PHILADELPHIA GAS WORKS

MANAGEMENT AND OPERATIONS AUDIT

Pennsylvania Public Utility Commission

Bureau of Audits

Issued February 2023

Docket No. D-2022-3030321

PHILADELPHIA GAS WORKS
MANAGEMENT AND OPERATIONS AUDIT

TABLE OF CONTENTS

PHILADELPHIA GAS WORKS
MANAGEMENT AND OPERATIONS AUDIT

LIST OF EXHIBITS

PHILADELPHIA GAS WORKS
MANAGEMENT AND OPERATIONS AUDIT

LIST OF EXHIBITS (CONTINUED)

PHILADELPHIA GAS WORKS
MANAGEMENT AND OPERATIONS AUDIT

LIST OF EXHIBITS (CONTINUED)

I. INTRODUCTION

Pennsylvania law grants the Pennsylvania Public Utility Commission (PUC or Commission) the general administrative power and authority to supervise and regulate public utilities within the Commonwealth of Pennsylvania per 66 Pa. C.S. § 501(b). Management and operational audits are required of certain Pennsylvania-based utility companies pursuant to 66 Pa. C.S. § 516(a). Specifically, the Commission can investigate and examine the condition and management of any public utility, 66 Pa. C.S. § 331(a).

In accordance with the PUC's ongoing program to identify improvements in the management and operations of fixed utilities under its jurisdiction, it was determined that a management and operations audit should be conducted of Philadelphia Gas Works (PGW or company).

This report summarizes the work of the PUC's Management Audit Division and outlines its conclusions. The findings presented in the report identify areas and aspects where weaknesses or deficiencies exist. In all cases, recommendations are offered to improve, correct, or eliminate these conditions. The final, and most important step, in the management audit process is to initiate actions toward implementation of the recommendations.

A. Objectives and Scope

The objectives of this management and operations audit were:

- To provide the Commission, PGW, and the public with an assessment of the efficiency and effectiveness of the company's operations, management methods, organization, practices, and procedures
- To identify opportunities for improvement and develop recommendations to address those opportunities
- To provide an information base for future regulatory and other inquiries into the management and operations of PGW

The scope of this audit was limited to certain areas of the company as explained in Section B, Audit Approach.

B. Audit Approach

The management and operations audit was performed by the Management Audit Division of the PUC's Bureau of Audits (PUC auditors or audit staff). The audit process began with a pre-field work analysis as outlined below:

- A five-year internal trend (2017-2021) and ratio analysis was completed using financial and operational data obtained from the company, Commission, and other available sources.

- Input was solicited from PUC bureaus and offices, external parties, and PGW regarding concerns or issues they would like addressed during our review.

- Prior management and operations audits, follow-up management efficiency investigations, implementation plans, implementation plan progress reports, other Commission-conducted audits, annual diversity reports, and other available documents were reviewed.

This information was used to focus the PUC auditors' work efforts. Specifically, the listed functional areas were selected for an in-depth analysis and are included in this report:

- Corporate Governance
- Executive Management and Organizational Structure
- Financial Management
- Gas Operations
- Emergency Preparedness
- Materials Management
- Customer Service
- Information Technology
- Fleet Management
- Human Resources and Diversity

The pre-field work analysis should not be construed as a comprehensive evaluation of the management or operations in the functional areas not selected for in-depth examination. Had we conducted a thorough review of those areas, weaknesses or deficiencies may have come to our attention that was not identified in the limited pre-field work review.

Fieldwork began on March 23, 2022 and continued intermittently through September 16, 2022. The principal components of the fact gathering process included:

- Interviews with company personnel as well as other Commission Bureaus
- Analysis of records, documents, and reports of a financial and operational nature focused primarily on the period 2017-2022
- Visits to select company facilities and observation of work practices

C. Functional Area Ratings

For the functional areas selected for in-depth examination, the PUC auditors rated the operating or performance level relative to the expected performance level at the time of the audit. This expected performance level is the state at which each functional area should be operating given the company's resources and general operating environment. Expected performance is not a "cutting edge" operating condition; rather, it is management of a functional area such that it produces reasonably expected operating results.

Listed below are the evaluative categories used to rate each functional area's operating or performance level:

- Meets Expected Performance Level
- Minor Improvement Necessary
- Moderate Improvement Necessary
- Significant Improvement Necessary
- Major Improvement Necessary

Our ratings for each reviewed functional area can be found in Exhibit I-1 on the next page.

Exhibit I-1
Philadelphia Gas Works
Management and Operations Audit
Functional Rating Summary

Functional Area	Meets Expected Performance Level	Minor Improvement Necessary	Moderate Improvement Necessary	Significant Improvement Necessary	Major Improvement Necessary
Corporate Governance			X		
Executive Management and Organizational Structure		X			
Financial Management		X			
Gas Operations			X		
Emergency Preparedness				X	
Materials Management		X			
Customer Service			X		
Information Technology		X			
Fleet Management		X			
Human Resources and Diversity		X			

D. Benefits

Where possible, the audit staff attempt to quantify the potential savings that would be expected from effectively implementing the recommendations made in this report. However, for most recommendations, it was impractical to estimate quantitative benefits as the benefits are of a qualitative nature, or insufficient data was available to quantify the impact. For example, it is difficult to estimate the actual benefit where new management practices or procedures are recommended where such did not previously exist or were not fully functional. Similarly, changes in workflow or implementation of good business practices could result in improved effectiveness and efficiency of a function but cannot be easily quantified.

The company will have options to implement the recommendations and, as a result, the PUC auditors have not estimated the cost of implementation for recommendations where no savings were quantified. However, it should be noted that the cost of implementing some recommendations could be significant.

E. Current Events

On March 6, 2020, the Governor of Pennsylvania, Tom Wolf, declared a disaster emergency due to the COVID-19 pandemic. This and other state government actions ordered all but essential businesses and their operations closed for the safety of the general public. Although fixed utility operation such as gas distribution was considered

essential, most of the back-office functions such as corporate management, accounting and government relations were deemed nonessential. Most Pennsylvania utilities closed their business offices and allowed their employees to work remotely. The Pennsylvania Public Utility Commission also closed the main office and allowed employees, including those of the Audit Bureau, to perform their functions remotely. All nonessential travel and in-person meetings were prohibited.

As such, the COVID-19 crisis affected the operation and data contained within this audit. In addition, where needed the approach and timeline of the audit was changed to accommodate lingering COVID-19 implications. For example, some interviews and data request responses were delayed or modified. In all cases, the audit staff worked with PGW to acquire information needed to issue the findings and recommendations contained within this report. We believe that our procedures sufficiently mitigate the audit risk associated with altering our standard practices to address COVID-19's impact to the company or our audit. However, conclusions presented within this report may change if additional information is made available.

F. Recommendation Summary

Chapters III through XII provide findings, conclusions, and recommendations for each function or area reviewed in-depth during this audit. Exhibit I-3 summarizes the recommendations with the following priority assessments for implementation:

- INITIATION TIME FRAME – Estimated time frame on how quickly the company should be able to initiate its implementation efforts given the company's resources and general operating environment. The time necessary to complete implementation is expected to vary depending on the nature of the recommendation and the scope of the efforts necessary and resources available to effectively implement the recommendation.

- BENEFITS – Net quantifiable benefits have been provided where they could be estimated as discussed in Section D - Benefits. Our overall rankings are not solely based on quantifiable dollars but rather our assessment of the potential overall impact of the recommendation on the efficiency and/or effectiveness of the company and/or the services it provides.

    - HIGH BENEFITS – Implementation of the recommendation would result in major service improvements, substantial improvements in management practices and performance, and/or significant cost savings.

    - MEDIUM BENEFITS – Implementation of the recommendation would result in important service improvements, meaningful improvements in management practices and performance, and/or meaningful cost savings.

- LOW BENEFITS – Implementation of the recommendation is likely to result in service improvements, management practices and performances, and/or enhance cost controls.

Philadelphia Gas Works
Management and Operations Audit
Summary of Recommendations

Rec. No.	Recommendation	Page No.	Initiation Time Frame	Benefits (including $ estimates)
Chapter III – Corporate Governance				
III-1	Streamline corporate governance processes to efficiently align with PGW's current regulatory framework.	18	12+ Months	High
III-2	Streamline the annual budget approval process.	18	12+ Months	High
III-3	Establish committee charters for all PFMC board committees.	18	0-6 Months	Low
III-4	Evaluate director performance annually to identify opportunities for improvement and to ensure emerging needs and priorities are met.	18	0-12 Months	Medium
Chapter IV – Executive Management and Organizational Structure				
IV-1	Develop specific guidance for span of control expectations, periodically review spans of control, and document any narrow or wide spans for PGW's management positions.	26	0-6 Months	Medium
IV-2	Implement a safety management system and improve safety culture at PGW.	26	0-12 Months	High
Chapter V – Financial Management				
V-1	Update Internal Audit policies and procedures.	34	0-6 Months	Low
V-2	Formally document explanations for variances from the capital and operating budgets.	34	0-6 Months	Low
Chapter VI – Gas Operations				
VI-1	Implement a policy and metrics-tracked plan to replace mercury regulators within the distribution system.	46	0-6 Months	Medium
VI-2	Accelerate cast iron main replacement.	46	12+ Months	High
VI-3	Plan and implement a process for gathering equipment and installation data in the GIS database.	46	0-12 Months	Medium
VI-4	Reorganize the CARC reporting structure to eliminate conflicts of interest with the SVP of Operations.	46	0-12 Months	Low
Chapter VII – Emergency Preparedness				
VII-1	File Self-Certification forms with the Pennsylvania PUC annually.	53	0-6 Months	Low
VII-2	Correct various deficiencies in physical security.	53	0-12 Months	High
VII-3	Establish a company-wide program for inspections for safety, security, medical, and fire equipment, and make assessable standardized first aid kits at all regularly occupied facilities.	53	0-12 Months	High

Philadelphia Gas Works
Management and Operations Audit
Summary of Recommendations

Rec. No.	Recommendation	Page No.	Initiation Time Frame	Benefits (including $ estimates)
Chapter VII – Emergency Preparedness (continued)				
VII-4	Explore ways to eliminate or mitigate the identified security risk through a business case analysis.	53	12+ Months	Medium
VII-5	Increase focus on cybersecurity by developing a dedicated cybersecurity budget, performing a staffing study and adjusting resources as needed, and create an executive level cybersecurity leadership position.	53	0-12 Months	High
VII-6	Reinforce contingencies with the OT systems by cross-training, increasing resources, or by some other method.	53	12+ Months	Medium
VII-7	Document the threshold where cybersecurity risks will be relayed to the cabinet and board levels.	53	0-6 Months	Low
VII-8	Implement a cybersecurity-focused risk registry.	53	0-6 Months	High
Chapter VIII – Materials Management				
VIII-1	Document the policies and procedures of PGW's cycle counting function.	57	0-6 Months	Low
VIII-2	Implement and/or increase automation of materials management processes to improve efficiency, accuracy, and ease-of-use.	57	12+ Months	Medium
Chapter IX – Customer Service				
IX-1	Leverage pandemic and low-income resources to help reduce the overall level of outstanding customer balances and maintain outreach efforts to engage payment troubled customers.	67	12+ Months	High
IX-2	Improve customer service performance through expanding call center resources.	67	0-12 Months	Medium
IX-3	Complete implementation of the replacement CIS.	67	12+ Months	High
IX-4	Establish reporting and key performance metrics for all back-office activities that support electronic, self-service, and alternative exchanges with customers.	68	0-6 Months	Medium
IX-5	Repurpose or divest interest in district offices and reallocate resources to benefit PGW ratepayers.	68	0-12 Months	High
Chapter X – Information Technology				
X-1	Establish IS departmental performance metrics for transparency, evaluation, and improvement of productivity and efficiency.	72	0-6 Months	Medium
X-2	Leverage and integrate data visualization software consistently across PGW.	72	0-12 Months	Medium
Chapter XI – Fleet Management				
XI-1	Improve efficiencies within the fleet department.	77	0-12 Months	Medium

Philadelphia Gas Works
Management and Operations Audit
Summary of Recommendations

Rec. No.	Recommendation	Page No.	Initiation Time Frame	Benefits (including $ estimates)
Chapter XII – Human Resources and Diversity				
XII-1	Implement strategies for recruitment and retention of “at-risk” positions.	84	0-12 Months	Medium
XII-2	Drive safety performance to meet industry standards.	84	0-6 Months	High

II. BACKGROUND

Philadelphia Gas Works (PGW or company) is fully owned by the City of Philadelphia (Philadelphia) and is the largest municipal owned natural gas distribution utility in the United States. PGW maintains approximately 6,000 miles of gas mains and services and serves about 500,000 natural gas customers within the City of Philadelphia, located in southeastern Pennsylvania. As a municipal entity, PGW only serves natural gas to properties within the City of Philadelphia. However, not all Philadelphia properties receive natural gas services.

As an asset owned by The City of Philadelphia, PGW must follow some of the rules and regulations that govern City entities. In addition, PGW was created for the benefit of all Philadelphians, which has led to the exploration or development of alternative revenue streams. For example, PGW operates a parts and labor program, which provides repair, inspection, and maintenance on covered appliances for enrolled customers. In addition, PGW also generates alternative revenues from sales of excess liquid natural gas (LNG) from its storage facility, etc. Many of these expanded activities are outside the traditional function of PUC regulated natural gas distribution companies. Similarly, Philadelphia has committed to be carbon neutral by 2050.[1] This action from the city has led to a Business Diversification Study[2] of PGW released on December 9, 2021. As a result, the company and Philadelphia are exploring ways to reduce greenhouse gas emissions, further diversify its resources, etc. that support an environmental and sustainability future as part of PGW's ongoing management strategies. See Chapter IV – Executive Management and Organizational Structure for more information about strategic planning.

In 1972, the City of Philadelphia created the Philadelphia Facilities Management Corporation (PFMC), PGW's management company, through a series of ordinances. PFMC was created as a non-profit corporation with the specific purpose of operating and providing oversight of PGW. The City of Philadelphia exercises control over PGW through the appointment of PFMC's board members by the Mayor. Additional oversight and responsibility for PGW was established through Philadelphia's Home Rule Charter and the Philadelphia Gas Commission (PGC), a City of Philadelphia departmental commission. Both the PGC and PFMC are discussed in more detail in Chapter III – Corporate Governance and share in oversight duties of PGW.

PGW is also subject to the authority of the Pennsylvania Public Utility Commission (PA PUC).[3] The PA PUC is responsible for the review and approval of rate cases, resolution of customer service disputes, financial and management audits, and oversight of PGW's adherence to federal pipeline regulations. A summary of oversight responsibilities for PGW's governance activities is provided in Chapter III – Corporate Governance, Exhibit No. III-1.

[1] https://www.phila.gov/2021-01-15-city-commits-to-carbon-neutrality-by-2050-releases-climate-action-playbook-and-hires-first-chief-resilience-officer/
[2] https://www.phila.gov/documents/pgw-diversification-study-resources/
[3] Natural Gas Choice and Competition Act, 66 Pa. C.S. §§ 2201-2212

Exhibit II-1 presents a summary of PGW's customers, usage, and revenues by customer class as of December 31, 2021. PGW's residential gas customers constituted about 90% of the customer base, 45% of the usage, and 73% of revenues. Commercial customers were approximately 5% of the customer base, 11% of the usage and 14% revenues. Industrial customers comprised approximately 1% of PGW's customer base attributing about 2% of the usage and total gas revenues.

Exhibit II-1
Philadelphia Gas Works
Customer Statistics
For the Year Ended December 31, 2021

Customer Class	No. of Customers	Percentage of Total Customers	MCF Sold	Percentage of Total Sales	Revenues	Percentage of Total Revenues
Residential	490,482	90.24%	31,970,286	44.91%	$488,720,460	73.18%
Commercial	24,753	4.55%	7,813,352	10.98%	$96,370,108	14.43%
Industrial	23,769	4.37%	30,208,483	42.44%	$68,129,162	10.20%
Other *	4,506	0.83%	1,191,628	1.67%	$14,637,731	2.19%
Totals	**543,510**	**100.00%**	**71,183,748**	**100.00%**	**$667,857,460**	**100.00%**

* Includes public and interdepartmental income/sales
Source: 2021 Philadelphia Gas Works PUC Annual Report

III. CORPORATE GOVERNANCE

Background

As discussed in Chapter II – Background, the City of Philadelphia (City) owns PGW and assigns oversight of the utility to the Philadelphia Gas Commission (PGC). Specifically, the PGC is responsible for approving PGW's annual operating budget; making recommendations to City Council on PGW's annual capital budget; real estate transactions and gas purchasing; and approving the selection and appointment of PGW's top level officers. All PGC meetings are open to the public. PGC membership is composed of five members, who are appointed to four-year terms (or until their successor is appointed/qualified, with exception of the City Controller who serves for their elected term): members are appointed by the respective political governing bodies except for the City Controller.

- The City Council appoints two members
- The City Mayor appoints two members
- The City Controller

Thus, the City of Philadelphia (i.e., City Council, Mayor, and City Controller), has both direct and indirect oversight of PGW. Indirect oversight is administered through appointment of independent members to the PGC, whereas direct oversight is leveraged by City Council approvals and ordinances.

Additionally, the City has assigned the general oversight (i.e., management and operation) of PGW to an independent entity, the Philadelphia Facilities Management Corporation (PFMC). PFMC's responsibilities are defined through the Management Agreement established between PFMC and the City and include appointment and oversight of PGW's senior management, initial review and preliminary approval of PGW's annual operating and capital budgets prior to their submission to the PGC, general review of company performance, insurance, etc. The PFMC is a voluntary board, composed of seven members who are appointed by the City Mayor. In 2022, the majority of PFMC board members are independent with only two members actively employed by the City.

To achieve oversight of the management and operations of PGW, PFMC conducts its business by using the following committees:

- Audit Committee - responsible for assisting the PFMC board in its oversight of financial reporting, risk management, internal control, compliance, and ethics. The Audit Committee (AC) provides oversight, monitoring, and instruction of the independent auditors and reports to the full PFMC board on reviews, recommendations, and findings. Additionally, the AC has direct oversight of PGW's internal audit (IA) function including the review and approval of the annual IA plan, oversight of completed IA reports, management responses, and progress reports. The Audit Committee collaborates with the PGW CEO in oversight of the IA Director, including the hire, termination, compensation

level, and the annual performance reviews. The AC is comprised of a minimum of three directors from PFMC and meets a minimum of four times annually. The Audit Committee met 11 times in 2021.

- Finance Committee – responsible for the review and approval of PGW's major financial transactions, (at thresholds determined by the Board), including contracts, agreements, amendments, etc. The Finance Committee's resolutions are developed and presented to the full PFMC board for approval. The Finance Committee meets in combination with the Audit Committee, as PFMC Audit Committee members also serve on the Finance Committee. Thus, in 2021, the three Finance Committee members also met 11 times.

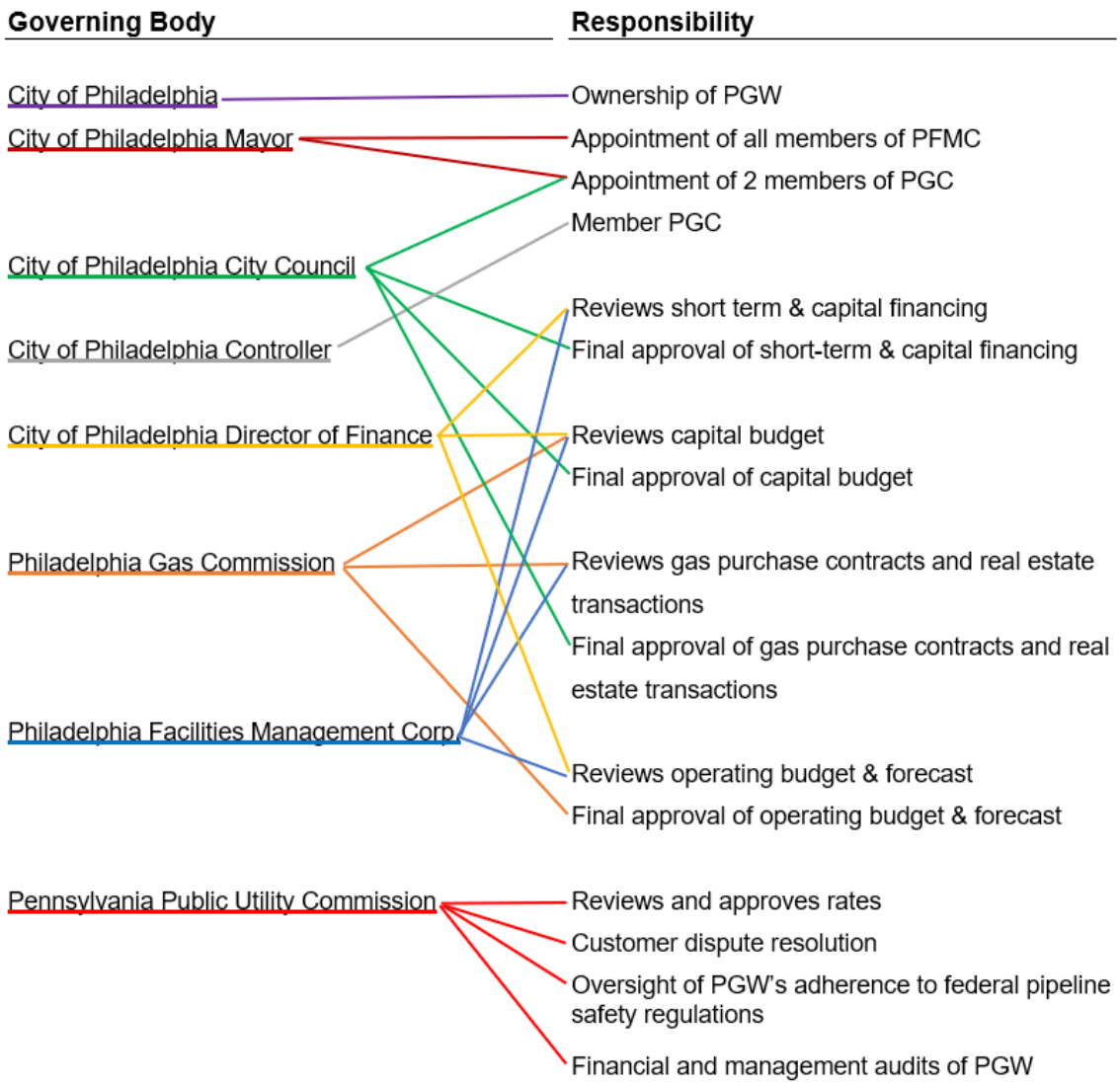
- Workforce Development Committee - responsible for attracting and retaining talent within PGW's workforce, including non-union compensation. The Workforce Development Committee's resolutions are developed and presented to the full PFMC board for approval. The Workforce Development Committee is comprised of three members and meets as needed. The Workforce Development Committee met twice during 2021.

The Audit Committee operates in accordance with its written charter, which is reviewed annually and updated as needed. Whereas PGW, as a municipal entity, is not required to meet the rules and guidelines of the NYSE and SEC, PGW's AC charter (Charter) aligns with the spirit of independence. For example, the Charter states that no AC member may have direct responsibility of daily management of the company. Similarly, the Charter qualifies that at least one member of the AC is preferred to have prior corporate finance experience and/or experience with audit matters. In addition, the AC meets a minimum of four times during the year with the PGW's internal audit director and the company's external audit firm with and without management, to discuss audit results, their evaluations, including the external auditor's review of the adequacy of PGW's internal controls and financial reporting, in accordance with US GAAS.

PGW maintains an Ethics and Conflict of Interest Policy and Program that apply to PGW executives and nonunion staff. PGW's internal ethics policies provide guidance concerning improper handling of duties, gifts, disclosure of confidential information, etc. PGW also maintains a Corporate Discipline Policy that applies to its union covered staff. The Corporate Discipline Policy is PGW's overarching framework for resolving ethical problems, where various company responses (e.g., progressive discipline (written warning, suspension, etc.), immediate suspension, or dismissal) are commensurate to the severity of the issues. PGW administers ethics refresher training for its employees bi-annually. Conversely, PGW's governance bodies and City elected officials (PFMC, the PGC, the Mayor, and City Council) are subject to external ethics rules. Specifically, PFMC members are subject to the State Ethics Commission rules and members of the PGC, City Council and the Mayor are subject to Philadelphia Ethics Commission rules, as well as the State Ethics Commission. Both ethics commission rules align with PGW's code of conduct concerning conflict of interest, seeking and accepting improper influence, etc.

