and then ongoing costs, to maintain and improve the Program. The PHMSA assumes that, in developing the Program, each utility establishes the program, identifies threats, acquires risk analysis software, and engages in initial data gathering.

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[12] PG&E 2014 GRC Exh. 8, p. 4-27

Accounting for PG&E's size and inflation, these activities would cost between $1,863K and $2,723K in the first year.

Following those expenditures, PHMSA assumes the utility improves and maintains the database. For PG&E, based on PHMSA's analysis in 2011, this would cost between $314K and $460K per year. The utility would also update its identified threats, at a cost to PG&E of $253K to $370K annually.

PG&E has not settled on one model for DIMP risk assessment. PG&E has used a model based on expert input, while it worked on Revision 2, a model based on a probabilistic risk algorithm. That is temporarily shelved due to complexity, while PG&E uses less complex updates. [13]

Although PG&E states that its "risk algorithm is not developed enough to make decisions about specific projects"[14], in fact, elsewhere, PG&E has been using multiple generations of its risk model to do just that. For example, PG&E's risk models have played a role in undertaking the Sewer Cross-Bore Program, the Excess Flow Valve Program, the Emergency Shutdown Zone Assessment, the Vault De-Watering Program, and the Leak Cluster Analysis.[15] .

We do not know what the final cost will be for PG&E to complete the model purchase/development task that PHMSA assumed would be done at the program's outset.

PHMSA's assumptions would call for PG&E's annual efforts to update their threat identification to cost between $253,000 and $460,000[16]

PG&E's risk algorithm development and support in the DIMP Aldyl-A and Plastic Program is focused on developing elements of a new PG&E's risk algorithm related to the characteristics of Aldyl-A and other plastic pipe. These include "ongoing upkeep

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[13] DRA DR 52-10

[14] PG&E Exhibit 3, p. 4-3

[15] TURN DR 15-21

[16] Workpaper: Inflation Rates and Fed DIMP Regulation Analysis.

and additional risk algorithm support from outside lab to reflect all plastic pipe, address issues with fittings and address urgency to repair or replace plastic tee caps due to cracking" (p. 4-21)

It is not clear to TURN what benefits these expenditures will provide. PG&E is already addressing the urgency to repair/replace plastic tee caps, is proposing additional leak surveys for areas in which plastic pipe has experienced clusters of leaks, has adopted new technology to improve its leak find rate and is increasing its plastic pipe replacement rate. PG&E has provided no analysis quantifying impact on safety and reductions in property loss, etc. of this work.

This work parallels research work in which PG&E is participating. The Integrated Risk Assessment research projects in which PG&E is participating include introduction of new models and algorithms for risk assessment of older plastic pipe and aging infrastructure.[17] As PG&E notes, this work leverages combined efforts to PG&E customers' benefit.[18]

PG&E draws a distinction between the two efforts, with the PG&E-specific work focused on issues within PG&E's system, and the R&D effort being focused on general tools and methodologies. In supporting its spending, PG&E writes:

> "It would be irresponsible for PG&E, with thousands of miles of Aldyl-A pipe in its system, to not undertake efforts within the Company to assess the associated risks and potential mitigation measures". [19]

As this testimony will discuss, PG&E has information and expertise now to make more cost-effective use of the funding it forecasts spending on safety initiatives. Until PG&E is able or willing to use existing information in a coordinated effort to find cost-effective risk reduction opportunities across its gas distribution system, it is not clear how more elegant modeling can provide greater benefits.

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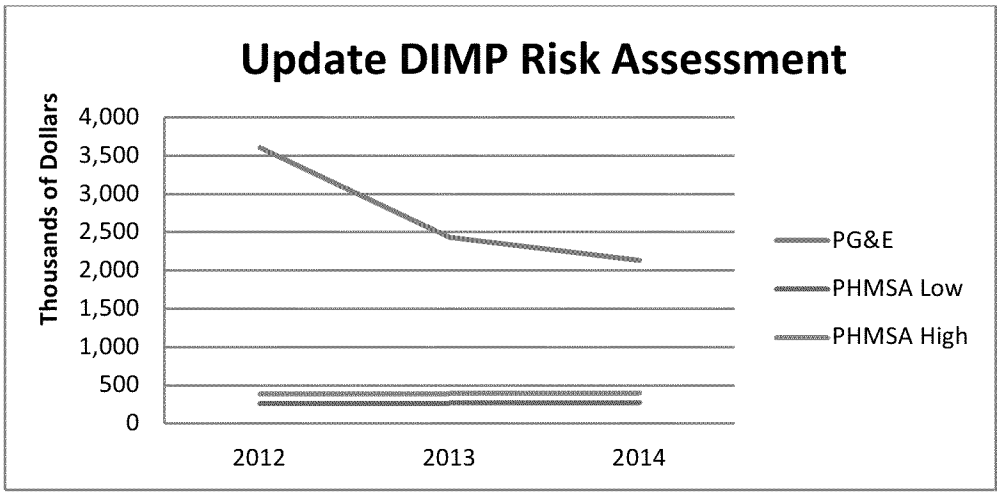
[17] PG&E Exh. 3, p. 10-14

[18] TURN DR 39-17 Conf.

[19] TURN DR 74-13a-b

The DIMP Risk Assessment and DIMP Plastics Program together result in forecast PG&E spending of $3,600,000 in 2012, $2,437,000 in 2013 and $2,121,000 in 2014. This is well above the adjusted PHMSA estimates. This spending is in addition to PG&E's expenditures on DIMP modeling in 2010-2011. PG&E's costs remain significantly above the adjusted PHMSA estimated costs.

**Figure 1: DMP Risk Assessment Update Comparison**




TURN recommends reducing risk assessment funding, including DIMP engineering support, risk algorithm development, risk algorithm documentation and Aldyl-A Algorithm support to $1 Million per year, beginning in 2013. This level is still well above what PHMSA's analysis suggests PG&E would still be spending. On the other hand, from PG&E's testimony, it is apparent that PG&E has not yet tied together the disparate elements of its safety-related spending. This should allow PG&E to continue the most important aspects of this work, to develop an integrated, cost-effective strategy to reduce risk.

**Table 3: DIMP Risk Assessment**

| | 2012 | 2013 | 2014 |
|---|---|---|---|
| Risk Algorithem Development | $50 | $50 | $50 |
| Risk Algorithm Documentation | $50 | $50 | $50 |
| PG&E - Risk Assessment | $909 | $910 | $913 |
| Aldy-A Algorithm Support | $2,698 | $1,527 | $1,221 |
| PG&E Combined DIMP Risk Assessment | $3,707 | $2,537 | $2,234 |
| TURN Recommendation | | $1,000 | $1,000 |
| PG&E > TURN | | $1,537 | $1,234 |

PG&E's research and development spending on integrated risk assessment is not part of this spending, leverages resources of other utilities, and should continue.

In DIMP, PG&E is pursuing a complex data intensive risk assessment algorithm, as demonstrated by the difficulty they have had in its launch. When asked about the risk assessment model updates, PG&E wrote that;

> "PG&E does not anticipate changes to any of the projects or programs initiated thus far. The updated algorithm should provide added insights into prioritization of asset replacement decisions, and may result in additional risk mitigation approaches outside of those PG&E is currently using."[20]

It appears that PG&E is focused on "grandfathering in" existing spending, cost-effective or not. This reduces the value to the public of model improvements. Much of the value of improving modeling is in more effective use of resources, in this case, to reduce risk. Better information and analysis can change existing priorities, moving resources from less productive activities to more productive ones. Here, PG&E appears to envision the improved model providing the basis for additional spending on risk reduction, rather than more efficient use of existing resources to reduce risk.

In a number of data requests related to safety program spending, TURN has posed questions regarding the anticipated benefits of that spending. PG&E's response was either simply that they did not know, or they provided check boxes indicating whether activities would impact safety, reliability or are required by regulation.[21] Yet, with model improvements focused on identifying new activities to pursue, PG&E does not appear poised to determine the benefits or safety or risk reduction impacts of the spending they forecast now.

ii. Program Management: Data Collection

PG&E's forecast for Risk Algorithm Data Collection is for $2,550K in 2012, $2,200K in 2013 and $600K in 2014.

