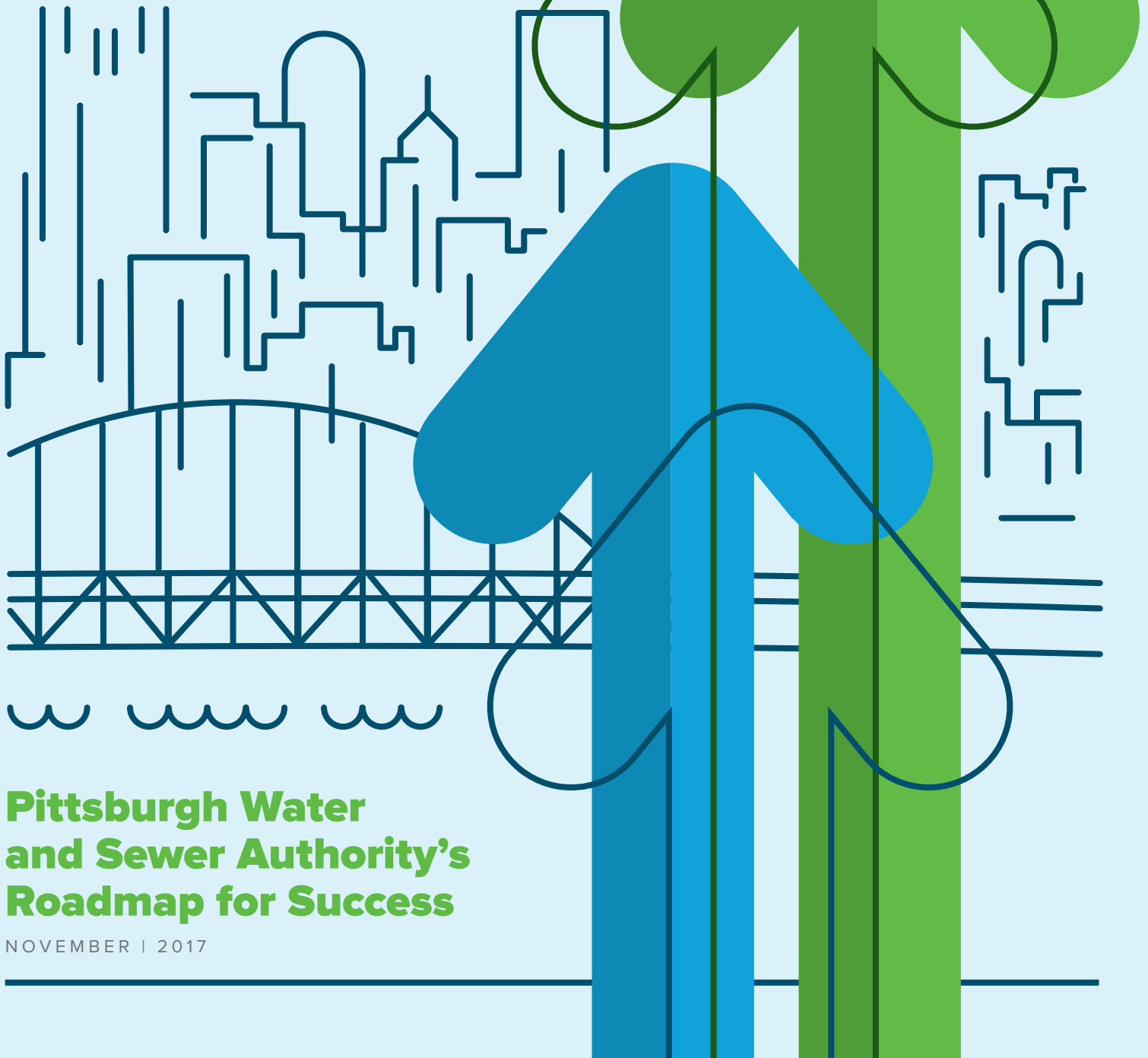


FOCUSING ON THE

FUTURE

PGH₂O



**Pittsburgh Water
and Sewer Authority's
Roadmap for Success**

NOVEMBER | 2017

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Message from the Executive Director:

The people of Pittsburgh have enjoyed access to public water service for more than 200 years. Today, that service is provided by the Pittsburgh Water and Sewer Authority (PWSA), which exists to support the community's vitality by protecting public health and the environment through safe, reliable, and cost-effective delivery of water, wastewater conveyance, and stormwater services.