As discussed in Chapter II – Background, PGW is subject to oversight and regulation from multiple municipal bodies within the City of Philadelphia, as well as regulatory oversight from the PA PUC. The complex distribution of oversight and regulatory duties between PGW's various governing bodies is summarized in Exhibit III-1.

Exhibit III-1
Philadelphia Gas Works
Governance Oversight Summary



Source: Data Request CG-19, Philadelphia Home Rule Charter, Natural Gas Choice & Competition Act

Findings and Conclusions

Our examination of the Corporate Governance function included a review of the Philadelphia Home Rule Charter, PFMC by-laws and the City of Philadelphia's

Management Agreement with the PFMC, including committees and charters; director independence; relationship with the external auditor; oversight of internal audits, business conduct and ethics codes; documents related to corporate governance; annual reports; etc. Based on our review, PGW should improve the effectiveness and efficiency of its corporate governance oversight function by addressing the following:

1. PGW's corporate governance structure is not optimal, resulting in duplicative governance and oversight duties.

Municipal utilities are governed and managed by their respective municipal governments. Generally, municipal governments manage via direct employment of staff or through operating contracts, where rates and fees are established by municipal leadership. Residents of these municipalities can petition their elected officials and, ultimately, control tenure of these leaders through local elections. However, PGW's governance structure deviates from this traditional design. City Council leverages a dual entity structure to govern PGW's activities, with the establishment of the PGC and PFMC, as discussed in the background. Moreover, under the Commonwealth of Pennsylvania's enactment of the Natural Gas Choice and Competition Act, 66 Pa. C.S. §§ 2201-2212 (Choice Act), responsibilities for approving PGW's rates and fees came under PA PUC jurisdiction. As a result, PGW's governance is significantly more complex than other investor-owned utilities or non-PUC regulated municipal utilities.

In this case, the PFMC operates as a traditional board of directors, meeting regularly and providing direct oversight of the operations of PGW which includes tasks such as selection and performance reviews of executive management, internal and external audit review, financial management oversight, company-wide performance, etc. Meanwhile, the PGC has some oversight functions of PGW (i.e., budget review and approval, aligning PGW with City of Philadelphia goals and initiatives, etc.) but was, prior to the Choice Act, responsible for setting rates, holding public input hearings, handling customer complaints, etc. However, after the Choice Act was enacted, the PA PUC was charged with rate and safety oversight of PGW. Nonetheless, the PGC has retained vestiges of its old functions and still holds public input hearings and addresses public comments to provide PGW and the City of Philadelphia input into the operation of PGW.

As demonstrated, PGW is subject to multiple oversight bodies, resulting in multilayered and overlapping review processes for core functions. As summarized in Exhibit III-1, fundamental and routine functions like the authorization of annual budgets, and real estate and gas purchasing transactions are subjected to multiple preliminary reviews and approvals prior to final approval by either City Council or the PGC. (See Finding and Conclusion No. III-2 for additional details regarding PGW's annual budget approval process.) In addition, other processes have not been streamlined to reduce duplicative activities among the PFMC, PGC, and/or PA PUC which ultimately create inefficiencies and decrease effectiveness of PGW staff and management of the utility. Furthermore, additional oversight hinders timely decision making, which can delay and impede action by PGW (see also Chapter IX - Customer Services chapter's Finding and Recommendation No. 5 for more details related to PGW's unresolved vacancy of its District Offices).

Overlapping governance oversight and duties are inefficient and create burdensome operations and management processes for the governed entity. Although this finding was initially identified in 2001 and repeatedly highlighted in subsequent PA PUC Management Audits[4] for more than 20 years, these overlapping governance oversight processes remain materially unchanged. The PUC auditors recognizes that PGW lacks the authority to eliminate the duplication created by its complex structure and relies upon its governing and oversight partners to streamline governance and oversight duties among all entities. As such, PGW should continue to work with their respective governing and regulating bodies to reduce the burdens shouldered by PGW's staff.

2. PGW's multi-layered annual budget approval process is inefficient and differs from its peers.

As discussed in Finding and Recommendation No. 1, prior to the July 2000 enactment of Choice Act, the PGC had been responsible for PGW rates. Thus, the annual budget approval processes in place at the PGC were designed to provide the necessary oversight to ensure PGW's rates were just and reasonable. However, in the past 22 years since the Choice Act tasked the PA PUC with ratemaking duties, the PGC has not made any material changes to its budgeting processes in response to the changes in PGW's regulatory structure. Oversight of the budgeting process requires the PGC to approve the annual operating budget and review the capital budget. The multistage budget review/approval process includes the initial filing, submission of questions for initial discovery, testimony from both the company and interveners, a public hearing by the PGC, recommended decision, and final action by the PGC. In the case of PGW's operating budget, the PGC's decision is the final approval, conversely, the PGC's capital budget review results in a recommendation to City Council, whose approval takes the form of a city ordinance.

Thus, PGW is subject to an annual budgetary review process that more closely mirrors a PA PUC fully litigated rate case, rather than the more typical budget approval processes followed by other City of Philadelphia entities. For example, the City of Philadelphia's Water Department annual budget approval process is submitted to City Council and is subject to a public hearing in City Council, but the hearing is typically a one to two hour event consisting of testimony by or on behalf of the Water Department without the trappings of litigation or multi-party participation. In contrast, many large investor-owned utilities can require multiple reviews of its operating and capital budgets with a final review and approval by the investor-owned utility's board of directors. Although these processes are similar in structure, the key difference is the level and/or duplication of scrutiny at every step of PGW's budget approval process.

[4] Docket Nos. D-99M038, D-03MEI020, D-06MGT042/D-2009-2086453, D-2011-2265174, D-2015-2468141, and D-2017-2627521

PGW's budget process includes:

- PGW internal staff forecast, estimation, requirements, and workshops to establish the proposed budget
- Preliminary review by PGW's Cabinet level management
- Review by the City of Philadelphia's Finance Director
- Review by PFMC
- Review by the PGC for final approval (operating budget) or recommendation to City Council (capital budget
- Final approval by City Council (capital budget)

The PA PUC auditors purport that PGW's current annual budget review process is overly administrative and burdensome. Moreover, capital projects often experience variances due to the lengthy review and approval process and resultant timing, which may no longer align with current conditions (e.g., material and labor costs, supply chain disruptions, workforce availability, weather events, etc.). Moreover, budgeting for ongoing operations and maintenance is not timely and does not provide the flexibility needed to effectively address emerging conditions. See Chapter V – Financial Management for more information regarding PGW's budget and variance reporting processes. As a result, the long lead time PGW requires to obtain approval of its budgets at the PFMC, PGC and/or City Council has necessitated that PGW's budgeting responsibilities are non-stop, year-round. Specifically, PGW's capital budgeting preparation for submission runs from September through January, and its Operating budget runs February through May, with additional testimonies, responses to interrogatories, etc. occurring between May and August.

The City of Philadelphia faces unique challenges, with a population of approximately 1.6 million people and an estimated 25% poverty rate. As a municipal entity, PGW cannot raise capital through investors and relies upon its ratepayers and issuance of municipal bonds to provide funding. Thus, the funding and budgeting of PGW is more restrictive than the funding options available to investor-owned utilities. Further, it is the PUC auditors' opinion that the changes in PGW's regulatory oversight as discussed in Finding and Conclusion No. 1 would facilitate a more streamlined budgetary processes and mitigate the administrative burden to PGW staff and management. This change will also reduce lag in the budgeting process allowing PGW to better manage its budget.

3. The PFMC's Finance and Workforce Development Committees do not have charters.

NYSE Rules Section 303A establishes guidelines for its listed companies to maintain charters for board committees, including audit, compensation, and nominating/governance. Under the NYSE guidelines, those three required committees must maintain charters. PGW is a publicly owned entity and is not bound to the NYSE rules and requirements for listed companies. However, the PA PUC auditors posit that the inherent benefits from maintaining committee charters would serve to benefit all organizations, including PGW.

Committee charters serve as a foundational documentation for each committee's role and responsibilities. However, PFMC's Workforce Development and Finance committees lack this guiding documentation. Such a charter would serve to ensure continuity in the committees' roles, responsibilities, composition, structure, membership requirements, and processes and procedures for new members. As such, the PUC Audit Staff recommends that both PFMC's Finance and Workforce Development Committees establish charters and review them periodically to ensure these committees continue align with intended PFMC vision.

4. The PFMC does not have a formalized process for performance evaluations and assessments.

In a December 2021 framework guide, PricewaterhouseCoopers (PwC) suggests that performing annual board, committee, and director assessments, and acting on the results accordingly, are some of the most important steps a board can take to assess performance and improve effectiveness.[5] PFMC's board composition and guidelines are established by the Management Agreement and PFMC's by-laws, neither of which address ongoing assessments or evaluations. Although the PFMC members stay apprised of current industry matters and emergent issues through a variety of channels, the PFMC has not established a formal process to perform ongoing assessments or evaluations of its board members. Therefore, PFMC could overlook opportunities for improvement of their effectiveness handling emerging issues, new technologies, and industry challenges. Moreover, continuous assessments could help to identify opportunities for expanding the expertise within the complement of PFMC members to drive PGW improvements in the future.

Recommendations

1. Streamline corporate governance processes to efficiently align with PGW's current regulatory framework.

2. Streamline the annual budget approval process.

3. Establish committee charters for all PFMC board committees.

4. Evaluate director performance annually to identify opportunities for improvement and to ensure emerging needs and priorities are met.

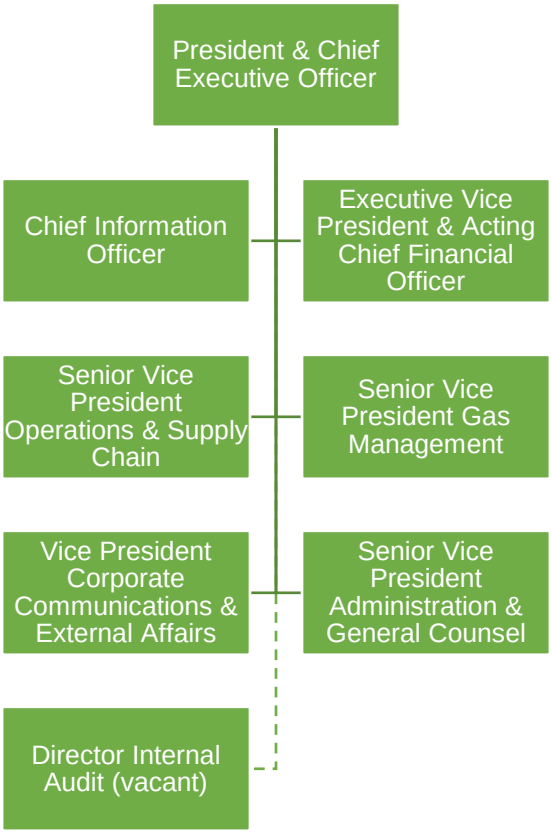
[5] https://www.pwc.com/us/en/services/governance-insights-center/library/conducting-effective-board-assessments.html

IV. EXECUTIVE MANAGEMENT AND ORGANIZATIONAL STRUCTURE

Background

Philadelphia Gas Work's executive management organizational structure is shown in Exhibit IV-1. Each of the functions represented in the chart below are discussed in more detail throughout this report. In addition to the company's executive management, PGW is overseen by its Board of Directors (PFMC) and the Philadelphia Gas Commission (PGC), which are discussed in greater detail in Chapter III – Corporate Governance.

Exhibit IV-1
Philadelphia Gas Works
Executive Management Organizational Chart
As of August 2022



Note: The dotted line between the Internal Audit Director and the President & CEO represents an administrative reporting relationship.
Source: Data Request EM-18

In December 2021, PGW's then Chief Operating Officer (COO) became President & CEO when the incumbent CEO retired from his position. In early 2022, PGW's organizational structure underwent a major reorganization to shift functional

reporting of departments, many of which previously reported to the COO, among other senior management. Specifically, changes included:

- Customer Affairs reporting to the SVP, Operations & Supply Chain
- Corporate Planning reporting to the CIO
- Environmental Services, Safety & Business Continuity, Labor Relations, Human Resources and Organizational Development reporting to the SVP, Administration & General Counsel
- Marketing reporting to SVP, Gas Management

These organizational changes and the decision not to fill the COO position were partially because of a consultant organizational structure review. As retirements or other situations occur, PGW intends to reevaluate its organizational structure in the future. Meanwhile, PGW's overall staffing levels are shown in Exhibit IV-2. From 2017 through 2022, the overall number of PGW employees decreased by 7% as of August 2022. Most of this decrease (53% or 61 of 115 employees) was within the Customer Service department. See Chapter XII – Human Resources and Diversity for more information about the decrease in employees at PGW and Chapter IX – Customer Service for more information about the impact of fewer employees within the Customer Service department.

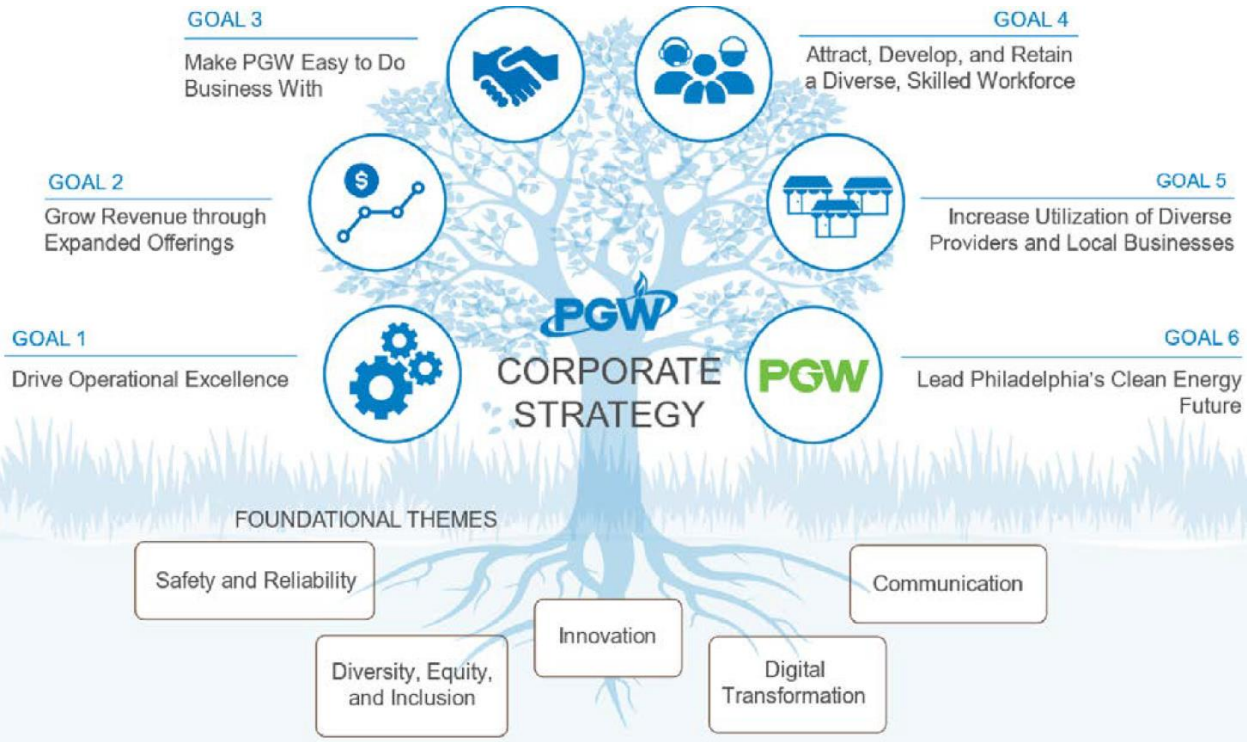
Exhibit IV-2
Philadelphia Gas Works
Staffing Levels
For the Years 2017 through August 31, 2022

Year	2017	2018	2019	2020	2021	2022
Total Employees	1638	1652	1658	1620	1567	1523

Source: Data Request No. EM-2, EM-21, and auditor analysis

PGW's Strategic Planning Office (SPO) which resides under the VP of Corporate Planning coordinates the annual strategic planning process. PGW's management team participates in an annual management retreat that includes a brainstorming exercise. Overall, the management team looks at the previous year's plan and incorporates newly submitted ideas. These ideas are then funneled into categories using the corporate strategy as guidance. See Exhibit IV-3 for more information about PGW's corporate strategy.

Exhibit IV-3
Philadelphia Gas Works
Corporate Strategy



Source: Data Request No. EM-6

The six corporate goals PGW has identified are each supported by at least one corporate objective per fiscal year. For fiscal year 2022, PGW had seven corporate objectives, which are shown in Exhibit IV-4 along with a reference to which goal the objective covered. Some additional examples of PGW's corporate objectives are discussed throughout this report (see Finding and Conclusion No. 2 within this chapter and Chapter IX – Human Resources and Diversity).

Exhibit IV-4
Philadelphia Gas Works
Fiscal Year 2022 Goals and Objectives

ID	FY 2022 OBJECTIVES	GOAL COVERAGE					
1	Implement an efficiency program in FY 2022, based on an FY 2021 3rd-party supported analysis of corporate expenses and savings opportunities. Begin generating savings in FY 2022 and realize significant annual savings in FY 2023.	O					
2	Generate $4.2 million in incremental new business margins, across all revenue streams.		R				
3	In FY 2022, complete implementation and ongoing enhancements to a set of customer service interaction improvements , and perform a customer outreach campaign. Achieve a targeted customer service satisfaction improvement in FY 2022, to be set based on an FY 2021 baseline.			E			
4	Complete all pre-production phases of CIS project and achieve production readiness by August 31, 2022. Implement operational improvement opportunities by providing greater control over functionality to business users.	O		E	W		
5	Increase FY 2022 M/W/DSBE percentage of spend to 25% by implementing a set of internal initiatives designed to assure adoption throughout all PGW departments.			E		D	
6	Focus on Access: Develop and begin implementation of an energy affordability services package designed to help customers achieve energy savings.		R	E			
7	Develop and implement a plan for RNG producers to have access to PGW distribution system.						CE

O	Drive Operational Excellence
R	Grow Revenue Through Expanded Offerings
E	Make PGW Easy To Do Business With
W	Attract, Develop and Retain a Diverse, Skilled Workforce
D	Increase Utilization of Diverse Providers and Local Businesses
CE	Strengthen PGW's Commitment to Philadelphia's Clean Energy Future

Source: Data Request No. EM-6

Additionally, during the strategic planning process the SPO works with the Risk Management department to evaluate the impact of the annual objectives on either aggravating or mitigating corporate risks. The strategic planning process lasts six to eight months before the budgeting process begins for the fiscal year of the strategic

plan being compiled.[6] This timing ensures that corporate objectives will be supported by funds within the budget. With each iteration of the company's strategic plan under the SPO, strategic planning at PGW has become more robust. Furthermore, the SPO has begun to encourage development of departmental objectives that align with corporate objectives. This initiative aims at providing more alignment of each department's goals with corporate objectives, which will further strengthen PGW's strategic vision.

PGW's CEO, Senior VP Admin & General Counsel, CFO, VP of Human Resources (HR) and the respective senior team members discuss and provide input towards succession plans at PGW. The VP of Human Resources (HR) meets on a semi-annual to quarterly basis with PGW's senior management, various directors, and other personnel to discuss succession plans depending on the action plans developed by the department. Succession plans are developed to identify opportunities for advancements for key personnel, lateral transfers, retirement strategies, and general knowledge management.

The PFMC Board is responsible for approving executive compensation levels for PGW's executives. In 2022, PGW had two employees that qualified as executives, the President and CEO and EVP & Acting CFO. Over the audit period, a portion of each executives' annual salary (up to 10%) was at-risk based on whether the company met key performance indicators that the Board approved for the year. Similarly, the Workforce Development Committee approved pay for performance increases for PGW's management employees using a two-tiered system based on individual and enterprise-wide goals established by PFMC.

Findings and Conclusions

Our examination of Executive Management and Organizational Structure included a review of PGW's organizational structure; staffing levels and spans of control; the roles and responsibilities of executive management; strategic planning, succession planning and executive compensation. Based on our review, PGW should initiate or devote additional efforts to improving the efficiency and/or effectiveness of its executive management function by addressing the following:

1. PGW's Human Resources department does not regularly conduct spans of control analyses.

A span of control refers to the number of subordinates a manager or supervisor directly supervises in an organization and is often used to help maximize organizational efficiency and effectiveness. Ideally, a utility should aim for spans of control in the range of 1:4 to 1:9 to control the layers of its management and maintain effective communications. Overly narrow spans of control can result in micromanagement, a

[6] For example, the fiscal year 2024 corporate objectives were approved in July 2022. PGW began working on its fiscal year 2024 capital budget in August 2022.

larger number of supervisors, and higher than necessary compensation costs. Meanwhile, spans of control that are too wide can result in poor performance due to a lack of management oversight and control.

In 2021, as part of an organizational structure study, a consultant conducted a span of control analysis. The consultant analyzed each level of management using different target ranges between 6-8 for officers and directors, 7-9 for managers, and 10-20 for superintendents and supervisors. This analysis showed that 73% of PGW's spans of control were below their respective target ranges. The consultant provided PGW with recommendations to formally document spans of control expectations for every management level, to assign accountability for performing spans of control analyses, and to maintain documentation of approved deviations from spans of control expectations.

Although PGW's Human Resources department has not conducted a formal span of control analysis recently, a summary of PGW's reporting relationships was provided in response to our management audit. Exhibit IV-5 shows PGW's summary of its spans of control by management level[7] in March 2022. The Audit staff confirmed that this response was not part of a formal spans of control analysis, which historically was used for succession planning. Therefore, no explanations for specific reporting relationships that fell outside the ideal range were included. Nonetheless, this exhibit shows a significant variation in reporting relationships at different levels of management.

Exhibit IV-5
Philadelphia Gas Works
Spans of Control by Management Level
March 2022

Management Level	Number of Managers	Direct Reports	Average Span of Control
1	1	8	8
2	7	47	6.71
3	31	112	3.61
4	51	554	10.86
5	42	511	12.17
6	27	252	9.33
7	4	21	5.25
Total	**163**	**1505**	**9.23**

Source: Data Request No. EM-3 and auditor analysis

[7] Management level refers to where the position falls within the organization starting with the President and CEO as level 1.

The PUC auditors contend that the lack of documented justification for reporting relationships outside of the ideal range negates a major benefit of spans of control analysis (i.e., historical retention of structural justifications). Specifically, analyses should be conducted every two or three years with written justifications of reporting relationships outside of the ideal range. Subsequent reviews will validate results, aid in reorganization decisions, improve management oversight and control, and reduce duplicated work. Formalizing spans of control guidance and thoroughly documenting performed analyses is a best practice, but it is especially important during organizational changes like retirement of senior personnel.

2. PGW completed a safety culture survey in 2020 which identified safety culture improvement opportunities.

As mentioned in the background section of this chapter, PGW's corporate objectives are set at least one year in advance of the planned fiscal year. For fiscal year 2024, a corporate objective is to: meet the milestones set forth in the API RP 1173 roadmap developed in FY 2023. In 2015, the American Petroleum Institute (API) announced its Recommended Practice (RP) 1173 regarding pipeline safety management systems (PSMS) as an industry best practice. PGW began taking steps towards implementing the framework laid out in API RP 1173 over the past few years, but the COVID-19 pandemic and organizational changes have slowed the company's efforts.

One of the principles of this safety management system RP is that a safety-oriented culture is essential to enable the effective implementation and continuous improvement of safety management system processes and procedures. Therefore, in the first half of 2020, PGW enlisted the National Safety Council (NSC) to conduct a safety culture survey of its employees to establish the company's baseline. PGW has previously conducted employee satisfaction/feedback surveys, but this was the first safety specific survey.

The survey had a response rate of 63% (or 1,000 respondents) and PGW's scores were benchmarked against other companies within the utility industry. Although PGW had all six performance categories[8] represented in its ten best performing components, three of the ten highest performing components were related to safety support activities. Safety support activities refer to the presence and quality of various safety programs with focus on communications, training, inspection, maintenance, and emergency response.

Alternatively, the areas where PGW has the most opportunities to improve are safety support climate, employee involvement, and overall safety awareness and education. Of the 50 safety components evaluated as part of the survey, 27 of PGW's scores were below the 25th percentile. Only two safety components ranked above the

[8] The six performance categories were management commitment, supervisor engagement, employee involvement, safety support activities, safety support climate and organizational climate.

