Performance Measures for Continual Improvement

October 31, 2018

Contents

1900 Rice Street, Saint Paul, MN 55113-6810 Phone: 651-266-6350

Message from the General Manager

Saint Paul Regional Water Services (SPRWS) has a long history of providing great service to our customers at a reasonable cost. We understand that, for any organization to succeed, they need to continually look for ways to improve their operation.

We believe in the saying "if you don't measure something you can't manage it". To help us manage our operations here at SPRWS, we have embarked on a reset of our Performance Measurement program.

What you see in this report is our initial rollout of ten measures that will be reported quarterly to the Board. Each time you receive a report, you will also hear a short presentation from one of our Divisions to talk about and answer questions about the measures that pertain to their areas of expertise.

This report allows you to understand some of the measures that we are tracking to better manage our operations. These measures will guide us in decision making to better serve our customers.

I want to thank you for your interest in SPRWS and look forward to discussing some of the ways that we can use this information to improve our business practices.

Steve Schneider
General Manager

About 2018 Performance Measures

This edition of performance measures is a preliminary view of the comprehensive continual improvement approach that is being developed in conjunction with the 2019-2021 strategic plan.

The majority of the measures presented here will remain, but will be framed within the context of the shifts the water industry is facing in customer expectations, public awareness, employee recruitment and regulatory environment among other challenges.

The new approach also strives to encourage more employee participation in the process of continuously finding ways to increase productivity and efficiency.

In order to achieve goals and meet timelines across the organization, the Business Improvement Unit will be coordinating the efforts to identify, implement and measure improvement opportunities.

Martha Burckhardt
Business Improvement Unit Manager (interim)

Customer Services and Community Participation

Customer Service Section—Call Center

Calls coming to the Call Center are answered by the Inter-Voice Response device (IVR). If a customer chooses the option to speak to customer service representative staff (CSR), their call is placed in the waiting queue.

Target: Meet expectations for abandoned calls, waiting time, and telephone success factor.

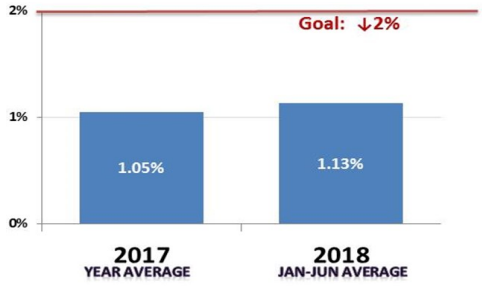
Overview: 2018 performance shows that actual performance for the Call Center continues to be closely aligned with expected performance.

The Customer Service Section tracks performance data from manual reports provided by the current phone vendor.

Later this year, SPRWS will change to a City telephone system. The new system is expected to offer automated tracking services.

According to 2017 and 2018 data, Customer Service averaged 318 calls per day and continues to meet targets.

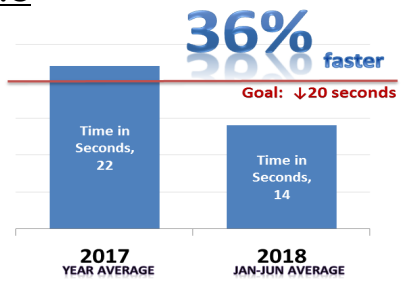
Abandoned Calls



Target is for less than 2% of calls to be abandoned. An abandoned call results when the caller hangs up before reaching Customer Service personnel.

Waiting Time

Target is for the wait time to be no more than 20 seconds. Call waiting time is the length of time a caller waits before a CSR answers the customer's call. The Customer Service Section is averaging a wait of 14 seconds for the period Jan-Jun 2018.



Telephone Success Factor (TSF)

Target is for 80% of calls to be answered within 20 seconds. The average for Jan-Jun 2018, is 88% of calls have been answered within 20 seconds.

Data Source: SPRWS Customer Services Section

Customer Services and Community Participation

Electronic Customer Payment Services

Electronic payments offer many advantages to customers and SPRWS.

Overview: Increasing electronic customer payments is an opportunity to address the strategic objective of expanding and promoting online services. The advantages of electronic payments include customer convenience, more timely information, and streamlined workflows.

