

FOCUSED MANAGEMENT AND OPERATIONS AUDIT OF COLUMBIA WATER COMPANY

Prepared By The
Pennsylvania Public Utility Commission
Bureau of Audits

Issued mARCH 2018

Docket No.D-2017-2606105



**COLUMBIA WATER COMPANY
FOCUSED MANAGEMENT AND OPERATIONS AUDIT**

TABLE OF CONTENTS

<u>Chapter</u>		<u>Page No.</u>
I.	INTRODUCTION	1
	A. Objectives and Scope	1
	B. Audit Approach	1
	C. Functional Area Ratings	2
	D. Benefits	3
	E. Recommendation Summary	4
II.	BACKGROUND	7
III.	CORPORATE GOVENANCE	9
IV.	FINANCIAL MANAGEMENT	13
V.	WATER OPERATIONS	17
VI.	EMERGENCY PREPAREDNESS	28
VII.	CUSTOMER SERVICE	31
VIII.	ACKNOWLEDGEMENTS	36
IX.	APPENDICES	37

**COLUMBIA WATER COMPANY
FOCUSED MANAGEMENT AND OPERATIONS AUDIT**

LIST OF EXHIBITS

<u>Exhibit No.</u>		<u>Page No.</u>
I-1	Functional Rating Summary	3
I-2	Summary of Recommendations	5
II-1	Customer Statistics	7
II-2	Employee Organizational Chart	8
V-1	Number of Customers	17
V-2	Number of Leaks	19
V-3	O&M and Capital Expenditures	20
V-4	Non-Revenue Water	20
V-5	Miles of Main by Decade of Installation	21
V-6	Actual and Projected Main Replacement Expenditures	22
V-7	Number of Line Locates	25
V-8	Number of Valves by Size	26
V-9	Number of Valves Exercised	27
VI-1	Public Utility Security Planning and Readiness Self Certification Form	28
VII-1	Collection Agency Placement and Recovery	33
VII-2	Customer Billing Statistics	34
VII-3	Customer Payment Statistics	35

I. INTRODUCTION

Management and operational reviews are required for certain utility companies pursuant to 66 Pa.C.S. § 516(a). Such companies are also subject to the Commission's general administrative power and authority to supervise and regulate all public utilities in the Commonwealth under 66 Pa.C.S. § 501(b). Specifically, the Commission can investigate and examine the condition and management of any public utility under 66 Pa.C.S. § 331(a). In accordance with the Pennsylvania Public Utility Commission's (PUC or Commission) program to identify improvements in the management and operations of fixed utilities under its jurisdiction, the PUC Bureau of Audits conducted a focused management and operations audit of Columbia Water Company (CWC or company).

This report summarizes the work of the Commission's Management Audit team and outlines their conclusions. The findings presented in the report identify areas 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 for the company to initiate actions toward implementation of the recommendations.

A. Objectives and Scope

The objectives of the focused management and operations audit were:

- To provide the Commission, CWC, and the public 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 CWC.

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

B. Audit Approach

The focused management and operations audit was performed by the Management Audit staff of the PUC's Bureau of Audits. The audit began with pre-fieldwork analysis as outlined:

- A multi-year internal trend and ratio analysis (see Appendices I, II, III, and IV) was completed using limited financial and operational data obtained from the Commission, filings made at the Commission, and other available sources.
- Input was solicited from Commission Bureaus and Offices, and certain external parties regarding any concerns or issues they would like addressed during our review.
- Other Commission-conducted audits, and other available documents concerning CWC were reviewed.

Information from the pre-fieldwork analysis was used to focus the Bureau of Audit's work in the field. Specifically, the following areas or functions were selected for in-depth analysis and are included in this report:

- Corporate Governance
- Financial Management
- Water Operations
- Emergency Preparedness
- Customer Service

The pre-fieldwork analysis should not be construed as a comprehensive evaluation of the management or operations in all functional areas. If we conducted a thorough review of other areas, weaknesses or deficiencies may have come to our attention that were not identified in the limited pre-fieldwork review.

Fieldwork began on August 21, 2017 and continued through November 8, 2017. The principal components of the fact gathering process included:

- Interviews with personnel from CWC and other Commission Bureaus.
- Analysis of records, documents, and reports of a financial and operational nature. The analysis focused primarily on the period 2013 - 2016, as well as 2017 as available.
- Visits to the operations centers, water production and storage facilities, and observation of selected work practices, etc.

C. Functional Area Ratings

For the functions or areas selected for in-depth review, the PUC's auditors rated the actual operating or performance level relative to the expected performance level at the time of the audit. The expected performance level is the state at which each area or function should be operating given the resources and general operating environment. Expected performance is not a "cutting edge" operating condition; rather, it is

management of an area or function such that it produces reasonably expected operating results.

Presented below are the evaluative categories used to rate each area's actual performance relative to its expected performance level:

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

Our ratings for each function or area reviewed can be found in Exhibit I-1.

Exhibit I-1
Columbia Water Company
Focused Management and Operations Audit
Functional Rating Summary

Functional Area	Meets Expected Performance Level	Minor Improvement Necessary	Moderate Improvement Necessary	Significant Improvement Necessary	Major Improvement Necessary
Corporate Governance		X			
Financial Management			X		
Water Operations			X		
Emergency Preparedness		X			
Customer Service		X			

D. Benefits

Where possible, the PUC's audit staff attempts to quantify the potential savings from implementing the recommendations made in this report. However, for many recommendations, it is not possible or practical to estimate quantitative benefits as they are of a qualitative nature or insufficient data was available to quantify the impact. For example, it is difficult to estimate the actual benefit of new management practices or procedures where they did not previously exist or were not fully functional. Similarly, changes in work flow or implementation of good business practices will improve the effectiveness and efficiency of a specific function but cannot be easily quantified.

Companies will have options in implementing the recommendations and thus the PUC's audit staff have not estimated the cost of implementation for recommendations

where no savings were quantified. However, it should be noted that the cost of implementing certain recommendations could be significant.

E. Recommendation Summary

Chapters III through VII provide the findings, conclusions, and recommendations for each function or area reviewed during this focused audit. Exhibit I-2 summarizes the recommendations with the following priority assessments for implementation:

- **INITIATION TIME FRAME** – Estimated time frame on how quickly the companies should be able to initiate its implementation efforts given the companies resources and general operating environment. The time necessary to complete implementation will 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 estimated overall level of benefits rankings is not solely based on quantifiable dollars but rather the Bureau of Audit's assessment of the potential impact of the recommendation on the efficiency and/or effectiveness of the companies 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.

**Columbia Water Company
Focused Management and Operations Audit
Summary of Recommendations**

Rec. No.	Recommendation	Page No.	Initiation Time Frame	Benefits (including \$ estimates)
Chapter III – Corporate Governance				
III-1	Consider expanding the audit committee to three directors.	12	0-6 Months	Low
III-2	Expand the strategic planning process by developing and monitoring performance metrics that support the overall strategy of the company.	12	0-12 Months	Medium
Chapter IV – Financial Management				
IV-1	Document the process and procedures used to perform budgeting, variance reporting, and other significant financial management functions.	16	0-6 Months	Medium
IV-2	Periodically explore banking and financing services through price comparison or competitive bid.	16	0-12 Months	Medium
IV-3	Prepare the necessary adjusting journal entries to accurately account for customer overpayments.	16	0-3 Months	Low
Chapter V – Water Operations				
V-1	Accelerate the replacement of cast iron mains.	27	12+ Months	High
V-2	Test a sample of new residential meters in accordance with regulations.	27	0-3 Months	Low
V-3	Update the Drought Contingency Plan.	27	0-6 Months	Medium
V-4	Develop and maintain a damage prevention program to include a damage prevention manual, line damage database, and a pipeline education and awareness program for the company's stakeholders (i.e., customers, contractors, etc.)	27	0-6 Months	Medium
V-5	Strive to exercise non-critical valves every seven to ten years.	27	12+ Months	Low

**Columbia Water Company
Focused Management and Operations Audit
Summary of Recommendations**

Rec. No.	Recommendation	Page No.	Initiation Time Frame	Benefits (including \$ estimates)
Chapter VI – Public Utility Emergency Preparedness				
VI-1	Strive to annually test all emergency plans on at least a limited basis.	30	0-12 Months	Medium
Chapter VII – Customer Service				
VII-1	Evaluate historical customer delinquent account data and modify collection practices accordingly.	35	0-12 Months	Medium
VII-2	Evaluate the feasibility of offering an automated pay-by-phone payment option.	35	6-12 Months	Low

II. BACKGROUND

Columbia Water Company (CWC or company) is a privately held water utility providing service to over 10,000 customers within Columbia, Marietta, and Mountville Boroughs and portions of West Hempfield, Manor, East Donegal, Rapho, and Hellam Townships in Lancaster and York County Pennsylvania. CWC operates its service territory as two separate service divisions; the Columbia Division and the Marietta Division, resulting from CWC's October 2012 acquisition of Marietta Gravity Water Company¹. CWC's distribution system consists of approximately 135 miles of water mains, nine finished water storage tanks, six pumping stations, four wells, and a water treatment plant. The Susquehanna River is the company's main raw water source although it is augmented by four wells throughout its system.

A summary of CWC's number of customers, water usage, and associated revenues by customer class are presented in Exhibit II-1.