50th percentile. Overall, PGW's scores ranked it higher than 18 (or 10%) of the 175 utilities included in the benchmark data.

In September 2022, PGW planned to engage a third party to conduct a gap analysis aimed at identifying and prioritizing necessary improvements for implementation of API RP 1173. PGW will use this gap analysis to create a roadmap for implementing API RP 1173 and accomplishing the company's FY 2024 corporate objective. This is an important step toward implementing a PSMS, which should assist PGW in managing risks and improving safety outcomes. The Audit staff encourages PGW to work toward improving safety culture with this initiative because without a strong safety culture, documented safety policies or practices may be ignored, injuries may increase, and employees may experience decreasing morale.

Recommendations

1. **Develop specific guidance for span of control expectations, periodically review spans of control, and document any narrow or wide spans for PGW's management positions.**

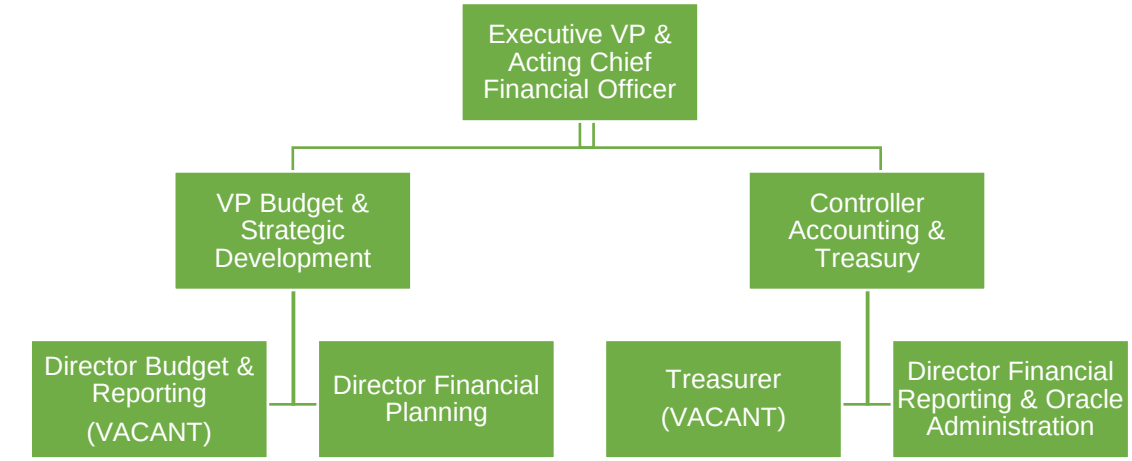
2. **Implement a safety management system and improve safety culture at PGW.**

V. FINANCIAL MANAGEMENT

Background

PGW's Financial Management function is led by the Executive Vice President and Acting CFO. The department is split into two areas as shown in Exhibit V-1. Budget and Financial Planning is headed by its VP and Accounting & Treasury falls under the Controller. As of August 2022, the Treasurer and Budget & Reporting Director were both vacant.

Exhibit V-1
Philadelphia Gas Works
Financial Management Organizational Chart
As of August 2022

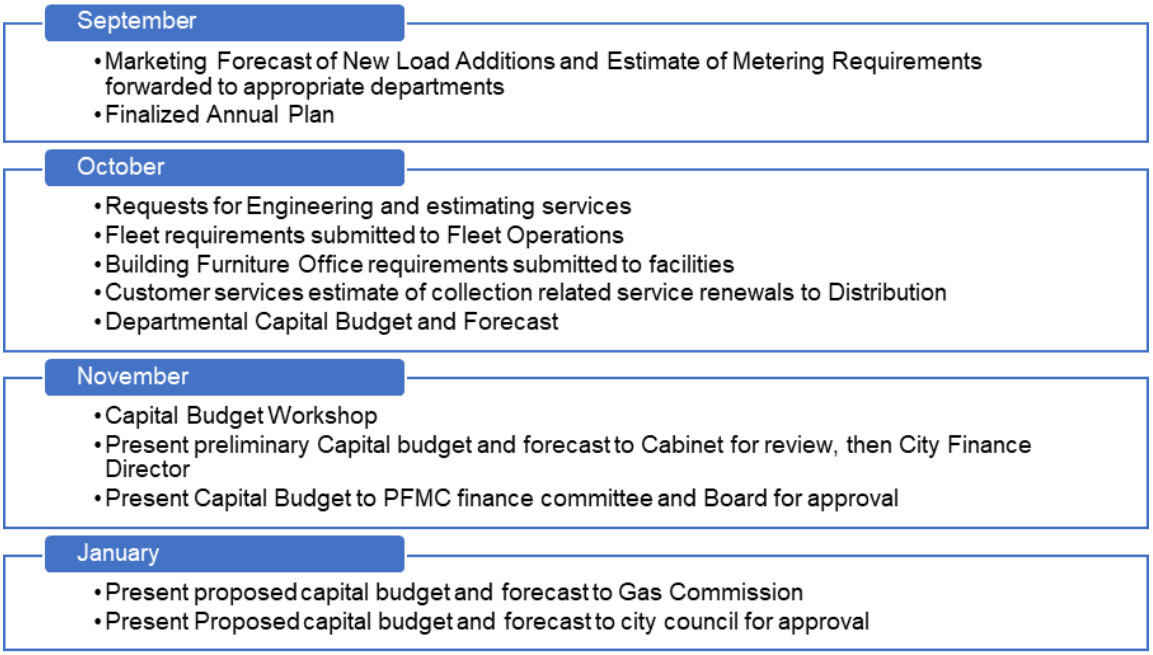


Source: Data Request EM-18 and interviews

PGW's Treasury department and Budgeting department personnel work collaboratively to develop a cash budget and forecast for the upcoming fiscal year. They are also responsible for developing the five-year cash projection. The forecasts are based on prior years' actual monthly trends, along with foreseen additional revenue or expenditures. The cash budget is reviewed periodically by both Treasury and Budgeting, and modifications are made to the forecasts reflecting any changes that differ from the original cash budget. PGW operates on a fiscal year that runs from September 1st through August 31st.

PGW's capital and operating budgets follow separate timelines regarding the budget process. As described in Exhibit V-2, PGW's capital budget process begins in September and budget proposals are delivered to the Philadelphia Gas Commission (PGC) in January and presented to City Council in April. Amendments to an already approved budget must be filed by the first business day in March of the budget year. In addition, the capital budget is reviewed at least quarterly to prepare for required reports to the Philadelphia Gas Commission. For more information about PGW's budgeting process, see Finding and Conclusion No. 2 within Chapter III – Corporate Governance.

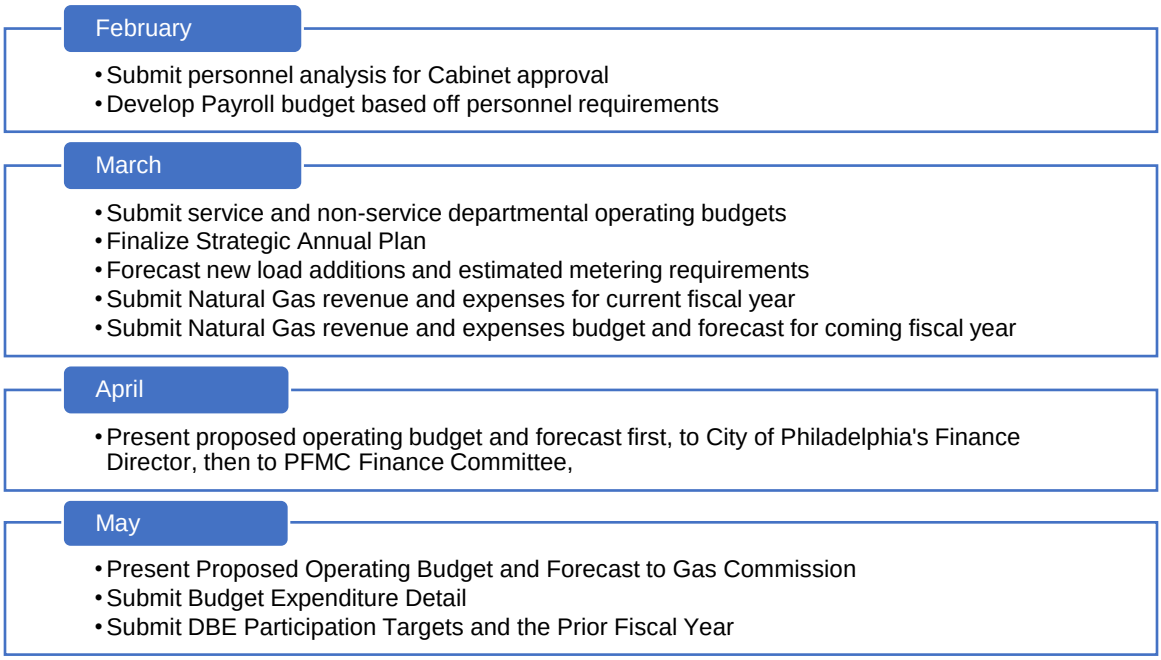
Exhibit V-2
Philadelphia Gas Works
Capital Budget Timeline



Source: Data Request FM-2

Following the capital budget process outlined in Exhibit V-2, PGW begins working on its operating budget in February. As shown in Exhibit V-3, the operating budget starts with the approval of PGW's department staffing levels by the Cabinet, which is made up of PGW officers at or above the Senior Vice President level. The operating budget then goes through a series of reviews and approvals ultimately requiring the approval of the Philadelphia Facilities Management Corporation (PFMC) and PGC. The operating budget is reviewed at least monthly to ensure departments' spending is on target. In addition to reviewing the budget variances, any additional amendments to the budgets are addressed during monthly meetings with individual departments. See Finding and Conclusion No. 2 within this chapter for more information about PGW's budget variance reporting.

Exhibit V-3
Philadelphia Gas Works
Operating Budget Timeline



Source: Data Request FM-2

PGW's bond sinking fund and capital improvement fund are managed by the City of Philadelphia and operate under the City's Investment policy. As shown in Exhibit V-4, PGW has been lowering is debt to capital ratio over the past years. PGW attributes the decreasing reliance on debt to be due to a number of factors; however, the increase in the Distribution System Improvement Surcharge (DSIC) and base rate increases have helped increase net income thereby enabling PGW to reduce debt. In addition, the company continues to decrease operating and maintenance expenses while still maintaining consistent or accelerated capital investments.

Exhibit V-4
Philadelphia Gas Works
Debt to Total Capital Ratio
2017 - 2021

Year	Debt to Total Capital Ratio
2017	95.9%
2018	91.0%
2019	83.7%
2020	77.2%
2021	72.5%

Source: Data request FM-12

As a result, PGW's credit rating has also improved among the three credit rating agencies over the same period as shown in Exhibit V-5.

Exhibit V-5
Philadelphia Gas Works
Historical Credit Ratings

Moody's			S&P			Fitch	
12/6/2021	A3/Stable		**1/15/2022**	A (Stable)		**2/17/2022**	A-/Stable
1/22/2021	A3/Stable		**4/24/2020**	A (Stable)		**3/21/2021**	BBB+/Positive
4/22/2020	A3/Stable		**5/8/2019**	A (Stable)		**4/21/2020**	BBB+/Positive
6/10/2019	A3/Stable		**7/28/2017**	A (Stable)		**7/31/2017**	BBB+/Stable
7/28/2017	A3/Stable		**8/10/2016**	A (Stable)		**8/8/2016**	BBB+/Stable
8/8/2016	Baa1/Positive		**7/22/2015**	A- (Positive)		**8/3/2015**	BBB+/Stable

Source: Data Request FM-11

As discussed in Chapter XII – Human Resources, PGW offers a pension as part of its employee compensation. Since 2011, PGW has allowed employees to participate in either the defined benefit plan or the defined contribution plan. However, employees hired after December 2011 are required to contribute towards the defined benefit plan. PGW pension assets are a mixture of stocks and bonds that are held by the Sinking Fund Commission. As depicted in Exhibit V-6, PGW has funded approximately 83% of its pension liability as of June 2021.

Exhibit V-6
Philadelphia Gas Works
Pension Funding Level
As of June 30, 2021

Fair Market Value of Plan Assets	**$673,541,940**
Accrued Liability	**$138,216,198**
Assets as a percent of liability	**82.97%**

Source: Data Request FM-17

The Audit Committee of the PFMC Board of Directors oversees PGW's Internal Audit department, which consists of the director and two staff auditors. The Director of IA reports functionally to the Audit Committee and administratively to the CEO. The Audit Committee is tasked to:

- Approve the IA charter
- Approve the IA audit plan
- Review IA budget, Resource plan, and planned internal audits submitted annually to the Philadelphia Gas Commission
- Receive communications from the Director on the Department's performance relative to its approved plan
- Approve decisions regarding the appointment/removal of the Department's Director
- Inquire of management and the Director to determine whether there is inappropriate scope or resource limitations
- Reviews all internal audit reports

The scope of IA activities includes a focus on the examination and evaluation of the adequacy and effectiveness of PGW's internal controls as well as the performance in carrying out assigned responsibilities such as compliance with policies and procedures, evaluating safeguards and accountability, and efficient use of resources. The scope of internal audits is re-evaluated at least annually to ensure that it remains aligned with PGW's business objectives and addresses the areas of key risk. Once PGW develops the internal audit plan, it is submitted to the Audit Committee for approval. Once approved, PGW can begin on the audit plan for the year. However, when resources are limited or additional expertise is needed, PGW will partner with external firms to conduct specific audits. Once an audit is complete, it is reviewed with affected departments at PGW and presented to the Audit Committee. For example, some recent audits have focused on the management of the residential meter exchange program; evaluation of PGW's procurement contracts; review of vehicle utilization and management; and effectiveness of the customer payment processes.

Findings and Conclusions

Our examination of the Financial Management function included a review of financial management policies and procedures, capital and operating budget processes, budget variance reporting, financing activities, cash management, and the internal audit process. Based upon our review, PGW should initiate or devote additional efforts to improve the efficiency and/or effectiveness of its Financial Management function by addressing the following:

1. Internal Audit policies at PGW do not accurately reflect practices and the internal audit manual has not been updated since May 2017.

PGW's internal audit function has evolved over the last few years. According to the Director of IA, the IA environment changed from a formalized audit reporting process with routine audits to a working dialog with the audited department to establish controls that the department maintains (continuous audit process/self-control assessment). This change in strategy has also led to procedural changes with the new practice incorporating additional discussion/review with the department being audited. Furthermore, IA also has migrated to a co-sharing function with outside resources when additional expertise or resources are needed. However, none of these changes are documented within the Internal Audit policies and procedures, which were dated 2017.

As a result, Internal Audit's policies and procedures do not accurately reflect its current process or practices. Outdated policies or procedures could lead to inconsistencies in audits, loss of information, etc. Instead, documented policies and procedures should be reviewed, and if necessary, revised and updated at least every five years, or sooner if structural changes render existing policy inadequate or obsolete, reorganization occurs, etc.

2. PGW variance reporting for Capital and Operating budgets are deficient.

As discussed in the background section of this chapter, PGW reviews budget to actual variances regularly for its capital and operating budgets. These variance reports include a breakdown by line item and compare budgeted amounts with actual expenses. However, none of the variance reports the audit staff reviewed included explanations for variances. Instead, significant variances are discussed and addressed during budget review meetings, but explanations for variances are not formally documented unless a particular variance is discussed in a public PGW hearing. An overview of the company's actual spend to budget for the capital and operating budgets can be found in Exhibits V-7 and V-8, respectively.

Exhibit V-7
Philadelphia Gas Works
Capital Spend vs Budget
(In 000s)
FY 2017 – 2022

	Actual	Budget	Diff.		Variance
FY 2022	$151,129	$165,595	$(14,466)		-8.74%
FY 2021	$138,504	$154,084	$(15,580)		-10.1%
FY 2020	$99,336	$135,739	$(36,403)		-26.8%
FY 2019	$110,543	$124,205	$(13,662)		-11.0%
FY 2018	$123,427	$121,771	$1,656		1.4%
FY 2017	$102,254	$133,415	$(31,161)		23.4%

Source: Data Request FM-3

Exhibit V-8
Philadelphia Gas Works
Operating and Maintenance Expense vs Budget
(In 000s)
FY 2017 – 2022

	Actual	Budget	Diff.		Variance
FY 2022	229,789	$260,463	($30,674)		-11.8%
FY 2021	$200,955	$281,900	($80,945)		-28.7%
FY 2020	$237,920	$281,845	($43,925)		-15.6%
FY 2019	$267,046	$285,967	($18,921)		-6.6%
FY 2018	$287,391	$327,394	($40,003)		-12.2%
FY 2017	$312,890	$322,743	($9,853)		-3.1%

Source: PGW's Fiscal Operating Budgets filed with the Philadelphia Gas Commission

As highlighted in Exhibits V-7 and V-8, PGW generally operates below budget on both the capital and operating budgets. In addition, the overall variance for both budgets is usually below 20%, with some outlying years. Naturally, a more detailed look

on specific line items of both the capital and operating budgets will showcase much large variance swings. For instance, due to COVID, various capital projects were deferred in 2020 leading to much higher variances, at least initially. Although there is a process requiring the review and discussion of budgets and corresponding variances, PGW should incorporate explanations for significant variances (greater than 10% or $20,000) into their variance reporting. Without this information, PGW risks missing or forgetting the cause of variances due to employee turnover, loss of information, etc. Without this information, PGW may repeat the cause for the variance or be unable to incorporate similar circumstances within its budgeting process. The Audit staff believes PGW already has informal processes in place, and the company simply needs to capture and document variance explanations. In fact, PGW may be able to leverage its implementation Tableau as discussed in Finding and Conclusion No. 2 in Chapter X - Information Technology, to capture and track budget variance explanations from departments.

Recommendations

1. **Update Internal Audit policies and procedures**.

2. **Formally document explanations for variances from the capital and operating budgets.**

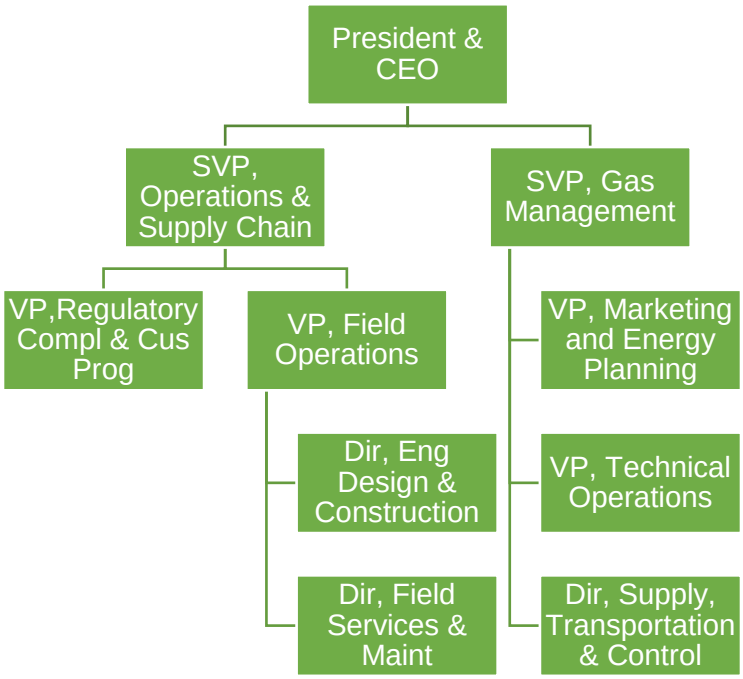
VI. GAS OPERATIONS

Background

Philadelphia Gas Works (PGW or the company) is the largest municipally owned natural gas company in the United States and provides natural gas service to more than 500,000 customers in the City of Philadelphia. PGW has for many years received natural gas from the Texas Eastern pipeline and the Transco pipeline, through nine City gate stations. However, in recent years, PGW has also been able to increase the amount of Marcellus Shale gas flowing into its system, sourcing 95% and 50% of its gas from Marcellus Shale during the summer and winter, respectively. In addition to transmission capacity, PGW also has access to multiple storage facilities including two Liquified Natural Gas (LNG) facilities; the Richmond and Passyunk plants. The Richmond plant can liquify natural gas and store 4.05 billion cubic feet (BCF) of LNG while the Passyunk plant only has storage capabilities of 0.25 BCF of LNG. These two LNG plants are needed for PGW to meet its 700,000 cubic feet (MCF) design day requirement.

PGW's Gas Management department is ultimately responsible for all storage, purchasing, and intake of natural gas into the system. Therefore, this department is responsible for the LNG facilities and the nine gate stations. Gas Management has three groups with one (Technical Operations) focused on maintaining gas supply plans including the design, operation, and upgrade of storage facilities. Meanwhile, the Supply, Transport & Control group handles the procurement of natural gas from all sources and monitors the intake of natural gas from the city gates. The final group, Marketing, is responsible for all marketing activities including handling large accounts, promoting natural gas use/expansion, and gas planning activities. The Marketing group is also leading PGW's Combined Heat and Power program, which is a new strategic initiative (See Chapter II – Background) and provides both heat and electricity to customers from natural gas. As of 2022, there were 25 CHP customers connected to PGW's distribution system. Exhibit VI-1 details the organizational structure for the Operations & Supply Chain and Gas Planning departments.

Exhibit VI-1
Philadelphia Gas Works
Gas Operations Organizational Chart
As of March 22, 2022



Note: Not all of the SVP, Operations & Supply Chain are represented in this exhibit. Instead, materials management and customer service direct reports are presented in Chapters X and IX, respectively.
Source: Data Request EM-3

Once gas is received at the city gate, it flows through PGW's distribution system, comprised of 3,046 miles of main, 476,065 service connections, and five pressure zones. All aspects of maintenance and operation (i.e., provide safe and reliable gas to customers; prevent, identify, and repair leaks and breaks; repair or replace equipment of the distribution system; etc.) is the responsibility of the Senior Vice President, Operations & Supply Chain (SVP Ops). Exhibit VI-2 shows the miles of main by material type for PGW's distribution system.

Exhibit VI-2
Philadelphia Gas Works
Miles of Main by Material Type
As of March 22, 2022

Material Type	Miles of Main
Unprotected Coated Steel	469
Cathodically Protected Coated Steel	524
Plastic	683
Cast/Wrought Iron	1,239
Ductile Iron	122
Reconditioned Cast Iron	7
System Total	**3,046**

Source: Data Request GO-2

Distribution & FSD responsibilities under the SVP Ops are split into two departments, Field Services & Maintenance and Engineering Design, Construction, & Planning. The Field Services & Maintenance department addresses repair and maintenance issues within the distribution system. Field Services & Maintenance is comprised of two distinct subgroups: Field Services and Distribution Maintenance. Field Services generally handles work occurring on customer properties (i.e., services and meters) whereas the Distribution Maintenance group addresses leaks and breaks across the entire distribution system. As both the Field Services and Distribution Maintenance groups handle emerging conditions, overtime is used to address emergencies or complete critical work tasks. PGW's overtime hours for the Field Services and Distribution groups have been declining since 2018. company management indicated that PGW experienced a bad winter in 2018 leading to an increase in overtime hours that year. Since then, overtime hours have continued to decline as presented in Exhibit VI-3. Company management attributed this decline to a focus on equally distributing overtime across employees, restricting overtime hours, and having a mandatory rest period for employees.

Exhibit VI-3
Philadelphia Gas Works
Overtime Hours
2017 - August 30, 2022

Year	Field Services Overtime (Hours)	Field Services Overtime (%)	Distribution Overtime (Hours)	Distribution Overtime (%)
2017	46,040	6.08	125,791	12.47
2018	61,379	8.24	153,988	15.23
2019	48,876	6.53	124,884	12.48
2020	36,452	4.87	102,826	10.26
2021	32,982	4.52	110,958	11.21
2022	29,981	4.18	104,798	10.50

Note: 2022 data is through August 30th.
Source: Data Request GO-40

Another area of focus for PGW is its damage prevention program. To further reduce third-party hits, PGW is involved in the PA One-Call program and in 2018 hired a Damage Prevention supervisor to help monitor and reduce hits. PGW inspectors also work to build relationships with other utility personnel in their covered service area throughout the course of their work. PGW has a relationship with Philadelphia's water department and notifies the department when a broken water main or cavity is observed. PGW has also established an in-house damage prevention committee. This committee meets at least every two years or when there is an event that requires meeting immediately. PGW tracks line hits on its distribution system and is presented in Exhibit VI-4. As can be seen below, PGW's performance has remained relatively steady.