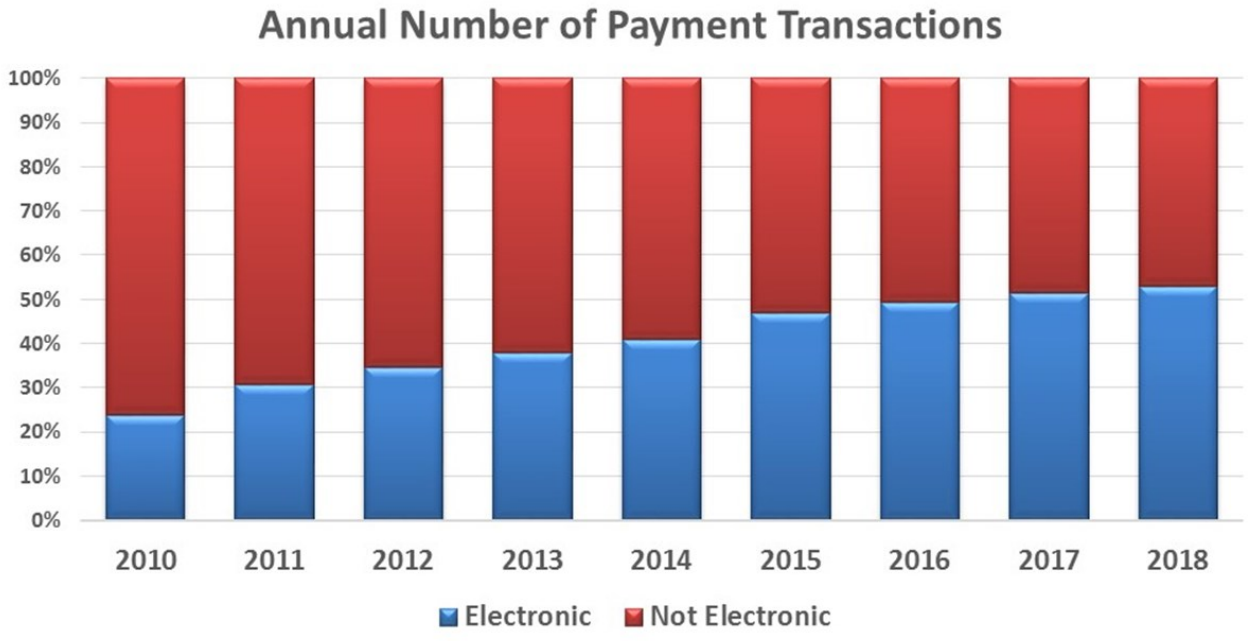
Growth in electronic payments has averaged 4% per year from 2010 through 2017. Customers have voluntarily sought out this service.

Target: SPRWS is working on ways to expand the electronic payment base with a target growth of 5% per year. In 2019, we expect to launch technology changes that will improve electronic services and make continued growth possible. This service area is a challenging one because customer expectations are increasing in response to greater flexibility and convenience offered by the world-wide financial industry.

Guidelines for Change: The following guidelines are being used to help manage changing expectations:

- Continuously seek ways to simplify enrollment/ participation.
- Continuously recruit customers to participate whenever they have contact with SPRWS.
- Continuously seek options that improve customer convenience.

Note: The 2018 data is through September.



Graph Source: Customer Information System

Financial Health

Debt Service Coverage Ratio

Debt management helps stabilize water rates.

Industry Tool: Through notes and bonds, SPRWS borrows money to pay for capital improvements. The borrowed money is repaid in annual installments.

