



PENNSYLVANIA-AMERICAN WATER COMPANY

MANAGEMENT AND OPERATIONS AUDIT

**Pennsylvania Public Utility Commission
Bureau of Audits
Issued October 2023**

Docket No. D-2022-3035217

**PENNSYLVANIA-AMERICAN WATER COMPANY
MANAGEMENT AND OPERATIONS AUDIT**

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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 Pennsylvania-American Water Company (PAWC 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, PAWC, 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 PAWC

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 (2018-2022) 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 PAWC 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:

- Executive Management and Organizational Structure
- Corporate Governance
- Cost Allocations and Affiliated Interests
- Financial Management
- Water Operations
- Wastewater Operations
- Emergency Preparedness
- Purchasing and 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 were not identified in the limited pre-field work review.

Fieldwork began on November 10, 2022 and continued intermittently through May 16, 2023. 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 2018-2023
- 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
 Pennsylvania-American Water Company
 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
Executive Management and Organizational Structure		X			
Corporate Governance		X			
Cost Allocations and Affiliated Interests			x		
Financial Management		X			
Water Operations			X		
Wastewater Operations		X			
Emergency Preparedness			X		
Purchasing and 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. The audit report contains identifiable potential quantifiable cost savings of approximately \$3.13 million in annual savings and \$4 million in one-time savings from effective implementation of the recommendations. We try to identify, whenever it is reasonably practical, the potential savings net of the projected costs for implementation. Some of these savings could be considered an actual reduction in costs, avoided costs or increased revenues, whereas others would result from better deployment and/or use of existing resources. These quantifications require some judgment and may require efforts beyond the scope of the audit for further refinement. Therefore, the actual benefits from effective implementation of the recommendations are subject to some degree of uncertainty and could be higher or lower than the amounts estimated by the audit staff. An overall summary of the annual and one-time cost savings quantified in the audit report are shown in Exhibit I-2.

**Exhibit I-2
 Pennsylvania-American Water Company
 Management and Operations Audit
 Quantifiable Savings Summary**

Recommendation	Annual Savings	One-Time Savings
Reduce UFW below the 20% threshold and report UFW correctly (VII-1)	\$2,530,000	
Improve Inventory turnover to two or higher turns by gradually reducing stockpiled materials. (X-1)	\$600,000	\$4,000,000
Totals	\$3,130,000	\$4,000,000

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. Recommendation Summary

Chapters III through XIV 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.

**Pennsylvania-American Water Company
Management and Operations Audit
Summary of Recommendations**

Rec. No.	Recommendation	Page No.	Initiation Time Frame	Benefits (including \$ estimates)
Chapter III – Executive Management and Organizational Structure				
III-1	Include version control documentation on all policies, procedures, manuals, etc. and explore additional tools to ensure documentation is kept up-to-date.	19	0-6 Months	Low
III-2	Develop metrics for the Service Company and other externally provided services to fully assess PAWC's overall performance.	19	0-6 Months	Medium
III-3	Document and clearly delineate PAWC's expected performance standards for all department levels on executive level reporting metrics.	19	0-6 Months	Low
III-4	Complete and ratify the updated ERM policy and charter.	19	0-6 Months	Low
Chapter IV – Corporate Governance				
IV-1	Perform a market comparison for local board compensation to ensure PAWC Board fees are at market rates.	25	6-12 Months	Medium
Chapter V – Cost Allocations and Affiliated Interests				
V-1	File a new or amended affiliated interest agreement that accurately reflects the current company structure and the intercompany transactions occurring between PAWC and AWWSC.	33	0-6 Months	Low
V-2	Update AWWSC's Cost Allocation Manual to define all allocation factors, updates in billing for services, and description of supporting processes.	33	0-9 Months	Medium
V-3	Establish SLAs for all critical functions provided through the service company, including IT, Customer Service, Fleet, Central Lab, etc.	33	0-12 Months	Medium
V-4	Require mandatory refresher training on time sheet entry and periodically review preset allocators for shared employees.	33	0-6 Months	Low
Chapter VI – Financial Management				
VI-1	Update American Water's Internal Audit Charter to accurately reflect the administrative reporting relationship of the Vice President of Enterprise Risk and Internal Audit	39	0-6 Months	Low

**Pennsylvania-American Water Company
Management and Operations Audit
Summary of Recommendations**

Rec. No.	Recommendation	Page No.	Initiation Time Frame	Benefits (including \$ estimates)
Chapter VII – Water Operations				
VII-1	Reduce UFW below the 20% threshold and report UFW correctly.	56	12+ Months	High (\$2.53 Million Annually)
VII-2	Meet or exceed an 80% compliance threshold for testable backflow prevention devices.	56	6-12 Months	High
VII-3	Reduce line hits to company underground facilities.	56	0-12 Months	High
Chapter VIII – Wastewater Operations				
VIII-1	Update PennDot specifications to the latest version in the Collections System Operations and Maintenance Manuals.	66	0-6 Months	Low
VIII-2	Conduct a staffing study for Water and Wastewater Operations with cost/benefit analysis weighting current and future expected workloads, analysis of overtime utilization, and strategic use of contractors.	66	6-12 Months	Medium
VIII-3	Correct the growth budget development process to account for predicted growth in wastewater.	66	0-6 Months	Low
VIII-4	Create and document a robust leak detection and repair program by creating a manual with policies and procedures, including use of the GIS system to track current known breaks, leaks, and repairs.	66	0-12 Months	Medium
Chapter IX – Emergency Preparedness				
IX-1	Correct minor deficiencies in physical security.	72	0-6 Months	High
IX-2	Incorporate a table of contents and tabs labelled with chapter titles to the printed EPRs.	72	0-6 Months	Low
IX-3	Establish a scheduled fence inspection program with training for operations personnel to accomplish thorough inspections.	72	6-12 Months	Medium
IX-4	Station rescue hooks near any open-topped tank or reactor that is aerated at any time.	72	0-12 Months	Medium
IX-5	Improve physical security for control rooms and SCADA systems.	72	0-12 Months	High
IX-6	Partner with a trusted third-party security specialist to conduct regular physical penetration testing of PAWC's facilities.	72	12+ Months	Medium
IX-7	Conduct regular tabletop exercises focused primarily on physical security and cybersecurity.	72	6-12 Months	Low

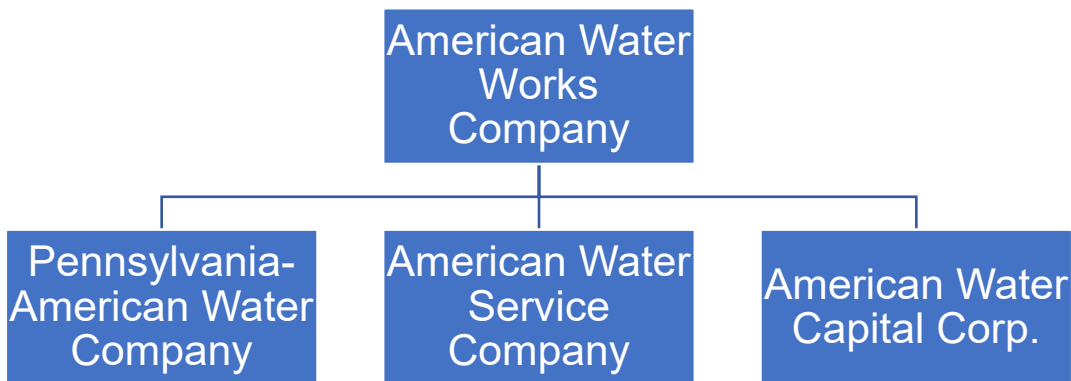
**Pennsylvania-American Water Company
Management and Operations Audit
Summary of Recommendations**

Rec. No.	Recommendation	Page No.	Initiation Time Frame	Benefits (including \$ estimates)
Chapter X – Purchasing and Materials Management				
X-1	Improve inventory turnover to two or higher turns by gradually reducing stockpiled materials.	79	6-9 Months	High (\$4 million One-Time Savings \$600,000 Annually)
X-2	Investigate and implement, if feasible, a framework for transferring materials between regulated affiliates including the appropriate regulatory approval.	79	0-9 Months	Medium
Chapter XI – Customer Service				
XI-1	Improve customer service performance at minimum to pre-pandemic levels.	84	0-9 Months	High
XI-2	Continue outreach efforts to engage with payment troubled customers and leverage low-income resources to help reduce the overall level of outstanding customer balances.	84	0-9 Months	High
Chapter XII – Information Technology				
XII-1	Work with the Service Company to establish key performance indicators, user metrics, system performance indicators, etc. that are shared with PAWC.	88	0-6 Months	Low
Chapter XIII – Fleet Management				
XIII-1	Evaluate the business case for implementing telematics in PAWC's fleet and develop specific goals for key performance indicators.	91	0-9 Months	Low
Chapter XIV – Human Resources and Diversity				
XIV-1	Document company policies and procedures or guidance for the application of remote work.	95	0-6 Months	Low

II. BACKGROUND

Pennsylvania-American Water Company (PAWC or company) is a wholly owned subsidiary of American Water Works Company, Inc. (American Water). American Water is a utility services holding company with numerous regulated and unregulated subsidiaries providing water service, wastewater treatment, and other various water related services. American Water is the largest publicly traded water and wastewater utility in the United States of America, providing service to approximately 14 million people in 24 states. More specifically, American Water's regulated subsidiaries provide water and wastewater service in 14 states including Pennsylvania. Nonetheless, only three of American Water's subsidiaries are discussed within this report and are presented in Exhibit II-1.

**Exhibit II-1
American Water Works Company, Inc.
Corporate Entity Organizational Chart
As of November 2022**



Note: American Water has additional subsidiaries, which are not listed on the organizational chart, and are not included in the scope of this audit.

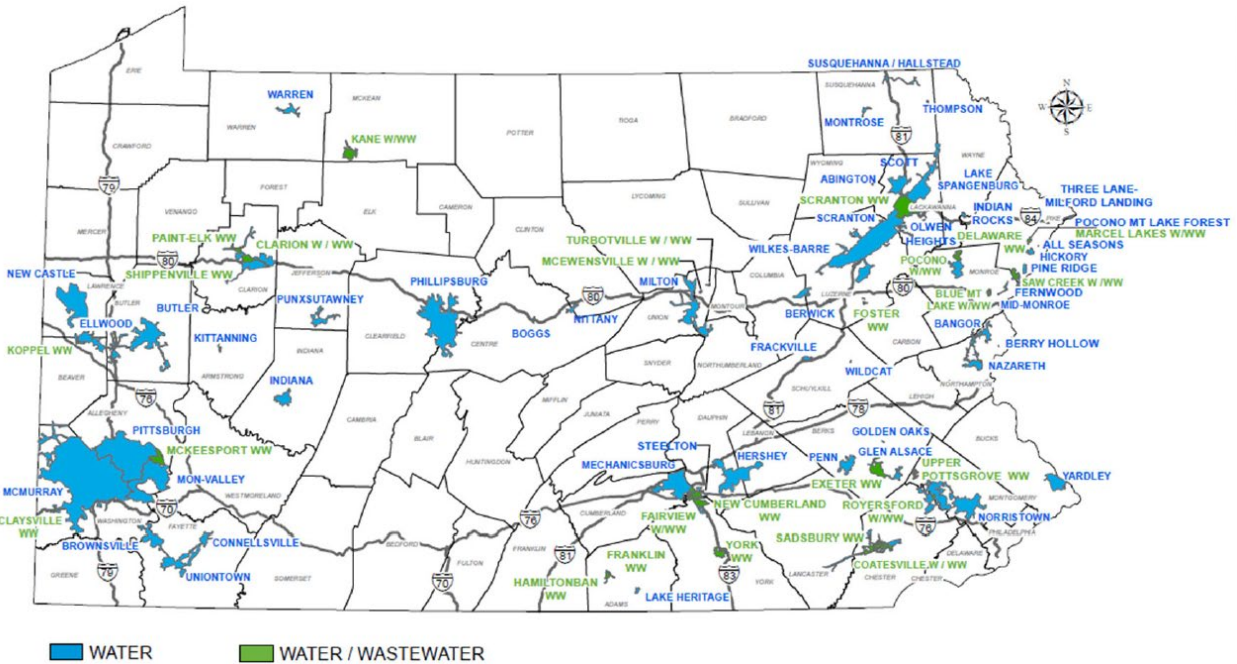
Source: Data Request EM-13

American Water Works Service Company Inc. (AWWSC or Service Company) provides a variety of support services comprising internal audit, finance, human resources, customer service, laboratory, legal, supply chain, engineering, information technology, corporate administration, etc. to American Water's subsidiaries, including PAWC. In addition to services received from AWWSC, PAWC leases office space, equipment, and furniture to AWWSC and provides services to affiliates (See Chapter V – Cost Allocations and Affiliated Interests). Furthermore, Chapter VI – Financial Management describes the banking, financing, and cash management services PAWC receives from American Water Capital Corp. (AWCC).

PAWC is the largest regulated water and wastewater service provider in Pennsylvania, serving approximately 679,000 water and 97,000 wastewater customers

in 37 counties (see Exhibit II-2 for a map of PAWC’s service territory). PAWC employs around 1,150 individuals throughout Pennsylvania and maintains approximately 11,500 miles of water and wastewater pipe. Exhibits II-3 and II-4 present a summary of PAWC’s customers, usage, and revenue by customer class as of December 31, 2022 for water and wastewater operations, respectively.

**Exhibit II-2
 Pennsylvania-American Water Company
 Service Territory
 As of November 2022**



Source: Data Request EM-13

**Exhibit II-3
 Pennsylvania-American Water Company
 Customer Statistics – Water Operations
 For the Year Ended December 31, 2022**

Customer Class	No. of Customers	Percent of Total Customers	Gallons Sold (000)	Percent of Total Sales	Revenues	Percent of Total Revenues
Residential	625,996	92.16%	25,802,839	57.59%	\$ 463,821,113	66.15%
Commercial	46,165	6.80%	12,153,944	27.13%	\$ 165,391,236	23.59%
Industrial	543	0.08%	4,399,560	9.82%	\$ 36,495,720	5.21%
Public	2,178	0.32%	1,737,167	3.88%	\$ 19,760,925	2.82%
Fire Protection	4,350	0.64%	349	0.00%	\$ 13,199,868	1.88%
Sales for Resale	20	0.00%	706,308	1.58%	\$ 2,450,171	0.35%
Totals	679,252	100.00%	44,800,167	100.00%	\$ 701,119,033	100.00%

Source: 2022 Pennsylvania-American Water Company PUC Water Annual Report

Exhibit II-4
Pennsylvania-American Water Company
Customer Statistics– Wastewater Operations
For the Year Ended December 31, 2022

Customer Class	No. of Customers	Percent of Total Customers	Revenues	Percent of Total Revenues
Residential	89,857	92.39%	\$ 64,736,673	61.66%
Commercial	7,086	7.29%	\$ 23,698,143	22.57%
Industrial	60	0.06%	\$ 3,505,600	3.34%
Public	252	0.26%	\$ 13,055,465	12.43%
Totals	97,255	100.00%	\$ 104,995,881	100.00%

Source: 2022 Pennsylvania-American Water Company PUC Wastewater Annual Report

In carrying out American Water’s and PAWC’s corporate strategy of growth through acquisition, PAWC acquired 15 water and/or wastewater companies (5 water and 10 wastewater) from January 1, 2019 to December 31, 2022 as summarized in Exhibit II-5. Ten of these systems were acquired under the Act 12 of 2016 – Fair Market Value legislation.

Exhibit II-5
Pennsylvania-American Water Company
Water and Wastewater Acquisitions
For the Years 2019 through 2022

	2019		2020		2021		2022	
	#	Customers	#	Customers	#	Customers	#	Customers
Water	2	2,744	1	29	2	1,668	0	0
Wastewater	3	10,509	1	2,088	3	4,496	3	15,797
Total	5	13,253	2	2,117	5	6,164	3	15,797

Source: Data Request EM-13

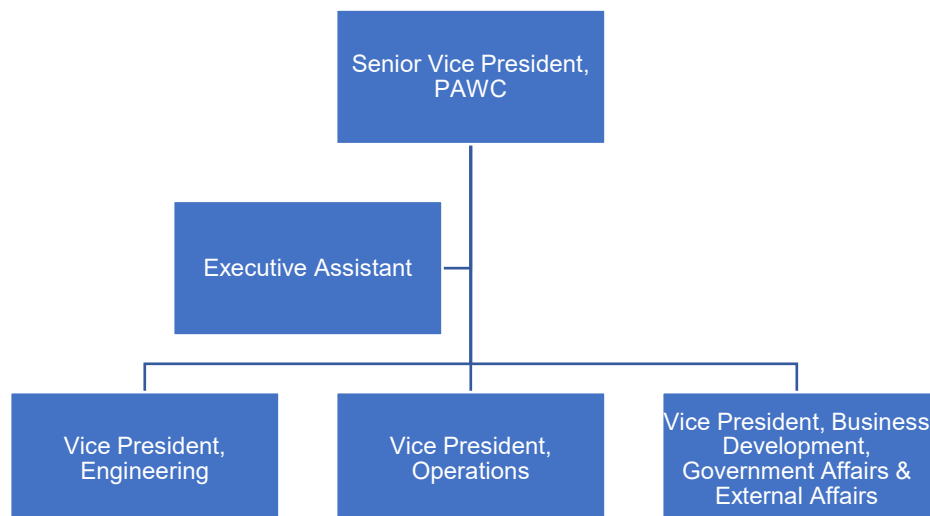
III. EXECUTIVE MANAGEMENT AND ORGANIZATIONAL STRUCTURE

Background

As discussed in Chapter II-Background, Pennsylvania-American Water Company (PAWC) and American Water Works Service Company (AWWSC or Service Company) are subsidiaries of American Water Works Company, Inc. (American Water). In cases where shared services could benefit multiple subsidiaries, these services are centralized within AWWSC. See Chapter V - Cost Allocations and Affiliated Interests for additional information regarding shared services.

Exhibit III-1 illustrates PAWC's executive management structure, where PAWC's President has direct reporting relationships with three vice presidents (VP): VP-Engineering, VP-Operations, and VP-Business Development, Governmental Affairs, and External Affairs. The VP-Engineering has oversight of engineering, system planning/analyses, geographic information system (GIS), and management of PAWC's capital project program. Meanwhile, PAWC's VP-Operations is responsible for PAWC's core operations including field operations, meter reading, water quality, customer compliance, and SCADA maintenance. In 2022, PAWC underwent a reorganization, consolidating its Business Development and Governmental Affairs and External Affairs functions under the VP-Business Development, Governmental Affairs, and External Affairs. These three VPs have direct or indirect oversight over the core functions of PAWC and PAWC employees, which are further discussed in Chapter VII - Water Operations, Chapter VIII - Wastewater Operations, Chapter X - Purchasing & Materials Management, Chapter XI - Customer Services, Chapter XII - Information Technology, and Chapter XIII - Fleet.

**Exhibit III-1
Pennsylvania-American Water Company
Executive Management Organization Chart
As of April 2023**



Source: Data Request EM-32

In addition, PAWC’s President is supported by dual reporting relationships through various AWWSC executives, including AWWSC’s Chief Financial Officer-Operations PAWC, AWWSC’s Director of Human Resources-Business Partners, AWWSC’s General Counsel-VP & Secretary, and AWWSC’s Senior Director-Rates & Regulatory. The PAWC President reports directly to AWWSC’s Deputy Chief Operations Officer. The PAWC President also serves on the Board of Directors for PAWC as discussed in more detail in Chapter IV-Corporate Governance.

During the period under review, PAWC’s staffing levels increased. The increase was primarily attributed to supporting increased capital and maintenance expenditures to comply with regulatory requirements, newly acquired systems between 2018 and 2022, as well as expanding PAWC’s external affairs communications with stakeholders. PAWC’s total staffing levels for 2018 through 2022 are summarized in Exhibit III-2.

**Exhibit III-2
Pennsylvania-American Water Company
Staffing Levels
As of December 31 for the Years 2018 through 2022**

Year	2018	2019	2020	2021	2022	Percent Change
Total Employees	1,126	1,134	1,161	1,164	1,215	7.9%

Source: Data Requests EM-2, EM-36, and Auditor Analysis

PAWC’s executive level compensation is managed by AWWSC’s Corporate Compensation department, which is responsible for establishing American Water’s salary structure guidelines and ranges. Salary structure is based upon the current market value for positions and considers the required job responsibilities, skills, and knowledge. In addition to base salary, compensation for executives includes opportunities to earn annual cash awards and equity-based awards. These additional compensation opportunities are aimed at driving performance improvement (i.e., annual cash rewards) while supporting retention (i.e., equity-based awards). For additional information related to employee compensation, see Chapter XIV - Human Resources & Diversity.

PAWC’s succession planning for senior level executive leadership (President and VP positions) are managed by AWWSC’s Human Resources Department and reviewed quarterly with the PAWC President and AWWSC’s Director HR Business Partner. In addition, PAWC’s key management positions are supported by AWWSC’s HR team with PAWC’s Directors and Senior Managers responsible for reviewing positions for criticality, turnover, available internal talent, and readiness for position. PAWC leverages a customized dashboard to serve as a foundation for annual workforce planning, identifying opportunities for high potential internal candidates, and/or identification of talent gaps.

As part of American Water's corporate strategy which focuses on people, PAWC monitors its employee's morale and work experience through a number of vehicles. PAWC routinely conducts employee experience surveys on its corporate culture. Additionally, PAWC leveraged pulse surveys¹ throughout the COVID-19 pandemic to help identify opportunities to support its employees, address concerns and respond to emerging issues. Additionally, PAWC employees participate in American Water's employee business resource groups that represent diverse demographics and provide the opportunity to share ideas and best practices and create positive impacts on American Water's overall culture. PAWC also receives feedback through focus groups and beginning in 2022, introduced the role of Culture Champion.

Culture Champions meet to discuss best practices, collaborate with peers, and solicit feedback on activities, events, and messaging. Four PAWC employees have been selected as Culture Champions. In addition to gathering information, Culture Champions partner with company leadership to support inclusion, diversity, equity, and wellness through local activities that drive safety, health, and inclusivity in the workplace.

Aligning with American water's overall corporate strategy, PAWC's strategic planning is based on American Water's corporate goals. American Water goals lie within five main categories: Growth, Safety, People, Operational Excellence, and Customers, defined below:

- Growth – industry leadership in critical infrastructure investment and customer growth,
- Safety – zero incidents and injuries with priority on physical and emotional well-being,
- People – inclusive and diverse team that provides the best service to American Water's diverse communities,
- Operational Excellence – best in class performance, improving efficiencies and managing costs, and
- Customers – at the center of all American Water strategy is the delivery of excellent customer service and strengthening of communities.

PAWC uses these five standards set by American Water to develop its strategy to emulate these core values in its operations. In some cases, this involves developing specific goals and objectives that clearly support one or more of the main categories. The more granular components of PAWC's annual strategic plan roll into the five-year plan that aligns with American Water's corporate strategy. PAWC's five-year plan includes the upcoming year's operating budget with a four-year projection, as well as the upcoming capital budget (approved annually) and a four-year forecast for capital spending. See Chapter VI - Financial Management for further details regarding PAWC's annual budget process.

¹ Pulse surveys are abbreviated surveys targeting specific areas of focus/concern. The COVID-19 pulse surveys focused on safety and wellness, communication, access to resources (including personal protective equipment, healthcare, employee assistance benefits, etc.), and employee feedback.

Findings and Conclusions

Our examination of the Executive Management and Organizational Structure focused primarily on a review of the corporate management structure, staffing levels, the roles/responsibilities of executive management, policies, procedures, manuals and executive level reporting, the strategic planning process, succession planning, executive compensation, corporate culture, etc. Based upon our review, PAWC should initiate or devote additional efforts to improving the efficiency and/or effectiveness of its executive management by addressing the following:

1. Numerous policies and practices were not reviewed and updated within the timelines required by American Water's Policy Management Policy.

American Water's Policy Management Policy (PMP) governs the processes used to ensure the company's policies and practices are accurate. The PMP requires all policies to be assigned a policy owner who is responsible for an annual review and required three-year update, at a minimum. AWWSC's Manager, Ethics & Compliance (Ethics Manager) is responsible for tracking all policies on a master spreadsheet and for notifying policy owners when updates are needed. Once updated, the Ethics Manager ensures that a legal review of the policy occurs. Then after legal review, the Ethics Manager posts the updated policy to the company intranet and sends a notification to all employees via the internal weekly newsletter.

In reviewing PAWC's policies, procedures, and manuals, the audit staff observed multiple instances where version history indicated that no review had occurred during the policy's required timeframe. Examples included numerous human resources related policies, PAWC's cross connection manual, and AWWSC's enterprise risk management (ERM) policy (see Finding and Conclusion No. 4 for additional details regarding the ERM policy). It is also noteworthy that among the updated documentation, no version controls were identifiable in policies updated since 2020. The audit staff was unable to determine why version control was removed from the policies and procedures in 2020 but, it is a best practice to maintain version control directly on the policy and procedure.

The process used to track all policies and procedures across the American Water footprint is a spreadsheet maintained by the AWWSC. As such, the company relies on an inefficient, manual process to maintain timely review of its documentation. The manual process, together with the lack of version control, increases the potential for outdated and inaccurate policies and procedures. Failure to maintain current documentation increases the risk for operations and practices to deviate from management's control or fail to provide adequate direction to employees to perform their duties. Therefore, AWWSC should require version controls on all policies, procedures, manuals, etc. and explore automated alternatives to ensure compliance with the PMP.

2. PAWC's executive level reporting lacks performance metrics for externally provided critical support functions.

During the audit staff's review of PAWC's executive management function, routine executive level reporting was reviewed. The audit staff observed that PAWC's reporting included information from various elements of PAWC operations, including functions like field service operations (orders completed, overtime, attendance, etc.), non-revenue water, capital program (construction work in progress, recurring and investment project spend, etc.). Additionally, AWWSC's HR and CFO Operations groups provide data on certain aspects of PAWC's operations. Primarily, this information is reserved to overall health of the company and include items like employee headcount, hiring, workforce planning, operating budget variances, safety metrics, drinking water program information, etc.