Exhibit VI-4
Philadelphia Gas Works
Line Hits
2017 – August 30, 2022

Year	Line Hits	Billable Hits	Non-Billable Hits
2017	90	69	21
2018	120	87	33
2019	127	88	39
2020	102	75	27
2021	112	70	42
2022	119	95	24

Note: 2022 data is through August 30th.
Source: Data Request GO-40

Currently, PGW's metering system primarily consists of Automated Meter Reading technology (AMR) that requires Meter Reading vans to drive by meters to acquire readings. PGW is in the process of testing an Advanced Metering Infrastructure (AMI) and its related equipment to determine its best application to its distribution system. AMI will create a fixed network for data capture but will also incorporate safety shutoff valves or other devices within the distribution system. PGW does not yet have a planned deployment as of the end of field work.

Findings and Conclusions

Our examination of the Field Operations functions included a review of policies and procedures, capacity planning, damage prevention, budgeting, unaccounted-for-gas levels, leak detection efforts, main replacement, dispatch and response times, corrosion control procedures, valve inspection, meter testing, staffing levels, and contractor usage. Based on our review, Philadelphia Gas Works should devote additional efforts to improve the effectiveness of its gas distribution operations by addressing the following:

1. PGW is not actively replacing mercury regulators.

PGW records show that there are 3,779 mercury regulators in its distribution system. Of this number, all but one, or 3,778 are located inside the customer's property; however, due to inaccurate installation records there could be more unidentified regulators within the system. Therefore, the company established a committee starting in the winter of 2021 to plan for removal of all mercury regulators. Furthermore, PGW has also established a pilot program to identify operational needs for proactive mercury regulator removal. This pilot program identified the costs, labor needs, safety concerns, and equipment needed to complete targeted mercury regulator replacement. However, although supply chain issues impacted the pilot program, it was completed at the start of the 2022 calendar year. As of the end of field work, PGW had not fully developed its goal for replacement of all mercury regulators.

Historically, PGW replaced mercury regulators on an as-needed basis, predominately when they failed or when other service work was being completed. From 2017-2021, an average of 160 mercury regulators were replaced each year translating to a replacement rate of 23.6 years to fully remove the known mercury regulators from its system. Exhibit VI-5 shows the mercury regulators replaced for the 2017 through August 2022 period.

Exhibit VI-5
Philadelphia Gas Works
Mercury Regulators Replaced
2017 - August 11, 2022

Year	Number of Mercury Regulators
2017	146
2018	156
2019	179
2020	146
2021	173
2022	86

Note: 2022 data is through August 11th
Source: Data Request GO-36

The Toxic Substance Control Act of 1976 (k15 U.S.C. Subsection 2601) defines mercury as a toxic substance. Furthermore, inside meter sets and/or regulators are not optimal due to potential safety concerns. The presence of mercury compounds these concerns because if not handled properly, there is the potential for customers and/or employees to be exposed to mercury. Accordingly, it is a best practice to remove mercury regulators to reduce the likelihood of poisoning. PGW has begun taking the steps necessary to eliminate mercury regulators from its system. However, additional work is needed to identify any previously unknown regulators within its system and address shortcomings, like the supply chain problems experienced within the pilot program. Nonetheless, PGW should move forward with its efforts to replace mercury regulators and accelerate this progress from its historical performance.

2. At PGW's current pace of replacement, cast iron will not fully be replaced until 2062.

On February 14, 2012, Act 11 of 2012 amended Title 66 of the Pennsylvania Consolidated Statues to allow jurisdictional natural gas distribution companies to implement a Distribution System Improvement Charge (DSIC).[9] In order to impose a DSIC to recover costs associated with main replacement, a utility must first file a Long-Term Infrastructure Improvement Program (LTIIP) with the Public Utility Commission (PUC or Commission) in accordance with 52 Pa. Code § 121.4. The utility must include within the LTIIP the elements detailed in 52 Pa. Code § 121.3. PGW's first DSIC became effective in July 2013[10] and was later modified to raise the DSIC cap in 2016[11]. PGW filed its latest LTIIP with the Commission in 2022 to illustrate its next five years of planned main replacement efforts, among other infrastructure improvements.

[9] See Docket No. M-2012-2293611 for information on the Commission's implementation of Act 11 of 2012.
[10] See Docket No. P-2012-2337737.
[11] See Docket Nos. P-2015-2501500 and C-2015-2504092.

PGW's current LTIIP is separated into two parts: a baseline program and an accelerated program. The baseline program aims to replace 18 miles of cast iron main per year. Meanwhile, the accelerated replacement program varies from year to year but aims to replace an additional 13 to 15 miles of cast iron main each year. In total, the company endeavors to replace 31 to 33 miles of cast iron main per year. Although cast iron is not the only material type PGW replaces, it is the company's most risky pipe.

To determine what projects will be scheduled within a given year, the company utilizes a Main Replacement Prioritization Program, designed by an assurance and risk management consulting company. This software has been in use since 2009 and is managed by the GIS (Geographical Information System) group. The program helps prioritize which pipes should be replaced to maintain distribution integrity by utilizing data such as location, pipe proximity, the number of breaks, corrosion susceptibility, etc. The program also is used to address and adhere to Distribution Integrity Management Program (DIMP) elements. The planning team then manually reviews the generated list of replacement projects to verify its output. This system allows PGW to analytically plan projects to remove poor performing pipe like cast iron or target trouble pipe segments.

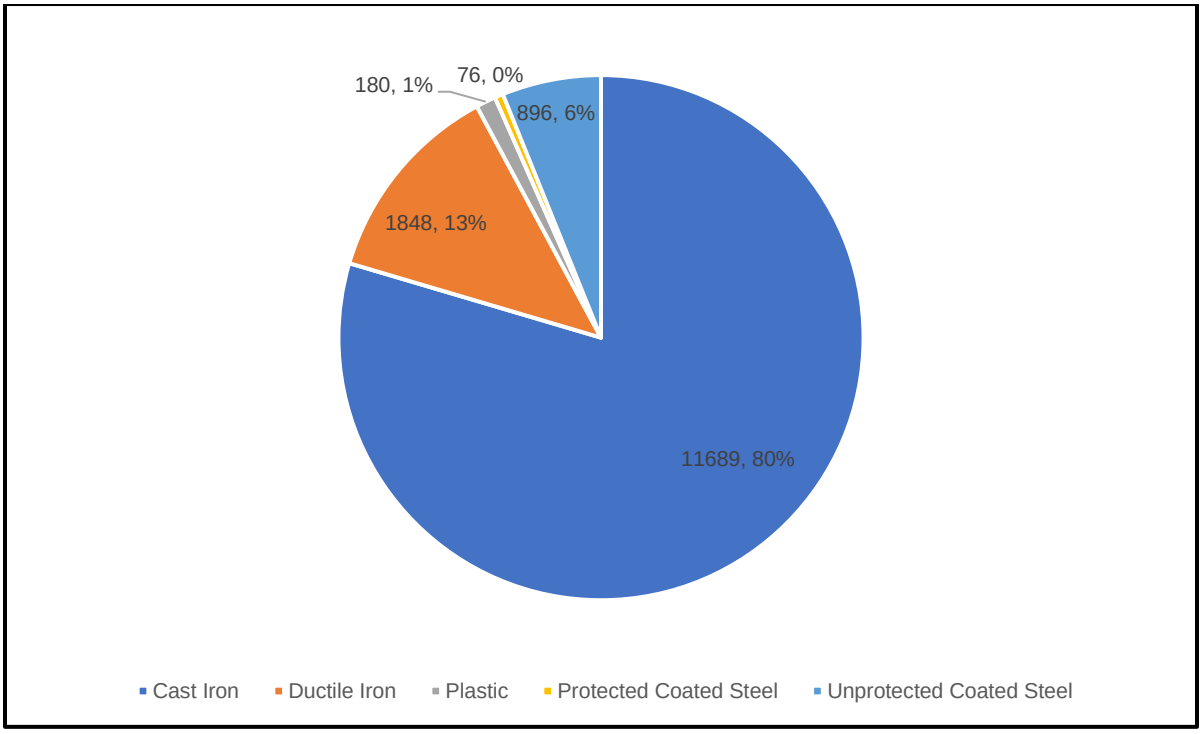
PGW, being the oldest municipal natural gas utility in the country has large amounts of cast iron within its system. As presented within Exhibit VI-2, roughly 40% of PGW's distribution system is cast iron. Currently, cast iron is the leading material type for both main breaks and leaks within PGW's distribution system. Exhibit VI-6 and Exhibit VI-7 show the annual number of main breaks and leaks respectively by material type.

Exhibit VI-6
Philadelphia Gas Works
Annual Breaks by Material Type
2017 – August 30, 2022

Material Type	2017	2018	2019	2020	2021	2022	Total Main Breaks	Main Breaks/Mile
Cast Iron	245	419	318	188	297	227	1694	0.228
Ductile Iron	0	1	1	2	0	0	4	0.005

Note: 2022 data is through August 30, 2022.
Source: Data Request GO-40

Exhibit VI-7
Philadelphia Gas Works
Main Leaks Repaired by Material Type
2017 - August 30, 2022

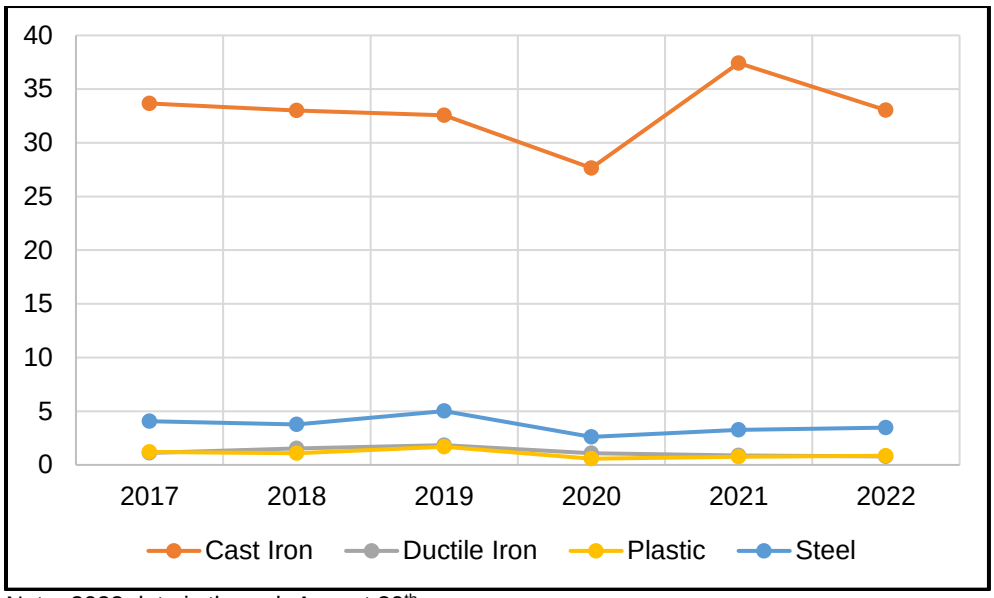


Source: Data Request GO-40

As Exhibits VI-6 and VI-7 demonstrate, cast iron main breaks per mile are 45 times greater than the average main breaks per mile for ductile iron.[12] In addition, many leaks within the system occur on cast iron pipe. Given the large amount of cast iron in the distribution system, PGW has been making cast iron main replacement a top priority as is evident from its expanded cast iron replacement efforts within its LTIIPs. Exhibit VI-8 shows the amount of pipe by material removed from service level during 2017 – 2022, which PGW terms its abandonment rate.

[12] GO-40 data did not include main breaks for plastic and steel pipe. GO-5 data did include plastic and steel main breaks but was not up to date as of year-end FY2022. Because of this omission, cast iron main break data could not be compared to steel and plastic main break data.

Exhibit VI-8
Philadelphia Gas Works
Main Replacement Miles by Abandonment
2017 - August 30, 2022



Note: 2022 data is through August 30th.
Source: Data Request GO-40

PGW did have a slight decrease in all replacement activities in 2020 due to the COVID-19 pandemic; however, the company made up for this temporary decrease in 2021. Overall, PGW is removing on average 33 miles of cast iron each year based upon its past performance. In PGW's most recently filed LTIIP with the Commission, the company has proposed to replace on average 31.5 miles of cast iron main in the 2022 – 2027 period. Exhibit VI-9 details the proposed cast iron components of LTIIP for 2022-2027.

Exhibit VI-9
Philadelphia Gas Works
Cast Iron Proposed Replacement Miles and Investment
As of March 22, 2022

Year	2022	2023	2024	2025	2026	2027
Total miles	31.35[13]	30.49	30.40	31.55	31.35	31.25
Total Dollars	$56,495,030[13]	$64,546,416	$65,369,391	$66,233,969	$66,999,378	$68,193,161

Source: PGW' LTIIP at Docket No. P-2022-3032303

[13] The total miles and dollar amount for the 2022 LTIIP are from the GO-11 data request.

Based upon PGW's historical replacement rate of cast iron and that proposed for the future in its LTIIP, the company is on pace to replace all cast iron by 2059 to 2062. The company continues to look for funding and ways to accelerate its cast iron replacement rates but without additional funding, this replacement rate likely will not change. The Commission's Order from November of 2011, Docket No. M-2011-2271982, states that "Each utility's metric must be set such that cast iron and bare steel replacement must meet or exceed the average ten-year historical replacement activity of the utility or established to remove all cast iron and bare steel within 20 years." The main age and quantity of cast iron main in PGW's system makes complying with the 20-year requirement of the 2011 commission order difficult with roughly 1,240 miles of cast iron still within PGW's distribution system. PGW risks failing to meet the requirements of the 2011 commission order if replacement rates are not accelerated further. Antiquated mains have a greater potential for leaks and breaks, which in turn could lead to public safety incidents. Therefore, PGW should continue to explore additional ways and funding opportunities to increase cast iron replacement.

3. PGW has electronic mapping but in most cases is missing GIS components.

PGW's current drafting process involves a Field Drafter collecting as-built information from the worksite to create a sketch order in PGW's In-House Sketch System. The sketch is reviewed and approved by the planning department before it is added to detail main maps (DMMs) in AutoCAD and published for company use. The company's current distribution mapping system was converted from a combination of AutoCAD drawings, Oracle databases, and Microsoft Access databases using the Environmental Systems Research Institute (ESRI) platform to a combined ESRI geodatabase based on the ESRI Utility and Pipeline Data Model (UPDM). This database houses the information on PGW's mains, services, pressure force equipment (such as main valves and district regulator stations), and corrosion control infrastructure. The mapping system has datalinks to other external systems such as databases from other city entities with references to Philadelphia's curb line layer, its street centerline layer, water department parcel layer, as well as the company's own internal Customer Information System and Work Management Systems.

PGW initially explored GIS software 13 years ago. By 2015, the company was using GIS as an aid to develop their main replacement program. However, maps at that time did not directly convert into GIS; therefore, these maps needed to be modified to be compatible with the GIS software. The map transfer was completed in 2017 but further difficulties arose when the GIS server was unable to handle the GIS system's large data volume. In response, PGW transitioned to a more cloud-based approach that would also enable personnel easier access to maps in the field.

Although PGW has created the foundation for the GIS system and have basic mapping functionality, the company has not fully implemented GIS. PGW has been searching for equipment that will allow it to capture and record certain data points such as technician data, equipment used, and installation methods. Ideally, PGW is looking

to use barcoding technology to seamlessly capture all relevant information at the time of installation. Meters and inserts are the only equipment that uses barcoding in this way. Ideally, PGW envisions every piece of infrastructure, starting with plastic piping, to be barcoded with relevant information captured at the time of installation. Therefore, each record will have information on the manufacture, Operator's Qualification, the equipment that was utilized, who did the work, and how the work was completed.

However, PGW has not been able to achieve the next phase of GIS implementation. In particular, the company indicated it was waiting for industry standards to be developed, had to reprioritize other projects/initiatives, etc. The company continues to explore additional hardware and software that could help it to further implement GIS. Nonetheless, to fully leverage the GIS, PGW must begin to capture additional data, rather than focusing primarily on map location. Key data like manufacturer, composition, date installed, etc. will enable PGW to target future replacement activities, identify trends or problematic infrastructure, etc. Therefore, PGW should work to expand its GIS beyond map location to capture relevant data from all infrastructure assets.

4. The recent restructuring of the Customer Affairs and Regulatory Compliance department reporting directly to the Senior Vice President of Operations has created a potential conflict or at least the appearance of a potential conflict of interest.

In December of 2021, Customer Affairs and Regulatory Compliance (CARC) were organizationally relocated to report to the SVP Operations & Supply. This organizational change also included the addition of new responsibilities addressing non-compliance letters from the Commission. Currently, CARC acts as a supporting role for the Operations & Supply Chain department and as a liaison to the Commission. Investigations that arise from non-compliance letters are handled by the Field Operations department whereas Regulatory Compliance facilitates communications between different groups at the company and the Commission. This means that employees within Regulatory Compliance are responsible for responding to non-compliance letters regarding Operations & Supply Chain practices, despite reporting to the same department that is investigating itself. Ultimately, the CARC is responsible for the official response to the Commission for all non-compliance letters, but the department reports organizationally to the Operations & Supply Chain Department. Naturally, the SVP Ops will provide input when needed but attempts to remain impartial to not unduly influence internal investigations.

Although the PUC auditors found no examples where this organizational structure impacted internal investigations of non-compliance letters, the reporting relationship creates the potential for conflicts of interest. Within much of the industry, regulatory compliance or internal audit groups do not report directly to the group they are reviewing. The company did indicate that this structure may change due to pending retirements and corresponding restructuring. Regardless of whether a restructure occurs, PUC audit staff contends that CARC should be independent of the Operations

department and therefore should be organizationally moved from its current reporting structure.

Recommendations

1. **Implement a policy and metrics-tracked plan to replace mercury regulators within the distribution system.**

2. **Accelerate cast iron main replacement.**

3. **Plan and implement a process for gathering equipment and installation data in the GIS database.**

4. **Reorganize the CARC reporting structure to eliminate conflicts of interest with the SVP of Operations.**

VII. EMERGENCY PREPAREDNESS

Background

On June 11, 2005, Regulations at 52 Pa. Code § 101 (Chapter 101) went into effect that require jurisdictional utilities to develop and maintain written physical security, cyber security, emergency response, and business continuity plans to protect infrastructure within the Commonwealth of Pennsylvania and to ensure safe, continuous, and reliable utility service. A jurisdictional utility is required to maintain these "emergency preparedness" plans and annually file a Self-Certification Form to the Pennsylvania Public Utility Commission (PUC or Commission) documenting compliance with Chapter 101. This form, available on the PUC website, is comprised of 13 questions as shown in Exhibit IX-1.

Exhibit IX–1
Pennsylvania Public Utility Commission
Public Utility Security Planning and Readiness Self Certification Form

Item No.	Classification	Response (Yes–No–N/A)
1	Does your company have a physical security plan?	
2	Has your physical security plan been reviewed in the last year and updated as needed?	
3	Is your physical security plan tested annually?	
4	Does your company have a cyber security plan?	
5	Has your cyber security plan been reviewed in the last year and updated as needed?	
6	Is your cyber security plan tested annually?	
7	Does your company have an emergency response plan?	
8	Has your emergency response plan been reviewed in the last year and updated as needed?	
9	Is your emergency response plan tested annually?	
10	Does your company have a business continuity plan?	
11	Does your business continuity plan have a section or annex addressing pandemics?	
12	Has your business continuity plan been reviewed in the last year and updated as needed?	
13	Is your business continuity plan tested annually?	

Source: Public Utility Security Planning and Readiness Self-Certification Form, as available on the PUC website at https://www.puc.pa.gov/documents/utility-files/279/Security_Planning_Self-Cert_Checklist2021-F.pdf

The PUC auditors use a NIST (National Institute of Standards and Technology) Cybersecurity Framework-based audit plan, modified to address the needs and capabilities of the PUC and the Pennsylvania utility companies. Ultimately, due to the sensitive nature of the information reviewed, specific information is not revealed in the audit report; instead, the generalities of the information reviewed are discussed.

Our examination of PGW's emergency preparedness included a review of the Physical Security Plan (PSP), Cyber Security Plan (CSP), Emergency Response Plan

(ERP), Business Continuity Plan (BCP), and associated security measures. Due to the ongoing COVID-19 pandemic, some work was conducted via videoconferencing with company personnel. However, the PUC auditors were able to perform most security reviews and facility inspections in-person.

Cybersecurity at PGW is handled entirely in-house, whereas physical security is managed by PGW with the aid of two security contractors. Physical security is managed by the Director of Security, who reports to the Senior Director of Safety, Security, and Business Continuity. This Senior Director reports to the Senior Vice President of Administration & General Counsel. Meanwhile, PGW's cybersecurity team operates as part of the IT department. The cybersecurity team is led by the Director of Information Security, who reports to the CIO (Chief Information Officer), who in turn reports directly to the President/CEO. PGW's cybersecurity team consists of four full time cybersecurity professionals. Although all PGW employees have a role in security, the following positions are primarily responsible for key security components and/or plans:

- Physical Security: Director of Security
- Cybersecurity: Director of Information Security
- Emergency Response:
    - Superintendent of Operations
    - Director of Field Services & Maintenance
    - Project Manager of Health and Safety, Plant Protection
    - Manager of Chemical Services & Environmental
- Business Continuity: Director of Business Continuity

The maintenance of the four emergency preparedness plans includes annual reviews and testing at least once per year. Testing often includes federal, state, and local agencies and authorities in addition to company personnel and is performed via tabletop exercises, simulations, and/or real-life events. In addition, physical and cyber vulnerability tests are routinely conducted to discover potential deficiencies. Opportunities for improvement identified from the testing or reviews are evaluated for implementation and the manuals are updated as needed to reflect new procedures or practices resulting from these findings.

Findings and Conclusions

Our examination of the emergency preparedness at PGW included a review of the PSP, CSP, ERP, BCP, vulnerability assessments, and all associated security measures. Based on our review of the company's emergency preparedness efforts, PGW should devote additional efforts to improving its security planning and preparedness procedures by addressing the following eight findings and recommendations:

1. PGW has not filed a Self-Certification Form with the Pennsylvania PUC in several years.

PGW has not filed a Public Utility Security Planning and Readiness Self Certification Form with the Pennsylvania PUC since 2017. Title 52 PA Code Chapter 101 that, "A utility under the reporting requirements of § 27.10, § 57.47, § 59.48, § 61.28, § 63.36 or § 65.19 shall file the Self Certification Form at the time each Annual Financial Report is filed, under separate cover at Docket No. M-00031717. Therefore, PGW should submit annual self-certification forms pursuant to Title 52 Chapter 101.

2. Deficiencies in physical security were noted during inspections of PGW's facilities.

Various physical security deficiencies were noted during inspection of PGW's facilities. Most of these deficiencies were due to facility age, oversight, neglect, weather, or general wear and tear. Issues included concerns such as barbed wire problems; fence issues; foliage issues; unlocked or unsecured cabinets, doors, and ladders; improperly secured communications equipment; etc. Security equipment varied from one facility to another, and PGW would benefit from standardization of equipment used based on type of facility and criticality.

Physical security should be continuously addressed, and deficiencies should be remediated in a timely manner. Due to deficiencies in individual layers of physical security at some of PGW's facilities, certain facilities could be entered by unauthorized personnel. More specifically, holes in a layer of security can render that layer ineffective, so these issues should be repaired or mitigated in the interest of maintaining multiple, functional layers of security throughout PGW's facilities.

3. Effective security and safety equipment inspections are not occurring on a regular basis at PGW facilities.

Currently, responsibility for security and safety inspections is split between many departments. In general, the Operations group handles gas plants and related gas facilities, whereas the Safety Group and/or the Security teams are responsible for all other locations like offices, storerooms, etc. Fence inspections are the responsibility of Facilities at PGW's headquarters building, but at other locations, the responsibility depends on the location of the fence.

In addition, first aid kits are neither inspected nor maintained as part of a centralized inspection program. PUC auditors found that at some locations first aid kits were well maintained, like those in trucks or at gas plants. However, at other facilities, first aid kits are the responsibility of local facility management and were clearly outdated. OSHA 1910.269(b)(3) requires first aid kit inspections at least annually. Furthermore, the audit staff found similar problems with fire extinguishers with some extinguishers not being inspected since 2015. 34 Pa Code § 13.4 adopts a list of NFPA

standards, including NFPA 10, which requires that fire extinguishers be inspected when they are put into service and at least monthly after that.