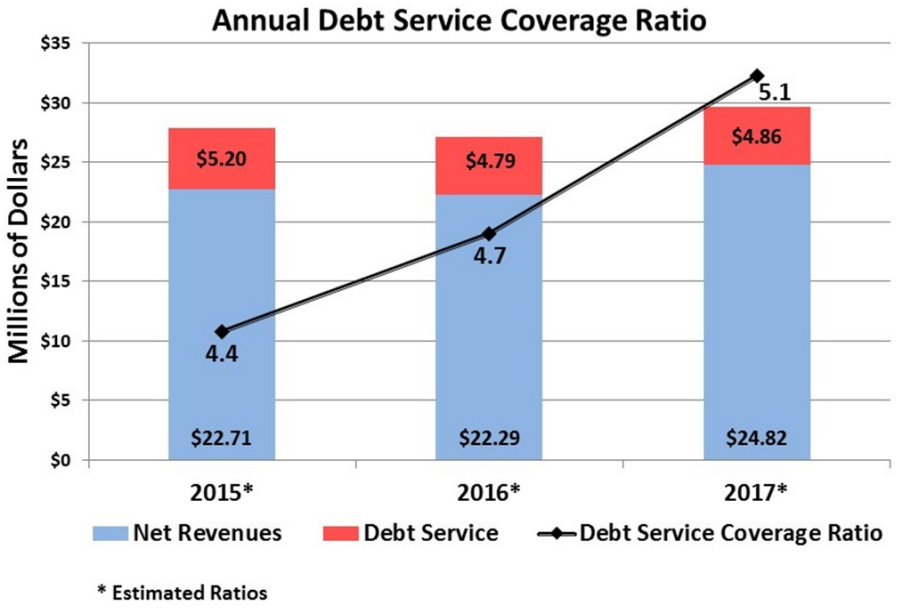
The "debt service coverage ratio" (DSCR) is a tool developed by the financial industry to measure borrowing against the available resources. The ratio compares net revenues with annual principal and interest costs for borrowing – the larger the ratio, the less the demand on resources.

Recent Results: The most recent DSCR is 5.1 for fiscal year 2017. This ratio is up slightly from 2015 and 2016 because of an increase in net revenue. The DSCR performance measure will be available annually following issuance of the audited Annual Financial Report.

Financial Stability: Debt management is part of an overall effort to ensure continued financial stability that was identified in the Strategic Plan.

Key factors in managing debt include:

- Continue to meet ratio requirements of existing debt covenants.
- Estimate debt needs in capital planning.
- The 2019-2028 Capital Plan anticipates debt will pay for 43% of capital costs. In 2019, $6.6 million dollars in bonds/ notes are projected to be issued to start process improvements at the McCarron's Plant.



Graph Source: SPRWS Financial Services Section

Energy Use

Pumping Energy Use

Target: Commit to seeking cost-effective and practical ways to reduce our use of energy - Strategic Plan Goal #4, operate an efficient utility.

Starting Point: The graph below provides insight on both the fiscal and operational efficiencies of energy management for SPRWS.

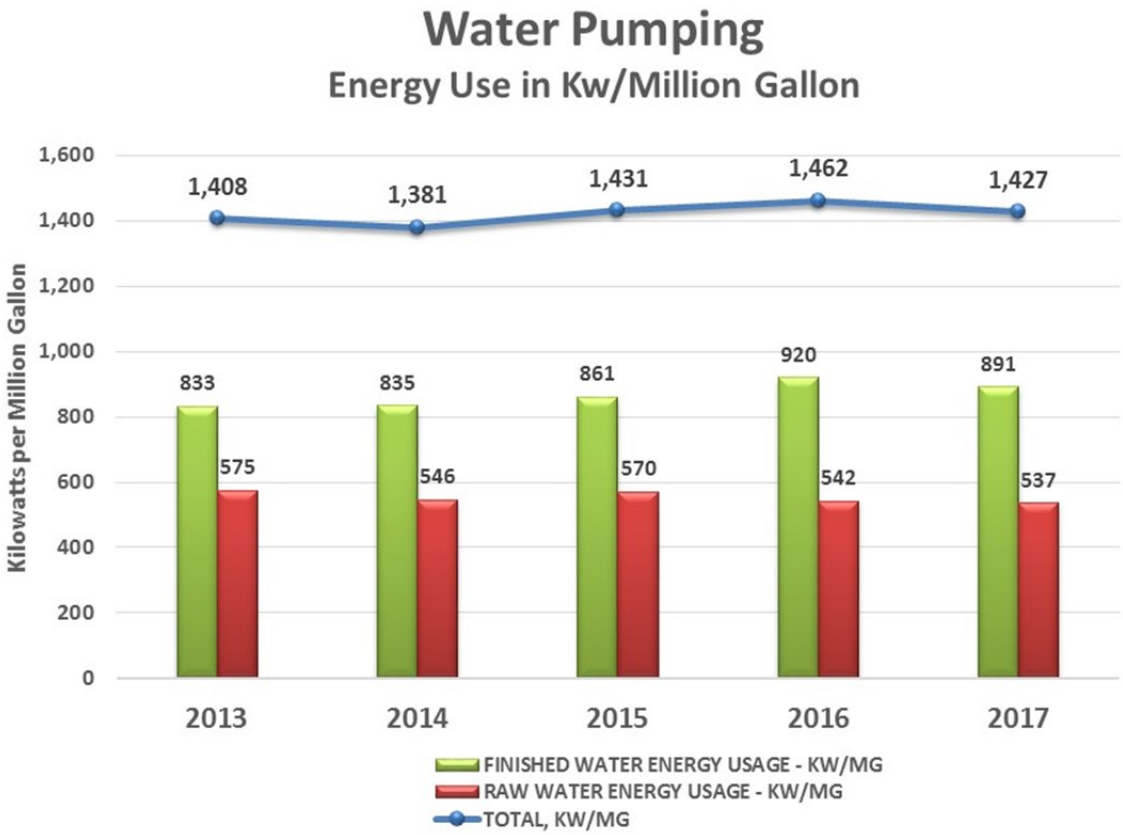
A critical factor in data management is the need to move towards electronic access to billing and consumption information from the vendors, Xcel and CenterPoint.

