

**Phase Two of an Investigation of  
Peoples Gas Light and Coke Company's  
Accelerated Main Replacement Program**

**Recommendation Implementation Monitoring  
Sixth Quarterly Report**

**Presented to:  
The Illinois Commerce Commission**



**Presented by:  
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**January 30, 2017**

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## Summary

- Work continued through the fourth quarter of 2016 -- the sixth of the eight quarters established for implementation monitoring of the recommendations set forth in Liberty's May 5, 2015, Phase 1 report regarding the Accelerated Main Replacement Program ("AMRP"). The original 95 recommendations now number 88, after we eliminated or consolidated a few with others (as reported earlier). Work this quarter continued to concentrate on successful close out of recommendations on the basis of successful implementation.
- Implementation progress continues - - the sixth monitoring quarter has produced 15 recommendations for which management completed implementation.
- This report addresses closeout activities for 15 recommendations, all of which we consider fully implemented (refer to the **Summary of Plan Activities and Status Detailed in This Quarter's Report**, on Page 3).
- Of the 88 recommendations, we consider 62 as accepted/closed. The percentage closed (71 percent) generally tracks the amount of our implementation period consumed (six of eight quarter, or 75 percent).
- We describe below the details underlying work on those 15 recommendations whose implementation activities this quarter's report addresses. We consider all closable on the basis of full implementation, either in full accord with the original recommendation and approved implementation plans, or on terms equally or more likely to optimize AMRP performance.
- We will continue to conduct monitoring activities as appropriate on the closed recommendations, in order to examine: (a) whether execution continues as planned, and (b) whether certain additional needs (generally narrow and administrative) were met.

## Implementation Plan Monitoring Approach

Liberty's May 5, 2015, Final Report on the Phase One Investigation addressed the findings, conclusions, and recommendations resulting from an essentially year-long investigation of management and execution of the AMRP. That report set forth 95 recommendations for improving AMRP planning and execution. The May 5, 2015, report ended Phase 1 of a two-phased project. Liberty's defined scope for Phase 2 is to conduct a structured, two-year program of monitoring the effectiveness of management's implementation of the final report's recommendations. Our scope does not include continuing "auditing" of program performance.

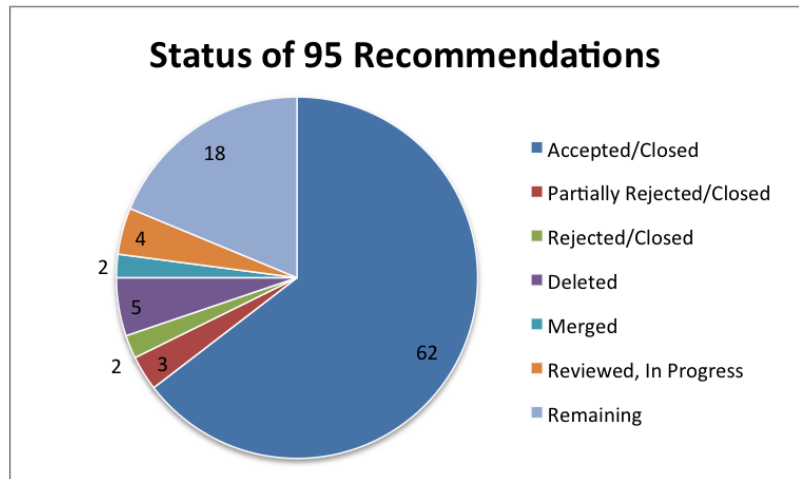
The Phase 2 monitoring work led to the elimination of five recommendations (Numbers D.5, F.4, K.4, L.6, and V.1) for various reasons that are documented in the prior status reports (Q2 2016 and Q3 2016).

Two other recommendations were merged into others, in order to reflect the ability to address them through a common implementation plan. Of the revised number of monitorable recommendations (88 after elimination and combination), all had what Liberty and management agreed were effective implementation plans at the end of Q3 2016.

This report describes the details of monitoring efforts on 15 of the 88 recommendations, all of which we believe should be closed out. (Refer to the **Summary of Plan Activities and Status Detailed in This Quarter’s Report**, on Page 3).

To date, PGL and Liberty have closed out (accepted, partially rejected, or rejected) 67 of the original 95 recommendations. Another seven of the 95 have been deleted or merged, leaving 21 to be implemented -- 4 “in progress” and 17 that have not yet been offered by PGL for closeout.

Two calendar quarters remain and PGL has suggested that five or more recommendations will not be implemented by the time Liberty completes its Phase II monitoring. For those expected to remain open at the end of our two-year monitoring period, our final monitoring report will describe status and provide recommendations for subsequent monitoring activities by Staff.



This report concludes with a summary of the status of all recommendations from the May 5, 2015, report (Appendix A).

### Summary of Expected First Quarter 2017 Monitoring Activities

1. Liberty construct an overall plan for monitoring work across the remaining two quarters of monitoring work.
2. Liberty will prepare and then execute detailed plans for specific monitoring activities (e.g., data requests, interviews, site visits) associated with those recommendations scheduled to undergo key implementation steps during the fourth calendar quarter of 2016.
3. Liberty will prepare a report of monitoring activities and open plan closure at the end of the quarter.

As before, Liberty has not identified changes to its monitoring work resulting from the stakeholder process that has been examining AMRP parameters.. As noted, however, we recognize that revision of fundamental AMRP parameters has significant potential for affecting the course that implementation of certain recommendations should take. Transitioning from the discrete, highly focused public-safety priority of the AMRP (via expedited replacement of leak-prone pipe) to a more broadly expressed “modernization” categorization should not serve to lessen management’s sense of priority on public safety or the focus on meeting critical long-term goals. An approach that manages production in rolling three-year windows can serve, but management should execute that approach in the context of reasonably clear long-term public safety goals. Any more generally stated modernization objective needs to be supported by clear public safety goals and annual budgets. Management also needs to express transparently the long-term cost impacts of meeting those goals, as PGL enters a new era following completion of the Commission’s current review of the AMRP.

**Summary of Plan Activities and Status Detailed in This Quarter’s Report**

<b>Rec. #</b>	<b>Recommendation</b>	<b>Previous Status</b>	<b>Current Status</b>
<b>C.1</b>	Peoples Gas should include as an element of the neighborhood work planning process an evaluation of the merits of taking an exception to the double decking approach	Plan Accepted	Accepted/ Closed
<b>D.2</b>	Peoples Gas should accompany regularly reported performance data with insightful analysis in order to make the data immediately meaningful to management oversight and supportive of timely and responsive improvement and corrective initiatives and activities	Plan Accepted	Accepted/ Closed
<b>I.3</b>	Peoples Gas should act immediately to address the need for sufficient internal resources to perform back end AMRP work as planned and scheduled	Plan Accepted	Accepted/ Closed
<b>K.1</b>	Peoples Gas should establish a cost estimating capability by formulating a clearly communicated cost estimating philosophy, formalizing a cost estimating process, preparing procedures, and developing effective tools	Plan Accepted	Accepted/ Closed
<b>K.2</b>	Peoples Gas should maintain and keep updated a set of historical databases that address cost estimating variables	Plan Accepted	Accepted/ Closed
<b>K.3</b>	Peoples Gas should perform project cost estimate reconciliations to understand major cost deviations, analyze performance and document lessons learned	Plan Accepted	Accepted/ Closed
<b>K.5</b>	Peoples Gas should establish a centralized cost estimating organization to maintain and sharpen the cost estimating skills	Plan Accepted	Accepted/ Closed
<b>N.1</b>	Peoples Gas should clearly define and document the AMRP governance roles of the Executive Steering Committee with mission statements, charters, and roles and responsibilities for project oversight, monitoring and decision authority	Plan Accepted	Accepted/ Closed
<b>N.2</b>	Peoples Gas should promptly execute its current plans to provide for more regular and effective oversight of AMRP and for follow-through and corrective actions to address performance shortfalls	Plan Accepted	Accepted/ Closed
<b>P.3</b>	Peoples Gas should promptly: (a) correct the gap that exists with respect to ensuring the accuracy of material and equipment costs charged to the AMRP, (b) develop a method for reliably and accurately determining independently the magnitude of error in AMRP material and equipment costs being included in rate recovery, and (c) devise and implement a similarly independent testing program to verify that no material risk of similar error exists with respect to AMRP costs subject to rate recovery	Plan Accepted	Accepted/ Closed

Q.3	Peoples Gas needs promptly to conduct short-term and long-term analyses of its requirements for skilled and experienced field resources, develop incentives for moving personnel into new positions and incenting senior workers to remain, and ensure that training and development efforts anticipate (and not merely react to) vacancies	Plan Accepted	Accepted/ Closed
Q.4	Identify and pursue means to increase the stability in and the numbers of field supervision and inspection personnel	Plan Accepted	Accepted/ Closed
Q.5	Clarify responsibilities for key field roles and institute training programs to support them more fully	Plan Accepted	Accepted/ Closed
U.1	Peoples Gas should alter the AMRP Communications Plan	Plan Accepted	Accepted/ Closed
U.2	Peoples Gas should standardize the process to set AMRP customer appointments	Plan Accepted	Accepted/ Closed

The next report sections address the results of the fourth calendar quarter’s monitoring efforts on these recommendations. The discussions begin with a statement of the recommendation made in our May 5, 2015, report and the conclusions underlying it.

## C.1 – Double Decking

Peoples Gas should include as an element of the neighborhood work planning process an evaluation of the merits of taking an exception to the double decking approach.

Double decking as a default option clearly makes sense for Peoples Gas. The planning process, however, needs to include an element that verifies its superiority over other options in individual cases.

### Underlying Conclusions

C.4 Departing from the more typical approach of a single main to serve customers on both sides of the street makes sense under the conditions that Peoples Gas faces, but deploying the strategy without exception would not promote optimization.

The “double decking” that Peoples Gas employs substantially increases some aspects of material and construction costs, but generally responds effectively to the cost penalties that would apply to the use of a single main (serving both sides of the street). A single main would require opening the paved portion of public rights-of-way, because the City of Chicago will not allow directional drilling of services under the street. A separate main serving each side of the street also offers future advantages (e.g., avoiding disruptions when future in-street work by others takes place). Finally, minimizing work in the streets mitigates the amount of public disruption that a program as massive as the AMRP inevitably must produce.

The Company, however, should not conclude that new, double decking makes more sense in all cases. Examining particular circumstances of each street as part of neighborhood work planning, rather than a universally applied rule, should dictate the final choice. For example, it would appear likely that some existing center-of-the street mains could remain in place, while being upgraded to higher pressure. A 6” replacement project performed in 2006, but left to operate at low pressure offers a case that would merit consideration. It takes case-by-case analysis to determine whether doing so would prove more expensive than replacement again with double-decked pipe.

### PGL Action Plan Steps

This recommendation now contains 6 steps, all of which Peoples Gas has completed.

Item #	Task	Status
1	Update the model with the current construction rates (main/service installation & restoration)	Complete
2	Update the model with the 150’ asphalt rule	Complete
3	Document the update/review process	Complete
4	Review attributes of the AMRP Neighborhoods under design	Complete
5	Make the decision on whether it is necessary to approach the city	Complete
6	Review and update the model/documented process	Complete

### **Expected Post-Implementation Conditions and Factors**

Management should be evaluating the need to “double deck” mains on both sides of the street on a continuing basis. A primary reason for this requirement is that the city does not allow Peoples Gas to use directional drilling techniques under city streets. As noted in task C.1.5, Peoples Gas may find it necessary to revisit this requirement in the future (see General Observations for a potential HDD trial).

### **Summary of Liberty’s Steps to Verify Implementation**

None except for the review of the model that has been performed as part of this closeout

### **Observed Conditions and Factors**

Liberty observed that in one particular case, double decking was specified in an alley that did not have the same cost basis as city street and thus a single main would have been appropriate.

### **Implementation Complete and Satisfactory?**

This recommendation is considered complete based on the tasks listed and the current schedule of completion plus the responses to data requests.

### **Remaining Gaps, Needs**

The cost model needs to update yearly with new cost information and/or changes in city requirements.

### **PGL Position**

PGL agrees that this recommendation should be implemented.

### **Future Liberty Verification Activities**

None.

### **General Observations**

Management has run its cost model for 2016. Based on the current requirements of the 150-foot Chicago DOT repaving rule and other costs, it determined that the break point on a cost basis is six services for double decking. Management has determined to double deck streets with more than six services; those with fewer will employ a single main. Management has proposed to discuss with CDOT a trial to drill directionally under smaller side streets (in lieu of open trenching), avoiding curb improvements required by the Americans with Disabilities Act (ADA). The most current CDOT specifications have reduced the number of ADA curb improvements on each intersection from four to two provided only one crossing is being made.

Below is a summary of the Double Decking Model currently being used. It shows that for eight services, the cost between the two options is essentially identical. Management prefers double decking, because it keeps mains and services out of street, thus avoiding in-street conflicts with other utilities (*e.g.*, sewer, water, electric).



Project Cost Summary		
Total Footage	600	
Number of Services	8	
	Single Install	Double Deck
Main Cost	\$ 21,791	\$ 43,583
Service Cost	\$ 39,643	\$ 17,409
Restoration Cost	\$ 190,010	\$ 92,000
Total	\$ 251,445	\$ 152,992

Assumptions:

For Double Deck: Twice as much main will be installed for 2" & 4" pipe

A long sided service is about 80'. A short sided service is about 30'

Restoration cost is included in the main and service installation cost

Grinding and Resurfacing Street is based on length x width

Width of street = 66'

## D.2 – Insightful Analysis of Performance

Peoples Gas should accompany regularly reported performance data with insightful analysis in order to make the data immediately meaningful to management oversight and supportive of timely and responsive improvement and corrective initiatives and activities.

Chapter O: Reports and Analysis addresses reporting requirements. For the present, this chapter has cited a number of examples of reporting gaps or weaknesses. Program management and executive oversight depend on candid and insightful reporting of performance. Managers and executives cannot provide effective oversight and instigate efforts to improve performance when they receive inadequate information. Those charged with management and oversight have no material use for meaningless data or information and analysis upon which they cannot act. What has become a long-term set of performance reporting issues needs to be corrected with communication.

### **Underlying Conclusions**

D.1 Current AMRP plans do not provide for sufficient program definition and the program has not been supported with sufficient assembly and analysis of performance information.

The AMRP should operate under a comprehensive and credible long-term plan that addresses all major components in a complete and consistent fashion. Liberty found that the AMRP does not have an integrated, up-to-date, sufficiently comprehensive program plan. Such a plan should clearly state critical assumptions. Liberty found critical planning assumptions neither well defined nor well documented. The kind of plan that the AMRP requires includes the provision of suitable contingencies for growth and other uncertainties. Liberty found no provision for contingencies or allowances to address the change and growth that are all but inevitable for a program of the AMRP's scope, complexity, and duration. Program management does not address these matters on a long-term basis, but confines contingency use to annual planning, and even in that case, largely limited to contractor work.

The program management organization does not have detailed information about progress to date. Performance data is not consistent, fully reliable, or well suited to the analysis that a program such as the AMRP requires. Past performance does not undergo rigorous and continual analysis to ensure optimization. Liberty has not found detailed, meaningful analysis of performance for the purpose of identifying improvement opportunities. Neither did Liberty's fieldwork disclose substantial documentation of corrective actions taken to address performance issues. Scope change typically has a significant impact on programs like the AMRP. There should exist clear documentation of the degree to which scope evolution has affected the program. Scope growth, particularly in terms of expanding project requirements has had an impact on the AMRP. That impact is not well documented or quantified. The absence of data produces an inability of program management and senior leadership to isolate AMRP activities and costs from those of other work commonly managed with AMRP projects.

D.3 The collection, maintenance, and presentation of AMRP performance data falls well below standard.

The quality of the data, after more than four years, does not serve a program of any substantial size, let alone a multi-billion-dollar super-project like the AMRP. Basic data remains fragmented, inconsistent, dated, and in some cases in error. Assembly of data sets often requires more than one source, with the result that anyone trying to analyze performance, whether internal or external to Peoples Gas, cannot be sure of the validity of the data.