It is an industry best practice to inspect security and safety equipment regularly and thoroughly. Without regular, documented inspections of security equipment, medical supplies, safety equipment, and fire equipment, missing supplies or faulty equipment could stymie efforts to respond in an emergency. Given the issues found with the emergency response, safety, and security equipment at various PGW facilities, and the current division of responsibilities for inspection of these types of equipment, PGW would benefit from creating standardized company-wide inspection checklists and accountability processes for each type of inspection. PGW recently began a similar process for camera inspections, specifically related to maintenance and foliage control, where Security inspects cameras several times per day and conducts regular audits. This program could be emulated and serve as a starting point for an expanded program covering security, safety, fire, and emergency response equipment.

PGW would also benefit from instituting a Senior Director-level monthly or quarterly inspection process where Director and Senior Director level management would be active participants in inspections to provide accountability and a fresh "outside" set of eyes on the inspection process.

4. A security risk identified at the time of the last PUC audit has not been mitigated since it was identified.

A security risk that could lead to a low probability, but potentially high impact event was identified at the time of the 2017 PUC audit. Elimination of the potential risk itself is not in PGW's hands as it is owned by a third party. PGW has taken steps to attempt to mitigate the risk. While these measures improve security, they do not eliminate the specific risk identified and no alternative solutions have been explored. As this risk has not been mitigated, the audit staff encourages the company to explore additional opportunities to mitigate this risk, engage a third party to review the vulnerability, and/or deploy additional safeguards to limit the impact.

5. PGW lacks focus and dedicated resources for cybersecurity.

PGW's cybersecurity function is managed within the IS department. In particular, the Director of Information Security has a team of four other IT professionals responsible for all security across the company's Information and Operational Technology (OT)[14]. Although many other IS members have a role in implementing cybersecurity patches, fixes, and overall security of the systems they use, it is not their primary focus. Therefore, as the cybersecurity team identifies potential patches or fixes to a system that cannot wait for a scheduled maintenance window, it strives to coordinate unscheduled downtime with the respective business owner.

[14] Operational Technology is defined as hardware and software systems used to monitor events, processes, and devices, and make adjustments in enterprise and industrial operations. It is used in automation, such as the computer systems that run factories or plants.

PGW has a Change Management Group, which consists of all IT directors and managers. Meetings occur weekly, and the group acts like a governance committee issuing final approval or disapproval for changes to PGW systems. Cybersecurity changes or patches are announced at this committee for tracking purposes, as the company contends there is no mechanism for the committee to reject them if the change doesn't cause an operational concern. Should the change be significant enough, the CIO may also brief the executive management team (see Finding and Conclusion No. VII-7). PGW has monthly scheduled down windows for maintenance and patching where identified cybersecurity patches can be applied. In the case where a critical security patch cannot wait until the next maintenance window, IS will inform the affected business unit(s) and find a mutually agreeable down window that balances the business impact and risk to apply the patch. PGW has an Emergency Change Management process for changes or patches that cannot wait until the next weekly meeting.

Although PGW has established a good process for change management, the audit staff expressed initial reservations about how the process handles cybersecurity changes. The company was able to provide additional context that alleviates fears around critical cybersecurity patches but audit staff believes additional emphasis on cybersecurity improvements may be warranted. Furthermore, the audit staff contends that the cybersecurity resources currently deployed at the company may not be sufficient. Therefore, to improve the focus on cybersecurity, the audit staff suggest the following improvements. These solutions could be implemented independently or in concert:

- Elevate the Director of Information Security to a Chief Information Security Officer (CISO) above other IT directors or even part of the executive management team. This move would enable the CISO the ability to implement cybersecurity changes without having to report to multiple levels of management.
- Expand cybersecurity staffing levels or ensure at least one member of each major IT team reports to the Director of Information Security. This will ensure that every major business owner has an embedded cybersecurity expert that will help to build cybersecurity into all systems from the ground up.
- Create a separate cybersecurity budget. This will provide additional resources, transparency and accountability to cybersecurity that will enable the cybersecurity group to improve cybersecurity posture across the entire company.

With increasingly sophisticated cybersecurity threats, especially from foreign nation states and from organized crime, it is important to prioritize cybersecurity by making it a core function of utility leadership and planning. Although the company has been working to improve its cybersecurity posture, there are still opportunities to strengthen the cybersecurity culture at PGW. Therefore, PGW should implement changes or expand resources that ensure cybersecurity meets corporate strategy.

6. Cross training of key personnel would be beneficial for OT systems.

There are some OT systems which currently lack both in-house maintenance and administrative redundancies. Although external redundancies do exist, it is an industry best practice for a utility to maintain in-house resources. In addition, redundancy plans should be maintained for systems access, administration, support, and maintenance needs of critical servers and systems.

7. PGW has not documented the process for elevating cybersecurity risks to the executive management or board levels.

According to PGW's CIO, if a risk cannot get resolved in IS or if additional support is needed, the risk will be elevated to the executive management team. Similarly, if an incident or condition warranted, it would also be presented to the executive management team. However, the audit staff found these conditions and processes were not documented. Furthermore, there was no guidance when a cybersecurity risk would be presented to the Philadelphia Facilities Management Corporation (PGW's board). Instead, PGW should clearly define the types of risks or risk levels that need to be elevated to the executive management team and/or board. Without such a process, PGW management and board members may be unaware of potential risks, impacts, or challenges.

8. PGW lacks a risk registry for cybersecurity risks.

According to PGW's VP of Risk Management and Environmental Services, all major projects are evaluated for risk. The senior team will weigh each project against other major projects and make decisions accordingly. In general, PGW maintains a risk register for company-wide risks spanning all aspects of PGW's operations. However, the audit staff found that there is no risk registry for IT risks and the company-wide risk registry does not generally incorporate cybersecurity vulnerabilities.

As discussed in Finding and Conclusion No. VII-5, cybersecurity risk would be mitigated by solutions from the Director of Information Security's group. However, there is no formal inventory of vulnerabilities, risks, or mitigating factors. As highlighted in the change management process, potential mitigative actions to address identified risks are not always adopted by the business lines. In these cases, the vulnerability remains unaddressed until another solution can be put forward. Although PGW indicates that it continues to work on these, there was no documentation highlighting the number of risks unaddressed, mitigated, or resolved. Therefore, potentially known vulnerabilities could be forgotten or left unaddressed until they cause adverse conditions. Although not all risks can be mitigated, the company should actively manage to maintain a certain risk tolerance.

The National Institute of Standards and Technology (NIST) recommends using a risk register to identify cybersecurity risks and track the risk owner, mitigation strategy,

proposed response, and risk analysis information[15]. PGW should therefore create a risk register for IT vulnerabilities. Furthermore, the risk register should be reviewed by the Change Management group routinely and discussed with the executive team at least once a year.

Recommendations

1. **File Self-Certification forms with the Pennsylvania PUC annually.**

2. **Correct various deficiencies in physical security.**

3. **Establish a company-wide program for inspections for safety, security, medical, and fire equipment, and make accessible standardized first aid kits at all regularly occupied facilities.**

4. **Explore ways to eliminate or mitigate the identified security risk through a business case analysis.**

5. **Increase focus on cybersecurity by developing a dedicated cybersecurity budget, performing a staffing study and adjusting resources as needed, and creating an executive level cybersecurity leadership position.**

6. **Reinforce contingencies with the OT systems by cross-training, increasing resources, or by some other method.**

7. **Document the threshold where cybersecurity risks will be relayed to the cabinet and board levels.**

8. **Implement a cybersecurity-focused risk registry.**

[15] See NISTIR 8286, available free of charge at https://doi.org/10.6028/NIST.IR.8286 for more information.

VIII. MATERIALS MANAGEMENT

Background

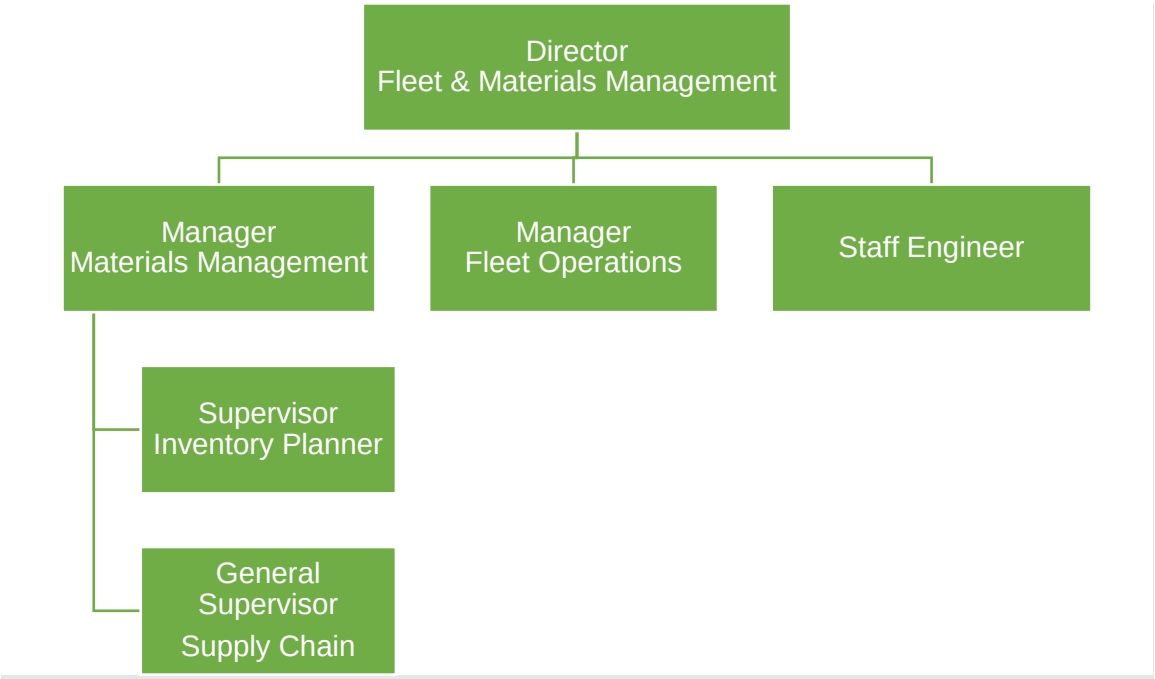
PGW's Supply Chain function is overseen by the Vice President Supply Chain (VP-SC), who reports to the Operations & Supply Chain Senior Vice President. Reporting to the VP-SC are the Director Fleet & Materials Management (Director F&MM) and Director Contract Management & Supply Diversity (Director CM&SD). These directors handle the day-to-day responsibilities associated with oversight of the procurement and materials management functions.

The Director CM&SD oversees eight direct reports (seven buyers/purchasers and a Supplier Diversity Administrator). This department is responsible for purchasing activities at PGW, including vendor selection and vendor management. In addition to unique challenges during the COVID-19 pandemic, PGW faced significant structural changes to the procurement process in 2020, which introduced new challenges and opportunities. First, the company moved to an entirely online bidding platform in early 2020, just prior to the start of the pandemic. Second, the company received approval to implement "best value" procurement rules for certain acquisitions of goods and services, which although still subject to rules and criteria, does not restrict the company to the least cost option. Finally, the COVID-19 pandemic also provided challenges procuring Some materials and disrupting the lead time to acquire materials.

Supply Chain actively maintains inventories at five main facilities throughout the greater Philadelphia area. In addition, outlying stations provide field personnel access to small everyday materials and supplies. The department is led by the Director F&MM, who handles day-to-day oversight responsibilities for materials management and PGW's vehicle fleet[16] with assistance from several direct reports, as seen in Exhibit VIII-1. Supply Chain management monitors inventory turnover and min/max inventory levels, performs reviews of daily cycle counting of physical inventories, handles labor issues and maintain relationships with unions of PGW employees. Supply Chain and Procurement are responsible for tracking cost savings, along with fostering spending increases and continuous relationships with minority, woman, veteran, and disabled owned businesses – collectively PGW refers to these as Disadvantage Business Enterprises (DBE). PGW has made relationships with local businesses a similar priority. (See Chapter XII – Human Resources for more on the DBE program at PGW)

[16] See Chapter XI - Fleet Management for more information about PGW's Fleet.

Exhibit VIII-1
Philadelphia Gas Works
Fleet & Materials Management Organizational Structure
As of August 31, 2022



Source: Data Response EM-18

Although inventory is stored throughout the company's service territory, approximately 90-95% of inventory is held in warehouses at the company's headquarters, Tioga, Montgomery, Richmond, and Passyunk locations. The General Supervisor is responsible for the day-to-day functions of PGW warehouses, which are staffed by (5) inventory supervisors, (4) clerks, (4) office services clerks, (16) drivers, (1) repair person, and (25) stock handlers. Due to the pandemic and challenges acquiring Some materials, PGW made the decision to increase its inventory stock of certain items to ensure availability, mitigate excessive lead times, etc. However, this move has caused the company's inventory turnover to dip below 2.0 turns in 2020 and has stayed in the 1.8-1.9 range since.

PGW Supply Chain relies on various software to manage and maintain an inventory with an average value of nearly $8.6 million in 2021. The primary software platform is Oracle-based and capable of integrating the disparate inventory tracking and control systems into a single inventory management system (IMS). Meanwhile, project planning is done through the company's own Asset Information Management System (AIMS), which is discussed in Chapter VI – Gas Operations, which is integrated with Oracle to import project data. In addition, the company recently acquired new software for the newly implemented online requisition process, which is used to develop material catalogs and standardize part descriptions and nomenclature.

Findings and Conclusions

Our examination of the Materials Management function included a review of assigned responsibilities, policies and procedures, information systems, reporting capabilities, inventory controls, inventory levels, warehouse locations and emergency stock. Based on our review, PGW should devote additional efforts to improve the effectiveness of its materials management operations by addressing the following:

1. PGW's cycle counting policies and procedures at not documented.

PGW uses a cycle counting process to ensure accuracy and perform physical counts of its inventory. The count frequency of an item is prepopulated in Oracle by completing a field within the item's properties/details indicating the annual frequency an item should be counted. Using the inventory database in conjunction with counting frequency, Oracle will generate a printed list of items to be counted each day. Stock handlers will then perform physical counts and record quantities on the printed list. Lists are submitted to supervisors upon completion, at which point either the General Supervisor or one of the Inventory Supervisors will take the completed lists and enter physical counts into the Oracle system. The supervisors will investigate quantity and dollar discrepancies they believe to be material or possibly in error. However, PGW does not have a predetermined threshold for when additional follow-up is required and instead relies on the experience and judgment of the supervisors.

Although this additional investigation of discrepancies is noteworthy, no part of this extra investigation process is documented. Neither the threshold warranting additional investigation nor the investigation itself is found within the company's cycle counting policies and procedures. Supply Chain is relying solely on the knowledge and experience of staff to perform the manual processes within the function. At present and in the short-term, Supply Chain appears to be relying on informal communication during the stock handler training process and any additional interactions with the supervisors to fully convey the cycle counting process. Without proper documentation, Supply Chain is risking degrading the cycle counting process because of employee departures and retirements.

Therefore, policies and procedures of all essential business processes within a functional area should be formally documented. Formally documenting a function's policies and procedure provides guidance to new and existing employees, establishes standardized task performance, and helps protect against knowledge retention issues.

2. Some processes within PGW Supply Chain's inventory management remain overly manual and lack automation.

PGW Supply Chain has undertaken several significant initiatives in the last five years as part of PGW's corporate goals and objectives. These initiatives included efforts to increase utilization of diverse vendors and local businesses, transitioning to an

entirely web-based online requisition process, and altering the least-cost procurement rules. A cursory review of PGW's corporate goals and objectives shows the company directed most of Supply Chain's focus toward various procurement-related initiatives. Noticeably absent from these initiatives are projects and tasks related to streamlining work processes to minimize or eliminate paperwork and manual data entry, system integration, and process automation.

Recommendations for PGW to consider some form of system improvement or automation technology date back to the PUC's 2009 Management Audit[17]. In the 2009 MA, the cost benefit of implementing barcoding technology, where all inventory materials have a product barcode that can be scanned and synchronized with the inventory management system in real-time, was presented as an automation tool that had been increasingly more common in larger utilities. Management Audits and follow-up Management Efficiency Investigations since have been highlighting the company's continued reliance on more manual forms of inventory management and hesitancy to implement automation technologies. As part of our review, auditors noted that Supply Chain's documented policies and procedures remain largely unchanged from prior audits and describe various manual paper tickets to request, issue, and transfer materials and process repair orders. As identified in the previous finding, taking physical inventory is an entirely pen and paper process.

In response, the company's past implementation plans and progress reports indicated they were evaluating system integration and automation technologies, and even included barcoding and an automated procurement system in the Supply Chain business plan. However, management indicated that other initiatives, such as the those related to the company's AIMS system, were a higher priority and hence many Supply Chain initiatives were postponed. Unfortunately, this results in Supply Chain's inventory management functions outside of the procurement process continuing to rely on inefficient manual processes as detailed in this and prior audit findings and recommendations. The audit staff recognizes that many of these automation initiatives can be resource intensive; however, manual processes can be equally inefficient. Therefore, PGW should eliminate manual processes within the materials management function by implementing automation or other initiatives.

Recommendation

1. **Document the policies and procedures of PGW's cycle counting function.**

2. **Implement and/or increase automation of materials management processes to improve efficiency, accuracy, and ease-of-use.**

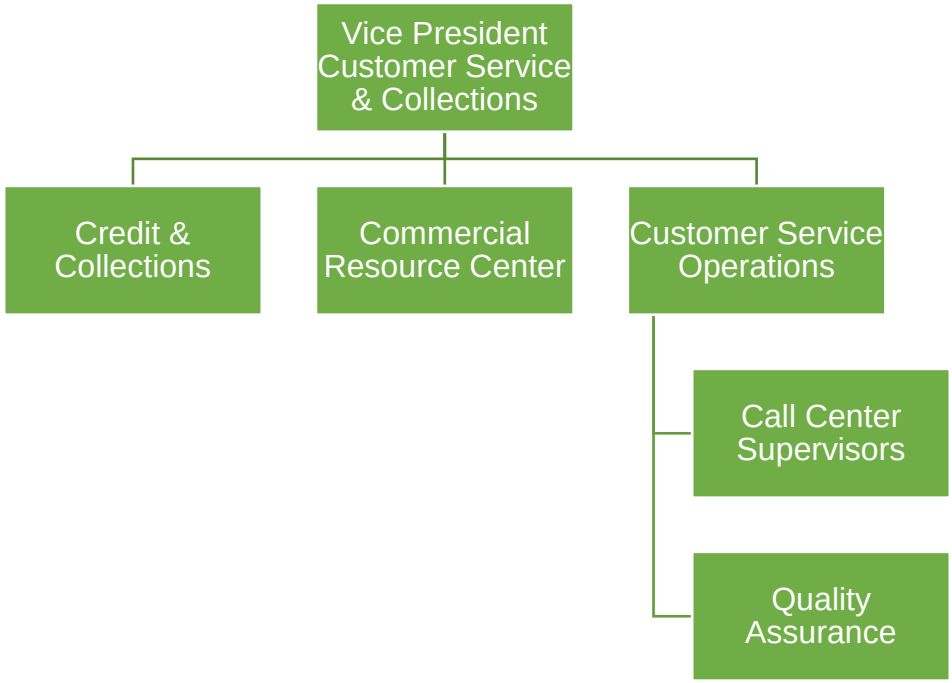
[17] See the Stratified Management and Operations Audit of PGW at Docket No. D-06MGT042 released at the Commission's Public Meeting of February 5, 2009.

IX. CUSTOMER SERVICE

Background

PGW is the largest municipal owned natural gas distribution utility in the United States of America. PGW provides natural gas service to more than 500,000 customers in the City of Philadelphia, Pennsylvania. The majority of PGW accounts are residential customers, composing 90% of all customer accounts. Multiple departments at PGW provide customer service functions, including Customer Service and Collections, Regulatory Compliance and Customer Programs, and Field Operations. All departments report directly to the Senior Vice President of Operations (see Chapter III – Executive Management for an executive organizational chart) and Supply Chain through their respective Vice Presidents (VP).

Exhibit IX-1
Philadelphia Gas Works
Customer Service and Collections Organizational Chart
As of August 31, 2022



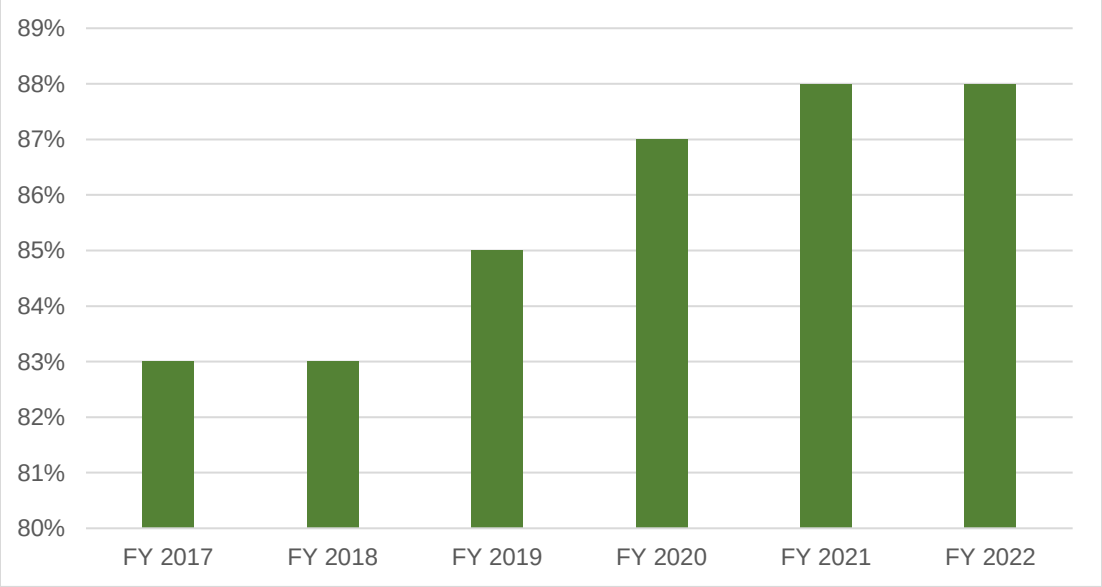
Source: Data Request EM-18

As illustrated in Exhibit IX-1, the VP Customer Service and Collections responsibilities include Credit and Collections (Credit), Commercial Resource Center (CRC) and Customer Service Operations (CSO). The Credit group has oversight of all credit and collections activities, including oversight of PGW's third party collection agencies, oversight of PGW's collections process for overdue balances, administrative duties handling settlements, bankruptcies, liens, etc. and assisting with collections calls

for residential accounts. The CRC group performs similar duties dedicated to PGW's commercial and industrial accounts. Meanwhile, the CSO group has responsibility for the call center and quality assurance activities. Prior to the pandemic, the CSO also had oversight of PGW's district offices, which provided in-person customer assistance at multiple locations throughout the City of Philadelphia.

However, in March 2020, PGW's district offices shuttered in efforts to mitigate exposure and spread of COVID-19 (See Finding and Conclusion No. IX-5 for additional discussion). Apart from cash payment remittance and in-person low-income program application assistance, PGW's district office transactions[18] could generally be completed via remote channels. To ensure continued access to services previously provided via its district offices, PGW leveraged its partnerships with third party organizations. PGW works with local community organizations to provide in-person assistance for application for financial assistance, including PGW's USP and the US Department of Human Services' Low-Income Heating and Energy Assistance Program (LIHEAP). Furthermore, PGW also contracted a payment vendor for a new cash payment option for customers. Retail cash payments can be made at any participating local retail location[19], via a barcode on PGW bills.