Moving Forward: SPRWS has a complex system of more than 70 energy meters. While the number of meters is advantageous in monitoring specific usage, our method of manually entering usage information into a data base is cumbersome.

Managing Data: Discussions are underway with Xcel on options they have to automate data collection. We are also considering adding carbon emissions to the data.

Energy consumption matters both to our environment and our economy.

John Baldacci



Graph Source: SPRWS Production Division Pumping Statistics

Water Quality

Regulatory Compliance

SPRWS maintains accreditation through the Minnesota Environmental Laboratory Accreditation Program.

Overview: SPRWS has consistently met all United States Environmental Protection Agency (EPA) and Minnesota Department of Health regulations governing drinking water.

Our laboratory maintains accreditation through the Minnesota Environmental Laboratory Accreditation Program (MNELAP), a division of the Minnesota Department of Health. Compliance with this rigorous program allows SPRWS to analyze its own Total Coliform Rule (TCR) and turbidity samples among other parameters.

Coliform Bacteria

Total coliform represent a family of bacteria that include pathogenic types such as E. coli. Every utility is required to collect a designated number of bacteria samples throughout its distribution system per month to ensure there is continually safe drinking water. The number of samples collected is dependent on the utility's size.

Target: At least 95% of TCR samples collected in the distribution system with absent coliform bacteria.

TCR Samples: Each month a minimum of 180 samples are collected and analyzed from the distribution system.

SPRWS rarely finds coliform bacteria present in any TCR sample. The most recent coliform positive sample was in 2016, representing 1 out of 2,172 samples collected that year.

In addition, SPRWS voluntarily analyses 243 treatment plant samples per month for coliform bacteria as confirmation of disinfection effectiveness before distribution of water.

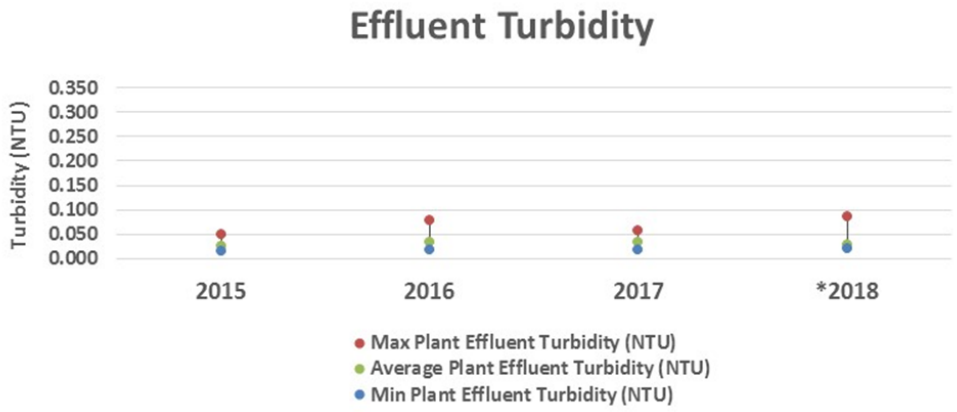
Effluent Turbidity

Turbidity is a measure of water clarity. High turbidity is not only aesthetically unappealing but also an indicator of a high number of particles in the water. These particles can be contaminants or organisms resistant to disinfection.

Target: 95% of samples less or equal to 0.3 NTU.