Costs are not presented in a manner that facilitates analysis. Planned quantities, except in a few instances, are not presented nor compared to actuals. Labor data, perhaps the most important management parameter, is lacking. That lack substantially constrains management’s ability to gauge the potential impact of added resources. Productivity in most areas cannot be determined in helpful ways. Moreover, some critical data, including the retirement data cited by management as the most important measure, is in error, and has not undergone updating for two years.

**PGL Action Plan Steps**

Item #	Task	Status
1	Establish a cross-functional core team tasked to identify the scope of desired metrics, points of data collection, data management systems, and the individuals responsible for analytic evaluation.	Complete
2	Team issue a report on the above noted data elements, and recommendations for improvements or modification	Complete
3	Generate core performance reports.	Complete
4	Establish training requirements for staff.	Complete
5	Re-charter core team to identify the next level of analytics value. Include participants from WEC peer projects.	Complete
6	Team recommendations on improvements.	Complete
7	Implement improved reporting	In Progress
8	Perform internal and/or WEC peer-to-peer reporting and analysis audits.	In Progress

PGL is upgrading data quality standards and metrics. The primary goal of these efforts is to use these metrics and standards to assess program effectiveness and efficiency. The critical function of data analysis is dependent on the establishment of these foundational elements. Key staff tasked with analysis and reporting functions will be sourced for their expertise and in some cases their skills developed through supplemental training provided either in-house or by third parties. While these staff members have the primary role to analyze and report on data and related metrics, the entire team will be expected to be able to process, verify, and question data analytics results and trends. Taken together, these aspects of the proposed data-driven management approach will help management stay updated on program performance and be able to deploy corrective actions as necessary. Plans regarding specific roles, training curriculum, analysis criteria, and other elements of this ongoing effort are in the process of being developed.

### *Data-Driven Management*

PGL will improve the format, content, intelligent analytics, and therefore management value of reports. Going forward, Management will make greater use of monthly and annual forecasting to more accurately predict plan and schedule work activities. PGL recognizes that quality forecasting will improve timely and productive inflight corrective adjustments. This activity will take place in two phases. Phase I will focus on high value near term core analytics to maintain on-going activities. Phase II will be a second pass deeper dive into additional analytics and data evaluation that can further benefit the program. While this improvement plan is presented in terms of two discrete phases, in practice the new leadership team has been retooling reporting activities on an on-going basis.

### *Performance Metrics*

PGL agrees that it should upgrade AMRP performance metrics to include annual or cumulative progress versus the twenty-year long-term plan goals and metrics for the executive oversight group and the boards of Peoples Gas and WEC.<sup>1</sup> Given the substantial length of the program, neither life of project nor short-term metrics can be successfully used in isolation. For example, evaluation of resources that the project will need over five or ten years would be a great fit with life of project profiles. This data may provide valuable insight to proactively project hiring and training needs. At the other extreme, short-cycle profiles of weekly or monthly overtime worked by each crew may be essential to assessing crew utilization and productivity, as well as supervisor coaching opportunities. Many other project management requirements can be met with weekly or monthly production or financial reporting. PGL believes the improved data sets and reports containing core metrics are up and running, with the breadth of actionable insights growing month by month.

Below is a sample of the core metrics that will help guide the program. Depending on the internal audience and business need, the data may be consolidated or broken down by district office, contractor, neighborhood, or project manager. Furthermore, the data would routinely illustrate variances between the original budget values, monthly revised forecasts, and actual values.

- Miles of main installed
- Miles of main retired
- Number of meters installed
- Customer satisfaction ranking
- Leak rates
- Permit compliance metrics
- Work completion rates
- Aging reports on project close-out
- Restoration quality rankings

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<sup>1</sup> However, this may not be the case. There is a clear trend towards a total near-term focus via rolling three-year windows. While this can be an appropriate construction management approach, any resulting de-emphasis on long-term public safety, cost, and schedule goals would be troubling.

- Crew utilization and over-time values
- Crew / contractor metric on hits to third-party infrastructure
- Suite of safety metrics associated with observations, first-aid cases, and other OSHA values
- Engineering design quality metric
- Contractor change order metrics
- Crew / contractor quality and performance metrics.

PGL will use the metrics above to drive business decisions associated with many aspects of the capital construction program, including:

- Program progress, cost, and schedule reporting
- Safety reporting for individuals, shops, crews, and contractors
- Contractor performance and alignment with Peoples Gas goals
- Evaluation of project management, crew, and contractor performance
- Engineering quality, compliance with standards, and efficiency
- Performance compared to third party expectations
- Customer satisfaction with internal and contractor crews
- Root cause analyses
- Materials management and waste tracking
- Capital utilization efficiency
- Regulatory reporting.

PGL recognizes that a solid program to collect, store, manage, and utilize project data is essential to high quality project management. The Company will link the above data and metric methodologies with an engaged and supportive executive team to guide the AMRP.

PGL understands that program management and executive oversight depend on candid and insightful reporting of performance, as stated in Liberty's report. Producing data without connecting the data to insightful observations substantially limits management's ability to effectively execute the program. To ensure that the reports are inclusive of the metrics needed to complete a useful evaluation of the metrics and data, a cross-functional team has been established consisting of the Vice President of Construction, the Directors of Construction and the Project Controls Manager.

In order to enhance project reporting for the company, management has tailored reporting to meet the needs of managers and staff, intending to inform implementation teams and management of project progress and project issues. As a result of this focus for reporting, the PGL team has made greater use of weekly, monthly and yearly forecasting.

Training has been developed to ensure use of these reports to their potential. The goal of this training is to provide participants with fresh ideas and the right tools to make better business decisions through analysis performed on available business data. The training will increase analytical competency for PGL personnel, mainly targeting participants from construction and

project management. The class builds on a solid mathematical background and helps participants to absorb tools and techniques to analyze data in a meaningful way.

For task items number five through eight, a PGL Capital Construction team regularly seeks feedback on the format and content of the Capital Construction Reports. In addition to the internal discussions regarding these reports, management has most recently engaged some peer utilities to obtain feedback from an outside perspective, informed by industry experience in managing large capital programs. Their review extended to areas of the reports such as the format, layout, content, and how effective they perceived the presentation of data to be, in the current version of these reports. The comments received thus far are summarized in a Reporting Peer-to-Peer Review and Comments Log. As feedback continues to be sought, the resulting comments will be logged and addressed as best fits the needs and context of the program at PGL.

With regard to program performance reporting and metrics, as part of an ongoing ICC Docket proceeding, management expects an early 2017 ruling on the content and frequency of program performance reporting to the ICC. PGL expects this Ruling to affect program reporting going forward. In addition to the expected ICC-required reporting, management may also commit to other, more detailed reporting to respond to City information requests. Management will update Liberty as any changes become finalized.

### **Expected Post-Implementation Conditions and Factors**

The development and deployment of a structured reporting mechanism will provide current, valid, and insightful data for timely and effective decision-making. Improving the value of reported performance data will have near and long-term benefits for decisions that affect program success. Combining quality project reporting with active, engaged, and thoughtful oversight is critical and it provides the support the project execution team needs to be successful.

### **Summary of Liberty's Steps to Verify Implementation**

On December 14, 2016, Liberty met with PGL to discuss actions taken and review implementation progress. Liberty reviewed the following closeout documents:

- PGL Analytics Training
- Reporting Peer-to-Peer Review and Comments Log
- PGL Capital Construction Projects Monthly Status Report – Month Ending March 2016
- PGL Capital Construction Projects Monthly Status Report with AMRP Focus – Month Ending March 2016.

Subsequent to the December 2016 meeting, PGL submitted the following documents for review:

- PGL Capital Construction Projects Monthly Status Report – Month Ending October 2016
- PGL Capital Construction Projects Monthly Status Report with AMRP Focus – Month Ending October 2016.

PGL considers the following deliverable as closeout components:

- Development and implementation of Phase I and Phase II monthly / weekly reports that address safety, company performance, contractor performance, customer satisfaction, and

financial performance which provide timely and insightful business management information.

### **Observed Conditions and Factors**

As we have noted in our evaluation of other recommendation responses, the concept of insightful analysis is difficult to grasp and even more difficult to implement. Management's thinking has evolved considerably in this regard and we expect results superior to those we have seen in similar organizations. Although early responses to this recommendation tended to focus on data, the shift to analysis (the intent of the recommendation) is clearly occurring. The proposed training, scheduled for 1Q17 plays a key role in this shift. The initial plans show an excellent initiative that we have not seen elsewhere.

Management established the Risk Level and Metrics procedures in September 2016. These metrics have been designed, and full implementation will occur at year-end when all 2016 data is in hand. Orientation and training has already begun.

### **Implementation Complete and Satisfactory?**

Yes. Liberty believes that the intent of Recommendation D.2 has been met and that management is on the road to producing industry-leading capabilities in performance analysis and improvement. As expected, this has been an evolutionary process - - one now accelerating toward fruition.

### **Remaining Gaps, Needs**

The key element of PGL's plan is the training, which is scheduled for completion in the 1Q17. The planning material for the training program and the personnel slated to be trained make success a high probability.

Our scope does not include an audit of actual performance results. Nevertheless, our implementation progress review did show concerns, observed in the construction reports for October 2016. Replacement quantities ran well below the sustained levels achieved by prior management. October results also showed significant concerns about the safety record. We did not see substantial analysis of the underlying issues or a clearly articulated management response. These circumstances show that work remains in establishing the intended commitment to performance analysis. The right process steps are being taken, but have yet to translate into comprehensive results. Our work of the remaining two quarters will examine progress in this regard.

### **PGL Position**

Management agrees that the recommendation has been implemented.

### **Future Liberty Verification Activities**

During the second quarter of 2017, Liberty will review the results of the training program as well as the ways in which the results of that training are being reflected in program management.

**General Observations**

None.



### **I.3 – In-house Labor for Backend AMRP Work**

Peoples Gas should act immediately to address the need for sufficient internal resources to perform back end AMRP work as planned and scheduled.

Conditions experienced in 2014 with respect to work such as meter installation need to be avoided in the future. Meter installation is less affected by weather than are main replacements and ground restoration. Performance information at the shop level made it apparent that production started to lag as early as March. Peoples Gas was unable to perform sufficient actions to correct performance lags, despite regular attention to the matter by all three Shops.

#### **Underlying Conclusions**

I.2 Consistent with the overall AMRP strategy, the Company’s short-term resource plans make an appropriate overall assignment of contractor and employee roles, but do not properly identify internal personnel to install meters and contractors to perform main replacement, service installation, and ground restoration.

AMRP resource plans must identify where the utility will use external and internal personnel. The strategy the utility used to define the overall roles of contractors and internal resources is appropriate for the short-term. However, changes in resource availability in the future may leave the Company in a reactive mode. Peoples Gas cannot rely exclusively on the short-term plans to accommodate future circumstances.

Failure to develop more substantial levels of internal workers skilled in replacing mains and installing services will force near total reliance on contractors for the life of the AMRP. Should the future bring a tighter market for resources (as more utilities accelerate replacement programs) a lack of internal resources will threaten completion of the AMRP on the current overall schedule. Increased competition in the industry for resources may also pose cost escalation risk.

#### **PGL Action Plan Steps**

This recommendation contains six tasks, all of which are complete.

Item #	Task	Status
1	Discuss, work rules with local union leadership to develop appropriate flexibility with resource allocation.	Complete
2	Review the construction sequence and modify the process and plan as appropriate to increase efficiency and effectiveness.	Complete
3	Review the proposed neighborhood block plans to ensure that all work can be reasonably accomplished during the scheduled period.	Complete
4	Position of “District Leader” added to the Capital Construction shop workforce	Complete
5	Run a pilot demonstration of the revised process on a selected neighborhood.	Complete
	Review and evaluate the success of the pilot program and make additional process changes as appropriate.	Complete

### **Expected Post-Implementation Conditions and Factors**

Management anticipates that with the process changes and the reassignment of in-house mechanics to the AMRP meter move/change process will result in eliminating any backlog in this facet of the work now and in the future.

### **Summary of Liberty's Steps to Verify Implementation**

At the conclusion of the construction season, typically in November, Liberty has evaluated the number of services not having have meters installed and we compared the results with prior year-ends. In the past, the number of services awaiting meter changes ran to the thousands, which caused additional restoration and multiple mechanic visits to ensure that the meters were eventually installed and moved outside. In some situations, installation delays could have also delayed the change from low pressure to medium pressure in entire areas.

### **Observed Conditions and Factors**

Liberty previously observed that management started the construction season with a backlog of meter moves/changes that carried over into the new construction season. This carry over was eliminated with the proposed process changes and additional in-house staffing

### **Implementation Complete and Satisfactory?**

This recommendation is considered complete and verified.

### **Remaining Gaps, Needs**

Peoples Gas needs to consider additional in-house resources for moving some of the work from contractors as proposed in recommendation I.2

### **PGL Position**

PGL agrees with this recommendation and has activity implemented it.

### **Future Liberty Verification Activities**

None.

### **General Observations**

Management completed the initial trial of the new process in the Beverly Phase 8 and 9 construction areas (see responses to DRs regarding recommendation I.3. Management considered the trial was a success, and will make the lessons learned and the change in meter locating and meter bar installation (plus where applicable installation of internal customer piping) the standard for the 2017 construction season. The total number of services without meters at the end of 2015 construction season was in the thousands. The backlog is now zero, with some meter locations marked and meter bars placed in advance of the 2017 construction season.

## K.1 – Developing a Cost Estimating Capability

Peoples Gas should establish a cost estimating capability by formulating a clearly communicated cost estimating philosophy, formalizing a cost estimating process, preparing procedures, and developing effective tools.

Liberty and the Company began discussing planned initiatives to address central program management, control, and oversight needs last September. Peoples Gas has stated that actions to address this recommendation are underway. The urgency of addressing program cost, however, needs to be underscored, in order to accelerate the pace of implementation. Those efforts would be materially advanced by securing the services of outside, professional cost estimators (two or more for a period of approximately six months) to develop a programmatic approach, define processes and procedures, and provide training to those individuals performing cost estimates in the new organization that Peoples Gas plans to manage the AMRP.

### **Underlying Conclusions**

K.1 The AMRP cost estimating process is fragmented and lacking in attributes key to its use as an effective basis for measuring AMRP work.

Each project estimate essentially consists of three different parts provided by personnel from three separate groups:

1. The design engineer normally estimates engineering and materials costs
2. The manager of the Cost Management Group adds overhead costs, which include the monthly allocation of charges from the personnel of all the supporting organizations
3. The Change Management Group provides the estimated construction costs, based on the awarded bid of the selected contractor.

A primary purpose of a cost estimate is to provide a valid cost-monitoring base. The current AMRP approach tends to actualize the engineering costs, focus essentially only on the contractor bids, and rely on the expectation that time charges by Peoples Gas employees will fall in line with the historical assumptions used. The AMRP cost estimates developed have limited consistency, and do not promote confidence with respect to their use in providing effective cost management of individual AMRP projects.

K.3 There presently do not exist cost estimating capabilities effective to meet AMRP needs.

No formal, written cost estimating guidelines or procedures exist. The cost estimating skills of the individuals preparing estimates vary significantly. In the absence of formal procedures and training, the quality of project estimates developed also varies greatly. The recent hiring of the first professional cost estimator for a program of this size reflects recognition of the need for improvement. One estimator will not prove sufficient, however, given the size, scope, and duration of the AMRP.

**PGL Action Plan Steps**

Item #	Task	Status
1	Finalize definition and mock-ups (i.e., methods) of the new cost estimate Compatible Units (CUs) to be used in WMIS	Complete
2	Document the CU annual update process	Complete
3	Obtain updated rates (Company, Contractor & Overhead)	Complete
4	Complete WMIS system changes for new cost estimate CU definitions	Complete
5	Communicate and train stakeholders on new CU process, tools and procedures	Complete
6	Develop new cost estimation philosophy between all identified stakeholders	Complete
7	Define cost estimation process	Complete
8	Define roles and responsibilities for the new cost estimating process	Complete
9	Identify all systems and tools required to support the new cost estimation process	Complete
10	Define all system/tool requirements and identify current gaps	Complete
11	Finalize business case and obtain necessary internal approvals	In Progress
12	Develop cost estimation procedures	In Progress
13	Develop cost reconciliation procedures	In Progress
14	Develop system/tools that meet cost estimating requirements	In Progress
15	Communicate and train stakeholders on new process, tools and procedures	In Progress

A holistic cost estimating process begins at the program level, providing an overall, high level estimate that involves the entire scope of the AMRP. Burns & McDonnell (B&M) developed program-level cost and schedule models. Project level estimates then begin as management initially conceives individual projects. Typically, this process occurs during the engineering and design phase. As multiple iterations of the design progress, so do project estimates. These iterations that are developed will be documented with supporting inputs and assumptions. Management has decided to use the design engineers to develop initial engineering estimates and to prepare the final engineering estimates. Throughout this entire process the Cost Estimator within the Project Controls Group has accountability and responsibility for ensuring estimating credibility and for taking action to identify and correct any discrepancies.

