Performance Measurement Report

Calendar Year 2015

Performance Measurements Using the "Effective Utility Management" Framework

Issue Date: April 20, 2016

www.NapaSan.com

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More information about the Napa Sanitation District can be found at
www.NapaSan.com

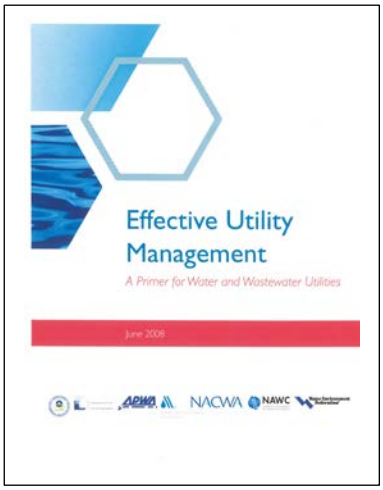
Introduction

Introduction to the Report

This report is the sixth annual report by the Napa Sanitation District regarding the performance of the District. It includes performance measures that, when taken as a whole, should give the reader a sense of how well the utility is performing and being managed. This report is prepared by management for use by the District's Board of Directors and by the general public.

The District has chosen to use the Effective Utility Management (EUM) framework for presenting this information. This framework is specific to water and wastewater utilities and provides for the possibility of comparing the District to other wastewater utilities once more providers begin using EUM for measuring and reporting on performance.

About Effective Utility Management



Effective Utility Management (EUM) is a framework for evaluating water and wastewater utilities. In May 2007, six major water and wastewater associations and the United States Environmental Protection Agency agreed to support EUM collectively and individually throughout the water sector. EUM is designed to help utility managers make practical, systematic changes to achieve excellence in utility performance, and encapsulates the collective knowledge and experience of utilities leaders who are committed to helping improve water and wastewater management.

EUM has identified Ten Attributes of Effectively Managed Water Sector Utilities. This performance measurement report has been divided into those ten attributes, as they are intended to help utilities maintain a balanced focus on all important operational areas rather than quickly moving from one problem to the next.

More can be learned about Effective Utility Management by visiting the website www.waterEUM.org.

About Performance Measures

Performance measures are those things that are measured by an organization to evaluate the performance of that organization. There are several types of measures, including input, output, efficiency and effectiveness. Input and output measures tend only to capture the amount of work performed by departments or organizations. This report focuses on efficiency and effectiveness measures, and then only on the measures that are meaningful to management of the District and that the District has some ability (total or partial) to influence.

Quick-Glance Ratings

This report includes with every measure an analysis of how the District is doing within that area. Additionally, next to each graph or qualitative measure is an icon to help the reader assess quickly how the District is performing against that measure. Those icons are as follows:

"Satisfactory" (green star) – signifies that the District has met its goals, or that the trend is positive.

"Watch" (orange diamond) – signifies that the District is in danger of not meeting its goals, that the trend is indeterminate, or that there is insufficient data to make an assessment.

"Unsatisfactory" (red triangle) – signifies that the District has not met its goals or that the trend is negative.

"No Measure" (purple circle with slash) – signifies that the District has not developed a measurement for this performance indicator.

Executive Summary

This report is the sixth annual Performance Measurement Report produced by the Napa Sanitation District. The report is structured around the Ten Attributes of Effectively Managed Water Sector Utilities, as developed in Effective Utility Management.

This report will be used by management of the District to identify specific trends or issues regarding the ten attributes. The Report is also intended to provide a partial answer to the question asked by the Board of Directors and the ratepayers alike, "Is the Napa Sanitation District a well-run utility?" This document will be used by the District's Board of Directors as a source of information for setting District goals and priorities through its strategic planning and annual budget processes.

The following is a summary of performance measurements reported in this report.

Product Quality – The District continues to meet or exceed regulatory compliance requirements at the wastewater treatment plant. Sanitary Sewer Overflows are few, with both the number and volume of spills remaining below the state average, except in extraordinary cases. The trend line for the number of plugged main lines is down, and the availability of recycled water is good. Recycled water reuse by customers met the targeted goal of 60%. Beneficial reuse of biosolids was at 100% last year.

Customer Service – The trend in reduced number of service calls due to District causes should result in more satisfied customers. The customer service surveys begun in 2011 appear to support this, with very high marks for the Collections crews. The District met its stated customer service response time goals for development review. The service call response time for the sewer collection system has been trending negatively, with the average response time exceeding the 30 minute goal in 2015, and the percentage of calls responded to within 30 minutes dropping from prior year.

Employee and Leadership Development – Retirements have been as anticipated the past several years, with no experience turnover rate in 2015. Anticipated retirements of 18% over the next five years suggest a continuation of this trend. The employee survey, which measures job satisfaction among other things, was not conducted in 2015. This past year, fewer on-line safety training courses were completed on time compared to previous year, but the total completion percentage was still very high. The District has drafted several succession plans for key positions, with training enabled to support the plans, and training programs are in place to capture collection system and operations knowledge.

Operational Optimization – Over the past decade, the plant has generally reduced its consumption of electricity overall, as well as its use per million gallons treated, although this number is impacted by the drought with higher than usual concentrations and greater demand for recycled water. The District's self-produced electricity is also at historic highs, continuing the increases since 2013 from the acceptance of fats, oil and grease at the new FOG receiving station. Chemical consumption per million gallons treated is continues to be low, although 2015 saw an increase in polymer use due to maintenance on the digester mixer.

Financial Viability – The ratio of revenue-to-expenditure has been trending down in recent years, with the exception of 2013 which was caused by an inflow of debt proceeds. This trend indicates that the District is spending more than what it brings in in revenue. The ratio of capital expenditures is also higher than the norm, due to capital projects that are either bond funded or being financed by other agencies. The debt service coverage ratio is significantly higher than the required 125%. The District maintains adequate financial policies and internal controls, and the District's bond rating remains high. The sewer service charge rate is projected to be below the actual life-cycle cost to provide wastewater and reclamation services. The District's reserves are funded in accordance with financial policies.

Infrastructure Stability – While the District has not performed an inventory of critical assets in the past 5 years, it does maintain computer-based asset and condition information of its collection system and most components of the Soscol Water Recycling Facility. The District came close but did not meet its goals related to annual sewer main line condition assessments. The District has been spending adequately on renewal & replacement projects to meet minimum standards and targets (percentage of total assets), mostly because of spending on bond-financed projects. The District invested more in renewal & replacement and Inflow & Infiltration sewer projects in 2015, with the Board having discussions at the end of 2015 about the proper rate of sewer replacement. Board directive is anticipated to be established next year. The District is performing very well regarding collection system failure rates. Planned maintenance as a percentage of total maintenance is high at the plant and in the collection system. District inspections of restaurant to help prevent fats, oil and grease (FOG) problems in the collection system increased to 100% in the past three years. During the past eight years in a row, collection staff has met its goal of cleaning the equivalent of 40% of main lines annually.

Operational Resiliency – There was only one recordable incident in the District in 2015, resulting in 8 hours of lost time, which is a very low rate. Insurance claims have continued to increase over the past several years, but still represent a relatively low level. The District's Experience Modification Rate (a measure of the quantity and severity of workers compensation claims) has gone down steadily since FY 05 and remains below both the industry average and the CSRMA average, although it did tick upward in FY15 due to the recordable incident rate in 2013. The District maintains adequate Emergency Response Plans and practices them regularly. The cogeneration engine has recovered from a recent downward trend in reliability, with the only significant downtime due to planned preventive maintenance and 2015 remaining at 98% uptime. In 2015, the District started operation of the new Influent Pump Station (IPS), resolving a long-standing issue with reliability and resiliency.