Exhibit II-1
Columbia Water Company
Customer Statistics
As of September 30, 2017

Customer Class	Number of Customers	%	Gallons Sold (000)	%	Operating Revenues	%
Residential	9,607	93.3%	330,206	55.8%	\$2,815,868	77.2%
Commercial	508	4.9%	140,731	23.8%	\$571,329	15.7%
Industrial	36	0.3%	113,021	19.1%	\$215,043	5.9%
Other^	150	1.5%	7,485	1.3%	\$44,938	1.2%
Total	10,301	100.0%	591,443	100.0%	3,647,178	100.0%

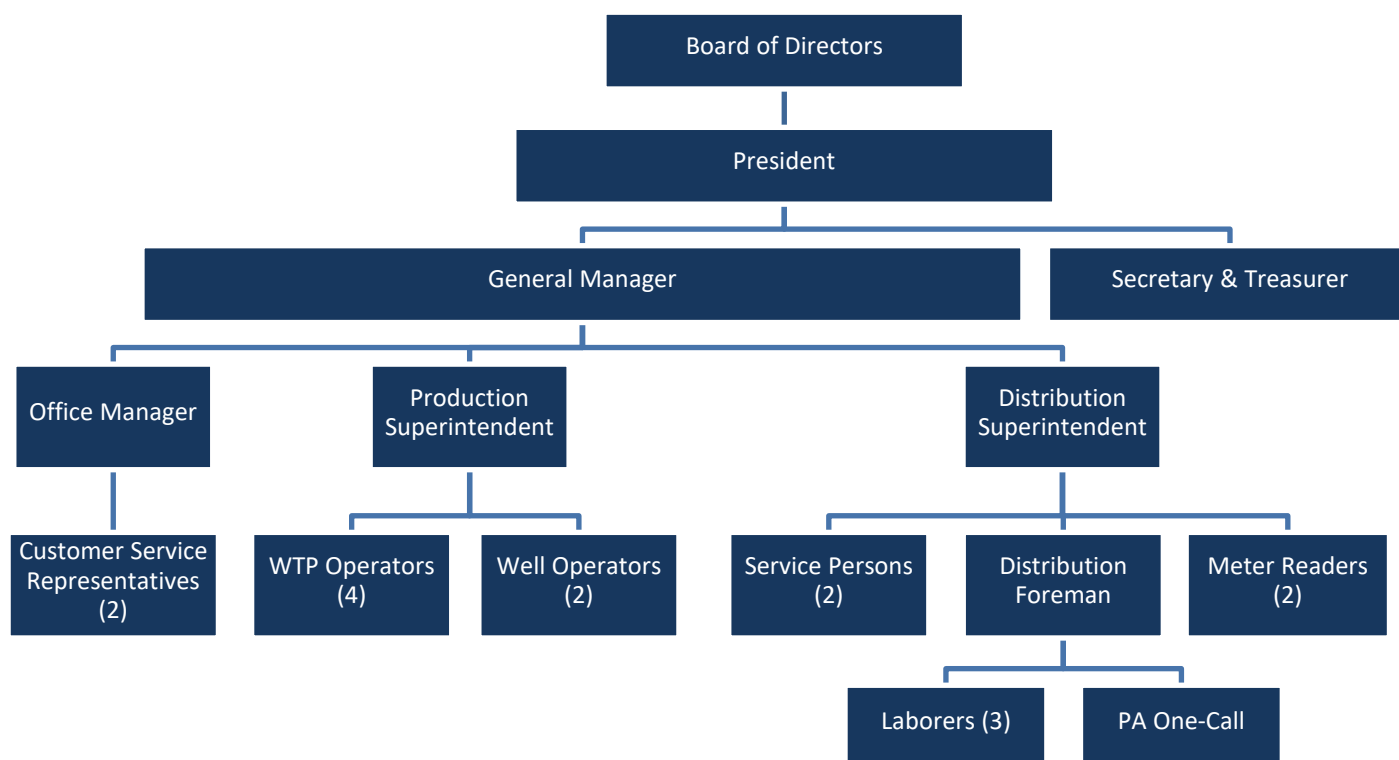
^Other includes public and fire protection customers
Source: PUC Reports and Data Request GO-30

¹ As part of CWC's pending rate case, filed June 27, 2017 at docket number R-2017-2598203, CWC proposed the combination of the Columbia and Marietta Divisions. As of December 31, 2017, the outcome of the rate case was still pending.

Columbia Water Company

As of July 31, 2017, CWC had 17 full-time and five part-time employees. The CWC President, General Manager and Secretary and Treasurer are also corporate officers and are on the company's Board of Directors. Additionally, CWC utilizes two part-time consultants to perform engineering and water quality testing services for the company. CWC's organizational chart is shown in Exhibit II-2.

Exhibit II-2
Columbia Water Company
Employee Organizational Chart
As of July 31, 2017



* The President, Secretary and Treasurer, Well Operator, and PA One-Call positions are all part-time.
Source: Data Request GD-2 and Auditor Analysis

III. CORPORATE GOVERNANCE

Background

As introduced in Chapter II – Background, Columbia Water Company (CWC or company) is a privately held water utility. As a private entity, CWC is not subject to many of the corporate governance practices outlined in the Sarbanes Oxley Act of 2002 (SOX) or other Securities and Exchange Commission (SEC) regulations. Likewise, CWC is not required to follow the corporate governance rules of the New York Stock Exchange (NYSE) or other listing markets. Although not required, CWC follows the spirit of many of the governance practices established by the SEC, SOX and NYSE.

CWC's Board of Directors (Board) is composed of six members including three directors who are also company officers (i.e., President, Vice President and General Manager, and the Secretary and Treasurer). The CWC Board meets monthly and utilizes the following three committees to help conduct its business:

- Audit Committee – This committee is responsible for overseeing CWC's accounting and financial reporting processes including approving all audit and non-audit services and fees, and the selection, retention, independence, and oversight of the independent auditor. The committee is also responsible for maintaining the company's code of conduct and ethics policies; reviewing all audited financial statements; reviewing the quality and adequacy of the company's internal controls with management and the independent auditor; and ensuring compliance with financial, accounting, legal, and regulatory requirements. The committee is comprised of two independent Board members and meets as necessary, typically, two times per year. These meetings include consultation with the independent auditor prior to the annual financial audit and to review and accept the final report prior to release.
- Executive Committee – This committee is responsible for advising and directing CWC's management on general business matters, and the operational, legal, and administrative affairs of the company; overseeing the development of the company's policies and processes; and carrying out the full authority of the Board between meetings, or as necessary. The committee meets monthly and is comprised of four members, two of which are considered independent.
- Pension and Property Committee – This committee is primarily responsible for overseeing CWC's employee pension plan and meets with management, and the pension plan trustee annually (or more frequently if necessary). This committee also periodically inspects the company's property and facilities and may perform other duties assigned by the Board. The committee is comprised of three directors - two independent directors and the CWC General Manager.

The Pennsylvania Public Utility Commission (PUC or Commission) has encouraged utilities to proactively improve diversity in their workforce and procurement for more than two decades. Commission regulations at 52 Pa. Code § 69.801 - § 69.809 encourage utilities to include diversity efforts as a component of their business strategy and file annual reports describing their diversity program activity. The Columbia Water Company has complied with 52 Pa. Code § 69.809, filing annual reports on diversity with the PUC for each year covered in the audit period (reports filed in 2014 through 2017 for the years ended 2013 - 2016). The auditors reviewed CWC's two most recent filings for the years ended 2015 and 2016. Included in its diversity report are sections pertaining to the company's diversity policies related to human resources and procurement. The company's diversity filing also contains a copy of its Code of Ethics and policies related to anti-harassment from its Employee Handbook.

Findings and Conclusions

Our examination of the Corporate Governance function included a review of the CWC Boards of Directors' organization including committee structure and charters; Board fee structure; director independence; documents related to principles of corporate governance and oversight; relationships with the independent auditor, performance of non-audit services by the independent auditor; code of ethics; annual reports to stakeholders; annual diversity filings; etc. Based on our review, CWC should initiate or devote additional efforts to improving the efficiency and/or effectiveness of its corporate governance functions by addressing the following:

1. The Columbia Water Company's Audit Committee is composed of only two independent directors.

CWC's audit committee charter specifies that the committee must have at least two independent directors who are financially literate. Based on auditors' review, it appears that both of CWC's two audit committee members are financially literate; meeting the requirements documented in the Board's audit committee charter. However, the NYSE listed company manual section 303A specifies that listed companies must have an audit committee composed of, at a minimum, three directors. These directors must be financially literate and at least one must have accounting and financial expertise.

As a privately held company, CWC is not required to follow the guidelines and practices prescribed in SOX, SEC, and NYSE regulations. Regardless, the PUC audit staff believes all Pennsylvania public utilities should follow these practices as they represent industry standards and provide benefits to the organization. These practices help support an environment with diverse viewpoints and meaningful discussions, avoid situations of a hung committee, and in general enhance the quality of the Audit Committee's oversight and execution of its responsibilities.

CWC's General Manager indicated that the Board has not considered expanding the Audit Committee to three members but expressed concern that three members may

be excessive given the size of the company. The audit staff acknowledges the General Manager's concerns but emphasizes the importance of the company's audit committee's oversight of accounting and financial reporting for the company and stakeholders. Although an audit committee of three members would be half of CWC's Board, CWC's other two committees have at least three members. Therefore, the PUC Audit Staff contends that a third member on the audit committee may provide a benefit to the company.

2. Columbia Water Company's strategic planning and performance monitoring and review processes could be improved.

A company's strategic planning process should encompass a holistic review of the organization and the environment in which it operates considering both current internal and external influences while forecasting for those expected in the future. It should also integrate the company's objectives, its plans for achieving those objectives, and performance measures which assess accomplishment of those goals and objectives.

CWC's strategic planning process is focused on developing CWC's 5-year capital plans. More specifically, CWC's strategic planning process considers the regulatory environment and any pending changes such as demand/growth and changing demographics in the service territory, state/local road improvement projects, trending equipment failures/system problems, need to upgrade/replace equipment, and corresponding financing options. These are all important parts of a holistic strategic planning process, but insufficient consideration is given to monitoring performance and employee development.

CWC monitors its performance utilizing two primary methods: customer satisfaction surveys and employee performance evaluations. Customer satisfaction surveys are sent to a sample of customers² annually to gauge their satisfaction³ in the following nine areas:

- Taste of water
- Reliability of service
- Friendliness of staff
- Speed of resolving concerns
- Bill format
- Water pressure
- Water clarity
- Resolution of concerns
- Emergency response time

The CWC General Manager compiles and reviews the results, looking for any trends or patterns and the driving cause. There were no general performance improvement initiatives based on the survey results within the audit period.

² The 2017 customer satisfaction survey was sent to 517 customers or about 5% of CWC's customers. Responses were received from 131 customers, approximately 25.3% of those surveyed.

³ Customers can rate their satisfaction as very satisfied, satisfied, dissatisfied, or no opinion.

Employee performance evaluations are also performed annually. Employees receive a rating of one to five on 14 performance factors, each of which has a corresponding rating of one to five based on its importance to the company. A performance review is conducted for the General Manager and all employees reporting up through the General Manager. Employee performance reviews are used to determine the amount of the annual performance-based salary adjustments and provide feedback to employees for improvement opportunities. If a specific weakness is identified, the employee's supervisor will suggest training to develop the needed skill however no formal employee development plans are created based on the performance evaluations.

No other corporate or departmental performance goals or metrics have been developed. Performance reviews are not conducted for the CWC Board or its committee members. Although directors are elected by the Board to serve two-year terms and could be passed over for re-election for poor performance, no true performance review or director development, particularly continuing education, takes place.