SPRWS effluent turbidity is consistently well below the target of 0.3 NTU and most often less or equal to 0.1 NTU.

Approximately 186 turbidity measurements are taken each month on the treated water leaving the plant. Turbidity is measured every fifteen minutes on each filter. The stringent turbidity requirements set by the EPA are designed to remove the pathogens not inactivated by disinfection.



* Data from January to May of 2018
Graph Source: Supervisory Control and Data Acquisition (SCADA) System

Water Quality

Regulatory Compliance

SPRWS has a target of not exceeding 4.0 parts per million of chloramine residual. Since 2015, 90% of the samples of chloramine have been between 2.4 and 3.6 parts per million.

Chloramine Residual

SPRWS relies on chloramine disinfection because of the large size of its distribution system. Chloramine is comprised of ammonia and chlorine and has a slower decay rate than free chlorine, providing a more lasting, effective disinfection, better suited for large systems.

Target: Distribution system chloramine residual must be detected in 95% of samples collected and concentration should not exceed 4.0 parts per million.

The goal is to add enough chloramine to minimize microbial contamination, but not so much as to create disinfection byproducts.

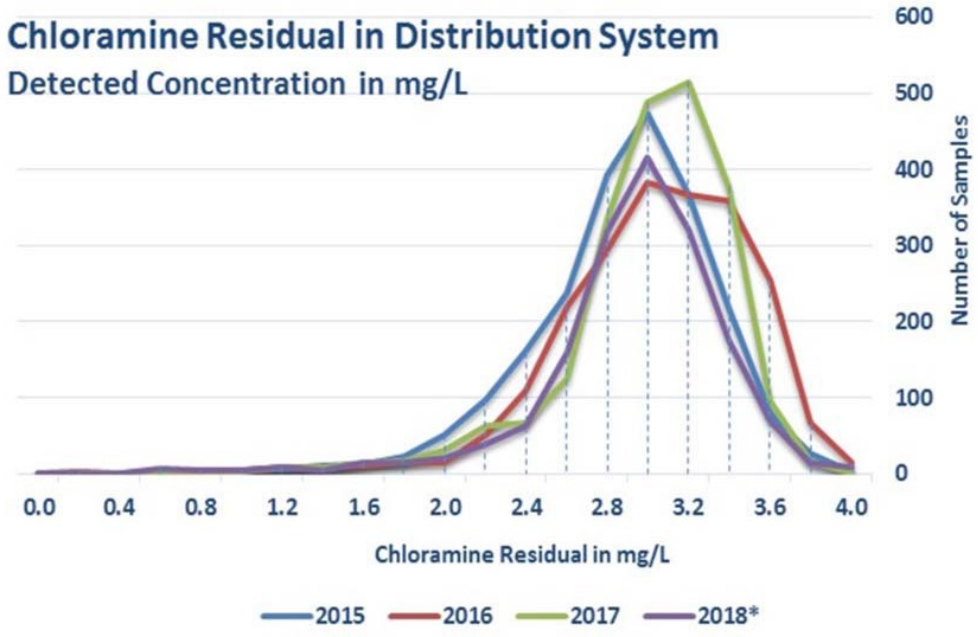
Disinfection byproducts include total trihalomethanes (THM) and haloacetic acids (HAA). These compounds are formed when excess chlorine combines with organic matter in the water. The maximum allowable level for THMs is 80 parts per billion and 60 parts per billion for HAAs. SPRWS averaged 43 and 34, respectively in 2017.

The chloramine residual in the distribution system averaged 2.8 parts per million for the first 9 months of 2018 .

Since 2015, an average of 90% of samples collected have had a chloramine residual between 2.4 and 3.6 parts per million.

Water Aging: Ensuring sufficient levels of chloramine throughout the distribution system is challenging due to the complexity of the system. Dead ends in the farther reaches of the distribution system are particularly problematic.

Hydrant flushing is a strategy used to mitigate chloramine decay by replacing stagnant low chloramine water with fresh water at fire hydrants. This strategy is used at known dead end locations, as part of the ongoing unidirectional flushing program, and as a response to customer complaints of discolored water.



* Data from January to September of 2018
Graph Source: Laboratory Information Management System

Infrastructure Stability

Main Breaks

SPRWS has stayed below the AWWA goal of 15 breaks per 100 miles of pipe since 2001 by averaging 11.4 breaks/leaks per 100 miles of pipe.