Community Sustainability – The District has invested in meeting community needs, particularly with recycled water. The District is involved in several community programs that encourage reduced potable water consumption and environmental protection and awareness, and has incorporated "green" practices into its capital planning. Greenhouse gas emissions from purchased natural gas, in the form of carbon dioxide, has seen a decrease in recent years, with more digester gas used to produce power rather than flared than ever before. As for service affordability, sewer service charges are still significantly within the "low burden" rating established by the EPA. The Low Income Assistance Program saw an decrease in the number of properties included in the program compared to prior years, due in

part to an improving local economy and also because of some housing units in low income housing programs no longer meeting the eligibility requirements for the program.

Water Resource Adequacy – This attribute, reinterpreted as a measure of recycled water adequacy, shows that the District has sufficient short-term adequacy to meet customer needs. The current water supply of 2,000 acre-feet is slightly overcommitted, although some of the demand has yet to be developed, and this problem will be resolved with the completion of the construction project to expand the recycled water filter capacity. Long term, there are more potential customers identified than water potentially available.

Stakeholder Understanding and Support – The District continues to seek out customer input and engagement on various project, most recently in discussions of the District's role in handling trucked winery waste and through a stakeholder group evaluating the District's sewer service rates. The District's sewer service charges compare favorably to other provider's rates, but have dropped rapidly in the last five years indicating a potential inadequacy of the District's rates that should be watched. Media coverage for the District was adequate in terms of amount, and saw small increases in both the coverage tone and accuracy this past year.

Summary of Measures and Ratings

More information about the specific measures and the rationale for the ratings can be found on the page number provided.

Attribute	Measurement	2015	Trend	Page
1. Product Quality	1-Treatment for BOD and TSS Removal	★	★	15
	2-Total Allowable BOD and TSS	★	★	16
	3-Sanitary Sewer Overflows (SSOs)	★	★	17
	4-Volume of Sewage Overflow	★	★	18
	5-Plugged Main Lines	★	★	19
	6-Recycled Water Service Availability	★	★	20
	7-Recycled Water Reuse by Customers	★	★	21
	8-Biosolids Put to Beneficial Reuse	★	★	22
2. Customer Service	1-Service Calls for District Plugged Laterals	★	★	23
	2-Service Call Response Time	◆	◆	24
	3-Development Review Response Time	★	★	25
	4-Customer Satisfaction	★	★	26
3. Employee and Leadership Development	1-Experience Turnover Rate	★	★	27
	2-Employee Satisfaction	⊘	★	28
	3-Total Training Hours	⊘	⊘	29
	4-Online Safety Training Hours	◆	★	30
	5-Succession Planning	★	★	31
	6-Institutional Knowledge Capture	⊘	★	32
4. Operational Optimization	1-Electricity Consumption by Source	★	★	33
	2-Electricity Consumption Efficiency	★	★	34
	3-Chemical Consumption	★	★	35
5. Financial Viability	1-Revenue-to-Expenditure Ratio	▲	◆	36
	2-Capital Expenses Compared to Operating Expenses	★	★	37
	3-Debt Service Coverage Ratio	★	★	38
	4-Financial Procedure Integrity	★	★	39
	5-Bond Rating	★	★	40
	6-Sewer Service Charges Compared to Inflation	★	★	41
	7-Rates Based on Life-cycle Cost	◆	◆	42
	8-Rate Stabilization Reserve	★	★	43

Satisfactory

Watch

Unsatisfactory

No Measure

Attribute	Measurement	2015	Trend	Page
6. Infrastructure Stability	1-Asset Inventory			44
	2-Sewer Main Condition Assessment			45
	3-Renewal & Replacement of Assets			46
	4-Sewer Main Renewal and Replacement			47
	5-Lower Sewer Lateral Renewal and Replacement			48
	6-Collection System Failure Rate			49
	7-Plant Planned Maintenance Ratio			50
	8-Collections Planned Maintenance Ratio			51
	9-Sewer Main Line Cleaning			52
	10-Pollution Prevention Inspections			53
7. Operational Resiliency	1-Total Recordable Incident Rate			54
	2-Lost Time Hours			55
	3-Insurance Claims			56
	4-Experience Modification (XMOD) Rate			57
	5-Emergency Response Plans			58
	6-Emergency Response Plan Training			59
	7-Uptime for Cogeneration Engine			60
	8-Uptime for Pumps at IPS			61
	9-Resiliency Under Emergency Conditions: Power			62
	10-Resiliency Under Emergency Conditions: Critical Parts and Equipment Resiliency			63
	11-Resiliency Under Emergency Conditions: Staff			64
	12-Treatment Operations Resiliency			65
8. Community Sustainability	1-Watershed-based Infrastructure Planning			66
	2-Green Infrastructure – Programs			67
	3-Green Infrastructure – New Infrastructure			68
	4-Greenhouse Gas Emissions – Purchased Energy			69
	5-Digester Gas Beneficial Reuse			70
	6-Sewer Service Charge Affordability			71
	7-Low Income Billing Assistance			72
9. Water Resource Adequacy	1-Short-term Water Supply Adequacy			73
	2-Long-term Water Supply Adequacy			74
10. Stakeholder Understanding & Support	1-Stakeholder Consultation			76
	2-Comparative Rate Rank			77
	3-Media/Press Coverage			78

Performance Measurement Report

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

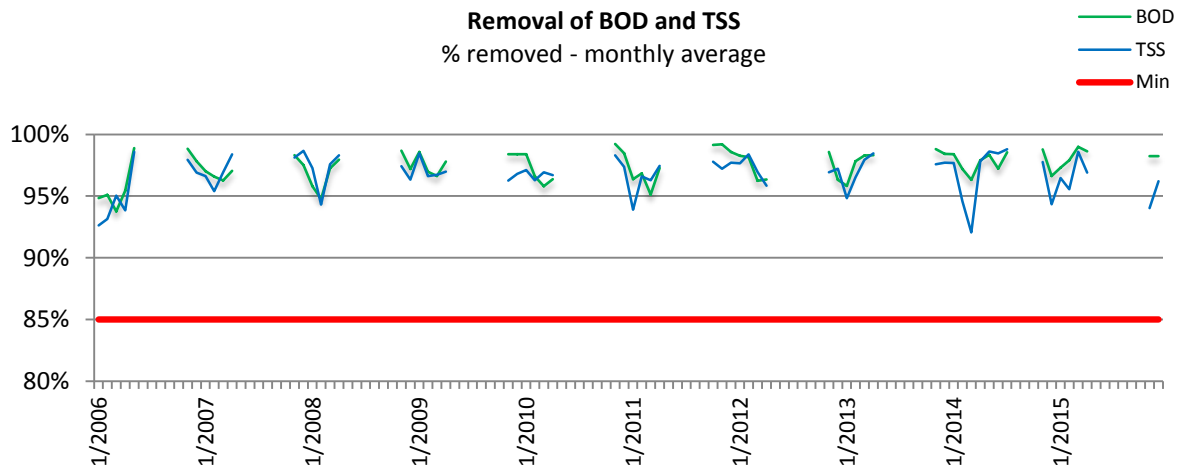
Measurement #1-1

NPDES Compliance: BOD and TSS Removal

Description

The District is required under its NPDES permit to remove at least 85% of the biochemical oxygen demand (BOD) and total suspended solids (TSS) from the water received at the plant during the river discharge period (winter months). The chart shows the average monthly removal percentages for both BOD and TSS. The monthly average percentage removal must remain higher than 85% to stay in compliance with the permit.