The employee performance reviews and the customer satisfaction surveys are the only performance metrics established by CWC, which are not adequate to gauge the overall corporate performance. CWC has no performance metrics that align the overall strategic plan and direction of the company while monitoring performance and driving improvement opportunities. Developing a set of performance objectives would allow the company to document its performance, reasons for deviation, or unique conditions for the year. This information in turn could be used to educate newly elected board directors and management hires or augment future initiatives with documented past experiences.

Similarly, CWC has maintained flexibility to closely manage and respond to any emerging operational concerns but has not focused resources toward developing a comprehensive top-down strategic planning program. Instead, these activities generally occur verbally in board meetings, management discussions, etc. as needed. CWC's current strategic plan provides a sound basis and is focused on infrastructure needs but should consider other aspects of its business such as employee and director performance and development, succession/staffing planning, etc.

Recommendations

- 1. Consider expanding the audit committee to three directors.**
- 2. Expand the strategic planning process by developing and monitoring performance metrics that support the overall strategy of the company.**

IV. FINANCIAL MANAGEMENT

Background

The Columbia Water Company (CWC or company) employs an office staff consisting of an office manager and two customer service representatives (CSR). The office manager is responsible for billing, accounts receivable, accounts payable, payroll, payroll taxes, and bookkeeping. The CSRs are responsible for handling walk-in customer payments, customer billing, the water service shut-off process, telephone inquiries, preparing service orders, and other miscellaneous office duties. The office manager is trained in all CSR duties and assists as necessary. For more information on CSR duties see Chapter VII – Customer Service.

The company prepares one-year operating and capital budgets and a rolling five-year capital budget annually. The budget process begins in late October/early-November when the Production Superintendent, Distribution Superintendent, and office manager submit their operating and capital needs for the upcoming year to the general manager (GM). The GM and President develop initial operating and capital budgets based in part from this input considering expected cost increases/decreases, changing regulations, planned borough/township construction activity, etc. The GM and President submit proposed budgets to the Board of Director's Executive Committee for comment and review. Following any adjustments resulting from the Executive Committee review, the budgets are finalized and sent to the Board for approval at the January Board Meeting. The operating budget can be revised in March, and reapproved at the April Board meeting, if adjustments arise from any changes in the company's audited financial statements, identified projects, or emerging conditions.

The capital budget includes planned installation or replacement of capital assets (e.g., mains, hydrants, valves, etc.), smart meters (i.e., replacement of old meters and installation for new accounts), general equipment and tools (e.g., vehicles, diagnostic tools, computers, etc.), and capital improvement projects (e.g., security upgrades, tank painting, etc.) for the upcoming calendar year. Project costs are tracked by the general manager and a list of all financial transactions broken out by expensed and capitalized portions, is provided to the Board every month. Additionally, all Pennsylvania Infrastructure Investment Authority (PENNVEST) loans require the GM to enter and track detailed budget vs actual cost information for projects funded by the loan. The five-year capital budget includes planned capital projects and equipment purchases with proposed financing over the following five-year period.

The operating budget is created using the previous year's budget as a baseline and adjusting for estimated increases or decreases in costs and revenues (e.g., salaries, benefits, materials, etc.) for the upcoming calendar year. Quarterly, the office manager compiles an operating budget variance report and provides it to the Board for review. The variance report compares budgeted versus actual revenues and expenses year-to-date. Each quarterly variance review is cumulative, building on the previous quarter, therefore by the end of the year, the full operating budget is compared to all actual revenues and expenses. The Board reviews the operating budget variance

reports quarterly. See Finding and Conclusion No. 1 for additional information related to CWC's budgeting process.

Findings and Conclusions

Our review of the Financial Management function included a review of the company's accounting policies and procedures, budget process, variance reporting, short and long-term financing activities, capital structure, cash collection and disbursement practices, etc. Based on our review, the company should devote additional efforts to improving the efficiency and/or effectiveness of its financial management function by addressing the following:

1. The Columbia Water Company has not documented policies and procedures related to budget development, budget management, and budget analysis.

CWC maintains documented financial and accounting policies and procedures for the general ledger, accounts payable, payroll, and dividend processing functions. These policies and procedures contain step-by-step instructions for each corresponding function. However, policy and process documents reflecting operating practices pertaining to general financial management and high-level decision making were missing. More specifically, the company lacked any policies and procedures related to budget development, budget management, and budget analysis. See the Background section of this chapter for detailed information on CWC's budgeting process.

As a small water company, CWC has few employees involved and familiar with the company's budgeting and budget management processes, and resources have not been focused on documenting these practices. The GM clearly articulated the processes by which the capital and O&M budgets are developed and approved, budget variance reports are produced and analyzed, and reports compiled and prepared for the Board. However, CWC has no standard budget and variance reporting process documented exposing it to several risks associated with improper documentation, primarily driven by turnover of key employees. Such risks include loss of institutional knowledge, undocumented budget assumptions or variance causes, inability to timely develop budgets or variance reports, or promptly report information to the Board.

Policies and procedures should be documented for the budgeting and variance reporting processes as well as other essential business processes and reviewed at least every three to five years. These documents will provide guidance to current and future employees and standardize specific processes are to be completed.

2. The Columbia Water Company has not acquired price quotes or competitive bids for its banking and financial services.

As of December 31, 2016, most of the company's long-term debt is from PENNVEST loans (i.e., \$14.1 million of \$21.3 million). The remaining \$7.2 million is financed through the company's local bank. As a matter of practice, the Company does not competitively bid or obtain price quotes for banking services. With the complex nature of utility financing, particularly the capital requirements, a long-term relationship with a financier can yield benefits (e.g., more favorable access to capital).

Obtaining multiple price quotes at a minimum periodically is an effective tool to evaluate the level of service provided by the company's banking institution. Contract services and blanket supply agreements should offer financial and performance advantages. Audit staff acknowledges that loan covenants or stipulations may require CWC to refinance all existing loans with a new institution should it find more favorable rates elsewhere in the market, but it is important to conduct due diligence reviews through service price comparisons periodically in order to document and justify the decision-making process. Otherwise, CWC may be paying higher banking fees or financing at higher interest rates than its competitors. Banking fees, refinancing options and loan requirements can be interdependent and create higher capital or resource commitments that, at a minimum, should be reconsidered every five to ten years.

3. CWC is incorrectly accounting for customer overpayments.

CWC's customer information system (CIS) does not have an automatic interface with its accounting system. Therefore, the CWC office manager must make manual journal entries in the accounting system to record customer transactions such as billing and payments. During a review of accounts receivable aging balances from its CIS, the auditors identified instances where certain aging categories had credit balances. The CWC office manager indicated that this was due to customer overpayments recorded in the system. However, when the CWC office manager transferred the customer billing and payment transactions from the CIS to the accounting system, no adjusting entry was made. Ideally, to accurately record the customer overpayments an adjusting entry is needed to record these prepayments as deferred revenues, which would correspondingly increase accounts receivable to show the true amount due from customers. The needed adjustment could be made as a single line item adjustment in the financial system without adjusting customer accounts in the CIS.

Under Generally Accepted Accounting Principles (GAAP) and the accrual method of accounting, income is recognized when it is earned, regardless of when it is collected. Therefore, unearned revenues, should be recorded as a liability until services are rendered. Because the adjustment needed to accurately record customer overpayments was automatically handled by CWC's accounting system, the accounts receivable and unearned revenue accounts are understated. This misstatement would fluctuate each month and represents a relatively small adjustment (roughly \$20,000 or about 4% of CWC's average monthly accounts receivable balance from January 2013 through July 2017) to the company's balance sheet.

Recommendations

- 1. Document the process and procedures used to perform budgeting, variance reporting, and other significant financial management functions.**
- 2. Periodically explore banking and financing services through price comparison or competitive bid.**
- 3. Prepare the necessary adjusting journal entries to accurately account for customer overpayments.**

V. WATER OPERATIONS

Background

The Columbia Water Company (CWC or company) provides water service to approximately 10,300 customers in Columbia, Marietta, and Mountville Boroughs, East Donegal, West Hempfield, Rapho and Manor Townships in Lancaster County and Hellam Township in York County. The number of customers in CWC's service territory for the years ending 2013 through 2016 are shown in Exhibit V-1. Whereas the number of customers increased by about 1.8% from 2013 to 2016, the gallons of water sold increased by 4%, from 735 million gallons in 2013 to 765 million gallons in 2016.

Exhibit V-1
Columbia Water Company
Number of Customers
January 1, 2013 through December 31, 2016

	2013	2014	2015	2016
Residential	9,379	9,406	9,432	9,540
Commercial	492	496	520	508
Industrial	37	37	36	36
Other*	135	136	143	141
Total	10,043	10,075	10,131	10,225

*Includes fire service and seasonal connections

Source: PUC Annual Reports

CWC's distribution system is divided into four primary pressure zones and six pressure subzones⁴. The four primary divisions include Columbia, Manor/Mountville, West Hempfield, and Marietta.

The company's primary source of raw water is the Susquehanna River. The company has a 25-year water withdrawal permit from the Susquehanna River Basin Commission (SRBC) to withdraw 6 million gallons per day (MGD) from the river. The water from the river is treated at the company's Walnut Street water treatment plant (WTP) which had undergone a major upgrade starting in 2012. In the fourth quarter of 2015, the company completed the final upgrades to the WTP increasing its capacity from 3 MGD to 4 MGD with allowable expansion to 6 MGD, if needed. The \$17.3 million upgrade also included new facilities for screening, filtering, storing and feeding chemicals, sedimentation basin, etc., moved operating areas out of the flood plain, and added redundancies and energy saving equipment. In addition to the WTP, the company utilizes four wells to supply its Marietta division. An interconnection between

⁴ Cedar Bluff, Penny Lane, Farmdale, Sterling Way, Eagle Path, and Heatherbank

the Columbia and Marietta divisions can be utilized in an emergency to supply water to the Marietta Division.

The company has six pumping stations and nine storage tanks with a capacity of 8.55 million gallons of finished water at any given time which represents about three days' worth of storage. As of December 31, 2016, the average daily system demand was 2.36 MGD and the peak daily demand was 2.68 MGD. Approximately 81% of the total daily demand is provided by the water treatment plant and the remaining 19% comes from the wells. The company operates about 135 miles of main ranging from 4" to 16" in diameter and is primarily comprised of ductile and cast iron. Further discussion on mains can be found in Finding and Conclusion No. 1.

As of July 31, 2017, CWC employed 14 full-time and three part-time personnel in water operations. Among other responsibilities, the company's General Manager (GM) oversees all water operation activities. Reporting directly to the GM are the Production and Distribution Superintendents. The Production Superintendent manages all water treatment and production activities at the water treatment plant and wells. The treatment plant is staffed by four full-time water operators whereas the operational activities at the wells are handled by two part-time well operators. Eleven employees in water operations hold a Department of Environmental Protection (DEP) certified operator's license.