PWSA's challenges are well defined; but they are neither unique, nor insurmountable. Extended periods of underinvestment and organizational instability have led to infrastructure failures, regulatory lapses, and organizational turnover. These are common challenges that most urban water systems in the northeast face. Through a combination of new and existing initiatives, talented leadership, and a supportive Board of Directors, PWSA is committed to improving its operations and addressing these challenges.

PWSA has a solid foundation to build upon – an ample water supply from the Allegheny River, adequate delivery capacity throughout its distribution system, and a stable customer base. This Organizational and Compliance Plan builds on the utility's strength. It articulates PWSA's goals, the concrete actions that will be taken to achieve those goals, and the measures by which PWSA staff, outside stakeholders, and customers can measure its ultimate success.

With this plan – and hard work – we will be successful. We will continue working, every day, to deliver safe, reliable, and cost-effective drinking water, wastewater conveyance, and stormwater services. We will continue working, every day, to protect public health and the environment. And we will continue working, every day, to be a highly responsive and trusted public utility, recognized for excellence and valued by our community.

Pittsburgh deserves no less.

Robert Weimar, P.E.
Interim Executive Director
Pittsburgh Water and Sewer Authority

WHAT IS OUR FUTURE?

PWSA is a highly responsive and trusted public utility, recognized for excellence and valued by our community.

WHAT DO WE DO?

PWSA supports community vitality by protecting public health and the environment through safe, reliable and cost-effective delivery of drinking water, wastewater and stormwater services.

OUR GOALS



Protect Public Health and the Environment

To protect and support the long-term health of our community and environment



Ensure Customer and Stakeholder Satisfaction

To enhance customer and stakeholder confidence by communicating effectively and engaging our community



Improve Infrastructure Reliability

To ensure service reliability through responsible infrastructure investment and proactive maintenance



Maintain a High-Performing Workforce

To recruit, develop, and retain a motivated and well-qualified team



Be an Efficient and Effective Organization

To optimize the use of our resources through innovative technology, effective processes, and continuous improvement



There are several trends that water-sector utilities must contend with and respond to, including increased utility financial constraints, regulations, workforce issues, and customer expectations. PWSA faces each of these, and each trend challenges PWSA's ability to maintain the traditional utility approach: out of sight, out of mind.

TRENDS

This Organizational and Compliance Plan addresses these trends.

TREND 1: CUSTOMER EXPECTATIONS

Changing requirements for service delivery are being driven by a new generation of customers who expect more rapid and easy access to information. The customers of the future are driving the investments of today.

PWSA must respond by providing updated customer billing and information management systems that meet the expectations of a changing customer base.

TREND 2: FINANCIAL CONSTRAINTS

With capital and operating budgets rising, and stakeholder groups who are increasingly resistant to rate increases, utilities struggle to make necessary investments.

PWSA carries a significant debt load of more than \$840 million, and additional capital investment is needed. Rates are expected to rise over the next several years as we replace our aging infrastructure and strengthen our delivery of services.

TREND 3: REGULATIONS

Across the board, regulations are becoming more stringent, which requires greater investment of an organization's scarce resources. Compliance with environmental regulations tends to be especially challenging (and costly).

In 2008, the Pittsburgh region entered a Consent Decree with the US Environmental Protection Agency to reduce and eliminate sewage contamination in local streams and rivers. The Consent Decree requires all 83 communities within the regional service area to repair broken sewer

lines, reduce storm water entering the system, reduce the frequency and amount of combined sewer overflows, and eliminate sanitary sewer overflows.

TREND 4: WORKFORCE ISSUES

Water-sector utilities struggle to recruit and retain staff with the necessary skills and competencies to manage utility operations. Typically, utilities have aging workforces, which make knowledge retention and succession planning significant challenges.