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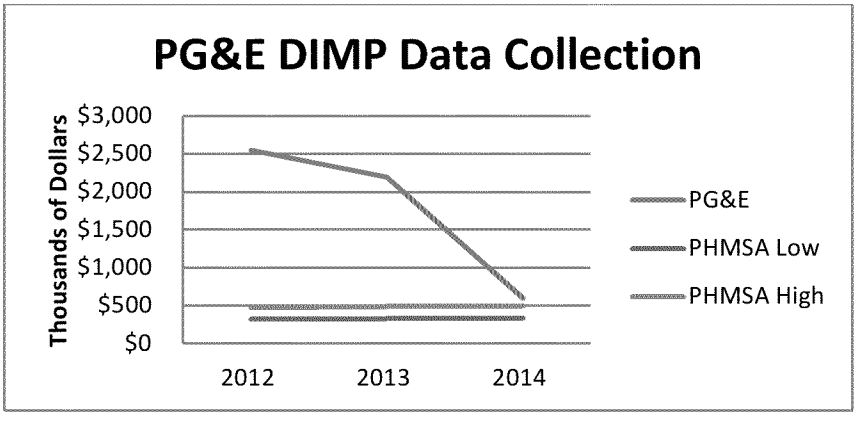
[20] TURN DR 15-21

[21] TURN DR 15-7b, TURN DR 15-27, TURN DR 44-2, TURN 44-5

Adjusted PHMSA assumptions suggest that PG&E would spend up to $2.29 Million for initial data collection. Annual updates should cost from $300,000 to $460,000. PHMSA assumes that utilities will continue to update their system "understanding" with information developed through normal activities and from past design, operations and maintenance.[22]

PG&E's forecast costs for 2012 is $2.5 Million and in 2013 $2.2 Million, versus PHMSA's adjusted cost estimate of $2.0 million for initial data collection. PG&E would not need to spend over $2 Million for each of two years of costs, given PHMSA estimates. For 2014, PG&E forecasts spending $600,000 for data collection, or $140,000 over the high end of the adjusted PHMSA-based range.

**Figure 2: DIMP Data Collection Comparison**




Were PG&E making better use of the data it has, and were PG&E willing to reallocate resources as better data are available, TURN would be more supportive of these efforts. PG&E has data that its "Pathfinder" project is converting into data sets. From its existing GPRP model PG&E has data on its steel main. For non-steel main, PG&E has leak cluster data, and likely other information on its system, developed in the normal course of operation. PG&E should focus on using its existing data to more cost-effectively conduct its risk reduction related work. The CPUC should make clear to PG&E that their 2017 ratecase filing should reflect an integrated assessment of risk

[22] Op Cit, DIMP Regulatory Impact Analysis, p. 5

reduction cost-effectiveness and accompanying allocation of funds across their risk reduction programs.

TURN thus recommends allocating $500,000 in 2013 and again in 2014 for DIMP data collection. This is higher than the upper end of the adjusted PHMSA estimate of data collection costs.

**Table 4: DIMP Data Collection**

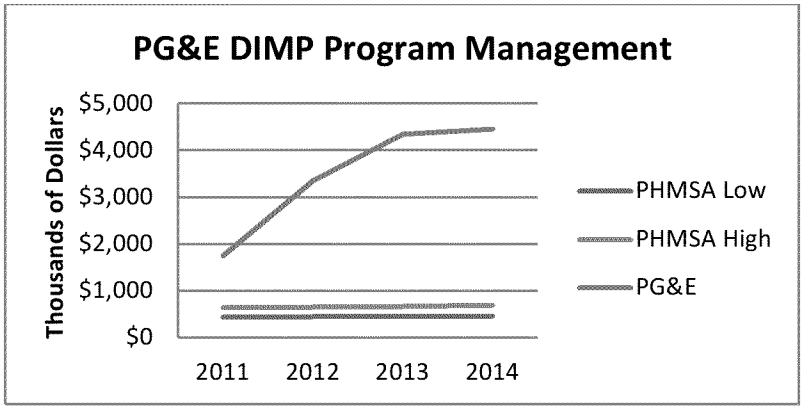
| DIMP Data Collection ($000's) | | | |
|---|---|---|---|
| | 2012 | 2013 | 2014 |
| PG&E Forecast | $2,550 | $2,200 | $600 |
| TURN Recommendation | | $500 | $500 |
| PG&E>TURN | | $1,700 | $100 |

iii. Program Management: Management

PG&E anticipates ramping up to 20 FTEs beginning in 2012 for DIMP Program Management. The forecast cost for this effort is $3,354K in 2012, $4,340K in 2013 and $4,449K in 2014. TURN recommends $3,354,000 be authorized in TY 2014.

PHMSA's analysis, adjusted for PG&E, results in estimated annual ongoing program management costs of $475,000 - $695,000 in 2014.

**Figure 3T: DIMP Program Management Comparison**




PG&E's staffing of DIMP management includes engineers in management and supervision, as well as "process owners" and "asset owners" to provide expertise on

equipment and pipe, and to oversee processes, ostensibly to reduce risk.[23] PG&E states that additional positions will be filled in 2012 to ensure that resources are in place to support the growth of the program planned for 2014 and beyond.[24] TURN assumes that the growth beyond 2014 is the "emergent work" mentioned later in DIMP testimony.

PG&E is already expanding its risk reduction related spending tremendously between 2012 and 2014. Multiple programs will be competing for resources. An example is the use of excavation to repair and replace pipe. Before PG&E focuses on new mitigation efforts, and added spending, they should focus on being able to undertake and hopefully improve the large efforts they currently propose.

PG&E is proposing the expansion of risk-reduction-related efforts, and should be completing planning. Thus far, the benefits of the complex organization that PG&E proposes to guide DIMP are not evident. There is a number of initiatives that are labeled "DIMP", but lack coordination with existing programs that have risk reduction benefits.

TURN recommends that the spending on program management be held at 2012 levels of $3.354 million, a reduction of $1.10 Million. In 2014, this provides PG&E with three-quarters of the funding they request. In its 2017 GRC filing, PG&E can explain the additional risk reduction initiatives it intends to pursue, when they present a cost-effective solution to risk reduction, as PHMSA expects[25].

iv. Program Management: Risk Mitigation

MAT JSL also includes two risk mitigation efforts along with program management. These are Low Pressure Regulator Vault Dewatering and Plastic Tee Cap Replacement

- Risk Mitigation Efforts: Low Pressure Vault Dewatering

PG&E is undertaking two efforts to reduce the probability of water covering the regulator vents for low pressure gas regulators in below-ground vaults, Vault

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[23] DRA DR 52-1c,

[24] PG&E Exh. 3, p. 4-15.

[25] Op Cit Final Regulatory Impact Analysis, PHMSA, p. 50

Dewatering and Regulator Vent Raising. If water were to cover the vent on a regulator, it could result in over-pressurization.

PG&E forecasts spending $177,800 on the Vault Dewatering Program in 2012, dropping to $107,000 in 2014. The cost reduction is due to the impact of the Regulator Vent Raising program. In some cases, raising the vent eliminates the need to dewater the vault. The program to raise the height of regulator vents is discussed in MWC FH, Preventive Maintenance.

While PG&E does not know the likelihood of over-pressure events, vault dewatering appears to be a cost-effective option to avoid risk, and has TURN's support.[26] TURN cannot say the same for the regulator vent raising, and will discuss that when considering expenditures in MWC FH.

v. Risk Mitigation Efforts: Plastic Tee Cap Replacement Program

PG&E proposes to begin a pilot program in 2013, to test a method for replacing plastic tee-caps on Aldyl-A plastic distribution main. TURN supports the 2013 pilot program, and recommends that in 2014, tee cap repairs be included in the budgets for pipe replacement, MATs 14A and 14c, reducing the 2014 MWC JS cost by $7.3 Million.

PG&E states that they have been tracking tee cap leaks for over a decade. PHMSA issued an advisory bulletin in 2007 regarding cracking on Delrin tee cap inserts.[27] In 2011, PG&E identified tee caps as a "major source of plastic leaks" requiring separate mitigation, when evaluating key drivers of its leak clusters.

PG&E has been repairing tee caps under MWC FI, totaling about 10,000 repaired since 2008. However, PG&E is unable to isolate the costs of this work from other repairs.[28]

PG&E is proposing a pilot program for 2013, testing a method to replace the tee caps without replacing the pipeline, as a cost-effective option for tee cap repairs.[29] Following

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[26] TURN DR 15-27

[27] Federal Register Vol 72, No. 172, Sept. 6, 2007, p. 51301.

[28] DRA DR 52-5d

[29] TURN DR 64-1fii

the pilot, PG&E proposes to repair or replace up to 1,000 tee caps a year, stating: "…it is not feasible to replace more tee caps than the number currently identified as needing replacement since efforts could be better spent on other initiatives."[30] When asked about the other initiatives, PG&E responded that their intention is to "balance the need to address a known degraded asset (the leaking tee cap) in a cost effective manner".[31]

The decision to limit the tee cap replacement effort to 1,000 per year, before determining the cost of repairs or the impact of tee cap replacements on pipe leak rates is arbitrary.

According to PG&E, tee caps are a major source of leaks on the gas distribution system, and contribute to the system leak rate.[32] In a world of coordinated safety efforts, TURN would expect PG&E to integrate the forecast impacts and costs of tee cap repairs into its pipe leak reduction efforts. PG&E does not discuss tee caps as a consideration in pipe replacement program decisions, nor does it include the forecast tee-cap effort in its estimates of the amount of pipe that must be replaced to meet PG&E's leak rate goals.