Conversely, PAWC's externally provided functions such as those centralized through AWWSC (central lab testing, call handling, customer satisfaction ratings, billing accuracy, information technology, etc.) as well as third-party provided service metrics (fleet services' vehicle maintenance and utilization metrics, collection agency performance rates, etc.) were not included in PAWC routine executive-level reporting. Although PAWC's executives have access to such information through ad-hoc reporting and/or via AWWSC liaisons, it is not routinely presented for PAWC management review. In fact, most of the services provided by AWWSC do not include performance metrics and/or are well defined. No routine information outside of some quarterly customer service reviews is provided to PAWC. Although the services provided by AWWSC are for the benefit of all American Water subsidiaries, the lack of information gives PAWC no standard to monitor multiple services that impact its customers or operations.

Performance metrics for outsourced functions should be established and reviewed periodically to assess value and help identify areas for improvement. Goals should be set for affiliate provided services to help ensure quality of service meets utility expectations or historical levels, see Chapter V - Cost Allocations and Affiliated Interests, Finding and Conclusion No. 3 for further information related to AWWSC service performance levels. Without this type of information, PAWC's ability to monitor and adequately assess/enforce performance of AWWSC provided services is greatly diminished. Therefore, PAWC should devote additional efforts to ensure all aspects of its operations, including those provided from outside sources, are included in routine, executive level reporting.

3. PAWC executive level reporting fails to document expected performance levels.

As discussed in Finding and Conclusion No. 2, PAWC's routine executive level reporting is limited to PAWC specific data and internally performed activities. However, the audit staff observed that all PAWC activities lacked information on expected performance levels. As discussed in the background, PAWC's company goals are internalized based upon American Water's corporate strategy, specific to individual

departments and functions. However, in the reporting routinely presented to PAWC management, documentation of those more granular goals is absent. Instead, PAWC-specific goals were provided as general targets or statements that mirrored American Water's corporate strategy.

In response to the PUC auditors' inquiries for documentation of PAWC-specific metrics, PAWC provided only 2023 targets for specific operational goals. The PUC auditors found that these targets did not consistently tie into the metrics included in PAWC's routine executive level reporting. The operational goals are far more comprehensive at the department level than the information included in executive reporting, limiting their overall oversight for decision-making. For example, executive reporting failed to include safety metrics on certified safe worker status, completion of pre-job safety briefings, near miss data, contractor safety compliance, etc. As such, the dashboards available to PAWC executives do not offer insight into many functions or areas supporting overall company or AWWSC goals.

Lack of defined and clearly communicated goals that align with key performance metrics could hinder PAWC's effectiveness in communicating tangible standards for performance to staff and ultimately lead to PAWC missing opportunities for improvement as discussed in Finding and Conclusion No. III-1. Clearly documented performance goals assist management in quickly monitoring key aspects of business performance to drive improvement. Although the dashboards used by PAWC management provide a snapshot and platform for real time monitoring for some PAWC activities, the lack of key functional areas of operations, routine reporting structure, etc. ultimately does not offer a complete picture to PAWC executives of comprehensive company performance. Therefore, key performance metrics and goals should be established and documented within executive level reporting for each PAWC-specific target. The best indicators of success, or those that best align with company's strategic plan, should then roll into reports for American Water's upper and executive management.

4. The Enterprise Risk Management charter and policy updates are not finalized.

During the third quarter of 2022, AWWSC reorganized its ERM function bringing it under AWWSC's internal audit organization. Moreover, AWWSC's ERM function transitioned to an integrated function with all internal staff responsible for ERM within their individual purview. However, the related ERM policy and procedures were outdated, reflecting a defined ERM structure assigning responsibility to specific groups and individuals throughout AWWSC and American Water's subsidiaries in use prior to the reorganization.

As discussed in Finding and Conclusion No. 1, failure to maintain current documentation increases the risk for operations and practices to deviate from management's control. Although an updated ERM charter and policy have been drafted, the updated documentation had not been finalized before the end of audit

fieldwork. Thus, the audit staff purports that an updated charter reflecting the changes that went into effect should be ratified, and the policy approved, as soon as practical.

Recommendations

- 1. Include version control documentation on all policies, procedures, manuals, etc. and explore additional tools to ensure documentation is kept up-to-date.**
- 2. Develop metrics for the Service Company and other externally provided services to fully assess PAWC's overall performance.**
- 3. Document and clearly delineate PAWC's expected performance standards for all department levels on executive level reporting metrics.**
- 4. Complete and ratify the updated ERM policy and charter.**

IV. CORPORATE GOVERNANCE

Background

As discussed in Chapter II – Background, Pennsylvania-American Water Company (PAWC) is a subsidiary of American Water Works Company, Inc. (American Water). American Water is publicly traded on the New York Stock Exchange (NYSE) under the symbol AWK. As such, American Water is subject to the corporate governance requirements contained in both the Sarbanes Oxley Act of 2002 (SOX) and the corporate governance rules of the NYSE.

As of December 2022, American Water's Board of Directors (Board) was composed of eleven members, including its President & Chief Executive Officer (CEO). The average tenure of the directors, as of December 2022, was six years. The Board has adopted categorical standards of independence² to assist in determining director independence, within the meaning of the NYSE and Securities and Exchange Commission (SEC) requirements. The Board determined, based on these categorical standards of independence, that 10 of the 11 board members were independent. The full Board met 15 times during 2022 and conducted its business using the following committees:³

- Audit, Finance, and Risk Committee – The Audit, Finance, and Risk Committee (AFR Committee) is a standing committee that appoints American Water's independent auditor to audit American Water's consolidated financial statements and reviews and discusses with management and the independent auditors the results of these audits. The AFR Committee also oversees the internal audit function and evaluates the qualifications, performance, and independence of American Water's external auditor.⁴ The AFR Committee monitors, reviews, evaluates and makes recommendations to the Board regarding: financial forecasts, financing requirements, capital structure, capital expenditure plan and strategies, dividend payment policy, investment performance of assets for employee benefit plans, and cash management plans and strategies. Also, the AFR Committee oversees the enterprise risk management process, insurance risk management policies and programs, and approves debt issuances by American Water and its subsidiaries. The AFR Committee is comprised of five independent Board members that are all considered financially literate and financial experts as defined by applicable SEC rules. The AFR Committee met seven times during 2022.
- Executive Development and Compensation Committee – The Executive Development and Compensation Committee (Compensation Committee) is a

² Defined by NYSE Rule 303A

³ Meeting data for 2022 regarding the American Water Board of Directors and its committees was obtained from the March 28, 2023 Proxy Statement filed with the SEC.

⁴ In accordance with SEC and NYSE requirements, American Water engages an external accounting firm to independently audit its annual financial statements and review its quarterly financial statements.

standing committee that establishes and reviews the overall American Water compensation philosophy, including executive compensation practices, reviews and recommends to the full Board Director compensation and annually reviews other benefit plans. The Compensation Committee is comprised of five independent members as defined under SEC rules and met ten times during 2022.

- Nominating/Corporate Governance Committee – The Nominating/Corporate Governance Committee (CG Committee) is a standing committee that is responsible for identifying and considering qualified nominees for directors, developing, and annually reviewing the Corporate Governance Guidelines, overseeing the annual evaluation of the Board, other committees, and certain members of management. The CG Committee is comprised of five independent members and met eight times during 2022.
- Safety, Environmental, Technology, and Operations Committee – The Safety, Environmental, Technology, and Operations Committee (SETO Committee) is a standing committee and is responsible for the oversight and review of employee and public safety, environmental and technology policies, including physical and cybersecurity issues, and operational performance and risk exposure. The SETO Committee reviews threat assessments and coordinates with the AFR Committee on matters related to cybersecurity. The SETO Committee also reviews and monitors related environmental strategies, planning, including compliance with applicable laws and regulations and monitors company performance. In addition, the SETO Committee reviews matters involving customer experience, business alignment with the strategic technology plan and reporting on major technology projects. The SETO Committee is comprised of five members and met four times during 2022.
- Emergency Executive Committee – The Emergency Executive (EE) Committee is a non-standing committee and serves in the event of an emergency or critical time-sensitive matter where it is not practicable to assemble the entire board. The EE Committee is composed of five members, where the Chairman of the Board serves as chair of the EE committee with chairs of the standing committees serving as the remaining members. The EE Committee met three times during 2022.

American Water's internal audit (IA) function is performed by American Water Works Service Company (AWWSC or Service Company) employees and external consultants. The IA function is headed by the Vice President of Enterprise Risk and Internal Audit (VP-ERIA) who reports directly to the American Water Board of Directors' AFR Committee. The AFR Chair's approval is needed for the hiring, compensation, removal, or replacement of the VP-ERIA. Additionally, the AFR Committee is responsible for approving⁵ the annual performance evaluation of the VP-ERIA. The

⁵ The VP-ERIA's annual performance evaluation is prepared by American Water's Chief Financial Officer with input from the AFR Committee Chair.

AFR Committee operates pursuant to a written charter consistent with the applicable standards of the NYSE and the SEC. The AFR Charter is reviewed at least every two years. The AFR Committee undergoes an annual performance evaluation, including a review of the compliance of the AFR Committee with its charter.

American Water's Internal Audit Charter was last reviewed and approved by the AFR Committee in April 2021. The primary objectives of the IA function are to examine and evaluate the effectiveness of the organization's governance, control and risk management processes, and the quality of performance in carrying out assigned responsibilities to achieve the organization's stated goals and objectives. The IA function's annual internal audit plan is developed using a risk-based approach. The IA plan is reviewed and approved by the AFR Committee. Quarterly, the VP-ERIA meets with the Chair of the AFR Committee to discuss the IA function's performance of the annual IA plan and other areas of interest. Reportedly, informal discussions occur more frequently. See Chapter VI – Financial Management for additional information regarding the IA function.

The CG, Compensation, and SETO Committees also operate pursuant to written charters consistent with the applicable standards of the NYSE and the SEC. Furthermore, the standing committees undergo an annual performance evaluation that compares the performance of each committee with the requirements of its respective written charter.

Corporate governance guidelines and related documents are available for review by the shareholders and the public at large by visiting www.amwater.com. Documents available at the website include:

- Charters for the AFR, CG, Compensation, and SETO Committees
- Corporate Governance Guidelines
- Anti-corruption and anti-bribery, insider trading and prohibited transactions, political contribution, regulation fair disclosure, and related person transaction policies
- Code of Ethics
- Biographies and credentials of each Board member

American Water's Code of Ethics (Code) sets out basic principles of ethical conduct and describes how and where employees of any of its subsidiaries may report illegal or unethical behavior or violations of the Code. The policy states, among other things, that:

- The Ethics Helpline is available to all employees 24/7 and allows for anonymous reporting and will be kept confidential to the extent possible.
- Employees reporting ethical concerns will be protected from retaliation.
- It is unacceptable to submit a complaint, knowing it is false.

In addition to reporting violations to the Ethics Helpline, employees may report violations to their manager, a Human Resources representative, or the Compliance and Ethics Department. All calls to the Ethics Helpline are reviewed by members of American Water's Compliance and Ethics Committee, which reports to American Water's AFR Committee. Ultimately oversight of the Code is the responsibility of the American Water Board of Directors. Annually, all employees are required to have annual ethics training and sign a certification that they have read and understood the Code and document any knowledge of potential violations.

As of December 2022, PAWC had an eight-member Board of Directors comprised of the President of PAWC, VP Engineering, VP Operations, Senior Director of Finance, Senior Director of Rates & Regulatory, a former President of PAWC and three independent directors. The PAWC Board met four times during 2022 and is responsible for approving dividend payments to American Water, debt issuances, acquisitions of water companies, property sales and the election of the Company's directors and officers.

The three independent members compose PAWC Board's Control and Compliance (CC) Committee, while the PAWC Board's Executive Committee is composed of the former PAWC President, PAWC's current President, and the Senior Director of Finance. The PAWC CC Committee oversees PAWC's adequacy and effectiveness of internal controls, quality and integrity of financial statements, compliance with legal regulatory requirements, and performance of internal and external audits. Whereas the Executive Committee is responsible for managing routine PAWC business during the intervals between the quarterly meetings of the full PAWC Board. See Finding and Conclusion No. 1 within this chapter for more information on the full PAWC Board.

Findings and Conclusions

Our examination of the Corporate Governance function included a review of American Water and PAWC's Boards of Directors' organization including committee structure and charters; Board fee structure; Director independence; documents related to principles of corporate governance; policies, practices, and procedures, internal audit function; code of ethics; annual reports to shareholders; etc. Based on our review, PAWC should initiate or devote additional efforts to improving the efficiency and/or effectiveness of its corporate governance function by addressing the following:

1. PAWC Board fees have increased and are not comparable to other Pennsylvania utilities.

PAWC is a subsidiary of American Water and is governed by a corporate (i.e., American Water Board) and local board (i.e., PAWC Board). Both Boards generally have separate and distinct duties as discussed in the Background, although certain items that pass through PAWC's Board may also go to American Water's Board for final approval. For example, internal audits pertaining to PAWC may first be presented to

PAWC’s Audit Committee/Board before going to the AFR Committee/American Water Board. Nonetheless, both Boards operate within their corresponding Charters and By-laws.

PAWC’s Board includes three independent directors and a former president of PAWC. In addition, officers of PAWC, like the President, who serve on the board, are not compensated. Instead, officer compensation is derived through their position with PAWC. Meanwhile, board members that are not officers of PAWC are compensated through two primary methods, a retainer for serving on the Board and a per meeting fee. In addition, the Chairman and members of the Audit Committee receive additional compensation for those duties. Total compensation for PAWC’s Board can be found in Exhibit IV-1.

**Exhibit IV-1
 Pennsylvania-American Water Company
 PAWC Board Total Compensation
 2019-2022**

Year	Total Compensation
2019	\$ 51,500
2020	\$ 73,750
2021	\$ 118,000
2022	\$ 103,000

Source: PUC Annual Reports, Data Requests CG-6 and CG-19

The large increase in PAWC Board compensation in 2021 was an increase to the base retainer fee for each director, all other forms of compensation remained the same. In fact, retainer fees were increased in 2016 (from \$8,000 to \$13,000) and 2020 (from \$13,000 to \$25,000). PAWC claimed that a review was completed to justify the 2016 change, but no information could be provided to substantiate the increase. Meanwhile, no review or market study was conducted to support the 2020 increase. Instead PAWC contended the 2020 increase was due to additional assistance and/or duties provided by the PAWC Board and to attract highly qualified candidates. Although the PAWC Board may provide support on emerging issues, like the pandemic, no new duties were officially added to its Charter. Nonetheless, in both cases, any comparison to market rates was unavailable leaving the increases unsupported by market data. In the audit staff’s analysis, only one other large utility in Pennsylvania with a corporate board compensates its local state level board, PECO Energy Company (PECO). All other local utility boards with corporate parents in Pennsylvania are comprised of officers of the utilities and therefore those directors are not compensated for service on their respective local boards in 2022. A comparison of total fees and total fees per meeting and director is presented in Exhibit IV-2 for PAWC and PECO.

Exhibit IV-2
Pennsylvania-American Water Company
Comparison of PAWC and PECO Energy Company Board Compensation for
Independent Members
2019-2022

	Year	Total Compensation	No. of External Board Members	No. of Meetings (max)	Average Compensation per director	Average Compensation per meeting
PAWC	2019	\$ 51,500	3	4	\$ 17,167	\$ 12,875
	2020	\$ 73,750	4	4	\$ 18,438	\$ 18,438
	2021	\$ 118,000	4	4	\$ 29,500	\$ 29,500
	2022	\$ 103,000	4	4	\$ 25,750	\$ 25,750
PECO	2019	\$ 40,000	6	4	\$ 6,667	\$ 10,000
	2020	\$ 40,000	5	4	\$ 8,000	\$ 10,000
	2021	\$ 50,000	5	5	\$ 10,000	\$ 10,000
	2022	\$ 54,000	8	5	\$ 6,750	\$ 10,800

Note: Number of board members fluctuates due to vacancies or addition of a new director mid-year and does not include board members who are compensated through their position with the company.
Source: PUC Annual Reports, Data Requests CG-6 and CG-19.

Although the audit staff acknowledges that independent directors should be compensated and use of independent directors is at the sole discretion of PAWC and American Water, the auditors' question whether the level of compensation is at market rates. The only comparable company the audit staff could find is compensated at less than half of PAWC's Board in all metrics presented in Exhibit IV-2 and may suggest that PAWC's board is overcompensated. Therefore, PAWC should perform a market analysis on compensation for state level boards of utilities with corporate oversight. The results should be used to adjust compensation or the rate impact to the customer accordingly.

Recommendations

- 1. Perform a market comparison for local board compensation to ensure PAWC Board fees are at market rates.**

V. COST ALLOCATIONS AND AFFILIATED INTERESTS

Background

This chapter presents the result of the audit staff's review of the nature and extent of transactions between PAWC and its affiliates. As discussed in Chapter II – Background, PAWC is a wholly owned subsidiary of American Water Works Company Inc. (American Water), a holding company with various regulated and nonregulated subsidiaries. American Water owns and operates regulated water and wastewater subsidiaries in 14 states, including Pennsylvania. PAWC regularly provides and/or receives services from various affiliates including American Water Capital Corp (AWCC) and American Water Works Service Company Inc. (AWWSC or Service Company).

Transactions between PAWC and its affiliates are governed by various affiliate service and lease agreements which have been approved by the Pennsylvania Public Utility Commission (PUC or Commission) and include the following:

- Lease agreement for Mechanicsburg office space between PAWC and AWWSC
- Lease agreement for Scranton office space between PAWC and AWWSC
- Support services agreement between PAWC and AWWSC
- Financial services agreement between PAWC and AWCC

As illustrated in Exhibit V-1, during the 2018-2022 audit period, PAWC provided services and made intercompany charges to two affiliates, AWWSC and American Water Enterprises. PAWC leased office space to AWWSC between 2018 through 2022. In response to the COVID-19 pandemic, all AWWSC Scranton-based employees have migrated to a full-time work from home role. Going forward, intercompany rent revenues received by PAWC will decrease as AWWSC will discontinue its lease of PAWC's Scranton office space in July 2024. In addition, PAWC provided billing and collection services to an affiliate, American Water Enterprises' (AWE) Homeowner Services Group. However, on January 4, 2022, American Water divested AWE's Homeowner Services Group⁶, thus the 2022 intercompany totals between PAWC and the Homeowner Services Group are markedly lower in 2022 than prior years.

⁶ PAWC continues to transact with Homeowner Services Group via an independent third-party contract, see Chapter XI – Customer Services for more information. However, transactions occurring after January 4, 2022 are no longer classified as affiliated/related party and, therefore, have been excluded from 2022 totals shown in Exhibit V-1.

Exhibit V-1
Pennsylvania-American Water Company
Summary of Charges from PAWC to Affiliates (in thousands)
For the Years 2018 through 2022

	2018	2019	2020	2021	2022
AWWSC					
Rent	890	587	521	524	535
American Water Enterprises					
Billing & Collection Services	691	699	692	624	7
Total from PAWC to Affiliates	\$1,581	\$1,286	\$1,213	\$1,148	\$542

Source: Data Request CA-28

PAWC also received services from affiliates, including AWCC and AWWSC during the audit period. A summary of charges from AWCC and AWWSC is presented in Exhibit V-2, by affiliated company and service type, for 2018 through 2022. AWCC provides banking, cash management, short-term and long-term financing, and investment services to American Water's subsidiaries, including PAWC. PAWC specific instruments are charged directly by AWCC, and allocated in cases where mechanisms are shared between other affiliates. AWCC allocated costs follow three general methodologies:

- Short-term financing and credit line costs – based on the affiliate's proportional total maximum principle requested for the year
- Long-term financing costs - based on proportional debt issued per affiliate
- Overhead costs – based on proportional total long-term and maximum requested principle short-term borrowings and investments for the year

Similarly, exclusive PAWC specific services are charged directly to PAWC by AWWSC. Various support services are provided by AWWSC, including finance, internal audit, human resources, customer service, laboratory, legal, supply chain, etc. AWWSC intercompany charges are attributed to ongoing operations and maintenance as well as PAWC's capital projects. Most intercompany charges from AWWSC to PAWC are derived from shared services performed by AWWSC employees, although corporate costs and overheads are also included in the overall charges from AWWSC to PAWC.

Shared costs are allocated to PAWC based upon a tiered methodology. The first tier is used to allocate costs of services or activities that benefit both regulated and unregulated subsidiaries of American Water. Generally, first tier costs are based upon a multifactor average of revenues, net plant, and headcount. Second tier costs are allocated amongst American Water's regulated subsidiaries and are based upon

customer counts⁷. On a monthly basis, accumulated overhead costs (e.g., rents, pension, medical, taxes, general office and administrative costs, etc.) are allocated to American Water's subsidiaries based upon the direct labor charges accumulated within each AWWSC shared function.

Exhibit V-2
Pennsylvania-American Water Company
Summary of Charges from Affiliates to PAWC (in thousands)
For the Years 2018 through 2022

	2018	2019	2020	2021	2022
AWCC					
Fees	2,037	1,019	704	753	729
Interest Expense - ST Debt	5,760	1,333	2,001	515	3,745
Interest Expense - LT Debt	40,280	46,161	52,072	53,413	60,863
Accrued Interest Expense	12,539	12,352	13,009	13,157	14,172
AWCC Total	\$60,616	\$60,865	\$67,786	\$67,838	\$79,509
AWWSC					
Business Development	896	1,177	1,161	628	700
Communications & External Affairs	934	964	958	1,126	1,296
Corporate Administration	6,870	5,310	6,141	4,100	2,659
Customer Service Organization*	8,113	8,312	13,636	15,706	16,973
Finance & Regulatory Services*	7,353	9,698	9,674	11,700	11,852
Environmental Leadership	1,227	1,180	1,509	1,524	1,664
Human Resources	3,333	4,192	3,962	4,325	4,416
Legal	2,055	2,588	3,410	3,828	4,548
Operational Excellence	401	687	727	729	815
Regulated Operations	3,115	3,504	3,263	2,429	2,407
Technology & Innovation	8,612	9,152	10,244	12,102	12,156
Operations & Maintenance Expenses [^]	\$42,910	\$46,763	\$54,684	\$58,202	\$59,486
Capitalized Utility Plant	18,148	19,667	18,273	17,708	24,900
AWWSC Total	\$61,058	\$66,430	\$72,957	\$75,910	\$84,386
Total to PAWC from All Affiliates	\$121,674	\$127,295	\$140,743	\$143,748	\$163,895

* AWWSC functions per Data Request CA-34

[^] May not sum to total due to rounding

Source: Data Requests CA-24, CA-28, and CA-34

In 2020, all PAWC's internal customer service functions were centralized within AWWSC, which contributed to the increase in overall AWWSC Operations and

⁷ Customer counts are adjusted for dual customers (customers receiving both water and wastewater services), as economies of scale for services is not equal to two unique customers but was determined to be 5% per AWWSC's 2013 Dual Customer Allocation Project.

Maintenance Expenses intercompany totals with the largest contribution attributed to the Customer Service Organization and as shown in Exhibit V-2. These costs had previously been paid directly to PAWC's customer accounting group and since 2020 have been reflected in AWWSC's Customer Service Organization.

Ringfencing is a term used to describe the actions and effort (legal, structural, and/or behavioral) taken to financially insulate a regulated utility from its affiliates, including unregulated affiliates in riskier markets. Appropriate ringfencing ensures the regulated utility's financial stability and continuity of services from being adversely compromised by the actions or financial conditions of its affiliates. As discussed earlier, American Water narrowed its unregulated business lines with the 2022 divestiture and elimination of AWE's non-regulated home services subsidiaries. In addition, American Water and PAWC have implemented various ringfencing protections to help safeguard PAWC's operations from its affiliates. These protections include:

- Corporate organizational structure
- Separate Board of Directors
- Separate books and records
- Separate management
- Separate credit ratings from S&P and Moody's rating agencies
- American Water's Cost Allocations Manual, limits on affiliate transactions, and intercompany loans
- American Water is publicly traded and subject to SOX
 - Additional measures taken to ensure accuracy of financial filings and testing of internal controls

Findings and Conclusions

Our examination of the Cost Allocations function focused primarily on a review of contracts and agreements governing transactions among affiliates, cost allocation methodologies, training efforts, compliance with existing allocation policies and practices, a review of ringfencing efforts, etc. Based upon our review, PAWC should initiate or devote additional efforts to improving the efficiency and/or effectiveness of its cost allocations by addressing the following:

- 1. Despite repeated audit recommendations, PAWC is still using its outdated 1989 affiliated interest agreement to detail the distribution of shared services and structure between PAWC and AWWSC.**

PAWC's approved affiliated interest agreement (AIA) with the PA PUC, covering services provided by AWWSC, was originally filed in 1989. Since that time, American Water has undergone numerous structural changes, expanding and becoming more complex over the preceding decades.

As such, the AIA fails to address the mixed organizational structure and shared costs between American Water's nonregulated and regulated businesses and does not reflect the current cost allocation methodology between its business lines. Furthermore, the AIA contains an outdated list of centralized services. Moreover, the AIA indicates that charges will be assigned "at-cost", rather than aligning with the commonly accepted "lower of cost or market value", as recommended by the NARUC Guidelines for Cost Allocations. As the existing AIA has multiple deficiencies and has not accurately reflected intercompany transactions and services for some time, the audit staff has made numerous recommendations⁸ (see 2014 Management Audit at Docket No. D-2014-2430603 and the 2018 Management Efficiency Investigation at Docket No. D-2018-2646503) for PAWC to update its AIA with AWWSC on file with the Commission.

The authority to approve contracts between public utilities and their affiliates is assigned by 66 Pa. C.S. § 2102. Thus, AIAs should be filed with the Commission for approval whenever new services are provided or there are substantive changes to the terms of existing AIAs. Historically, PAWC has contended that the changes over the decades were immaterial and do not warrant a new or amended filing to the Commission. However, the audit staff disagrees and believes the changes noted above are materially significant to require the AIA to be updated. Therefore, PAWC should file an amended or new AIAs which accurately disclose the nature, extent, and methodology applied to intercompany transactions currently recovered in rates paid by Pennsylvania's regulated customers. Continued use of the outdated 1989 AIA risks the denial of rate recovery for certain costs undefined within the 1989 agreement, lead to additional regulatory action or scrutiny, etc.