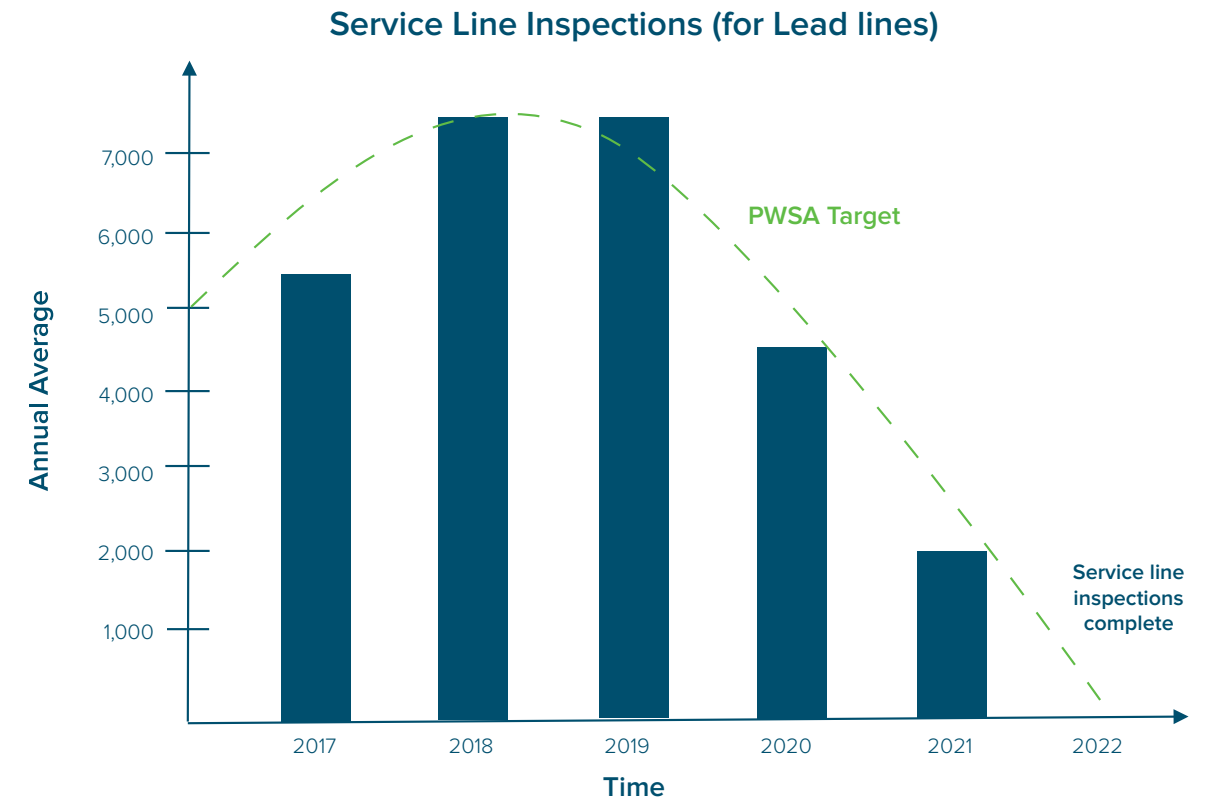
PWSA has experienced frequent leadership turnover in the last several years, and operates in a union environment, which can limit workforce flexibility. Compensation is limited, and often not competitive as compared to the private sector. Additionally, the utility's financial constraints have curtailed some employee development and training opportunities.

GOAL 1

PROTECT PUBLIC HEALTH AND THE ENVIRONMENT

To protect and support the long-term health of our community and environment

The primary mission of any water and wastewater utility is to protect public health and the environment. Drinking water must meet all regulatory water quality requirements when it leaves PWSA treatment facilities and when it is used at a customer's tap. PWSA must ensure that wastewater is collected from customers without backups or spills, and conveyed through the wastewater collection system to the regional ALCOSAN treatment facility. The conveyance process must be secure, and occur without sanitary sewer overflows (SSOs) that could damage the environment. Treatment then renders the wastewater safe, before it is discharged back to the environment.



FOCUS AREA 1: DELIVER HIGH QUALITY DRINKING WATER

Our goal is to continuously meet or exceed customer and regulatory standards for the water that we provide.

To do that, PWSA will pursue the following strategies:

- Perform regular tests at certified laboratories to ensure high water quality and service levels
- Report water quality results to customers in an annual Consumer Confidence Report
- Continue to actively manage and replace lead service lines

Ensuring success in this area will require PWSA to effectively manage its distribution system, including increasing the number of water quality monitoring points; regularly flushing the system; incorporating best-in-class technology and enhanced modeling capabilities; and improving its cross-connection control program to meet industry best practices.