While PG&E states that the initiatives coming out of the DIMP risk management process should determine PG&E's focus[33], there is no indication that PG&E has used existing experience to integrate its knowledge of the tee cap issue with other risk reduction initiatives. TURN supports going ahead with the TCAP pilot program. Following the pilot program, developing a lower cost method of repairing Tee Caps, TURN recommends that this work be folded back into the funding for MATs 14A, 14D, pipe replacement. The results of the pilot program should allow PG&E to continue tee cap repairs at lower cost than in the past, providing an alternative to outright replacement of sound pipe.

**Table 5: Tee Cap Replacement ($000's)**

| | 2013 Pilot | 2014 Operation |
|---|---|---|
| PG&E Proposal | $238 | $7,279 |

[30] PG&E Exh. WP 3, p. WP 4-25

[31] TURN DR83-3a

[32] TURN DR 64-1f

[33] Id.

| | | |
|---|---|---|
| TURN Recommendations | $238 | $0 |

*c. MAT: JSK: Cross-Bored Sewer Program*
PG&E requests $14.458 Million for TY 2014. TURN recommends $6.002 Million.

Outside of "DIMP Management", but still recorded within the DIMP MWC is the Cross Bored Sewer Program. "Cross-bores" occur when a gas line runs through a sewer line, usually a gas service line running through a sewer "lateral" service line. This can result from trenchless installation.

PG&E has been aware since 1999 that gas service lines, installed by boring, may run through sewer laterals.[34] Cross bored gas lines pose a threat of a leak. If an auger is used to clean the sewer line, it can cut through the plastic gas service. In 2009-10 PG&E began its "Cross Bore Infrastructure Identification" project.[35] The cross bore program began in 2011, focused on locations in which copper service lines had been installed. In November 2011, PG&E instituted a cross bore inspection requirement to insure that no new cross bores were created.[36] In PG&E's 2011 GRC, PG&E requested funding to "evaluate the risk of natural gas migrating inside the sewer system should a leak occur. In responding to DRA in this following GRC, PG&E had no evaluation documentation.[37]

PG&E has since expanded it to other areas in which boring, used for service installation, may have encountered sewer laterals. Program costs include sewer inspections and repairs with redirected service lines. PG&E assumes that approximately 500,000 services will be reviewed. PG&E forecasts funding 20,000 to 50,000 inspections per year, and the repairs extending over a period of 9 to 10 years. PG&E documents the basis for assuming 215,000 services being inspected. The balance, 285,000 are still to be identified.

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[34] DRA DR 49-2 Atch 1.

[35] DRA DR 49-7

[36] TURN DR 64-9ai

[37] DRA DR 49-2a

The 500,000 total is an estimate of the final number after an engineering review of services that may be affected.[38]

The estimate of 20,000 to 50,000 lateral inspections per year is an estimate of the rate at which sewer laterals could be inspected. In 2012, approximately 11,000 laterals were inspected. While PG&E has been identifying additional equipment and contractors to perform the work, it is not clear that they have identified enough resources to triple the effort to the forecast 30,000 inspections in 2014 within the current, forecast unit price.[39]

While TURN is concerned that cross-bores could lead to significant incidents when sewer lines are "rooted out", PG&E apparently did not undertake the analysis on the risk of incidents that it proposed in its 2011 GRC. PG&E has been working to identify cross-bores since 2009, beginning to check bore holes for copper service replacements in 2010. Only in late 2011 did PG&E initiate a broader inspection requirement to ensure that new cross-bores were not created. PG&E's contractors were responsible for repairing 16 cross-bores in 2011. PG&E does not provide information on contractor responsibility for cross-bore repairs in 2012.[40]

In its testimony, the alternative to its program proposal that PG&E presents is to discontinue the program.[41] PG&E provided no analysis of alternative levels of inspection efforts, other than its proposal or the no program alternative.

TURN recommends that PG&E continue this program at the 2012 level of inspection effort, while conducting research on the risk that cross-bores pose and refining the method for identifying where cross-bores may have occurred. Given the cost of the video inspections the program requires, more precisely targeting the inspections would increase the cost-effectiveness of the program, and give a more precise estimate of the total work to be accomplished.

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[38] PG&E 2014 GRC, WP Exh. 3, p. WP 4-15

[39] DRA DR 49-5a-c

[40] TURN DR 44-6a

[41] Id.

PG&E forecasts a repair rate of 1.67% to 2% of the sewer laterals inspected, based on experience. Results reported to DRA show a much lower average repair rate for 2011-12 of 0.65 percent.[42] PG&E subsequently provided data on May 6, 2013 showing an even lower actual repair rate of 0.41% for 2011 and 2012. Apparently, with the cross-bore contractor responsible for repairing cross-bores, PG&E's responsibility for repairs in 2011 dropped significantly as compared to the numbers provided in the response to DRA.[43] Apparently a significant number of the cross-bores found are recently created. With the revised number of 2011 cross-bores repaired at PG&E's expense, the PG&E-funded average repair rate drops to 0.41 percent for 2011 and 2012.

The Program's emphasis changing from areas in which copper service lines were installed to a broader sample of PG&E's system may also be responsible for the reduced repair rate for cross bores. Information from PG&E does not allow us to verify that.

Based on these data TURN thus recommends that PG&E continue this program at the 2012 level of inspection effort, while conducting research on the risk that cross-bores pose and refining the method for identifying where cross-bores may have occurred. Given the cost of the video inspections the program requires, more precisely targeting the inspections would increase the cost-effectiveness of the program, and give a more precise estimate of the total work to be accomplished.

**Table 6: Cross-Bored Sewer Program – Primary Recommendation**

| | Cross-Bored Sewer Program (MAT JSK) | | |
|---|---|---|---|
| | 2012 | 2013 | 2014 |
| PG&E Forecast | $5,936,000 | $14,377,500 | $14,458,000 |
| TURN Recommendation | $5,936,000 | $5,970,080 | $6,001,672 |
| Difference | $0 | $8,407,420 | $8,456,328 |

Alternatively, if the CPUC does not choose to maintain this program at 2012 levels while PG&E develops a better understanding of the risk cross-bores pose and of the number of inspections necessary, TURN recommends funding based on the average repair rate for 2011-2012.

[42] DRA DR 49-5

[43] TURN DR 44-6a

**Table 7: Cross-Bore Sewer Program – Alternative Recommendation**

| | 2012 Rec. | 2013 | 2014 |
|---|---|---|---|
| Forecast Inspections | 11000 | 30000 | 30000 |
| Forecast Repairs (Units) | 58 | 500 | 500 |
| TURN Repair Units | | 123 | 123 |
| Forecast Repair Cost | | $3,677,000 | $3,758,000 |
| TURN Repair Cost | | $904,542 | $924,468 |
| PG&E>TURN | | $2,772,458 | $2,833,532 |

For this alternative, the total Cross Bore Program cost forecast is:

| TURN Alternative Program Cost ($000's) | | |
|---|---|---|
| | 2013 | 2014 |
| PG&E Forecast Spending | $14,378 | $14,458 |
| TURN Forecast Spending | $11,606 | $11,624 |

*d. MAT: JSA: DIMP Leak Survey/Leak Repair:*

PG&E is focusing additional resources on surveying areas in which clusters of leaks have been found and repaired in the past. The program is using leak cluster data created from 20 years of leak survey information. In 2012-13, PG&E is surveying leaks in areas in which clusters of seven or more leaks within 200 feet of each other have been repaired in the past. In 2014, approximately 1,000 clusters will be surveyed. Work includes documenting and repairing any leaks found.

PG&E notes that leaking tee caps were identified as a threat during leak cluster analysis is 2011.[44] This work apparently overlaps with the tee cap replacement program discussed above. The work also parallels leak survey and repair efforts in MWCs DE and FI. In the forecast of costs for 2014, nearly one quarter of the program cost represents vendor management.[45]

TURN recommends that PG&E develop an integrated approach to pipe leak survey and repair efforts, allocating resources where they are most effective. Carving out special programs, such as this, with separate funding for similar projects, complicates finding the most cost-effective blend of activities needed to achieve the overall goal of reducing risk.

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[44] DRA DR 52-08

[45] PG&E Exh WP 3, p. WP 4-34

PG&E should thus zero out special funding for this DIMP program, a reduction of $2.023 Million. By integrating this work with the leak survey and repair programs (MWCs DE and FI). Consolidating the programs should reduce PG&E's overhead, and PG&E can better allocate funding for this effort, where it is more productive than other leak survey and repair options.

**2. Emergent Work MMC: JS MAT_NA**

PG&E requests $ 10.0 Million. TURN recommends $4.714 Million.

PG&E groups a number of activities into "emergent work". The program costs are accounted for in other MWCs. *W*orkpapers provide costs for some of these efforts *through* 2013, suggesting that the annual average through then is representative for 2014.

PG&E forecast the 2014 combined costs of these dispersed efforts at between $4.1 and $5.0 million for 2014. PG&E then rounds the forecast up to $10.0 Million to account for additional programs to address risk.