The Distribution Superintendent is responsible for all distribution work and oversees a staff of nine: a distribution foreman, two service personnel, two meter readers, three laborers and one part-time locator. The two fulltime service personnel are responsible for replacing/installing new meters, maintaining meter records, and meeting with customers to address any service issues. The laborers perform a bulk of the main repair and replacement work whereas the part-time locator is responsible for responding to PA One Call requests to mark company underground facilities as well as perform miscellaneous work such as collecting samples, delivering customer notices, etc. In addition to its water operations employees, CWC also utilizes the services of an engineering consultant and a water quality consultant. Services such as preparing engineering designs, engineering studies, etc. are provided by the part-time engineering consultant and the water quality consultant is responsible for assisting in maintaining or improving water quality or complying with regulation changes impacting water quality.

The company has hired a consultant to perform annual system-wide leak surveys of its distribution system. The results of the leak surveys conducted from 2013 through 2017 are shown in Exhibit V-2. As evident from the exhibit, the number of leaks on mains and services have remained minimal with approximately half of the leaks being discovered on hydrants caused primarily due to wear and tear on hydrant parts (i.e., seat rings, o rings, etc.) or hydrants not closing properly due to debris, etc. In addition to the annual leak surveys performed by the outside consultant, the company is equipped with acoustic equipment (i.e., aqua scopes) to perform in-house leak detection on an as-needed basis. Furthermore, all company vehicles are equipped with physical listening devices called aquaphones that are used weekly for leak detection.

Exhibit V-2
Columbia Water Company
Number of Leaks
January 1, 2013 through July 31, 2017

Leaks on	2013	2014	2015	2016	2017
Mains/Services	6	0	2	1	3
Hydrants	4	0	0	0	5
Total	10	0	2	1	8

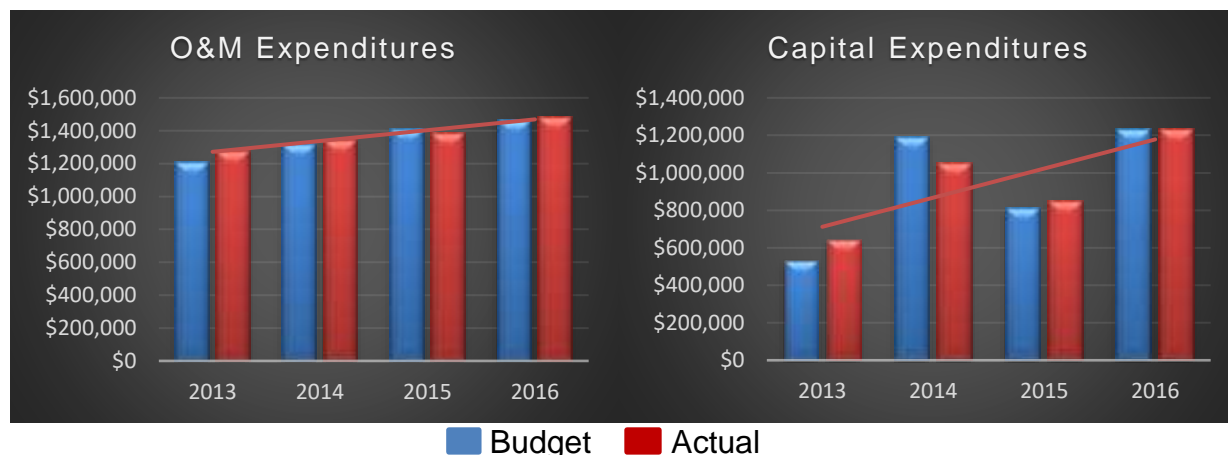
Source: Data Request WO-6

Residential, commercial, and industrial customer meter reads in the Columbia division are performed monthly while the residential and commercial customer meter reads in the Marietta division are performed quarterly. The Marietta division has one industrial customer whose meter is read monthly. About 55% of the company's meters have radio read or automatic meter read (AMR) capability whereas the remaining 45% are read manually.

CWC's operations & maintenance (O&M) and capital expenditures for the years 2013 through 2016 are shown in Exhibit V-3. The company's O&M expenditures primarily include labor, purchased power, materials and supplies, treatment and other⁵ expenses. O&M expenditures have remained relatively flat from 2013 through 2016 and the variance between budget and actual O&M expenditures has not exceeded 10% in any of the years. Capital expenditures have shown an increasing trend from 2013 through 2016, primarily due to security upgrades and equipment purchases for several projects.

⁵ Other expenses include contractual services, transportation expenses, etc.

Exhibit V-3
Columbia Water Company
O&M and Capital Expenditures
January 1, 2013 through December 31, 2016



* Capital expenditures do not include WTP upgrades
 Source: Data Requests FM-1, FM-8 and WO-24

Non-revenue water (NRW) as defined by the American Water Works Association (AWWA) is comprised of three factors: unbilled authorized consumption, apparent losses, and real losses. Unbilled authorized consumption is primarily related to utility water use (e.g., water treatment, distribution operations, main and hydrant flushing, etc.) as well as firefighting, etc. Apparent losses are associated with water theft, customer metering inaccuracies and systematic data handling errors, whereas real losses (or physical water losses) are associated with main breaks, leaks, tank overflows, etc. The company's NRW data is shown in Exhibit V-4. CWC has done well in maintaining minimal water losses and has reduced its NRW by 57%, from 17.6% in 2013 to 11.2% in 2016.

Exhibit V-4
Columbia Water Company
Non-Revenue Water (Gallons)
January 1, 2013 through December 31, 2016

	2013	2014	2015	2016
Water Supplied	891,664,000	790,012,000	841,216,000	862,012,000
Billed Authorized Consumption	734,706,000	673,317,000	742,247,000	765,217,000
Unbilled Authorized Consumption	30,037,000	66,246,000	66,246,000	26,536,000
Apparent Losses	4,438,000	3,999,000	4,334,000	4,456,000
Real Losses	122,483,000	46,450,000	28,389,000	65,803,000
NRW (Gallons)	156,958,000	116,695,000	98,969,000	96,795,000
NRW (%)	17.6%	14.8%	11.8%	11.2%

Source: Data Request WO-7

Findings and Conclusions

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

1. The company's main replacement activity is not adequately addressing aging cast iron pipe.

As of September 30, 2017, CWC had approximately 135 miles of main in its service territory as shown in Exhibit V-5. The company's piping is relatively new compared to other Pennsylvania water utilities, with over 80% of its mains less than 50 years old and over 30% less than 20 years old. Only about 12 miles, or less than 10%, of the company's mains are older than 1950 with about two miles, or less than 2%, installed pre-1900. Approximately 80% of the company's mains are comprised of ductile iron while about 20% are made of cast iron material. All main older than 1950 is cast iron pipe representing about 50% of the company's cast iron main total.

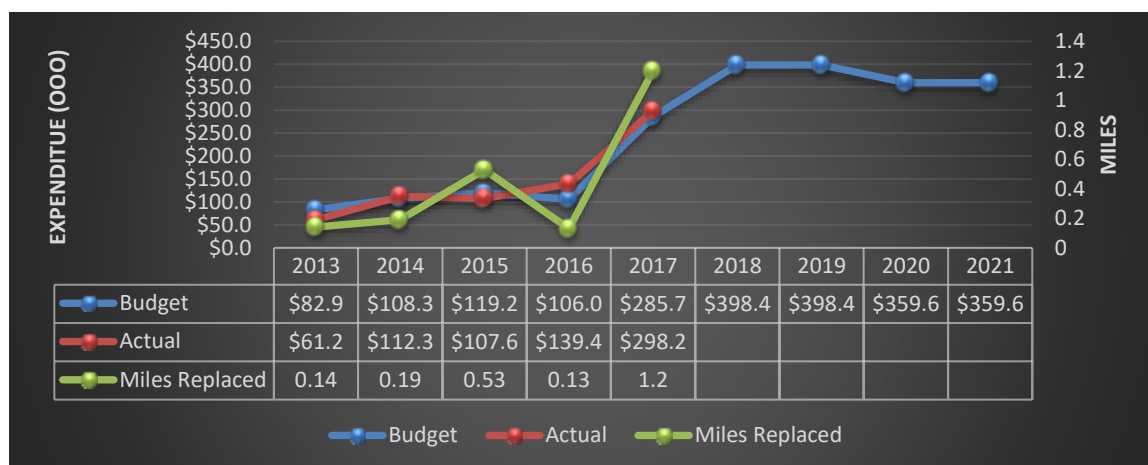
**Exhibit V-5
Columbia Water Company
Miles of Main by Decade of Installation
As of September 30, 2017**

Decade of Installation	Miles of Main	Percentage
Pre-1900	2.11	1.6%
1901-1925	5.34	3.9%
1926-1950	4.42	3.3%
1951-1960	2.51	1.9%
1961-1970	8.04	5.9%
1971-1980	18.87	13.9%
1981-1990	18.87	13.9%
1991-2000	28.83	21.3%
2001-2017	44.01	32.5%
Unknown	2.350	1.7%
Total	135.35	

Source: Data Request WO-2

Main replacement activities (actual and projected) are shown in Exhibit V-6. For the years 2012 through 2016, the company has replaced, on average, 0.2 miles of main which equates to a 675-year main replacement schedule. It should be noted that during this time, the company did make a large capital investment in its WTP that diverted capital resources from its main replacement needs. For the next five years (i.e., 2017 thru 2021) the company is planning to replace 0.884 miles of main annually which translates to a 150-year main replacement schedule. If the company can maintain this rate of replacement, it could replace its entire cast iron main inventory of 27 miles in about 30 years.

Exhibit V-6
Columbia Water Company
Actual and Projected Main Replacement Expenditures (000s)
January 1, 2012 through December 31, 2021



* 2017 Actual and miles replaced data is annualized as of August 31, 2017
 Source: Date Request WO-3 and LTIP

Replacement of antiquated main, especially pre-1950 cast iron pipe, is critical to ensure reliability of the distribution system. Older cast iron main is more prone to leaks and breaks due to pitting, graphitic corrosion, and ground movement. In a report published by the United States Environmental Protection Agency in May 2002 on “Deteriorating Buried Infrastructure Management Challenges and Strategies”, the concern in the water industry revolves around replacing the three older vintages of cast iron pipe (i.e., pit cast, spun cast, and spun cast with leadite joints) that were primarily installed prior to the 1960s. These three vintages of cast iron pipe which were installed in different time periods (i.e., late 1800s until late 1960s) may be reaching the end of their respective service lives around the same time. The industry standard and general rule of thumb for the life expectancy of cast iron pipe is 75-100 years. Furthermore, based on the depreciation rates used in the 2017 rate case, the company designated a service life of 50 to 70 years for its cast iron and ductile iron pipe.