At the start of 2015, PGL implemented updates to the existing cost estimating process used by Gas Engineering. A team consisting of representatives from Accounting, Gas Engineering, Business Support, the Program Management Office, Project Services, and Team Impact worked together to

come up the key components for estimating and how best to use existing software to produce better estimates. PGL determined that the existing work management information system (WMIS) system could be modified to meet these needs. The team agreed that the primary estimating components for both mains and services would be: contractor labor, company labor, materials, restoration, and overhead. This initiative resulted in new compatible units to be defined and developed in WMIS.

As a result of the need to continue to refine and improve cost estimates, management examined the philosophy, process, procedures, and tools supporting estimating. In developing cost estimating processes and tools, management analyzed the inter-relationships with upstream and downstream processes, in collaboration with Project Management & Controls, Engineering, Supply Chain, Contracts, Construction, and IT. The cross departmental team reviewed the Compatible Units (CU) and what the process would be to maintain the CUs, as established within the Work Management Information System (WMIS). Based on the review of the maintenance process in conjunction with the inter-relationships with upstream and downstream processes, it was determined that better quality estimates could be prepared outside of the CUs in WMIS with much more efficient maintenance process. The Project Estimator tool was developed in the first quarter of 2016 between Project Management & Controls, Contracts, and Engineering using pay item costs from 2015 bid data.

Cost estimate reconciliation is another major facet of a holistic cost estimate process. The data collected needs to be analyzed and compared to the cost estimates to understand the major cost drivers that contributed to significant overruns. Project cost reconciliation will be prepared in a manner that can be completed on a regular basis such that project managers can take appropriate actions confidently for future projects.

Management has upgraded the AMRP estimating process as a whole. Ultimate responsibility of the estimating functions and oversight will be maintained in the Project Controls Group. A process has been developed to establish the procedures and a standard of performance for estimating. Tools and tactics are established to ensure effective coordination with participating departments that either provide estimate review or use cost estimating data. These estimates will form the basis of project management and provide useful data and insight at both the project and program levels.

### **Expected Post-Implementation Conditions and Factors**

The expected benefit of a holistic cost estimating process is the ability to provide a basis for sound project management and cost control. A quality estimating process allows the Project Controls Group to monitor productivity and expenses of actual conditions versus what was originally estimated or anticipated. On a timely basis, these comparisons allow the Project Team to respond to early warning sign and manage projects in a proactive manner rather than on a reactive basis. From an overall program level, project estimates can be used to analyze and refine program estimates so adjustments can be made to update and maintain the credibility of the AMRP final projected costs.

### **Summary of Liberty's Steps to Verify Implementation**

In May, 2016 PGL provided the following documents for Liberty's review and comments:

- A sample of the new cost estimate Compatible Units currently used in WMIS.

- The CU Annual Maintenance of WMIS Estimating Methods & Values Process Flow Chart
- The cost estimation spreadsheet - a tool that was developed and utilized to get project estimates.
- WMIS updates for cost estimating completed and training outlines developed.
- Cost Estimating Guideline Procedure - revised 3/1/2016
- The cost estimating definition is shown through the Cost Estimating Guideline flow chart

On November 28, 2016, PGL conducted an on-line Liberty Cost Estimating Workshop and provided the following materials for discussions:

- Cost Estimating Procedure - Table of Content page
- Cost Estimating Process Flow Diagram
- Cost Estimating Tool sample page used to prepare project cost estimates
- Excerpts from Cost Estimator Training
- Project Controls Organization Chart
- Cost Estimating Variable Evaluation Summary
- Roles and Responsibilities of Project Controls Cost Analyst-Estimator.

On December 14, 2016, Liberty met with PGL to discuss actions taken and review implementation progress. Liberty reviewed the following close-out documents:

- Cost Estimating Procedure, scheduled to be effective on January 1, 2017
- Cost Estimating Process Flow Diagram, dated December 2, 2016
- Cost Estimating System Flow Diagram, dated December 2, 2016
- Estimate Review Meeting Agenda Template
- Cost Estimate Comparison Log
- Cost Estimating Workshop Presentation, dated November 28, 2016
- Roles and Responsibilities of Project Controls Cost Analyst-Estimator
- Cost Estimating Variable Evaluation Summary.

Subsequent to the December 14, 2016 meeting, PGL submitted the following documents for Liberty to review:

- Cost Estimating Philosophy Statement
- Narrative on the development of Cost Estimating Variables Database
- Cost Estimator Training Workshop Presentation.

Management considers the following key deliverables for a holistic cost estimating program as closeout components:

- Project cost estimation philosophy document
- Project cost estimation process maps
- Cost estimating procedure for individual projects
- Roles and responsibilities associated with the development of individual project cost estimates
- Documentation of estimating tools to be used
  - AMRP Schedule Model
  - AMRP Cost Model



- Project cost reconciliation procedures
- Project Controls Group Organizational Structure.

### **Observed Conditions and Factors**

Implementing this recommendation involves a very large effort, with management seeking to upgrade cost estimating capabilities considerably. Plans include seven major deliverables - - all essential to the success of the cost estimating program.

In the December review meeting with management, Liberty emphasized the importance of a robust cost estimating philosophy. The philosophy should delineate the purpose of the estimate, the uses of different types of estimates at different stages of the project, the general approach adopted, the recognition that the quality of the estimate varies with how and when it is prepared, and the acceptable levels of uncertainties, expressed as contingency, versus the final cost projection. The Cost Estimating Philosophy Statement submitted subsequent to the meeting adequately addresses the primary goals, the quality of estimates, the estimating resources, and the maturity of estimates.

The Cost Estimating Flow Diagram shows Engineering responsible for preparing the Initial Estimate after the Line-of-Lay walkdown. There is no display of any interface with contract management. We presume that final bids might not be available when Engineering issues the Final Estimate. Liberty previously expressed concern that engineering's involvement seems to cease after the completion of the Final Estimate. It is not clear who or if the Final Estimate will be revised if the final bids are significantly higher.

The roles and responsibilities of the cost analyst-estimator is comprehensive and complete. The workload will be heavy and challenging for one experienced, qualified cost estimating professional to fulfill.

### **Implementation Complete and Satisfactory?**

Yes. The cost estimating procedure, which covers cost estimating preparation and final project cost reconciliation, has been approved and issued. The project cost estimation process maps have been finalized. A sound estimate review process now exists. The project manager has been identified as the estimate's "owner" on its issuance. The cost estimator position has been filled. The roles and responsibilities of the cost estimator are fully defined. All major project cost overruns will be reconciled. It is appropriate to close this recommendation.

### **Remaining Gaps, Needs**

Management developed Estimating Guidelines for Engineering to ensure estimates are prepared comprehensively and consistently. Management needs to complete the training plan for all the design engineers regarding the philosophy, the methodology, the estimating variable database, the estimate review, the estimating tools, the project cost analysis, and the final cost reconciliation of projects with significant variances.

The Projects Controls Manager should annually evaluate the effectiveness of the cost estimating capability in terms of having the design engineer prepare the estimates and tasking the lone cost estimator to be the overseer of the cost estimating function.

### **PGL Position**

The Company agrees that the recommendation has been implemented.

### **Future Liberty Verification Activities**

During the second quarter of 2017, Liberty will review a couple of newly prepared cost estimate samples. We will also validate the cost estimate process and procedures are being followed.

### **General Observations**

None.



## K.2 – Establishing a Cost Estimating Database

Peoples Gas should maintain and keep updated a set of historical databases that address cost estimating variables.

Historical data should be collected and analyzed for at least the following key variables: installed quantities, unit costs, wage rates of craft workers, productivity, and the ratio of installed to retired pipe. Productivity information should include at least number of work-hours per mile of main installed, number of work-hours per service installed, number of work-hours per meter moved. Comprehensive and current information about these variables will improve the quality of future cost estimates at the individual project level. The information will also supply valid data for the cost model being designed and constructed to forecast final AMRP costs.

### Underlying Conclusions

K.2 Data underlying the compatible units used to perform cost estimates do not have sufficient reliability, given the lack of regular updating.

Data sources used in estimate development need to be maintained and updated at least annually. Design engineers try to compensate for the failure to do so in different ways and degrees when performing AMRP work. Continuing to use 2012 contractor unit cost pricing for the Cost Estimating Template reflects another weakness, and supports the need for creating a dedicated cost-estimating group to compile and analyze actual data of a repetitive nature.

### PGL Action Plan Steps

Item #	Task	Status
1	Finalize definition and mock-ups (i.e., methods) of the new cost estimate CUs to be used in WMIS	Complete
2	Document the CU annual update process	Complete
3	Obtain updated rates (Company, Contractor & Overhead)	Complete
4	Complete WMIS system changes for new cost estimate CU definitions	Complete
5	Communicate and train stakeholders on new CU process, tools and procedures	Complete
6	Project Director to form Cost Estimating Variables improvements implementation team	Complete
7	Define objectives and requirements for the Cost Estimating Variables improvements process and procedure	Complete
8	Design the Cost Estimating Variables improvements process and procedure	Complete
9	Prepare Cost Estimating Variables improvements process and procedure	Complete
10	Approve and issue Cost Estimating Variables improvements process and procedure	In Progress
11	Provide orientation and training to project personnel on Cost Estimating Variables improvements	In Progress
12	Document Completion of the Cost Estimating Variables improvements recommendation implementation	In Progress

In developing cost estimating processes and tools, the inter-relationships with upstream and downstream processes were analyzed in collaboration with Project Management & Controls (PM&C), Engineering, Supply Chain, Contracts, Construction, and Information Technology (IT). The cross departmental team reviewed the Compatible Units (CU) and the process to maintain them, as established in the Work Management Information System (WMIS). The review of the maintenance process in conjunction with the inter-relationships with upstream and downstream processes led to the determination that similar or better estimates could be prepared and more efficiently maintained outside the CUs in WMIS. Project Controls will not need to rely on IT resources to maintain current rates in the Project Estimator tool (developed in the first quarter of 2016 between PM&C, Contracts, and Engineering, using pay item costs from 2015 bid data). The Estimating Tool includes the commonly used pay items for main types, sizes, and installation methods. Associated pay items exist for restoration, test openings, and other work items included in the Contract Unit Pricing List. The Estimating Tool includes units for work performed by contractors, a rate for meter installation costs, an assumption for other PGL costs (including material and overhead), and an assumption for contingency. Cost analyst-estimator will update the database annually, using newly available actual costs.

Management conducted an analysis to determine which variables in the cost estimating process to track and update regularly in the estimating tools. Additional variables may be identified and analyzed as outlined in the Cost Estimating Procedure Estimating Analysis and Improvement section.

### **Expected Post-Implementation Conditions and Factors**

PGL recognizes that tracking and using historical data for key cost variables will improve the quality of cost estimates for individual projects, and provide useful data for the program cost model. The improved cost estimates and data tracking will benefit resource planning and overall cost control processes, and support development of leading indicators with cost implications.

### **Summary of Liberty's Steps to Verify Implementation**

In May, 2016 PGL provided the following documents for Liberty's review and comments:

- A sample of the new cost estimate Compatible Units currently used in WMIS.
- The CU Annual Maintenance of WMIS Estimating Methods & Values Process Flow Chart
- WMIS updates for cost estimating completed and training outlines developed
- Cost Estimating Guideline Procedure - revised 3/1/2016.

On November 28, 2016, PGL conducted an on-line Liberty Cost Estimating Workshop and provided the following materials for discussions:

- Cost Estimating Procedure content page
- Cost Estimating Tool sample page
- Cost Estimating Variable Evaluation Summary.

On December 14, 2016, Liberty met with PGL to discuss actions taken and review implementation progress. Liberty reviewed the following close-out documents:

- Cost Estimating Procedure, scheduled to be effective on January 1, 2016
- Cost Estimating Tool sample page

- Cost Estimating Variable Evaluation Summary.

Subsequent to the December 14, 2016 meeting, PGL submitted the following documents:

- Narrative on the development of Cost Estimating Variables Database
- Project Cost Estimator Training Workshop Presentation.

PGL considers the following deliverable as closeout components:

- List of cost and productivity variables to be tracked
- Identification of source for the list of cost and productivity variables that will be tracked
- Cost and productivity variable update procedure
- Historical cost data tracking databases/spreadsheets.

### **Observed Conditions and Factors**

The Cost Estimating Variable Improvement Team has determined to track only Installed Quantities and Unit Costs, because unit cost is the preferred variable in the estimating tool. Liberty does not view a cost estimate as an end in itself, but rather the monitoring base of an ongoing project within AMRP. Not monitoring production rates in work hours/miles of main installed or work hours/service installed (for example) loses the unit work-hour installation dimension, and lessens resource management capability. When the time comes to reconcile any project estimate overruns, management will not be able to identify the cause as a productivity, wage-rate, resource, or escalation issue.

Management has acknowledged the benefits of monitoring these variables. It prefers to begin with the unit cost dimension first, because most of the new contracts are unit-cost based. As the needs arise, management will expand coverage to include the work-hour dimension, as deemed necessary.

### **Implementation Complete and Satisfactory?**

Yes, the existing data was last assembled in 2016, based on 2015 actual data. In accordance with the Roles and Responsibilities of the Project Cost Analyst-Estimator, this individual has the responsibility to update the Cost Estimating Variables Table annually. PGL filled this position, and we have confidence that management has the capability to update the database, as required.

### **Remaining Gaps, Needs**

Management needs to expand the cost estimating variables to include unit work-hour rates for main replacement, service replacement, and restoration in future. It should begin monitoring the work-hours per meter installed or moved now.

### **PGL Position**

Management agrees that the recommendation has been implemented.

### **Future Liberty Verification Activities**

During the second quarter of 2017, Liberty will review the effort to update the database based on historical data at the end of 2016. We will also validate the updated information is being used to prepare new project cost estimates.

### **General Observations**

None.

### K.3 – Reconciliation of Project Cost Estimates

Peoples Gas should perform project cost estimate reconciliations to understand major cost deviations, analyze performance and document lessons learned.

This information will improve the ability of construction supervision to manage cost effectively by taking appropriate actions to improve performance.

#### Underlying Conclusions

K.4 Peoples Gas does not perform cost estimate reconciliations to understand and to deal with cost deviations, or to capture lessons learned.

The Project Management Office does not undertake any structured analysis seeking to reconcile cost estimates with actual costs. Such analysis is necessary to secure understanding of why project actuals vary from expectations. Analyzing the sources of variances supports the identification of root causes, which management can then use to identify corrective actions.

AMRP management appears to consider the change management process governing contractor requests for costs increases sufficient to justify cost increases. This approach does not conform to best practice. Reconciling estimated and actual costs, even for fixed-price or unit cost contracts, comprises an important element in optimizing costs. Knowing what drives contractor costs is central to judging increase requests and to developing cost estimates for future work.

Liberty accepts program management’s assertion that weekly field progress review meetings give an opportunity for lessons to be learned and to be incorporated into the planning and performance of future work. However, a systematic and programmatic approach to reconciliation on an annual basis will make the analysis more insightful, and promote a cost control culture and awareness among all contributors.

#### PGL Action Plan Steps

Item #	Task	Status
1	Develop Cost Reconciliation Procedure	Complete
2	Develop Cost Control & Change Management Procedure	In Progress
3	Design training process for new plans and procedures	In Progress
4	Publish procedures as part of the Project Execution Plan	In Progress
5	Provide Orientation to appropriate personnel	In Progress
6	Evaluate procedures	In Progress
7	Modify, add, edit cost management procedures	In Progress

The Cost Estimating Procedure seeks a consistent estimating process. This procedure incorporates a feature addressing Estimating Analysis and Improvement. The Project Controls Estimator must maintain an Estimate Comparison Log for projects greater than \$1 million in total costs. On an annual basis, the Project Controls Estimate will identify and analyze completed projects with significant variances for major cost drivers and their root causes for the purpose of recommending performance improvement actions.