The purpose of grouping these efforts into "emergent work" appears to be to identify new initiatives since the 2011 GRC, and argue for additional funding for unidentified future efforts. PG&E writes that it looked at the programs it has identified, and "estimated similar additional expenses for risk mitigation going forward". This equates to $5.0-$5.9 million in unallocated funding. PG&E is no more specific about the request.

PG&E only looked for additional funding opportunities and fails to consider evaluating the effectiveness of the efforts already selected, or look for reallocation opportunities.[46] PG&E's sole argument is that they have decided to undertake new initiatives after the last GRC, and may do so again. If PG&E uncovers very cost-effective opportunities to further reduce risk, that same analysis should identify less cost-effective existing spending that PG&E could curtail to provide greater risk reduction with existing resources.

TURN recommends denying this request to fund unidentified work.

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[46] TURN DR 15-21

**Table 8: DIMP Emergent Work**

| Emergent Work (MWC JS, MAT NA) ($000s) | | | |
|---|---|---|---|
| | 2012 | 2013 | 2014 |
| Existing "Emergent" Programs | $4,052,672 | $5,001,695 | $4,714 |
| Request for Undefined Work | | | $5,286 |
| PG&E "Emergent" Forecast | | | $10,000 |
| TURN Recommendation | | | $4,714 |
| PG&E>TURN | | | $5,286 |

## *C. Chapter 5: Pipe/Meter/Other Preventive Maintenance*

### 1. FHJ: Raise Low Pressure Vent Locations:

PG&E has concluded that water in vaults, containing low pressure regulators, can intrude into the regulators through regulator vents. This could cause the regulator to allow the main to operate at higher pressure than permitted. The Vent Raising program is targeted at the same risk as the Low Pressure Vault Dewatering, raising the levels of vault-mounted low pressure regulators to the top of the vault, or as high as possible[47] .

Since 2007, PG&E has had seven over-pressure events reported.[48] Human error and SCADA problems exacerbated the problems in two cases and a case in San Francisco involved multiple regulators with high water in vaults.[49] In one case, the regulator's pilot vents were raised after the vault was pumped.

PG&E has conducted a program since 2007 of pumping water out of vaults, as necessary, to protect low pressure regulators from water intrusion. As of 2012, PG&E is continuing this work on a regular basis as part of its DIMP efforts, discussed above.

The DIMP pilot program has been investigating selected areas known for vault flooding[50], providing PG&E with information on water in low pressure vaults, through

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[47] TURN DR 15-27

[48] TURN DR 44-13ai

[49] TURN DR 44-13 Atch. 1

[50] DRA DR 77-6a

its dewatering work. This has helped PG&E identify critical vaults with water intrusion and set priorities for vent raising.[51]

PG&E appears to have small number of vaults that are subject to periodic flooding. In the dewatering pilot, PG&E has 838 entries for vault visits in 2012. From the total entries, about 20 vaults appear to have multiple visits in 2012, involving significant repeated pumping.[52] For the other vaults in the program we do not know how long it took for the water to accumulate, as PG&E's previous dewatering program did not involve pumping on a regular schedule. Not caught in this number are unexpected events, such as water main breaks can result in vault flooding.

PG&E states that the pumping program is effective, and is unable to estimate the risk of over-pressurization that remains with the pumping program in effect.[53] Since the initiation of the vault dewatering program, there have been no overpressure events in the area in which it operates.[54]

The scheduled vault dewatering program appears to be an effective and inexpensive measure to avoid overpressure from flooded vaults. There is little need for a concerted vent raising program.

PG&E's Reliability Pipe Replacement Program is replacing low pressure pipe and regulators. The Gas Pipe Replacement Program has also replaced low pressure pipe, potentially allowing retirement of low pressure regulators. Actively working to eliminate the Low Pressure Distribution Systems is one of PG&E's proposed strategies to deal with the regulator vault water issue.[55] As these programs progress, there will be fewer vault-mounted low pressure regulators.

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[51] TURN DR 44-13 Atch. 3

[52] TURN DR 44-13 Atch 4

[53] TURN DR 15-27

[54] DRA DR 77-6g-I Atch. 1

[55] TURN DR 44-13 Atch. 2

PG&E proposes to raise vents over five years on 316 LP regulator stations and system relief stations, at a forecast cost of $7.7 Million.[56] Given the results of the vault dewatering, PG&E's effort to identify the most trouble-prone regulators, and the replacement of low pressure regulators, TURN recommends that this work be focused on the highest priority stations. Those would appear to be the 20 stations that showed significant water intrusion during the year. This results in a significant cost saving without impacting safety.

The average forecast cost of this work per station ($7.7 Million/316) is $23,700.

TURN's estimate for raising the vents on the 20 most troubled regulators is $475,000. In case PG&E has not addressed these regulators in its 2013 spending, TURN recommends that $475,000 be available over the Test Year and attrition years to complete that work. This provides an average of $160,000 per year for this program..

**Table 9: Low Pressure Regulator Vent Raising**

| | Low Pressure Vent Raising ($000s) | | |
|---|---|---|---|
| | 2012 | 2013 | 2014 |
| PG&E Forecast | $2,225 | $3,622 | $3,959 |
| TURN Recommendation | | | $160 |
| PG&E > TURN | | | $3,799 |

## *D. Chapter 6: Leak Survey and Repair*

### 1. MWC DE: Leak Survey –

*a. MAT DEA: Leak Survey Frequency Increase to 3-Year Cycle*

PG&E proposes to increase the frequency of leak surveys, in non-business district areas, from every five years to every three years. PG&E also proposes to conduct additional leak surveys of areas in which leak clusters have occurred, and will begin using the Picarro Surveyor system (Picarro), which is significantly more sensitive than traditional leak survey equipment, and capable of surveying a larger area quickly.

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[56] Id.

PG&E is proposing a number of leak survey enhancements at once. PG&E is proposing to employ the Picarro Surveyor technology which reportedly provides very broad and sensitive leak detection. PG&E is focusing additional survey resources on areas with known high leak rates, where there have been clusters of leaks repaired. These efforts should improve PG&E's effectiveness at detecting leaks. Given these efforts, TURN believes that shifting to a 3 year general leak survey interval from the current 5 year interval should at least be postponed until the effects of these other programs are determined, and PG&E can provide analysis demonstrating the value of the increased survey frequency.

PG&E proposes the three year leak survey cycle, suggesting that this frequency is "Consistent with best practices in the gas industry".[57] PG&E also states its belief that "the three-year cycle is prudent and "consistent with a majority of the industry". [redacted]

PG&E states that since initially proposing the shift in 2011 GRC testimony, they are more convinced that moving to a three year inspection cycle is worth the cost.

When asked about that statement, PG&E responded with references to its existing testimony and workpapers. This information does not provide more data on safety impacts of more frequent, general non-business district surveys, nor information demonstrating that the additional cost makes this change an efficient method to reduce risk. While PG&E proposed the three year leak survey frequency in the 2011 GRC, PG&E did no study since then to evaluate the impacts of different leak frequencies.[58] .

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[57] PG&E Exh. 003 p. 6-2

[58] DRA DR 26-5b-c

i. TURN's Analysis of Leak Rate Data

The leak rate in PG&E's testimony is the number of leaks found per 1,000 services.[59] TURN's discussion is based on data PG&E provided on leak find rates in terms of percent of services surveyed.[60] Moving from a five year leak survey interval to a three year interval would increase the number of services included in surveys, so the absolute number of leaks should increase immediately. However, the leak rate should be similar for the first three years, until surveyors were visiting areas on the shorter cycle. When the system was surveyed on a three year basis a new, "steady state" leak rate should emerge. How different the five year and three year "steady state" leak rates would be is unknown. It is also unknown how PG&E's proposed use of new technology and additional leak survey initiatives will change the leak find rates.

The history of PG&E surveys, and the resulting leak find rates make it unrealistic to extrapolate from past experience on PG&E's system. PG&E notes that its 2008-2010 leak find rates are not comparable to later years.[61] As TURN's discussion below presents, there is no leak rate data comparable to the 2011 and 2012 results.

As Figure 4 below shows, the trend in leak find rates since 2005 has varied tremendously. From 2005 to 2007, the percentage of services surveyed with leaks hovered at 0.5%. PG&E implemented its GEEM Program, of accelerated surveys along with improved employee qualifications and equipment in November, 2007. While that program operated, through June, 2010,[62] leak find rates increased significantly, first to 2.49%, nearly five times the previous service leak find rate, then to 4.15% in 2009. During 2010, as GEEM was phased out, the find rate was 3.77%, with six months of the GEEM program and six months of non-accelerated leak surveying. In 2011, the first year of strictly normal leak testing, 2.44% of services had leaks. In 2012, 2.91% had leaks. PG&E does not provide information regarding the distribution of leak rates around these averages.