MEASURE OF SUCCESS	TARGET PERFORMANCE
Compliance with regulatory water quality standards	→ 365 days of full water quality compliance
Implement cross-connection control	→ • 100% of service connections rated for potential threat level and catalogued • All backflow devices tested at regular intervals
Compliance with lead standards	→ Lead levels; in compliance with EPA standards
Achieve water pressure standards	→ Meet target maximum and minimum pressure in water mains; minimum fire flow at hydrants

FOCUS AREA 2: SAFELY AND EFFECTIVELY CONVEY WASTEWATER AND STORMWATER

Our goal is to continuously meet or exceed customer and regulatory standards as we convey wastewater and stormwater to the ALCOSAN treatment facility. PWSA is committed to:

- Maintaining wastewater system cleaning, root removal, and maintenance activity to prevent back-ups
- Routinely inspecting manholes
- Monitoring and reporting on all combined and sanitary sewer overflows
- Regularly performing condition assessments on all gravity pipe segments

PWSA's continued success in this area will also require implementing a risk-based wastewater system renewal program; incorporating similar best-in-class technology and modeling capability to what is required for the water system; and adopting a lateral inspection and renewal program.

MEASURE OF SUCCESS	TARGET PERFORMANCE
Compliance with regulatory wastewater and stormwater quality standards	→ 365 days of full compliance
Eliminate sanitary sewer overflows (SSOs)	→ Zero SSOs per year
Compliance with combined sewer overflow (CSO) requirements	→ Reduced number and volume of CSOs
Minimize back-ups and failures	→ Fewer than one unplanned failure per 5,000 accounts (AWWA benchmark)
Clean and inspect wastewater mains and manholes	→ 10% of system annually

GOAL 2

MAINTAIN A HIGH-PERFORMING WORKFORCE

To recruit, develop, and retain a motivated and well-qualified team

Attracting, training, and developing the next generation of utility staff is quickly becoming a significant focus area for every major water utility. A high-performing organization needs to address capturing and transferring institutional knowledge, succession planning, career development and personal growth opportunities for its workforce. Training and incentives that enhance and recognize employee efforts provide the means to establish higher standards to meet the needs of modern utility operations. PWSA's shift to a learning-based culture will help attract and support a high-performing workforce.

FOCUS AREA 1: INCREASE HIRING EFFECTIVENESS

Developing a strong workforce relies on identifying and hiring qualified applicants. To that end, PWSA is committed to:

- Implementing a new Human Resources Information System (HRIS)
- Reviewing and improving job postings and position descriptions
- Optimizing and streamlining the hiring process and timeline
- Reviewing employee total compensation packages

Additionally, PWSA will look to extend outreach to industry publications, community partnerships, and other venues to reach prospective talent; as well as evaluating the possibility of eliminating the City's domicile employment requirements that hinder finding and retaining good people.

MEASURE OF SUCCESS	TARGET PERFORMANCE
Hiring Response Time	→ Average time to fill existing positions is less than three months from the date of the vacancy
Position Vacancy Rate	→ Average vacancy rate is less than 3%



FOCUS AREA 2: ENHANCE WORKFORCE ENGAGEMENT AND PERFORMANCE

Increasing the efficiency and effectiveness of our organization requires engaged, developed, and high-performing PWSA employees. Creating this workforce will require PWSA to:

- Work cooperatively with unions to find and act on opportunities to increase workforce performance and effectiveness
- Complete a training program roadmap and inventory of the training requirements for all positions at PWSA
- Dedicate additional resources to training and development; as well as health, safety, and risk management
- Establish and track productivity goals for work groups, where applicable

Additionally, PWSA will develop a program to recognize high-performing employees and will support employee involvement in industry groups and events.

MEASURE OF SUCCESS	TARGET PERFORMANCE
Training hours per year	→ Twenty hours per employee per year
Safety Compliance	→ Maintain a workers' compensation experience modification rate of less than 1.0
OSHA Compliance	→ Meet OSHA requirements
Conduct a staff engagement survey every three years	→ Increased engagement levels

GOAL 3

ENSURE CUSTOMER AND STAKEHOLDER SATISFACTION

To enhance customer and stakeholder confidence by communicating effectively and engaging our community

PWSA is committed to maintaining an elevated level of quality, performance, and value. While the utility has recently experienced infrastructure failures, billing issues, and negative media reports, PWSA is actively working to regain community confidence. Recognizing that the utility must earn customers' support and trust, PWSA has already begun to engage the community and communicate many of the positive changes that are being made to enhance service.