Performance Data



Analysis

The District has remains in compliance with this NPDES Permit requirement for the percentage removal of BOD and TSS. The District consistently removes over 90%, and often over 95% of these constituents from the influent during the months when the District discharges to the Napa River.

Measurement #1-2

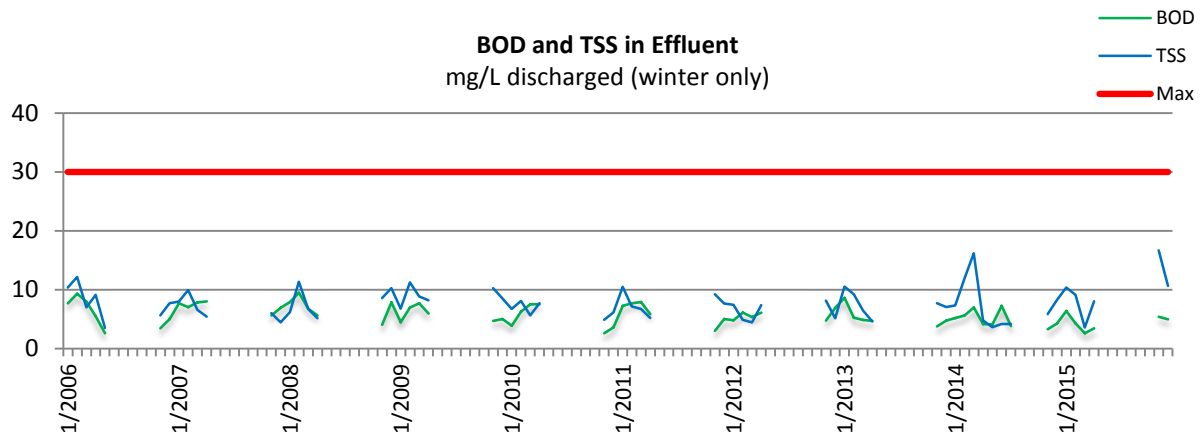
NPDES Compliance: Total Allowable BOD and TSS

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Description

The District is required under its NPDES permit to remove biochemical oxygen demand (BOD) and total suspended solids (TSS) in its process so that the effluent to the river during the winter months does not exceed 30 mg/L of either.

Performance Data



Analysis

The District has remains in compliance with this NPDES Permit requirement for the total allowable BOD and TSS in its effluent discharge to the Napa River.

Measurement #1-3

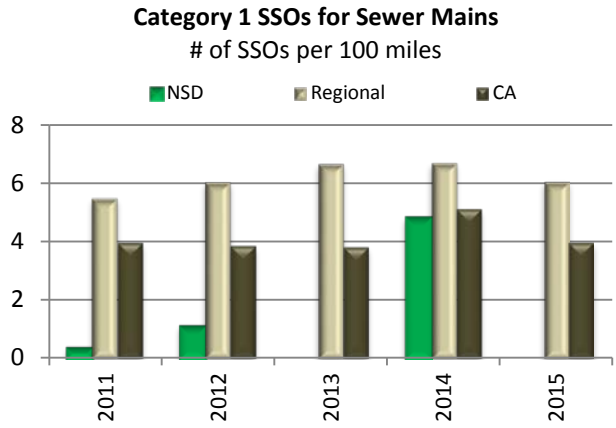
Number of Sanitary Sewer Overflows (SSOs)

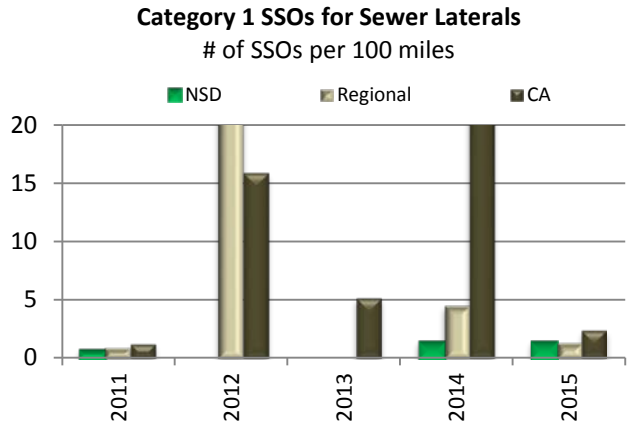
Rating	
Current Year	5-Year Trend
★ Satisfactory	★ Satisfactory

Description

The District's goal is to maintain the sewer collection system so that there are no SSOs. Especially important is to prevent overflows that reach a creek, river or other body of water, or overflows that reach a storm drain and were not fully recovered, both of which are considered "Category 1 SSOs". While the overall goal is to prevent all overflows, the operational goal of the District is to have fewer overflows than the industry average in the San Francisco Bay Region and in California as a whole.

Performance Data





Analysis

For the past several years, there have not been very many Category 1 SSOs in the collection system, and consistently fewer than the regional and California state averages.

Sewer Mains – In 2014, there were an above average number of Category 1 SSOs in the District due primarily to the earthquake in August and a severe rainstorm in December. In 2013 and 2015, there were no Category 1 SSOs in NSD's sewer mains.

Sewer Laterals – The District has been consistently low compared with the regional and state averages. The regional average in 2012 was almost 36 Category 1 SSOs per 100 miles (off the chart) and the state average in 2014 was just over 53 (off the chart). In comparison, the District has ranged in the last five years between zero (in 2012 and 2013) and 1.36 (in 2014 and 2015) Category 1 SSOs in laterals per 100 miles.

Measurement #1-4

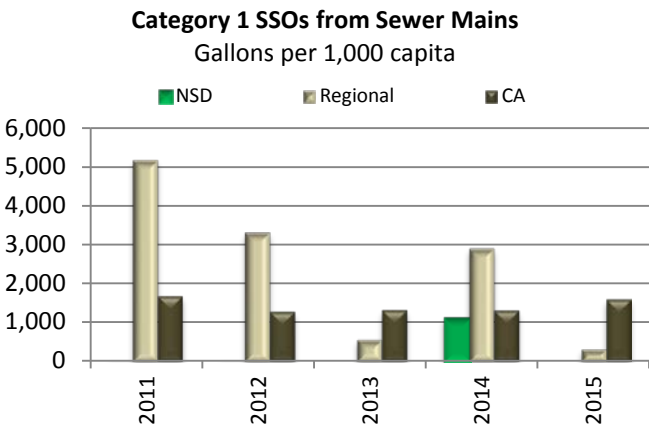
Volume of Sanitary Sewer Overflows (SSOs)

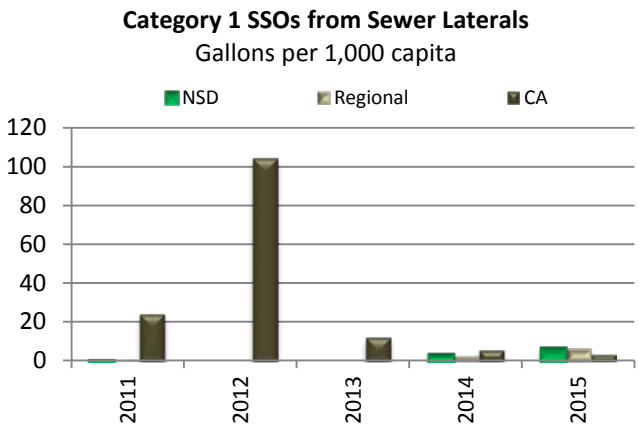
Rating	
Current Year	5-Year Trend
★ Satisfactory	★ Satisfactory

Description

It is the District's goal to prevent Sanitary Sewer Overflows. However, when an SSO occurs, the District strives to respond quickly to prevent as much spillage from reaching a body of water as possible. This measure is the volume (in gallons) of sewage spilled reaching surface water as a Category 1 SSO per 1,000 residents, and is compared to the San Francisco Bay Region and California statewide averages.