Target: SPRWS utilizes the AWWA Partnership for Safe Water Distribution System Optimization Program goal for a fully-optimized distribution system of 15 breaks per 100 miles of pipe annually (AWWA Partnership for Safe Water, 2011). The main break count includes the tally of flow disruptions to distribution mains, hydrant branches, and joint leaks. The main break count does not include main hits, suburban billable work orders, and service leaks.

Background: SPRWS has been installing mains for more than a century. The mains have been constructed of different materials - brass, concrete, cast iron, copper, ductile iron, galvanized iron, lead, plastic and steel.

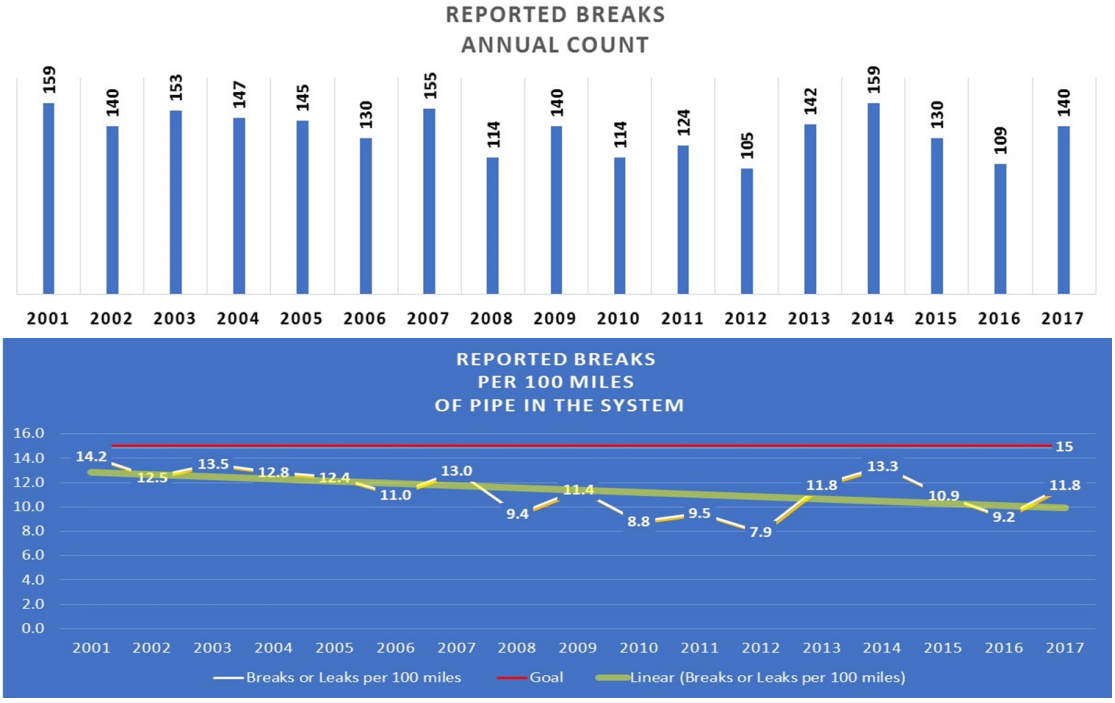
Ductile iron is the most commonly material used today to construct water mains.

Trendline: Since 2001, SPRWS has stayed below the goal line by experiencing between 7.9 and 14.2 main break occurrences per 100 miles of main.

Types of main breaks: Several factors can cause a main to break.

- Hole: a physical hole in a main.
- Joint: lead or mechanical joint failure – age or rust can deteriorate a joint.
- Shear: crack along the diameter of a main.
- Split: crack along the length of the main.
- Unidentified: unknown explanation for break.

In recent years, shear breaks have been the predominant type of main break.