FOCUS AREA 1:

RESPOND TO CUSTOMERS AND STAKEHOLDERS IN A TIMELY MANNER

Being responsive to customers is paramount to earning their trust and recognition of PWSA as a valuable community resource. To do that, PWSA will:

- Develop Standard Operating Procedures (SOPs) and standard scripts for effectively managing common types of customer contacts
- Provide customer service staff with additional training and call monitoring
- Increase call center resources to meet call volumes and achieve target performance goals

MEASURE OF SUCCESS	TARGET PERFORMANCE
Less than 5% of calls abandoned	→ Average answer speed of less than three minutes
Reduce call abandonment	→ Less than 3% of calls abandoned
Minimize customer complaints	→ Less than 5.9 complaints per 1,000 accounts annually

FOCUS AREA 2:

REGULARLY PROVIDE CLEAR AND EFFECTIVE INFORMATION

Customer and stakeholder support and trust begin with understanding, and that begins with the information that PWSA shares. PWSA is committed to:

- Developing a communications plan, to include social media and web-based strategies
- Increasing transparency and developing educational materials
- Providing regular progress reports to key PWSA stakeholders

MEASURE OF SUCCESS	TARGET PERFORMANCE
Conduct an annual customer and stakeholder satisfaction survey	→ Increased satisfaction rates
Increase social media interaction	→ Increased platforms, followers, and engagement

FOCUS AREA 3:

UTILIZE ADVANCED METER INFRASTRUCTURE (AMI) TO GENERATE ACCURATE CUSTOMER BILLS

Ensuring customer satisfaction, as well as utility revenue sufficiency, relies on PWSA's ability to accurately read meters and generate the corresponding bills. This requires PWSA to:

- Meter all users, including public and commercial users
- Verify AMI and CIS communications to ensure accurate data transfers
- Adopt industry best practices for billing quality control and assurance
- Adopt AWWA Water Loss Management Practices

Additionally, PWSA will maintain a robust meter monitoring, testing, and replacement program; ensure all meters are connected to the AMI system; conduct leak detection analysis; and alter the printed bill layout to ensure that it is easily understandable.

MEASURE OF SUCCESS	TARGET PERFORMANCE
Percent of accounts metered within 18 months	→ 100% of active, permanent accounts metered
Equip all meters with AMI technology	→ 98% of active, permanent meters have AMI technology
Ensure accurate meters	→ 95% of residential and 98% of commercial meters meet minimum acceptable accuracy levels (any over-billed accounts are adjusted promptly)
Provide timely and accurate bills to customers	→ 99.9% of bills are sent on time with no errors in charges/fees
Minimize non-revenue water	→ Reduce non-revenue water to less than 20% of treated volume



GOAL 4

IMPROVE INFRASTRUCTURE RELIABILITY

To ensure service reliability through responsible infrastructure investment and proactive maintenance

PWSA operates and maintains over 2,000 miles of water and sewer pipe, two water treatment plants, and numerous water storage reservoirs, pumps stations, manholes, and fire hydrants. Unfortunately, most assets are underground and hidden from view, so problems with these important networks often goes unnoticed until failures occur. This has led to decades of underinvestment. PWSA is dedicated to investing the necessary resources to elevate the condition of its infrastructure and minimize system failures.



FOCUS AREA 1:

IMPLEMENT ENHANCED MAINTENANCE PRACTICES

Enhanced maintenance practices will allow PWSA to extend the useful life of its assets and reduce costs over time. Doing so requires PWSA to:

- Inspect and rate the condition of gravity pipe segments on a regular schedule
- Add additional crews to implement and maintain a 2-year cycle of valve and hydrant exercising
- Increase field crew productivity

PWSA will need to focus on increasing the ratio of proactive to reactive maintenance; shift to replacing infrastructure based on risk and performance, rather than years in service; and fully integrate capital project and maintenance management technology systems.

MEASURE OF SUCCESS

Increase the number of proactive work orders



TARGET PERFORMANCE

80% of work orders are proactive

Perform manhole inspections



20% of manholes are inspected annually

Conduct condition assessment of wastewater mains using CCTV



15% of the wastewater collection system to be assessed annually

FOCUS AREA 2:

RENEW AGING/FAILING INFRASTRUCTURE

PWSA's success in achieving its mission and accomplishing its goals relies heavily on the condition and sufficiency of its infrastructure. Continuing to focus on developing and maintaining that infrastructure to meet customer needs now and into the future will occur by:

- Implementing and staffing the internal Project Management capability necessary to oversee and manage capital projects
- Ensuring sufficient resources to align capital renewal with the desired service levels

Renewing aging/failing infrastructure will require development of installation and repair SOPs; implementing a risk-based renewal system; adopting a lateral inspection and renewal plan; and initiating the water loss programs discussed in the previous section.