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[59] PG&E Exh. 3, WP 6-43

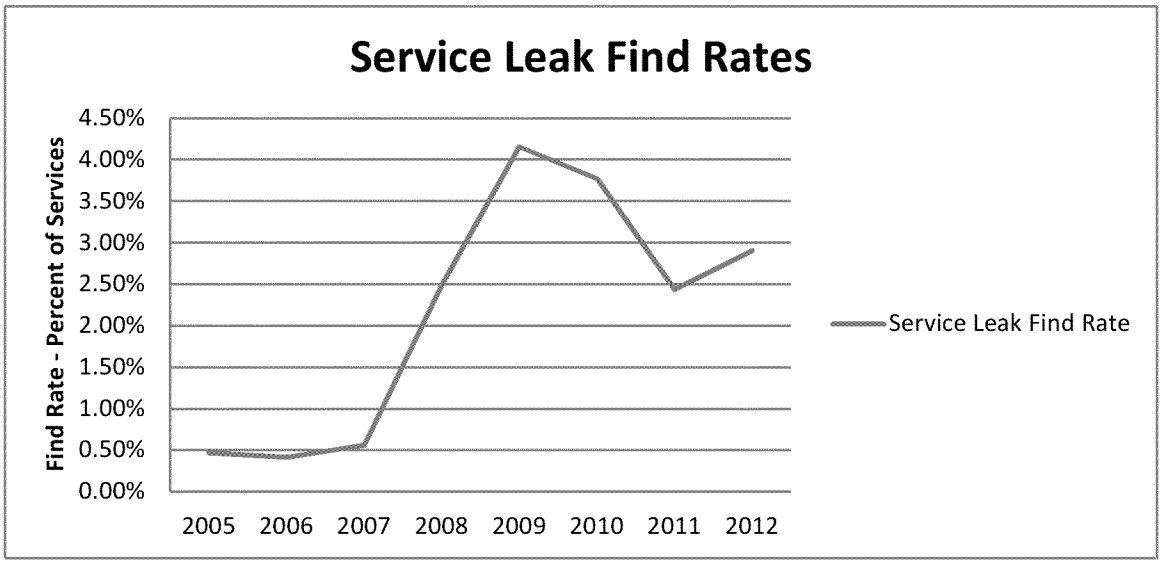
[60] TURN DR 52-11

[61] Id

[62] TURN DR 52-12

**Figure 4: Leak Find Rate History**

[63]




PG&E's argument for a three year survey cycle is based on the logic that leaks develop over time, and the longer the time between surveys, the more leaks will develop and go unrepaired. This would potentially increase risk.

If this logic defined the growth of leak rates and detection, there should be more leaks detected with five year interval inspections than after completing surveys on a three year interval. However, the actual data do not fit this model. The leak find rates during the five-year cycles from 2005 through 2008 were far lower than those afterward, as shown in Figure 4 above. Either PG&E's logic does not hold, or PG&E is ignoring some intervening factor.

An explanation that better fits the data is that the leak survey employees and methods were relatively ineffective up through the end of 2007. This proposition is supported by the disclosures of employee misrepresentations and insufficient training that resulted in the GEEM program, as described in PG&E's April 2010 "Gas Matters Update."[64] PG&E implemented a corrective program, costing over $100 Million from 2008 through 2010[65],

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[63] TURN DR 52-11

[64] TURN DR 15-19 Atch. 1

[65] A09-12-020 TURN Testimony, Marcus, April 19, 2010 p. 8

which found a lot of leaks that previous surveys had missed, as well as new ones. Now, with properly trained surveyors, better equipment and quality control, PG&E has hopefully achieved a steady state for traditional leak surveys.

The historic leak find rates do not provide a convincing argument for a shorter leak survey cycle. These data on leak find rates are not consistent enough to demonstrate the benefits of moving from a five year survey interval to a three year interval. These data also do not provide a long enough history to demonstrate a convincing trend in leak find rates.

ii. PG&E is Adopting New Technologies that Should Improve Leak Find Rates and Leak Detection Cost Effectiveness

PG&E is undertaking the use of the Picarro Surveyor (Picarro) for surveying its highest risk pipe. This should allow PG&E to thoroughly evaluate the pipe that presents the greatest likelihood of leaking.

PG&E is also phasing in this system for general leak surveying. PG&E plans to survey its entire system using Picarro within 5 years unless PG&E is funded to reduce the survey interval to three years. PG&E anticipates finding significantly more leaks with Picarro than it would through traditional leak survey methods.

PG&E is also accelerating repairs to Grade 2 leaks from within 18 months to within 15 months.

Each of these changes should reduce the risk of damage or injury due to gas leaking from the distribution pipeline system. It is not clear how much impact on risk each initiative will have. However, the combination of these, especially use of Picarro Surveyor should result in more effective surveys, with higher leak find rates.

iii. Impact on Corrosion Inspections

PG&E claims that the three year leak survey cycle would result in savings in the cost of corrosion inspections for above ground equipment (MAT FHK). Federal requirements call for inspections of this equipment every three years. Remaining with the five year leak survey cycle leaves the need for separate corrosion inspections. With a three-year inspection cycle, PG&E suggests that the leak surveyors can conduct the corrosion inspections as part of their work. Leak surveyors do not currently perform this work.

PG&E estimates that this work will add $586,000 annually to the cost of leak surveying, for surveyors to conduct this work as part of a 3-year leak survey cycle. [66]

However, even if PG&E transitions to the three year survey cycle, the introduction of Picarro Surveyor will eliminate any potential savings due to joint inspections. Where the Picarro Surveyor is used, independent corrosion inspectors are still necessary because the survey equipment is in a vehicle, and the technicians do not inspect above ground facilities. PG&E forecasts that the savings in costs of corrosion inspections due to a 3 year survey cycle decline over time.

**Table 10: 3 Year Survey Corrosion - TURN Savings**

| | 2014 | 2015 | 2016 |
|---|---|---|---|
| 3-Year Survey Corrosion Inspection Savings: | $3.4 Mil | $2.7 Mil. | $1.8 Mil.[67] |

iv. TURN Recommendation – Stay With 5-Year Surveys

Given the lack of information about the impact of changing the leak survey frequency, the new technologies and better trained staff that PG&E is deploying and the other initiatives the PG&E is bringing into the field, TURN recommends staying with the general five year survey cycle. Three years from now, in the 2017 GRC, there should be data to evaluate any potential impacts and benefits of s shorter leak survey cycle.

The result is a forecast for TY 2014 MWC DE expenses of $24.88 million, a reduction of $8.92 Million.

**Table 11: Three Year Survey Cycle: TURN Recommendation**

**(Assuming TURN Leak Find Rate ($Millions))**

| | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| PG&E Forecast: MWC DE | $20.60 | $22.00 | $33.80 | $38.60 | $38.60 |
| With TURN Leak Find Rate Forecast | $0.00 | $0.00 | -$0.79 | -$2.36 | -$3.15 |
| TURN 5 Year Survey Cycle Reduction | $0.00 | $0.00 | -$8.13 | -$10.43 | -$9.02 |
| TURN Forecast for MWC DE | | $22.00 | $24.88 | $25.81 | $26.44 |
| PG&E - TURN MWC DE Savings | | $0.00 | $8.92 | $12.79 | $12.16 |
| Net Corros. Inspect. Cost (MAT FHK) | $0.00 | $0.00 | $3.40 | $2.70 | $1.80 |
| PG&E>TURN | | $0.00 | $5.52 | $10.09 | $10.36 [68] |

[66] DRA DR 77-5a-k, Atch01, p. 4

[67] TURN DR 60-14a

*b. MAT DED: Grade 3 Leak Rechecks:*

PG&E proposes to recheck Grade 3 leaks within 15 months, rather than waiting for the next leak survey at the site, which could be within 1 year, three years or five years. This change is forecast to involve an additional 9,200 checks in 2014, for an incremental cost of $1.94 Million.[69] Given PG&Es' expectation that Picarro Surveyor leak surveys will uncover more leaks, we anticipate a significant increase in the cost of these rechecks.

PG&E's testimony is not persuasive on this proposal. PG&E states that "these leaks are non-hazardous and are expected to remain non-hazardous". This initiative does not improve safety.

Given that these leaks are not hazardous, the benefits of the accelerated rechecks might be reduced loss of gas. PG&E cannot quantify the potential impact on gas losses.[70]

Given the lack of benefits from this proposed spending, TURN recommends that spending on this initiative be disallowed completely, a reduction of $3.14 million for TY 2014 expenses.