Graph Source: Criteria for Optimized Distribution Systems by Melinda J. Friedman et. al. . Water

Infrastructure Stability

Nonrevenue Water Loss

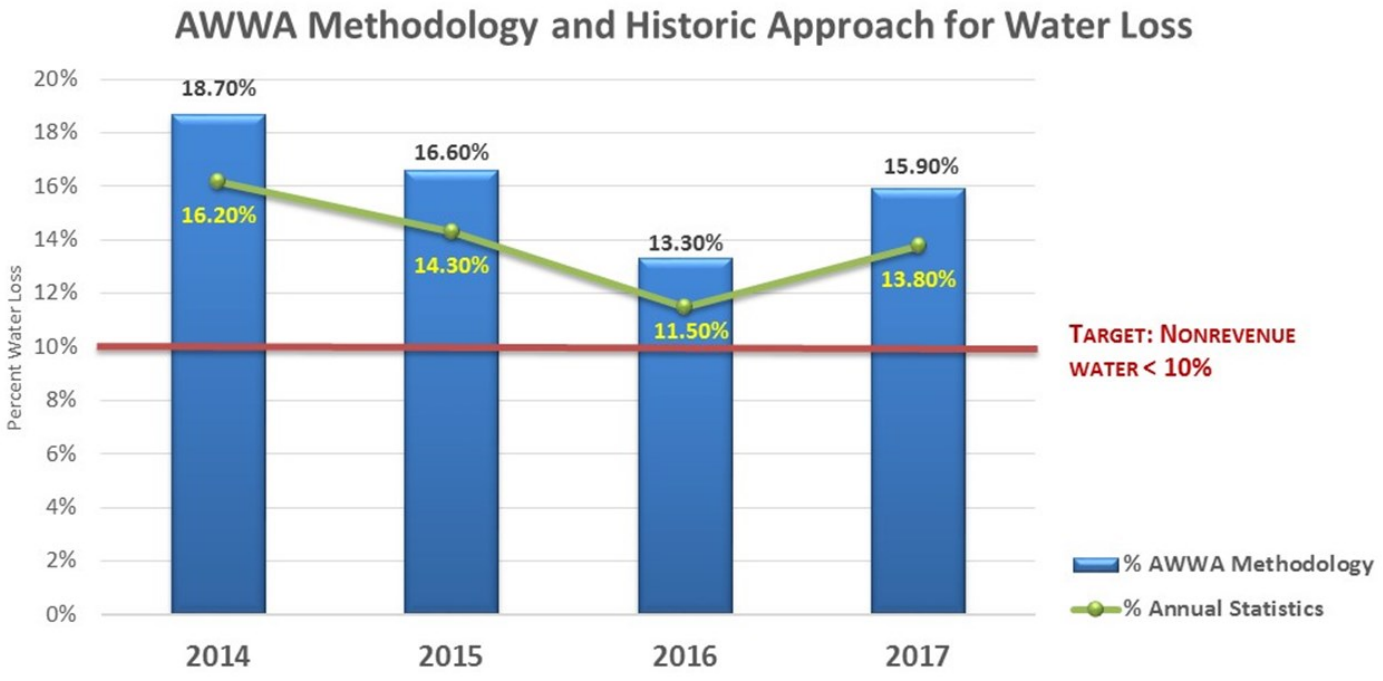
Changes being made to reach water loss target.

Target: Nonrevenue water loss is less than 10% of water distributed.

Industry Practice: A common industry practice is to determine the annual "water loss". The loss is basically a comparison of water billed to customers with the amount of water distributed. SPRWS has set a target loss of no more than 10% of annual water distributed.

AWWA Methodology: AWWA has introduced an approach for calculating water loss which is a bit more complicated than the historic approach. Probably the most notable difference between the approaches is that the AWWA method excludes wholesale water customers. The rationale for this exclusion is that SPRWS does not control the distribution systems of wholesale customers.

Next Steps: A couple of changes are being made to help SPRWS meet the 10% target. The changes are: leak study will be completed annually; and, the nonrevenue report will be completed by April first each year. The April date will make the report results more useful in managing nonrevenue water loss.



Graph Source: AWWA Free Water Audit Software v5.0 Worksheet

Infrastructure Stability

Zebra Mussel Cleaning

SPRWS continues to actively manage the invasive zebra mussels discovered in the system.

Current Program: Zebra mussels are an invasive species that have been present in the SPRWS supply water system for some time. The mussels disrupt the system by attaching to other mussels and to our system assets which results in clogging the system. To learn about the species, SPRWS stays in contact with other agencies. At this time, there is little to no possibility for eradication of the species.

The Vadnais crew in the Production Division is responsible for the task of removing zebra mussels from the supply system, specifically the conduits and screens. Maintenance efforts require a full crew to complete the task. Zebra mussel clean out is divided into the following major efforts: gatehouses, conduits, and Sucker Creek.