Performance Data





Analysis

The District has been very successful in keeping the amount of Category 1 sewage spilled per at levels significantly below the San Francisco Bay Region and California state averages. In 2014, there were higher than average spills reaching a body of water due primarily to overflows during the August earthquake and a severe storm in December.

PRODUCT QUALITY

Measurement #1-5

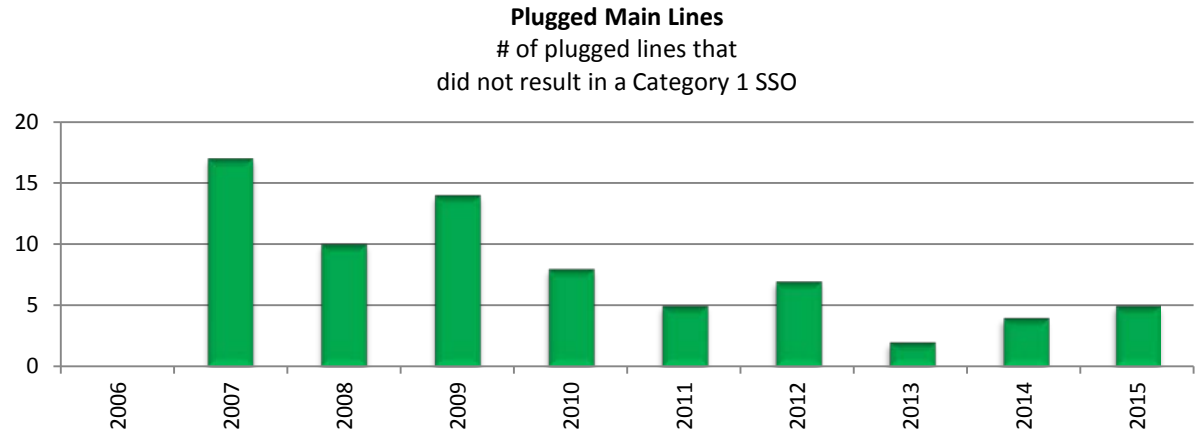
Plugged Main Lines

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Description

This is the number of sewer mains that were plugged and needed immediate attention, but did not result in a Category 1 Sanitary Sewer Overflow (SSO).

Performance Data



Analysis

There has been a positive trend in this measure over the past few years, as the District has made increased investments and efforts toward preventive maintenance.

Measurement #1-6

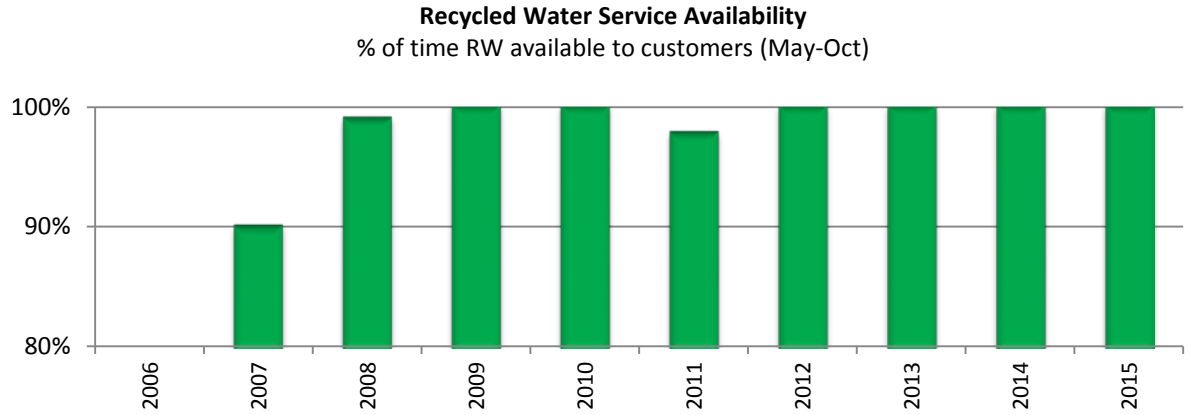
Recycled Water Service Availability

Rating	
Current Year	10-Year Trend
Satisfactory	Satisfactory

Description

This is the percentage of days from May 1 through October 31 that there is no interruption in recycled water delivery.

Performance Data



Analysis

This data is available starting in 2007. In 2007, the system was down for 10% of the days between May 1 and October 31. The availability increased to 99% the following year, with the next two years at 100% availability during these dates. In 2011, the system was down for 4 days to repair a leak in a recycled water main line. From 2012 to 2015, there were no breaks in recycled water service availability.

Measurement #1-7

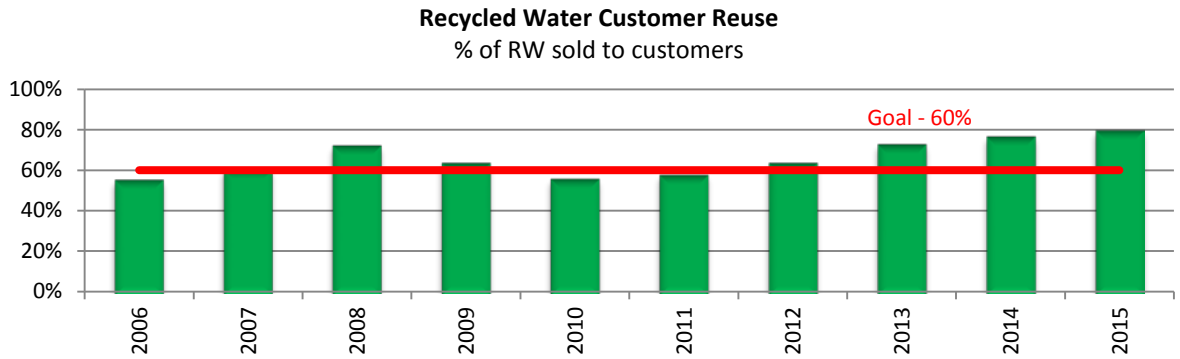
Recycled Water Reuse by Customers

Rating	
Current Year	10-Year Trend
Satisfactory	Satisfactory

Description

This is the percentage of recycled water created by the treatment plant during the months of May through October that were sold to customers, instead of being applied to spray fields. This is a measure of how much of the District's recycled water is being put to customer reuse.

Performance Data



Analysis

From 2005 through 2008, the District increased its sales of recycled water by expanding its customer base. The years 2009 to the present saw declines from 2008 levels because of decreased recycled water use at Chardonnay Golf Course when it converted 9 holes to vineyard use. The 2010 and 2011 years were impacted by cool summers and wet springs. The 2012 calendar year was considered a "typical" weather year, while 2013, 2014 and 2015 were some of the driest years on record for Napa County.

There are several development projects that have requested recycled water from the District, but those projects have not yet come on line. When they do, there will be sufficient customer demand to increase the percentage of recycled water reused by customers, and to increase the overall quantity of recycled water delivered. The current goal of 60% of recycled water used by customers equates to what's needed in a typical weather year for the District to meet customer demands and meet the District's non-discharge requirements.