2. Methods routinely used to allocate certain shared services are undocumented.

In addition to the AIA discussed in Finding and Conclusion No. 1, PAWC's intercompany charges are supported via AWWSC's cost allocation manual (CAM). The CAM is intended to provide additional information for AWWSC staff, defining the methodology and specific cost allocation practices used to distribute shared services and costs to its affiliates, including PAWC. The CAM outlines American Water's organizational structure and describes the affiliate billing process, including its tiered methodology described in the Background. However, certain services (call handling, central lab, billing, etc.) are allocated based upon alternative allocation methods. These allocation methods are updated more frequently and are based on the prior month's activities for the related services. However, they are not supported or documented within the AIA, CAM, company policies, practices, or any other formalized document.

The CAM also lacks information about the processes used by AWWSC's Treasury services to allocate the shared costs related to financing and cash

⁸ The 2008 Consultant led management audit (Docket No. D-06MGT029) recommendation led PAWC to file an informal updated list of services as a response to the 2011 management efficiency investigation (Docket No. D-2010-2192659). The 2014 management audit (Docket No. D-2014-2430603) made a similar recommendation for PAWC to update its AIA, as PAWC had failed to file a new or amended AIA with the PUC. The 2018 management efficiency investigation (Docket No. D-2018-2646503) found no changes with PAWC's filed AIA.

management, particularly the principal, interest, fees, and overheads. Instead, the company relies solely upon the AIA between AWCC and PAWC and the applicable promissory notes for its documentation for cost distribution. Instead, CAMs should describe all methods used to distribute shared costs and provide a clear definition of services billed to help ensure consistency in the application of intercompany transactions.

AWWSC supports a large and growing organization and allocates costs to American Water's subsidiaries under a complex and fluid accounting structure. Although the CAM provides a foundation for AWWSC's general allocation practices, ambiguous, undefined, and undocumented cost allocation processes make the application and verification of intercompany charges unclear for American Water's subsidiaries and other stakeholders. Therefore, AWWSC should leverage its CAM to fully support its intercompany transactions by addressing all allocation methodologies and document all processes used to allocate costs between American Water's subsidiaries.

3. PAWC lacks service level agreements with AWWSC to define the level of service provided.

AWWSC provides shared services to American Water's subsidiaries, including PAWC. Sometimes these AWWSC services include partially or fully outsourced functions to a third-party.⁹ However, as previously noted in Finding and Conclusion No. 1, PAWC relies upon its outdated AIA to provide the foundation for shared services provided through AWWSC. There are no service level agreements (SLAs) for the shared services. Furthermore, as discussed in Chapter III - Executive Management's Finding and Conclusion No. 2, PAWC's executives do not receive performance metrics on externally provided support functions, including those critical to PAWC's operations. Although AWWSC's CAM provides a description of these centralized services, no parameters or expected results are defined. Furthermore, no routine reporting is provided to individual affiliates on the level of service provided by AWWSC.

Without SLAs, PAWC has limited information on the efficiency and effectiveness of the services. For example, PAWC does not receive routine reporting on the number of water quality tests performed for PAWC nor the expected turnaround time for such tests from AWWSC's Central Lab. Similarly, no reporting indicating the number and type of customer service calls handled, wait times, etc. from AWWSC's call center is routinely provided to PAWC's executives. Although PAWC's executive staff has access to AWWSC customer service metrics (i.e., call handling) on-demand and has quarterly reviews, it is not regularly accessed as part of PAWC's monthly reports. PAWC's routine reporting on Service Company and/or outsourced services are limited to PAWC specific data (i.e., headcount, employee turnover) that feed into the costs allocated to PAWC. However, no deliverables related to the quantification of externally provided services are conveyed routinely, leaving PAWC paying for its portion of the service

⁹ For example, AWWSC's call handling services are performed 50/50 directly by AWWSC staff and indirectly through an independent third-party vendor.

without assurances of those services meeting the company's needs. Instead, PAWC relies upon its AIA with AWWSC and its negotiated third-party service contracts to provide the foundation for external services.

Although AWWSC's reporting is accessible to PAWC's executive level management on an ad-hoc basis, no service level agreements have been established defining the measure of service, expected performance levels, etc. between PAWC and AWWSC. Routine reporting on externally provided services are limited to PAWC specific data and does not focus on overall performance of those services, which hinders PAWC's understanding of its overall performance and potential to identify opportunities for improvement. As a best practice, performance metrics for all outsourced functions should be established and reviewed periodically to assess value and ensure minimum service levels for outsourced or affiliated provided functions. Furthermore, goals should be set for affiliate-provided services that help to ensure regulatory compliance or other quality of service expectations are met.

4. Periodic refresher training on time entry is not required for shared service employees.

AWWSC employees are assigned preset allocators based upon their routine activities, role, and responsibilities, which automatically determines how labor expenses are appropriated. As non-routine work conditions occur, AWWSC uses exception time reporting, where employees report non-routine activities as a part of time entry. This requires the employee to be aware of their default labor allocation and when a project or work task deviates from that norm. In the PUC auditors' opinion, this type of setup requires sufficient training to ensure accurate time reporting.

PAWC and the Service Company rely upon AWWSC's new employee training, supervisory review process, accounting safeguards, and on-demand trainings, guides, and walkthroughs to support accurate charging of time to various subsidiaries. However, the PUC Auditors were unable to identify any ongoing refresher training on time entry for shared employees. Without periodic refresher training, staff may inadvertently create cross-subsidization between American Water's subsidiaries by failing to report time properly to the appropriate subsidiary(ies), especially when exception time reporting is leveraged. As a best practice, employees providing shared services should undergo periodic training to ensure proper time reporting procedures between entities are followed. In addition, with the heavy reliance on predetermined allocation rates, AWWSC should ensure that preset allocators are appropriate by periodically assessing them for accuracy.

Recommendations

- 1. File a new or amended affiliated interest agreement that accurately reflects the current company structure and the intercompany transactions occurring between PAWC and AWWSC.**

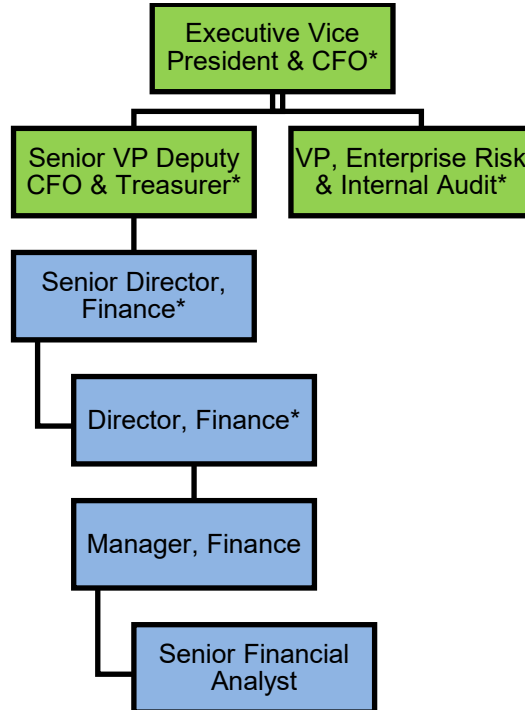
- 2. Update AWWSC's Cost Allocation Manual to define all allocation factors, updates in billing for services, and description of supporting processes.**
- 3. Establish SLAs for all critical functions provided through the service company, including IT, Customer Service, Fleet, Central Lab, etc.**
- 4. Require mandatory refresher training on time sheet entry and periodically review preset allocators for shared employees.**

VI. FINANCIAL MANAGEMENT

Background

As explained in Chapter II – Background, American Water Works Service Company Inc. (AWWSC or Service Company) is the centralized service company subsidiary of American Water Works Company Inc. (American Water). The Service Company provides a variety of services for all subsidiaries of American Water, including Pennsylvania-American Water Company (PAWC). PAWC does not employ its own finance personnel, instead centralized financial management functions are provided by AWWSC including debt management, tax planning, budgeting, pension fund management, centralized cash management and internal audit services. The AWWSC financial management organization is overseen by American Water’s Executive Vice President and Chief Financial Officer¹⁰ (EVP-CFO). Exhibit VI-1 presents an abbreviated organizational chart of the AWWSC Finance Department. An overview of the major responsibilities of the Finance Department are discussed further within this chapter.

Exhibit VI-1
American Water Works Service Company Inc.
Abbreviated Finance Department Organization Chart
As of May 2023



*: These positions have additional direct reports not shown on this chart.

Note: AWWSC employees who work directly with PAWC (State Finance personnel) are shown in blue.

Source: Data Requests EM-13, FM-25, FM-34, and interviews

¹⁰ Additional direct reports to AWWSC’s EVP-CFO include VP – Tax, Senior VP – Supply Chain & Strategic Projects, VP – Business Development, and Senior VP – Chief Accounting Officer

American Water's Finance and Treasury Functions:

American Water's Senior Vice President Deputy CFO and Treasurer oversees AWWSC's treasury, cash management, BIRS¹¹ and State Finance personnel, who work directly with specific affiliated state functions. Treasury actively manages PAWC's overall capital structure including acquiring short- and long-term borrowings. From 2019 through 2022, PAWC's Standard and Poor's corporate credit rating was "A" and PAWC's Moody's issuer rating was "A3." All debt is secured at the operating company level with PAWC's long-term debt consisting of mortgage bonds, PENNVEST loans, and unsecured notes payable to American Water Capital Corporation (AWCC), a financing subsidiary of American Water. Exhibit VI-2 reflects PAWC's capital structure for the years 2018 through 2022.

Exhibit VI-2 Pennsylvania-American Water Company Summary of Capital Structure As of December 31, 2018 – 2022

	2018	2019	2020	2021	2022
Long Term Debt	45.7%	45.0%	45.0%	44.6%	44.8%
Equity	54.3%	55.0%	55.0%	55.4%	55.2%
	100.0%	100.0%	100.0%	100.0%	100.0%

Source: PAWC annual reports to the PA PUC, auditor analysis

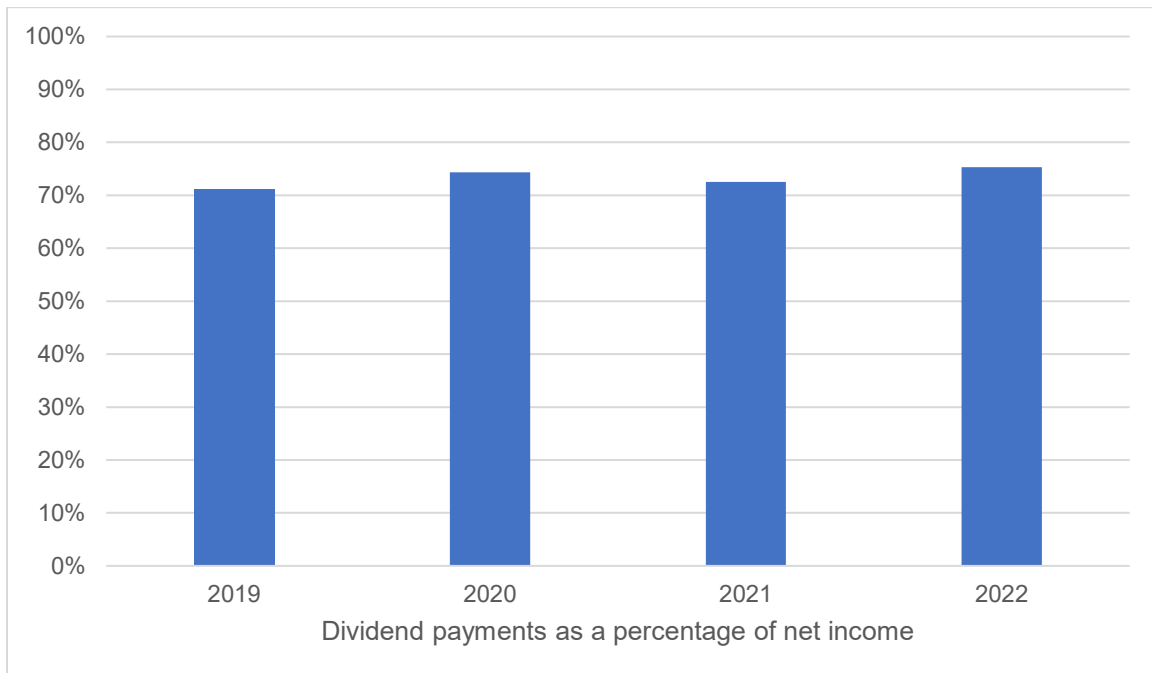
Cash collection and disbursement are handled by AWWSC's Cash Operations group within the Treasury function. Customer payments are accepted in several ways such as: electronic payments using online bill pay with the customer's bank (ACH), checks mailed to lockbox sites, credit or electronic check payments made by telephone or the internet through third party systems, etc. Funds collected in PAWC's bank account are transferred daily to AWCC's concentration bank account, which is comprised of cash receipts from all American Water affiliates. For this reason, PAWC's checks are issued by AWCC. Additionally, PAWC maintains a line of credit through AWCC. PAWC's available cash is used to pay-down the line of credit and checks issued increase the Company's line of credit balance.

As shown in Exhibit VI-3, PAWC provided annual dividend payments to American Water from 2019 through 2022, expressed as a percentage of its annual net income. During this period, the percentage of net income paid as a dividend to American Water ranged from 71% to 75%. PAWC's legal department provides guidance on laws related to the dividend calculation and ensures dividends paid do not exceed the maximum amount permissible in conformance with American Water's dividend policy. Additionally, each quarter the Accounting Department will calculate dividends based

¹¹ Budgeting, Internal Reporting and Revenue Analytics group of the Service Company

upon net income to common stock. The PAWC Board of Directors must approve dividend distributions prior to dividends being paid.

Exhibit VI-3
Pennsylvania-American Water Company
Dividend Payments to American Water Works Company
For Years Ended December 31, 2019 – 2022



Source: Data Requests FM-14, FM-22 and FM-33, auditor analysis

American Water’s Budgeting Process:

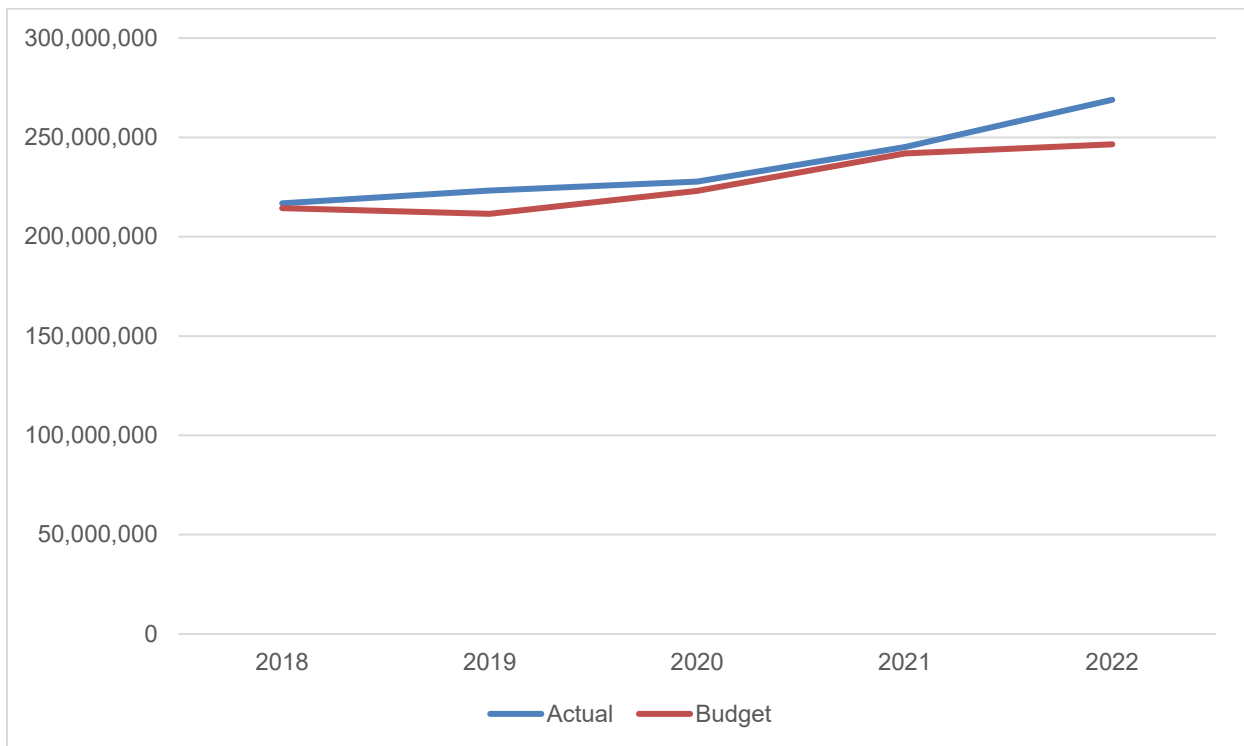
BIRS personnel and State Finance employees¹² are responsible for creating an annual budget and five-year plan for American Water and individual states, respectively, though the process involves frequent communication between the groups.

American Water’s budgeting process begins annually in January/February with the BIRS group collecting and distributing the global assumptions to be used by all subsidiaries. From February through May, Corporate Engineering prepares a five-year capital plan. From April through July, State Finance personnel draft a five-year financial overview, which includes an operating budget and financial statements. In July, State Finance presents the annual budget and five-year financial overview to the AW Executive Leadership Team. From August to September, BIRS personnel prepare a consolidated five-year financial overview for American Water, which is presented in October to the American Water Board of Directors for approval.

¹² State Finance employees are shown in blue within the organizational chart in Exhibit VI-1.

Subsequently, State Finance personnel monitor PAWC’s operating budgets using updated forecasts throughout the budget year to reflect ongoing changes whereas PAWC’s Engineering personnel monitor the capital budget and the status of ongoing projects. Monthly variances are reported and discussed for the operating and capital budgets during recurring meetings internally at PAWC and AWWSC. Exhibit VI-4 shows a comparison of PAWC’s budgeted and actual operating and maintenance expenses from 2018 through 2022. See Chapter VII – Water Operations and Chapter VIII – Wastewater Operations for more information about PAWC’s capital budget for these functions.

**Exhibit VI-4
 Pennsylvania-American Water Company
 Operating and Maintenance Expenses
 For the Years 2018 through 2022**



Source: Data requests FM-5 and FM-30

Post-retirement benefits for American Water employees:

American Water sponsors a noncontributory defined benefit pension plan covering eligible employees hired before January 1, 2006. Benefits under the plan are based on the participant’s years of service and compensation. Union employees hired on or after January 1, 2001, had their accrued benefit frozen as of December 31, 2005, and will receive this benefit as a lump sum upon termination or retirement. Available to all PAWC employees is a 401(k) savings plan, which is a defined contribution plan. The

company matches contributions based on a percentage of an employee’s contribution, subject to specific limitations.

An actuarial firm assesses the obligations and funding requirements for the American Water sponsored plans. The company’s pension funding practice is to contribute at least the greater of the minimum amount required by the Employee Retirement Income Security Act of 1974 or the normal cost. Additionally, the company maintains other postretirement benefit plans providing varying levels of medical and life insurance to eligible retirees. The retiree welfare plans are closed for union employees hired on or after January 1, 2006. The plans had previously closed for non-union employees hired on or after January 1, 2002. The company’s policy is to fund other postretirement benefit costs up to the amount recoverable through rates. See Exhibit VI-5 for the funding status of American Water’s defined benefit pension plan and retiree welfare plan as of December 31, 2022¹³.

Exhibit VI-5
American Water Works Company Inc.
Pension Plan and Retiree Welfare Plan Funding Status
As of December 31, 2022

	Pension Plan	Retiree Welfare Plan
Projected Benefit Obligation	\$ 1,578,000,000	\$ 255,000,000
Fair Value of Assets	\$ 1,413,000,000	\$ 254,000,000
Funded Percentage	89.54%	99.61%

Source: American Water’s Annual Report for 2022

American Water’s Internal Audit Function:

American Water’s Internal Audit department (IA), which is led by the Vice President of Enterprise Risk and Internal Audit¹⁴, develops an annual Internal Audit Plan based on risk for the entire corporation. Most internal audits performed from 2018 through 2022 focused on functional areas shared by American Water’s subsidiaries, although a few state-specific audits are completed each year. The number of planned audits ranged from 35 to 48 projects annually with an average of two each year that specifically included PAWC locations/processes. PAWC specific operational audits during this period focused on emerging contaminants, acquisition processes, corrosion control, PAWC Operations, customer bill accuracy and customer meters.

¹³ Information regarding accumulated and projected benefit obligations is not prepared at the subsidiary level.

¹⁴ See Finding and Conclusion No. 1 within this chapter for more information on the Internal Audit VP’s reporting relationships. See Chapter IV – Corporate Governance for more information about American Water’s IA function.

Findings and Conclusions

Our examination of the Financial Management function focused primarily on a review of accounting policies and procedures, the capital and operating budget process, budget variance tracking and reporting, long and short-term financing policies and activities, dividend policies, internal audit, and pension program funding. Based on our review, PAWC should initiate or devote additional efforts to improving the efficiency and/or effectiveness of its financial management function by addressing the following:

1. American Water's Internal Audit Charter inaccurately describes the Vice President of Enterprise Risk and Internal Audit's administrative reporting relationship.

An internal audit charter should provide a foundation for its function, which includes clearly and accurately assigning the reporting relationship(s) for the head of internal audit. To support the independence of the function, the head of internal audit should report functionally to the Audit Committee and administratively to the company's executive management.

The American Water Internal Audit (IA) charter stated that the Vice President of Internal Audit reports functionally to the Chair of the Audit, Finance and Risk Committee and administratively to the American Water Chief Financial Officer (CFO) and a dotted line to the AW Chief Executive Officer (CEO). However, the charter for American Water's Audit, Finance and Risk Committee stated that the Vice President of Internal Audit reports directly to the Chair of the Audit Committee and administratively to the American Water CFO.

However, during interviews with the Chair of the Audit, Finance and Risk Committee and the Vice President of Internal Audit the PUC auditors were told that there is no dotted line reporting relationship to the CEO. Therefore, the IA department's charter should be updated to accurately reflect the current reporting relationship of the VP of IA.

Recommendation

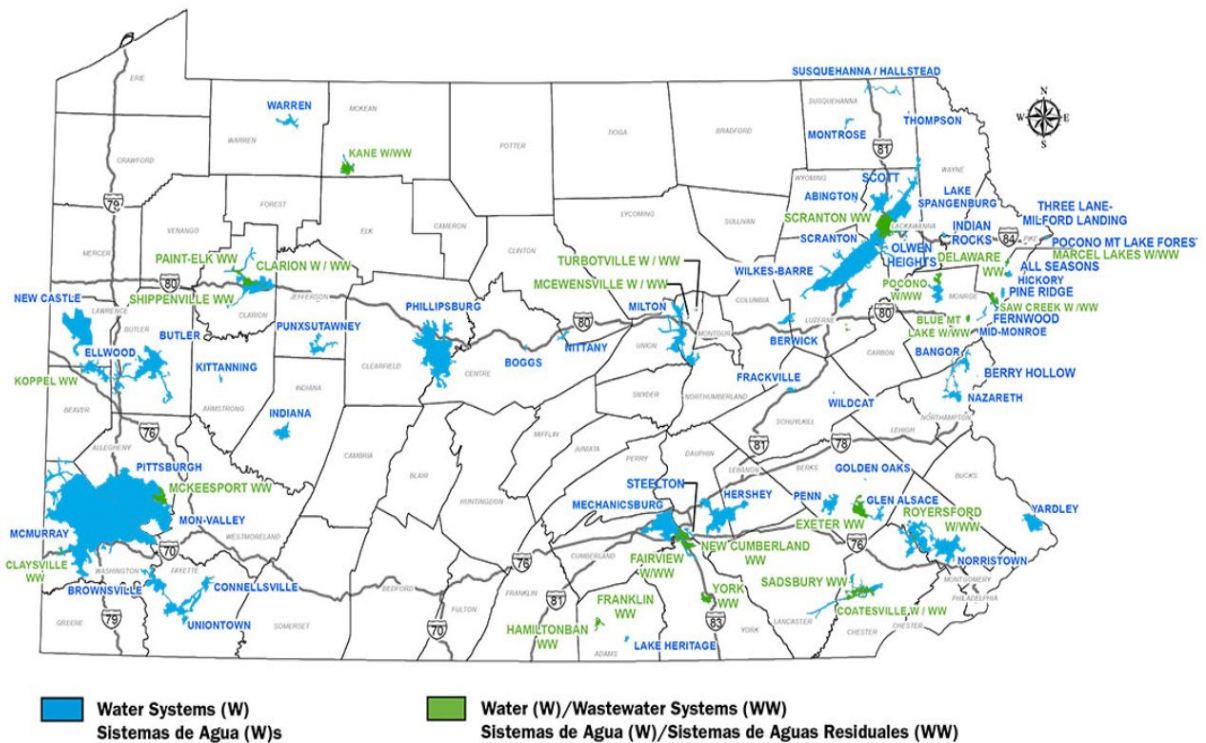
1. Update American Water's Internal Audit Charter to accurately reflect the administrative reporting relationship of the Vice President of Enterprise Risk and Internal Audit.

VII. WATER OPERATIONS

Background

As mentioned in Chapter II - Pennsylvania-American Water Company (PAWC or the Company) is the largest regulated water and wastewater service provider in Pennsylvania, which operates approximately 38 water and wastewater districts across Pennsylvania within 416 communities in 37 counties. PAWC provides potable water to approximately 679,000 water customers, or roughly 2.4 million people, in addition to serving 97,100 wastewater customers. PAWC's service territories are shown in Exhibit VII-1.