Although age is not the only indicator for failure, older pipe has a statistically higher chance of failure. Therefore, to mitigate catastrophic failure, emergency repairs and water quality degradation, it is imperative that the company continue to accelerate

the replacement of older cast iron mains, especially those that were installed prior to 1950. The company's projected accelerated replacement over the next five years improves CWC's removal of risky pipe. However, the company will need to maintain this pace for at least 30 years to eliminate cast iron from its system and should consider accelerating this projected level further as opportunities arise.

2. The company does not test new meters before deployment.

The Columbia Water Company has been replacing 300-500 meters annually but typically replaces its commercial and industrial meters every 8-10 years and its residential meters every 10-15 years. Although new meters are always installed with AMR devices, the company does not have a systematic plan to replace its manual read meters with AMR technology. Instead, the company deploys new meters as old meters break or exceed their service life.

Even though the company has a certified meter test bench, it does not have meter testing policies and/or procedures. The test bench is used to test residential and commercial meters upon customer requests and to test company repaired or rebuilt meters. The company relies on the meter manufacturer's test results and does not test a sample of its new residential or commercial meters before placing into service. Moreover, the company contends that it was unaware of new meter PUC testing regulations despite manufacturer provided attestations of meter accuracy.

The PUC meter testing regulations at 52 PA. Code § 65.8(d) state in part, "...in the case of a new meter or a meter reconditioned by a manufacturer, the test results of the manufacturer may be accepted as the installation test if the utility has verified the manufacturer's reported test results by testing the greater of 10% or ten meters of a shipment of meters." Moreover, water meters are required to be tested at different rates of flow to make sure that the error in registration is not more than 2%.

By not performing the required PUC regulatory sample testing, the company is deploying meters without ensuring the accuracy of the meters and relying strictly upon the manufacturer certifications. This introduces a slight risk of deploying defective meters, but a risk that could be avoided if a sampling was done before deployment.

3. The company has not updated its Drought Contingency Plan since 2002.

CWC's Drought Contingency Plan (DCP) was developed in 1991 and was last updated in November 2002. The DCP includes water system data, drought triggers, and water use restrictions. However, the DCP does not include up-to-date information such as a current description of all ground and surface water sources including all interconnections and locations and yields of the sources. Furthermore, the DCP is only configured for the Columbia Division and does not incorporate the Marietta Division. Certain parameters and restrictions including withdrawal and treatment limits, average and maximum daily withdrawal amounts, etc. could have potentially changed in the last

15 years, especially with the WTP upgrade and the acquisition of the Marietta Gravity Water Company.

In accordance with 4 PA. Code § 118.4 Contingency Plans – Public Water Supply, a Drought Contingency Plan shall, at a minimum, contain the following:

- A description of the ground and surface water sources including all interconnections and the locations and yields of the sources.
- Data indicating the monthly average and peak day rates of withdrawal from each source.
- Data indicating the monthly average and peak day rates of water use in the system.
- A description of the criteria to be used by the agency in identifying the onset of water shortage problems in the system.
- A plan of action that will be taken to respond to drought or water shortage conditions, including public notices such as newspaper, radio or television notices, a water conservation program, development of emergency supplies and rationing.

The company believes that the main components of the DCP remain unchanged and do not warrant an update to the DCP. However, the PUC's audit staff contends that it is good business practice to update the DCP every five years due to normal demographic and consumption changes. Such changes, although minor, could affect how the company responds to a drought, highlight additional needs during certain drought conditions, or allow for the minimization of expensive strategies. Overall, an up-to-date DCP that has a current plan of action to respond to water shortages would allow the company to respond more effectively during drought conditions.

4. The company has not established a damage prevention program.

The Columbia Water Company is a member of the Pennsylvania One Call System (POCS) and regularly participates in POCS sponsored training and provides mapping of its service territory to POCS to reduce the number of locate ticket requests. As illustrated in Exhibit V-7, CWC tracks PA One Call information such as number of locate requests received and tracks locate marking information in the POCS system.

Exhibit V-7
Columbia Water Company
Number of Line Locates
January 1, 2013 through August 14, 2017

	2013	2014	2015	2016	2017
Number of Locates	1,833	1,983	1,799	1,854	1,095
Clear - No Facilities	721	963	814	904	483
Field Marked	1,092	1,006	951	887	593
Conflict - Lines nearby	10	2	16	5	0
Not Marked due to no access	5	6	6	43	14
Insufficient Information	4	6	6	10	3
Did not respond through One Call	1	0	6	5	2

Source: Data Request WO-5

Damage prevention programs, although more prevalent in the gas industry due to the inherent safety issues, also play a significant role in the water industry. These programs typically utilize a database to track POCS information such as locate requests, number of line hits, billing information, etc. Additionally, damage prevention programs should include a damage prevention manual and pipeline education and awareness information for employees, contractors, customers, etc. regarding the POCS, safe digging techniques, etc. The company has components of a damage prevention manual including educational material and internal procedures; however, this information has not been consolidated or documented within a manual.

The company does not use a database for tracking third-party line hits due to the infrequency of such line hits. In fact, the company has only experienced one third-party line hit each year over the last five years. All third-party line hits since 2013 have been on service lines and have been minor. In lieu of billing the contractor, the company has remediated the damages by allowing the offending contractor to make the necessary repairs. The auditors recognize that the company experiences minimal third-party damages but contends that the company should have a standardized method of tracking damage information such as number of hits on mains and/or services, dollar amount of each incident, billed versus collected amounts, the repeat offending contractors, etc.

Furthermore, the company does not have a damage prevention manual. A damage prevention manual should include damage prevention protocols such as general marking requirements for contractors, excavators, and employees, safe digging techniques, reporting requirements, public education and awareness outreach efforts, employee training, etc. A damage prevention manual in conjunction with maintaining a database to track relevant line hit damage information would provide a framework for a more comprehensive damage prevention program at the company.

5. The company is not exercising its distribution valves in accordance with AWWA guidelines.

The Columbia Water Company's distribution valve inspection manual was adopted in 2005 and most recently revised in 2017. The manual includes a clear purpose for the program, background information, and a well-documented procedure including goals and a valve exercise schedule. In accordance with the valve inspection manual, the company's goal is to inspect and exercise all critical valves in the distribution system on a five-year cycle.

CWC has located all its assets including distribution and critical valves by use of a Global Positioning System (GPS) and tracks and maintains information on each valve in its Geographic Information System (GIS). An electronic record has been prepared for each system valve through GIS which allows for documentation of valve type, age, location, maintenance history, and unique features. Using this information, the company can sort the valve information by a specific category to assist with valve maintenance and replacement. Exhibit V-8 shows a breakdown of the valve sizes.

**Exhibit V-8
Columbia Water Company
Number of Valves by Size
As of August 14, 2017**

Size	Number of Valves
2"	12
3"	4
4"	11
6"	1,146
8"	1,009
10"	103
12"	502
16"	41
Total	2,828

Source: Data Request WO-11

The company has prepared a list of critical valves that are vital to minimizing severe water loss and the number of customers out of service during a major main break by isolating the system. The critical valves range from 6" to 16" in size. The number of critical and non-critical valves exercised over the last five years are shown in Exhibit V-9. On average, the company has exercised 60 non-critical valves each year representing about 2% of its total valve inventory and equates to a 47-year exercising schedule. Meanwhile, the company has identified 105 valves that are critical to its operations and operates them in accordance with its five-year target.

Exhibit V-9
Columbia Water Company
Number of Valves Exercised
January 1, 2013 through September 13, 2017

	Non-critical Valves Exercised	Critical Valves Exercised
2013	27	5
2014	50	0
2015	46	27
2016	38	25
2017	138	53
5-year average	60	22

Source: Data Request WO-11 and WO-27

The AWWA recommends “inspections should be made of each distribution valve on a regularly scheduled basis (annually if possible) and more frequent intervals for valves with a 16-inch diameter and larger.” AWWA’s recommendation can be resource intensive or restrictive. Therefore, the PUC audit staff recommends that utilities strive to exercise critical valves on a one to three-year cycle and the remaining non-critical valves on a seven to ten-year cycle. Although not aligned with AWWA standards, a five-year schedule for critical valves provides the company with a balance between resource needs and proper maintenance.

The key benefits of a valve exercise program are to identify and ensure all system valves are accessible and operate correctly prior to an emergency. Effectively isolating a main break translates to reduced water loss, faster repairs, and reduced property damage. The PUC audit staff acknowledges the company’s efforts in exercising its critical valves on a five-year schedule but believes that the company should consider accelerating its schedule to exercise valves consistent with AWWA standards. The company should strive to identify and exercise secondary or non-critical valves that would be beneficial to operate on a seven to ten-year schedule.

Recommendations

1. **Accelerate the replacement of cast iron mains.**
2. **Test a sample of new residential meters in accordance with regulations.**
3. **Update the Drought Contingency Plan.**
4. **Develop and maintain a damage prevention program to include a damage prevention manual, line damage database, and a pipeline education and awareness program for the company’s stakeholders (i.e., customers, contractors, etc.)**
5. **Strive to exercise non-critical valves every seven to ten years.**

VI. EMERGENCY PREPAREDNESS

Background

52 Pa. Code § 101 (Chapter 101) requires jurisdictional utilities to develop and maintain written physical security, cyber security, emergency response, and business continuity plans to protect the infrastructure within the Commonwealth of Pennsylvania and ensure safe, continuous, and reliable utility service. Along with the requirement to establish these “emergency preparedness” plans, a utility is required to annually file a Self-Certification Form with the 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 VI-1.

Exhibit VI-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?	1.
2	Has your physical security plan been reviewed in the last year and updated as needed?	2.
3	Is your physical security plan tested annually?	3.
4	Does your company have a cyber security plan?	4.
5	Has your cyber security plan been reviewed in the last year and updated as needed?	5.
6	Is your cyber security plan tested annually?	6.
7	Does your company have an emergency response plan?	7.
8	Has your emergency response plan been reviewed in the last year and updated as needed?	8.
9	Is your emergency response plan tested annually?	9.
10	Does your company have a business continuity plan?	10.
11	Does your business continuity plan have a section or annex addressing pandemics?	11.
12	Has your business continuity plan been reviewed in the last year and updated as needed?	12.
13	Is your business continuity plan tested annually?	13.