Measurement #1-8

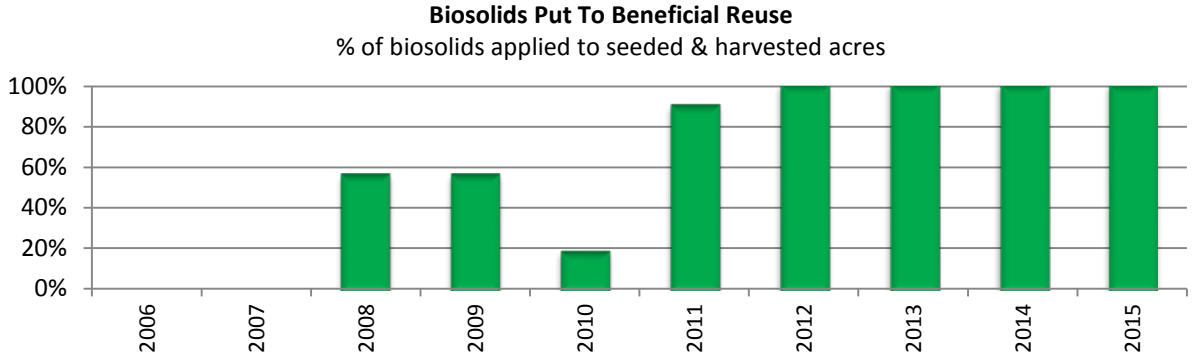
Biosolids Put to Beneficial Reuse

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Description

Percentage of biosolids that are applied to land that is seeded and harvested for use by livestock or associated use, based on dry tons applied to acres.

Performance Data



Analysis

The District's current program includes the agricultural application of biosolids for beneficial reuse on District owned or leased land. All lands applied with biosolids in 2012 to 2015 were seeded for beneficial reuse, either for agricultural commodities or as sheep grazing land.

CUSTOMER SERVICE

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

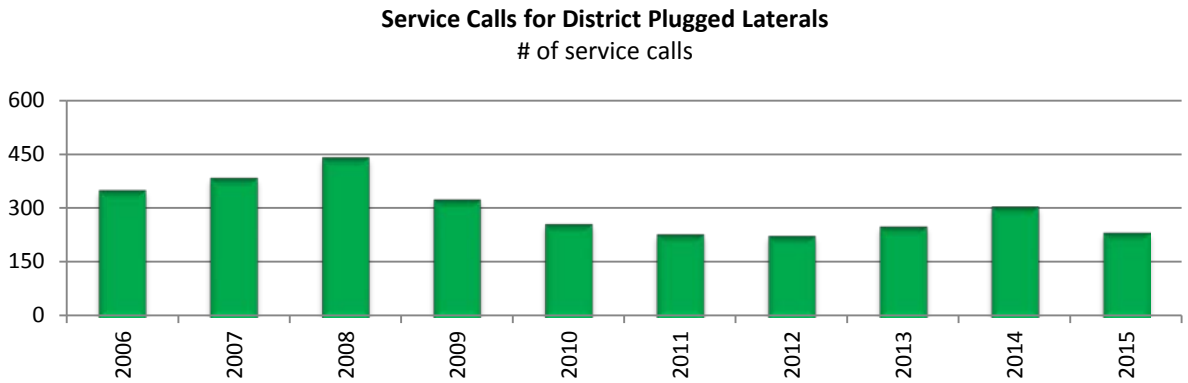
Measurement #2-1

Service Calls for District Plugged Laterals

Description

The District uses the number of plugged laterals in the District's portion of the lateral as a proxy for determining customer complaints, as these problems lead to backups. The goal is to see a downward trend in this number.

Performance Data



Analysis

There has been a steady trend toward fewer service calls that were due to plugs in the District's portion of the lateral. During the past several years, the District has focused on preventive maintenance, partially in an effort to reduce these backups. These efforts have a long-term focus, but it appears that the number of District plugged laterals has decreased as a result of these efforts.

CUSTOMER SERVICE

Rating	
Current Year	10-Year Trend
Watch	Watch

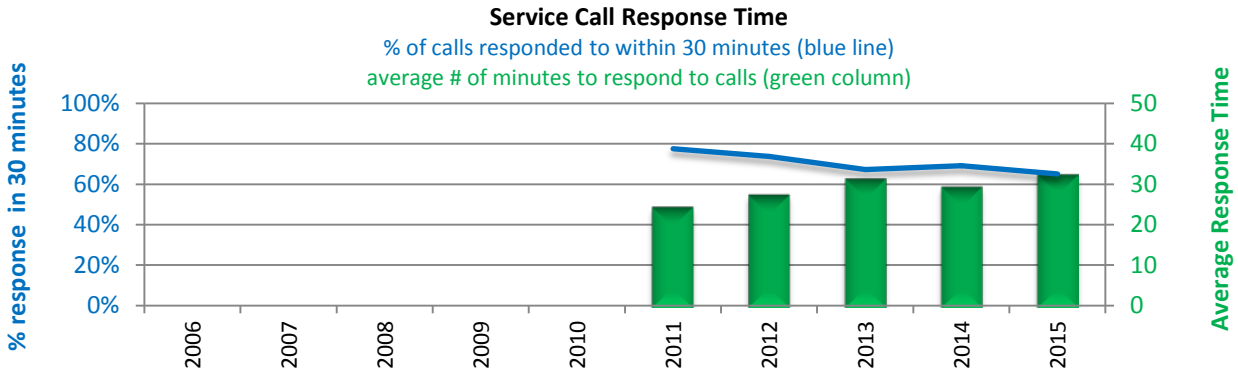
Measurement #2-2

Service Call Response Time

Description

The District maintains a goal of responding to service calls for sewer backups by arriving at the site of the backup within 30 minutes of the call. This measure shows the percentage of calls that were initially responded to within 30 minutes and the average response time.

Performance Data



Analysis

The District began collecting this data in 2010 and 2011 and could not be compiled for previous years from existing records. Over the past five years, the percentage of service calls responded to has dropped from 77% in 2011 to 65% in 2015, while the average response rate has risen to 32 minutes, which is longer than the 30 minute goal.

There were two factors contributing to the increase in response time. First, out of 251 standby calls, 63 of them (25%) were received back to back, which increases response time as one call needs to be resolved before responding to the next. Second, 93 of the calls (37%) were responded to by an employee who lives 33 minutes from the Napa Sanitation Corporation Yard. This employee's average response time was 42 minutes. As this employee received a larger than usual percentage of the standby calls, the average response time increased.

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

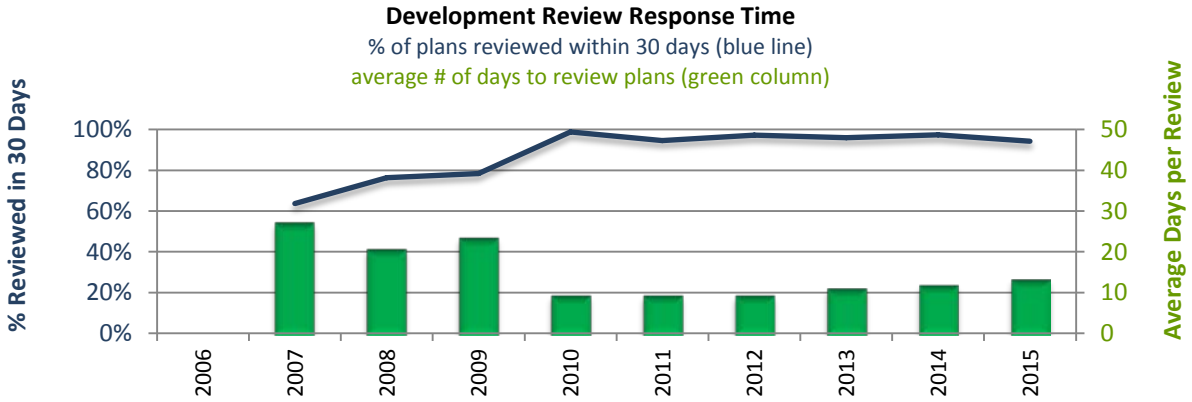
Measurement #2-3

Development Review Response Time

Description

The District maintains a goal of completing review of development plans within 30 days of receipt of the plans. This chart shows the percentage of plans that were reviewed and returned within that goal.