MEASURE OF SUCCESS

Replace/rehabilitate buried assets at an accelerated rate



TARGET PERFORMANCE

Renew at least 2% of buried assets per year

Reduce water main breaks



Achieve a failure rate of less than 50 breaks per 100 miles of water main annually

Ensure the financial resources are available to implement the capital plan



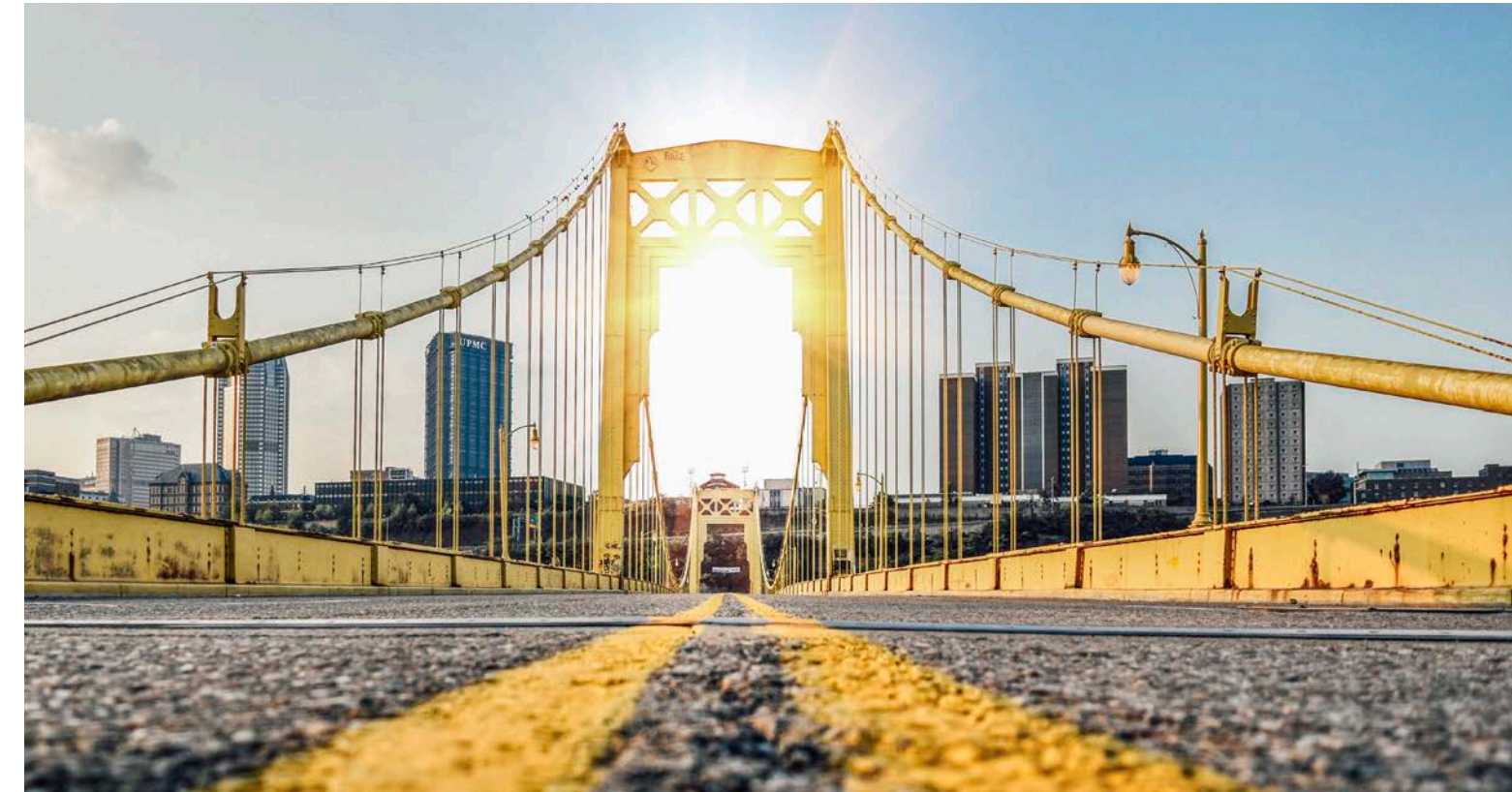
Acceptance and approval of user charges to fully fund CIP

GOAL 5

BE AN EFFICIENT AND EFFECTIVE ORGANIZATION

To optimize the use of our resources through innovative technology, effective processes, and continuous improvement

The people of Pittsburgh expect PWSA to provide excellent value, spending the public's money and using its resources as efficiently and effectively as possible to ensure the delivery of high quality services. To meet these expectations, PWSA will increase its productivity and streamline its systems and processes. Ultimately, PWSA is focused on instituting better practices, implementing modern technologies, and using data to drive improvements to organizational performance. These changes will allow us to continue to provide the high-quality and timely services our customers deserve.