### **Expected Post-Implementation Conditions and Factors**

At the end of a project and as part of close-out procedures, PGL will reconcile expenditures against cost estimates of projects with significant variances. Cost estimate reconciliation is necessary for the project team to understand the major cost drivers that contributed to overruns. These factors can include changes in scope, decline in productivity, and schedule delays due to internal or external factors, for example. Causes may be controllable or uncontrollable. For controllable causes, analysis may identify corrective or mitigating actions. Even for uncontrollable causes, analysis can assist in determining the cost impacts on future projects and on final AMRP costs. Analysis can identify means for managing future projects more effectively. This cost estimate reconciliation process will also promote a cost control and awareness culture among all AMRP participants.

### **Summary of Liberty's Steps to Verify Implementation**

On November 28, 2016, PGL conducted an on-line Liberty Cost Estimating Workshop and provided the following materials for discussions:

- Cost Estimating Procedure draft
- Estimate Comparison Log.

On December 14, 2016, Liberty met with PGL to discuss actions taken and review implementation progress. Liberty reviewed the following closeout documents:

- Cost Estimating Procedure, scheduled to be effective on January 1, 2017
- Cost Estimating Workshop Presentation, dated November 28, 2016
- Cost Estimating Comparison Log.

PGL considers the following deliverable included in the holistic cost-estimating program as closeout component:

- Cost Reconciliation Procedure as part of the PEP
- Cost Estimate Comparison Log.

### **Observed Conditions and Factors**

Construction management is identifying and incorporating lessons learned on a routine basis via field progress review meetings or day-to-day problem-solving. Project cost overruns could, however, result from more than just construction cost issues. Every major cost component (design, materials, internal labor, contractors, support groups, overhead, and unexpected expenditures) affected by external influences should be analyzed as potential cost driving issues across every neighborhood project throughout the duration of the AMRP program.

We agree that establishing an estimate comparison log comprises a positive first step. However, the Project Controls Group should acquire or establish other essential information (such as unit costs, wage rates, productivity factors, contract changes, overhead loading factors, cost impact of schedule delays, and percent of engineering to construction costs), in order to enable the cost estimator to perform insightful cost estimate reconciliations or project cost analyses.

### **Implementation Complete and Satisfactory?**

Yes. The cost estimate reconciliation is part of the cost estimating process, as defined in the Cost Estimating Procedure. The Estimate Comparison Log is established. The full-time cost estimator position has been filled to oversee the program. It is appropriate to close this recommendation.

### **Remaining Gaps, Needs**

PGL needs to define what variance thresholds will require a cost estimate reconciliation, *e.g.*,  $\pm 15$  percent variance or  $\pm \$250,000$  from the original engineering estimate or final estimate. Management also needs to start performing cost estimate reconciliations on the overrunning projects identified on the Estimate Comparison Log.

### **PGL Position**

The Company agrees that the recommendation has been implemented.

### **Future Liberty Verification Activities**

During the second quarter of 2017, Liberty will review samples of Project Estimate Reconciliations of completed projects that exceed the acceptable variance thresholds. We will also validate the identification of performance issues and documentation of lessons learned.

### **General Observations**

None.



## K.5 – Establishing Central Cost Estimating Organization

Peoples Gas should establish a centralized cost estimating organization to maintain and sharpen the cost estimating skills.

The capabilities of estimate preparers fundamentally drive cost estimate quality. The recent hire of one cost estimator takes a first step, but not one that can prove sufficient by itself. Too much work remains to establish sound estimating, and then to continue executing it through the course of the AMRP. It will particularly take more resources to support the cost model being developed to restore the ability to forecast final AMRP program costs credibly.

Peoples Gas needs to hire at least one more cost estimator and one cost estimating supervisor to oversee the cost estimating activities required to support the AMRP appropriately. The new supervisor should report to the AMRP cost management director.

### **Underlying Conclusions**

K.2 Data underlying the compatible units used to perform cost estimates do not have sufficient reliability, given the lack of regular updating.

Data sources used in estimate development need to be maintained and updated at least annually. Design engineers try to compensate for the failure to do so in different ways and degrees when performing AMRP work. Continuing to use 2012 contractor unit cost pricing for the Cost Estimating Template reflects another weakness, and supports the need for creating a dedicated cost-estimating group to compile and analyze actual data of a repetitive nature.

K.3 There presently do not exist cost estimating capabilities effective to meet AMRP needs.

No formal, written cost estimating guidelines or procedures exist. The cost estimating skills of the individuals preparing estimates vary significantly. In the absence of formal procedures and training, the quality of project estimates developed also varies greatly. The recent hiring of the first professional cost estimator for a program of this size reflects recognition of the need for improvement. One estimator will not prove sufficient, however, given the size, scope, and duration of the AMRP.

### **PGL Action Plan Steps**

Item #	Task	Status
1	Finalize definition and mock-ups (i.e. methods) of the new cost estimate Comparable Units (CUs) to be used in WMIS	Complete
2	Document the CU annual update process	Complete
3	Obtain updated rates (Company, Contractor & Overhead)	Complete
4	Complete WMIS system changes for new cost estimate CU definitions	Complete
5	Communicate and train stakeholders on new CU process, tools and procedures	Complete



6	Develop new cost estimation philosophy between all identified stakeholders	Complete
7	Define cost estimation process	Complete
8	Define roles and responsibilities for the new cost estimating process	Complete
9	Identify all systems and tools required to support the new cost estimation process	Complete
10	Define all system/tool requirements and identify current gaps	Complete
11	Finalize business case and obtain necessary internal approvals	In Progress
12	Develop cost estimation procedures	In Progress
13	Develop system/tools that meet cost estimating requirements	In Progress
14	Communicate and train stakeholders on new process, tools and procedures	In Progress

Management has decided to continue to rely on Engineering to prepare cost estimates. The cost estimating overseeing function will be assigned to the Project Controls Group, which reports to the Project Director. This organization is being staffed with cost management professionals equipped with the tools, means, and methods to perform beneficial analysis as they relate to cost management and performance. Presently management has only authorized one cost estimator position, and it has been filled. The roles and responsibilities of this cost analyst-estimator have been defined.

Cost estimating philosophy and procedures identify the tools, technology, methods, and training needs and requirements for staff to effectively manage all the essential cost estimating tasks and functions. In the development of the cost estimating process and tools as part of the transition from CUs in WMIS to the current Project Estimator tool, the Cost Estimating Procedure was drafted to reflect this approach. It addresses the roles of Engineering and of Project Controls. Project Cost Estimator Training has also been developed, to demonstrate how to navigate through the new Cost Estimating template.

### **Expected Post-Implementation Conditions and Factors**

A holistic cost estimating process provides a basis for sound project management. A quality estimating process allows the Project Controls Group to monitor productivity and expenses of actual conditions versus what was originally estimated or anticipated. On a timely basis, these comparisons allow the Project Team to respond to early warning signs and manage projects in a proactive manner rather than on a reactive basis. From an overall program level, project estimates can support analysis and refinement of estimates, supporting adjustments that update and maintain project and program estimate credibility. The overseeing and maintenance of this holistic cost estimating process demands the full attention of the qualified professional cost estimator.

### **Summary of Liberty’s Steps to Verify Implementation**

On November 28, 2016, PGL conducted an on-line Liberty Cost Estimating Workshop and provided the following materials for discussions:

- Project Controls Organization Chart
- Roles and Responsibilities of Project Controls Cost Analyst – Estimator.

On December 14, 2016, Liberty met with PGL to discuss actions taken and review implementation progress. Liberty reviewed the following closeout documents:

- Project Controls Organization structure with the Cost-Analyst Estimator position filled
- Final draft of the roles and responsibilities of Cost Analyst-Estimator
- Project cost estimation process maps
- Cost Estimating Procedure, stipulating the requirement of project cost estimate reconciliation.

Subsequent to this review meeting, PGL submitted the following documents for review:

- Cost Estimating Philosophy Statement
- Development of Cost Estimating Engineering Guideline
- Project Cost Estimating Training Workshop Presentation.

PGL considers the following key deliverable for a holistic cost-estimating program as closeout components:

- Project cost estimation philosophy document
- Project cost estimation process maps
- Cost estimation procedure for individual projects
- Roles and responsibilities associated with the development of individual project cost estimates
- Documentation of estimating tools to be used
  - AMRP Schedule Model
  - AMRP Cost Model
- Project cost reconciliation procedures
- Project Controls Group Organizational Structure.

### **Observed Conditions and Factors**

A PGL Action Plan Steps Table focuses on the development of the cost estimating process and tools, but not on the organization. There is no description of the evaluation and decision on retaining the preparation of project estimates in the Engineering organization. There is also no mention of the cost estimator as a key action step. Moreover, steps 11 to 14 are not applicable for this recommendation.

We originally recommended a centralized cost estimating organization, but management appears comfortable with the Engineering organization continuing to develop cost estimates. There is certainly a major advantage for the engineers to prepare the cost estimates as they design projects. We find this approach appropriate, provided that cost estimates are effectively prepared. The drawback is that the estimate accountability of the engineers seems to cease once the project proceeds to the construction phase. It is our understanding that the cost analyst-estimator will review and monitor all the project cost estimates.

We examined the roles and responsibilities of the cost analyst-estimator. We believe the workload is very heavy for one person. However, it is not unreasonable for management to test whether one cost estimator will prove adequate. We emphasize that if this cost estimator is diverted to perform

other cost management functions in the Project Controls Group, the cost estimating capability will be unduly compromised.

During the online meeting on November 28, 2016, Liberty indicated that PGL needed to have a cost estimating guideline for the engineers to prepare engineering estimates in a consistent and comprehensive manner.

### **Implementation Complete and Satisfactory?**

Yes. The cost analyst-estimator position is filled with a qualified professional. The cost estimating procedure is approved and issued. The upgraded cost estimating tool has been in operation for six months. The Cost Estimating Guidelines for Engineering have been developed. The training plan is comprehensive. It is appropriate to close this recommendation.

### **Remaining Gaps, Needs**

PGL needs to complete the cost estimating guideline training for the engineers.

### **PGL Position**

The Company agrees that the recommendation has been implemented.

### **Future Liberty Verification Activities**

During the second quarter of 2017, Liberty will review if the cost estimation function is adequately staffed with only one full-time cost estimator. We will also validate the effectiveness of assigning the preparation of the engineering estimates to the engineering organization.

### **General Observations**

None.

## N.1 – Governance of Executive Steering Committee

Peoples Gas should clearly define and document the AMRP governance roles of the Executive Steering Committee with mission statements, charters, and roles and responsibilities for project oversight, monitoring and decision authority.

Liberty found that lack of definition and corresponding lack of structure in providing AMRP oversight at the corporate leadership level have persisted since program inception. Peoples Gas has acknowledged the need for developing a formal structure for AMRP governance and oversight. Following discussions with Liberty, beginning in September 2014, the Company identified plans to address oversight issues.

Liberty found the Company’s stated commitment to greater structure of the oversight function and its relationship to AMRP leadership appropriate as a first step. That commitment, however, needs to distinguish itself from previous oversight methods, in order to prove more effective. The proposed new group of oversight participants remains very broad and not fully independent of AMRP management. Identifying “executive overseers” as the entire Executive Steering Committee and the board of directors makes from 25 to 30 individuals responsible for oversight.

A number of these individuals are not senior executives. Including the Integrys Executive Vice President – Gas and some other proposed Executive Steering Committee members also does not meet the standard of “independence” as defined in the Peoples Gas criteria.

Liberty believes that concentrating the senior executive level oversight function to a group of perhaps three executives is appropriate. Use of the Executive Steering Committee as an organ for keeping a broad group of executives and senior managers aware of the current status of a program as important as the AMRP continues to be appropriate. Inviting comment and suggestion from the group as part of that process is also sound. The concern about making such a group responsible for a clearly defined oversight function, however, is a tendency toward diffusion of accountability. That diffusion will tend inevitably to reduce detailed information toward a lower common denominator. Keeping the oversight group very small and at the highest levels will better support clarity of role, detail of oversight provided, and accountability for using information to identify improvement opportunities.

In any event, clarity of membership, responsibilities, regular reporting and meeting requirements, and expectations for the group should be included in the mission statement, charter and oversight roles and responsibilities documentation that the Company states it is committed to developing. Peoples Gas has stated to Liberty that it plans to complete documentation addressing AMRP mission, roles and responsibilities of top-level program oversight.

The initiatives as described are positive, but the definition of mission, charter, roles and responsibilities, and decision authority for project executive oversight must be completed and implemented with dispatch, and with the refinements expressed above.

### **Underlying Conclusions**

N.4 The governance roles of the Executive Steering Committee and the Peoples Gas board for AMRP oversight, monitoring and decision authority remain weakly defined.

Senior Integrys leadership views the Executive Steering Committee as the primary vehicle for top-level oversight of the AMRP. The lack of defined governance for the Committee has persisted since project inception in 2011. Liberty found no Executive Steering Committee charter. Top Integrys management acknowledges that management and controls have substantially lagged dollars spent and work performed in the field. The Committee’s role and authority remain unclear.

Defining and structuring AMRP governance remains a substantial weakness. Executive ownership (outside the very large Executive Steering Committee) has not been clearly assigned. The mission, roles, and responsibilities of the senior oversight function have not been clearly defined or articulated. Clear accountability for AMRP performance at senior executive levels has not been clearly identified.

**PGL Action Plan Steps**

Item #	Task	Status
1	Determine financial approval limits for Peoples Gas’ President as well as Peoples Gas and WEC Boards	Complete
2	Draft and distribute for review and approval the roles and responsibilities document for the President and Boards	Complete
3	Publish final document defining oversight roles, responsibilities, and approval authority for the President of Peoples Gas and the Boards of Peoples Gas and WEC	Complete
4	Re-evaluate and recommend adjustments to the document referenced in item 3	In Progress

Management agrees that governance roles need to be clearly understood and well established. In the case of the AMRP, PGL has implemented a different organizational structure from that pursued under Integrys management. As discussed in other responses, WEC Energy Group, Inc. (WEC) is substantially changing the profile of AMRP management, by bringing in-house all the critical capabilities largely outsourced until July of 2015. Additionally, given the long timeline associated with AMRP execution, management has determined that the AMRP governing structure should look more like an on-going component of the organization rather than a project team with an executive oversight committee assembled for a defined period of time and then disbanded with individuals returning to their regular work activities.

In other words, steering committees and other similar structures that are often assembled for oversight of short or medium term projects are not necessarily the best fit for the AMRP. For this reason, PGL has designed the management and oversight structures for the AMRP as part of the capital construction management function of PGL. This structure is further enforced when considering that the AMRP plus the other capital spending that is eligible for Rider QIP recovery accounts for approximately 85 percent of all capital spending<sup>2</sup>. Clear and consistent management

<sup>2</sup> The cited 85 percent has been used as a basis, in part, to justify homogenization of all capital work, and eliminating the heavy focus on AMRP that we have recommended in the past. However, expenditures do not appear to conform

processes, procedures, and execution benefit all capital construction activities. This structure has the important benefit of presenting a predictable and comprehensive experience for stakeholders such as the City of Chicago.

Additionally, much of the new PGL leadership brings project management expertise from years of work on numerous large capital projects. This new team (discussed further below) is further supplemented by external talent to assist with improvements to project and cost controls, cost and schedule planning, and management.

Based on a more typical business unit structure, oversight, authorization, and guidance follow the hierarchy of PGL and then WEC. For example, there are four director functions (engineering, construction, project controls, cost controls, and reporting, and contracting) reporting to the Vice President of Construction at PGL. This team is responsible for execution of the program. The Vice President reports to the President of PGL, who reports to the Chairman and CEO of WEC. Authorizations, reporting, and project approvals go systematically up through this chain. The PGL and WEC Boards will also provide oversight through regularly scheduled progress reviews and authorization processes.