Performance Data



Analysis

Over the past six years, the District met its goal of completing reviews within 30 days in 95% or more of submissions, while maintaining the average number of days to review plans at just under 13, even as development plan submissions have increased significantly in 2015.

CUSTOMER SERVICE

Rating	
Current Year	5-Year Trend
Satisfactory	Satisfactory

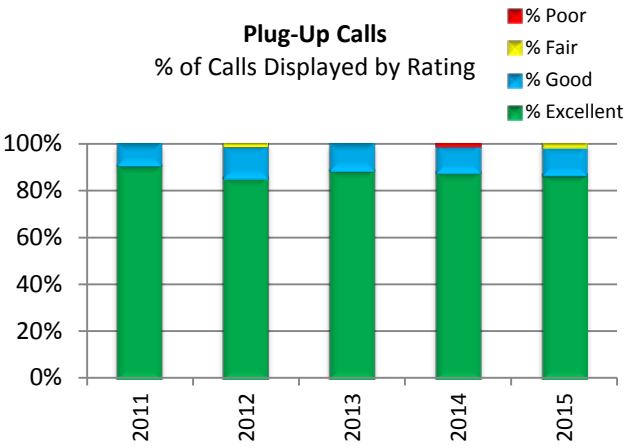
Measurement #2-4

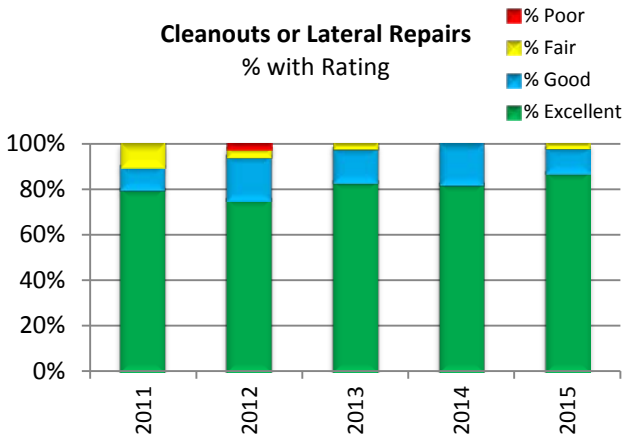
Customer Satisfaction

Description

This is the measure of how well District staff performed, according to the customer who was directly impacted by that work. Surveys were sent out for all plug-up calls and for any time the District conducted a lateral repair or installed a cleanout that affected private property.

Performance Data





Analysis

The District started conducting these surveys in 2011, with the first full calendar year of data in 2012. The first chart is for interactions when the customer calls the District for service to clear a plugged sewer line. The second is for the installation of sewer cleanouts or lateral replacements, where the District initiates interaction and involves construction practices. Both measures show positively on the District in 2015, with 99.1% of plug-up surveys and 98.2% of cleanout or lateral repair surveys reporting that the District's service was either "Excellent" or "Good."

EMPLOYEE AND LEADERSHIP DEVELOPMENT

Rating	
Current Year	5-Year Trend
★ Satisfactory	★ Satisfactory

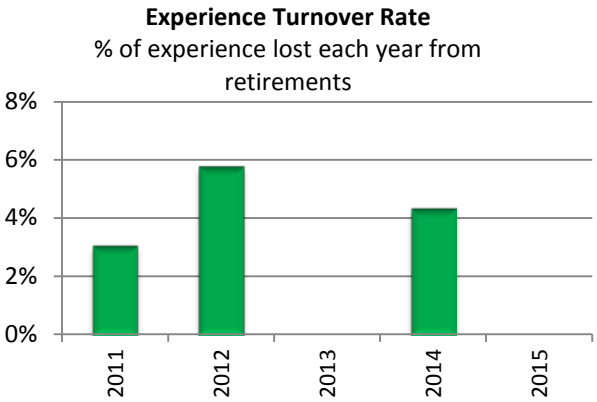
Measurement #3-1

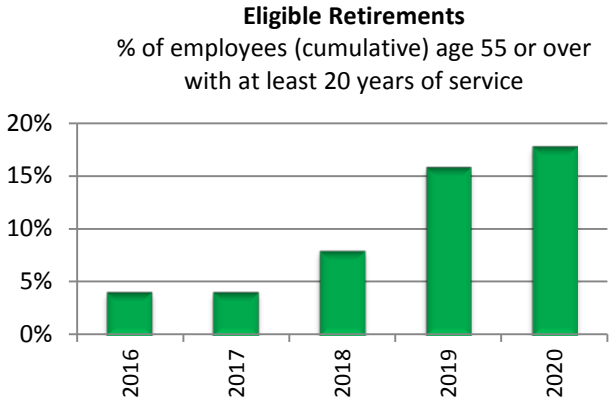
Experience Turnover Rate

Description

Experience Turnover Rates is the percentage of years that retiring employees worked at the District compared to the total number of years of experience for all employees. It measures the amount of experience lost in any given year due to retirements at the District. Eligible Retirements is the percentage of District employees at least age 55 with 20 or more years of service, and shows the potential for employee turnover in the next five years.

Performance Data





Analysis

Most employees who leave employment from the District do so through retirement. Most retirements are known in advance and planned for. The experience turnover rate for 2011-2015 is in line with expectations. There were no retirements in 2013 and 2015.

The experience turnover rate from retirements at the District is not a controllable measure, and as such this is not a performance measure as much as it is a data set that helps to inform whether there are trends in the workforce to which management needs to respond.

Over the next five years, the District is expected to lose 18% of its workforce to retirements. This is a reasonable rate and well within the District's ability to manage.