**Table 12: Accelerated Grade 3 Leak Checks (MWC DE)**

| Year | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Incr. Cost of 15 mo. Check:[71] | $1.95 Mil | $2.8 Mil | $3.14 Mil | $4.92 Mil | $3.17 Mil |
| TURN Recommendation: | | $0 | $0 | $0 | $0 |
| TURN Reduction | | $2.8 Mil. | $3.14 Mil. | $4.92 Mil. | $3.17 Mil |

**2. MWC FI: Corrective Maintenance –**

*a. MATs FIH, FIP, FIG: Leak Repair*

PG&E forecasts an increase of $64.2 million[72] in leak repair costs above base year 2011 due to a) more leaks being found as a result of a three year leak survey cycle, b) the use of Picarro for general leak survey work, c) use of Picarro on leak clusters and d) repair of

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68 [redacted]

69 DRA DR 44-03a-c, PG&E Exh. 3 WP 6-16

70 TURN DR 44-3b

71 WP Exh.3, p. 6-37; TURN DR 44-3a-c

72 PG&E Exh. 3, p. 6-28

grade two leaks within 15 rather than 18 months of discovery. These costs are separate from leaks being repaired as a result of the DIMP Tee Cap Repair Program and DIMP cluster survey, covered in MWC JS

PG&E's develops its analysis using a system leak rate of 3.561%, based on the "combined" leak find rate for the years 2008 through 2012[73]. This is PG&E's forecast rate for traditional leak surveys. PG&E also uses this rate as a baseline in evaluating the impact of using the Picarro Surveyor on the leak find rate.

As discussed above, TURN has concluded that the rate of leaks found during the GEEM Program is not appropriate for forecasting a "steady state" leak rate. That program ran from November 2007 through June 2010.[74] Those years appear to be anomalous, as PG&E caught up on leaks missed in previous years. PG&E's forecast leak find rate is based on both GEEM and non-GEEM periods.

TURN proposes to use a leak rate of 2.457% for traditional (non-Picarro) leak surveying,based on the average leak rate for 2011 - 2012. [75] These two years exclude GEEM expenditures and the previous, very low, leak find rates.

TURN's estimated leak find rate of 2.547% affects both the forecast number of leaks found through the traditional leak surveys as well as the forecast number of leaks found with the emerging Picarro Surveyor leak survey technology. Both PG&E's and TURN's estimates of the leak find rate with Picarro Surveyor rest on PG&E's pilot test of the Picarro system. PG&E used the ratio of leaks found with traditional methods, to the results of a resurvey with Picarro.

PG&E used its baseline leak find rate of 3.561% to develop an estimated Picarro leak find rate of 9.65%[76]. Substituting TURN's base leak find rate of 2.457% results in a Picarro

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[73] TURN DR 44-1b

[74] TURN DR 52-12

[75] TURN DR 52-11 Atch. 1

[76] PG&E Exh. WP-3, p. 6-90, Corrected in TURN DR 44-1a

leak find rate of 6.66%. TURN calculates this result using PG&E's methodology for comparing the impact of Picarro in comparison to traditional leak surveys.

These Picarro estimates, both PG&E's and TURN's, are based on samples in two of PG&E's 18 districts. As PG&E expands Picarro to more districts, surveys will provide much larger samples to adjust leak find rates for the next GRC.

Given PG&E's other efforts to reduce leaks, such as improving the technology for tee cap repairs, and increasing effort in pipe replacement in both MWC 14, Pipe Replacement and MWC 50, Distribution Reliability, leak find rates should begin to drop.

i. Effects of Reduced Leak Find Rate

TURN's analysis results in a lower leak find rate for leak surveys, with an accompanying reduction in leak repairs and costs of leak repairs. The average leak find rate drops from PG&E's estimate of 3.56 percent to TURN's estimate of 2.46 percent of services.

ii. Effects of Three Year Leak Survey Cycle

TURN recommends remaining with a five year leak survey cycle, at least until PG&E has more post-GEEM data on leak find rates, especially with the Picarro system. PG&E will be using accelerated leak surveys in areas with especially vulnerable pipe, so at least some of any potential benefits of the shorter leak survey cycle will already be realized.

The combined effects of using a leak find rate estimate not based on the GEEM program, and continuing the 5 year survey cycle reduce TY 2014 expenses for MWC FI by $27.8 million:

**Table 13: Leak Repair Forecast Expenses (MWC FI)[77]**

| | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| PG&E Forecast: MWC FI | 52.3 | 49.4 | 102.1 | 158.1 | 175.2 |
| TURN Leak Find Rate Reduction | 0.0 | (0.3) | (14.1) | (26.4) | (30.2) |
| TURN 5 Year Survey Cycle Reduction | 0.0 | 0.0 | (13.7) | (30.6) | (36.1) |
| TURN Forecast for MWC FI | 52.3 | 49.1 | 74.3 | 101.1 | 108.8 |
| PG&E>TURN | 0.0 | 0.3 | 27.8 | 57.0 | 66.4 |

77 [redacted]

## *E. Chapter 7*

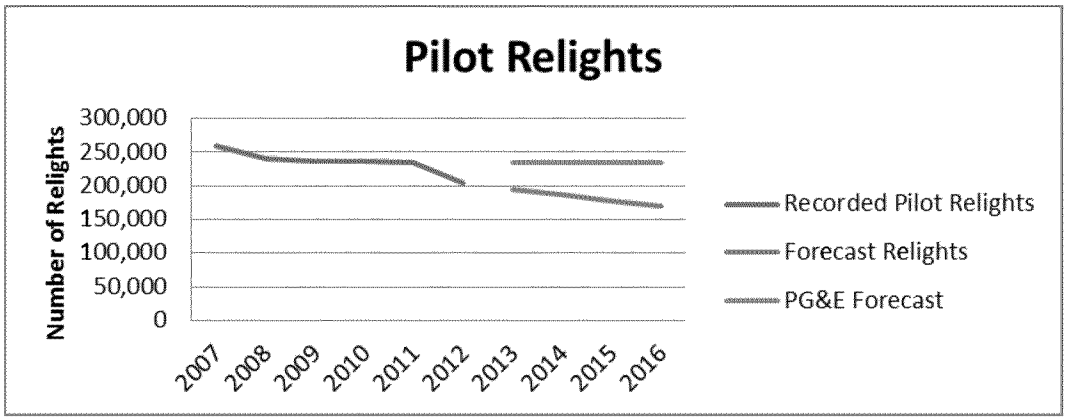
### 1. MWC DD: Gas Scheduling/Dispatching and Gas Field Services

*a. MAT DDD: Pilot Relights*

For Field Services work, relighting pilot lights on gas appliances is behind only responding to gas leaks and emergencies for cost. The number of pilot relights has been steadily declining for 30 years, as efficiency regulations have required electric ignition rather than pilot lights on new appliances. As the stock of appliances with pilot lights declines, so does the number of requests for relight.

To forecast the cost of pilot relights for 2012 through 2014, PG&E uses the base year 2011 recorded number of 235,511 pilot relight visits. However, using one-year recorded data is not the appropriate methodology for forecasting trending costs. The annual number of pilot relights has been steadily declining since 2007. A simple regression analysis of the 2007-2012 recorded data results in a more realistic forecast of 8,388 fewer pilot relights each year from 2012.[78]

**Figure 5: Pilot Light Relights**




The reduced number of pilot relights reduces the forecast cost of this work by $6.5 Million in 2014.

[78] Workpaper "Pilot Relights-Regulator Replace-Reliability Replace.xls"

**Table 14: Pilot Relights: MAT DDD**

| | 2013 | 2014 |
|---|---|---|
| PG&E Forecast | 235,511 | 235,511 |
| TURN Forecast: | 195,259 | 186,872 |
| Difference | 40,252 | 48,639 |
| Unit Cost | 116 | 134 |
| PG&E Forecast | $27,408,000 | $31,513,000 |
| TURN Forecast: | $32,077,199 | $38,030,683 |
| PG&E>TURN | $4,669,199 | $6,517,683 |

**2. MWC 74: Regulator Replacement, Capitalized Labor**

The majority of PG&E's commercial sized regulators do not have an internal relief valve (IRV). The valve material in these "non-IRV" regulators tends to harden with age. The regulators are over 20 years old, and PG&E states that this hardening impacts the valve's ability to lock-up, limiting pressure under low- or no-flow conditions. PG&E has concluded that this is a risk.

PG&E has not reviewed records of "incidents" resulting from hardened valve material, nor does it know the likelihood of problems, nor how often incidents resulting from hardened valve material occur. PG&E's estimate of 100,000 such regulators on their system is based on professional judgment.[79]

In response to a DRA request, PG&E provided a report from Batelle Applied Energy Systems, regarding use of low pressure regulators for propane systems. The Executive Summary begins by noting anecdotal evidence that the natural gas industry effectively and safely uses low pressure regulators in field service for time periods exceeding 30 years.[80]

PG&E is developing a plan and proposes to replace 20,000 regulators a year for four or five years, to replace the remaining non-IRV regulators. This is a significant change from PG&E's current practice, which is to inspect the regulators when the customer's meter is replaced or the valve is shut off, or there is a leak investigation. If needed, the

[79] DRA DR 13-1a-b

[80] DRA DR 13-1k, Atch 3, p. v.

regulator is replaced.[81] PG&E does not know how many non-IRV regulators are being replaced by Gas Service Representatives when called to a location for other work.

After reviewing the information that PG&E has provided, including the Batelle report, TURN does not see the need for an urgent replacement effort. TURN accepts that replacements will eventually be necessary. Where opportunities arise for cost-effective replacement of these regulators, by expanding on an existing service call, or to complement other work being done at a site, the replacement would make sense.