Source: Public Utility Security Planning and Readiness Self-Certification Form, as available on the PUC website at http://www.puc.state.pa.us/general/onlineforms/pdf/Physical_Cyber_Security_Form.pdf.

During fieldwork, the auditors reviewed the most recent (i.e., 2016) Self-Certification Forms submitted by Columbia Water Company (CWC or company). Our examination of CWC’s emergency preparedness included a review of physical security plans, cyber security plans, emergency response plans, business continuity plans (collectively referred to as emergency plans), and associated security measures. In addition, the PUC’s audit staff performed inspections at a sample of the company’s facilities; including the main office, water treatment plant, well houses, pump stations, and storage tanks. Due to the sensitive nature of the information reviewed, any specific information is not revealed in this report, but the generalities of the information reviewed are discussed.

The company maintains separate emergency preparedness plans for its Columbia and Marietta divisions. The emergency response plans are well-documented and include relevant emergency response documentation such as a description of the system, detailed assessment of available equipment, emergency measures to be taken for a list of anticipated emergencies, communication procedures for contacting its customers during emergencies, emergency reference table with contact information for employees, media, regulatory agencies, etc. Furthermore, CWC hired a consultant in October 2013 to develop a vulnerability assessment to evaluate any weaknesses that may be present in the company's distribution system security.

The physical security plans include documentation of its facilities such as treatment plant, pumping stations, storage tanks, vaults and chambers, etc. and the procedures that company personnel follow to keep its facilities secure. The business continuity plans include an overview of the system, procedures for contacting employees and customers during emergencies, data back-up and recovery plans, identification of critical equipment, and the procedures to follow if the company were to lose one of its critical facilities. The cyber security plans include several elements related to security and safeguarding of its supervisory control and data acquisition (SCADA) system and computer network.

Findings and Conclusions

Our examination of CWC's Emergency Preparedness included a review of the physical security plan, cyber security plan, emergency response plan, business continuity plan, vulnerability assessment and all associated security measures. Based on our review of CWC's emergency preparedness efforts, the company should initiate or devote additional efforts to improving its security planning and preparedness procedures by addressing the following:

1. The Company does not perform live or table top tests of its emergency response, business continuity, and cyber security plans.

As mentioned in the chapter background, the company has developed, maintained, and recently updated all its emergency preparedness plans such as the emergency response plan, physical security plan, business continuity plan, and the cyber security plan. PUC regulations at Chapter 101.3 (b) and (c) require a jurisdictional utility to review and update its plans annually and maintain and implement an annual testing schedule of the plans. In addition, the company indicated in its 2016 Self-Certification form that it tests its emergency plans annually.

The company performs various activities that can qualify as a test such as ensuring that doors/gates/hatches are locked, employees are using badges, sensitive documents are being stored appropriately, critical systems are operable, etc. However, the auditors did not find evidence that live or table top testing had been performed for the emergency response, business continuity or cyber security plans. The company

indicated that live tests requiring numerous employees are very resource intensive, particularly if the employees were actively involved with planning. Nonetheless, the PUC's audit staff suggests that the company strive to perform these exercises on a limited basis to mitigate resource requirements.

The PUC's audit staff acknowledges that many common conditions (i.e., droughts, floods, main breaks, etc.) can effectively test the company's various emergency plans, particularly when paired with after action reviews. However, live drills or table top exercises can introduce new or atypical operating conditions, explore alternative responses to emergencies, or refresh/train on existing plans. In addition, there are methods to reduce the impact live or table top drills have on a company's resources. For instance, the company could implement annual testing by department on a rotational basis to mitigate annual company resource requirements. Furthermore, the rotational departmental testing could be limited to portions of the individual plans (e.g., the company could perform cyber security penetration tests of its wireless devices in a given year and perform SCADA security testing the following year). The benefit of such testing is the ability to require an immediate response from employees who would be required to act during an emergency. However, unlike a real emergency, the employee/company doesn't need to execute the decision allowing for retrospective analysis.

Furthermore, there are additional resources available to aid in the development of drills. Federal, state, or other agencies such as the Environmental Protection Agency, American Water Works Association, Federal Emergency Management Agency, Department of Homeland Security, etc. offer several tabletop tools and free resources that the company could utilize. In addition to providing free resources, these federal agencies provide training for exercise planning at individual facilities. The PUC's audit staff also recommends that the company strive to work with its local and county emergency responders and its regional Emergency Task Force by either hosting or participating in annual tabletop exercises held by these governing bodies. Furthermore, any test should be documented and include an after-action review.

Recommendation

- 1. Strive to annually test all emergency plans on at least a limited basis.**

VII. CUSTOMER SERVICE

Background

Columbia Water Company's (CWC or company) customer service function is performed by the CWC officer manager and two customer service representatives (CSR). CWC's customer service representatives utilize a customer information system (CIS) to maintain customer account information and help perform their daily responsibilities. These responsibilities including answering customer calls, processing payments, processing customer requests (e.g., scheduling service calls, handling settlements for property sales, opening/closing accounts, etc.), preparing customer bills, and processing customer complaints. They also are responsible for setting up payment agreements, conducting collection efforts via telephone, and processing shut-off notices.

As mentioned in Chapter II-Background, CWC's service territory is operated as two separate divisions. For meter reading and billing, the divisions are split into three main billing cycles. The first cycle is designated for approximately 4,450 customers located outside of Columbia borough; the second cycle is for approximately 4,550 customers located within Columbia borough; and the third cycle is for all 1,200 customers in the Marietta division. Meters for customers in the first two cycles are read monthly and customers are billed accordingly. Unlike customers in the Columbia division (i.e., the first two cycles), Marietta borough customer meters are read and billed quarterly due to differences in the approved tariffs⁶. In addition to these primary billing cycles, CWC has about 100 fire service customers whose meters are also read and billed quarterly.

Customer meters are read by two meter readers who report to the Distribution Superintendent. Meter reading begins on or around the 3rd and 18th business day of each month for cycle one and cycle two, respectively. Both cycles require about four business days to read all the meters. On quarter ending months (March, June, September, and December), cycle three meters are read immediately following cycle one and take about one day to complete. As groups of meter reads are completed, they are downloaded into the CIS with exceptions identified (i.e., reading errors (no-reads) or customers with abnormal usage (high, low, or zero usage)). Any reading errors are reread by a meter reader. If a reading cannot be obtained on the second attempt, a service technician is dispatched to resolve the problem.

Meanwhile, CSRs review accounts with high or low usage⁷. Customers with verified high or low usage are contacted by the company to determine the cause and provide advanced notice to the customer. The follow-up process for accounts with reading errors or abnormal usage takes about three days to complete for each cycle.

⁶ As part of CWC's pending rate case, filed June 27, 2017 at docket R-2017-2598203, CWC proposed to begin billing the Marietta customers monthly. As of December 31, 2017, the outcome of the rate case was still pending.

⁷ Accounts with usage 15% higher or lower than the previous month are flagged for further review. If the increase or decrease is verified, or cannot be readily explained, (e.g., increase happens every summer to water vegetation or fill a pool; decreases every fall/winter if a customer always goes to a warmer climate, etc.) the customer is contacted.

Bills are then prepared and either mailed to customers via bulk mailing or sent through e-mail for customers enrolled in CWC's e-bill option (see Exhibit VII-2 in Finding and Conclusion No. 2 of this chapter for additional information). Bill preparation and mailing takes about one day with cycle one bills mailed on about the 15th day of the month; cycle two bills mailed on about the last business day of the month; and cycle three bills mailed on the third Friday of the month.

CWC's collection efforts begin after a customer fails to pay two consecutive bills. Finding and Conclusion No. 1 describes CWC's collection process. In addition to performing its own collection efforts and shut-offs for each billing cycle, CWC also performs limited services for the Lancaster Area Sewer Authority (LASA). LASA bills residential customers a flat rate on a quarterly basis, but commercial and industrial customers are billed monthly based on usage. CWC provides water usage data to LASA for these commercial accounts. In addition, CWC performs service shut-offs for LASA's delinquent customers within CWC's service territory. LASA is responsible for delivering their shut-off notices to customers; however, CWC will be present for delivery of 48-hour notice to ensure it is given to the customer. CWC will then shut-off water service for delinquent LASA customers. CWC bills LASA for the time spent performing shut-offs.

CWC utilizes two types of customer meters. Approximately 55% of the company's meters have radio read or automatic meter read (AMR) capability that acquire meter reads by driving or walking near the service location. The remaining 45% of meters are read manually via a touch pad; requiring the meter readers to physically touch the meter read pad with the reading device. Annually, CWC attempts to replace 300 to 500 meters but no formal meter replacement program is in place. All replacement meters have AMR capability.

Findings and Conclusions

Our examination of the Customer Service function included a review of CWC's customer service organization, policies and procedures, customer satisfaction surveys and complaint data, accounts receivable, bad-debt levels, billing, payment and collection cycles, payment options, collection practices, etc. Based on our review, CWC should initiate or devote additional efforts to improve the efficiency and/or effectiveness of their customer service functions by addressing the following:

1. CWC does not actively attempt to collect on delinquent customer balances.

Collection efforts begin when a customer fails to pay two consecutive bills and has an outstanding balance of \$25 or more. Shortly after the second payment is two days late, the 10-day notice is mailed. Next, CWC's CSRs attempt to contact delinquent customers by telephone. If the customer's phone number is not valid, or if contact cannot be made with the customer, then a three-day notice is printed, and hand delivered to the customer approximately one week from the 10-day notice. If unsuccessful, a 48-hour notice is hand delivered. If the customer has not paid the

delinquent balance or established a payment arrangement by the end of this 48-hour period, service is terminated. Therefore, CWC's primary collection efforts is focused on leveraging the service termination process and critical need for water.

Delinquent customer accounts are maintained four years on CWC's customer service system following service termination but are written-off in the financial system one year after account closure. Regulations at 52 Pa Code § 56.285 allow Pennsylvania utilities to require the payment of any outstanding residential account balance accrued with the utility within the past four years as a condition of furnishing service. If a customer with a delinquent balance attempts to re-establish service within the four-year period, CWC collects the balance at that time prior to providing service⁸. After four years, delinquent accounts are placed with a collection agency. CWC pays the collection agency a percentage of the placements collected. Exhibit VII-1 shows the amounts placed with and, recovered by the collection agency from 2013 through 2016. As can be seen the amount recovered by the collection agency is negligible.