EMPLOYEE AND LEADERSHIP DEVELOPMENT

Rating	
Current Year	5-Year Trend
No data	Satisfactory

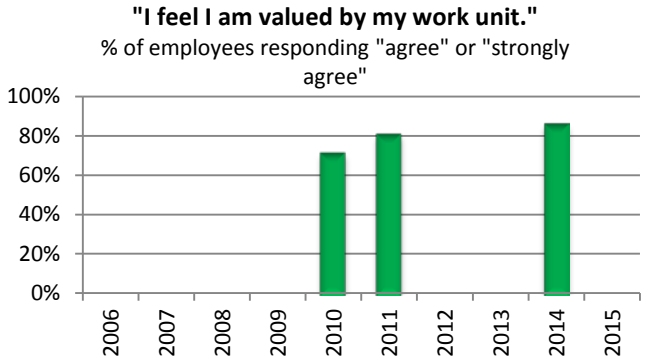
Measurement #3-2

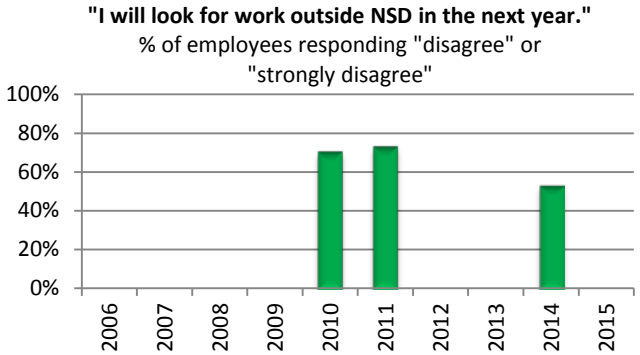
Employee Satisfaction

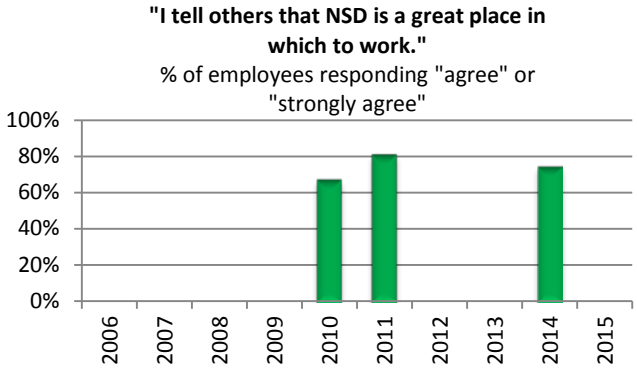
Description

The following charts show the response to three questions asked during employee surveys. These questions are designed to gauge employee satisfaction. The survey was conducted in 2010, 2011, and 2014.

Performance Data







Analysis

Fall 2010 was the first time the District surveyed its employees on these three attributes. In Fall 2011 and 2014, the survey was repeated.

From the survey results, it appears that employees feel valued and that they enjoy working at the District. There are a considerable number of employees who intend to look for work outside the District (8) or who neither agreed nor disagreed with the statement. In a follow up question in the 2014 survey, the majority of employees who said they intend to look for work stated they would do so to seek career advancement.

EMPLOYEE AND LEADERSHIP DEVELOPMENT

Rating	
Current Year	5-Year Trend
No data	No data

Measurement #3-3

Total Training Hours

Description

This is the total number of training hours provided to employees at the District.

Performance Data

No Measure.

Analysis

It is the employee's responsibility to track hours necessary to maintain specific certifications. The District currently does not track total training hours by employee. A future goal of the District is to implement a system to track employee training.

EMPLOYEE AND LEADERSHIP DEVELOPMENT

Rating	
Current Year	10-Year Trend
Watch	Satisfactory

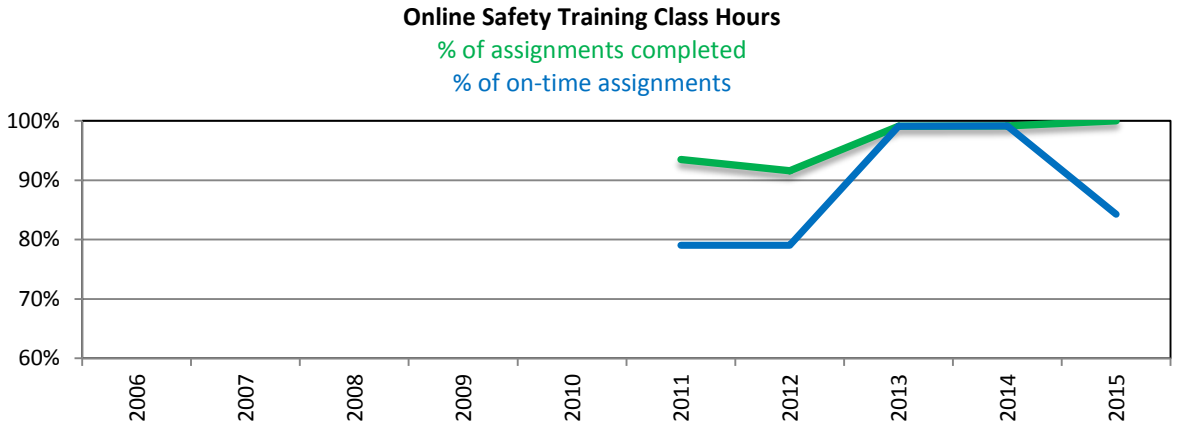
Measurement #3-4

Online Safety Training Completion

Description

This is the percentage of total online safety training class hours completed by staff, and the percentage that were completed prior to their due date.

Performance Data



Analysis

The online safety program began in August 2006, but performance data was not available until 2011. This measure shows the completion rates and on-time completion rates for online safety classes. The past three years, considerable improvement was made in the completion rate, now at or nearly 100%. However, the on-time completion rate dropped to only 85% in 2015. Managers are aware of the issue, and this is being addressed at the staff level.

EMPLOYEE AND LEADERSHIP DEVELOPMENT

Rating	
Current Year	10-Year Trend
 Satisfactory	 Satisfactory

Measurement #3-5

Succession Planning

Description

Percentage of key positions covered by long-term workforce succession plan.

Performance Data

Seven (7) positions were identified as critical for the development of succession plans. The District has developed formal succession plans for each position and has completed the necessary cross training associated with these plans.

Analysis

The District completed succession plans for the following positions: Plant Manager, Reclamation Director, Collection System Manager, Laboratory Supervisor, Human Resources Officer/Clerk of the Board, Senior Accountant and Safety, Training and Fleet Maintenance Officer. In addition to development of succession plans for the 7 most critical positions at the District, the District maintains other practices designed to capture institutional knowledge and maintain continuity during periods of staffing transition.

The District has implemented the "Operator III Training Program" to increase operator knowledge and allow for the necessary skills to operate the plant's treatment processes and regulatory control on a day-to-day basis. The Plant Maintenance and Laboratory Supervisors have also trained staff sufficiently to provide coverage in the event of vacancy. The Collection Department has a cross-training process to ensure that all employees know how to do every job and use all of the equipment in the department.

EMPLOYEE AND LEADERSHIP DEVELOPMENT

Rating	
Current Year	10-Year Trend
No data	Satisfactory

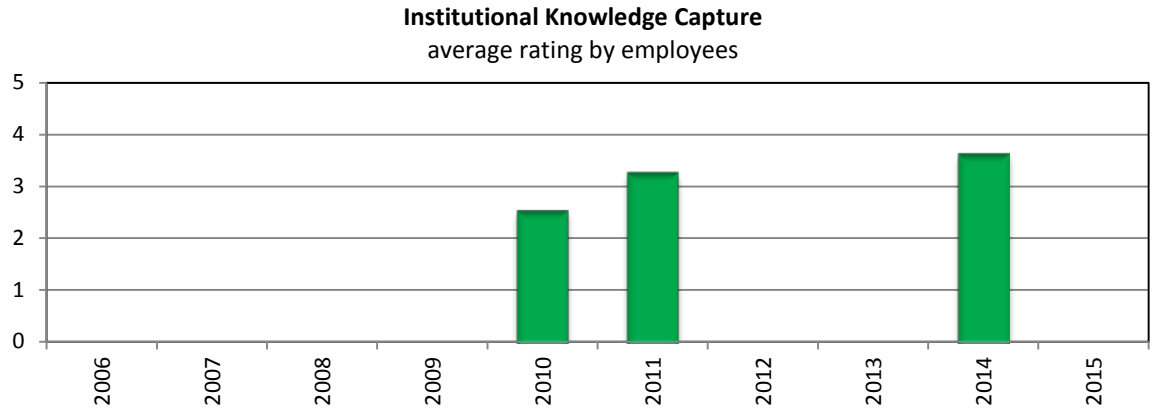
Measurement #3-6

Institutional Knowledge Capture

Description

Percent of employees who believe the District is capturing critical institutional knowledge. In the Employee Survey, employees were asked to rate whether they disagree with the following statement, "***Efforts are being made at NSD to capture the critical institutional knowledge that may be held by one employee in order to reduce the risk of losing that knowledge all together should the employee leave.***" The chart shows the average rating by employees on a 1-to-5 scale, where 1 is "strongly disagree" and 5 is "strongly agree."