Through information review and discussions with management, the PGL's President and Board of Directors become equipped to understand the AMRP risks and challenges and to monitor management's performance in achieving the project goals. PGL's Capital Construction reports issue on a monthly basis to the President and Board. In addition to monthly reporting, the Vice President of Construction provides in-person updates to the President on a monthly basis, and the Board receives updates at scheduled meetings. The written and in-person updates include an assessment of performance against metrics for budget, schedule, safety, and customer service. As the robustness of AMRP performance tracking continues to improve (as addressed in responses to Liberty Recommendations E.1, E.3, E.4, E.5, and L.3), so will the information insight provided to the President and Board.

This communication allows the Board to oversee management's development of short- and long-term strategies for improving the execution of the AMRP. Additionally, there will be discussions of the AMRP's major risk categories and exposures and the steps management has taken to monitor and control these categories and exposures.

For task item numbers one to three listed in the PGL Action Plan Steps Table above, refer to the excerpt from the Project Authorization Policy including an Approval Authority Matrix.

For task item number 4, PGL will review and update the oversight roles, responsibilities, and approval authority for the President of PGL and the Boards of PGL and WEC and provide Liberty with any such relevant updates, when appropriate.

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to this number. AMRP work accounted for 69 percent of the budget in 2016 and 67 percent of actual expenditures as projected from actuals through October.



### **Expected Post-Implementation Conditions and Factors**

Clearly defining and documenting AMRP governance roles is crucial to driving accountability in order to meet program or project targets. Additionally, the improved reporting and managing structure will continue to maintain decision-making transparency along with enhanced monitoring and control capabilities.

### **Summary of Liberty's Steps to Verify Implementation**

On December 14, 2016, Liberty met with PGL to discuss actions taken and review implementation progress. Liberty reviewed the following closeout documents:

- Excerpt from WEC Project Authorization Policy
- Internal Correspondence - PGL Written Consent of the Board of Directors on project authorization approval levels.

Subsequent to the December 14, 2016, meeting, PGL submitted for review PGL Reporting Structure Schematics, demonstrating the roll-up and drill-down features.

PGL considers the following deliverable as closeout components: A final document defining the oversight roles, responsibilities, and the approval authority of the President of PGL, the PGL Board, and the WEC Board will be the final deliverable.

### **Observed Conditions and Factors**

The Integrys governance structure, for which this recommendation was crafted, was quite different from the approach taken by WEC. The WEC structure, which is far more conventional, is not vulnerable to the problems that were prevalent in the Integrys approach. We therefore believe that a sound foundation is in place for sufficient oversight of the program, provided that it is implemented as planned.

### **Implementation Complete and Satisfactory?**

Yes, Liberty considers this recommendation closed.

### **Remaining Gaps, Needs**

PGL needs to complete and issue the above-mentioned final document defining the oversight roles, responsibilities, and the approval authority of the President of PGL, the PGL Board, and the WEC Board will be the final deliverable.

### **PGL Position**

The Company agrees that the recommendation has been implemented.

### **Future Liberty Verification Activities**

During the first quarter of 2017, Liberty will review final deliverable for compliance.

### **General Observations**

None.





## N.2 – More Effective Oversight of AMRP

Peoples Gas should promptly execute its current plans to provide for more regular and effective oversight of AMRP and for follow-through and corrective actions to address performance shortfalls.

The Executive Steering Committee has not met on a regular and frequent basis. The action plans that Peoples Gas has shared with Liberty call for a redefinition of executive oversight of the AMRP, specifically increasing scheduled review meetings and corrective actions to address performance shortfalls and adverse trends.

The improvement initiatives proposed by Peoples Gas address AMRP executive oversight frequency, engagement and corrective actions. However, turning these statements of intent and general description of goals into an effective oversight function “on the ground” will take significant change, not only in structure and documented practices and procedures, but also in culture, attitude, and focus. Selling this new approach, particularly through engagement by and instigation from the boards and top executive management, will be particularly important. Liberty anticipates the need for a transition period that requires a fundamental shift in perception about how top leadership can and should act to keep the AMRP on track as it progresses through what remains a long duration. In particular, significant top-level impetus must apply to reinforcing the message that senior leadership needs to remain engaged in holding program management accountable for performance against much more than meeting expenditure targets. Specifically, leadership should demand that management make performance levels, trends, and problems transparent and meaningful at top levels, regularly engaging with management about those trends and problems, and ensuring that corrective actions get identified and executed promptly.

### **Underlying Conclusions**

N.5 Oversight through the Executive Steering Committee has been intermittent and lacking in clear follow-through and corrective actions to address performance shortfalls.

Key attributes of effective oversight include: (a) frequent meetings and discussion, (b) regular reporting schedules, (c) key performance metrics focusing on progress against plan, (d) project reporting with “insightful analysis,” (e) executive summaries of analysis for upward board reporting, and (f) documented meetings and decisions with agenda/minutes/reports.

Despite reports of quarterly meeting cycles, Liberty found that Executive Steering Committee meetings occurred on a significantly less frequent basis. Even meetings as infrequently as quarterly would be hard to square with the needs and magnitude of the AMRP. The frequency of meetings does not support the focused oversight and monitoring required.

Moreover, a review of the Committee’s efforts does not demonstrate an aggressive level of engagement in identifying and addressing AMRP performance issues. The Committee has not documented meetings and decisions with agendas/minutes/reports. Liberty did observe attention by the Executive Steering Committee and the Peoples Gas board to remain informed about the program. Liberty could not, however, identify a structured and well-defined set of oversight, monitoring and decision authority guidelines, information requirements, and points of control.

**PGL Action Plan Steps**

Item #	Task	Status
1.1	Establish a cross-functional core team tasked to identify the scope of desired metrics, points of data collection, data management systems, and the individuals responsible for analytic evaluation.	Complete
1.2	Generate core performance reports.	Complete
1.3	Team recommendations on improvements.	Complete
1.4	Implement improved reporting.	Complete
1.5	Perform internal and/or WEC peer-to-peer reporting and analysis audits	In Progress
2.1	Draft and circulate the roles and responsibilities document for President and Boards	Complete
2.2	Re-evaluate and recommend adjustments to final document defining oversight roles, responsibilities, and approval authority for the President of Peoples Gas and the Boards of Peoples Gas and WEC	In Progress

PGL considers clearly defined and documented AMRP governance roles crucial to drive accountability that will be necessary to meet project and program targets. Authorizations, reporting, and project approvals will follow a hierarchical path shared by PGL and WEC Energy Group, Inc. (WEC), and their boards, providing oversight through regularly scheduled progress reviews and authorization processes. A PGL Capital Construction report will go to the PGL Board members monthly, with reviewed at their quarterly meetings. Additionally, PGL will review its forward looking capital project spend plan in the fall of each year with:

- The PGL Senior Project Team
- The PGL Board
- The WEC Board.

Management will also continue to develop its reports to Senior Management and the PGL Board, seeking to make the content more robust.

The concept of using a Senior Project Team (SPT) for reviewing capital projects came over from other WEC Energy Group affiliates. The SPT is comprised of the executive leadership team of PGL and one or more executives from other affiliates.

Management seeks to adopt a data-driven management approach, improving the format and content of reports, and will increase the use of annual and monthly forecasting, to more accurately predict, plan, and schedule work activities. Management recognizes that quality forecasting will improve timely and productive inflight corrective actions. PGL also agrees that it should upgrade AMRP performance metrics to include annual or cumulative progress versus the long-term twenty-year plan goals and metrics for the executive oversight group and the Boards of PGL and WEC. PGL believes that improved data sets and reports containing core metrics are now up and running, with the breadth of actionable insights growing month by month.

Information review and discussions with management equip PGL’s President and Board of Directors to understand the AMRP risks and challenges and to monitor management’s performance in achieving the project goals. PGL’s Capital Construction reports issue monthly to the President and Board.

PGL understands the importance of these reports, which support data and analytics-driven decision making. A core team consisting of the Vice President of Construction, Director of Construction, Director of Project Controls and Management, and the Manager of Project Controls, has been created to establish those metrics against which insightful analysis can be performed. Monthly status reports now include summary dashboards featuring the ability to drill down into problematic areas readily. Updates on management initiatives give further insight into key drivers for company and contractor performance. Variance explanations exist for various capital programs, including AMRP specific data, to identify trends in performance. Capital Monthly Reports are generated each month. A subset on AMRP Focus of this Report is also prepared.

For task item numbers 1.3 to 1.5 listed in the PGL Action Plan Steps Table above, refer to task number 8 in Recommendation D.2 on Internal WEC peer-to-peer reporting and analysis audit.

For task item numbers 2.1 to 2.2 listed in the PGL Action Plan Steps Table above, refer to task numbers 1 and 2 in Recommendation D.2 on the excerpt from WEC Project Authorization Policy and an internal correspondence on the PGL Written Consent of the Board of Directors on project authorization approval levels.

### **Expected Post-Implementation Conditions and Factors**

The development and deployment of a structured reporting mechanism, supported by an engaged management structure will ensure that leadership can rely on current, valid, and insightful data to make decisions. Since these decisions directly impact the success of the program, developing and enacting modified plans to improve communications and reporting will have near-term and long-term benefits for oversight of the AMRP.

### **Summary of Liberty’s Steps to Verify Implementation**

On December 14, 2016, Liberty met with PGL to discuss actions taken and review implementation progress. Liberty reviewed the following closeout documents:

- PGL Capital Construction Projects Monthly Status Report – Month Ending March 2016
- PGL Capital Construction Projects Monthly Status Report with AMRP Focus – Month Ending March 2016.

Subsequent to the December 14, 2016, meeting, PGL submitted the following documents for review:

- PGL Capital Construction Projects Monthly Status Report – Month Ending October 2016
- PGL Capital Construction Projects Monthly Status Report with AMRP Focus – Month Ending October 2016.

PGL considers the following deliverable as closeout components:

- Deliverables outlined in PGL’s responses to Liberty’s Recommendations D.2 and N.1 will address the implementation of this recommendation.

### **Observed Conditions and Factors**

The discussion of Recommendation N.1 addressed governance structure. The discussion of this Recommendation N.2 addresses actions taken within that structure to achieve effective oversight.

Liberty's original recommendations considered the governance structure of Integrys, and in particular the key role of its Executive Oversight Committee. WEC has a much more conventional governance structure, making elements of our original recommendations inapplicable. We believe an appropriate structure is now in place and management seems committed to providing the Boards the data and insights they need to provide effective oversight.

Committing to provide them, however, does not mean that those data and insights are fully in place today. Please refer to our qualifications in D.2 on the October 2016 progress reports. There are issues in those reports that should generate the interest of the Board, including (a) production results lower than those attained by Integrys on a sustained basis and (b) safety performance of PGL crews. It is important that issues like these come to the attention of the Board. This analysis of the effectiveness of oversight processes will be addressed in more detail in our pending validation work.

### **Implementation Complete and Satisfactory?**

The governance structure applied to the program is conventional and there is no reason it cannot be effective. The reporting approach planned makes sense and, if implemented diligently, will satisfy the goal of our recommendation. Current performance deviations, serious enough to attract Board attention, present a good test case to the extent that Board and management responses to those concerns will provide good conclusions on the effectiveness of oversight.

### **Remaining Gaps, Needs**

None.

### **PGL Position**

The Company agrees that the recommendation has been implemented.

### **Future Liberty Verification Activities**

During the first quarter of 2017, Liberty will review the reporting cycles of late 2016, including specifically how the production issues and safety problems were handled by management and the extent to which the Board and senior executives became involved.

### **General Observations**

None.

### **P.3 – Proper Verification of AMRP Charges**

Peoples Gas should promptly: (a) correct the potential gap that exists with respect to ensuring the accuracy of material and equipment costs charged to the AMRP, (b) develop a method for reliably and accurately determining independently the magnitude of any error in AMRP material and equipment costs being included in rate recovery, and (c) devise and implement a similarly independent testing program to verify that no material risk exists with respect to AMRP costs subject to rate recovery.

The Internal Audit Services group issued its report about material and equipment reconciliation in November 2014. The Company must promptly verify completion of measures that will address the inability to ensure that material and equipment costs charged to the AMRP match those actually spent. The Company also needs to verify that they have been recorded and reported under appropriate controls. Verification efforts should include the testing of specific transactions and activities.

What is required for the AMRP is a ground-up, fresh examination of rate risk. This examination needs to consider, but not limit itself to the materials and equipment reconciliation issue. The examination should produce a clear and comprehensive assessment of improper recovery risk, and develop plans for testing. Reporting of the assessment and planning processes should be made promptly to the Illinois Commerce Commission on completion. The same is true for reporting of specific tests, examinations, and audits. At least internally to Integrys and Peoples Gas, if not to the Illinois Commerce Commission as well, executives outside the AMRP and rate/regulatory leadership and management chain should be prepared regularly to certify that, to the best of their knowledge, information, and belief, all costs claimed for AMRP rate recovery contain no material error. That certification should rely on explicitly stated confidence in the testing plan and the results of tests conducted. Materiality should be defined with reference to size of the retail rate elements or components under which AMRP costs are recovered.

#### **Underlying Conclusions**

P.5 Control over material quantities recorded to AMRP project accounts has not been sufficient; there is no reliable way to verify that wholly accurate materials cost information underlies AMRP costs.

The November 2014 examination of materials reconciliation by Internal Audit Services raises concern from the perspective of program management effectiveness. It has equal and perhaps greater concern for its potential impacts on the confidence that the Illinois Commerce Commission and stakeholders can and should have on the accuracy of AMRP costs that Peoples Gas are recovering through rates.

The amounts directly implicated by the audit's specific test work represent only a small portion of AMRP costs. That said, the casting of doubt about costs underlying even a small portion of rates undermines the regulatory confidence that should always form a hallmark of utility management and operation. Moreover, the Project Management Office belief that it does have a method for determining the level of inaccuracy that exists:

- Underscores the AMRP management, control, and oversight weaknesses that other chapters of this report address
- Calls for development of more than the current, vague commitment to ensuring a reasonably accurate measure of inaccuracy in the known area of concern
- Begs the question of what review outside of the AMRP management organization is required to provide confidence that similar concerns do not underlie other areas of AMRP cost.

**PGL Action Plan Steps**

Item #	Task	Status
1	Form Material and Equipment Management Tiger Team and define scope of project	Complete
2	Special Project Manager to complete investigation and analysis and determine required actions. Perform a detailed review of the programs to identify specific action items.	Complete
3	Issue Implementation Schedule	In Progress
4	All required actions are complete	In Progress

Management formed a multi-disciplinary “Tiger Team” at the end of 2015, responsible for completing a detailed review of the program(s) to identify specific action items. Since the formation of the team and prior to the completion of the detailed plan however, certain members of the team were re-assigned to address other priorities. In mid-2016, PGL senior management assigned a Special Project Manager (SPM) to this recommendation (filled by the Director of Construction). The SPM reviewed the work of the Tiger Team to-date and developed a list of required actions items. Primary areas of focus identified by the SPM included:

- Procurement of required materials and equipment
- Identification of estimated materials on a Bill of Materials on the appropriate design drawing(s)
- Handling of scrap and waste materials
- Requisitioning of material by contractors
- Responsibility for supply for various materials and equipment
- Verification of actual material used versus the design drawing Bill of Materials
- Definition of material and equipment handling protocols in contract documents for contractors
- Establishment of regular internal audit protocols for verification of compliance
- Review of proper accounting treatments associated with materials and equipment in the capital construction program(s).

Throughout June and July of 2016, the SPM reviewed the collected information from prior materials reviews and performed additional investigation and analysis. The review produced an



identification of a series of gaps related to data or document control, and field review and verification. To address these gaps, the following action items were identified:

1. A pilot project to place the responsibility of furnishing materials upon the contractors to identify all the touch points in supplying materials to a project.
2. A field quantity tracking pilot, begun in July of 2016, and planned for completion in March of 2017. This pilot will evaluate the use of an electronic tool (iPads) to track quantities in the field (as entered by the Field Coordinators).
3. Another pilot to be bid out in December 2016 or early 2017 and executed in 2017. The reconciliation pilot adds a dedicated Materials Specialist to the project to track the flow and usage of materials and compare those results to the data provided by two newly available sources of information (electronic field quantity tracking data and as-built GPS data at closeout). The intent of this pilot is to identify how new tools and methods can be used to close the previously identified gaps in the event that furnish and install contracts prove infeasible.