**Exhibit VII-1
Pennsylvania-American Water Company
Service Territory – Water & Wastewater
As of December 31, 2022**

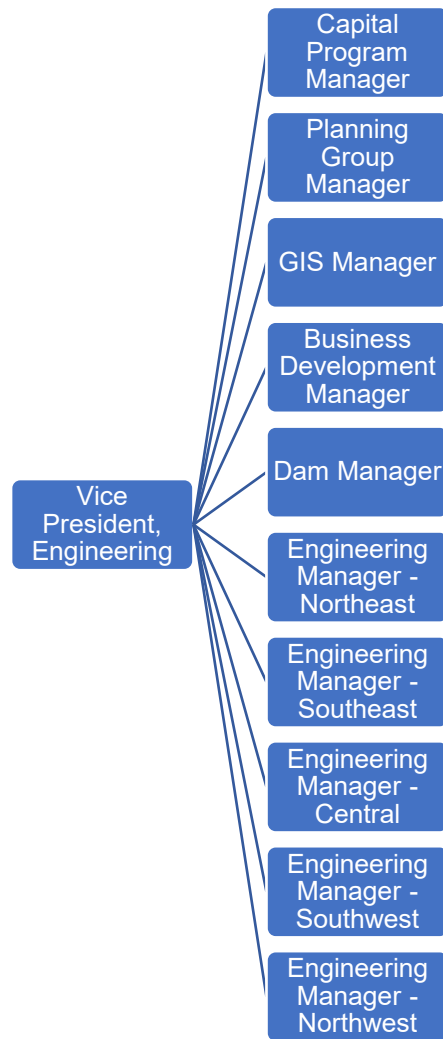


Source: www.amwater.com

The Vice-President of Operations reports to PAWC's President and has responsibility for water and wastewater operations (see Chapter VIII – Wastewater Operations) across Pennsylvania. The operations department has employees specifically dedicated for either water or wastewater operations. Depending on their responsibilities employees could assist in either the treatment and production of potable water or managing collections and treatment of wastewater. Water and wastewater

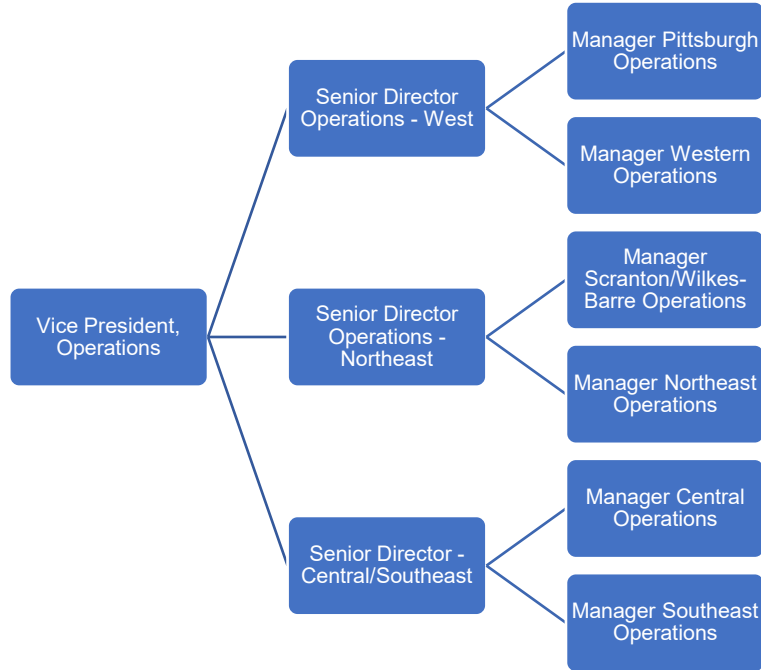
operations are also supported by various departments and positions. The engineering department, for example, is responsible for design and planning of all production and distribution assets. Similarly, the Vice President of Engineering also reports directly to the PAWC President and aims to improve the efficiency and increase reliability of the Company's water and wastewater infrastructure. Exhibits VII-2 and VII-3 highlight the PAWC organizational structure for engineering and operations, respectively.

Exhibit VII-2
Pennsylvania-American Water Company
PAWC Engineering Department Organization Chart
As of April 26, 2023



Source: Data Request EM-32

Exhibit VII-3
Pennsylvania-American Water Company
PAWC Operations Department Organization Chart
As of April 26, 2023



Source: Data Request EM-32

PAWC’s service territories are divided into three regions: the Western Region, the Central/Southeastern Region, and Northeastern Region. Each region is led by a Senior Director. The three regions are further split into sub-regions, most of which encompass multiple districts (the exceptions being the Pittsburgh and Scranton Wilkes-Barre districts due to the size and number of customers). Each sub-region is overseen by a manager which reports to the Senior Director positioned within their respective region. Exhibit VII-4 displays the PAWC water service regions and sub-regions along with the number of customers within each respective region.

Exhibit VII-4
Pennsylvania-American Water Company
Water Service Regions and Customer Totals
As of December 31, 2022

Water Service Regions & Districts					
Western Region		Central/Southeastern Region		Northeastern Region	
Pittsburgh Sub-Region		Central Sub-Region		WB/Scranton Sub-Region	
Pittsburgh	136,755	Mechanicsburg	41,981	WB/Scranton	136,197
Southwest Sub-Region		Hershey/Palmyra	20,373	Northeast Sub-Region	
McMurray	57,982	Coatesville	14,599	Abington	6,361
MonValley/Elizabeth	21,423	Lake Heritage	870	Susquehanna	2,533
Uniontown/Connellsville	13,536	Milton	12,887	Bangor	3,755
Brownsville/California	4,676	Berwick	6,288	Nazareth	10,143
Northwest Sub-Region		Frackville	2,347	Pocono	8,489
New Castle/Ellwood	26,816	McEwensville	129	Lehman Pike	8,433
Butler	19,622	Turbotville	323	Northeastern Region Total	175,911
Indiana	7,520	Steelton	2,359	PAWC Total	
Punxsutawney	3,610	Southeast Sub-Region		679,396	
Clarion	4,236	Norristown	33,173		
Kittanning	1,966	Yardley	12,892		
Warren	5,430	Glen	9,490		
Kane	2,077	Penn/Wyomissing	12,661		
Philipsburg	7,933	Royersford	18,928		
Boggs	24	Central/Southeastern Region Total		189,300	
Nittany	579				
Western Region Total				314,185	

Source: Data Request WO-4

PAWC's production facilities consist of 37 surface water treatment plants, 24 wastewater treatment plants, and 94 groundwater well stations. Additionally, PAWC's distribution facilities consist of 272 water storage facilities and over 11,571 miles of water and wastewater pipe. Exhibit VII-5 shows the material composition of PAWC's drinking water pipe.

Exhibit VII-5
Pennsylvania-American Water Company
Miles of Drinking Water Main by Material Type
As of January 2023

Material Type	Miles of Main
Asbestos Concrete	484
Cement	138
Cast Iron	2,716
Ductile Iron	6,414
Polyvinyl chloride	373
Other	193
TOTAL	10,318

Source: Data Request WO-34

PAWC utilizes MapCall, an SAP-based work management system. When the company is notified of a leak either through PAWC's leak survey process or a notice from an external party, a work order is created in MapCall. Once the work order is created, an operations crew from the district will respond and repair the leak. The company addresses leaks upon discovery and has no backlog of leak repairs. Exhibit VII-6 shows the number of main and service leaks that PAWC repaired from 2018 to 2022. Overall, the company witnessed a 6.6% increase of main leaks. However, 19 PAWC districts observed an overall leak reduction for the five-year period. In addition, the number of services leaks repaired decreased substantially. The company invested in technologies to help identify leaks and reduce time needed for leak detection, such as acoustic loggers.

Exhibit VII-6
Pennsylvania-American Water Company
Main and Service Leaks Repaired
2018 – 2022

Material Type	2018	2019	2020	2021	2022	Percentage Change
Total Main Leaks	2,123	2,011	1,947	2,178	2,262	6.6 %
Total Service Leaks	1,172	1,042	1,038	389	304	-74.1 %

Source: Data Requests WO-38 (Part 5) & WO-38 (Part 6)

The company also uses MapCall for line-locate requests. When a line-locate request is received, the company pulls information about the request from the KorTerra software (a vendor that sells damage prevention software) and sends it to MapCall. The company then generates a work order for the request. When the request is completed, the work order will be marked as complete in MapCall. This will then trigger the KorTerra software to be updated, alerting Pennsylvania One Call that the line-locate request has been completed.

Additionally, PAWC can have MapCall pull system-related data from its GIS system. PAWC has deployed ArcGIS, which enables field employees to access location and key underground data points anywhere using the company's mobile devices (iPads, iPhones, etc.). A GIS Manager and their team within the Engineering department is responsible for this system and supports operational activities such as main replacement and locating work. Meanwhile, the Planning Engineering Group within the Engineering department is responsible for capacity planning. The group looks at future growth and the current capacity of systems in order to calculate future needs.

Capacity planning has a role in main replacement activity but encompasses all capital assets including dams, water treatment plants, main upgrades, etc. Additionally, the Planning Engineering Group will meet with operations groups across the company to discuss any system issues that if targeted, would help to aid operational efforts. All of these factors are then analyzed and discussed at a state-wide level for determining project priority. Exhibits VII-7 and VII-8 show PAWC's capital expenditures and operation and maintenance expenditures by region, respectively.

Exhibit VII-7
Pennsylvania-American Water Company
Capital Expenditures – Water
2018 – 2022

Water Sub-Region	2018	2019	2020	2021	2022	Percentage Change
Western Region						
Pittsburgh	\$53,233,729	\$71,290,938	\$57,344,413	\$56,984,399	\$82,432,990	54.85%
Southwest	\$42,918,116	\$48,165,872	\$54,254,806	\$48,401,726	\$56,196,959	30.94%
Northwest	\$78,634,515	\$28,613,431	\$27,267,965	\$33,232,188	\$45,563,365	-42.06%
Total	\$174,786,360	\$148,070,241	\$138,867,184	\$138,618,313	\$184,193,314	5.38%
Central/Southeastern Region						
Central	\$31,620,159	\$26,911,663	\$52,354,070	\$33,594,150	\$45,940,157	45.29%
Southeast	\$15,579,224	\$22,617,352	\$43,201,355	\$36,488,133	\$38,640,251	148.02%
Total	\$47,199,383	\$49,529,015	\$95,555,425	\$70,082,283	\$84,580,408	79.20%
Northeastern Region						
Wilkes-Barre/Scranton	\$63,800,433	\$46,980,844	\$52,995,488	\$44,375,661	\$63,057,716	-1.16%
Northeast	\$13,113,785	\$15,435,490	\$18,519,438	\$14,107,765	\$26,105,511	99.07%
Total	\$76,914,218	\$62,416,334	\$71,514,926	\$58,483,426	\$89,163,227	15.93%
Corporate	\$17,372,581	\$26,341,395	\$19,917,783	\$26,520,586	\$43,510,536	150.46%
Water Totals	\$316,272,542	\$286,356,985	\$325,855,318	\$293,704,608	\$401,447,485	26.93%

Source: Data Requests WO-38 (Part 2)

**Exhibit VII-8
Pennsylvania-American Water Company
O&M Expenditures – Water
2018 – 2022**

Water Sub-Region	2018	2019	2020	2021	2022	Percentage Change
Western Region						
Pittsburgh	\$20,428,771	\$21,107,969	\$21,017,984	\$22,268,153	\$26,313,493	28.81%
Southwest	\$13,210,303	\$13,354,017	\$13,125,520	\$15,049,020	\$15,861,605	20.07%
Northwest	\$18,895,035	\$19,301,554	\$18,561,393	\$20,465,246	\$21,904,973	15.93%
Total	\$52,534,110	\$53,763,540	\$52,704,897	\$57,782,420	\$64,080,071	21.98%
Central/Southeastern Region						
Central	\$15,195,286	\$15,258,405	\$16,176,243	\$17,533,350	\$19,594,399	28.95%
Southeast	\$10,124,759	\$10,318,137	\$10,296,914	\$11,124,079	\$12,958,605	27.99%
Total	\$25,320,045	\$25,576,542	\$26,473,157	\$28,657,429	\$32,553,005	28.57%
Northeastern Region						
Wilkes-Barre/Scranton	\$20,857,994	\$19,930,900	\$19,749,197	\$21,979,586	\$23,292,225	11.67%
Northeast	\$7,120,275	\$6,711,465	\$6,727,373	\$7,824,153	\$7,487,249	5.15%
Total	\$27,978,269	\$26,642,365	\$26,476,570	\$29,803,739	\$30,779,475	10.01%
Corporate	\$88,402,861	\$95,066,972	\$98,443,969	\$103,461,065	\$108,356,284	22.57%
Water Totals	\$194,235,284	\$201,049,419	\$204,098,593	\$219,704,653	\$235,768,834	21.38%

Source: Data Requests FM-5 & FM-30 (Part 2)

To manage its infrastructure, PAWC utilizes a prioritization tool called the Information Asset Planner. As of 2022, the company uses the Information Asset Planner only within its water systems and the NASSCO software for its wastewater systems. Where applicable, the prioritization tool will provide reports on district-level systems. In some cases, the company will not use the prioritization tool because some systems, like those recently acquired by the company, do not have enough data to use the tool effectively. For systems where the tool is applicable, the Information Asset Planner is applied to each system from a holistic perspective. From this perspective, the tool is able to determine a system's:

- Likelihood of Failure
- Consequence of Failure

The Likelihood of Failure factor attempts to predict the probability that a pipe segment will survive, whereas the Consequence of Failure factor assess the impact if a break were to occur and considers pipe location and criticality.

These two factors play a crucial role in the company’s three-tiered approach for determining main replacement needs. The first tier is quantitative and includes the Likelihood of Failure factor and other relevant data on pipe condition. The second tier is based on more empirical evidence and field observations. This second tier is where the Consequence of Failure is incorporated. The final tier incorporates opportunity or ideal planning for a replacement project. This tier accounts for other planned work in the area (i.e., other utilities or the Pennsylvania Department of Transportation) that may make it easier or cheaper to perform main replacement.

Once pipe segments are rated using the prioritization model, they are then incorporated into the company’s capital project and main replacement plans. Exhibit VII-9 shows the company’s main replacement efforts from 2018 – 2022.

Exhibit VII-9
Pennsylvania-American Water Company
Main Replacement Efforts (in miles)
2018 – 2022

Recurring Replacement Category	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	Percentage Change
Main Replacement-Scheduled	62.9	92.6	98.7	43.4	76.0	20.83%
Main Replacement-Unscheduled & Relocation	8.6	5.5	8.4	5.7	4.0	-53.49%
Investment Projects	21.5	4.9	6.8	4.5	12.0	-44.19%
Totals	93.0	103.0	113.9	53.6	92.0	-1.08%

Source: Data Request WO-38 (Part 4)

Findings and Conclusions

Our examination of the Water Operations function included a review of policies and procedures, capacity planning, drought contingency planning, engineering and construction, maintenance, production, main replacement, non-revenue water, damage prevention, and the cross-connection program. Based on our review, Pennsylvania-American Water Company should devote additional efforts to improve the effectiveness of its water production, transmission, and distribution operations by addressing the following:

1. PAWC's UFW levels are above 20% and are reported incorrectly.

To determine the water lost between production and consumption, water companies can utilize the Unaccounted-For Water (UFW) or Non-Revenue Water (NRW) methodologies to complete such analysis. Although both methodologies include water lost in the distribution system from leaks, theft, etc., the primary difference between the two methodologies is that NRW factors in unbilled authorized consumption (e.g., firefighting, emergency services, etc.). The UFW methodology only factors in legitimate consumption, both metered and unmetered. Both the International Water Association (IWA) and the American Water Works Association (AWWA) recommend water companies employ the NRW methodology.

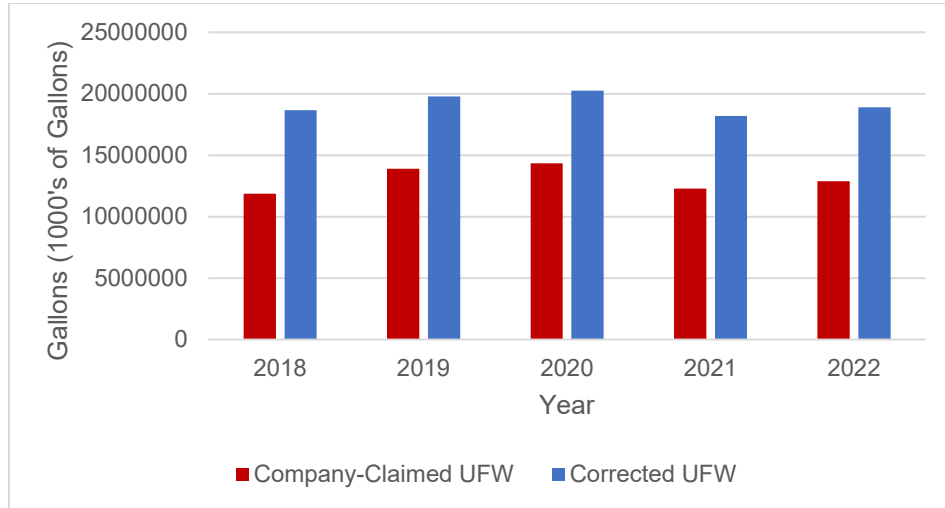
Additionally, the NRW methodology allows water companies to determine system performance. From the AWWA Water Audit Methodology, the Infrastructure Leakage Index (ILI) is a performance indicator designed for benchmarking of real losses among water utilities. The ILI is the ratio of the level of current annual real losses (CARL) to the unavoidable annual real losses (UARL). The CARL value is comprised of systemic leaks that could be recoverable. The UARL is a reference minimum level of leakage that is calculated in a system-specific manner for a water utility and intended to represent a theoretical minimum leakage value for a system. The ILI should only serve as a benchmarking indicator to compare water company performance.

Currently, the Commission does not have a regulation for NRW but is exploring the water audit methodology in a rulemaking at Docket No. L-2020-3021932. Meanwhile, the Commission defines water loss targets within Title 52 § 65.20 (4) of the Pennsylvania Code. Specifically, the code states that “levels of unaccounted-for-water should be kept within reasonable amounts. Levels above 20% have been considered by the Commission to be excessive.” In addition, the company’s long-term goal within each district is to reduce the amount of UFW to less than 20%.

Unfortunately, the UFW data provided by PAWC to the Commission and the audit staff mixes the two methodologies. PAWC submitted annual financial reports to the Commission from 2018 – 2022¹⁵ that included information on how the unaccounted-for water amount was calculated (e.g., schedule 500). For each of the five annual reports, unavoidable leakage (in gpd/miles of main) was included as an exclusion from the unaccounted-for water calculation. In addition, this data was also provided to the audit staff in response to data requests during the audit. This unavoidable leakage is equivalent to the UARL and is part of the NRW methodology as detailed above. Although UARL is unavoidable, it is not excludable from UFW since UARL is not within the UFW methodology. Exhibits VII-10 and VII-11 detail PAWC’s UFW values from 2018-2022 with (Company-Claimed UFW) and without (Corrected UFW) the unavoidable leakage.

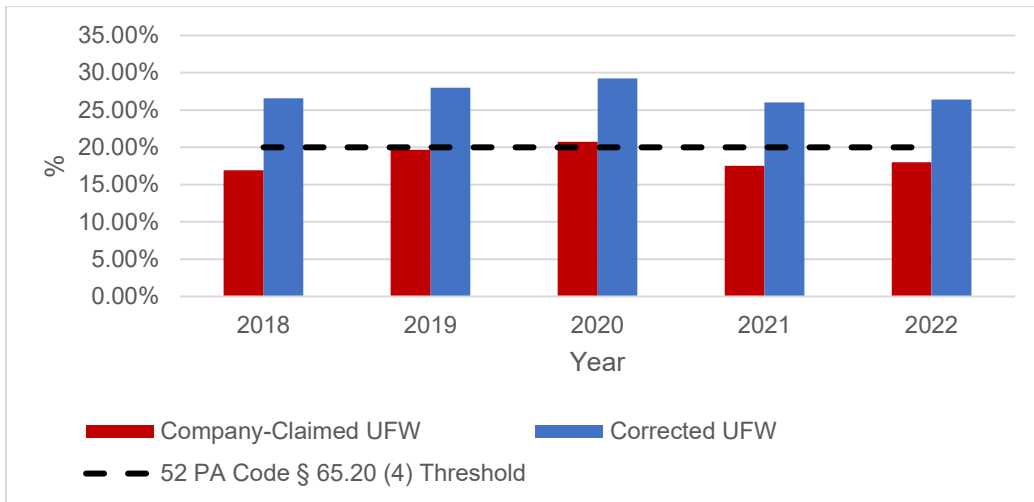
¹⁵ Title 52 § 65.19 of the Pennsylvania Code states that unless prior permission to do otherwise granted, a public utility, other than transportation, subject to the jurisdiction of the Commission, shall file annual financial reports with the Commission by April 30 immediately following the reporting year, for reports based upon the calendar year.

**Exhibit VII-10
 Pennsylvania-American Water Company
 Unaccounted-For Water
 2018 – 2022**



Source: Pennsylvania-American Water Annual Reports from 2018 through 2022

**Exhibit VII-11
 Pennsylvania-American Water Company
 Unaccounted-For Water Percentages
 2018 – 2022**



Source: Pennsylvania-American Water Annual Reports from 2018 through 2022

The company takes various steps to decrease NRW/UFW levels. Some of these initiatives include ensuring metering accuracy (for production and delivery), pressure management, cellular acoustic monitoring, and partnering with local municipalities and boroughs to share Infiltration and Inflow (I & I) data. The company also has deployed various District Meter Areas (DMAs), which segment systems into small components in

the attempt to identify causes for lost water. For the future, PAWC is exploring advanced technology that could help identify leaks such as using satellite imagery or drones to differentiate untreated groundwater and treated facility water to detect leaks. The company already has some employees going through Federal Aviation Administration training to acquire a drone-license.

The average amount of water lost in excess of the Commission's 20% UFW for 2018 – 2022 is approximately 5.1 billion gallons. By using the company's average variable production cost (in \$/Million gallons) from 2018 – 2022¹⁶, the company could save \$2.53 million annually. Therefore, the company should reduce UFW and should stop incorrectly reporting UFW.

2. PAWC has observed a decrease in its backflow prevention device testing for commercial and industrial devices.

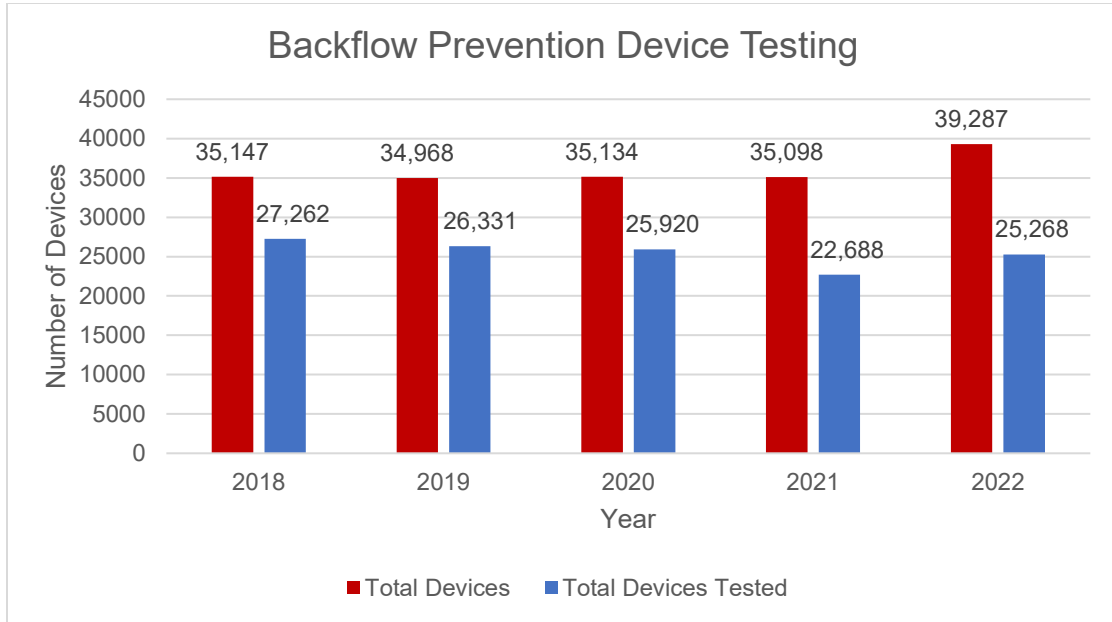
Backflow prevention devices are devices installed in a water distribution system that protect a system from contamination from certain situations. If backflow (which results from a loss of pressure due to main flushing, a break in the water main, etc.) were to occur, this device prevents potentially unsafe water from returning to the distribution system. Essentially, water will only flow from the distribution system to the customer's service line if the device is installed.

There are various backflow prevention devices; however, they are often categorized by customer class. Residential customers typically have smaller service lines and less potential for backflow conditions so smaller devices are needed. Once installed, PAWC does not require any additional maintenance or review of these residential devices. However, customers that are categorized as commercial or industrial, specifically those with larger service lines, have larger backflow prevention devices that are tracked and require annual testing.

Exhibit VII-12 shows the company's number of testable commercial and industrial backflow prevention devices and the number of backflow prevention devices tested for 2018 – 2022. Meanwhile, Exhibit VII-13 displays the testing percentages for backflow prevention devices and the percent change from 2018 – 2022 by district.

¹⁶ This was \$496.18 for every million gallons and was provided in data requests WO-8 and WO-41.