Exhibit IX-2
Philadelphia Gas Works
Overall Customer Service Satisfaction Rate
FY 2017 – FY 2022

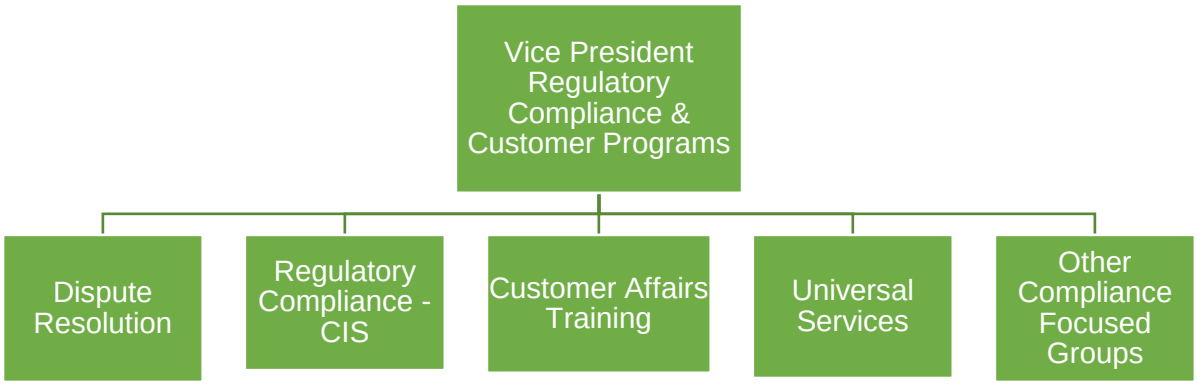


Source: Data Request No. CS-54

[18] Bill inquiry, account turn-ons, payment remittance may be completed online or by phone (convenience fees apply for certain remittance types).
[19] Participating retailers include 7-Eleven, Speedway, CVS, Family Dollar, Dollar General, Walgreens, Walmart, Sheetz, Rutters, and Royal Farms. Customers exercising the retail cash payment option can access their e-receipt under their barcode at the vendor's website. Retail cash payments are not subject to any additional convenience fees.

Despite the pandemic and closure of its district offices, PGW's overall customer satisfaction rate has increased as illustrated in Exhibit XI-2. Management opined that PGW's efforts to accommodate customer needs and modify delivery of its customer service function through the pandemic have led to this increase. However, as discussed in more detail in Finding and Conclusion No. 2, other aspects of PGW's call center performance (i.e., service levels and abandonment rates) have degraded since March 2020.

Exhibit IX-3
Philadelphia Gas Works
Regulatory Compliance and Customer Programs - Customer Service Focused
Organizational Chart
As of August 31, 2022



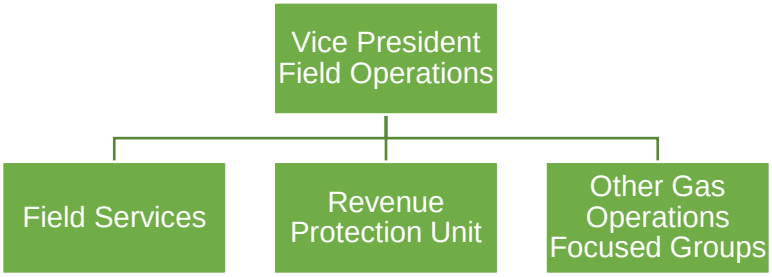
Note: Personnel reporting to the VP, Regulatory Compliance and Customer Programs, who are not part of the CS organization are not shown in this exhibit but are discussed in other chapters.
Source: Data Request CS-27

As shown in Exhibit IX-3, the Regulatory Compliance & Customer Programs (CCP) department is responsible for handling customer complaints, customer information system (CIS) issues and enhancements, customer service training, and the universal service program (USP). The CCP department addresses all PUC customer complaints, including formal and informal, as well as customer disputes. The CCP department supports PGW's legacy CIS through system maintenance and has oversight of a CIS replacement team (see Finding and Recommendation No. 3 for additional information). The CCP's customer training group is responsible for conducting new and refresher training for PGW's customer service representatives (CSRs). In addition, the department is responsible for administering PGW's USP, which encompasses four main programs.

PGW's multifaceted USP includes the low-income usage reduction program (Home Comfort), customer assistance referral and evaluation service program (CARES), senior citizen discount program, and PGW's customer assistance program (CRP). Each component of the USP is designed to provide support for at-risk customers and outreach is done in multiple languages. Home Comfort provides free in-

home weatherization and energy conservation services to qualifying households. The CARES program provides eligible customers with referral information to internal and external organizations for additional assistance. PGW's senior citizen discount program was closed to new participants as of August 31, 2003 but continues to provide a bill reduction for existing enrollees. Finally, PGW's CRP supports low-income customers through decreased billings and provides pre-program arrearage forgiveness for past due balances for active participants.

Exhibit IX-4
Philadelphia Gas Works
Field Operations Organizational Chart – Customer Service Focus
As of August 31, 2022



Note: Personnel reporting to the VP, Field Operations, who are not part of the CS organization are not shown in this exhibit but are discussed in other chapters.
Source: Data Request EM-18

As reflected in Exhibit IX-4, the VP Field Operations has oversight of multiple areas, including gas operations and various customer service focused areas (see Chapter VI – Gas Operations for more details on operations-focused areas). In particular, the Field Operations department has oversight of two customer-service focused areas: the Field Services group and the revenue protection unit (RPU). The Field Services group is responsible for meter reading and completing customer work orders (turn-ons, turn-offs, meter maintenance, etc.) at the customer's location whereas RPU is responsible for meter reading and gas theft investigations. PGW leverages AMR (automated meter reading) technology to collect meter readings[20] for its customers via drive-by technology. The Field Operations department's RPU is responsible for conducting investigations of possible theft of service and performing shutoffs as necessary to ensure public safety in cases where meter tampering is detected.

Findings and Conclusions

Our examination of the Customer Service function included a review of policies and procedures, staffing, customer satisfaction surveys and performance metrics, budget billing, credit and collections, and bad debt levels. Based on our review, PGW

[20] PGW also uses on-demand meter reading technology for approximately 400 interruptible customers.

should improve the effectiveness and efficiency of its customer service function by addressing the following:

1. Due to the pervasive economic effects of the COVID-19 pandemic, PGW's long term aged residential customer accounts receivable balances have significantly increased.

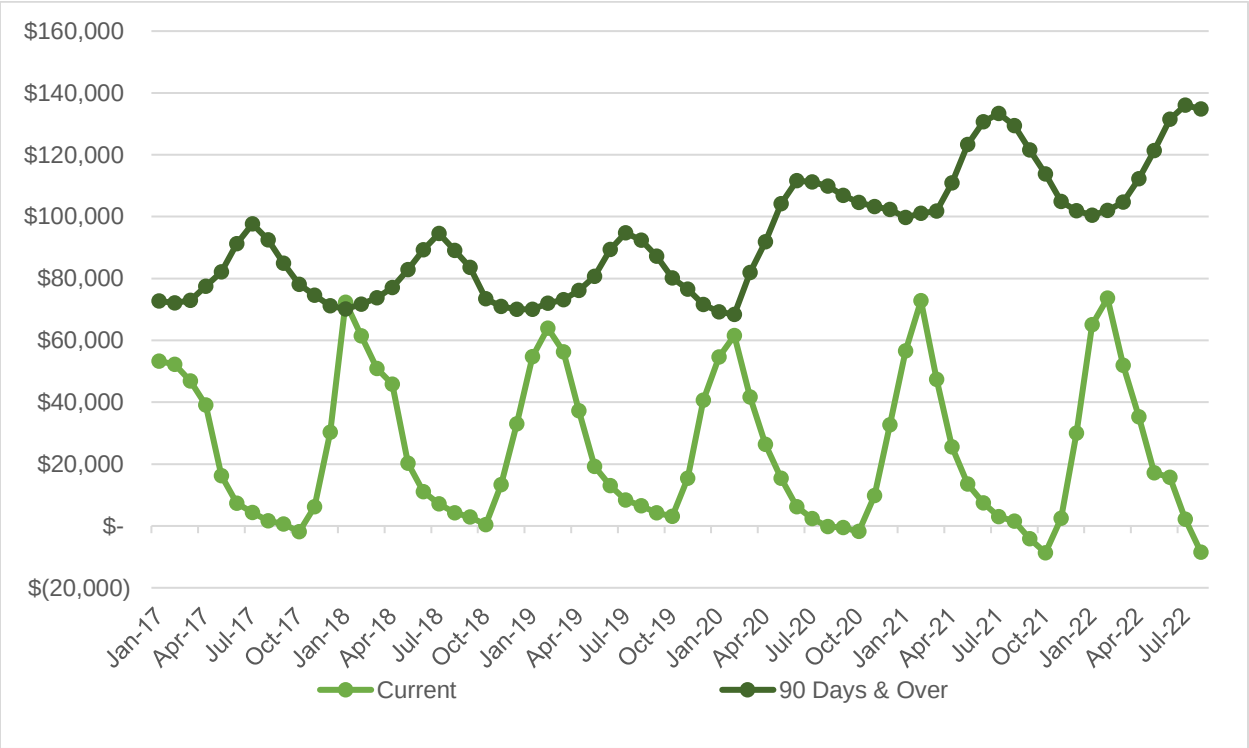
As a result of the pandemic, many families have faced challenging economic conditions, including PGW's ratepayers. The PUC's March 13, 2020, Emergency Order[21] established a moratorium during the pendency of the Proclamation of Disaster Emergency by Governor Tom Wolf. The COVID moratorium temporarily suspended service terminations due to non-payment allowing a mechanism for customers who were unable to make utility payments to maintain critical life-sustaining utility services. In addition, various other social programs or aid opportunities were developed to address pandemic caused hardships.

For instance, PGW leveraged and continues to employ robust communications (i.e., print media, TV, radio, social media, in-person community events, press releases and videos) efforts to prompt customers to seek social assistance due to financial needs. In addition to its comprehensive outreach and traditional USP, PGW implemented a temporary one-time special COVID relief plan, providing an additional $2 million in grants to payment troubled customers. Many customers at PGW took advantage of the temporary pandemic resources to help stabilize collections.

Despite these proactive measures, as illustrated in Exhibit IX-5, PGW's residential customer account balances aged 90 days and over have increased significantly, outpacing the increase in current balances since March 2020. Although PGW's multifaceted efforts have been commendable, the company's over 90-day customer receivables continue to reflect substantially higher balances than those experienced prior to the pandemic. This trend has been noted across Pennsylvania and is not unique to PGW. However, while not caused by the company, its effects must be addressed by PGW.

[21] Docket No. M-2020-3019244

Exhibit IX-5
Philadelphia Gas Works
Residential Customer Accounts Receivable Current Balances and Balances Aged 90 Days and Over
January 2017 – August 2022



Source: Data Request CS-55

Older accounts receivable balances are at increased risk for non-collection, more specifically, for larger overdue balances. PGW's service territory includes a significant percentage of low-income customers that exceeds the state average. As of the 2020 U.S. Census, roughly 19.4% of people in Philadelphia County (PGW's service territory) were in poverty versus a statewide average of 12.1%.[22] This positions PGW at an increased risk for loss from non-payment due to these levels of long-term accounts receivables. The compounding challenges presented by the pandemic and corresponding responses like the Moratorium have impacted every utility within Pennsylvania. Thus, PGW should continue its outreach endeavors and work with the Commission to seek additional measures for relief, as the pervasive economic distress from the pandemic will require a more permanent solution for all utilities within Pennsylvania.

[22] Information taken from the US Census data tables at https://www.census.gov/quickfacts/fact/table/philadelphiacountypennsylvania,PA/IPE120221#IPE120221

2. PGW is experiencing a decline in its customer performance metrics.

Under 52 Pa. Code § 62.33, PA PUC regulated natural gas distribution companies are required to report quality of service performance metrics, including the average percent of calls answered within 30 seconds (service level) and call abandonment (abandoned rate) rates. PGW's service level is defined as the percentage of calls answered within 30 seconds. Service levels are a standard of customer service performance that reflects the responsiveness of the company to customer inquiries by telephone. Similarly, PGW's abandonment rate is defined as the percentage of calls abandoned by customers prior to being answered by the company. Generally, as service levels decrease, abandonment rates increase, both reflecting lower than expected performance.

The most recent Customer Service Performance report[23] published by the PUC reflects the combined average of natural gas distribution companies (including PGW) to reflect service levels of 86%, 92%,83% and call abandonment rates of 4%, 2%, and 5% between 2019-2021. Through fiscal year 2021, PGW's customer service performance remained high, generally matching performance across the Pennsylvania. However, fiscal year 2022 (September 2021 – August 2022) reflects a degradation of its customer service performance metrics, as illustrated in Exhibit IX-6.

Exhibit IX-6
Philadelphia Gas Works
Customer Service Performance Metrics
FY 2017 – FY 2022

	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
Total number of calls handled	968,180	1,008,109	979,695	770,560	831,274	722,526
Service Level	87%	91%	90%	93%	93%	76%
Abandoned rate	9%	5%	5%	4%	5%	24%

Source: Data Request CS-54

PGW's recent degradation in customer service performance is directly related to staffing. As mentioned previously in this chapter's background, PGW's district offices were shuttered at the onset of the COVID-19 pandemic. The influx of additional staff was split between the CSO's call center and Customer Affairs' Universal Services group. During the two years following the district office closure, staffing overflows were reduced through natural attrition, as PGW did not perform any remote hiring or onboarding between March 2020 through March 2022. Furthermore, PGW has experienced increased unplanned absences and separations, coinciding with PGW's transition away from remote call center deployment, returning to full time on-site call center activity in late March 2022. PGW had sought to introduce a new class of CSRs in the spring of 2022, however, the company experienced challenges attracting the

[23] https://www.puc.pa.gov/media/2051/customer_service_performance_report2021.pdf

desired level of new staff, see Chapter XII – Human Resources' Finding and Conclusion No. 1 for more information concerning PGW's at-risk positions.

In addition, PGW experienced higher than projected call volumes in May – June 2022 due to an anomaly produced by its Weather Normalization Adjustment (WNA) charge. This anomaly resulted in a higher-than-expected total bill for some customers. Although PGW was able to temporarily suspend the WNA charge, additional review of the WNA will occur in a future PUC proceeding[24]. However, the WNA problem exacerbated PGW's call center resourcing challenges and demonstrated that PGW's call center resources were insufficient to meet customer needs during that event.

In July 2022, PGW implemented contracts for additional call center support via third parties. PGW's service level increased eight percent, rising from 78% in July to 86% in August 2022. Similarly, PGW's abandoned rate improved markedly, dropping from 24% in July to 8% in August 2022. However, the PUC auditors contend that the additional support is still too recent to fully assess its ongoing effectiveness. The additional resourcing should provide PGW with the flexibility to better respond to periods of high call volume, staffing inconsistencies, etc. Furthermore, the third parties should provide crucial support to streamline PGW's transition to a new customer information system. Thus, PGW should continue to monitor and adjust internal and external call center resources to meet demand while improving its quality-of-service performance metrics.

3. PGW's customer information system is not optimal and has reached end of life functionality.

PGW's legacy CIS is maintained internally and is a highly customized system implemented over 20 years ago. Unfortunately, the CIS has reached its end of life and needs to be replaced for both customer operations and information technology related reasons. PGW originally projected the implementation of a new CIS in October 2022 but revised its timeline due to delays from the COVID-19 pandemic and to ensure sufficient testing for the transition. Instead, PGW is now targeting September 2023 for the new CIS to go live. The new CIS will be able to verify real time payments and allow PGW to take advantage of other new technologies that address future customer expectations.

Updated software contributes positively to the efficiency of operations and supports continuing improvement and expansion of capabilities. The new CIS will provide a more modern tool that will enable new technologies to be integrated and provide more advanced customer options. However, implementation of a new CIS can create new unanticipated challenges for a utility both from a data integrity and user understanding perspective. System conversion errors can result in pervasive and disruptive billing problems which exacerbate financial stress for customers. Furthermore, resolution for such occurrences create additional action by the utility. Under 52 Pa. Code § 56.14(i), failure to bill customer accounts must be addressed by

[24] Pa. Public Utility Commission v. Philadelphia Gas Works, Docket No. R-2017-2586783

the company through an offer of payment arrangements that amortize the delayed outstanding amounts over the same period as the error occurred[25]. Therefore, PGW should continue to implement the new CIS but also sufficiently test and prepare for inevitable data and/or user challenges along the way.

4. PGW's back-office activities have increased and PGW could benefit from additional monitoring.

As discussed previously, the closure of PGW's district offices has changed how PGW delivers customer services. In response, customer activity for online and alternative avenues of services has increased significantly since the pandemic. These new types of customer interactions require more back-office work rather than live customer interactions or call handling. As shown in Exhibit IX-7, PGW began measuring some back-office activities in 2021, but does not track other data points for customer interactions, such as emails, electronic requests generated via phone contacts, etc.

Exhibit IX-7
Philadelphia Gas Works
Non-Phone/Electronic Customer Services
2021 – 2022

Type of Service	2021	2022
Online-Turn on requests	27,503	27,678
Online-turn off requests	7,743	3,878
Social medial inquiries	23	176
New Service Mailbox	n/a	11,863
PGW Online Account	6,255	12,634

Source: Data Request CS-58

As utilities migrate from traditional methods of communication, the burden to support alternative contact increases. Although there are clear advantages to more electronic communication, there are also new and unique challenges that must be addressed. Therefore, measurement of back-office activities provides management with visibility and information necessary to ensure performance is achieved. Furthermore, goals for completing back-office work are needed to ensure the company maintains certain service levels. In traditional customer service, phone calls must be taken at the customer's discretion and addressed real time whereas newer communication methods like messaging and emailing provides the utility with some grace period to respond. However, these newer tools must be reliable and meet customer expectations to provide the same level of customer satisfaction as resolving

[25] See Docket No. D-2014-2430603, Finding and Conclusion No. X-5 for additional details.

an issue over the phone. Therefore, PGW should expand reporting metrics on activities supporting electronic based customer service activities and establish goals to ensure it achieves the desired outcomes.

5. Although permanently closed, final disposition of multiple PGW district office properties are unresolved.

In early 2020, PGW had five district office locations, which provided payment services, billing inquiries, appliance services, turn on/offs, payment arrangements, assistance programs, energy grant assistance, senior citizen discounts, etc. Originally, PGW temporarily closed all district offices due to COVID. As discussed in the background, PGW reallocated in-person services originally provided by the district offices to remote and third-party provided alternatives. Based upon an internal study[26], PGW concluded that the closure of district offices did not significantly hinder payment rates. In fact, only 4.6% of customers who had previously visited a district office had not made any payments since the March 2020 district office closures. Furthermore, the analysis confirmed that the enrollment of customers in its CRP had not been affected. Given this information, PGW decided that it will permanently close the district offices.

Two of the five district office locations were leased. As of June 30, 2022, PGW discontinued one of its lease contracts and plans to terminate the remaining lease by the end of October 2022; however, the three remaining locations are owned by PGW and are no longer actively operating[27]. As discussed in greater detail in Chapter III – Corporate Governance, PGW is a municipal utility, owned by the City of Philadelphia, thus the sale and disposition of proceeds from the properties are governed by Philadelphia's City Council. The valuations for the facilities were not known during the time of audit fieldwork. Nonetheless, the PUC auditors contend that future proceeds from ratepayer-funded assets should exclusively benefit that utility's ratepayers.

Recommendations

1. Leverage pandemic and low-income resources to help reduce the overall level of outstanding customer balances and maintain outreach efforts to engage payment troubled customers.

2. Improve customer service performance through expanding call center resources.

3. Complete implementation of the replacement CIS.

[26] In the fall of 2021, PGW conducted an internal study on customers receiving in-person services at its district offices between 2014-2019 and their interactions with PGW since the closure of its district offices.
[27] Although no longer in operation, PGW is currently accruing expenses like security on this property.

4. **Establish reporting and key performance metrics for all back-office activities that support electronic, self-service, and alternative exchanges with customers.**

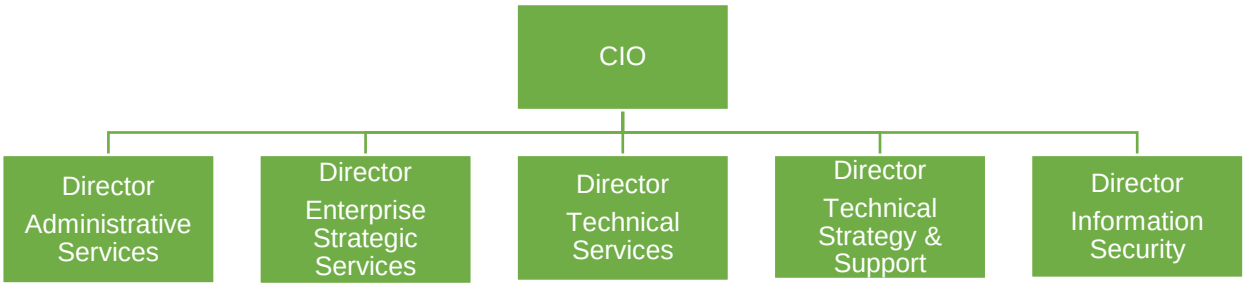
5. **Repurpose or divest interest in district offices and reallocate resources to benefit PGW ratepayers.**

X. INFORMATION TECHNOLOGY

Background

PGW's Information Services (IS) department provides information technology functions and services for the entire organization. The Chief Information Officer (CIO) maintains oversight of the department and reports to the company's President & Chief Executive Officer (CEO). The IS department is functionally divided into Administrative Services, Enterprise Strategic Services, Technical Services, Technical Strategy & Support, and Information Security. PGW's IT functions overseen by a director that reports to the CIO are spread broadly among the five divisions shown in Exhibit XII-1.

Exhibit X-1
Philadelphia Gas Works
Information Services Organizational Chart
As of August 31, 2022



Source: Data Response EM-18

Administrative Services is responsible for asset management, managing the capital and operating budgets, and oversight of the help desk. Other groups also aid in asset management and explore technical specifications and needs of hardware and software; however, Administrative Services is responsible for inventorying, budgeting, and general oversight of all IT hardware and software. As changes are identified, project management and software testing (i.e., QA) is handled by Enterprise Strategic Services. Meanwhile, Technical Services is responsible for procurement, deployment, maintenance, and support of all IT hardware (e.g., laptops, monitors, switches, servers, etc.). In this way, Technical Services handles all hardware from cradle to grave and supports Administrative Services asset management program. Conversely, on the software side, Technical Strategy & Support develops, releases, and maintains in-house enterprise business application systems and provides software support for third-party solutions. Lastly, Information Security handles all cybersecurity and IT risk management duties, including penetration testing, access review, firewall management, and security policies, standards, and guidelines. See Chapter VII – Emergency Preparedness for more information about the cybersecurity function.

The overall purpose of the IS department is to budget for, and bear responsibility for maintaining the company's IT infrastructure. For this, the department must develop a plan to implement, develop, and maintain hardware and software assets in the short and long-term. As part of this process, IS works with other departments throughout PGW to identify needs, gaps, or improvements to existing products and services. Based upon departmental needs, IT projects such as developing and implementing the new Customer Information System (CIS) for Customer Service and Collections are identified. This CIS project is a complete overhaul of the existing CIS utilizing staff and contractors across PGW, including ten employees from the IS team. The company plans to deploy the new CIS in September 2023 (See Chapter IX – Customer Service Finding and Conclusion No. 3).

PGW's CIO has taken on additional oversight responsibilities the last several years, first with the newly created Data Analytics department in January 2021 and again with Corporate Strategy in January 2022. Further discussion of the Data Analytics department can be found in Finding and Recommendation No. 2 in this chapter. The Corporate Strategy function is covered in Chapter IV – Executive Management.

Findings and Conclusions

Our examination of Information Technology included a review of the organizational structure, staffing levels, operating and capital expenses, policies and procedures, cyber security measures, employee IT training techniques and all related information. Based on our review, PGW should devote additional efforts to improve the effectiveness of its information technology operations by addressing the following:

1. IS does not use formal goals or metrics to evaluate departmental performance.

Organizations record and track data inputs and statistics to develop indicators that can measure performance in every aspect of their business. These indicators can be broad and ambiguous to any department or business activity (e.g., absentee and safety rates, budget performance, overtime expenses, etc.), designed specifically for a department's work product or business activity, etc. Most importantly, the metric needs to be capable of establishing a baseline for performance so end-users can evaluate productivity and efficiency, identify deficiencies, and propose goals to target.

PGW's IS department utilizes several tools to monitor and track the health and status of assets. These tools track and assist in managing unplanned system outages, project backlogs, helpdesk tickets, alerts, and on-call schedules. These tools serve as a valuable resource for performing various tasks; however, they do not provide insight into the productivity and performance-level of these tasks outside the department. There does not appear to be high-level snapshots of the department's present and recent workload, productivity, or performance provided to the executive team or other departments within PGW. Instead, any IS metric is rolled into companywide corporate goals. However, analysis of previous PUC issued management audits indicates IS

used several performance metrics back in fiscal year 2014 that could be reported company-wide.