Management has created several Material Specialists positions, reporting to the PGL Contract Organization (Refer to P.3.1Atch01 and P.3.1Atch02). Material Specialist responsibilities include liaison among Engineering, Construction and Supply Chain, to manage and ensure material availability for contractors, to coordinate with Engineering and Project Management teams and contracts, and to reconcile materials. (Refer to P.3.1Atch03 for a full job description of a Material Specialist P.3.2 – P.3.4).

### **Expected Post-Implementation Conditions and Factors**

Management has embarked on several pilot projects to address material reconciliation issues identified by this recommendation. The results of these pilots may establish new policies and procedures controlling material reconciliation. It is important that the underlying policies and procedures be updated to reflect the changes in these programs, especially the addition and involvement of the Material Specialists and the processes used by Field Coordinators to update installed quantities in the field.

Management should also formally report on the outcome of each pilot project and determine how well each addresses the issues identified. Plans to extend the pilots company wide should also be defined and communicated.

### **Summary of Liberty's Steps to Verify Implementation**

On December 14, 2016, Liberty met with Peoples Gas' Director of Construction to review the following documentation of task progress to-date:

- PGL Construction Organizational Chart (P.3.1Atch01) detailing Special Project Manager
- PGL Contract Organizational Chart (P.3.1Atch02) detailing Material Specialists
- Job Description of a Material Specialist (P.3.1Atch03).

Additionally, Liberty discussed the results of the SPM and proposed pilot projects with the Lead Contract Specialist responsible for overseeing the pilot projects as well as the Material Specialists positions.

### **Observed Conditions and Factors**

PGL's SPM has completed the analysis, originally intended for a Tiger Team, to identify areas of focus to improve material reconciliation. Three pilot projects have been identified to address the issues and 3 Material Specialists have been placed to oversee the process in each of the Shops. The pilot projects identified appear to address concerns identified during the management audit. Results from these pilots should be available in 2017.

### **Implementation Complete and Satisfactory?**

Yes. PGL has appropriately addressed this recommendation. The pilot programs will not be completed prior to the end of Liberty's monitoring period. As a result, Liberty will consider this recommendation to be completed. To the extent possible, Liberty will monitor pilot status during the first and second quarters of 2017.

### **Remaining Gaps, Needs**

None.

### **PGL Position**

PGL agrees with Liberty that this recommendation should be closed.

### **Future Liberty Verification Activities**

During the first and second quarters of 2017, Liberty will review and verify PGL's progress on each of these pilot projects.

### **General Observations**

None.



### Q.3 – Field Resources, Short and Long Term

Peoples Gas needs promptly to conduct short-term and long-term analyses of its requirements for skilled and experienced field resources, develop incentives for moving personnel into new positions and incenting senior workers to remain, and ensure that training and development efforts anticipate (and not merely react to) vacancies.

Performing a comprehensive field resource needs analysis represents a key first step. The Peoples Gas initiatives resulting from discussions between Liberty and senior leadership include plans for a needs analysis that will identify potential losses of first-level and general supervisors reaching retirement age. Peoples Gas should supplement that “numbers” analysis, which is appropriate, with an examination of the likely training and development needs for potential replacements.

The Company seems to understand that incentives to move into supervision and to remain with the Company after reaching retirement benefits plateaus must form part of its plans for ensuring adequate resources over the long AMRP duration that remains. The Company has acknowledged the long-term need to promote first-level supervisors from within (e.g., moving well qualified and motivated crew leaders into management from this current highest union position). Such movement historically has provided an important source for acquiring first-level supervisors.

The needs analysis should look closely at the utility worker (formerly called gas mechanic) position, given the time it takes to fully qualify such mechanics. That training time makes it too late to begin the training process when a vacancy occurs, or becomes imminent...

#### **Underlying Conclusions**

Q.5 Peoples Gas has had difficulty in filling internal positions responsible for AMRP work, and, like the industry as a whole, faces graying workforce issues that can cause skills gaps to widen over time.

Maintaining an adequate number of skilled and experienced personnel forms a central element in ensuring work quality, timeliness, and efficiency. Peoples Gas faces current shortages in a number of positions. Liberty’s review also confirmed the risk that shortages will increase, given the demographics of the internal workforce. Like others in the industry, Peoples Gas faces the loss of growing numbers of skilled workers and supervisors as retirement ages approach. A combination of disincentives to remain after reaching benefits plateaus and increased employment opportunities in an improving economy further increase employee retention risk. The growth of accelerated main replacement programs around the country adds further risk.

The discussions that began last September between Liberty and senior leadership produced consensus on the need to address internal resource numbers and skills, both short- and long-term. A comprehensive analysis of needs across the immediate and the longer terms should take place. Peoples Gas also needs to identify methods to incent bargaining unit employees to enter supervision and retirement-eligible workers to remain.

#### **PGL Action Plan Steps**

This recommendation contains 2 tasks that have been rescheduled and are now considered completed.

Item #	Task	Status
1	Interview and fill the restructured organizational positions in the Capital Construction organization.	Complete
2	Conduct training programs associated with new personnel in repurposed or new positions.	Complete

### **Expected Post-Implementation Conditions and Factors**

Management will be employing many first level supervisors not having gas construction or gas management experience, because it will rely on outside hires to staff first level supervisor vacancies.

### **Summary of Liberty’s Steps to Verify Implementation**

None.

### **Observed Conditions and Factors**

Management will experience a loss of talent as the work force, including first level supervision reaching retirement age. We believed that management should restructure its incentives to provide a method for senior union personnel to move into first level supervisor positions. Management did not agree nor implement this part of the recommendation. Instead, it has decided to hire from the outside, and to train newly hired first level supervisors. Management was able to induce some lower level union personnel to move to first level supervision, but they also must have additional people-skills training. This approach is not as positive as having crew leads move into first level supervision, but should prove better than hiring from the outside and having to train these new company employees in handling gas work.

### **Implementation Complete and Satisfactory?**

Yes, this recommendation is implemented and additional training modules are due to be released for the 2017 construction season.

### **Remaining Gaps, Needs**

Training will be a critical task in ensuring the safety of the gas system since many newly hired first level supervisors may not have prior gas construction or safety experience.

### **PGL Position**

Management agrees that the first level supervisor position is critical, but has decided that it will not change human resources policies to incent senior union personnel to move to management.

### **Future Liberty Verification Activities**

None

### **General Observations**

This recommendation is aligned with Q.4 and Q.5.

In 2016, two training courses were redesigned or developed to provide the fundamental reference information and expectations of Field Coordinators, with respect to managing contractors in the field. For 2017, the two courses from 2016 will continue to serve as an introduction to the responsibilities of Field Coordinators, and an additional training course pertaining solely to roles, responsibilities, and expectations of Field Coordinators will be introduced. All training courses presented to the Field Coordinators address some aspect of management of contractors.

Training increased from six to 16 modules from 2015 to 2016. In 2016, six of the additional training modules available to Field Coordinators were newly developed. For 2017, 39 modules are planned, incorporating 17 newly developed modules for newly hired Field Coordinators. These coordinators will include Peoples Gas employees and third party supplied contract individuals, some of which are retired gas employees. Management was also able to hire some mechanics as Field Coordinators, but not union crew leaders, from the bargaining unit ranks.

For the 2017 construction season, management will have hired over 30 additional Field Coordinators, some prior, unionized mechanics, but most new hires with some but limited gas experience. The new training courses are designed to improve their skillsets. As in 2014 and 2015 management is attempting to mentor the novice gas individuals by teaming them with experienced District Leaders and Field Supervisors, of which 18 out of 28 are new to the company.

See Recommendation Q.5 General Observations for comments regarding Quality Control and Quality Assurance on AMRP and other programs.

## Q.4 – Field Resources and Inspection Stability

Identify and pursue means to increase the stability in and the numbers of field supervision and inspection personnel.

Discussions with senior management make clear its recognition that Peoples Gas faces resource restrictions that affect AMRP performance. A comprehensive understanding of the size of the resource gaps in areas affecting safety and compliance, however, must depend upon progress in improving overall planning, management, and control of the AMRP.

Nevertheless, on an immediate basis, Peoples Gas needs to begin addressing barriers that exist to securing resources to enhance supervision of crews.

The Company should undertake a focused examination of the incentives necessary to induce union crew leaders to become first level supervisors, as an alternative to filling vacancies through outside hires with limited gas operations experience. Current disincentives to internal succession include retirement programs, pay, and other benefits. The timeframe for filling first level supervision positions is long, as is the learning curve for outside hires. Peoples Gas needs to begin to address vacancies before they occur, even at the expense of temporarily having extra supervisors. Their ability to be trained and mentored by senior general supervisors prior to being assigned to crews will represent resources well spent in the interests of long-term AMRP optimization.

The Company also needs to promote a greater level of continuity in AMRP management and supervisory ranks at the Shop level. Minimizing job shifts that deprive the local Shops of key resources needs to become a priority. Doing so will permit faster resolution of issues by personnel not in the process of learning on the job. Greater stability will also help to make lines of authority and responsibility more clear. Lack of clarity about who (e.g., the Project Management Office versus the Shop areas, Integrys versus Peoples Gas) has responsibility and accountability for what decisions and actions will improve performance beyond what our field inspection teams observed.

### **Underlying Conclusions**

Q.6 A number of factors increase the difficulties that Peoples Gas has in providing sufficient numbers of experienced personnel.

Liberty's field investigations and interviews with field management disclosed a number of specific personnel-related concerns that contribute to performance, safety, and compliance issues.

Peoples Gas has experienced a significant level of vacancies in key field supervision and inspection positions. The utility has not filled vacancies resulting from retirements, promotions, and reassignments at a sufficient rate to sustain resource levels at effective numbers and levels of experience. The growth in work occasioned by the AMRP and other work growth (such as the increase to medium pressure and the relocation of meters to outside locations) has placed significant strain on resources. Frequent switches in job assignments have produced many cases where job holders have short tenures in current, key positions (e.g., shop construction supervisor and manager positions). Moreover, incentives to retain people in key positions and to encourage experienced workers to take supervisory positions are not strong.

Peoples Gas has consequently experienced a shortage of trained personnel to fill supervision and inspection roles. The impacts show in what Liberty’s field inspection team found to be comparatively weak levels of supervision and oversight, particularly with respect to work being performed by Peoples Gas crews. Moreover, it is clear that there have been delays by Peoples Gas crews in accomplishing their designated elements of AMRP work. As contractors continue to perform substantial numbers of gas main and service replacements, the gap threatens to widen, absent expansion in the number and capabilities of Peoples Gas resources.

**PGL Action Plan Steps**

This recommendation contains 2 tasks that have been rescheduled and are now considered complete.

Item #	Task	Status
1	Interview and fill the restructured organizational positions in the Capital Construction organization.	Complete
2	Conduct training programs associated with new personnel in repurposed or new positions.	Complete

**Expected Post-Implementation Conditions and Factors**

Management will have many first level supervisors without gas construction or gas management experience, because it is relying on outside hires to staff first level supervisor vacancies.

**Summary of Liberty’s Steps to Verify Implementation**

None.

**Observed Conditions and Factors**

Management will experience a loss of talent as the work force, including first level supervision reach retirement age. We believed that management should restructure its incentives to provide a method for senior union personnel to move into first level supervisor positions. Management did not agree nor implement this part of the recommendation. Instead, it has decided to hire from the outside, and to train newly hired first level supervisors. Management was able to induce some lower level union personnel to move to first level supervision, but they also must have additional people-skills training. This approach is not as positive as having crew leads move into first level supervision, but should prove better than hiring from the outside and having to train these new company employees in handling gas work.

**Implementation Complete and Satisfactory?**

Yes, this recommendation is considered complete and implemented.

**Remaining Gaps, Needs**

Training will be a critical task in ensuring the safety of the gas system since many newly hired first level supervisors may not have prior gas construction or safety experience.

### **PGL Position**

PGL agrees that the first level supervisor position and inspectors are critical to the company but has decided that it will not change human resources policies to incent senior union personnel to move to management.

### **Future Liberty Verification Activities**

None.

### **General Observations**

This recommendation is aligned with Q.3 and Q.5. See the general observations under Recommendations Q.3 and Q.5 for additional details.

## Q.5 – Training and Inspection Issues

Clarify responsibilities for key field roles and institute training programs to support them more fully.

The Company needs to make clear that Technical Training is the recognized authority for guidance involving safety, operating procedures, compliance, and Operator Qualification matters, for both Integrys personnel conducting AMRP work through the Project Management Office and Peoples Gas personnel working under management in the three Shop areas. It must also be made clear that Compliance Monitoring Group personnel are not only monitoring or advisory resources, but have the authority to address field safety and compliance issues directly and as they arise.

Technical Training needs to rework and expand the training for construction inspectors. It needs to design training that will ensure that inspectors are completely knowledgeable about Company procedures, standards, and regulatory requirements. It should undertake that effort based on a focused effort to identify the principal and recurring gaps and other problems.

The training should include practical, hands-on treatment of issues (e.g., fusing and Operator Qualification requirements). It should also focus on how to spot poor quality work and who to call when questions or concerns arise. Technical Training should also make available and ensure that field personnel know how to gain prompt access to a knowledgeable person who can respond in a short time frame. Construction inspector training also needs to include City permit requirements and clear information on what requirements take precedence when conflicting or differing requirements apply (e.g., City versus Peoples Gas standards; depth of cover requirements for city rights-of-way versus customer property).

Technical Training has lost expertise due to retirements and the use of contract instructors. It is therefore necessary to conduct a review of resource numbers, skillsets, and experience needs, followed immediately by preparation and prompt execution of a staffing plan to meet identified needs.

### **Underlying Conclusions**

Q.7 Peoples Gas' designation of roles and responsibilities for oversight of work effectiveness, quality, and safety is unclear, and fully effective means for supporting the execution of those roles do not exist.

#### Field Supervision

Liberty's field investigations found a lack of supervision of some Peoples Gas crews. Liberty observed in a number of cases the absence of on-site supervision and a lack of visits by responsible supervisors. Each of the three Shop areas has vacancies for first level supervision. Liberty's understanding of the benefits of entering supervisory roles indicates lack of sufficient material incentives for seasoned crew leaders (a natural source of expertise) to become non-union supervisors.

#### Meter Markers

Liberty's field inspections disclosed a number of cases where inaccurate marking of new meter locations raised concerns about compliance with safety and with Company procedures and



standards. The work that Peoples Gas performs under common management with AMRP replacements involves moving to outside locations meters currently located inside customer structures. Marking the new locations thus comprises a significant effort. Completing the work that new main and service installation by contract crews initiates has been a problem for Peoples Gas. Adding to the problem, a lack of knowledge on the part of overly stressed and busy workers performing meter markings has produced violations and cost impacts for corrective work.

#### Supervision of Contractor Crews

Peoples Gas assigns a construction inspector to each contractor crew installing mains and services. However, Liberty's field investigations identified a lack of sufficient skill and experience levels of Peoples Gas construction inspectors. Many construction inspectors did not have gas or any other pipeline inspection experience prior to their hiring. The training they received is more appropriate for individuals with extensive gas construction experience such as former employees familiar with the Peoples Gas system. A majority of inspectors have come from other types of construction (e.g., highway, water main, buildings). The mentoring provided comprises a good practice, but the quality of mentoring is also a function of expertise in gas construction.

#### Technical Training and Compliance Monitoring

The Company also needs to identify and empower a single source for providing ultimate guidance for field personnel questions involving operations and materials procedures and specifications. At present, contractors who have questions regarding standards or procedures rely on the advice they obtain from the construction inspectors, who may or may not have the needed experience or knowledge.

#### Operator Qualification

The Pipeline and Hazardous Materials Safety Administration requires that pipeline operators performing covered tasks undergo evaluation intended to demonstrate the ability to "perform assigned covered tasks and recognize and react to abnormal operating conditions." Peoples Gas has the responsibility for ensuring that the resources it employs are operator qualified.

Liberty found instances of contractor non-compliance with the standard operating procedures and standards program of Peoples Gas, particularly with respect to: (a) required operator qualifications ("OO"), gas system mark-out (to avoid third-party damages when working in the vicinity of gas facilities) accuracy issues, providing adequate ground cover (above replaced mains and services), providing adequate service regulator vent terminus clearance (minimum distances from opening in buildings through which gas can migrate), performing meter marking to promote efficient interior piping, and thrust block sizing. In one instance an operator of a directional drilling machine did not have an up-to-date certification.