Exhibit VII-12
Pennsylvania-American Water Company
Backflow Prevention Device Testing
2018 – 2022



Source: Data Request WO-28 & WO-38 (Part 12)

Exhibit VII-13
Pennsylvania-American Water Company
District-Level Backflow Prevention Device Testing
2018 – 2022

District	2018	2019	2020	2021	2022	% Change
Pittsburgh	75.98%	75.22%	71.64%	64.46%	62.81%	-17.34%
Steelton	0.00%	0.00%	0.00%	0.00%	100.00%	N/A
McMurray	79.66%	78.20%	76.05%	70.39%	72.07%	-9.53%
Mon-Valley	75.94%	75.74%	73.68%	67.73%	62.01%	-18.35%
Uniontown	83.75%	78.41%	80.75%	67.63%	51.88%	-38.06%
Brownsville	82.18%	77.98%	82.42%	78.53%	75.29%	-8.39%
New Castle	78.17%	76.94%	74.44%	69.46%	51.84%	-33.68%
Butler	83.62%	81.36%	85.45%	74.43%	71.37%	-14.65%
Indiana	85.79%	70.13%	78.24%	67.62%	74.78%	-12.83%
Punxsutawney	68.38%	63.68%	66.81%	49.57%	64.23%	-6.06%
Clarion	83.26%	82.11%	80.54%	69.86%	68.83%	-17.33%
Kittanning	78.68%	63.04%	79.26%	63.16%	60.42%	-23.21%
Warren	72.81%	79.18%	77.67%	69.47%	66.20%	-9.08%
Kane	87.31%	81.34%	86.03%	74.26%	69.66%	-20.22%
Norristown	73.11%	69.84%	65.20%	54.02%	55.09%	-24.64%
Yardley	73.68%	76.37%	68.25%	54.02%	55.42%	-24.79%
Abington	76.69%	71.04%	78.46%	64.26%	69.55%	-9.31%
Susquehanna	81.58%	83.46%	72.83%	70.26%	69.23%	-15.14%
Bangor	74.43%	69.77%	65.67%	57.77%	51.71%	-30.52%
Nazareth	79.43%	77.92%	79.56%	64.60%	70.44%	-11.32%
Pocono	75.80%	72.90%	68.79%	54.49%	69.78%	-7.94%
Glen Alsace	78.39%	76.45%	76.95%	66.01%	67.61%	-13.75%
Mechanicsburg	81.07%	79.07%	80.53%	69.65%	68.27%	-15.80%
Hershey	83.27%	80.10%	85.01%	68.28%	70.77%	-15.01%
Wyomissing	84.25%	78.28%	79.18%	67.01%	71.25%	-15.44%
Royersford	77.84%	75.46%	66.80%	61.19%	62.30%	-19.95%
Coatesville	69.20%	69.35%	67.18%	54.34%	48.81%	-29.47%
Lake Heritage	100.00%	66.67%	66.67%	66.67%	0.00%	-100.00%
Lehman Pike	61.02%	80.36%	46.43%	55.77%	57.63%	-5.56%
Milton	79.00%	83.95%	80.22%	70.01%	72.30%	-8.49%
Philipsburg	81.98%	78.95%	88.00%	74.86%	81.28%	-0.85%
Berwick	80.43%	76.95%	76.42%	66.57%	71.07%	-11.64%
Frackville	57.14%	51.79%	71.93%	72.73%	61.54%	7.69%
Boggs	16.67%	92.31%	92.31%	92.31%	71.43%	328.57%
Turbotville	0.00%	0.00%	0.00%	87.50%	81.82%	N/A
Scranton	76.46%	72.73%	71.17%	61.89%	63.78%	-16.58%
Total	77.57%	75.30%	73.77%	64.64%	64.32%	-17.08%

N/A – Not Applicable

Source: Data Request WO-28 & WO-38 (Part 12)

From Exhibit VII-13, 32 of the 36 districts observed a negative percentage change (or decrease) for compliance with testing requirements for customers with testable devices. In fact, many districts saw over 10% decline in compliance with only two districts (Boggs and Frackville) posting an improvement from 2018 to 2022.

Customers with a testable backflow prevention device are responsible to hire a certified backflow tester to certify to PAWC that their device has been tested. To aid this effort, PAWC sends out letters to remind customers of their testing obligation each year. The company also has a follow-up notification process and, in the past, has terminated service for commercial customers who had not tested that year. However, approximately 36% of customers with testable devices did not test their device in 2022.

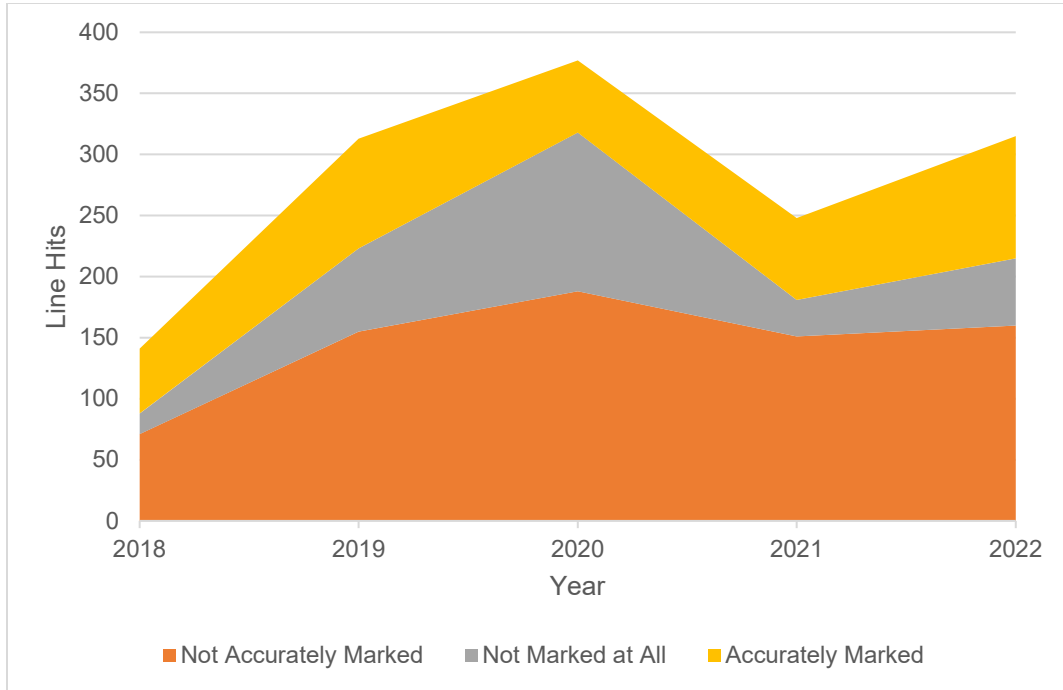
For comparison purposes, a testing rate of 80% or higher is generally considered acceptable with best performers reaching well over 90%. PAWC was close to this level in 2018 but through the pandemic this performance has declined. Understandably, there were commercial and industrial customers who shuttered their businesses over this timeframe but may still be an active paying customer, despite little to no water usage. Various other factors may also play a role into why customers are no longer testing their devices despite a similar compliance program from PAWC, like change of ownership, financial hardship, closure, ignorance, etc. Nonetheless, 25 Pa Code §§ 109.701(a) clearly makes the customer responsible for the device and requires the utility to enforce compliance up to and including termination. Unfortunately, decreased testing levels could increase the chance of a backflow prevention device failing, leading to contamination within PAWC's distribution system. Therefore, PAWC should reevaluate its backflow prevention program and consider additional outreach, help, or enforcement actions to increase testing compliance.

3. PAWC has had an increase in line hits to its underground infrastructure since the last report.

The 2017 Underground Utility Line Protection Law (Act 50) provides oversight and enforcement for damage prevention to the Pennsylvania Public Utility Commission and additionally defines roles and responsibilities to all parties involved in construction projects in Pennsylvania. The main goal of Act 50 is to prevent damages to underground infrastructure and to establish protocols and enforcement when a damage occurs. Act 50 highlights that all parties play a role in protecting underground infrastructure including facility owners, contractors, project owners, and homeowners. More specifically, PAWC is a facility owner, but can also be a project owner or may hire contractors. Therefore, PAWC must protect its own infrastructure but also must follow safe digging practices when performing work on its system.

When damages do occur, the company characterizes line hits into two separate categories: at-fault and not-at-fault hits. If PAWC does not mark or incorrectly marks its facilities, the Company did not comply with Act 50 and is at-fault. Meanwhile, if a third-party hits PAWC underground facilities despite compliance with Act 50, then PAWC categorizes it as not-at-fault. Exhibit VII-14 shows all line hits associated with PAWC from 2018 through 2022.

**Exhibit VII-14
 Pennsylvania-American Water Company
 Company Annual Line Hit Data
 2018 – 2022**

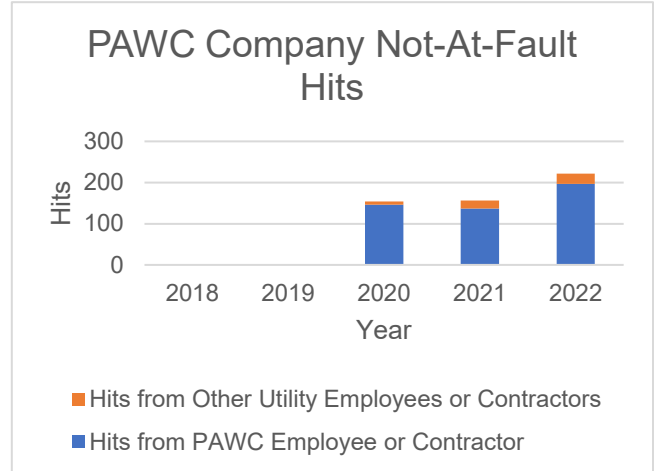
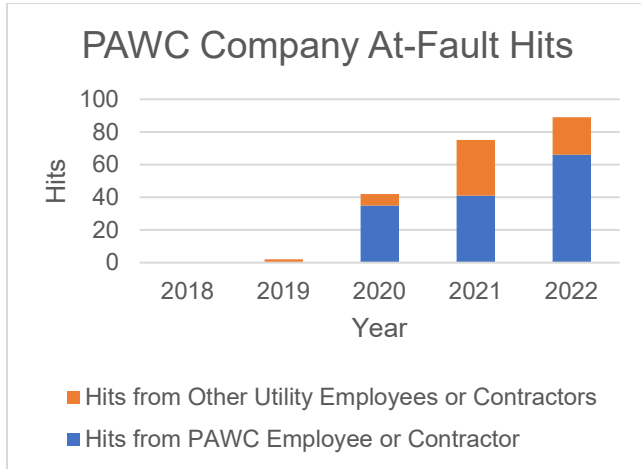


Source: Data Request WO-38 (Part 7)

Upon further discussion with PAWC, Exhibit VII-14 includes all line hits (i.e., either to PAWC facilities from a third party or itself, or by PAWC to other facility owners). Unfortunately, PAWC line hit data is only partial prior to 2020 thereby making it difficult to compare third-party damages to PAWC from PAWC damages to third parties. However, considering all damages caused by PAWC (either cases where PAWC was at fault for someone hitting their facility or hitting someone else’s facility) shown in Exhibit VII-14 (above), there is an increase in company at-fault hits from 2018 to 2022.

Looking at this data differently, the audit staff separated the data into three main buckets as presented in Exhibit VII-15; PAWC at-fault hits (where PAWC was responsible for hits on its own facilities and other utility facilities), hits where PAWC was not-at-fault (where the other facility owner or excavator was responsible for hitting PAWC facilities), and unknown facility owners (where it was unclear within PAWC data whether the damage was to PAWC or another facility owner). Although there is uncertainty of the owner and who was responsible in the unknown facility category, the data still shows most hits from PAWC or its contractors.

**Exhibit VII-15
 Pennsylvania-American Water Company
 PAWC Damages by Category
 2018 – 2022**



Source: Data Request WO-45

In all three categories, the number of hits by PAWC employees or contractors outpace other utility owners over the 2018 to 2022 time period. Although the unknown category makes true analysis difficult, PAWC has the most control over these types of line hits (from PAWC employees or PAWC contractors) albeit through proper training, adequate business practices, etc. of its employees and to a lesser extent its contractors. Consequently, a robust damage prevention program can significantly mitigate although not entirely eliminate line hits.

PAWC performs damage prevention training for employees depending upon the individuals' roles. When the training is completed, employees may work with vendors to improve line locating techniques. The company has also started to use MapCall to create preventative maintenance work orders. Moving to electronic work orders allows PAWC to access a history of work done. In addition, the company continuously is updating its GIS system and making it more accessible to field employees to aid in line

locates. Additionally, PAWC started having employees capture photo documentation of the line-locate request area. These initiatives should help to improve PAWC’s damage prevention performance.

The cause of a line hit can be complex and highly dependent on various field conditions. However, as presented throughout this report, if PAWC does not optimize its resources, this factor greatly increases the risk that a damage might occur. Although a number of hits to PAWC facilities were the fault of PAWC employees or PAWC hired contractors, the audit staff also analyzed third-party hits to PAWC’s facilities. Pulling data from Exhibit VII-15’s first two graphs, third-party data is presented within Exhibit VII-16 from 2018 – 2022.

**Exhibit VII-16
Pennsylvania-American Water Company
Third-Party Hits to PAWC Facilities
2018 – 2022**

Year	PAWC At-Fault Hits	Third-Party At-Fault Hits
2018	N/A*	N/A*
2019	2*	N/A*
2020	7	8
2021	34	19
2022	23	25

Note: * - Hit data in 2018 and 2019 did not include facility owner in most cases making it difficult to determine company at-fault hits
Source: Data Request WO-45

While 2018 and 2019 data are inconclusive, for the last three years (i.e., 2020-2022), PAWC has seen an increase in at-fault third-party line hits. This coupled with the number of line hits caused by PAWC or PAWC contractors since 2018 indicate that additional damage prevention focus is needed. Additional corrective action may include additional training for employees, contractors, or other third parties; changes to digging practices; additional resources for line locating; mapping improvements, etc. By taking appropriate action, PAWC can reduce damages incurred on its system, minimize the cost and labor associated with line hits, and focus on delivering safe and reliable drinking water to the general public. In the meantime, the number of line hits should be reduced with an emphasis on company at-fault hits.

Recommendations

- 1. Reduce UFW below the 20% threshold and report UFW correctly.**
- 2. Meet or exceed an 80% compliance threshold for testable backflow prevention devices.**
- 3. Reduce line hits to company underground facilities.**

VIII. WASTEWATER OPERATIONS

Background

As mentioned in Chapter II - Pennsylvania-American Water Company (PAWC or the company) is the largest regulated water and wastewater service provider in Pennsylvania, which operates approximately 38 water and wastewater districts across Pennsylvania within 416 communities in 37 counties. PAWC serves approximately 97,100 wastewater customers. PAWC's water and wastewater territories are illustrated in Chapter VII – Water Operations, Exhibit VII-1.

The Vice-President of Operations reports to PAWC's President and has responsibility for water and wastewater operations (see Chapter VII – Water Operations) across Pennsylvania. The operations department has employees specifically dedicated to either water or wastewater operations but may share common management depending upon the size of the systems in a particular area. In addition, various departments and positions support water and wastewater operations. The engineering department, for example, is responsible for design and planning of all production and distribution assets including wastewater treatment plants. Similarly, the Vice President of Engineering also reports directly to the PAWC President and aims to improve the efficiency and increase reliability of the Company's water and wastewater infrastructure. Exhibits VII-2 and VII-3 in Chapter VII-Water Operations illustrate the PAWC organizational structure for engineering and operations, respectively.

PAWC's service territories are divided into three regions: Central/Southeast, Northeast, and West. Each region is led by a Senior Director. The three regions are further split into sub-regions, most of which encompass multiple districts (the exceptions being the Pittsburgh and Scranton Wilkes-Barre districts due to the size and number of customers). Each sub-region is overseen by a manager which reports to the Senior Director positioned within their respective region. Exhibit VIII-1 displays the PAWC wastewater districts along with the number of customers in each.

Exhibit VIII-1
Pennsylvania-American Water Company
Wastewater Service Regions and Customer Totals
As of November 2022

District	Residential	Commercial	Industrial
Clarion WW	2,110	343	0
Claysville WW	446	40	0
Marcel Lakes WW	362	2	0
Coatesville WW (Includes Sadsbury WW)	10,155	497	2
Exeter Twp WW	7,593	253	9
Fairview WW	3,917	200	0
Franklin WW	323	23	1
Kane WW	1,838	164	1
Koppel WW	342	12	3
Lehman Pike WW (Includes Winona Lake WW)	2,853	15	0
McEwensville WW	119	9	0
McKeesport WW	9,662	848	0
New Cumberland WW	2,821	279	0
Painted Elk Twp WW	358	75	0
Blue Mountain Lake WW	874	2	0
Pocono WW	3,778	19	0
Scranton WW	26,806	2,785	30
Turbotville WW	256	50	0
York WW	12,160	1,253	1
Royersford WW	1,274	203	7
Upper Pottsgrove WW	1,506	36	0
Foster WW	504	10	2
Total	90,057	7,118	56

Source: Data Request WW-1

Each district is primarily served by a single wastewater treatment plant; however, two districts include two distinct treatment plants leading to a total of 24 wastewater treatment plants across Pennsylvania. The collection system for these wastewater treatment plants totals 1,334 miles and is shown by district in Exhibit VIII-2.

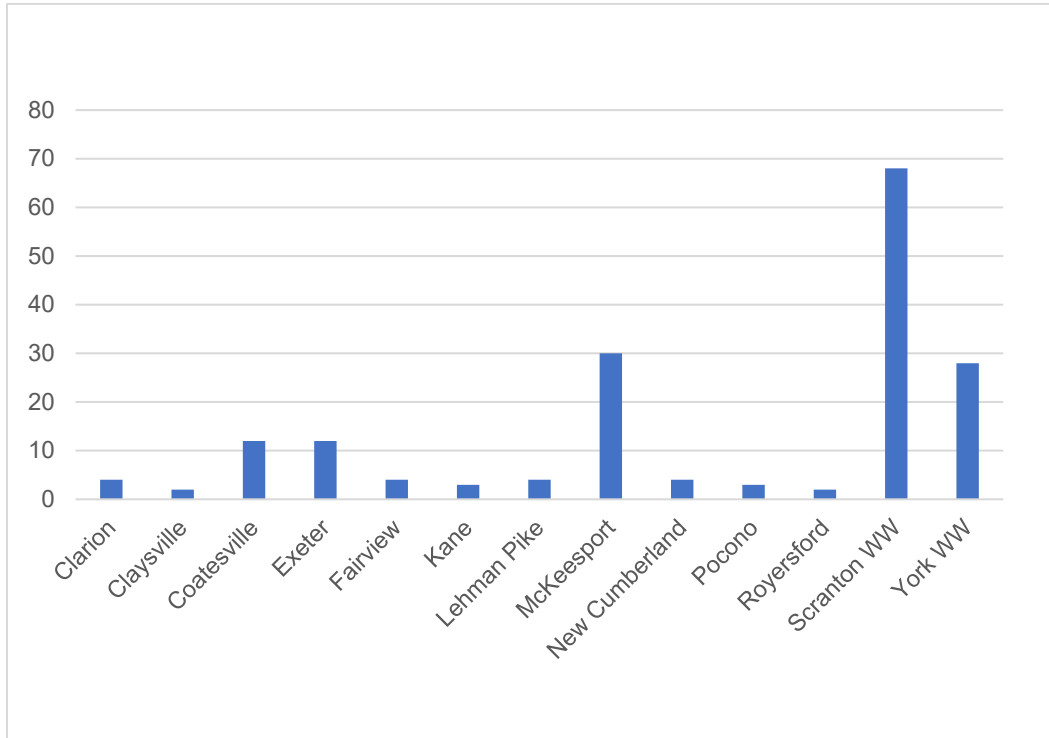
**Exhibit VIII-2
Pennsylvania-American Water Company
Miles of Wastewater Main by District
As of November 2022**

District	Miles of Gravity Main	Miles of Force/Low Pressure Main	Total Miles of Wastewater Main
McKeesport WW	171	7	178
Exeter WW	123	3	126
Upper Pottsgrove WW	20	4	24
Kane WW	56	6	62
Claysville WW	11	0	11
Koppel WW	5	0	5
Marcel Lakes WW	6	5	11
Franklin WW	11	2	13
Painted Elk WW (includes Shippensville)	17	4	22
Clarion WW	40	7	47
Pocono WW	28	19	47
Fairview WW - North	31	4	35
Fairview WW – South	37	2	40
Royersford WW	13	1	14
Coatesville WW (includes Sadsbury WW)	125	25	150
Blue Mountain Lake WW	0	13	13
Lehman Pike WW	0	51	51
Delaware WW	2	4	6
Foster WW	7	2	9
McEwensville WW	2	0	3
New Cumberland WW	27	1	29
Turbotville WW	4	0	4
Scranton WW	329	2	332
York WW	103	0	103
TOTAL	1,171	163	1,334

Source: Data Request WW-2

PAWC does not have dedicated wastewater employees for every wastewater district. For some of the smaller ones, personnel from a nearby system will do work as needed. Exhibit VIII-3 shows the staffing levels by FTEs (Full Time Equivalents) for districts with dedicated wastewater personnel. As of November of 2022, there were 176 FTEs dedicated to wastewater.

**Exhibit VIII-3
 Pennsylvania-American Water Company
 Wastewater District Staffing Levels
 As of November 2022**



Source: Data Request WW-6

PAWC utilizes MapCall, an SAP-based work management system. The company conducts system assessments when a wastewater system is acquired, which includes using cameras to inspect the lines and rate the condition of each segment as part of a NASSCO (National Association of Sewer Service Companies) condition assessment. This allows PAWC to identify structural defects and areas of excessive I&I (Inflow and Infiltration). GPS locating data is also collected, as well as asset attributes. When a repair is needed, a work order is created in MapCall, and an operations crew from the district will respond and repair or replace the pipe. See Chapter VII-Water Operations for more information on how PAWC uses MapCall.

Findings and Conclusions

Our examination of the Wastewater Operations function included a review of policies and procedures, staffing and overtime levels, capital and O&M budgets, damage prevention, break detection and repair, preventative maintenance, training, and long-term planning. Based on our review, PAWC should devote additional efforts to improve the effectiveness of its wastewater treatment and operations by addressing the following:

1. The Collections System Operations and Maintenance Manuals are out of date and use PennDOT specifications from 2005.

The PennDOT specifications used in the Collections System Operations and Maintenance (O&M) Manuals are out of date. PAWC was citing the 4th revision of the 2003 version of Publication 408, released in 2005. However, the current version is the initial version of the 2020 edition. Although the audit staff has no evidence to suggest work performed by PAWC is not in compliance with PennDOT's standards, the outdated reference could cause errors, confusion, non-compliance, etc. Therefore, any PennDOT or other government standards referenced in a manual should be the most up-to-date version.

2. The company has not conducted a staffing study supported by a cost/benefit analysis for wastewater and water Operations.

PAWC has not conducted staffing studies for water operations or for wastewater operations. During the prior management audit¹⁷, the PUC auditors recommended that PAWC conduct a staffing study, "...of the Operations Department that incorporates the cost/benefit of hiring additional resources, overtime utilization, and outsourcing functions." However, in response, the company conducted a limited review of its organization, encompassing only a subset of its workforce and did not include hourly utility workers and operators. In follow-up during the management efficiency investigation (MEI)¹⁸, the PUC auditors repeated the recommendation to conduct a staffing study that included the cost/benefit components of the Operations Department that weights current and future workload, overtime utilization, and strategic usage of contractors.

In lieu of a full staffing study, PAWC conducted a collection of business cases, focusing on various groups and departments to either implement shifts in the organization structure or to strategize for the future. Most of the business cases in operations focused on organizational structure of management. In particular, they centered around creating the VP Operations East and VP Operations West positions, as well as a Senior Manager of Scranton Production, a Director of Operations – Pittsburgh, and a Director of Operations – Outside Districts. One of these business cases compared Pittsburgh and Scranton headcount and wage statistics. Nonetheless, none of these business cases examined specific cost/benefit analysis weighting current and future workload, overtime utilization, (though one of the studies did recommend looking into overtime utilization), or strategic use of contractors.

Although Operations staffing levels were examined in the two largest districts (Pittsburgh and Scranton), the analysis did not consider overtime, contractor use, or workload-based staffing levels. In addition, staffing levels were not examined in relation to or for any other district at PAWC. Although overtime was not excessive in any district, Scranton saw the highest levels which ranged from 6% to 15.5% between 2018

¹⁷ Docket No. D-2014-2430603

¹⁸ Docket No. D-2018-2646503

and 2022, with the higher values being more recent. By using overtime data coupled with contractor data, the company could identify opportunities to increase or decrease staffing to optimize labor costs. However, such an analysis was not included in the case studies performed by PAWC.

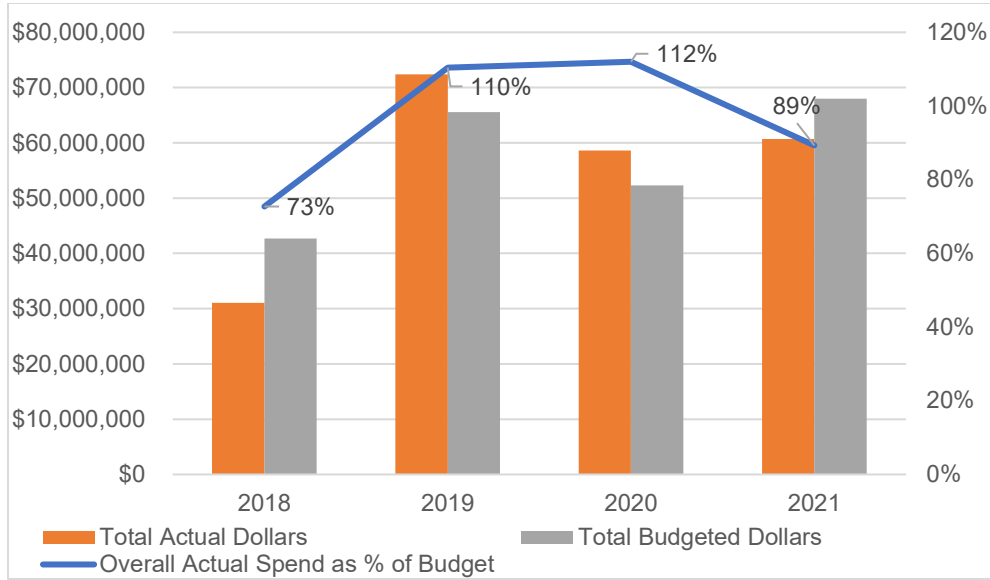
PAWC performs other functions and reviews that should be incorporated with staffing studies. For instance, Human Resources (HR) is working with consultants from Willis Towers Watson and utilizing technology to better assess workforce trends, onboarding, etc. Strategic workforce planning is taking place in some areas of the organization and HR is currently developing workforce planning guidelines and processes for utilization across the company; however, roles and responsibilities for workforce planning are not clear across the organization, and succession planning for levels below vice president is not consistently addressed. Moreover, PAWC stated that it has not conducted a specific wastewater staffing study despite the increased growth in wastewater systems across Pennsylvania.

It is a best practice to conduct thorough staffing studies at least every five to ten years to establish and maintain optimum staffing levels, use of overtime, and cost-effective utilization of contractors. Although the business cases performed by PAWC have been useful and noteworthy, they did not quantify workload with staffing and contractor needs. The lack of a full operations staffing study for both the water and wastewater departments may cause inefficient use of labor, overtime, and contractor resources. Moreover, the labor market has changed dramatically since the last staffing study was performed. Given the prevalence of remote work options; inflation; aging and retiring workforce; and the difficulty of finding new hires, the labor market may dictate new strategies to meet the workload of PAWC.