The 2014 metrics spanned financial-related functions (e.g., operating and capital budget variance, percent on-budget delivery projects), internal processes (e.g., percent of projects on time, sick leave rates, open help desk tickets stratified by days, etc.), staffing (e.g., average days to select candidate, intern ratio to full-time employee, etc.), and department-wide indicators (e.g., percent of department goals achieved, average percent of goals met per employee). It should be noted that performance metrics are just a tool and do not always provide a clear picture of the efficiency or effectiveness of a department. Therefore, these past metrics may not be the best snapshot today. Performance indicators are limited by how useful they are in making decisions. Metrics should be periodically reviewed every few years to determine their value to the organization and whether the metric needs updated, removed, or replaced.

Ultimately, IS should have metrics evaluating performance that management can review periodically to gain insight into the department's workload and performance. Whether IS coordinates with Data Analytics to develop and create performance metric dashboards within Tableau, as discussed in this chapter's Finding and Recommendation No. 2, or they develop metrics internally, transparent performance metrics evaluating IS productivity and efficiency should be readily available and accessible to management. Well-defined, consistent, and standardized performance metrics provide the organization with a tool to assist in IT evaluation without possessing exceptional knowledge of the function.

2. PGW's implementation of interactive data visualization software varies significantly between departments.

As previously discussed in the background section of this chapter, PGW created a Data Analytics department in January 2021. The Data Analytics Vice President (VP-DA) maintains oversight of this department. Prior to the creation of this department, the VP-DA held a similar data reporting and analytics role within Operations with a focus on data management, data warehousing, and analytics development. The company believed the entire organization could benefit from this function and elevated this function into its own group reporting to the CIO.

Data Analytics is trying to move the organization away from locally stored data and manually updated spreadsheets and reports, and towards a shared data repository and real-time dashboards. The main tools Data Analytics relies on are Tableau and SQL Server Reporting Services (SSRS). Tableau is the newer, primary platform, while SSRS remains in use as the company transitions to newer platforms. SSRS is the more standard reporting tool, relying on numbers and values. Tableau is the more modern platform, a web-based product specializing in interactive data visualizations, charts, and graphs. Utilizing relational databases, online analytics processing, and cloud databases, Data Analytics can create dynamic dashboards and charts that update every time they are accessed.

Despite the significant effort and resources PGW and Data Analytics has put into modern reporting tools, like many new technologies, adoption is slow and haphazard, varying greatly among departments. During field work, the audit staff found several departments that were or were planning to work with Data Analytics on their dashboards. For example, Corporate Planning was an early adopter of Tableau, creating a dashboard for the PFMC Board of Directors. A customer call center performance dashboard was in development. In addition, the finance department began working with Data Analytics to analyze operating and capital budget information that could translate into Tableau. Conversely, IS (as discussed in Finding and Conclusion No. 1) and HR were not using Tableau nor were they maintaining their own formal departmental metrics.

The audit staff acknowledge that the data analytics function as a centralized resource is new to PGW and has support from the company's CEO. However, implementation of Tableau is seen as a culture change for PGW due to the shift from presenting numbers and values to more interactive charts and graphs. Ultimately, this shift should reduce time spent within each individual department on manually pulling data and creating charts so that each department can better spend their time interpreting and using the data.

Recommendations

1. **Establish IS departmental performance metrics for transparency, evaluation, and improvement of productivity and efficiency.**

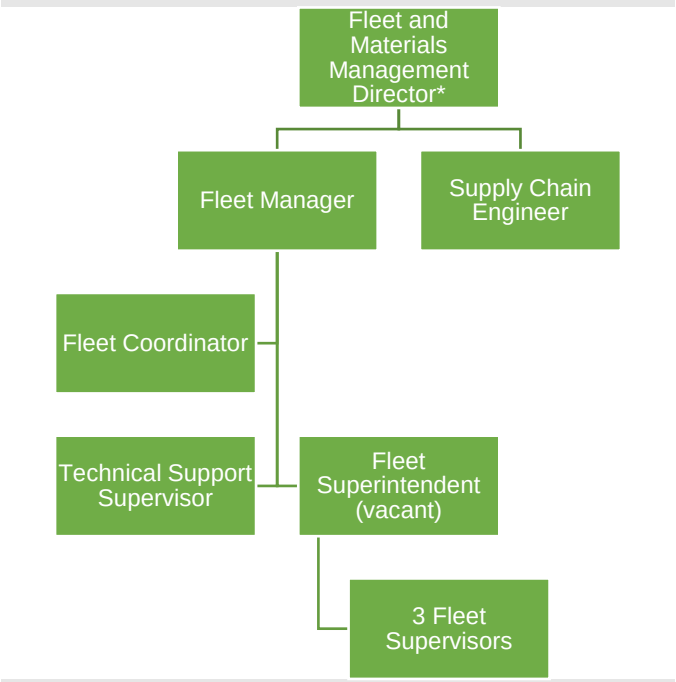
2. **Leverage and integrate data visualization software consistently across PGW.**

XI. FLEET MANAGEMENT

Background

PGW's Fleet department (Fleet) is responsible for the administration and management of the company's vehicles, motorized equipment, trailers, etc. The Fleet department uses several tools to manage its fleet, the Fleet Management System *M5* (*M5*), telematics[28], and the fuel management system *FuelForce*. In general, Fleet is responsible for all vehicle maintenance, annual capital and operating budget creation, asset life cycle of vehicles, etc. From 2017 through 2022, the Fleet department's complement remained consistent, fluctuating between 34 to 36 employees. These employees and all fleet functions are overseen by the Fleet Manager, who reports directly to the Director of Fleet and Materials Management as shown in Exhibit XI-1. Some of the Fleet Manager's responsibilities include monitoring reports from *M5*, ensuring vehicles are not out of service for excessive periods of time, and reviewing exceptions reports for fuel transactions and time and labor management.

Exhibit XI-1
Philadelphia Gas Works
Fleet Department Organizational Chart
As of March 2022



*: The Fleet and Materials Management Director has other direct reports who are not shown on this chart.
Source: Data Request MM-15, FT-12, and interviews

[28] Wireless telematics devices are installed in most PGW vehicles to collect and transmit GPS data and data on vehicle use.

In March 2022, the 3 fleet supervisors [29] oversaw 1 fleet clerk, 2 mobile communications specialists[30], who comprise PGW's radio shop, and 26 mechanics (including foremen). PGW has multiple classifications of mechanics (e.g., equipment, auto, air tool, and welder) assigned to one of PGW's five fleet facilities across three work shifts. There is one fleet supervisor per shift with three shifts to provide for 24/5 coverage. To limit downtime of vehicles, mechanics perform most of the preventative maintenance work on the second and third shifts. First shift mechanics typically perform repair work and complete preventative maintenance as feasible.

In addition, as materials are needed to repair vehicles, the Supply Chain Engineer acts as a liaison between the Fleet and Materials Management departments to coordinate procurement activities. Monthly, the Supply Chain Engineer downloads reports from the fleet management system to calculate the Fleet department's performance metrics for the month. See Exhibit XI-3 for more information about Fleet's key performance metrics.

Additionally, the Supply Chain Engineer is involved in ensuring that PGW's North Operations Center (NOC), which is expected to be completed in the first half of 2023, is built to support the needs of both departments. In addition, there are plans to expand an existing facility to become a South Operations Center (SOC). PGW plans to move most of its mechanics out of its other facilities and into the NOC and SOC with the North Operations Center becoming the primary vehicle maintenance facility in coordination with the movement of Operations field crews. These new facilities will give Fleet dedicated and pre-planned space to perform vehicle maintenance. It will also centralize the Fleet and Operations departments enabling the mechanics to perform preventative maintenance without significant travel time.

When a department needs additional vehicles or an existing vehicle can no longer be maintained, the Technical Support Supervisor along with the Supply Chain Engineer are involved in PGW's annual vehicle acquisition process. After receiving user input from the departments, vehicle specifications are established prior to obtaining bids from local dealerships. Dealerships are asked to provide lease and buy components for each vehicle quote.

To manage the fleet, PGW uses a fleet management system, *M5*. This web-based system acts as the database for PGW's fleet records. The fleet management system is used to create fleet work orders, track mechanic labor (time and costs), track costs of parts and materials, and create reports to track vehicle repair expenses, mechanic efficiency, vehicle downtime, and departmental billing. During fieldwork, PGW's fleet management system was not integrated with *FuelForce* for fueling transactions or telematics, which is installed in most PGW vehicles, for usage information. Instead, mechanics manually record mileage at the time they are servicing

[29] In August 2022, PGW planned to fill the vacant Fleet Superintendent position. While this position was vacant, the Fleet Supervisors reported directly to the Fleet Manager.
[30] The radio shop was moved from under Information Services to Fleet in 2021 to improve efficiencies between the fleet and radio shop functions.

the vehicle. See the Findings and Conclusions section of this chapter for more information about inefficiencies within the Fleet department.

As of March 2022, PGW had 841 vehicles and equipment in its fleet. See Exhibit XI-2 for the number of vehicles and equipment by classification.

Exhibit XI-2
Philadelphia Gas Works
Vehicles and Equipment by Classification
As of March 2022

Classification	Number of Vehicles
Passenger Car & SUV	137
Van & Light Truck	369
Medium and Heavy-Duty Truck	135
Equipment & Trailer	200
Total Vehicles and Equipment	**841**

Source: Data Request FT-3

Findings and Conclusions

Our examination of the Fleet Management function included a review of policies and procedures, staffing, performance metrics, vehicle acquisitions, maintenance, and disposal procedures, reporting and expenses. Based on our review, PGW should improve the effectiveness and efficiency of its fleet management function by addressing the following:

1. PGW's fleet department has several inefficient processes.

As mentioned in the background section of this chapter, the Fleet department performs its duties over five facilities and three shifts. A fleet supervisor oversees each shift of mechanics and uses a few metrics to monitor performance. For instance, vehicle availability and performing preventative maintenance on schedule are metrics consistently met by the Fleet department whereas performance relative to meeting planned work and wrench time metrics are frequently missed as shown in Exhibit IX-3.

Exhibit IX-3
Philadelphia Gas Works
Fleet Key Performance Metrics Dashboard
For Fiscal Year 2022

Performance Metric	FY 2021 Target	FY 2021 Actual	FY 2022 Target	FY 2022 Actual
Planned Work	50%	41.4%	50%	40.8%
Preventative Maintenance Schedule	>90%	92.0%	>90%	95.1%
Availability	>96%	96.9%	>96%	96.8%
Wrench Time	>67%	62.7%	>67%	63.1%
PM Efficiency*	>85%	71.2%	>100%	104.5%

* During this period, the metric for PM Efficiency changed to reflect only work with union negotiated times to complete
Source: Data Requests FT-2 and FT-18

Although the metrics in Exhibit IX-3 are influenced by several factors, the PUC auditors contend that several changes could be made to improve the efficiency and performance of Fleet. First, when a vehicle needs service, Fleet uses phone calls and e-mails to schedule the vehicle for service. However, the Fleet department must track down vehicles when Operations personnel fail to bring vehicles in for servicing as requested. In addition, mechanics are often responsible for picking up and dropping off vehicles for preventative maintenance. The Supply Chain Engineer tracks a metric for indirect hours spent each month. For the month of August 2022, mechanics spent nearly 200 hours (~5% of total hours) traveling to get vehicles to perform preventative maintenance.

Secondly, the Fleet department needs to transfer tools and equipment between locations, thereby decreasing efficiency. For example, the Fleet department only has two scanners, one of which is needed by another facility, so the item is transferred between facilities using company resources (i.e., employee's time and transportation costs). Sometimes, this transfer can align with other work duties, but those opportunities do not always exist. Although the PUC audit staff acknowledge that maintaining infrequently used equipment would be uneconomical, this example further illustrates support for PGW's current facility consolidation efforts. It is anticipated that the new consolidations will generally eliminate the need to shuttle equipment between locations thereby solving this concern.

A third inefficiency noted is the lack of integration between the fuel maintenance and telematics systems with the fleet management system. PGW's telematics software provides GPS location of all vehicles and certain data points (i.e., mileage and hours used) depending on the vehicle model. However, this telematics data no longer populates automatically in the *M5* software because it was populating information incorrectly. The Resource Management group within PGW is purportedly working on correcting irregularities with the transfer of telematics data into *M5*. Similarly, when employees fill up at PGW's existing fuel pumps, mileage information is not transferred to the fleet management system. Instead, mechanics must manually record the mileage when a vehicle is serviced. In the future, the new fuel pumps planned for the NOC are

expected to have software that can integrate with *M5*. This integration of fuel transaction data is expected to improve preventative maintenance by better aligning specific vehicle maintenance with actual needs rather than a preset time interval.

The final inefficiency noted involved non-stocked parts. Specifically, when non-stocked parts are ordered, the parts are delivered to a centralized location before being sent to the requesting facility. This results in additional lag time until the part is received and expense for handling and transporting the materials. Furthermore, because these materials are non-stocked items, the Supply Chain Engineer must manually update work orders to record when the non-stocked materials are used. Due to the Supply Chain Engineer's other responsibilities, there is often a backlog of work orders waiting to be updated. Although centralization of PGW facilities will likely improve the handling of non-stocked items, it will not address the manual entry requirements for these items. Manual processes can lead to data integrity problems due to the potential for human error and data entry mistakes.

As noted throughout this report, the building consolidation and creation of the NOC will mitigate or improve many of the inefficiencies noted. It is anticipated that there will be cost savings and efficiency improvements from the elimination of duplicative equipment and reducing transfers of materials, tools, and equipment between the various fleet garages. Nonetheless, while the building consolidation effort is underway, the Fleet department should take interim steps towards improving efficiencies and productivity. Only about one third of the mechanics' time is spent on performing actual repair work, thus there is a great opportunity to improve efficiency by eliminating non-wrench time. Therefore, the Fleet department should seek better coordination with the Operations department to ensure its employees are not spending excessive time on less productive, nonvalue-added services.

Additionally, there are still several manual processes that could be eliminated or reduced leading to better transparency of the costs of PGW's fleet. Specifically, automation and integration between *M5* and the Fleet department's associated systems (e.g., the inventory management system, *FuelForce,* and telematics) would ensure that real-time and accurate data is being transmitted for true cost benefit analysis, informed decision making, and future initiatives. Therefore, PGW should work to improve efficiencies, leverage its new facility, reduce manual processes, and ensure accountability throughout the organization.

Recommendations

1. Improve efficiencies within the fleet department.

XII. HUMAN RESOURCES AND DIVERSITY

Background

PGW's Human Resources (HR) function is led by the Vice President of HR & Organizational Development, who reports to the Senior Vice President, Administration and General Counsel. HR is split into three areas, each led by their respective director as shown in Exhibit XII-1. Those sections are Administration, Staffing, Wellness & Special Projects, and Organizational Development.

Exhibit XII-1
Philadelphia Gas Works
Human Resources Organizational Chart
As of August 2022

Source: Data Request EM-18

PGW's HR Administration group handles training, growth, and performance correction of PGW's management level employees. This group also coordinates onboarding of new hires, including administration of their compensation and benefits. The company also compares its compensation levels with peers routinely. For instance, a 2020 Korn-Ferry study indicated PGW is keeping pace and alignment with both the median and 37.5 percentiles of the Utilities market. In addition, PGW offers current and retired employees medical, vision, dental, prescription, and life insurance. PGW also offers a pension, as discussed in Chapter V - Financial Management, after a 5-year vesting period. They also maintain HR policies and procedures.

PGW uses *ADP Vantage HCM* as its Human Resource Information System (HRIS), which handles all basic HR functions such as payroll, employee information, and benefits. The HRIS can also generate employee performance reviews. Managers can add goals for employees and track their progress. There are also succession planning modules that can help managers identify and monitor potential successors using a standard 9-box approach.

The Staffing, Wellness & Special Projects function is responsible for the wellness incentive program, the annual performance management process, and recruiting and hiring throughout PGW. The wellness incentive program gives employees a chance to earn reductions on health plan copays by completing a certain number of activities such as gym visits or health coaching. All management level employees are required to be evaluated through the annual performance management process. HR's role is to review employee performance reviews for consistency and fairness while addressing any potential concerns such as underperformance. This group also develops recruitment strategies such as partnering with local high schools and colleges to develop specific curriculum that will prepare students for immediate hire within the natural gas industry. PGW plans to increase these efforts by establishing metrics to better monitor the effectiveness of these programs[31].

The Organizational Development group assists managers throughout PGW with succession planning. This group also handles corporate trainings, affirmative action plan (AAP), and employee performance. For instance, recently promoted management employees are enrolled in a development program where Organizational Development will provide training and coaching on the duties and responsibilities of management roles.

The Safety, Security, and Business continuity department reports directly to the Senior VP Administration & General Counsel. The Safety department maintains a comprehensive safety and health manual that covers everything a field operative can expect to encounter. These manuals are updated on a regular basis. PGW views employee and environmental safety as two of the organization's core values.

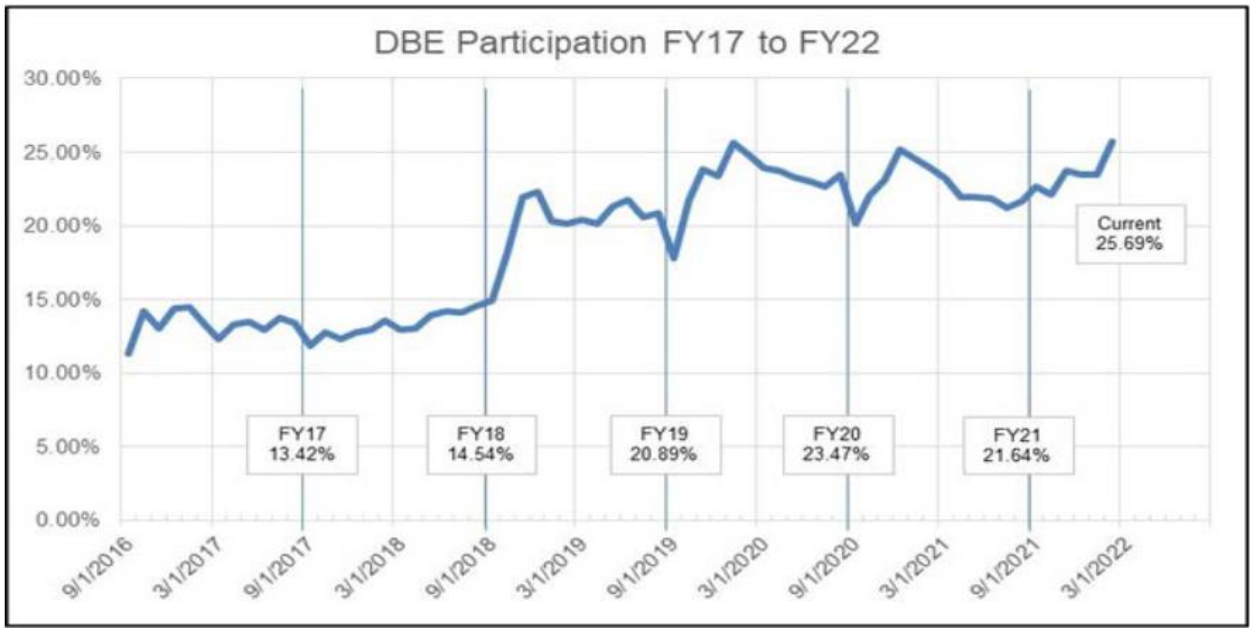
Diversity

The Pennsylvania Public Utility Commission (PUC or Commission) has encouraged utilities to proactively improve diversity in their workforce and purchasing efforts for more than two decades. In March of 1992, the Commission issued a Secretarial letter directing all jurisdictional utilities affected by Section 516 of the Public Utility Code (i.e., utilities whose plant-in-service exceeds $10 million) to file quarterly diversity status reports with the Commission. In May of 1994, the Commission issued an Order directing Section 516 utilities to file diversity status reports semi-annually rather than quarterly, to submit EEO plans annually, and to file certain diversity procurement data. In February 1995, the Commission adopted Chapter 69 regulations which encouraged utilities to include diversity efforts as a component of their business strategy. Later, in March of 1997, the Commission's diversity filing requirements changed from semi-annual to annual. The Commission is currently reviewing its diversity requirements and issued its final rulemaking order at Docket L-2020-3017284 at its April 14, 2022, Public Meeting.

[31] For FY 2024 PGW has a corporate objective to: develop and scale partnerships with high schools, colleges, universities, technical schools, and local training programs to increase application and hiring rates of employment candidates from those partnerships. Define and establish baseline metrics in FY 2023 to be achieved in FY 2024.

PGW is currently in compliance with the PUC's ongoing annual diversity filing requirements, included in its diversity report are sections related to PGW's diversity policies on both procurement and human resources. Although not required to comply with, the Office of Federal Contract Compliance Program standards, the Board requested PGW develop an affirmative action plan anyway, which they update annually. PGW also intends to hire a new director of diversity, equity and inclusion (DEI) in fiscal year 2023 to help further increase inclusivity in an attempt to attract, develop, and retain a diverse workforce. In addition, PGW tries to procure goods and services from Disadvantaged Business Enterprises (DBE) by utilizing their procurement department's outreach programs to not only attract but educate DBE's how to participate in PGW's bid process. The company's use of DBEs is highlighted in Exhibit XII-2 and demonstrate a consistent commitment to purchase from DBEs.

Exhibit XII-2
Philadelphia Gas Works
DBE Participation Performance
For 2017 through 2022



Source: Company provided data

Findings and Conclusions

Our examination of the HR functional area included a review of assigned responsibilities, policies and procedures, the HRIS capabilities, training and employee development, compensation and benefits, diversity programs, and safety initiatives. Based on our review, PGW should initiate or devote additional effort to improving the efficiency and/or effectiveness of the HR functional area by addressing the following:

1. PGW's retention rate and ability to onboard new employees are not optimal.

As discussed in Chapter IV – Executive Management and shown in Exhibit IV-2, PGW's overall staffing levels have decreased by 115 employees from 2017 through 2022.

As demonstrated and like most companies, PGW has been experiencing difficulties in recruiting new talent to their organization because of the COVID-19 pandemic. For instance, PGW often used job fairs and other recruitment events to interface with potential candidates. However, the company has reported that a number of these events were canceled or had light attendance since the start of the pandemic. Therefore, PGW started using different avenues to attract candidates and improve the hiring process with enhanced electronic communications. Nonetheless, PGW management reported that they are still struggling to attract new candidates, sometimes losing them to similar companies in the area.

In response, PGW developed a corporate objective for FY 2023 to implement an employee retention program for job groups identified as at-risk positions in each department. PGW created a steering committee (committee) that met with the VP of each department to identify jobs that the departments considered "at-risk". The committee reviewed the retention and turnover rates of positions and considered hard to fill or positions requiring specialized expertise or experience. In the third quarter of 2022, the following positions were identified as the top "at-risk" positions as illustrated in Exhibit XII-3 by their high turnover rates.

Exhibit XII-3
Philadelphia Gas Works
"At-Risk" Job Retention & Turnover Rates
For 2017 through 2022

Job Group	Retention Rate	Turnover Rate
Customer Affairs Utility Reps	71%	96%
Engineers – Operations	42%	85%
Engineers – Gas Management	75%	46%
Business Application Specialists	45%	114%
Enterprise Solution Engineers	63%	38%

Note: Retention Rates and Turnover Rates are based on 5-year measurement period.
Retention Rate = (# of employees who remained during 5-year period / # of employees at start of 5-year period) x 100
Turnover Rate = (# of retained employees over measurement period / # exited employees over measurement period) x 100
Source: Data Request HR-35

The committee also held focus groups with current employees in "at-risk" positions to identify factors that help retain or contribute to departure. Identified factors for reasons employees left included the following:

- Lack of remote work
- Competitors' higher salaries/signing bonuses
- Philadelphia residency requirements
- Rigidity regarding use of leave
- Overworked
- Building environment

PGW also reviewed exit interview data from the past five years for departing employees in "at-risk" positions and found it corresponded to focus group reasons for leaving. PGW then began working to mitigate negative factors while promoting its strengths. One example where PGW made a change was that PGW worked with the union and City of Philadelphia to lift the Philadelphia residency requirement for its employees. As of May 2022, PGW employees are no longer required to reside within Philadelphia city limits[32]. Similarly, PGW has begun to improve its building environment by renovating its headquarters and moving staff from older outdated offices. In addition, PGW was able to raise pay for customer service representatives in mid-2022 to help attract and retain new CSRs.