*Q.8 The high rates of turnover, the lack of experience among replacements, and the slow pace in filling some positions make the need for training a particularly high AMRP priority.*

Peoples Gas does not provide training in a reasonably uniform manner to those who require it, and its training programs do not fully reflect the needs of a work force that has a large number of people filling roles in which they do not have significant experience. Moreover, when making organizational and process changes to address oversight of work safety and quality, the Company will have to provide training intended to ensure that those responsible for key roles understand



their authority and how they need to execute it. Training regarding procedures and standards for construction inspectors requires particular attention.

### **PGL Action Plan Steps**

This recommendation contains 2 tasks that have been rescheduled but that need to be implemented before this recommendation can be considered closed.

<b>Item #</b>	<b>Task</b>	<b>Status</b>
1	Interview and fill the restructured organizational positions in the Capital Construction organization.	Complete
2	Conduct training programs associated with new personnel in repurposed or new positions.	Complete

### **Expected Post-Implementation Conditions and Factors**

Peoples Gas will have many first level supervisors that do not have gas construction or gas management experience since they are relying on outside hires to staff first level supervisor vacancies.

### **Summary of Liberty's Steps to Verify Implementation**

None.

### **Observed Conditions and Factors**

Management will experience a loss of talent as the work force, including first level supervision reaching retirement age. We believed that management should restructure its incentives to provide a method for senior union personnel to move into first level supervisor positions. Management did not agree nor implement this part of the recommendation. Instead, it has decided to hire from the outside, and to train newly hired first level supervisors. Management was able to induce some lower level union personnel to move to first level supervision, but they also must have additional people-skills training. This approach is not as positive as having crew leads move into first level supervision, but should prove better than hiring from the outside and having to train these new company employees in handling gas work.

### **Implementation Complete and Satisfactory?**

Yes, this recommendation is considered complete and implemented.

### **Remaining Gaps, Needs**

Training will be a critical task in ensuring the safety of the gas system since many newly hired first level supervisors may not have prior gas construction or safety experience.

### **PGL Position**

PGL agrees that the first level supervisor position and inspectors are critical to the company but has decided that it will not change human resources policies to incent senior union personnel to move to management.

### **Future Liberty Verification Activities**

None.

### **General Observations**

This recommendation is aligned with Q.3 and Q.4.

Management has made multiple changes in how it has proposed to perform quality control of field organizations for both in-house maintenance and construction and outside contractor performed maintenance and construction. Management formed a CMG organization in the late 2000s to perform this critical audit function, and most recently proposed to have contractors perform QC on the AMRP work with some auditing by CMG. This changed the initial AMRP approach, under which third parties provided construction inspectors, acting with limited oversight by the CMG organization. Management has made another, recent change, proposing again to use a third-party contractor to inspect the construction contractors, similar to the initial AMRP approach. Management has, however, expanded the CMG organization to provide additional inspection resources for internal and external performed maintenance and construction work. The reason given for the change was that the construction contractors were not producing robust QC and QA programs.

We continue to have concerns, because none of the previous methods of construction inspection appeared to be satisfactory. The CMG organization was formed to prevent continual compliance issues, but, until recently, there was not sufficient apparent improvement. The early construction inspectors employed by the third-party inspection contractor did not have sufficient experience or training to recognize out-of-compliance and safety issues. With the latest iteration of the QC process returning to the old method, we have concerns about its effectiveness. A further discussion of this issue is presented in Recommendation Q.2.

Management says that it has implemented new training for Field Coordinators and other individuals involved in capital construction work. Management stated that the new training modules were being demonstrated with a pilot group in December, and will be rolled out all new and existing Field Coordinators (and others) in January and February 2017. Depending the completeness of this new training, quality and safety issues noted in prior Liberty work involving PGL may be eliminated. Another concern that management says it has corrected is that any individual can now stop unsafe and non-compliant activities.

## U.1 – AMRP Communications Plan

### Peoples Gas should alter the AMRP Communications Plan.

Peoples Gas revised its Communications Plan for AMRP in December 2014. This effort had been underway since July 2014. However, the 2014 Communications Plan fails to address several items, including:

- Protocols and strategies for dealing with uncooperative customers
- Process to update customer needs and expectations as the project progresses
- Process to gather customer feedback and measure customer satisfaction.

Following Plan modification to address these concerns, Peoples Gas should communicate the Plan throughout the organization and train contractors and employees on its use.

### **Underlying Conclusions**

#### U.1 Peoples Gas failed to update its initial draft AMRP Customer Communications Plan until recently and the Company has not monitored use of its Plan protocols and procedures in the field.

The Company did not finalize the AMRP Customer Communications Plan prior to program launch. It has also not updated it to reflect changes to the communications process or materials in the intervening three years. Considering the risks to Company image and customer satisfaction, Peoples Gas should review and update this program-specific communications plan annually to address customer notification and public communication in regards to meter access and cut over, including templates and prepared communications addressing these needs.

### **PGL Action Plan Steps**

Item #	Task	Status
1	Revise Communications Plan	Complete
2	Communications Team to communicate the Plan to all of those involved in the program, gather input from the past year and incorporate those suggestions into the 2016 plan.	Complete
3	Communications Team to communicate the 2016 Plan to all of those involved in the program. See communications rollout plan, on page 4.	Complete
4	Communications Team to communicate the Plan to all of those involved in the program, gather input from the past year and incorporate those suggestions into the 2017 plan. See communications rollout plan, on page 4.	On Going
5	Monitor Plan protocols and processes.	On Going

Management revised and renamed the plan in September 2015 (U.1 Attachment 1). Changes were made to reflect the recent acquisition by WEC, to reflect current processes and to address Liberty's recommendation, including:

- Protocols and strategies for dealing with uncooperative customers
- Process to update customer needs and expectations as the project progresses
- Process to gather customer feedback and measure customer satisfaction.

During 2016, management proposed changes to re-sequence meter-related AMRP workflows, including meter marking and meter replacement (refer to Recommendation U.2). The 2015 AMRP Customer Communications Plan did not address these pending changes to key customer touch points. An updated plan, the 2016 Capital Construction Communications Plan, was produced in May 2016 (attached to U.1 Implementation Plan Revision 1).

At the end of the construction season in 2016, PGL conducted lessons learned sessions with field employees and identified additional changes to the communications plan. The results will be reflected in an upcoming 2017 plan. Additionally, PGL piloted a training session that communicates the plan to field employees in November 2016. Training will be delivered to employees ahead of the 2017 construction sequence, and the communications plan will be discussed at that time.

Management will monitor plan protocols and procedures going forward.

### **Expected Post-Implementation Conditions and Factors**

Peoples has updated and "rolled out" the revised Capital Construction Communications Plan to the field and other stakeholders. Going forward, this process should be repeated annually to ensure that the plan is current and reflective of the process. Any revisions to these customer-facing processes should be reflected in the Communications Plan and appropriately communicated to employees, contractors, and other key stakeholders, well ahead of the planned implementation.

### **Summary of Liberty's Steps to Verify Implementation**

On December 14, 2016, Liberty met with Peoples Gas to discuss the following documents:

- 2016 Capital Construction Program Communications Plan (U.1.1Atch01)
- Construction Program Communications Plans rollout sign-in sheets (U.1.3Atch01)
- Communications Plan Rollout Training Presentation for trainers (U.1.3Atch02)
- Communications Plan Rollout Training Presentation for field employees (U.1.3Atch03).

The 2017 Communications Plan is in the process of being updated. A draft document will be made available to Liberty once available, as part of task activity U.1.5.

### **Observed Conditions and Factors**

PGL has updated the Construction Program Communications Plan for 2016 and presented the plan to employees in the field. The Plan has been expanded significantly from the 2014 version to address the items noted in this recommendation. Additionally, the Plan was strengthened to include all communications stakeholders, including: Residential and non-residential customers, Government Officials, Media, employees, and contractors.

PGL will update the plan annually to incorporate lessons learned from the prior year and any changes required for the planned work in the upcoming construction season. Other updates will be made as required.

### **Implementation Complete and Satisfactory?**

Yes. PGL has satisfactorily addressed the concerns of this recommendation.

### **Remaining Gaps, Needs**

None.

### **PGL Position**

Management agrees that the recommendation is ready for close-out this quarter (4Q16).

### **Future Liberty Verification Activities**

During the first and second quarters of 2017, Liberty will determine if it is necessary to follow up with any of the various Capital Construction Program Communications stakeholders to determine the effectiveness of PGL's communications. Where possible, Liberty will review periodic results from customer satisfaction surveys and other feedback to better understand the impact of communications efforts.

### **General Observations**

None.

## U.2 –AMRP Customer Appointments

Peoples Gas should standardize the process to set AMRP customer appointments.

Peoples Gas should standardize the appointment setting process and the Contact Center should set all appointments to facilitate a one-stop experience for customers. The Company should use the customer system to set and track appointments. These changes will provide a more consistent experience for customers. Peoples Gas should also consistently offer options for after-hours and weekend appointments to accommodate customers who need them.

### **Underlying Conclusions**

U.2 AMRP communications techniques have been inconsistent.

Peoples Gas requests appointments for service mark-outs through a standard letter process, and the Contact Center schedules them. However, each Shop individually handles requests to schedule appointments to move meters. This approach may prove easier for the Shops to manage. It can, however, cause confusion for customers, who set the first appointment through the Contact Center. A month or so later, Shop personnel go door-to-door to set appointments with customers. In some cases, no letter or other communication informs customers about the process from end-to-end.

This approach causes problems in addition to inconsistency in the customer experience. Customers may not be home, or unwilling to answer the door. Door-to-door delivery of brochures involves significant costs. The Peoples Gas field employees going door-to-door also do not have the customer-service “soft skills” training necessary for making such contacts effective.

The Shops record appointments on handwritten lists. The Shops do not document appointments appropriately in the Peoples Gas customer information system (known as “Cfirst”). The Contact Center therefore has no record of these appointments. Customer Service Representatives thus do not have the information that enables them effectively to answer questions or reschedule appointments.

U.5 Peoples Gas has not consistently scheduled off-hour appointments for customers unavailable during normal business hours.

The Company recently limited the availability of after-hours appointments to move meters. The letter requesting a customer appointment offers hours from Monday through Friday, between 8 am to 7:30 pm. It also offered Saturday appointments from 8 am to 3:30 pm. However, from August through October 2014, Peoples Gas Shops were not permitting the scheduling of Saturday appointments. This restriction frustrated many customers, and increased complaints and special handling requests.

**PGL Action Plan Steps**

Item #	Task	Status
1	Collaborate with customer service, communications, construction, engineering, and others to finalize construction sequence and adopt appropriate meter marking and meter move protocols.	Complete
2	Confirm director level approval of construction sequence.	Complete
3	Meter Move Customer Service Task Force to develop recommendations to eliminate gaps in customer service records management related to field personnel making appointments and not scheduling.	Complete
4	Evaluate the implementation success and develop next level improvements to scheduling and executing customer appointments.	Annually at year-end

At the beginning of the 2016 construction season, management developed a new customer communication process to set customer appointments and support the re-sequenced construction approach (Mark and Bar and Meter Moves). A cross-functional Meter Move Task Force team developed customer appointment protocols for both the existing construction process and the future process. While the composition of the team varied during the development, the following areas were represented, Construction, Project Management, Customer Service, Process Improvement, Government Relations, Compliance, and IT. The team included executive level involvement, Director, Construction; VP, Customer Service; and Director, Strategy & Performance.

The Task Force focused on a temporary solution to allow appointments to be better coordinated between the field and customer service in a manner that mitigates or eliminates impact to the customer. The following process was developed:

- Field employees setting appointments with customers in the field must document the appointment on an Appointment Log form.
- The employee turns in the Appointment Log and the Daily Recaps (Completion Reports) to the shop at the end of the shift.
- An Operations Specialist in each shop will enter the Appointment Log information and completion reports into the C-First customer service system.
- The Operations Specialist serves as the coordinator between Customer Service and Field Construction in the event of issues or questions.

A pilot program was conducted and completed in the Beverly neighborhood during 2016. Following the pilot, minor mid-course corrections were identified and the Mark and Bar program was expanded rapidly. At that time, a training program was provided to all Mark and Bar and Meter Move crews.

A “lessons learned” session was held in the fall of 2016 to review the success of the communications protocols. A flow chart was developed to document the revised construction



communication process (U.2.4Atch01). Enhancements to the AMRP appointment setting process (as a result of the lessons learned session) are illustrated in yellow on the flow chart. The flow chart also documents the communications materials that are provided to customers as part of the AMRP customer appointment process.

A more robust, formal training program is being developed for the January 2017 pre-construction season training, which includes upgrading field technology. While the program is running well, the process will be incorporated into a formal procedure in mid-2017. Another “lessons learned” session will be conducted at the conclusion of the 2017 construction season to make any additional required adjustments to the communications protocols.

### **Expected Post-Implementation Conditions and Factors**

Management plans to replace its current Customer Information System (Cfirst) in 2017. A long-term customer appointment setting solution should be identified, using the upgraded field technology and new customer system to support the revised appointment setting process. This will allow management to track field progress and communicate that progress across the organization and to customers. This integration will eliminate the current manual appointment logging process and standalone database and improve Customer Service responsiveness.

### **Summary of Liberty’s Steps to Verify Implementation**

On December 14, 2016, Liberty met with Peoples Gas to discuss progress on this recommendation and to review the following documents:

- AMRP Construction & Communication Process (U.2.4Atch01)
- LSO 201: Example Customer Introductory Letter (U.2.4Atch02)
- Step-by-Step Guide of Infrastructure Upgrade Construction Process (U.2.4Atch03)
- FAQs for Infrastructure Upgrade Construction Process (U.2.4Atch04)
- Door Hanger Leave Behind (U.2.4Atch05).

### **Observed Conditions and Factors**

Management has revised the customer appointment process to address the re-sequenced construction approach (Mark and Bar) and strengthened the process to document appointments set by the field in each of the Shops. The new process was communicated to the field ahead of the 2016 pilot in the Beverly subdivision. Following the pilot, the mark and bar process was expanded, and additional training was provided to improve the appointment process.

During the fourth quarter of 2016, management conducted a lessons-learned session to identify any needed changes to the appointment process. An enhanced process was documented and incorporated into the upcoming training for the 2017 construction season.

Management plans to revisit the customer appointment process annually through lessons learned sessions. Ultimately, when the field technology upgrade is complete, appointments will be integrated into the technology, eliminating the current manual log and update process, which will ensure better communications with employees and customers.



**Implementation Complete and Satisfactory?**

Yes. PGL has satisfactorily addressed the concerns of this recommendation.

**Remaining Gaps, Needs**

None.

**PGL Position**

Management agrees that the recommendation is ready for close-out this quarter (4Q16).

**Future Liberty Verification Activities**

During the first and second quarters of 2017, Liberty will review periodic results from the We Care customer satisfaction surveys and other feedback to better understand the impact of the revised appointment setting process and associated customer communications efforts.

**General Observations**

None.