3. PAWC does not consider wastewater acquisitions when planning its growth budget.

The wastewater capital budget is set based on need and requirements of the various wastewater systems at PAWC. Meanwhile, the wastewater operating budget (O&M) is based upon a three-year average and adjusted for inflation. In both the capital and O&M budget for wastewater, the company sees fluctuations in actual spend due to several reasons such as acquisitions, growth, compliance issues, unanticipated maintenance needs, project substitutions, etc. Generally, the Capital Spend for the WW program is within 10-12% of the budget. An exception occurred in 2018, when the Capital Actual Spend overall was 27% under budget, as shown in Exhibit VIII-4. The overall O&M budget follows similar patterns as the capital budget with having some variance but generally managed within a 10% variance (see Exhibit VI-4).

**Exhibit VIII-4
 Pennsylvania-American Water Company
 Wastewater Capital Spend Vs. Budget
 For the Years 2018 – 2021**

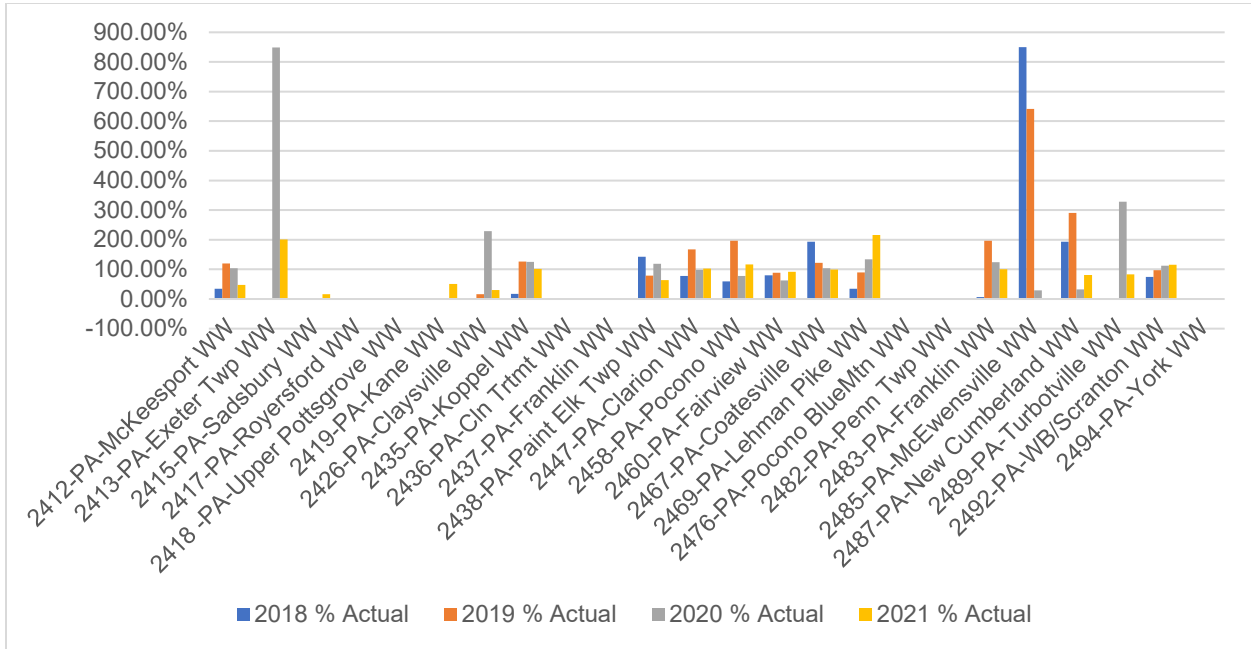


Source: Data Request WW-11

Upon further investigation, the audit staff discovered that the growth budget (i.e., the piece aimed at anticipated acquisitions and impacts to the company’s budget) is primarily based on water, not wastewater. Because of this, the initial wastewater budgets are not very accurate when growth occurs. With the accelerated growth of wastewater in the last few years, this has significantly contributed to variances in the O&M and capital budgets for individual wastewater systems.

Although PAWC tries to keep overall capital and O&M spend close to budget, acquisitions lead to significant variances at the district levels. In fact, no individual district (WW) was within 10% of the capital budget in 2018, and only Scranton WW in 2019; McKeesport, Clarion, and Coatesville in 2020; Koppel, Clarion, Fairview, Coatesville, and Franklin in 2021 were within 10 % of budget. Of the remaining systems, there were only 9 additional instances where the actual capital spend was off by less than 20% from the budget. Exhibit VIII-5 illustrates the Actual Spend by District as a percentage of the capital budget.

Exhibit VIII-5
Pennsylvania-American Water Company
Capital Spend by District as a Percentage of Capital Budget
For the Years 2018 – 2021



Source: Data Request WW-11

Similarly, the O&M spend experiences similar fluctuation. Individual districts vary from as much as 100% under budget (\$0 spent) to 750% overspent (850% of budget). Examples include:

- Clarion Twp: Actual Spend of \$0 in 2018 and a budget of \$27,900.
- McEwensville: Actual Spend of \$205,006 in 2018 and a budget of \$24,106.
- Exeter Twp: Actual Spend of \$3,697,550 in 2020 and a budget of \$435,844.
- Exeter Twp again: Actual Spend of \$7,902,775 in 2021 and a budget of \$3,930,761.

PAWC has been active in acquiring new wastewater systems which have largely driven the variances. To be fair, acquisitions are not the only cause of variances but due to the acquisition process, they do increase the chance of a variance. Before a system is acquired, both capital and O&M needs are estimated, but the system cannot be fully assessed until it is acquired, which can result in emergent project changes. PAWC accounts for acquisitions within their water budget through their growth budget, but as already mentioned the growth budget does not properly account for wastewater acquisitions. These factors have made it difficult to maintain spending within budget for wastewater.

In general, the audit staff recommends budget variances are optimal when under 10%. For variances over 10%, the audit staff recommends the cause for the variance to

be documented and retained so that conditions affecting the budget can be corrected or accounted for in the future. In this case, the growth budget properly accounts for wastewater acquisitions and should be changed to eliminate the variance pressure on the wastewater budget. Although PAWC has generally been able to keep its overall budget in alignment by reprioritizing projects, the impacts to individual districts, challenges in capital requirements, etc. are visible. Therefore, PAWC should correct or create a growth budget for wastewater acquisitions and aim to keep variances to under 10%.

4. Sewer service line breaks and leaks are not tracked by cause and region, and there are no wastewater leak detection policies.

Both water and sewer lines can break or leak over time; however, the effects of the failures are different between these two industries. When water lines break or leak, there's the potential for contamination of a potable product and the economic loss of the product itself. Meanwhile, many wastewater lines are not pressurized meaning that a break may not impact flow or lead to the loss of any material (i.e., an environmental concern). Instead, a larger concern of breaks in wastewater is inflow and infiltration (I&I) of water.

I&I varies from system to system and is primarily based on weather events. The company defines excess I&I as when the combined infiltration amount during dry weather and the base domestic wastewater flow (excluding major commercial, industrial, and bulk sewer use) exceeds 120 gallons per capita per day. This value may be higher for collection systems subject to higher-than-average groundwater levels. The company also considers I&I excessive if flow during a wet weather event exceeds 275 gallons per capita per day, or in the occurrence of operations problems, such as overflows, bypasses, or hydraulic overloading of the treatment works during storm events.

PAWC strives to reduce I&I in its wastewater systems, through the use of a multi-year survey and sewer system condition assessment program throughout Pennsylvania for all company-owned wastewater system assets including pipes, manholes, regulator structures, etc. This effort started in 2018 and includes the collection of GPS locational data, asset attribute data (size, type, elevations, etc.), along with NASSCO (National Association of Sewer Service Companies) condition assessment information. This data is used to direct repair efforts, using a risk-based condition assessment approach (likelihood of failure vs. consequences of failure) and aiding in the creation of the Long-Term Infrastructure Improvement Plan (LTIIP). PAWC regularly cleans and performs camera inspections of its wastewater systems over a certain time period for each system based on size, performance, etc. In addition, as systems are acquired, PAWC will conduct an initial assessment of the system including a camera inspection and cleaning.

Although PAWC has a robust sewer assessment program for prioritizing repairs and tracking sewer conditions, there is no leak detection manual or policies defining excessive I&I incidents. For instance, PAWC's relining and replacement process relies

upon NASSCO ratings for line segments, but there is no documentation when a line will be repaired, rehabilitated, or replaced. Although NASSCO ratings tend to drive repair and replace decisions, different considerations are given to the size of pipe with smaller diameter getting less priority than higher diameter pipe. In addition, the company's survey and sewer assessment program is not well-documented within its policies, though the current LTIP describes the use of system survey and NASSCO ratings as part of main replacement planning. Furthermore, PAWC does not keep logs of sewer breaks or leaks by region, cause, or other distinguishable factors. If a repair was made, the repair would be captured in the company's GIS, but this record does not include the cause of the break/leak and does not allow for comparisons between systems or years.

As PAWC continues to grow its wastewater operations, different approaches and assets will make it challenging to ensure company standards are met, and preferable practices are retained. Therefore, it is a best practice to document leak detection practices in a manual or with policies and procedures. In addition, wastewater breaks and leaks should be captured and tracked by region and cause. As PAWC's wastewater business grows, an inventory of leaks/breaks by cause would give PAWC a ready tool to compare the performance of the various wastewater systems.

Recommendations

- 1. Update the Collections System Operations and Maintenance Manuals to include the latest PennDOT specifications.**
- 2. Conduct a staffing study for Water and Wastewater Operations with cost/benefit analysis weighting current and future expected workloads, analysis of overtime utilization, and strategic use of contractors.**
- 3. Correct the growth budget development process to account for predicted growth in wastewater.**
- 4. Create and document a robust leak detection and repair program by creating a manual with policies and procedures, including use of the GIS system to track current known breaks, leaks, and repairs.**

IX. 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. Our examination of PAWC’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. In addition, the audit staff performed inspections at a sample of the PAWC’s facilities, including offices, workshops, service centers, pump stations, and water and wastewater treatment plants. 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.

At PAWC, cybersecurity and physical security are handled in-house with certain functions like testing outsourced. Physical security is managed by the Director of Cybersecurity and Physical Security, who reports to the VP Digital Infrastructure and Security who also serves as the Chief Security Officer. Meanwhile, PAWC's cybersecurity team operates as part of the IT department. The cybersecurity team is led by the Director of Cybersecurity and Physical Security, who reports to Chief Security Officer. The American Water Service Company's cybersecurity team consists of six full time cybersecurity professionals, who are responsible for all state utilities rather than being assigned to particular states. Although all PAWC employees have a role in security, the following departments are primarily responsible for key security components and/or plans:

- Physical Security: American Water Digital Infrastructure & Security
- Cybersecurity: American Water Digital Infrastructure & Security
- Emergency Response: PAWC Operations
- Business Continuity:
 - PAWC Operations (as related to operational issues)
 - PAWC Operational Risk Management (as related to strikes, work stoppage, and pandemics)

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.

Findings and Conclusions

Our examination of the emergency preparedness at PAWC 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, PAWC should devote additional efforts to improving its security planning and preparedness procedures by addressing the following eight findings and recommendations:

1. Minor deficiencies in physical security were noted during inspections of PAWC's facilities.

Various minor physical security deficiencies were noted during inspection of PAWC's facilities. Most of these deficiencies were due to facility age, oversight, neglect, weather, or general wear and tear. These included concerns such as barbed

wire problems; fence issues; foliage issues; unlocked or unsecured cabinets and doors; improperly secured communications equipment; etc. Security equipment varied from one facility to another, and PAWC would benefit from standardization of equipment based on type of facility and criticality.

Physical security should be continuously addressed, and any deficiencies should be remediated in a timely manner. Deficiencies in a layer of security can render that layer ineffective. Therefore, any deficiency should be repaired or mitigated in the interest of maintaining multiple, functional layers of security throughout PAWC's facilities.

2. The printed emergency response plans could be improved with navigational aids.

The emergency response plan, or ERP, is available electronically via the company intranet, in addition to the physical copies kept at operations centers. The location of the electronic files is noted on the inside cover of the physical copies. The ERP has an accountability section, which shows that this version of the plan was created on May 7, 2018, reviewed on December 15, 2022, and again on January 19, 2023.

The ERP is fairly comprehensive, however there is no Table of Contents for the body of the ERP. In addition, there are tabs separating each chapter, but the chapter titles are only on the cover pages for each chapter, rather than repeated on each tab. This makes navigating the ERP more difficult than necessary.

It is a best practice for emergency plans to be as easy to navigate in a stressful situation as possible. Given the lack of Table of Contents and the lack of descriptive labels on the tabs of the physical copies of the ERP, navigating this plan quickly is challenging unless the chapter titles or subjects are already memorized by the reader. This could cause delays during an emergency response.

3. Fence inspections are insufficient to address fence issues in a timely manner.

There are fence issues at some facilities, including gaps; broken barbed wire; damaged poles; vegetation ingrowth; equipment piled near or against them; etc. Although some facilities have local personnel that conduct an inspection or a daily or weekly walk near the fence, there is no organized program and no training for these personnel on what to look for and report. In addition, not all facilities do periodic fence inspections. In general, PAWC does not have an organized fence inspection program.

Physical security should be continuously reviewed and inspected, and any deficiencies should be addressed as soon as possible. The lack of regular, competent fence inspections has led to physical security deficiencies with fencing at certain facilities. A periodic physical security inspection using trained local plant personnel

would identify these situations and flag needed repairs. These situations can then be evaluated and prioritized by security professionals at PAWC and/or AWWSC.

4. Some open-topped tanks (single batch reactors), which are aerated for part of their operations cycle, do not have rescue hooks.

PAWC has not provided rescue hooks at some of its open-topped tanks that use an aeration process. The audit staff visited at least one aerated wastewater tank which lacked any rescue hooks nearby. Humans are not buoyant in an aerated tank, which makes rescue much more difficult should an accident occur. Ideally, rescue hooks provide an effective way to attempt the rescue and therefore should be installed on or around any aerated tank.

5. Control room security has room for improvement.

It is an industry best practice for SCADA controls to be protected by an additional layer of physical security in addition to perimeter plant security (i.e., within a separately locked room with access granted only to personnel with the need to be there.) At several PAWC facilities, the audit staff noted this second additional layer of security was nonexistent or rendered ineffective by local personnel. In addition, several potential options for improvements to existing security were identified during the inspections and recommended to PAWC and AW security leadership.

While specific deficiencies or remediations cannot be identified within a public report, the audit staff recommends at a minimum that SCADA controls be located in a locked room requiring two-factor authentication to enter, that those entering and attempting to enter are automatically logged, that cameras be used to monitor all approaches to the room, and that only a limited subset of employees with the need to enter be able to open the door.

6. PAWC does not conduct physical penetration testing.

Per 52 Pa. Code § 101.3(a), a jurisdictional utility shall develop and maintain written physical security, cyber security, emergency response, and business continuity plans. Part of maintaining physical and cyber security plans is evaluating existing security and evaluating the plans with respect to new and emerging threats. PAWC has partnered with the Department of Homeland Security to conduct phishing exercises, but has not tested social engineering attempts other than phishing, and has not conducted any physical penetration testing. Penetration testing can be extremely helpful in understanding the strengths and weaknesses of a company's security. Often a physical penetration test will include attempts at social engineering to gauge the effectiveness of the training program and perception of employees.

The audit staff recommends that physical penetration testing occur periodically. Although the testing can be done by company personnel, it is most effective when local

employees do not know the tester. Therefore, penetration testing should occur annually with internal resources and at least every five years through a third-party, to maintain an awareness of security status and potential weaknesses. In the case of a large multi-state entity like American Water, the service company or another American Water state entity could act as the “trusted 3rd party.”

7. PAWC’s tabletop exercises do not focus on physical and cybersecurity.

Per 52 Pa. Code § 101.3(a), a jurisdictional utility shall develop and maintain written physical security, cyber security, emergency response, and business continuity plans. Part of maintaining physical and cyber security plans is evaluating existing security and evaluating the plans with respect to new and emerging threats. Tabletop exercises can be extremely helpful in understanding the strengths and weaknesses of a company’s security, as well as in training personnel how to react in specific, security-related incidents.

PAWC performs tabletop tests and exercises annually. These are internal tabletop exercises occurring in the fall, but PAWC does bring in external emergency responders to participate in them. For these tabletops, physical and cybersecurity components may be injected during the exercise, but are not the focus of the exercise. In the past, some tabletop exercises have focused on the commingling of cyber and physical security. PAWC is currently planning to run an exercise specifically related to the physical security of specific types of infrastructure, but no exercise is planned on a comprehensive, companywide scale.

The last tabletop exercise affecting physical security was run in the fall of 2022. The sole focus was not on security. The Senior Security Specialist for American Water and the Manager of Physical Security for PAWC could not recall any tabletop exercise where the primary focus was physical security. Usually there is a tabletop scenario based on an incident and the security leadership is brought into the tabletop to explore their support role. Despite their participation, no opportunities for improvement for security were identified during the last tabletop exercise.

As a result, PAWC has not conducted an annual tabletop exercise focused primarily on physical security or cybersecurity for some time. Although the audit staff understands that the cybersecurity and physical security employees perform their own readiness checks within their departments, these are not shared or highlighted with other company employees. As a result, the company may be missing some weakness in its response plans or security posture and is missing an opportunity to better prepare its employees for cyber or physical security-related incidents.

Recommendations

- 1. Correct minor deficiencies in physical security.**
- 2. Incorporate a table of contents and tabs labelled with chapter titles to the printed ERPs.**
- 3. Establish a scheduled fence inspection program with training for operations personnel to accomplish thorough inspections.**
- 4. Station rescue hooks near any open-topped tank or reactor that is aerated at any time.**
- 5. Improve physical security for control rooms and SCADA systems.**
- 6. Partner with a trusted third-party security specialist to conduct regular physical penetration testing of PAWC's facilities.**
- 7. Conduct regular tabletop exercises focused primarily on physical security and cybersecurity.**

X. PURCHASING AND MATERIALS MANAGEMENT

Background

The materials management functions at Pennsylvania-American Water Company (PAWC or Company) are performed by PAWC with assistance and guidance from American Water Works Service Company (AWWSC or Service Company). AWWSC is responsible for most purchasing functions (discussed later in this chapter) and establishing policies and procedures for all American Water Work Company, Inc.'s (American Water) distribution companies. There are no direct materials management reporting relationships between AWWSC and PAWC; however, a manager from AWWSC works with PAWC to help coordinate occasional process or practice changes, run reports, etc. All told, there are six employees from AWWSC that support the Supply Chain and Purchasing functions at PAWC.

To support its operations, PAWC has 39 warehouses across its service territory that store materials, although at times some locations do not carry inventory balances. Meanwhile, the three largest warehouses issue over 50% of materials on average when combined. Two of these warehouses are considered central hubs and are geographically positioned with one each in Scranton and Pittsburgh. The third largest warehouse works in tandem with the Pittsburgh warehouse. These three facilities each carry over a million dollars in inventory at any given time and have dedicated material management employees whose full-time duties are managing the inventory. These employees are integrated within the Vice President of Operations' reporting structure. (See Chapters VII and VIII – Water Operations and Wastewater Operations). However, most materials management functions outside of the three largest warehouses are handled by employees with split duties. In these cases, PAWC uses a local manager, supervisor, or administrative support position to handle warehousing needs, which includes issuing inventory from the warehouse, logging material received/issued into the system, performing physical counts, etc. A snapshot of the size of the warehouses segregated by PAWC district can be found in Exhibit X-1.

Exhibit X-1
Pennsylvania-American Water Company
Average Inventory Balance by Warehouse
As of July 2022

Greater than \$1,000,000	\$500,000 - \$1,000,000	\$200,000 - \$500,000	Less than \$200,000
McMurray	Blue Mount Nazareth	Pocono	Abington
Pittsburgh	Lehman Pike	Susquehanna	Bangor
Scranton / Wilkes Barre	Mechanicsburg	Hershey	Berwick
	Norristown	Milton / White Deer	Frackville
	Indiana	Phillipsburg	Glen Alsace
	New Castle / Ellwood	Royersford	Penn Water
	Butler	Clarion	Yardley
	Mon Valley	Punxsutawney	Kane
	Uniontown / Connellsville	Brownsville	Warren
			Kittanning
			Coatesville
			Boggs Township
			Nittany
			Steelton

Source: Data Request MM-2, MM-15, and MM-17

The materials management functions support water production, metering, water distribution, and maintenance departments and their respective functions. Each water treatment plant is responsible for maintaining chemical levels, maintenance on chemical feed systems and other plant equipment. In this way, some equipment is stored at production facilities to maintain unique production equipment and is not included in the distribution warehouses listed in Exhibit X-1. In addition, chemical inventory is unique in that shelf life is limited. Storage is often based on safety concerns with containment issues and required to be stored at a treatment plant for direct addition to raw water, etc.

Due to the COVID-19 pandemic, the company reported that the supply chain for chemicals was constrained making them harder to acquire, more expensive, etc. Therefore, the company increased its holdings of treatment chemicals wherever it was practical (i.e., storage room, usage levels, etc.). This reduced the turnover of chemicals from almost 7 turns before the pandemic to just under 6 turns by the end of 2022. Meanwhile, meter turnover is mostly cyclical with major deployments/replacement efforts yielding extremely high turnovers and non-deployment/replacement turnover driven by meter failure. In addition, of all the material handled by PAWC, meters are unique in that they can be reconditioned and returned to inventory or service. See Chapter XI – Customer Service for more information on metering.

PAWC uses SAP for all materials management activities. Although some smaller warehouses may still use paper pull sheets for material issues, these are later transcribed into SAP for tracking purposes. The key modules PAWC uses and a brief description of their functions are found in Exhibit X-2. To ensure that material information is accurate in SAP, PAWC follows AWWSC's inventory counting policy. In practice, chemicals and fuel are counted monthly whereas materials are counted annually based upon warehouse size. In particular, AWWSC's Accounting group will evaluate inventory levels on-hand and group warehouses into two tiers. The first tier is counted annually and represents the largest warehouses representing approximately 80% of combined inventory at PAWC. Meanwhile, all other warehouses are grouped into tier two and the materials at these warehouses are counted every five years. PAWC's inventory accuracy is found in Exhibit X-3 and encompasses all counting activities for the respective years.

**Exhibit X-2
Pennsylvania-American Water Company
SAP Modules and Uses**

Module / Component	Activities Performed
SRM (Supplier Relationship Management)	Supplier contract management, creation of purchase requisitions
MM (Materials Management)	Purchase order creation and monitoring, material requirements planning (MRP), receiving, and issuing of inventory, physical inventories
QM (Quality Management)	Quality inspection and release of incoming materials (in PA – meters)
Logistics Information System	Summary level reporting and key performance indicators, ad-hoc reporting
Business Intelligence (BI)	Reporting – testing / verification in progress

Source: Data Request MM-7

Exhibit X-3
Pennsylvania-American Water Company
Physical Inventory Count Accuracy
2018 - April 2023

Year	Net Dollar Variance	Net Quantity Variance
2018	(\$32,022)	(1,469)
2019	(\$179,369)	(15,174)
2020	\$55,061	(1,847)
2021	\$5,868	(114)
2022	(\$28,701)	(1,320)
2023 (As of April)	(\$2,257)	(651)

Note: An error was found in the 2019 count at one warehouse and was corrected for subsequent years.

Source: Data Request MM-12 and MM-16

As PAWC identifies material or service needs, these requirements are uploaded into the applicable SAP module. From there, purchasing decisions are made at a national level from AWWSC employees within Supply Chain. Material price negotiations, specification management, purchasing troubleshooting, supplier relationship management and supplier diversity efforts are primarily carried out at the Service Company level. Local suppliers are utilized only when national contracts are insufficient. Consequently, material purchases are primarily transacted through purchase orders established through national contracts with American Water for the benefit of its regulated operating subsidiaries in multiple states (including PAWC). In cases when there is not an active contract in place for materials or services, AWWSC policy requires a competitive bid for any one-time or combined annual purchase over \$250,000.

Findings and Conclusions

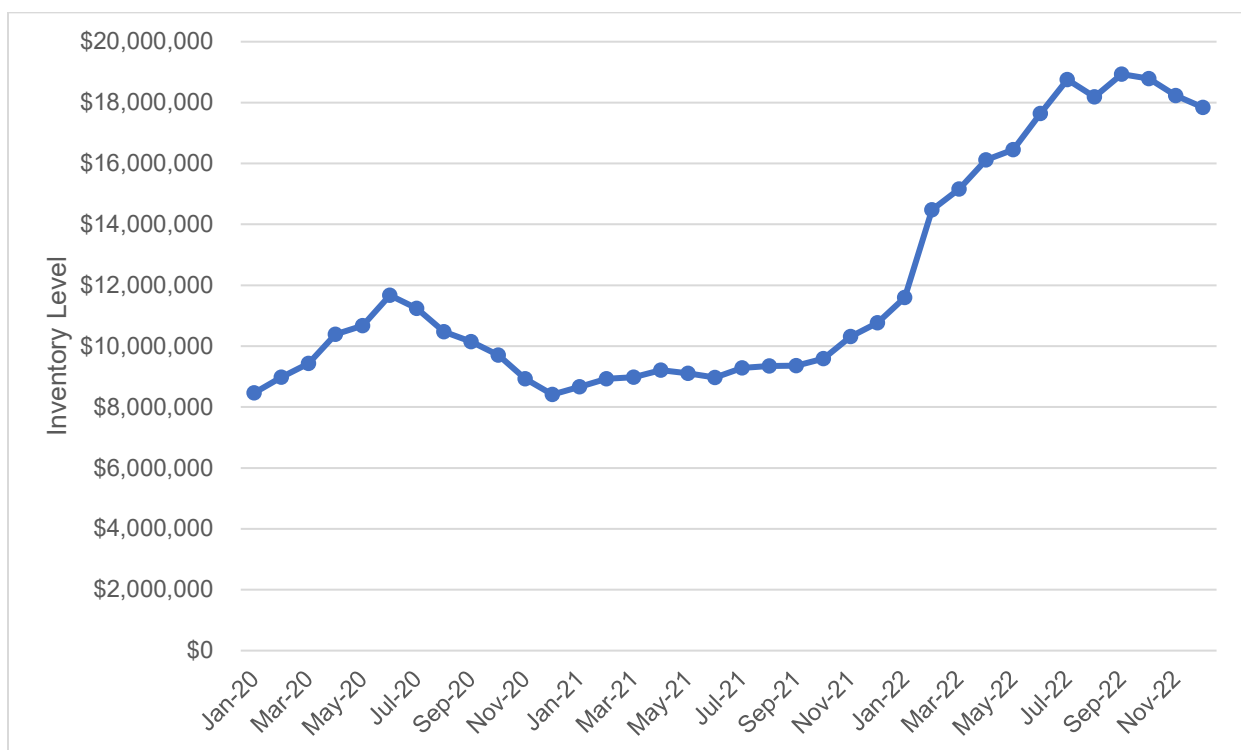
Our examination of the materials management function included a review of assigned responsibilities, policies and procedures, information systems, reporting capabilities, inventory control, inventory levels, turnover, and warehouse operations. Based on our review, PAWC should devote additional efforts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

- 1. Due to the pandemic, inventory levels at PAWC were increased leading to decreased inventory turnover.**

Many utilities have reported supply chain problems during the COVID-19 pandemic with constraints ranging from price increases to sourcing delays to loss of vendors. In response to these constraints, PAWC made the decision to increase its inventory levels for many material types. Already discussed in the background,

chemical inventory doubled from 2019 to the end of 2022. Still, chemical inventory turnover remained high with a value close to 6 turns as of December 2022. Similarly, PAWC increased warehouse inventory because of the pandemic and corresponding supply chain problems. PAWC only began this increase in early 2022 due to the supply chain constraints mentioned earlier, resulting in inventory levels roughly doubling from the start to end of 2022. PAWC's inventory levels are depicted in Exhibit X-4.