Gatehouses: Staff checks the screens at the gatehouses daily. When the screens are clogged with the shells, the supervisor immediately adjusts the activities and deploys a crew to perform the clean out work.

90 inch conduits: Over the past 10 years, the crew has completed inspections and zebra mussel clean out of the 90 inch conduits. Winter months are ideal for this effort because:

- Cool water temperatures create a non-reproducible dormant zebra mussel.
- Lower water demand during the winter months allows crews to shut down a conduit.
- Experienced labor is available in the winter to perform the work.

Sucker Creek: Maintenance occurs during low water production periods when the crew can lower the lake levels to expose the zebra mussels that need to be removed.

Pilot Program: Over the past decade, different techniques have been attempted, some with more success than others. In 2016, a pilot program was initiated to inject a chemical which includes cupric sulfate into the water. This treatment is proving to be effective at reducing the quantity of young mussels in the system. With this program, the 2017 and 2018 cleaning hours have been substantially reduced.

Graph Source: SPRWS, CMMS Timekeeping Report

Safety and Welfare of the Workforce

Sick Leave Usage

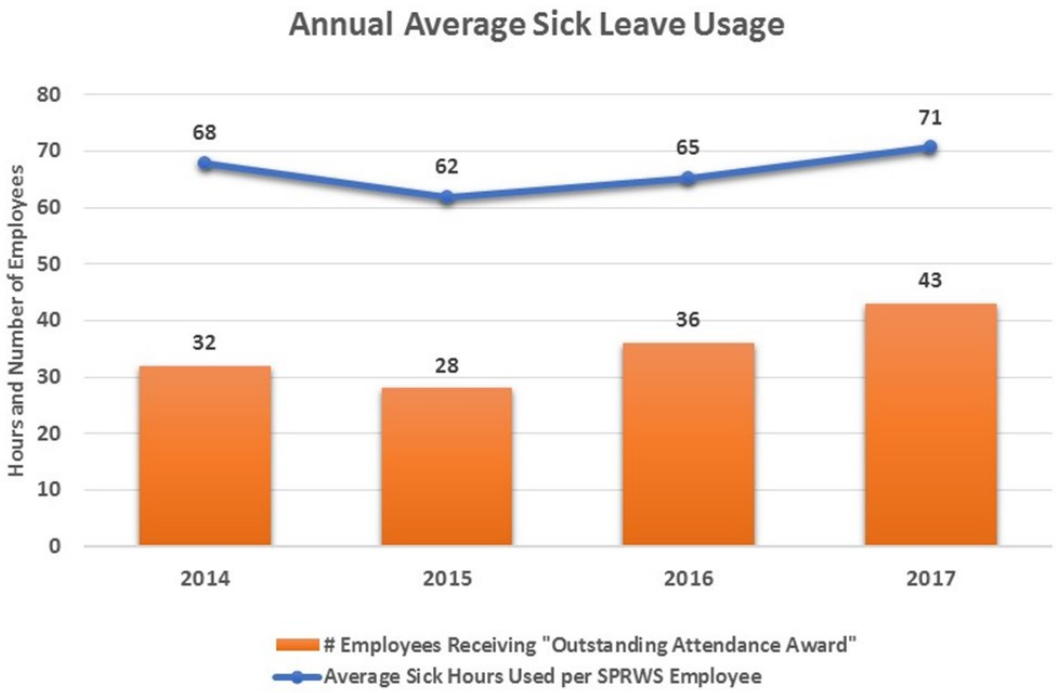
Incentive efforts help to manage sick leave usage.

The majority of employees use their sick leave benefit responsibly. Sick leave usage becomes a problem when it interferes with delivering services timely and performing operations efficiently. Sick leave abuse also contributes to low morale among the work units affected.

Saint Paul Regional Water Services has the objective of reducing the annual average number of sick time hours used by employees. For this purpose, it has established a recognition program, the "Outstanding Attendance Award," that celebrates employees who use 20 or less hours of sick leave annually.

The number of employees receiving the "Outstanding Attendance Award" has increased over the last three years, but it's unclear if the award has served as deterrent of abuse since the average sick leave usage has also increased during the same period.

SPRWS is exploring additional strategies encourage employees to use their benefit properly, enhance the work environment and optimize organizational performance.



Graph Source: SPRWS, CMMS Timekeeping Report