**Appendix A: Recommendation Status**

<b>Rec. #</b>	<b>Recommendation</b>	<b>Previous Status</b>	<b>Current Status</b>
<b>C.1</b>	Peoples Gas should include as an element of the neighborhood work planning process an evaluation of the merits of taking an exception to the double decking approach	Plan Accepted	Accepted/ Closed
<b>C.2</b>	Peoples Gas should more thoroughly study and report on the causes of extremely high reports of contactor damage incidents	Plan Accepted	Accepted/ Closed
<b>C.3</b>	Peoples Gas should undertake measures to verify the operability of external service shutoff valves	Plan Accepted	Accepted/ Closed
<b>C.4</b>	Peoples Gas should examine the ability to address low pressure and single-contingency outage risks in the neighborhood program	Plan Accepted	Accepted/ Closed
<b>C.5</b>	Peoples Gas should test both services and mains to 100 psig	Plan Accepted	Accepted/ Closed
<b>C.6</b>	Analyze and report on the precise nature and numbers of corrosion leaks, and determine whether protected and coated steel mains are experiencing corrosion leaks	Plan Accepted	Accepted/ Closed
<b>D.1</b>	As part of the new planning effort now underway, Peoples Gas should provide a clear and unambiguous description of the AMRP, including quantities for all parameters important to management of the project	Plan Accepted	Accepted/ Closed
<b>D.2</b>	Peoples Gas should accompany regularly reported performance data with insightful analysis in order to make the data immediately meaningful to management oversight and supportive of timely and responsive improvement and corrective initiatives and activities	Plan Accepted	Accepted/ Closed
<b>D.3</b>	Peoples Gas should provide a realistic schedule assessment based on an effective program plan	Plan Accepted	
<b>D.4</b>	Peoples Gas should prepare a soundly derived, detailed resource plan and provide for full coordination between the annual budget and resulting resource requirements	Plan Accepted	In Progress
<b>D.5</b>	In light of apparent decreases in productivity, Peoples Gas should promptly complete an analysis of productivity associated with the installation of meters	Deleted	Deleted
<b>D.6</b>	Peoples Gas should promptly complete a new program cost estimate consistent with good estimating practices	Plan Accepted	Accepted/ Closed
<b>E.1</b>	Peoples Gas should complete a full replacement of the plan for management (the project execution plan) addressing all key elements of AMRP management and control	Plan Accepted	Accepted/ Closed

<b>E.2</b>	Current developmental plans for a new Project Execution Plan should specifically address prior failures and how they will be avoided in the new plan	Plan Accepted	Accepted/ Closed
<b>E.3</b>	Peoples Gas should prepare a long-term AMRP management resource plan that specifically addresses (a) requisite skills needed both on an immediate and on a longer term basis; (b) current gaps in internal capabilities; (c) the optimum balance of owner versus contractor personnel; (d) acquisition and development of resources; and (e) succession plans	Plan Accepted	
<b>E.4</b>	Peoples Gas should move toward a project organization that makes significantly more use of dedicated resources under a strong project manager approach	Closed	Rejected/ Closed
<b>E.5</b>	Peoples Gas should prepare a specification for a new program management function, correcting the weaknesses in the current process	Plan Accepted	Accepted/ Closed
<b>E.6</b>	Peoples Gas should assign a project manager to most, if not all, AMRP neighborhood projects	Plan Accepted	Partially Rejected/ Closed
<b>F.1</b>	Peoples Gas should develop, staff, and implement a data quality control program	Plan Accepted	
<b>F.2</b>	Peoples Gas should develop a database of the soils data already collected and populate it further with soils data taken at all new excavations	Plan Accepted	Accepted/ Closed
<b>F.3</b>	Peoples Gas should conduct a structured study of alternative criteria and weightings for the Main Ranking Index and for the neighborhood approach	Plan Accepted	Accepted/ Closed
<b>F.4</b>	Should Peoples Gas not change the current criteria and weightings, then the utility should develop additional measures to reduce leak rates further	Deleted	Deleted
<b>F.5</b>	Peoples Gas should determine on a system, segment and neighborhood basis the level of acceptable risk and metrics that will support appropriate adjustments in replacement rates	Plan Accepted	Accepted/ Closed
<b>F.6</b>	Peoples Gas should develop a cost model that addresses O&M costs associated with AMRP and related work	Plan Accepted	
<b>G.1</b>	Peoples Gas should develop a new Cost Plan Model that includes comprehensive measurement bases and critical assumptions regarding scope, quantities, productivity, labor costs, unit costs, and regulatory requirements; a reserve should be included as part of the overall program costs	Plan Accepted	
<b>G.2</b>	Peoples Gas should establish a Cost Trend Program to monitor potential, major cost-affecting items	Plan Accepted	
<b>H.1</b>	Peoples Gas should develop a Scheduling Master Plan	Plan Accepted	Accepted/ Closed

<b>H.2</b>	Peoples Gas should develop a complete project schedule for every new project, and it should address all aspects of the work required, from engineering to construction and through completion	Plan Accepted	Accepted/ Closed
<b>H.3</b>	Peoples Gas should resource-load schedules to address all physical work resources (including internal workforce and contractors) and construction inspectors	Plan Accepted	Accepted/ Closed
<b>H.4</b>	Peoples Gas should regularly perform schedule variance analyses to identify recurring or systemic issues, and plan corrective actions	Plan Accepted	Accepted/ Closed
<b>H.5</b>	Peoples Gas should complete promptly its efforts to ensure that construction schedules become quantity-based for both the internal workforce and the contractors	Plan Accepted	Accepted/ Closed
<b>I.1</b>	Peoples Gas should develop a long-term resource staffing plan that reflects the numbers, skills, and experience needs of all key positions	Merged	Merged
<b>I.2</b>	Peoples Gas should develop the in-house capability to replace gas main and install services on a larger and more long-term basis	Plan Accepted	
<b>I.3</b>	Peoples Gas should act immediately to address the need for sufficient internal resources to perform back end AMRP work as planned and scheduled	Plan Accepted	Accepted/ Closed
<b>I.4</b>	Peoples Gas should bring enhanced productivity measurement and management to resource planning	Plan Accepted	
<b>I.5</b>	Peoples Gas should more closely monitor contractor resources and production	Plan Accepted	
<b>I.6</b>	Peoples Gas should establish a centralized resource planning group or function	Plan Accepted	
<b>I.7</b>	Peoples Gas should evaluate regularly the performance ( <i>e.g.</i> , wage rates, quality, productivity, expertise, safety, dependability) between the internal and external workforce	Plan Accepted	
<b>J.1</b>	AMRP management should promptly design and implement a two-pronged scope control process: (a) at the program level, and (b) at the individual project level	Plan Accepted	In Progress
<b>K.1</b>	Peoples Gas should establish a cost estimating capability by formulating a clearly communicated cost estimating philosophy, formalizing a cost estimating process, preparing procedures, and developing effective tools	Plan Accepted	Accepted/ Closed
<b>K.2</b>	Peoples Gas should maintain and keep updated a set of historical databases that address cost estimating variables	Plan Accepted	Accepted/ Closed
<b>K.3</b>	Peoples Gas should perform project cost estimate reconciliations to understand major cost deviations, analyze performance and document lessons learned	Plan Accepted	Accepted/ Closed

<b>K.4</b>	Peoples Gas should expand the development of cost estimates at the individual project level and at the program level	Deleted	Deleted
<b>K.5</b>	Peoples Gas should establish a centralized cost estimating organization to maintain and sharpen the cost estimating skills	Plan Accepted	Accepted/ Closed
<b>L.1</b>	Peoples Gas should implement a holistic cost management program	Plan Accepted	
<b>L.2</b>	Peoples Gas should establish a structured, well defined approach to managing AMRP costs at three levels: the long-term total program outlook, the individual project level, and the annual budget view	Plan Accepted	
<b>L.3</b>	Peoples Gas should define appropriate roles for cost management professionals, including all activities, responsibilities, and accountabilities important to holistic cost management	Plan Accepted	
<b>L.4</b>	Peoples Gas should establish a cost support organization that: (a) resides organizationally at a level and in a place consistent with treating cost management as a high program priority, (b) serves the cost management needs of all levels of management, (c) develops a force of skilled cost professionals and assures those skills are continuously improved, and (d) has overall accountability for the development and implementation of the cost management program	Plan Accepted	Accepted/ Closed
<b>L.5</b>	Peoples Gas should provide training for managers, supervisors and cost support personnel in cost management techniques consistent with the holistic approach	Plan Accepted	
<b>L.6</b>	Peoples Gas should continue aggressively to pursue the recommendations made by Liberty in discussions leading to the interim report	Deleted	Deleted
<b>M.1</b>	Peoples should develop a formal strategy that assures the Company gets above-average terms and below-average pricing in view of the long-term opportunities afforded by the AMRP	Plan Accepted	Accepted/ Closed
<b>M.2</b>	Peoples Gas should regularly include in program monthly reports information showing procurement fulfillment and past due rates	Plan Accepted	Accepted/ Closed
<b>M.3</b>	Peoples Gas should develop a formal strategy that assures the Company gets optimum terms and pricing in view of the long-term opportunities afforded to contractors by the AMRP	Merged	Merged
<b>M.4</b>	Peoples Gas should determine those contract administration tasks that it considers required, and assure that the Program Management Office executes those tasks	Plan Accepted	Accepted/ Closed

<b>M.5</b>	Peoples Gas should apply a program of enhanced management oversight to the contract change process	Plan Accepted	Accepted/ Closed
<b>M.6</b>	The Program Management Office should implement enhanced analysis of its results in managing contract changes	Plan Accepted	Accepted/ Closed
<b>M.7</b>	The Supply Chain and Program Management organizations should require contractors to provide key data that supports their plans and bids	Plan Accepted	Accepted/ Closed
<b>M.8</b>	The Program Management Office should link the results of its contractor evaluation program to future bid evaluations and awards	Plan Accepted	Accepted/ Closed
<b>N.1</b>	Peoples Gas should clearly define and document the AMRP governance roles of the Executive Steering Committee with mission statements, charters, and roles and responsibilities for project oversight, monitoring and decision authority	Plan Accepted	Accepted/ Closed
<b>N.2</b>	Peoples Gas should promptly execute its current plans to provide for more regular and effective oversight of AMRP and for follow-through and corrective actions to address performance shortfalls	Plan Accepted	Accepted/ Closed
<b>N.3</b>	Peoples Gas should substantially enhance the completeness and accuracy of AMRP performance information provided to the boards of directors, and ensure its consistency with information used by AMRP program management and provided to the small executive group with designated responsibility for program oversight	Plan Accepted	Accepted/ Closed
<b>N.4</b>	Peoples Gas should expand top-level AMRP performance metrics and reports to include more actionable information, and to compare actual performance with plans and budgets meaningfully	Plan Accepted	Partially Rejected/ Closed
<b>N.5</b>	Peoples Gas should upgrade AMRP performance metrics to include annual or cumulative progress versus the long-term (20-year) plan goals and metrics for the executive oversight group and the boards	Plan Accepted	In Progress
<b>N.6</b>	Peoples Gas should employ outside assistance in designing and implementing the initiatives it committed to undertaking to improve AMRP management, control, and oversight	Closed	Rejected/ Closed
<b>O.1</b>	The AMRP Program Management Office should overhaul its approach to reporting, with emphasis on defining and meeting the needs of managers and staff	Plan Accepted	Accepted/ Closed
<b>O.2</b>	Management should establish a framework for performance improvement based on analysis of project performance and corrective actions	Plan Accepted	Accepted/ Closed
<b>O.3</b>	In the course of its current improvement initiatives, Peoples Gas should redefine and reestablish its standards for program performance	Plan Accepted	Accepted/ Closed

<b>O.4</b>	Program Management Organization should establish a culture and a regular, defined, comprehensive program that provides insightful analysis of program performance, and should acquire the capability to perform such analyses	Plan Accepted	Accepted/ Closed
<b>O.5</b>	Peoples Gas should expand the role of its project controls professionals to allow for more analysis of project progress and performance and, in turn, support of management by facilitating corrective action	Plan Accepted	Accepted/ Closed
<b>P.1</b>	Peoples Gas should conduct a comprehensive assessment of AMRP risks associated with potential mismatches between work performed and work charged, and develop an ongoing program of annual testing designed to mitigate the risks identified	Plan Accepted	
<b>P.2</b>	Peoples Gas should provide for dedicated, executive level sponsorship of the three-year materials and equipment control initiatives program and provide a regular method of reporting progress to the Illinois Commerce Commission	Plan Accepted	Accepted/ Closed
<b>P.3</b>	Peoples Gas should promptly: (a) correct the gap that exists with respect to ensuring the accuracy of material and equipment costs charged to the AMRP, (b) develop a method for reliably and accurately determining independently the magnitude of error in AMRP material and equipment costs being included in rate recovery, and (c) devise and implement a similarly independent testing program to verify that no material risk of similar error exists with respect to AMRP costs subject to rate recovery	Plan Accepted	Accepted/ Closed
<b>Q.1</b>	Peoples Gas should address a number of construction standards and should enhance training, documentation, and auditing in a number of areas related to construction standards	Plan Accepted	
<b>Q.2</b>	Peoples Gas should adopt measures to ensure consistent use of construction inspection checklists, develop a structured program for analyzing the information they produce to identify and respond to field performance issues disclosed, and clearly empower inspectors to halt unsafe work	Plan Accepted	
<b>Q.3</b>	Peoples Gas needs promptly to conduct short-term and long-term analyses of its requirements for skilled and experienced field resources, develop incentives for moving personnel into new positions and incenting senior workers to remain, and ensure that training and development efforts anticipate (and not merely react to) vacancies	Plan Accepted	Accepted/ Closed
<b>Q.4</b>	Identify and pursue means to increase the stability in and the numbers of field supervision and inspection personnel	Plan Accepted	Accepted/ Closed
<b>Q.5</b>	Clarify responsibilities for key field roles and institute training programs to support them more fully	Plan Accepted	Accepted/ Closed

<b>Q.6</b>	Peoples Gas should examine the benefits of equipping technicians with sub-meters accurate GPS devices in areas that have lines of sight to satellites	Plan Accepted	Accepted/ Closed
<b>R.1</b>	Peoples Gas should establish a formal continuous improvement program under the Impact Team to promote a culture of and an emphasis on seeking innovations to improve efficiency in the installation of mains, services, and meters	Plan Accepted	Accepted/ Closed
<b>R.2</b>	Peoples Gas should assign a project control engineer or cost analyst to each of the three Shops to handle the analysis of all AMRP construction work performed by the internal workforce and contractors	Closed	Partially Rejected/ Closed
<b>R.3</b>	Peoples Gas should assign a single manager to coordinate AMRP-level permitting improvement initiatives and to monitor and measure permitting for the duration of the program	Plan Accepted	Accepted/ Closed
<b>S.1</b>	Peoples Gas should invigorate the commitment to safety and permit compliance through the designation of an executive level “champion,” and institute a comprehensive communications program, set aggressive goals and performance targets, perform regular measurement, perform root cause analysis, and develop responsive action plans	Plan Accepted	Accepted/ Closed
<b>S.2</b>	Peoples Gas should more closely examine the root causes and develop a responsive action plan to improve employee accident rates	Plan Accepted	Accepted/ Closed
<b>T.1</b>	Peoples Gas needs to continue to focus on improving communications and relationships with the City and with its Department of Transportation, but must recognize that it will take improved permitting and work performance to create and sustain relationships at the level needed to optimize AMRP performance	Plan Accepted	Accepted/ Closed
<b>T.2</b>	Peoples Gas should expand the scope of AMRP project schedules to incorporate permitting requirements	Plan Accepted	Accepted/ Closed
<b>T.3</b>	Peoples Gas should develop a database of permit applications	Plan Accepted	Accepted/ Closed
<b>T.4</b>	Peoples Gas should work with the Chicago Department of Transportation to determine which existing and potential reports from the Department’s system are available and which could be provided to Peoples Gas	Plan Accepted	Accepted/ Closed
<b>T.5</b>	Peoples Gas should improve the database of rail crossing permits	Plan Accepted	Accepted/ Closed
<b>T.6</b>	Peoples Gas should improve its database of citations	Plan Accepted	Accepted/ Closed
<b>U.1</b>	Peoples Gas should alter the AMRP Communications Plan	Plan Accepted	Accepted/ Closed



<b>U.2</b>	Peoples Gas should standardize the process to set AMRP customer appointments	Plan Accepted	Accepted/ Closed
<b>U.3</b>	Peoples Gas should ensure that the Customer Information System fully supports AMRP communications processes	Plan Accepted	Accepted/ Closed
<b>U.4</b>	Peoples Gas should adequately resource the AMRP Complaints Handling Group, and should monitor complaint resolution performance and the root causes of customer complaints, for the purpose of identifying improvement opportunities	Plan Accepted	In Progress
<b>U.5</b>	Peoples Gas should measure on a regular basis: (a) customer satisfaction with AMRP, and (b) the effectiveness of AMRP Communications and Customer Service	Plan Accepted	Accepted/ Closed
<b>V.1</b>	Peoples Gas should work promptly to identify the AMRP reporting changes that it proposed to implement near term, and tailor them to meet the reporting cycles and content this chapter describes as appropriate for supporting the monitoring needs of the Illinois Commerce Commission	Deleted	Deleted