**Exhibit X-4
 Pennsylvania-American Water Company
 Inventory Levels
 2020 - 2022**



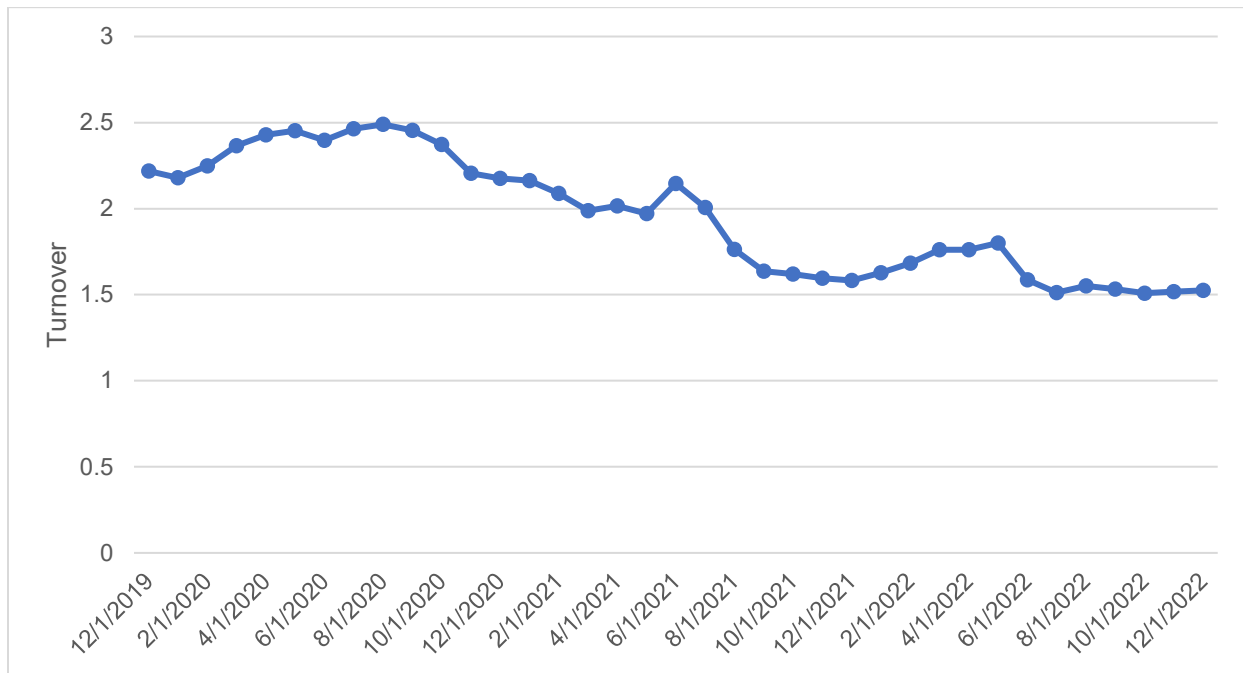
Source: Data Requests MM-2, MM-15, and MM-17

The audit staff recognizes that as an essential utility service where lack of materials may lead to a prolonged outage, PAWC needed to ensure that critical inventory was on hand to address construction or repair needs. Intermingled within PAWC's inventory levels in Exhibit X-4 are emergency stock items. Some emergency stock items were increased during the pandemic; however, a large majority of the stock increases were due to items used in routine repairs, construction, etc.

While this increase in inventory levels provides the company with the ability to weather supply chain problems, it decreases its financial efficiency. One way to measure this performance is through inventory turnover. Inventory turnover is a measure of how often materials are being issued compared to the amount held in warehouses. Ideally, an inventory turnover value of two or higher is considered

adequate to demonstrate efficiency within utilities. PAWC’s rolling 12-month inventory turnover is shown in Exhibit X-5

**Exhibit X-5
 Pennsylvania-American Water Company
 Rolling 12-month Inventory Turnover
 December 2019 – 2022**



Source: Data Requests MM-2, MM-15, and MM-17

As demonstrated in Exhibit X-5, PAWC was performing at an inventory turnover at or above two before the pandemic. Then, as construction slowed during the early stages of the pandemic, inventory turnover understandably dipped below this goal. However, as the pandemic wore on and construction activities returned to normal in 2021, the increased inventory holdings drove the company’s turnover lower. As supply chain constraints continue to improve and many industries return to normal, PAWC should improve its inventory turnover by reducing inventory levels to pre-pandemic levels. However, not all industries have returned to normal so it may be prudent to retain higher levels of certain materials still facing constraints. Therefore, this drawdown may be done over the next two to three years. Nonetheless, PAWC should work to improve its inventory turnover, targeting at least 2 turns. Achieving a target of 2 inventory turns over this time would yield a one-time inventory reduction of approximately \$4 million and an annual savings of \$600,000 based on an estimated 15% carrying costs.

2. There is no mechanism to transfer materials between regulated water company affiliates.

In conversation with the company, it was mentioned that there is not a way to transfer materials between the different American Water regulated subsidiaries, like PAWC. Purportedly, the chief concern was how the different regulatory commissions, like the Pennsylvania Public Utility Commission, would view such transactions. Therefore, there is no data identifying how often this type of mechanism would be used. However, in the audit staff's experience, similar transactions have occurred in the past during emergency situations or at other utilities.

Creating a mechanism to share materials between the affiliates of American Water has the potential to improve efficiency, achieve economies of scale, reduce overhead costs, aid in eliminating obsolete materials, etc. for all participating operating companies. However, the regulatory constraints would need to be well defined and approved by all participating affiliates' regulatory bodies. The audit staff believe that incorporating this type of mechanism within the affiliated interest agreement between PAWC and AWWSC would be the most logical approach. Specifically, the agreement would need to identify when such a mechanism would be used and how the applicable costs would be handled (cost of the material, transportation, timing, etc.). Typically, material like this would be transferred at cost or with the receiving entity replacing the goods used. However, care should be taken when cost and market are substantially different. Therefore, PAWC should explore how useful a material sharing mechanism would be and how to establish the necessary regulatory framework.

Recommendations

- 1. Improve inventory turnover to two or higher turns by gradually reducing stockpiled materials.**
- 2. Investigate and implement, if feasible, a framework for transferring materials between regulated affiliates including the appropriate regulatory approval.**

XI. CUSTOMER SERVICE

Background

As first mentioned in Chapter II - Background, Pennsylvania-American Water Company (PAWC or company) served approximately 679,000 water and 97,000 wastewater customers in 37 counties throughout the Commonwealth as of November 2022. American Water Works Service Company, Inc. (AWWSC or Service Company)¹⁹, a wholly owned subsidiary of American Water Works Company, Inc., (American Water) is responsible for PAWC's primary customer service functions. AWWSC's Customer Service Organization (CSO) organization provides call handling, billing, field services coordination, and other customer-focused services for all American Water's regulated operations, including PAWC. Generally, employees of AWWSC are not dedicated to specific regulated operations, instead performing their duties for multiple affiliates. Conversely, field services (e.g., turn-ons/off, meter reading, water quality, etc.) and complaints are handled by PAWC and are embedded in the Water Operations Department (See Chapter VII – Water Operations).

Led by the Vice President Customer Service Organization (VP CSO), AWWSC's CSO organization comprises Customer Care, Billing and Collections, Customer Insights & Performance, Major Accounts & Business Partners, Tariff Administration, Customer Relations, and Customer Project Management. The core functions commonly associated with customer service (e.g., call handling, customer support, billing, and accounts receivable, etc.), along with AWWSC's entire complement of customer service representatives²⁰ (CSRs), 332 in total as of February 2023, are located within either Customer Care or Billing and Collections.

Although CSO began conducting a remote work pilot program prior to the COVID-19 pandemic, some CSRs worked out of physical locations in Pensacola, FL and Alton, IL up through early-2020. In March 2020, the COVID-19 pandemic and accompanying quarantine prompted a quick transition to full remote work while maintaining customer services and support. CSO indicated the pilot program helped prepare the organization and no personnel were lost during the successful transition. All AWWSC CSRs remain fully remote and are expected to continue as such for the foreseeable future.

AWWSC Customer Care maintains a virtual call center that routes calls through an Interactive Voice Response (IVR) system, offering both self-service options and CSR assistance. Throughout all affiliates, AWWSC's IVR handled approximately 5.7 million calls in 2022, with roughly an even split between in-bound calls handled by CSRs and the automated IVR itself. The call center is staffed twenty-four hours for emergencies and Monday through Friday, from 7:00 a.m. to 7:00 p.m. for all non-emergency calls. CSRs in Billing and Collections use a Customer Information System (CIS) from SAP SE

¹⁹ See Chapter V – Cost Allocations and Affiliated Interests for more information on AWWSC's shared services.

²⁰ AWWSC classifies these employees as Customer Care Agents.

Software Solutions (SAP) to resolve billing issues, process billing exceptions and adjustments, and manage the collection's process.

AWWSC completely overhauled the self-service functionality and user experience of its website in recent years. Now known internally as MyWater and accessible to PAWC customers at www.amwater.com/paaw/. Prior to 2018, the website only offered basic functionality allowing customers to pay their bill. Beginning in 2018 up through 2021, changes and updates to MyWater resulted in a graphical user interface (GUI) that is the same for both customers and CSRs. Customer Care indicated this is especially beneficial when customers are viewing their account in MyWater as they speak to a CSR and leads to much more intuitive interactions. The redesign also expanded the services available to customers on the web. Customers can now sign-up, move, or cancel service, sign-up for budget billing, request a payment plan, track, and view water usage in comparison to neighbor usage, sign-up for alerts, etc.

Meter reading and service orders are performed by PAWC's Field Service Technicians. The majority of PAWC customers are equipped with radio frequency read meters; however, approximately 1 ½ - 2 years ago the company began an 8-year plan to move towards automated meter infrastructure (AMI or fixed network). The impetus for this change is to move away from technologies using mechanical parts towards technologies with sensors, which are considered more accurate with fewer moving parts. Approximately 144,000 customers in three service areas, 140,000 in Scranton alone, are on a fixed network.

Findings and Conclusions

Our examination of the Customer Service function included a review of customer service policies and procedures, billing, call handling, collections, key performance indicators, customer satisfaction surveys, meter reading, etc. Based on our review, the company should initiate or devote additional efforts to improve the efficiency and/or effectiveness of its customer service function by addressing the following:

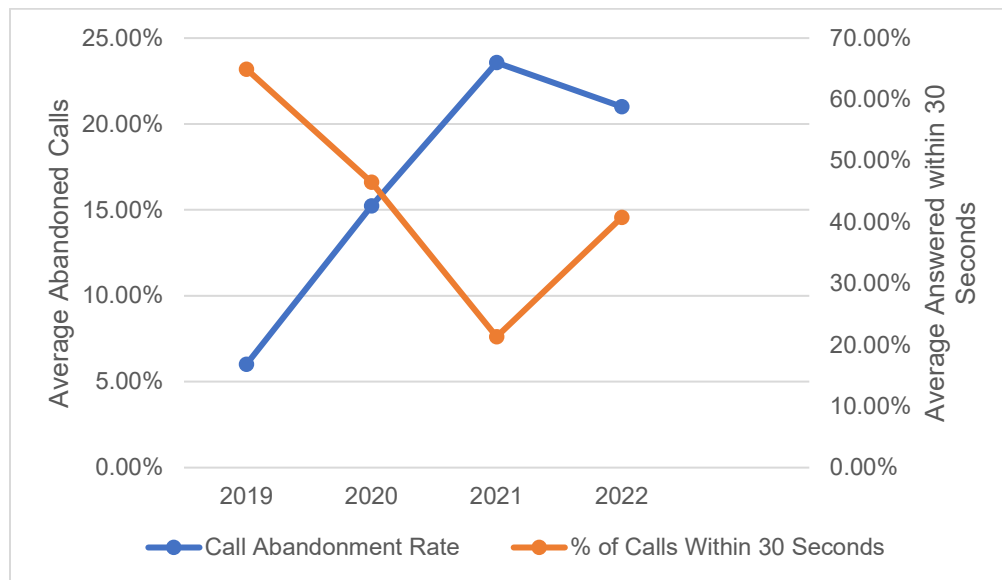
1. Since 2019, PAWC experienced a sustained decline in call handling performance.

Although regulated water and wastewater utilities are not subjected to the quality of service reporting requirements required of regulated natural gas distribution companies (NGDCs) and electric distribution companies (EDCs), the call center, billing, and meter reading performance metrics used in that reporting are just as relevant to water and wastewater utilities. In those metrics, percentage of calls answered within 30 seconds, average busy-out rate²¹, and call abandonment rate are used to evaluate call center quality of service. In 2020, AWWSC customer care call center's percentage of

²¹ AWWSC's modern routing/dispatching system eliminates busy signals because it can handle a very large volume of simultaneous calls.

calls answered within 30 seconds declined 28% from the prior year while the call abandonment rate more than doubled. This decline in performance obviously coincided with the pandemic; however, as shown in Exhibit XI-1, performance in both metrics worsened in 2021 and had not recovered fully by the end of 2022.

**Exhibit XI-1
 Pennsylvania-America Water Company
 AWWSC Customer Care Call Center Performance
 2019 – 2022**



Source: Data Request CS-12 and 35

Multiple factors contributed to the performance decline, though the COVID-19 pandemic is the common catalyst that either worsened or caused these factors. As stated in the background, the call center quickly and successfully adapted to a remote work environment. However, the 3rd party call centers AWWSC contracts with were unable to transition and required employees to continue working from their physical call center. At some point during the pandemic, an outbreak in the vendor’s call center forced a 2-week quarantine and shutdown. AWWSC indicated the vendor struggled to reopen. Meanwhile, AWWSC successfully retained existing CSRs but struggled to attract and retain new hires. These hiring challenges were made worse because AWWSC delayed a ramp up in hiring in late-2019 due to the implementation of the self-service functionality of its MyWater web platform. The Director CSO indicated new hires averaged 365 days pre-COVID. Post-COVID new hires average 35-36 days and 70% left within the first year. In addition, the company began experiencing difficulty recruiting when the hospitality industry (their main competitor in the workforce pool) began offering increased compensation.

As the primary and frequently sole contact point for customer inquiry, concern, or issue with the utility and utility service, it is best practice to ensure call centers maintain

baseline performance. As Exhibit XI-1 shows, AWWSC did start to make improvements in call handling performance after 2021. However, at the end of field work these performance levels were still worse than historical performance levels. Therefore, AWWSC should work to improve call center performance to meet or exceed performance before the COVID-19 pandemic.

2. PAWC's long-term aged accounts receivable increased significantly due to the pervasive economic impacts of the COVID-19 pandemic.

As a result of the COVID-19 pandemic, PAWC's ratepayers, both individuals and households, faced harsh and completely unexpected economic conditions. The PUC's March 13, 2020, Emergency Order²² established a moratorium on terminations during the pendency of Governor Tom Wolf's Proclamation of Disaster Emergency. 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 and aid opportunities were developed to address pandemic-caused hardships.

For instance, the American Rescue Plan Act and Consolidation Appropriations Act of 2021 passed by the federal government established a Low-Income Household Water Assistance Program (LIHWAP). Similar to the decades old Low-Income Household Energy Assistance Program (LIHEAP). LIHWAP is a temporary emergency program to help eligible low-income customers pay overdue water bills. All water utilities, including PAWC, encourage customers to apply in addition to any other assistance they may receive. The Pennsylvania Department of Human Services is responsible for LIHWAP in the Commonwealth and recently began accepting applications beginning July 10, 2023 through August 11, 2023.

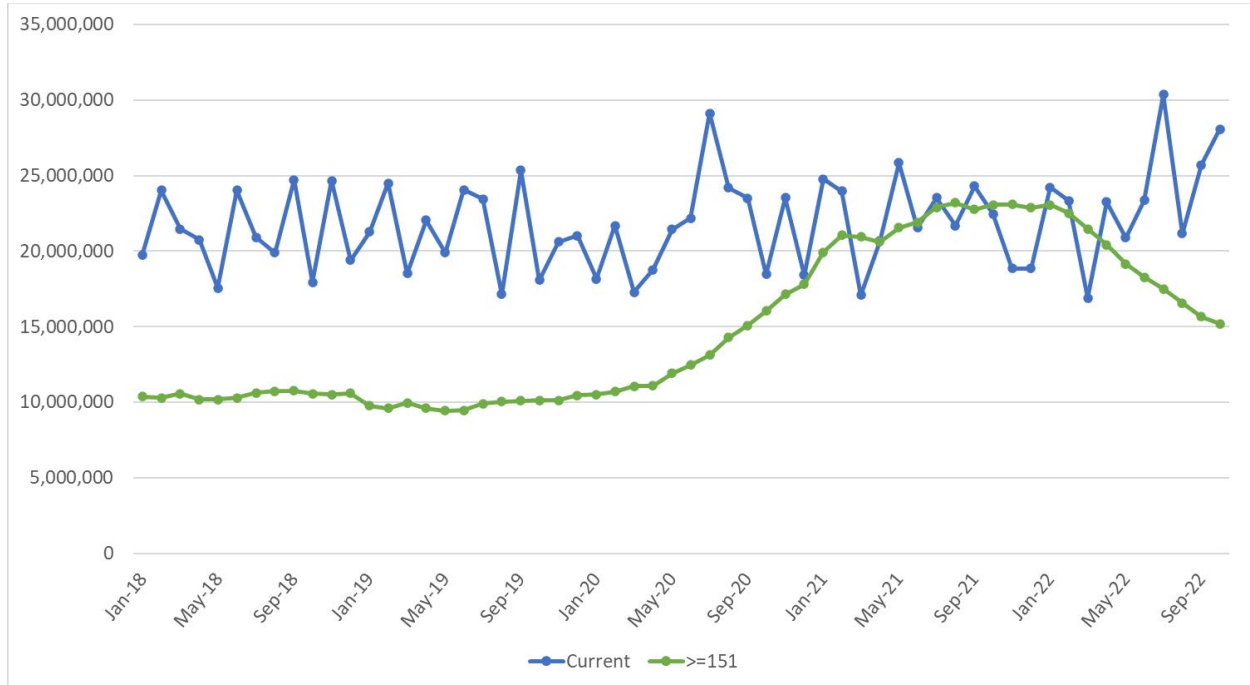
PAWC provides customer assistance through its Help to Others (H2O) program. The program has long provided low-income water and wastewater customers grants of up to \$500 annually. In January 2023, the company introduced within its approved tariff a new tiered discount program for low-income water customers with an emphasis on water usage and increased the discount provided to all low-income wastewater customers. The new discount provides a 40%-80% discount on the monthly service charge and a 25%-80% discount on water usage depending on the customer's household income compared to 150% of the federal poverty level (FPL). The prior discount program provided an 85% discount on service charges but only a 10% discount on water usage to all low-income customers at or below the 150% FPL.

Despite measures to address payment difficulties, especially among the most vulnerable customers, customer account balances aged more than 150 days increased significantly since early-2020, as illustrated by Exhibit XI-2. Although PAWC's effort are commendable, as of February 2023, the company's over 150-day customer receivables continue to reflect substantially higher balances than those experienced prior to the

²² Docket No. M-2020-3019244

pandemic. This trend has been noted across Pennsylvania and is not unique to PAWC. However, while not caused by the company, its effects must be addressed by PAWC.

**Exhibit XI-2
 Pennsylvania-American Water Company
 Residential Customer Accounts Receivable Current Balances
 and Aged More than 150 Days
 January 2018 – February 2023**



Sources: Data Requests CS-15 and 38

Recommendations

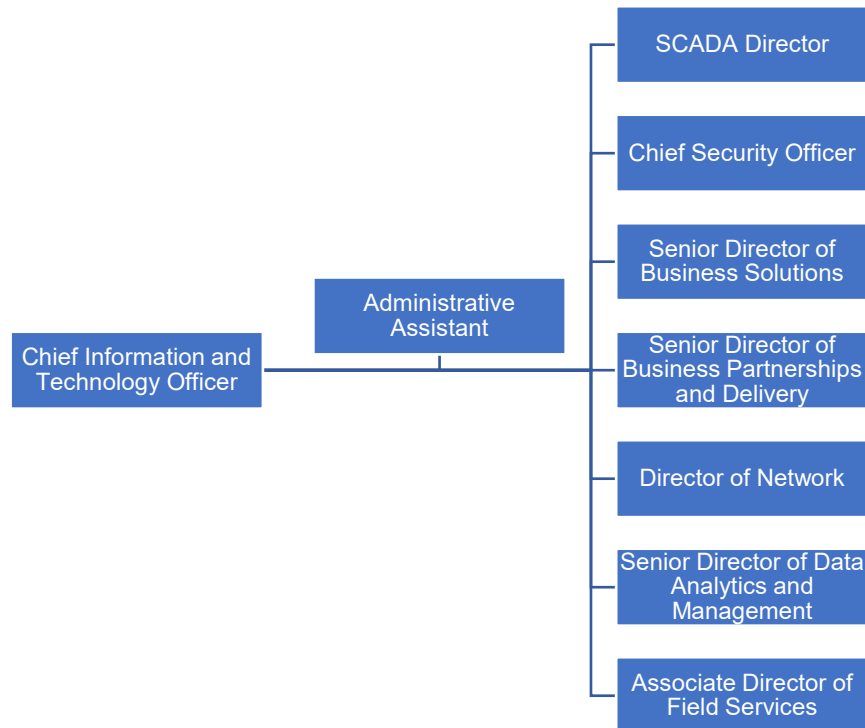
- 1. Improve customer service performance at minimum to pre-pandemic levels.**
- 2. Continue outreach efforts to engage with payment troubled customers and leverage low-income resources to help reduce the overall level of outstanding customer balances.**

XII. INFORMATION TECHNOLOGY

Background

Pennsylvania-American Water Company (PAWC or Company) primarily receives Information Technology (IT) services from the centralized IT Department within American Water Works Service Company, Inc. (AWWSC). Furthermore, the IT Department provides these types of services to all American Water subsidiaries and is led by a Chief Technology and Innovation Officer. In early 2015, the IT Department initiated a complete restructuring to streamline its operations post-implementation of its Business Transformation Initiative (see the Focused Management and Operations Audit of PAWC at Docket No. D-2014-2430603). AWWSC's IT organizational restructure was designed to increase SAP capabilities, to address emerging technologies within SAP business processes (i.e., hire to retire, record to report, procure to pay, etc.), leverage increased cloud usage, etc. An overview of the IT Department can be found in Exhibit XII-1.

Exhibit XII-1
American Water Works Service Company, Inc.
IT Department Organization Chart
As of May 2023



Source: Data Request IT-18 and Interview Request IT-4

As presented in Exhibit XII-1, the IT Department is broken into seven different areas encompassing approximately 200 employees. The Supervisor Control and Data Acquisition (SCADA) Director is responsible for all SCADA systems and communications including the hardware needed for these systems. The SCADA systems largely support the production and distribution systems of both its water and wastewater operations across the American Water footprint, including at PAWC. Meanwhile, the cybersecurity of the SCADA system and the security of all other IT systems is the responsibility of the Chief Security Officer. In addition, the Chief Security Officer is also responsible for physical security (See Chapter IX – Emergency Preparedness for more details).

A renewed focus at American Water is the deployment of application (App) and cloud-based solutions or improvements to current operating systems or business needs. The Senior Director of Business Solutions is responsible for all App based systems for both the operating companies and customer platforms. A large focus of this team is providing value-added services to critical business functions like SAP. Another major initiative across American Water is the recently redeployed vehicle hotspot capabilities to improve data connectivity and capabilities for field workers. Although this initiative met early challenges when it was first deployed, it has since been improved and redeployed in 2022 to give all vehicles the means to remote access pertinent applications or data. The company's network is managed by the Director of Network. However, this position is also responsible for all cloud-based services, which is a strategic focus of the company to improve its resiliency and system availability.

The Senior Director of Business Partnerships and Delivery has oversight over IT project managers. This group oversees any large capital IT projects, called key technology enabled business projects, from cradle to implementation. These projects may be identified by IT or from any American Water subsidiary but are often focused on the entire American Water footprint. For example, IT plans to standardize how and what IT tools are used across American Water. Meanwhile, the Senior Director of Data Analytics and Management provides support to all IT business lines and is driving the use of data across American Water. For example, as discussed in Chapter III – Executive Management, PAWC has begun using a dashboard to show dynamic and real time performance on key data points.

The final IT group provides helpdesk and troubleshooting support for American Water and is managed by the Associate Director of Field Services. This is the only group to have dedicated employees embedded within PAWC. In addition, this group routinely meets with PAWC employees with the Associate Director attending monthly meetings with each, the PAWC President and Vice President of Operations. In addition, there are six positions spread out within Pennsylvania with two in Pittsburgh, one in Mechanicsburg, one in Milton, one in Scranton, and one in Norristown. These Pennsylvania dedicated resources are overseen by a Manager of Southeast Region for Field Services who is based out of Lexington, Kentucky and oversees Pennsylvania, Kentucky, Tennessee, and West Virginia. All told, this group receives approximately 4,000 trouble calls a month with PAWC being a subset of those calls. The group manages trouble calls in a tiered type of approach where initial intake and diagnosis is done at tier 1. If the problem cannot be fixed quickly, the trouble ticket is escalated to

tier 2 which are the field service technicians embedded within the operating companies. If the problem is too complex for tier 2 or will require additional resources, its escalated to tier 3 response which is the corresponding IT department.