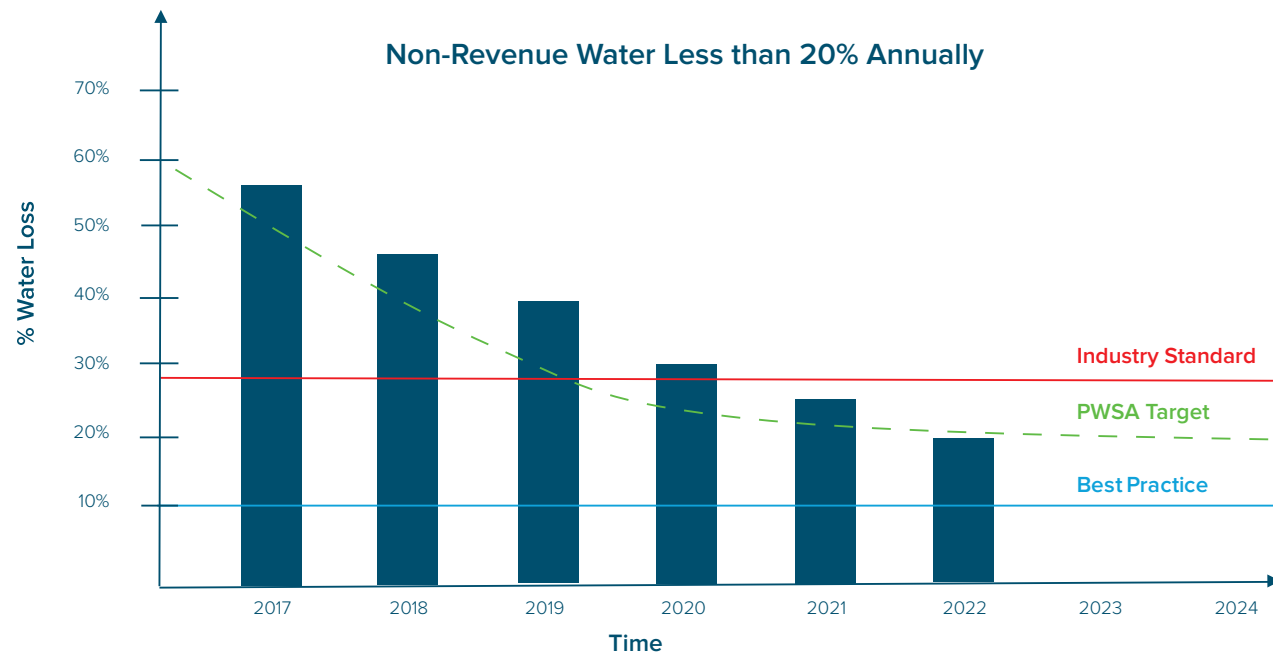
FOCUS AREA 1:

IMPLEMENT ENHANCED WORK PRACTICES AND STANDARDS

Increasing the efficiency and effectiveness of our organization starts with instilling a culture of continuous improvement in PWSA employees. This will allow us to look critically at our existing operations, use data to identify key areas for improvement, implement change, and measure success. Specifically, PWSA will:

- Establish a Performance Improvement group to help instill and grow a culture of continuous improvement
- Adopt technologies and reporting processes to seamlessly communicate progress in key performance areas
- Use a combination of internal and external resources to address critical staffing needs

Particular areas of opportunity include centralizing the field work yards and the warehouse; optimizing the use of fleet and vehicle assets; and implementing an operations technical support function to focus on treatment optimization and process control.



MEASURE OF SUCCESS

- Consistent measurement and reporting of Key Performance Indicators (KPIs)
- Efficient staffing levels
- Field Crew Work Activity Tracking
- Service disruptions are addressed quickly, minimizing time without service

TARGET PERFORMANCE

- Continuously monitor operations and processes against KPIs, and report results
- Maintain staffing numbers and cost per account ratios in line with industry standards
- Time spent on task is greater than 75% of available time
- Average service disruption time is less than 12 hours

GOAL 5: BE AN EFFICIENT AND EFFECTIVE ORGANIZATION *CONTINUED*

FOCUS AREA 2:

INVEST IN INFORMATION TECHNOLOGY SYSTEMS AND RESOURCES

Our goal is to enhance our organization’s performance through the implementation of modern technology, which will support the work practices and standards described in Focus Area 1. To achieve this goal, PWSA will:

- Implement robust IT systems that allow for increased levels of service and the elimination of paper-based recordkeeping. These systems include a computerized maintenance management system (CMMS), a Human Resources Information System (HRIS), and an updated Customer Information System (CIS).
- Increase IT resources to support security, programming, database administration, and desktop support

Additionally, PWSA is focused on increasing its use of business analytics, GIS integration, and use of an electronic document management system.