As highlighted, PGW has taken positive steps to improve retention and reduce factors that historically contribute to turnover. However, the changes PGW implemented may take some time to determine if these changes will make a material difference. High turnover is detrimental due to the cost to hire and train new employees, loss of knowledge, increased operating costs if forced to outsource, etc. Therefore, other changes may be necessary to fully address employee retention concerns. Some factors like pay, leave use, and remote work flexibility may be difficult to change, nonetheless, these factors may need to be addressed for PGW to fully address turnover and/or retention concerns.

2. PGW's OSHA Recordable Incident and DART Rates are higher than industry average.

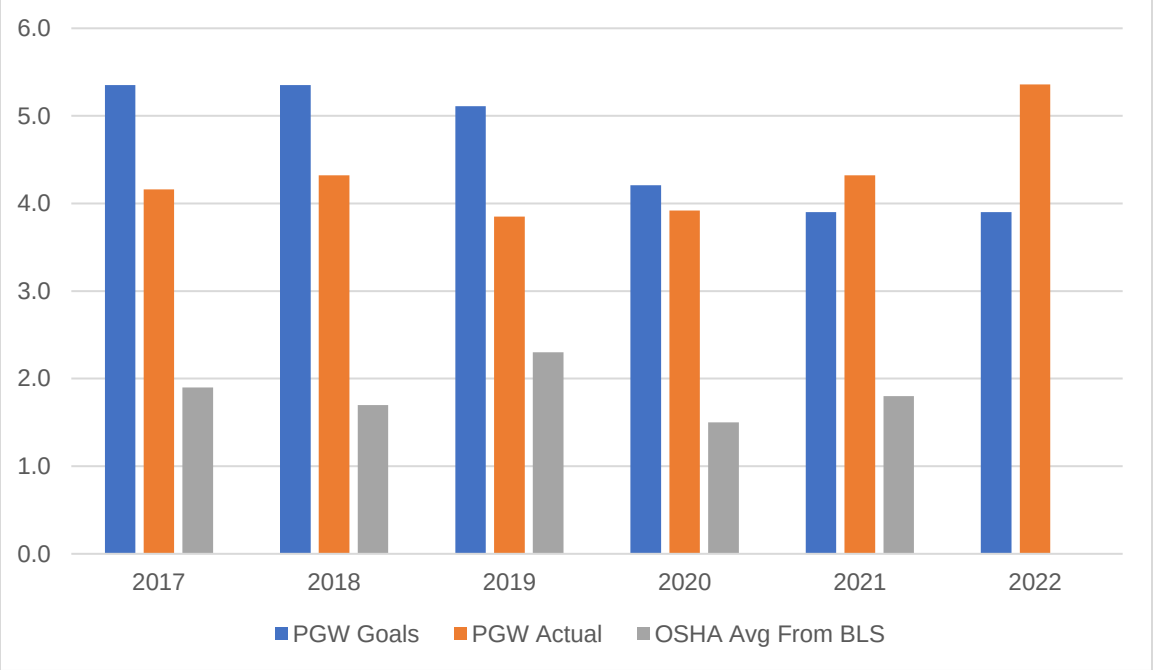
Although PGW, as a municipal entity, is not required to follow OSHA regulations, PGW does adhere to OSHA reporting standards for injuries and data tracking. OSHA recordable incidents are work-related injuries, illnesses, and fatalities that must be recorded by employers according to OSHA standardized guidelines. Injuries are considered by OSHA to be work-related when an event or exposure in the work environment causes or contributes to the condition.

PGW views employee and environmental safety as two of the organization's core values. PGW has two company-wide Safety Committees (Manager's Safety Committee and the Union Management Safety Committee) which both meet bi-monthly. Additionally, there are six department specific committees and one general Office Safety Committee, each comprised of union and management employees Safety Committees focus on and review any recent accidents, near misses, industry trends,

[32] Prior to May 2022, PGW employees were required to reside within the City of Philadelphia by one year of their hire date.

current events, etc. This information is then used to develop monthly topics that are shared with all employees. As an overview of PGW's program, the company's reportable incident rates are presented in Exhibit XII-4.

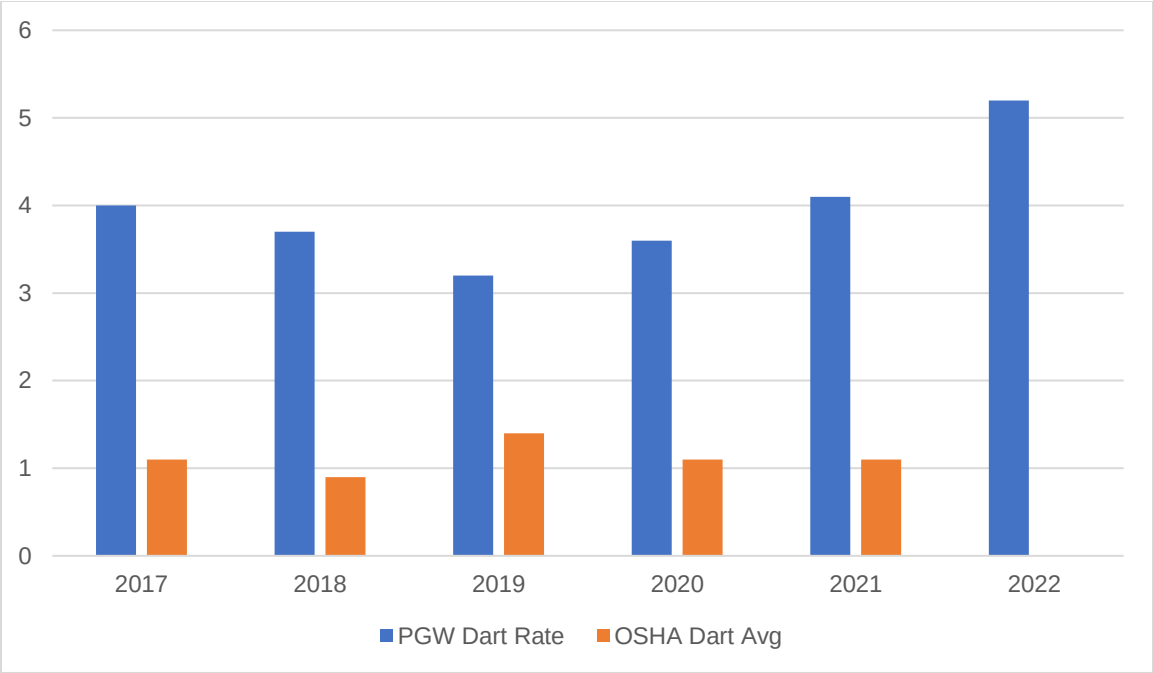
Exhibit XII-4
Philadelphia Gas Works
OSHA Recordable Incident Rate
For 2017 through 2022



Note: 2022 BLS.gov website data was not available at time of report
Source: Data Request HR-15, HR-16, and BLS.gov website

In addition, OSHA also uses DART rate (Days Away, Restricted, or Transferred) as one of its employee safety measures. The DART Rate is a function of the number of injuries and illnesses that cause employee hours to be away, restricted or transferred from their normal duties, relative to the DART benchmark of 200,000 hours per year. PGW does not set goals based on DART. Instead, injury goals are based on the number of Lost Time Injuries and are tailored to each department. Still, a comparison of PGW's DART rate to the industry average is shown in Exhibit XII-5.

Exhibit XII-5
Philadelphia Gas Works
Days Away Restricted or Transferred (DART)
For 2017 through 2022



Note: 2022 BLS.gov website data was not available at time of report
Source: Data Request HR-15 and BLS.gov website

As shown in Exhibits XII-4 and XII-5, PGW's Recordable Incidents and DART rates are higher than the industry average indicating opportunities for improvement. In addition, PGW's recordable incident rate exceeded its goals in 2021 and 2022. PGW has begun taking steps towards improving safety culture by partnering with the National Safety Council (NSC) to identify employee's perception of safety culture and developing a roadmap to move towards a more safety-oriented culture as discussed in Finding and Conclusion No. 2 within Chapter IV – Executive Management. In addition, PGW has begun implementing *Tableau* to improve employee injury tracking to identify safety/injury trends. *Tableau* will also serve as a central database for incident reporting and will also be able to report real-time data to VPs and other management employees. However, PGW's performance relative to the averages of the natural gas industry clearly demonstrate the need for continuous and even expanded efforts on safety. Although the NSC initiative will likely lead to additional safety efforts, PGW should explore all opportunities to improve safety numbers.

Recommendations

1. Implement strategies for recruitment and retention of "at-risk" positions.

2. Drive safety performance to meet industry standards.

XIII. ACKNOWLEDGEMENTS

We wish to express our appreciation for the cooperation and assistance given to us during this Management and Operations Audit by the officers and staff of Philadelphia Gas Works.

This audit was conducted by Krystle Daugherty, Michael Flynn, Jennie Banzhof, Barry Keener, Michael Savage, and Evan Baker of the Management Audit Staff of the Bureau of Audits.

XIV. APPENDICES

Appendix A Financial and Operating Data Statistics

PHILADELPHIA GAS WORKS
Financial and Operating Data Statistics

DATA AND STATISTICS	2017	2018	2019	2020	2021	Compound Growth
OPERATING REVENUE ($)						
Residential	$ 487,112,834	$ 540,064,947	$ 511,351,261	$ 468,788,740	$ 488,720,460	0.1%
Commercial	88,822,788	99,870,187	98,385,168	81,387,885	96,370,108	1.6%
Industrial	44,467,719	55,770,882	66,448,399	63,266,110	68,129,162	8.9%
Other	6,669,958	7,804,161	7,364,964	7,436,252	14,637,731	17.0%
Total Operating Revenue	**$ 627,073,299**	**$ 703,510,177**	**$ 683,549,792**	**$ 620,878,987**	**$ 667,857,461**	1.3%
OPERATION & MAINTENANCE (O&M) EXPENSES ($)						
Production Maps and Records	-	-	-	-	-	0.0%
Gas Well Expenses	-	-	-	-	-	0.0%
Field Line Expenses	-	-	-	-	-	0.0%
Field Compressor Station Expenses	-	-	-	-	-	0.0%
Field Compressor Fuel and Power	-	-	-	-	-	0.0%
Field Measuring and Regulating Station Expenses	-	-	-	-	-	0.0%
Other Expenses	-	-	-	-	-	0.0%
Rents	-	-	-	-	-	0.0%
Maintenance of Structures and Improvements	-	-	-	-	-	0.0%
Maintenance of Producing Gas Wells	-	-	-	-	-	0.0%
Maintenance of Field Lines	-	-	-	-	-	0.0%
Maintenance of Field Compressor Station Equip.	-	-	-	-	-	0.0%
Maintenance of Field Measuring and Reg. Equip	-	-	-	-	-	0.0%
Maintenance of Other	-	-	-	-	-	0.0%
Total Manufactured Gas Production Expenses	$ 3,236,860	$ 3,848,469	$ 4,094,999	$ 3,550,607	$ 4,734,198	7.9%
Total Gas Production Operation Expenses	**$ 3,236,860**	**$ 3,848,469**	**$ 4,094,999**	**$ 3,550,607**	**$ 4,734,198**	0.0%
Natural Gas Well Head Purch., Segment - Interco.	-	-	-	-	-	0.0%
Natural Gas Transmission Line Purchases	-	-	-	-	-	0.0%
Natural Gas City Gate Purchases	188,903,878	202,102,919	191,622,210	129,169,471	220,792,065	3.2%
Other Gas Purchases	-	-	-	-	-	0.0%
Purchases Gas Cost Adjustments	-	-	-	-	-	0.0%
Purchased Gas Expenses	2,591,662	3,162,215	2,651,908	1,481,385	2,705,942	0.9%
Gas Withdrawn from Storage - Debit	30,129,529	36,725,048	34,244,287	21,134,996	24,393,021	-4.1%
Gas Delivered to Storage - Credit	(34,456,749)	(40,127,008)	(28,977,804)	(17,831,829)	(43,072,566)	4.6%
Gas Used for Other Utility Operations-Credit	(7,877,398)	(10,296,580)	(9,844,012)	(5,056,921)	(6,850,693)	-2.8%
Other Gas Supply Expenses	7,367,592	9,351,351	9,187,169	6,225,436	6,825,191	-1.5%
Total Gas Supply Operation Expenses	**$ 186,658,514**	**$ 200,917,945**	**$ 198,883,758**	**$ 135,122,538**	**$ 204,792,960**	1.9%
Wells Expense	$ -	$ -	$ -	$ -	$ -	0.0%
Lines Expense	-	-	-	-	-	0.0%
Compressor Station Expense	-	-	-	-	-	0.0%
Compressor Station Fuel and Power	-	-	-	-	-	0.0%
Measuring and Regulating Station Expenses	-	-	-	-	-	0.0%
Gas Losses	-	-	-	-	-	0.0%
Storage Well Royalties	-	-	-	-	-	0.0%
Other Expenses	-	-	-	-	-	0.0%
Maintenance of Structures and Improvements	-	-	-	-	-	0.0%
Maintenance of Reservoirs and Wells	-	-	-	-	-	0.0%
Maintenance of Lines	-	-	-	-	-	0.0%
Maintenance of Compressor Station Equipment	-	-	-	-	-	0.0%
Maintenance of Other	-	-	-	-	-	0.0%
Operating Supervision and Engineering	1,161,692	1,332,113	1,343,656	1,646,569	1,820,184	9.4%
Compressor Station Labor and Expenses	2,891,587	3,750,777	4,098,105	3,451,597	3,573,747	4.3%
Mains Expenses	-	-	-	-	-	0.0%
Measuring and Regulating Station Expenses	146,223	141,040	151,665	65,670	144,798	0.0%
Transmission and Compression of gas by Others	273,327	342,312	286,484	353,106	214,606	0.0%
Other Expenses	-	-	-	-	-	0.0%
Rents						0.0%
Maintenance Supervision and Engineering	688,096	642,643	666,758	628,346	743,114	1.6%
Maintenance of Structures and Improvements	1,078,794	1,379,358	1,038,040	1,069,177	1,308,867	3.9%
Maintenance of Gas Holders	511,550	403,249	2,635,765	3,610,807	1,413,840	22.5%
Maintenance of Purification Equipment	14,671	16,430	18,201	14,131	16,942	2.9%
Maintenance of Liquefaction Equipment	572,525	653,858	607,894	905,051	1,190,581	15.8%
Maintenance of Vaporizing Equipment	950,706	942,372	1,447,361	1,231,902	1,451,571	8.8%
Maintenance of Compressor Station Equipment	546,764	800,501	352,089	605,270	231,995	-15.8%
Maintenance of Measuring and Reg Station Equip.	143,252	319,015	149,791	142,460	262,167	12.8%
Maintenance of Communication Equipment	-	-	-	-	-	0.0%
Maintenance of Other Equipment	1,262,294	1,110,973	1,195,918	1,233,227	1,170,100	0.0%
Total Gas Storage, Terminating & Processing Exp.	**$ 10,241,481**	**$ 11,834,641**	**$ 13,991,727**	**$ 14,957,313**	**$ 13,542,512**	5.7%

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PHILADELPHIA GAS WORKS
Financial and Operating Data Statistics

DATA AND STATISTICS	2017	2018	2019	2020	2021	Compound Growth
Operation Supervision and Engineering	$ 3,261,383	$ 3,784,277	$ 3,369,512	$ 3,078,911	$ 3,390,404	0.8%
Distribution Load Dispatching	1,613,662	1,713,522	1,748,044	2,065,615	2,173,144	6.1%
Mains and Services Expenses	4,803,122	5,068,307	4,718,993	4,419,820	5,099,587	1.2%
Measuring and Reg. Station Expenses - General	2,312,272	2,258,471	2,314,061	2,261,621	2,208,060	-0.9%
Measuring and Regulating Station Expenses - Industrial	138,231	123,459	100,560	151,087	198,899	7.5%
Measuring and Regulating Station Expenses - City Gate	555,812	592,581	627,616	654,174	677,313	4.0%
Meter and House Regulator Expenses	16,336,026	16,768,468	15,719,375	13,611,446	14,288,624	-2.6%
Customer Installation Expenses	1,394,286	3,046,974	3,196,246	6,281,772	4,717,860	27.6%
Other Expenses	13,205,419	11,397,504	9,858,864	9,161,335	9,901,464	-5.6%
Rents	5,397	5,297	3,947	8,586	6,260	3.0%
Maintenance of Supervision and Engineering	311,877	305,835	233,883	277,685	281,051	-2.1%
Maintenance of Structures and Improvements	-	-	-	-	-	0.0%
Maintenance of Mains	26,995,443	28,961,133	28,774,369	26,159,050	27,297,988	0.2%
Maintenance of Compressor Station Equip.	-	-	-	-	-	0.0%
Maint. of Measuring & Reg. Station Equip. - Gen.	1,144,610	1,101,753	1,005,189	1,569,927	2,096,591	12.9%
Maint. of Measuring & Reg. Station Equip. - Ind.	122,140	81,468	76,096	117,088	105,173	-2.9%
Maintenance of Measuring & Reg. Station Equip.-City G	394,912	494,704	637,497	517,554	536,463	6.3%
Maintenance of Services	1,434,857	1,721,741	1,519,918	2,053,380	2,021,173	7.1%
Maintenance of Meters & House Regulators	3,407,321	3,169,645	2,601,412	2,288,222	3,739,527	1.9%
Maintenance of Other Equipment	-	-	-	-	-	0.0%
Total Distribution O&M Expenses	**$ 77,436,770**	**$ 80,595,139**	**$ 76,505,582**	**$ 74,677,273**	**$ 78,739,581**	0.3%
Supervision	$ 693,240	$ 736,643	$ 848,897	$ 837,023	$ 633,214	-1.8%
Meter Reading Expenses	690,552	726,686	659,922	647,308	568,928	-3.8%
Customer Records & Collection Expenses	23,497,160	26,205,397	25,426,391	26,376,055	27,747,179	3.4%
Uncollectable Accounts	27,903,721	31,438,172	29,393,213	44,794,000	15,466,000	-11.1%
Miscellaneous Customer Accounts Expenses	-	-	-	-	-	0.0%
Total Customer Account Operations Expenses	**$ 52,784,673**	**$ 59,106,898**	**$ 56,328,423**	**$ 72,654,386**	**$ 44,415,321**	-3.4%
Supervision	$ -	$ -	$ -	$ -	$ -	0.0%
Customer Assistance Expenses	4,277,741	4,937,154	4,807,626	4,303,971	4,639,346	1.6%
Inform. & Instructional Advertising Expenses	-	-	-	-	-	0.0%
Misc. Customer Service & Inform. Expenses	-	-	-	-	-	0.0%
Total Cust. Ser. & Inform. Operations Exp	**$ 4,277,741**	**$ 4,937,154**	**$ 4,807,626**	**$ 4,303,971**	**$ 4,639,346**	1.6%
Demonstrating and Selling Expenses	$ -	$ -	$ -	$ -	$ -	0.0%
Advertising Expenses	-	-	-	-	-	0.0%
Total Operation Sales Expenses	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	0.0%
Adminstrative and General Salaries	$ 15,364,053	$ 16,731,198	$ 17,834,422	$ 19,225,044	$ 19,272,030	4.6%
Office Supplies and Expenses	25,678,565	28,244,102	30,465,803	25,502,031	31,788,456	4.4%
Administrative Expenses Transferred Credit	(24,661,590)	(25,652,943)	(23,284,219)	(25,952,821)	(31,155,203)	4.8%
Outside Servie Employed	2,222,416	2,237,657	3,737,358	2,251,738	2,204,207	-0.2%
Property Insurance	1,405,467	249,838	1,229,677	227,634	2,423,880	11.5%
Injuries and Damages	6,403,087	11,521,467	5,527,017	8,341,498	6,069,671	-1.1%
Employee Pensions and Benefits	114,431,374	91,836,934	78,500,871	51,527,004	12,062,033	-36.2%
Franchise Requirements	-	-	-	-	-	0.0%
Regulatory Commission Expenses	4,094,180	4,240,224	3,622,040	3,855,968	3,667,908	-2.2%
Duplicative Charges - Credit	(768,375)	(860,794)	(1,076,217)	(280,591)	(771,776)	0.1%
General Advertising Expenses	578,749	599,001	462,804	561,130	484,240	-3.5%
Miscellaneous General Expenses	3,434,685	3,571,048	3,494,126	4,059,310	4,468,608	5.4%
Rents	311,538	300,619	332,850	157,165	152,351	0.0%
Total Admin. and General O&M Expenses	**$ 148,494,149**	**$ 133,018,351**	**$ 120,846,532**	**$ 89,475,110**	**$ 50,666,405**	-19.4%
Maintenance of General Plant	-	-	-	-	-	0.0%
Total Gas O&M Expenses	**$ 483,130,188**	**$ 494,258,597**	**$ 475,458,647**	**$ 394,741,198**	**$ 401,530,323**	-3.6%

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PHILADELPHIA GAS WORKS
Financial and Operating Data Statistics

DATA AND STATISTICS	2017	2018	2019	2020	2021	Compound Growth
RECEIPTS BY VOLUME (MCF)						
Purchased Gas	43,905,569	47,232,253	45,990,324	41,932,180	41,694,061	-1.0%
Gas of Others Received for Transportation	28,576,455	21,475,112	19,144,202	18,534,484	18,860,087	-8.0%
Exchange Gas Received	-	-	-	-	-	0.0%
Gas from Storage	8,655,121	10,027,750	10,555,638	8,420,613	10,370,267	0.0%
Other Receipts	1,606,923	2,239,296	1,704,660	1,037,458	816,935	0.0%
Total Receipts	**82,744,068**	**80,974,411**	**77,394,824**	**69,924,735**	**71,741,350**	-2.8%
DELIVERIES BY VOLUME (MCF)						
Residential	32,668,453	37,630,997	34,033,484	30,708,903	31,970,286	-1.5%
Commercial	6,968,015	8,159,560	7,993,680	6,569,896	7,813,352	-1.5%
Industrial	28,576,456	31,799,676	32,645,523	30,735,166	30,208,483	1.8%
Other	614,893	699,756	644,737	652,684	1,191,628	1.5%
Total Sales	**68,827,817**	**78,289,989**	**75,317,424**	**68,666,649**	**71,183,749**	**-0.1%**
Injected into Storage	-	-	-	-	-	0.0%
Exchange Gas	-	-	-	-	-	0.0%
Other Deliveries	-	-	-	-	-	0.0%
Gas Used by Company	-	-	-	-	-	0.0%
Other Deliveries	**-**	**-**	**-**	**-**	**-**	0.0%
Total Deliveries (Sales & Other Deliveries)	**68,827,817**	**78,289,989**	**75,317,424**	**68,666,649**	**71,183,749**	-0.1%
UNACCOUNTED FOR GAS (MCF)						
Total Receipts	82,744,068	80,974,411	77,394,824	69,924,735	71,741,350	-4.1%
Less: Total Deliveries	68,827,817	78,289,989	75,317,424	68,666,649	71,183,749	-0.1%
Unaccounted For Gas	13,916,251	2,684,422	2,077,400	1,258,086	557,601	-45.2%
UFG AS A % OF TOTAL RECEIPTS						
Unaccounted For Gas	1,489,789	821,041	1,939,835	1,381,144	179,308	-1.9%
Total Receipts	82,744,068	80,974,411	77,394,824	69,924,735	71,741,350	-4.1%
% Unaccounted For Gas	1.8%	1.0%	2.5%	2.0%	0.2%	2.3%
AVERAGE CUSTOMERS						
Residential	475,961	480,293	482,192	487,578	491,401	0.6%
Commercial	24,550	24,716	24,724	24,872	24,882	0.3%
Industrial	5,114	10,164	18,614	23,184	24,261	45.9%
Other	4,030	4,088	4,434	4,660	4,524	3.7%
Totals	**509,655**	**519,261**	**529,964**	**540,294**	**545,068**	1.5%
AVERAGE EMPLOYEES*						
Totals	**1642**	**1648**	**1651**	**1640**	**1602**	0.0%
GAS LINES						
Lines/Mains (M. Ft.)	3,040	3,042	3,041	3,046	3,046	0.0%
Lines/Mains (Miles)	576	576	576	577	577	0.0%
Services	477,698	476,938	476,605	476,370	476,600	-0.1%

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