PG&E should continue opportunistic replacement, but should keep better track of such replacements as part of standard asset management. There is not a need, however, for a special accelerated replacement program.

TURN's recommendation is to provide PG&E with 25 percent of requested funding for this effort, to support opportunistic replacements of non-IRV regulators. If PG&E has analysis in its next GRC supporting a more aggressive effort, the Commission can consider it then.

**Table 15: Replacement of Commercial Non-IRV Regulators (MWC 74)**

| | Replacement of Non-IRV Regulators (MWC 74) ($000s) | | | | |
|---|---|---|---|---|---|
| | 2012 | 2013 | 2014 | 2015 | 2016 |
| PG&E Forecast Cost: | $2,526 | $14,060 | $14,440 | $14,861 | $15,296 |
| TURN Forecast Cost | | $3,515 | $3,610 | $3,715 | $3,824 |
| PG&E>TURN | | $10,545 | $10,830 | $11,146 | $11,472 |

## *F. Chapter 8: Gas Distribution Capital and Investment Planning*

### 1. MWC 14: Gas Distribution Pipeline Replacement

PG&E proposes a massive escalation in pipeline replacement, with capital spending of $331,190,000 in 2014 (and similar amounts in 2015 and 2016), as compared to recorded 2011 spending of $127,010,000. The reason for this 260% spending increase in 2014 is due to more than doubling the spending on steel pipe replacement (from $75 million to $163

[81] DRA DR 13-1d

million), and instituting a new program for replacing plastic pipe (primarily the Aldyl-A pipe) at a similar spending level ($166 million).

TURN fully supports the Aldyl-A replacement program as a cost-effective risk reduction strategy. The problem with PG&E's approach is that it ignores the fact that greater risk reduction is achieved more economically by replacing plastic pipe. Rather than expand the level of steel pipe replacement, PG&E should continue that effort at current levels and redirect more money to plastic pipe replacement. TURN's proposal results in greater risk reduction at a lower total cost. TURN's proposal results in TY 2014 capital spending of $296,937,000, still 230% above 2011, but about $32,407,000 less than PG&E's request for 2014 capital.

Replacing pipe that has higher leak rates is PG&E's principal method of reducing the distribution system leak rate.[82] PG&E is able to plan ahead for replacing pipe with this funding. Emergency pipeline replacement is handled elsewhere.

PG&E's Program is guided by a quantified goal to reduce the leak rate of all pipe materials to the system average of 0.16 leaks per mile. This is an arbitrary goal, apparently unconnected to the value of reducing leaks in different materials. It also leads to a non-cost-effective outcome. A more cost-effective and safer outcome can be achieved by focusing on specific materials with the worst problems, rather than trying to reduce the leak rates for all pipes.

In pursuing this goal, PG&E expands both its pre-1940 steel pipe replacement program, and its pre-1973 Aldyl-A (early Aldyl) pipe replacement programs. PG&E discusses combining the existing Gas Pipe Replacement Program (GPRP) which focuses on metal pipe, and the plastic replacement program focused on Aldyl-A, and basing future efforts on DIMP-identified pipe replacements, for a longer term investment strategy[83]. PG&E has developed independent prioritization models for steel pipe replacement and for

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[82] TURN DR 44-1c

[83] PG&E, Exh. 3, p. 8-7

Aldyl-A pipe replacement. PG&E has not performed an analysis comparing the probability of leakage between steel and Aldyl-A pipe.[84]

[redacted]

Between 2011 and forecast 2013 spending, PG&E is expanding plastic pipe replacement spending from one percent of steel pipe replacement spending to a nearly equivalent amount.

[84] TURN DR 64-02bii

**Table 16: Distribution Steel/Aldyl Pipeline Replacement ($000's) (MWC 14)**

| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|
| 14A: Pre-1940 Steel[85] | $74,668 | $78,951 | $92,370 | $163,391 | $166,322 | $170,490 |
| 14D: Plastic | $699 | $36,120 | $81,111 | $165,940 | $168,940 | $171,981 |
| Total 14A,D Spending | $75,367 | $115,071 | $173,481 | $329,331 | $335,262 | $342,471 |

This spending plan makes no sense from either a safety or cost-effectiveness perspective. Allocating all spending to early Aldyl pipe replacement provides greater risk reduction at a lower cost.

Replacing early Aldyl pipe eliminates more than twice as many leaks as replacing pre-1940 steel pipe. The early Aldyl pipe leak rate per mile is higher than steel pipe. In addition, it costs less per mile to replace. Pre-1940 steel pipe on PG&E's system had a leak rate in 2011 of 0.222 leaks per mile, while the early Aldyl pipe had a leak rate of 0.304 leaks per mile.[86] The forecast 2014 cost of replacing steel pipe is forecast at $516/foot, while the cost of replacing Aldyl pipe is forecast to be $314/foot.[87] The plastic pipe's higher leak rate and lower cost of replacement, makes replacing early Aldyl pipe very cost-effective for reducing leaks, compared to replacing steel pipe.

The result of pursuing PG&E's DIMP goal is that the two programs, the GPRP and the plastic pipe replacement program, both expand at nearly the same rate from 2013. From 2014 forward, when the DIMP planning is implemented, the two programs receive nearly equal amounts of funding continuing through 2028. Given PG&E data on relative leak rates and replacement costs, this strategy of doing everything at once diverges sharply from a strategy focused primarily on reducing risk.

PG&E has stated that it will not reallocate existing spending priorities to reflect the impact of better information available in the future.[88] Apparently, PG&E intends to use new information strictly to request increases in spending, rather than reallocate

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[85] Includes cast iron pipe.

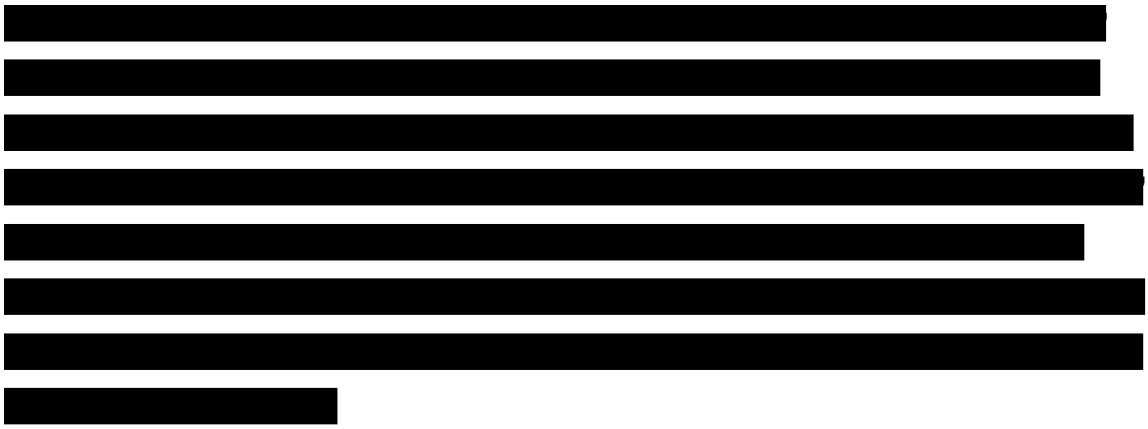
[86] PG&E Exh. WP 3, p. WP 8-33

[87] PG&E Exh WP 3, p. WP 8-35

[88] TURN DR 15-21

spending to achieve efficiencies. Incremental spending will not necessarily be redirected to maximize risk reduction, but may serve to expand existing, less effective programs.

TURN believes cost-effectiveness should guide PG&E's risk reduction spending, to provide greater safety improvements for the money spent.



PG&E's plans for replacement reflect PG&E's approach to DIMP analysis, that existing efforts are not subjected to review due to new information or more cost effective alternatives. PG&E implements a "grandfathering" approach to spending, with equal additional funding to existing efforts even when data show spending should be redirected to programs that achieve safety more cost-effectively.[89] PG&E's approach to pipe replacement is arbitrary and does not account for cost-effectiveness or the relative value of replacing different types of pipeline.

If resources are the constraint that PG&E faces, they could spend less and achieve the same system risk reduction as their forecast spending. Replacing early Aldyl pipe provides a 125% greater risk reduction per mile replaced (number of leaks removed) than does replacing the steel pipe, at lower cost.

Increased spending on Aldyl-a replacement, while holding the feet of steel pipe replaced approximately constant from about the 2011 level onward would provide savings of over $48 Million/year from 2014 through the attrition years, while achieving a system leak rate comparable to PG&E's proposal.