MEASURE OF SUCCESS

TARGET PERFORMANCE

Procure and begin CMMS Implementation	→	6 months to procure and 1 year to fully implement
Procure and begin CIS Implementation	→	8 months to procure and 2 years to fully implement
Procure and begin HRIS Implementation	→	8 months to procure and 1 year to fully implement

FOCUS AREA 3:

MAINTAIN FINANCIAL INTEGRITY

Our goal is to consistently meet or exceed targeted financial metrics while delivering clean, safe, and reliable service to customers at rates they can afford. To do that, PWSA will:

- Establish and maintain revenue sufficiency to meet increasing levels of operating and capital costs
- Implement cost-justified rates that are consistent with industry best practices
- Report the results of operations annually in a Comprehensive Annual Financial Report
- Implement an affordability program to provide customer assistance

Ensuring success in the financial focus area will require PWSA to establish financial metrics that can be continuously monitored; implement proactive and cost-justified rate increases; enhance the billing process to reduce billing errors; develop an affordability program; and assess the program’s impact on system revenues.

MEASURE OF SUCCESS

TARGET PERFORMANCE

Fully fund operating and capital costs	→	Set water and sewer rates at a level that allows for full funding of utility operating and capital costs
Improve PWSA’s bond rating	→	Increase debt service coverage above the covenant-required 1.25% and increase liquidity through annual reserve contributions
Maintain equitable and cost-justified rates	→	Implement equitable and defensible water and sewer rates
Maintain a clean or unmodified opinion annually from PWSA external auditors	→	Adhere to GASB and Pennsylvania PUC-endorsed accounting practices



COMMUNICATIONS

Through this Organizational and Compliance Plan, PWSA has committed to improving internal and external communications. Effective communication is critical not only for the successful implementation of the plan, but also for the overall success of PWSA. The issue of communication cuts across the various goals and initiatives discussed herein.

While most specifically called out in the *Ensure Customer and Stakeholder Satisfaction* goal area, PWSA has committed to significantly increasing communications in many areas, through:

- Reporting water quality information to regulatory agencies and the public
- Communication of progress against metrics in key performance areas, both internally and externally
- Production of a Comprehensive Annual Financial Report
- Increased social media and web-based customer and stakeholder interaction
- Creation of community outreach and education materials
- Conducting an annual customer satisfaction survey
- Communication of OSHA and other safety compliance information
- Conducting an employee satisfaction survey every three years

Overall, enhanced communications will be a major initiative at all levels of PWSA to assure employee commitment and to facilitate various teams and individuals working toward the same vision and mission, regardless of which goals or initiatives are their primary focus.



MOVING TO THE FUTURE

PWSA recognizes that the status quo cannot continue, and that the organization's challenges must be addressed with a sense of urgency. While this Organizational and Compliance Plan has only recently been formalized, many of the initiatives and actions contained within are already underway. A plan alone, however, is not sufficient to address the magnitude of the work that must be completed.

Key hires have already been made, and rates will increase by approximately 28% in FY 2018, which will allow for essential investment in PWSA's critical infrastructure and funding for many of the initiatives included in this plan.

PWSA is also realigning its organizational structure to ensure that sustained progress continues, with the creation of a Strategy and Performance Office. This office will provide needed support in the areas of business process optimization, strategic planning and implementation, and overall performance management. Ultimately, the office will have responsibility for ensuring that PWSA adopts processes and methods to continuously evaluate and improve the organization's operations. Central to this responsibility is the requirement that proven approaches such as LEAN and Six Sigma process improvement analysis methods be deployed as necessary to assist with the organization's overall optimization objectives.

Making progress on the initiatives contained within this plan, continuing to staff key positions with qualified employees, moving toward revenue sufficiency, and reorganizing to support continuous improvement will allow PWSA to achieve its ultimate goal of:

**Supporting
community vitality
by protecting
public health and
the environment
through safe,
reliable and cost-
effective delivery
of drinking water,
wastewater, and
stormwater services.**

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