Findings and Conclusions

Our examination of the Information Technology function included a review of PAWC and AWWSC's organizational structure, staffing levels, outsourcing conditions, training/staff development, operating expenses, and maintenance planning. Based on our review, PAWC should devote additional efforts to improve the effectiveness of its information technology operations by addressing the following:

1. IT performance metrics, key performance indicators or system use statistics are not provided to PAWC.

As presented in Finding and Conclusion No. III-2 in the Executive Management Chapter, PAWC's executive level reporting lacks performance metrics for externally provided critical support functions, including IT. Instead, IT produces internal metrics that are reported to a department lead within IT or the CIO; however, this information rarely or never is shared with PAWC. For instance, the Associate Director of Field Services monitors a number of metrics surrounding the helpdesk function like tickets closed, abandoned calls, hold time, average handling time, etc. However, none of that data is shared directly with the operating companies like PAWC which can lead to the operating companies questioning why a helpdesk ticket is not closed faster. In reality, it may be a single ticket out of a hundred across American Water.

Instead, IT relies upon the operating companies to provide feedback if problems arise causing operational problems. These can be formally submitted through helpdesk tickets, discussed during management meetings, or sometimes filtered through the IT employees embedded within a state's operations. Similarly, if IT discovers an operational problem with one of their systems, they pass this information back to the operating company through one of the above methods with significant issues gaining more formality. For instance, a minor connectivity problem may just be mentioned to users when they submit a ticket whereas a complete loss of connectivity would be relayed to all affected management. Despite these feedback and feedforward methods, no routine information is shared about the performance of the IT department or of the systems it manages, like presented in Finding and Conclusion No. III-2.

One of the missions of an upcoming IT Governance Committee is to drive standardization and check on IT performance. Although this Committee approach is needed and commendable, the audit staff believes this type of interaction should be ingrained between IT and PAWC. To be clear, this Committee should move forward but IT should expand the information it shares with PAWC and other users of its services.

The information shared should focus partly on performance of the IT systems with key metrics like system availability, key helpdesk statistics like tickets closed or

average response time, latency, etc. In addition, IT should provide user statistics for key systems focused on the use and performance of the individual system. These could include user access statistics, average use time, failed/timeout functions, downtime, user transactions per day, etc. This second set of data should be compared across all operating companies and will provide PAWC with insight how similar peer companies are using technology. Naturally, major differences should be discussed and may help to drive innovation or standardization across the user base. Ultimately, sharing key performance metrics will help build understanding between IT and companies like PAWC, increase PAWC management knowledge of the IT systems it is using, help identify opportunities for improvement, etc. Therefore, PAWC should work with IT to establish or infuse standard reporting statistics into interactions between the service company and PAWC.

Recommendations

- 1. Work with the Service Company to establish key performance indicators, user metrics, system performance indicators, etc. that are shared with PAWC.**

XIII. FLEET MANAGEMENT

Background

PAWC’s fleet operations are overseen by a fleet manager, fleet supervisor and an administrative assistant. Together they are responsible for the administration and management of the company’s fleet working in conjunction with a third-party fleet management company (FMC). The FMC manages a fleet database, which tracks PAWC’s vehicle information (i.e., expenses, maintenance records, etc.) and generates reports. Meanwhile, PAWC personnel monitor the budget, develop vehicle specifications, choose vehicles to replace, ensure driver compliance, and assess fleet performance.

As of January 2023, PAWC had 1,225 vehicles and equipment in its fleet. See Exhibit XIII-1 for the number of vehicles and equipment by classification. The COVID-19 pandemic has caused some constraints for the fleet department. Specifically, vehicle manufacturers reportedly dealt with chip shortages and limited vehicle specification options. As a result, PAWC reported that vehicles are arriving over a year after ordering. Even then, those orders are sometimes delayed longer or cancelled causing a backlog of vehicles that have met PAWC’s replacement criteria.

**Exhibit XIII-1
Pennsylvania-American Water Company
Number of Vehicles and Equipment by Classification
As of January 2023**

Unit Type	Number of units
Cars	36
Heavy Trucks	37
Light Trucks	444
Medium Trucks	253
SUV	127
Van	72
Subtotal of Vehicles	969
Trailers	138
Equipment	118
Total Vehicles and Equipment	1,225

Source: Data Request No. FT-14

Most vehicles within PAWC’s service territory receive maintenance and repairs from third party vendors. The FMC is responsible for contacting the driver of each vehicle when that vehicle is due for preventative maintenance²³. Employees then

²³ Preventative maintenance interval parameters are 7,500 miles or 6 months between service.

schedule the required maintenance with any service provider at their convenience with the invoice going to the FMC. Alternatively, when a vehicle needs corrective maintenance, PAWC employees contact the FMC, who will guide the employee through the appropriate course of repair based on the vehicle history, shop capabilities and industry best practices. Fleet vendors are authorized to make repairs up to \$500 without preauthorization. Any repair over \$500 requires approval by the FMC while any repair over \$1,000 must be approved by PAWC before work can begin.

Alternatively, vehicles within the Pittsburgh district are serviced by two mechanics²⁴ who work in that district's garage. These mechanics report to supervisors within that district. Only vehicles located in Pittsburgh are serviced by these mechanics. The FMC's garage management program allows the Pittsburgh garage to report into the fleet database like an outside vendor. Therefore, the fleet database tracks vehicle maintenance records for all PAWC vehicles.

PAWC monitors past due maintenance, which is tracked on a monthly report and listed in the monthly fleet newsletter. The fleet newsletter is compiled by PAWC's fleet management and forms the basis for monthly calls with Operations management. Additional information presented in the monthly fleet newsletter includes a DOT compliance section and the following reports:

- Inventory summary
- Fleet utilization
- Open recalls
- Vehicle related accidents
- Fuel exceptions

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, PAWC should improve the effectiveness and efficiency of its fleet management function by addressing the following:

1. PAWC's Fleet Operations would benefit from implementing telematics because not all fleet performance data is real time.

As mentioned in the Background section of this chapter, Fleet management sends a monthly fleet newsletter to communicate a variety of fleet related information to PAWC's Operations personnel. However, the newsletter and other management reports (See Chapter III – Executive Management and Organizational Structure Finding and Conclusion No. 2 and 3) do not convey qualitative performance metrics regarding fleet performance. In fact, most fleet data is delayed due to timing of invoices for

²⁴ Although there is one mechanic working in Scranton, this mechanic works solely on wastewater related equipment.

maintenance and repairs from vendors, fuel transactions, etc. making the delivery of real time fleet information challenging.

In December 2022, American Water Works Service Company Inc. (AWSCC) hired a Director of Fleet & Logistics. In this role, the Director of Fleet & Logistics expects to provide guidance and governance for fleet related matters²⁵. A particular focus is the implementation of telematics. While less than 5% of PAWC's fleet have telematics installed, the success of recent pilot programs across American Water's fleets has led to a push for the implementation of telematics. No timeline for widespread implementation of telematics in PAWC's fleet has been established as of the end of field work.

Nonetheless, increased utilization of telematics may provide PAWC with various operational improvements. Use of telematics is a best practice for utilities to track valuable information about their fleet vehicles. Telematics can also help improve efficient fleet operation by ensuring proper preventative maintenance, increased and optimized vehicle utilization, proactive identification of vehicle or driver problems, etc. It can also reduce manual processes or eliminate administrative errors. Specifically, telematics can be used to gather vehicle diagnostic information, mileage, and GPS location. Utilities can use telematics to monitor driver behavior and spot trends in inefficient driving behavior or to offer remedial training for unsafe driving practices. Furthermore, PAWC should use the additional information provided by telematics to develop specific goals for key performance indicators that can be used to help compare fleet operation across the state. However, there is a cost for implementing telematics and possible constraints, like union agreements. Therefore, the PUC auditors recommend that PAWC perform a business case analysis for implementing telematics and establish a timeline for deployment, should it be advantageous.

Recommendations

- 1. Evaluate the business case for implementing telematics in PAWC's fleet and develop specific goals for key performance indicators.**

²⁵ There is no formal reporting relationship for PAWC's fleet function to the Director of Fleet & Logistics.

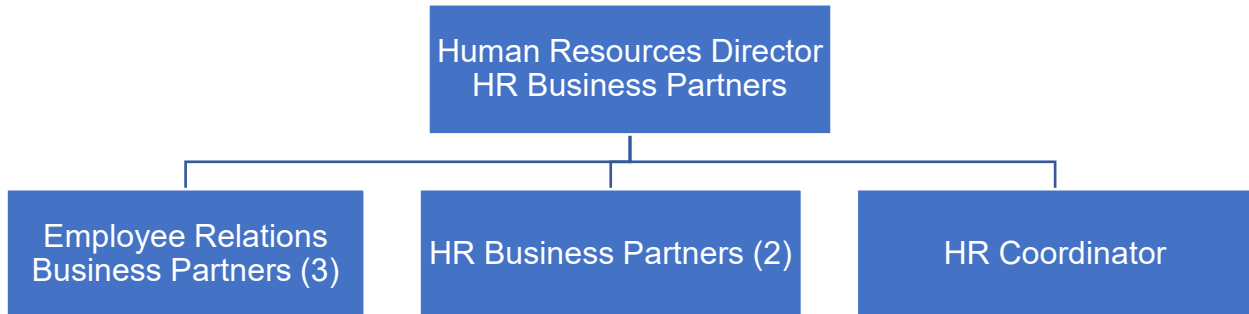
XIV. HUMAN RESOURCES AND DIVERSITY

Background

Human Resources

As indicated in the Chapter II – Background, the Human Resources function is provided by American Water Works Service Company (AWWSC). AWWSC Human Resources (HR) department provides recruitment and hiring, employee benefits, compensation, labor relations, general training, and development services, etc. for all American Water Works Company, Inc.'s (American Water) regulated and non-regulated subsidiaries. The HR function for PAWC, as shown in Exhibit XIV-1, is overseen by the Director HR Business Partners (Director), who is responsible for Pennsylvania and West Virginia's regulated subsidiaries and reports to AWWSC's Senior HR Director.

**Exhibit XIV-1
Pennsylvania-American Water Company
Human Resources Organization Chart
As of December 2022**



Source: Interview Request EM-2

The HR Director is based in West Virginia and is responsible for HR in American Water Works Company, Inc.'s (American Water) Pennsylvania and West Virginia regulated subsidiaries. The Employee Relations Business Partners offer front line support to employee questions and concerns, manage oversight of employee investigation and discipline, and maintain the company's code of ethics, oversee and coordinate labor management meetings, and are actively involved with and support supervisor-employee coaching. HR Business Partners duties include talent acquisitions and analysis of workforce trends, employee culture, and compensation. Administrative responsibilities are handled by the HR Coordinator.

American Water offers an expansive total compensation package to attract and retain talent. The compensation system determines current market value of a position based upon job duties, responsibilities, skills, and knowledge, to establish base salaries

and support the company business strategy. The Annual Performance Plan (APP) is the company’s incentive-based compensation program offered to eligible non-union and union employees. Using weighted goals based around financial growth, safety, diversity & inclusion, and customer performance, the full 100% APP award provides a cash bonus of 7% - 40% of base salary, depending on salary level, to non-union employees and 3% of base salary to union employees. An additional Long-Term Performance Plan (LTPP) awards restricted stock units (RSUs) and performance stock units (PSUs) to eligible executives. Lastly, the spot award bonus is designed to recognize significant contributions of non-union employees with a cash award up to \$500.

American Water’s benefits package includes the option of medical coverage through a Consumer Directed Health Plan (CDHP) and Health Savings Account (HSA) or a Preferred Provider Organization (PPO) and Flexible Spending Account (FSA). Separate coverage is available for dental and vision benefits. Additional benefits include critical illness, accident, and hospital indemnity insurance; pet insurance; company and employee paid life insurance; an employee assistance program (EAP); short-term disability; paid family leave; commuter benefits; and tuition reimbursement up to \$10,000 annually to name a few. The company’s 401(k), the American Water Savings Plan (AWSP), offers a 100% match up to 3% of an employee’s salary and a 50% match for the next 2% contributed. American Water contributes 5.25% of an employee’s base salary to a separate Defined Contribution Account (DCA) regardless of participation in the AWSP. Employees can purchase American Water stock at a 15% discount through an Employee Stock Purchase Plan (ESPP).

Exhibit XIV-2 shows the annual safety rates and trends from 2018 through 2022 for PAWC employees in comparison to industry benchmarks provided by the United States Department of Labor’s Bureau of Labor Statistics (BLS). PAWC’s safety performance during this period has been favorable relative to the BLS benchmark.

Exhibit XIV-2
Pennsylvania-American Water Company
Annual Safety Rates
For the Years 2018 – 2022

Total Recordable Incidence Rate	2018	2019	2020	2021	2022
PAWC - Actual	2.62	0.95	1.34	0.77	0.85
BLS Benchmark [^]	4.30	5.10	2.10	2.60	N/A
DART Rate	2018	2019	2020	2021	2022
PAWC - Actual	2.19	0.32	0.70	0.34	N/A
BLS Benchmark [^]	2.90	3.50	1.30	1.90	N/A

[^]2022 data from U.S. Bureau of Labor Statistics not available (N/A)

N/A – Not Available,

Source: Data Request HR-15, HR-16, and HR-27

PAWC's safety programs are overseen by the Director Health and Safety (H&S). The H&S department manages and administers safety training; conducts investigations and root cause analysis of workplace injuries and potential safety issues; manages safety committees; enforces policies and procedures; tracks workplace incidents and injuries; and handles worker's compensation claims. In addition to the H&S department, the VP Operations holds safety and environmental meetings twice per month.

American Water utilizes SAP SuccessFactors' Human Capital Management (HCM) HR software platform for its human resource information system (HRIS). The modules and sub-modules comprising the HCM handle recruiting, onboarding, training, compensation, employee development, and succession planning. The platform is cloud-based and accessible to employees from anywhere through the internet. The company uses Businessolver to manage employee benefits and payroll is disbursed through Automatic Data Processing (ADP).

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 three decades. All jurisdictional utilities affected by Section 516 of the Public Utility Code (i.e., utilities whose plant-in-service exceeds \$10 million) are required to file annual diversity status reports with the Commission, to submit EEO plans annually, and to file certain diversity procurement data. Furthermore, Chapter 69 regulations encourage utilities to include diversity efforts as a component of their business strategy. After reviewing its diversity requirements, the Commission issued its final rulemaking order at Docket L-2020-3017284 at its April 14, 2022, Public Meeting.

PAWC complies with 52 Pa. Code § 51.13 by filing annual diversity reports with the PUC. Included in the diversity report are sections describing the company's programs and initiatives to promote diversity in the workplace and procurement process. The company's National Supplier Diversity Program is designed to increase competition and provide opportunities to diverse suppliers (e.g., women; minorities; veterans; service-disabled veterans; persons with disabilities; and lesbian, gay, bisexual, and transgender (LGBT) individuals). In addition, the company's Prime Supplier Initiative encourages supplier diversity in subcontracting efforts. Inclusion, Diversity and Equity efforts are supported by robust training and education initiatives, recruiting efforts, employee and community outreach, and employee business resource groups. American Water's efforts to increase representation of women and minorities are part of their APP and represent 5% of the potential award.

Findings and Conclusions

Our examination of the Human Resources, Safety and Diversity functions included a review of the Company's policies and procedures, compensation and benefits, employee training, safety programs, PUC diversity filings, communication methods, management philosophy, and accountability. Based on our review, PAWC

should initiate or devote additional efforts to improving the effectiveness of its human resources function by addressing the following:

1. There are no policies, procedures, or employee agreements detailing remote work at PAWC.

In 2022, PAWC began offering employees the option to work remotely on a part-time basis. The opportunity is available at the discretion of management, and positions with functions and duties incompatible with remote work are ineligible (i.e., operations, field staff, etc.). Known as a 3/2 hybrid schedule, employees report to their normal worksite location three days per week and work remotely the other two days. Implemented in response to employee feedback and made possible by the remote work infrastructure developed during the pandemic, the company expects hybrid schedules to be a desirable option for existing employees and a useful recruiting tool.

Although PAWC implemented a hybrid schedule, it never developed policies and procedures governing this work practice. These types of management controls are needed to set expectations, define parameters, standardize practices, etc., which in turn promote efficient and effective business operations. Documentation should provide guidance on topics such as defining employee eligibility; whether the alternate worksite location need to be at the employee's residence; any technology, equipment, or service requirements; and/or whether the employee can be a caregiver while working to name a few. Some of the answers to these examples may appear obvious, but if left undefined the issues are left open to interpretation.

The benefits from hybrid schedules and other remote-work opportunities can be numerous for both the employer and employee. In fact, many companies are now reporting such benefits as increased employee satisfaction and productivity, reduced overhead expenses, and improvement in the company's ability to hire and retain talent. However, garnering those benefits depends on factors like workplace culture, trust between employees and management, and setting boundaries, all of which are better defined when documented. Therefore, PAWC should document its hybrid work schedule within policies, procedures, employee handbook, etc.

Recommendations

1. Document company policies, procedures, or guidance for the application of remote work.

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 Pennsylvania-American Water Company.

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

XIV. APPENDICES

Appendix A Water Financial and Operating Data Statistics

Appendix B Wastewater Financial and Operating Data Statistics

Pennsylvania American Water Company
Financial and Operating Data and Statistics

Appendix A
Page 1 of 2

<u>Operating Statistics</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>Compound Growth</u>
Gross Utility Plant	5,124,450,851	5,345,987,911	5,589,242,658	5,894,464,731	6,226,199,486	5.0%
Depreciation & Amortization	1,070,293,038	1,050,351,777	1,061,553,686	1,166,987,026	1,196,037,974	2.8%
Utility Plant Adjustments	14,274,431	13,279,941	12,690,794	12,087,678	11,484,562	-5.3%
Net Utility Plant	4,068,432,244	4,308,916,075	4,540,379,766	4,739,565,383	5,041,646,074	5.5%
Total Water Sales & Other Revenue						
Unmetered Water Revenue						
Residential	97,559	98,711	85,380	111,307	69,291	-8.2%
Metered Water Revenue						
Residential	398,904,543	402,759,914	441,734,729	455,376,400	463,751,822	3.8%
Commerical	152,384,184	150,185,703	146,797,243	161,454,528	165,391,236	2.1%
Industrial	28,728,990	28,800,563	29,501,745	32,785,088	36,495,720	6.2%
Public	19,347,896	19,663,705	16,998,883	18,246,894	19,760,925	0.5%
Other						
Public Fire Protection	8,207,746	7,945,450	8,092,949	8,585,369	8,644,789	1.3%
Private Fire Protection	3,962,991	3,892,970	4,034,135	4,859,814	4,555,079	3.5%
Other Sales to Public						
Total Water Sales	611,633,909	613,347,016	647,245,064	681,419,400	698,668,862	3.4%
Other Water Revenues	16,349,671	12,796,854	14,783,259	5,197,412	13,118,714	-5.4%
Total Water Sales & Other Revenues	627,983,580	626,143,870	662,028,323	686,616,812	711,787,576	3.2%
Gallons Sold						
Unmetered Sales						
Residential	5,837	5,560	4,838	4,830	4,433	-6.6%
Metered Sales						
Residential	25,554,530	25,287,293	27,095,201	26,114,696	25,798,406	0.2%
Commerical	13,433,627	12,870,850	11,770,829	12,292,419	12,153,944	-2.5%
Industrial	4,014,581	3,831,427	3,841,040	4,091,938	4,399,560	2.3%
Public	1,906,920	1,915,657	1,515,233	1,612,303	1,737,167	-2.3%
Private Fire Protection	58,459	3,160	6,838	3,306	349	-72.2%
Sales for Resale	688,822	693,840	704,195	731,644	706,308	0.6%
Total Water Sales	45,662,776	44,607,787	44,938,174	44,851,136	44,800,167	-0.5%
Total Water Delivered	70,145,478	70,704,310	69,193,957	69,973,424	71,556,449	0.5%
Total Sales	45,662,776	44,607,787	44,938,174	44,851,136	44,800,167	-0.5%
Non-Revenue Usage Allowance	12,611,089	12,194,493	9,905,936	12,849,089	13,878,012	2.4%
Unaccounted for Water	11,871,613	13,902,030	14,349,847	12,273,199	12,878,270	2.1%
Percentage of Unaccounted for Water	16.9%	19.7%	20.7%	17.5%	18.0%	1.5%
Customers (Average)						
Unmetered Sales						
Residential	139	134	128	138	120	-3.6%
Commerical	-	-	1	1	-	NM
Metered Sales						
Residential	606,720	610,570	616,625	621,972	624,965	0.7%
Commerical	45,022	45,174	45,488	45,735	45,993	0.5%
Industrial	524	528	534	539	543	0.9%
Public	2,230	2,216	2,203	2,232	2,217	-0.1%
Private Fire	3,877	3,881	3,903	3,925	3,927	0.3%
Public Fire	413	410	410	411	417	0.3%
Sales for Resale	23	23	23	24	22	-1.1%
Total Customers	658,946	662,934	669,312	674,974	678,203	0.7%
Employees (Average)	967	985	1,001	1,016	1,031	1.6%

NM = Not Meaningful
Source: PUC Annual Reports

Pennsylvania American Water Company
Financial and Operating Data and Statistics

<u>Operating Statistics</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>Compound Growth</u>
Salaries & Wages	47,164,794	48,464,665	51,144,527	54,569,241	56,364,087	4.6%
Employee Pensions & Benefits	8,935,494	9,778,698	2,534,576	(3,418,693)	(5,144,009)	NM
Purchased Water	2,878,906	2,578,352	2,917,143	3,024,165	3,275,530	3.3%
Purchased Power	13,454,721	13,450,939	11,892,063	12,514,341	15,257,639	3.2%
Fuel for Power Production	36,136	28,576	34,450	54,748	54,738	10.9%
Chemicals	9,342,939	9,455,008	9,861,968	10,776,803	14,652,312	11.9%
Materials & Supplies	1,798,288	2,775,401	4,045,363	3,929,247	4,233,655	23.9%
Contractual Services	59,560,242	61,793,477	69,292,689	77,222,798	78,949,836	7.3%
Rent & Transportation Expenses	2,829,979	2,540,924	2,481,684	3,455,241	3,607,311	6.3%
Insurance	11,952,605	11,892,643	12,797,851	13,728,545	15,898,887	7.4%
Advertising Expenses	1,989	-	-	-	-	-100.0%
Regulatory Expenses	888,460	873,408	851,990	980,673	2,683,811	31.8%
Bad Debt Expenses	10,221,717	10,677,168	10,171,729	9,368,615	9,475,298	-1.9%
Miscellaneous Expenses	21,059,084	23,680,460	15,838,817	15,963,323	18,710,874	-2.9%
Total Water Operation & Maintenance Expenses	190,125,354	197,989,719	193,864,850	202,169,047	218,019,969	3.5%

Source: PUC Annual Reports

Pennsylvania American Water Company
Wastewater
Financial and Operating Data and Statistics

Appendix B
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<u>Operating Statistics</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>Compound Growth</u>
Gross Utility Plant	869,554,149	1,143,931,218	1,235,367,180	1,334,420,054	1,663,954,009	17.6%
Depreciation & Amortization	311,313,202	421,820,697	448,643,081	484,442,339	506,700,309	13.0%
Utility Plant Adjustments	(499,539)	(249,770)	-	56,044	1,400,012	NM
Net Utility Plant	557,741,408	721,860,751	786,724,099	850,033,759	1,158,653,712	20.1%
Total Wastewater Sales & Other Revenue						
Residential	33,714,665	35,200,987	41,847,829	50,514,352	64,736,673	17.7%
Commerical	13,492,594	14,111,353	16,110,112	17,973,155	23,698,143	15.1%
Industrial	1,698,345	2,148,648	2,260,433	2,697,893	3,505,600	19.9%
Public	11,292,006	10,404,468	9,975,075	10,659,764	13,055,465	3.7%
Other						
Total Wastewater Sales	60,197,610	61,865,456	70,193,449	81,845,164	104,995,881	14.9%
Other Wastewater Revenues	913,890	1,119,675	864,640	1,103,072	1,612,530	15.3%
Total Wastewater Sales & Other Revenues	61,111,500	62,985,131	71,058,089	82,948,236	106,608,411	14.9%
Customers (Average)						
Unmetered Sales						
Residential	2,600	1,175	1,365	2,064	3,417	7.1%
Commerical	45	28	31	89	157	37.1%
Industrial	4	3	3	5	7	12.9%
Public	5	4	4	4	5	2.7%
Metered Sales						
Residential	57,273	63,225	68,954	71,780	79,473	8.5%
Commerical	4,834	5,029	5,308	5,521	6,272	6.7%
Industrial	30	36	43	45	50	13.6%
Public	180	187	198	207	229	6.2%
Other	8	11	11	13	15	18.9%
Total Customers	64,977	69,696	75,916	79,727	89,624	8.4%
Employees (Average)	143	144	146	147	162	3.1%

NM = Not Meaningful

Source: PUC Annual Reports

**Pennsylvania American Water Company
Wastewater
Financial and Operating Data and Statistics**

<u>Operating Statistics</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>Compound Growth</u>
Salaries & Wages	8,136,007	8,081,884	8,005,952	8,706,962	10,282,953	6.0%
Employee Pensions & Benefits	3,247,803	2,741,372	2,718,545	3,096,909	3,626,117	2.8%
Purchased Wastewater Treatment	-	-				
Purchased Power	2,456,836	2,506,962	2,401,672	2,740,794	3,865,500	12.0%
Fuel for Power Production	14,011	-	14,744	-	25,645	16.3%
Chemicals	2,154,565	2,008,233	1,658,289	1,525,681	2,125,137	-0.3%
Materials & Supplies	-	-	-	-	-	0.0%
Contractual Services	3,639,658	3,989,969	4,867,899	5,377,496	6,527,813	15.7%
Rent & Transportation Expenses	1,214,537	1,077,514	1,079,526	656,050	1,681,527	8.5%
Insurance	185,699	225,990	258,493	196,623	164,403	-3.0%
Miscellaneous Expenses	1,524,074	1,594,948	1,827,522	1,848,888	3,025,406	18.7%
Total Water Operation & Maintenance Expenses	22,573,190	22,226,872	22,832,642	24,149,403	31,324,501	8.5%

Source: PUC Annual Reports



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