**Exhibit VII-1
Columbia Water Company
Collection Agency Placement and Recovery
For the Years Ending December 31, 2013 through 2016**

Year	Collection Agency Placements	Collection Agency Recoveries
2013	\$6,005.56	\$61.88
2014	\$8,346.34	\$289.35
2015	\$6,711.80	\$30.45
2016	\$8,477.24	\$25.68
Totals	\$29,540.94	\$407.36

Source: Data Request CS-9

The CWC General Manager reported that the agreement with the collection agency prohibits the company from directly collecting on customer accounts placed with the agency. Therefore, the company is obligated to send the delinquent customer to the collection agency to resolve any outstanding balances prior to obtaining service. This slows the service connection process and requires CWC to pay a percentage of the amount recovered to the collection agency. As a result, CWC has retained delinquent accounts with no active collection efforts, waiting for customers to return within the four-year collection period established in 52 Pa Code § 56.285, prior to sending the account for collection efforts.

Actively working to timely collect overdue balances reduces the risk of lost revenue. Consequently, delinquent balances should be sent for active collections within

⁸ CWC will require the payment of any outstanding balance for returning customers. Additionally, lease agreements for new applicants are typically reviewed to ensure a customer with an outstanding balance is not listed on the lease agreement for a rental property.

a reasonable amount of time to increase the chance of collection. Consequently, CWC should use historical customer collection data for delinquent accounts to determine the most appropriate period in which to effectuate an active collection program for overdue customer balances.

2. CWC does not offer customers the option to pay by phone.

CWC offers customers a variety of billing and payment options. As an alternative to CWC's standard postcard style billing⁹, customers can enroll in the company's electronic billing option. These customers receive their monthly (Columbia division) or quarterly (Marietta division) bill via e-mail. Customers also have five options to pay their water bill:

- By mail
- In person at the company's business office
- Drop off the at Union Community Bank
- Online via ACH through the customers banking institution
- Online utilizing the company's electronic billing system

CWC's billing and payment methods are printed on the back of each customer bill and annual flyers are sent to customers to highlight the electronic billing option and the available payment methods. Customer billing and payment statics are presented in Exhibits VII-2 and VII-3 respectively.

**Exhibit VII-2
Columbia Water Company
Customer Billing Statistics
As of October 31, 2017**

Billing Method	Customers	Percentage
Mail	7,484	72.6%
Electronic	2,831	27.4%
Total	10,315	100.0%

Source: Data Request CS-7, Interview Request CS-2, and Auditor Analysis

⁹ Bills are printed on postcard-sized paper which are directly mailed to customers without being placed in an envelope.

Exhibit VII-3
Columbia Water Company
Customer Payment Statistics
As of October 31, 2017

Payment Method	Customers¹⁰	Percentage
Cash	2,060	30.6%
Check	3,911	34.0%
ACH	2,264	19.1%
Debit/Credit	218	1.9%
Online	1,862	14.4%
Total	10,315	100.0%

Source: Data Request CS-7, Interview Request CS-2, and Auditor Analysis

Although CWC offers these payment options, it does not offer the ability to pay by phone through an interactive voice response system (IVR). The CWC office manager noted that some customers had expressed interest in paying by phone but did not know how many would use a pay-by-phone option. However, CWC has not considered the option. There are security, operational, and infrastructure requirements for an IVR or pay-by-phone method that must be considered, but vendors could provide a similar service.

Utilities should promote billing and payment methods which result in ease of processing, low processing costs, and a high level of automation. Although it is not feasible to offer every payment option, CWC has not evaluated the cost/benefit of contracting for a phone payment method which is a widely utilized payment channel. Automated payment methods, including online, ACH, and telephone payments, often save companies time and money through the operating efficiencies gained from not manually processing paper-based payment methods. Savings resulting from increased efficiencies may offset or reduce the cost of providing a pay-by-phone option. Automated payment methods also help to compress the cash collection cycle and improve cash flows while simultaneously helping to improving customer satisfaction.

Recommendations

- 1. Evaluate historical customer delinquent account data and modify collection practices accordingly.**
- 2. Evaluate the feasibility of offering an automated pay-by-phone payment option.**

¹⁰ The number of customers paying by check includes all customers who paid through the Union Community Bank; CWC does not track the number of customer paying by cash. For presentation, the number of customer paying cash includes all customer not paying through the other payment methods during October 2017.

VIII. ACKNOWLEDGEMENTS

We wish to express our appreciation for the cooperation and assistance provided by the officers and staff of the Columbia Water Company during the Focused Management and Operations Audit.

The audit was conducted by Deron Henry, Porus Irani, and Barry Keener of the Management Audit Staff of the Bureau of Audits.

IX. APPENDICES

Appendix I	Columbia Water Company Income Statement Data
Appendix II	Columbia Water Company Balance Sheet Data
Appendix III	Columbia Water Company Utility Plant Data
Appendix IV	Columbia Water Company Customer Related Data by Classification

**COLUMBIA WATER COMPANY
INCOME STATEMENT DATA
FOR THE YEARS ENDED DECEMBER 31, 2012-2016**

Category	2012	2013	2014	2015	2016	Compound Growth
WATER REVENUES						
Residential	\$3,065,435	\$3,380,441	\$3,747,352	\$3,833,812	\$3,707,300	4.9%
Commercial	\$550,930	\$616,166	\$691,092	\$760,790	\$799,452	9.8%
Industrial	\$160,407	\$338,598	\$348,129	\$322,412	\$270,034	13.9%
Public	\$45,441	\$56,199	\$64,880	\$62,259	\$58,953	6.7%
Fire Protection	\$258,843	\$332,420	\$363,430	\$378,586	\$360,407	8.6%
Other	\$335,126	\$341,480	\$298,973	\$1,307,084	\$1,141,734	35.9%
Total Water Revenues	\$4,416,182	\$5,065,304	\$5,513,856	\$6,664,943	\$6,337,880	9.5%
WATER OPERATING EXPENSES						
Salaries and Wages	\$921,115	\$1,027,490	\$1,060,035	\$1,078,466	\$1,130,345	5.3%
Pension & Benefits	\$149,982	\$170,032	\$188,180	\$217,670	\$232,188	11.5%
Purchased Water	\$4,506	\$29,323	\$33,493	\$45,888	\$42,128	74.9%
Purchased Power	\$188,624	\$199,335	\$215,491	\$204,651	\$205,843	2.2%
Chemicals	\$58,163	\$86,558	\$105,645	\$114,764	\$125,251	21.1%
Materials and Supplies	\$178,971	\$186,121	\$228,040	\$259,602	\$292,756	13.1%
Contractual Services	\$238,998	\$357,133	\$365,668	\$403,700	\$465,449	18.1%
Rental of Building/Real Property	\$13,960	\$42,368	\$43,852	\$45,392	\$46,980	0.0%
Transportation	\$53,540	\$76,622	\$71,061	\$62,121	\$54,518	0.5%
Insurance	\$121,077	\$131,846	\$145,571	\$153,641	\$186,001	11.3%
Regulatory	\$0	\$0	\$105,520	\$105,521	\$105,521	NM
Bad Debt	\$10,436	\$9,132	\$7,773	\$9,494	\$14,397	8.4%
Miscellaneous	\$100,328	\$116,368	\$135,806	\$136,874	\$132,875	7.3%
Total Water Operating Expenses	\$2,039,700	\$2,432,328	\$2,706,135	\$2,837,784	\$3,034,252	10.4%
OPERATING INCOME	\$2,376,482	\$2,632,976	\$2,807,721	\$3,827,159	\$3,303,628	8.6%

NM - Not Meaningful

Source: Form PUC 244, Annual Report to the PA PUC

COLUMBIA WATER COMPANY
BALANCE SHEET DATA
FOR THE YEARS ENDED DECEMBER 31, 2012-2016

Category	2012	2013	2014	2015	2016	Compound Growth
UTILITY PLANT						
Total Utility Plant	\$39,351,360	\$45,324,484	\$50,006,502	\$56,978,240	\$58,383,832	10.4%
Construction Work in Progress	\$3,472,270	\$6,698,698	\$3,698,839	\$284,372	\$234,255	-49.0%
Plant Acquisition Adjustments	\$561,313	\$520,985	\$483,092	\$445,199	\$407,306	-7.7%
Less: Accumulated Depreciation	(\$11,125,713)	(\$12,107,000)	(\$11,126,778)	(\$12,370,020)	(\$13,753,310)	5.4%
Net Utility Plant	\$32,259,230	\$40,437,167	\$43,061,655	\$45,337,791	\$45,272,083	8.8%
INVESTMENT AND FUND ACCOUNTS						
Other Physical Property	\$60,189	\$60,189	\$60,189	\$60,189	\$60,189	0.0%
Investments in Affiliated Companies	\$0	\$0	\$0	\$0	\$0	0.0%
Other Investments	\$67,150	\$68,428	\$57,370	\$51,652	\$45,215	-9.4%
Sinking Funds	\$0	\$0	\$0	\$0	\$0	0.0%
Total Investment and Fund Accounts	\$127,339	\$128,617	\$117,559	\$111,841	\$105,404	-4.6%
CURRENT AND ACCRUED ASSETS						
Cash	\$450	\$450	\$450	\$450	\$450	0.0%
Cash in Bank	\$33,664	\$40,826	\$46,630	\$73,428	\$159,347	47.5%
Working Funds	\$10,706	\$5,236	\$34,476	(\$4,440)	\$2,625	-29.6%
Temporary Cash Investments	\$0	\$0	\$0	\$0	\$0	0.0%
Notes Receivable	\$0	\$0	\$0	\$0	\$0	0.0%
Accounts Receivable	\$492,366	\$707,088	\$533,277	\$766,475	\$608,852	5.5%
Accumulated Provision for Uncollectible Accounts Credit	\$0	\$0	\$0	\$0	\$0	0.0%
Receivable from Affiliated Companies	\$0	\$0	\$0	\$0	\$0	0.0%
Accrued Utility Revenues	\$0	\$0	\$0	\$0	\$0	0.0%
Materials and Supplies	\$78,828	\$83,949	\$73,557	\$67,999	\$65,006	-4.7%
Prepayments	\$36,209	\$39,886	\$34,664	\$36,186	\$54,124	10.6%
Other Current & Accrued Assets	\$0	\$0	\$0	\$0	\$0	0.0%
Total Current and Accrued Assets	\$652,223	\$877,435	\$723,054	\$940,098	\$890,404	8.1%
DEFERRED DEBITS	(\$532)	\$359,052	\$211,042	\$104,468	\$5,763	NM
Total Assets and Other Debits	\$33,038,260	\$41,802,271	\$44,113,310	\$46,494,198	\$46,273,654	8.8%
EQUITY CAPITAL	\$7,948,907	\$8,819,665	\$9,103,159	\$9,696,995	\$10,017,582	6.0%
LONG-TERM DEBT						
Other Long-term Debt	\$9,225,183	\$15,316,420	\$19,186,981	\$20,665,247	\$21,255,921	23.2%
CURRENT AND ACCRUED LIABILITIES						
Accounts Payable	\$1,549,810	\$3,818,078	\$1,812,733	\$1,502,203	\$597,844	-21.2%
Notes Payable	\$677,227	\$667,150	\$630,000	\$300,000	\$0	-100.0%
Customers' Deposits	\$44,048	\$44,321	\$42,260	\$43,131	\$39,222	-2.9%
Taxes Accrued	\$348,731	\$138,072	\$93,352	\$175,366	\$162,101	-17.4%
Interest Accrued	\$14,092	\$15,647	\$37,340	\$57,832	\$58,993	43.0%
Accrued Dividends	\$0	\$0	\$0	\$0	\$0	0.0%
Other Current and Accrued Liabilities	\$205,984	\$237,547	\$167,426	\$186,937	\$157,022	-6.6%
Total Current and Accrued Liabilities	\$2,839,892	\$4,920,815	\$2,783,111	\$2,265,469	\$1,015,182	-22.7%
DEFERRED CREDITS	\$0	\$0	\$0	\$0	\$0	0.0%
OPERATING RESERVES	\$0	\$0	\$0	\$0	\$0	0.0%
CONTRIBUTIONS IN AID OF CONSTRUCTION	\$8,049,579	\$7,911,766	\$7,806,456	\$8,090,541	\$7,862,253	-0.6%
ACCUMULATED DEFERRED INCOME TAXES	\$4,974,699	\$4,833,606	\$5,233,603	\$5,775,947	\$6,122,715	5.3%
Total Liabilities and Other Credits	\$33,038,260	\$41,802,272	\$44,113,310	\$46,494,199	\$46,273,653	8.8%