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[89] Id

**Table 17: Savings from Redirection**

| | Savings from Redirecting Pipe Replacement Spending | | | |
|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 |
| Total PG&E Forecast: | $173,481 | $329,331 | $335,272 | $342,471 |
| PG&E Leaks Eliminated: | 23 | 44 | 44 | 44 |
| Total TURN Recommend: | $162,722 | $280,454 | $285,752 | $289,339 |
| TURN Leaks Eliminated: | 23 | 44 | 44 | 44 |
| TURN Savings: | $10,759 | $48,877 | $49,520 | $53,132 |

These savings offer an opportunity to further reduce distribution main leaks, and the potential for dangerous incidents on PG&E's system. Since replacing plastic pipe appears to be a cost-effective alternative, TURN recommends applying half of the cost savings, between TURN's cost-effective case and PG&E's forecast, to additional plastic pipe replacement.

**Table 18: Applying Savings to Leak Reduction**

| | Additional TURN MWC 14C Expenditures (Aldyl-A) | | | |
|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 |
| Split TURN Savings: | $5,380 | $24,439 | $24,760 | $26,566 |
| Additional Leaks Eliminated | 1 | 4 | 4 | 4 |

**Table 19: TURN Recommendation (MAT 14A, C)**

| | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|
| PG&E Total MWC 14A,C | $173,481 | $329,331 | $335,272 | $342,471 |
| TURN Steel Replacement | $72,722 | $74,454 | $75,752 | $77,339 |
| TURN Aldyl Replacement | $95,380 | $230,439 | $234,760 | $238,566 |
| Total TURN MWC 14A,C | $168,102 | $304,892 | $310,512 | $315,905 |
| PG&E>TURN | $5,379 | $24,439 | $24,760 | $26,566 |

This should reduce the leak rate and accompanying risk on PG&E's system more quickly and at less cost than PG&E's current proposal, which simply expands the steel / plastic balance of existing replacement efforts.

This recommendation leaves about $75 Million a year for replacing steel pipe. This work should be focused on eliminating pipe with PG&E's highest priority value, subject to constraints. PG&E already proposes this in its workpapers.[90] PG&E is moving

[90] PG&E Exh. WP 3, Ch 7-12, p. 8-101

responsibility for replacing cast iron pipe, the most leak prone type of pipe on its system from the GPRP to Reliability Replacement, so this should make more of these funds available for steel pipe replacement. TURN also recommends that PG&E be required to conduct an evaluation for the 2017 GRC of its pipe replacement program, to provide data on unit costs and leak reduction by pipe category. Based on the results of the analysis, PG&E should redirect spending where it can pursue greater risk reduction with pipe replacement funds, even if those efforts involve activities other than pipe replacement.

**2. MWC 50: Gas Distribution Reliability**

*a. MAT 50A: Reliability Main Replacements*

PG&E intends to more than quadruple spending on this program from recorded spending of $12.457 million in 2011 to $53.660 million in 2014, to be continued through 2015-2016. TURN supports funding for this program, as the evidence suggests that replacing the high risk low pressure main reduces risk cost-effectively compared to other programs.

Much of the forecast growth in this Program is in replacement of low pressure main with high pressure main. PG&E's discussion suggests this work is done in heavily populated area, replacing cast iron (high leak rate) and early steel pipe, subject to overpressure incidents. These conditions appear to make the weighted consequences of leaks in these areas greater than the average on PG&E's system. This project appears to address a relatively high-risk problem. Some of this increased cost reflects the cost of replacing main in San Francisco, and this increased unit cost will persist through the attrition years.[91]

PG&E's goal, here again, is to reduce the leak rate of the post-1940 steel pipe, and emergent pipe replaced to PG&E's current system average leak rate, within 60 years.[92] TURN has already discussed its concerns regarding the "average leak rate" criterion. It is unrelated to minimizing risk. As of 2014, this program will include cast iron pipe as

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[91] TURN DR 60-4a-b

[92] PG&E Exh.3, p. 8-16

well as older, low pressure pipe and facilities. From the information that PG&E provides, it appears that the safety value of replacing pipe in the low pressure distribution system program would be relatively high in comparison to the replacements in the GPRP (MWC 14A), or generally of post-1940 steel pipe.

While PG&E plans to achieve its leak rate goal in the pipe replacement program (MAT 14A, C) in 15 years, PG&E plans to take 60 years to achieve the same goal here. TURN is left wondering why this work has so much lower priority. If risk reduction is PG&E's primary goal, this appears counterintuitive.

PG&E plans to apply its "Priority Value" methodology, used in the Gas Pipe Replacement Program to the program in 2014, to prioritize work.[93] If PG&E is successful in using this prioritization methodology, it this it would be a start toward comparing the risk of pipeline segment between programs. PG&E could then use this method to pursue a more efficient allocation of resources between the Pipe Replacement Program and Reliability Main Replacements.

It appears to TURN that this spending is warranted as a cost-effective risk reduction strategy, at least in this rate case, while low pressure main is a significant focus. In this program, as well as in the pipe replacement efforts in MWC 14, PG&E is forecasting significant spending increases by 2014. The spending in this work would double between 2012 and 2014. This expanding program will compete with other pipe replacement efforts for resources. Given the example of PG&E's confidential DIMP evaluation, if shortages of resources occur, we have no confidence that PG&E would reallocate those resources based on most cost-effectively reducing risk.

*b. MAT 50B, G: Reliability Service Replacements*

PG&E forecasts an increase in the number of service replacements in these MAT codes as a result of shortening the leak survey cycle to three years from five years.[94]

TURN believes that any change in the leak survey cycle should be postponed until the impacts of the leak cluster survey/repair efforts and the Picarro leak surveys are known,

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[93] TURN DR 83-3

[94] PG&E Exh. 3 WP 8-48

and better data on a steady-state leak find rate are available. We recommend denying this increase.

**Table 20: Reliability Service Replacements ($000s) (MAT 50B, G)**

| Reliability Service Replacements | | | |
|---|---|---|---|
| Incremental for 5 to 3 Year Leak Survey | | | |
| | 2014 | 2015 | 2016 |
| PG&E Forecast | $2,051 | $2,088 | $2,141 |
| TURN Recommendation | 0 | 0 | 0 |

*c. MAT 50E: Emergency Shutdown Zone Valves*

PG&E's proposes to install additional emergency shutdown valves based on adopting a different standard for the number of services per shutdown zone. The criteria that PG&E has applied to determining the number of additional valves[95] appears to fit with AGA best practice guidelines[96]. This effort will require over $27 million in capital spending for each year 2014-2016.

However, TURN is concerned that PG&E intends to install all of these valves in three years, accelerating from no installs to over 1,000 installs per year. This jolt of spending would occur at the same time PG&E proposes to double reliability main replacement spending, double the footage of Aldyl-a distribution main replacement, and increase replacement of eighty percent more footage of steel distribution pipe.

In these other efforts, PG&E is willing to spend 15 to 60 years to get the leak rate of each type of distribution pipe down to the current system average. The annual risk of injuries and property damage from an emergency event on PG&E's distribution system may be higher than the risk from leaks repaired by replacing distribution pipe and service lines. However, it is also likely that there are areas on PG&E's system in which emergency events are less likely, dangerous and potentially costly than in others.

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[95] TURN DR 60-05di

[96] TURN DR 44-4 Atch 1 CONF

This Program is still being planned as part of PG&E's Gas Operations 5 year operating plan[97]. TURN recommends that PG&E install the valves over six years, using the current planning process to focus work in areas posing the greatest risk of an emergency. This will smooth spending, and create less competition for resources shared with other safety initiatives that also have rapidly expanding spending. The result is a reduction in capital spending of about $13.909 million in TY 2014.

PG&E gives no indication that this work would be coordinated with pipeline replacement efforts. This looks like an area in which an effective DIMP planning effort could provide the benefits of more efficient use of resources.

**Table 21: Emergency Shut Off Valves ($000's) (MAT 50E)**

| Year | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|
| Forecast Cost MAT 50E: | 0 | $27,818 | $28,319 | $29,027 |
| TURN Proposed Cost: | 0 | $13,909 | $14,160 | $14,514 |
| PG&E>TURN | | $13,909 | $14,160 | $14,514 |

**3. Balancing Account Treatment**

PG&E proposes significant increases in distribution leak repairs, pipeline replacement and pipeline reliability replacement spending and installation of emergency shutoff valves. All of these activities involve excavation. From 2012 to 2014, PG&E's forecast spending on these programs nearly triples.

TURN supports expansion of these efforts to reduce risk on PG&E's system, with some changes and reductions covered in this testimony. At the same time, TURN is concerned about competition for resources, the time it may take to scale up existing programs, and to field new efforts, like the Emergency Shut-Off Valve Program.

Excavation for some of PG&E's proposals may be specialized, leading TURN to omit tee cap repair and DIMP cluster survey and repair from this discussion. However, with this aggressive increase in program efforts, TURN believes that underspending in the first

[97] TURN DR 69-7a

year or two of the less specialized efforts is a real possibility, as plans are finalized and acquisition of resources to pursue the program gets underway.

In order to provide resources to conduct these program, and at the same time protect ratepayers from utility underspending, TURN recommends that the CPUC establish an expense balancing account for the combined expenses in MWC FI, and capital MATs 14A, 14D, 50A, 50E.