NM - Not meaningful

Source: Schedule 400, Form PUC 244, Annual Report to the PA PUC

**COLUMBIA WATER COMPANY
UTILITY PLANT DATA
FOR THE YEARS ENDED DECEMBER 31, 2012-2016**

Category	2012	2013	2014	2015	2016	Compound Growth
INTANGIBLE PLANT						
Organization	\$13,093	\$13,093	\$13,093	\$13,093	\$13,093	0.0%
Franchises and Consents	\$366,159	\$366,159	\$366,159	\$366,159	\$366,159	0.0%
Miscellaneous	\$1,202	\$1,202	\$1,202	\$1,202	\$1,202	0.0%
Total Intangible Plant	\$380,454	\$380,454	\$380,454	\$380,454	\$380,454	0.0%
SOURCE OF SUPPLY & PUMPING PLANT						
Land and Land Rights	\$116,795	\$359,681	\$359,681	\$364,956	\$364,956	33.0%
Structures and Improvements	\$685,562	\$685,562	\$590,502	\$590,502	\$590,502	-3.7%
Lakes, Rivers and Other Intakes	\$392,875	\$392,875	\$361,145	\$361,145	\$361,145	-2.1%
Wells and Springs	\$172,800	\$172,800	\$172,800	\$172,800	\$172,800	0.0%
Infiltration Galleries and Tunnels	\$43,082	\$43,082	\$43,082	\$43,082	\$43,082	0.0%
Supply Mains	\$0	\$0	\$0	\$1,675,276	\$1,675,276	NM
Power Generation Equipment	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	0.0%
Pumping Equipment	\$688,836	\$688,836	\$688,836	\$688,836	\$688,836	0.0%
Total Sources of Supply & Pumping Plant	\$2,134,950	\$2,377,836	\$2,251,046	\$3,931,597	\$3,931,597	16.5%
WATER TREATMENT EQUIPMENT						
Structures and Improvements	\$122,843	\$5,174,218	\$10,960,984	\$9,398,137	\$9,722,323	198.3%
Pumping Equipment	\$0	\$52,675	\$52,675	\$577,615	\$577,615	NM
Water Treatment Equipment	\$2,111,992	\$2,111,992	\$982,169	\$4,785,230	\$4,786,777	22.7%
Instrumentation	\$0	\$0	\$0	\$969,260	\$969,260	NM
Wastewater Treatment Equipment	\$0	\$0	\$0	\$329,361	\$329,361	NM
Total Structures and Improvements	\$2,234,835	\$7,338,885	\$11,995,828	\$16,059,603	\$16,385,336	64.6%
TRANSMISSION AND DISTRIBUTION						
Land and Land Rights	\$321,348	\$321,348	\$321,348	\$321,348	\$321,348	0.0%
Structures and Improvements	\$3,304,569	\$3,304,569	\$3,350,572	\$3,350,572	\$3,350,572	0.3%
Pumping Equipment	\$491,487	\$498,694	\$143,741	\$143,741	\$143,741	-26.5%
Distribution Reservoirs and Standpipes	\$4,196,684	\$4,196,684	\$4,196,684	\$4,196,684	\$4,196,684	0.0%
Transmission and Distribution Mains	\$18,235,792	\$18,632,945	\$18,888,628	\$19,713,278	\$20,084,339	2.4%
Services	\$2,193,188	\$2,224,941	\$2,297,997	\$2,368,619	\$2,440,582	2.7%
Meters and Meter Installations	\$2,563,355	\$2,659,940	\$2,759,080	\$2,906,871	\$3,053,282	4.5%
Hydrants	\$994,494	\$1,039,622	\$1,061,854	\$1,121,625	\$1,158,786	3.9%
Backflow Prevention Devices	\$0	\$0	\$0	\$20,967	\$20,967	NM
Other Plant & Miscellaneous Equipment	\$17,300	\$17,300	\$17,300	\$17,300	\$17,300	0.0%
Total Transmission and Distribution	\$32,318,217	\$32,896,043	\$33,037,204	\$34,161,005	\$34,787,601	1.9%
GENERAL PLANT						
Land and Land Rights	\$14,078	\$14,078	\$14,078	\$14,078	\$14,078	0.0%
Structures and Improvements	\$538,372	\$538,372	\$546,492	\$554,642	\$554,642	0.7%
Office Furniture and Equipment	\$327,369	\$331,993	\$331,993	\$344,429	\$309,603	-1.4%
Transportation Equipment	\$259,154	\$298,876	\$298,876	\$323,807	\$352,475	8.0%
Stores Equipment	\$164,786	\$164,786	\$164,786	\$164,786	\$158,800	-0.9%
Tools, Shop and Garage Equipment	\$191,935	\$195,951	\$193,082	\$195,295	\$195,295	0.4%
Laboratory Furniture and Equipment	\$47,354	\$47,354	\$47,354	\$47,354	\$47,354	0.0%
Powered Operated Equipment	\$202,516	\$202,516	\$207,966	\$251,175	\$346,975	14.4%
Communication Equipment	\$27,784	\$27,784	\$27,784	\$40,457	\$40,457	9.8%
Miscellaneous Equipment	\$451,739	\$451,739	\$451,739	\$451,739	\$451,739	0.0%
WTP & Pump Station Security	\$0	\$0	\$0	\$0	\$307,243	NM
Distribution System Mapping	\$0	\$0	\$0	\$0	\$44,486	NM
Other Tangible Plant	\$57,820	\$57,820	\$57,820	\$57,820	\$57,820	0.0%
Officer Security System	\$0	\$0	\$0	\$0	\$17,879	NM
Total General Plant	\$2,282,907	\$2,331,269	\$2,341,970	\$2,445,582	\$2,898,846	6.2%
Total Water Plant in Service	\$39,351,363	\$45,324,487	\$50,006,502	\$56,978,241	\$58,383,834	10.4%

NM - Not Meaningful

Source: PUC Form 244, Annual Report to the PA PUC.

**COLUMBIA WATER COMPANY
CUSTOMER RELATED DATA BY CLASSIFICATION
FOR THE YEARS ENDED DECEMBER 31, 2012-2016**

Classification	2012	2013	2014	2015	2016	Compound Growth
<u>Average No. of Customers:</u>						
Residential	9,371	9,379	9,406	9,432	9,540	0.4%
Commercial	479	492	496	520	508	1.5%
Industrial	35	37	37	36	36	0.7%
Public	41	38	39	39	37	-2.5%
Fire Protection	92	97	97	104	104	3.1%
Other	0	0	0	0	0	0.0%
Total	10,018	10,043	10,075	10,131	10,225	0.5%
<u>Gallons of Water Sold (000):</u>						
Residential	400,287	431,525	433,848	437,007	435,323	2.1%
Commercial	127,953	144,003	156,890	166,924	193,033	10.8%
Industrial	71,046	149,575	148,007	129,216	126,922	15.6%
Public	7,642	9,603	11,153	9,752	9,492	5.6%
Fire Protection	0	0	0	0	0	0.0%
Other	509	341	502	419	448	-3.1%
Total	607,437	735,047	750,400	743,318	765,218	5.9%
<u>Operating Revenue:</u>						
Residential	\$3,065,435	\$3,380,441	\$3,747,352	\$3,833,812	\$3,707,300	4.9%
Commercial	\$550,930	\$616,166	\$691,092	\$760,790	\$799,452	9.8%
Industrial	\$160,407	\$338,598	\$348,129	\$322,412	\$270,034	13.9%
Public	\$45,441	\$56,199	\$64,880	\$62,259	\$58,953	6.7%
Fire Protection	\$258,843	\$332,420	\$363,430	\$378,586	\$360,407	8.6%
Other	\$335,126	\$341,480	\$298,973	\$1,307,084	\$1,141,734	35.9%
Total	\$4,416,182	\$5,065,304	\$5,513,856	\$6,664,943	\$6,337,880	9.5%
<u>Revenue per Customer:</u>						
Residential	\$327	\$360	\$398	\$406	\$389	4.4%
Commercial	\$1,150	\$1,252	\$1,393	\$1,463	\$1,574	8.2%
Industrial	\$4,583	\$9,151	\$9,409	\$8,956	\$7,501	13.1%
Public	\$1,108	\$1,479	\$1,664	\$1,596	\$1,593	9.5%
Fire Protection	\$2,814	\$3,427	\$3,747	\$3,640	\$3,465	5.3%
Other	NM	NM	NM	NM	NM	NM
Total	\$9,982	\$15,670	\$16,611	\$16,062	\$14,522	9.8%

NM - Not Meaningful

Source: Form PUC 244, Annual Report to the PA PUC