Performance Data



Analysis

Over the last three surveys, the District's actions in recording and retaining institutional knowledge have resulted in an increase in the belief by employees that meaningful efforts are being taken. There were no surveys in 2012, 2013 or 2015.

OPERATIONAL OPTIMIZATION

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

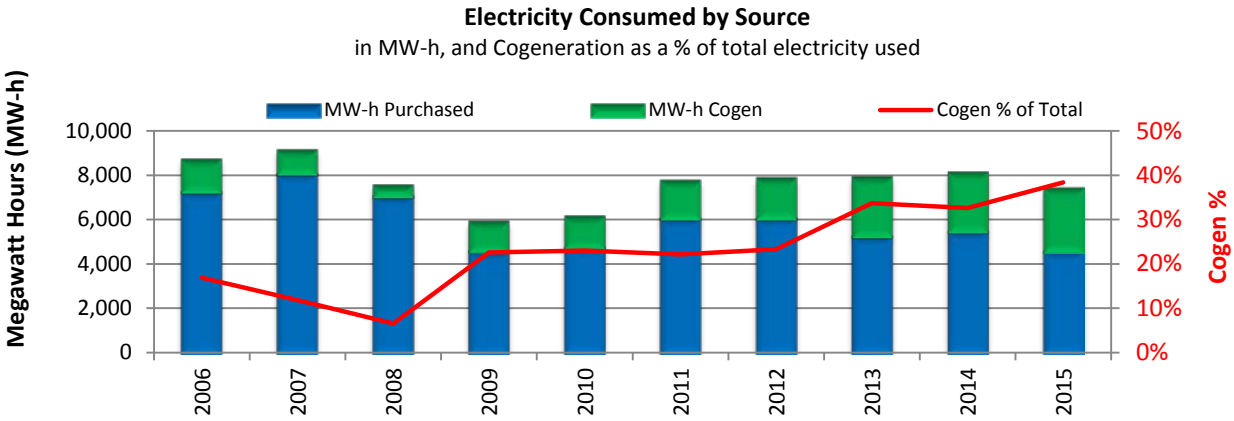
Measurement #4-1

Electricity Consumption by Source

Description

Electricity is one of the largest expenses in the treatment process. The treatment plant uses a cogeneration engine ("Cogen") powered by captured and compressed biogas gas to create electricity. The goal is to generate as much electricity as possible from the Cogen system, to offset purchased electricity. This chart shows the total megawatt hours of electricity purchased, electricity produced by cogeneration, and the percentage of total electricity that came from cogeneration.

Performance Data



Analysis

The percentage of electricity produced by the Cogen increased significantly in 2013 and continued to rise in 2014 and 2015 due to increased amounts of FOG accepted at the FOG Receiving Station.

OPERATIONAL OPTIMIZATION

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

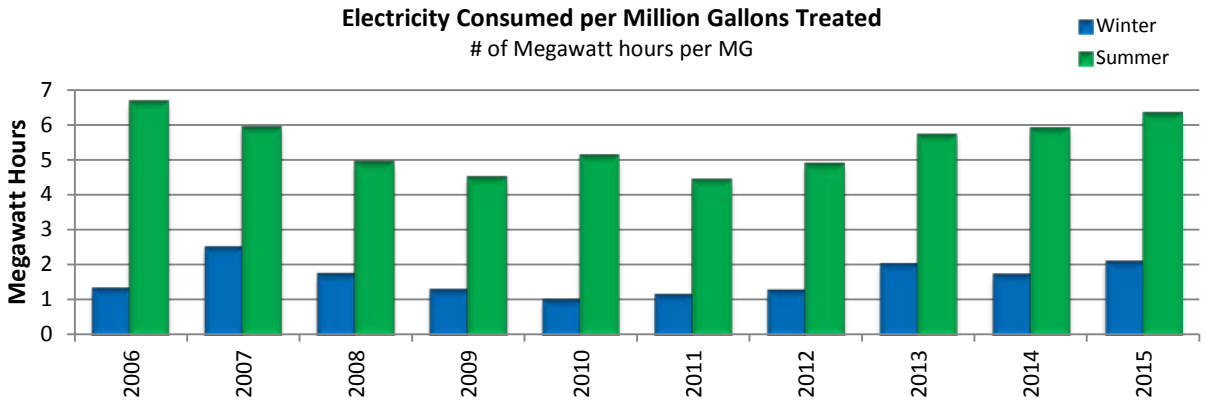
Measurement #4-2

Electricity Consumption Efficiency

Description

This chart shows overall electricity efficiency by measuring the amount of electricity consumed per million gallons of wastewater effluent. Winter months (November-April) represent wastewater processed and discharged to the river. Summer (May-October) represents wastewater processed to recycled water standards and either sold to customers or applied to spray fields.

Performance Data



Analysis

Electricity consumption per million gallons treated has increased slightly at the plant compared to 5 years ago, which may be drought related, as the same amount of solids need to be processed, but with lower flows. This measure was expected to increase slightly in 2015 as the plant shifted from using flocculating clarifiers to a dissolved air floatation clarifier, a process that uses more electricity to remove algae from pond water.

OPERATIONAL OPTIMIZATION

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

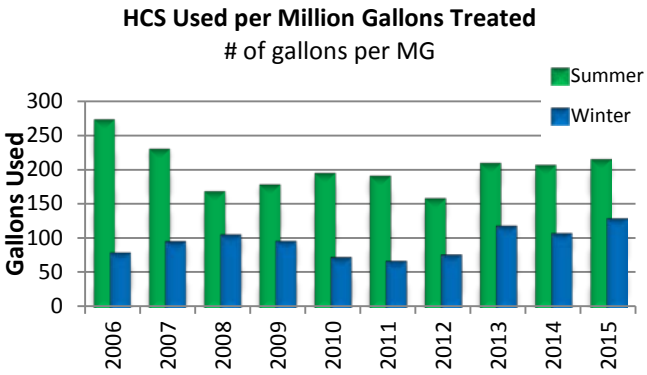
Measurement #4-3

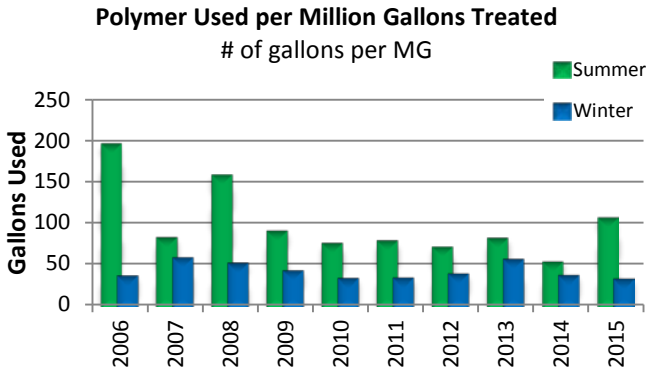
Chemical Consumption

Description

Chemicals are a significant cost in the wastewater treatment process. Two chemicals specifically make up a majority of the chemical budget – sodium hypochlorite (HCS) and polymer. HCS is used to disinfect water and remove bacteria, while polymer is used to remove suspended solids and to "dewater" biosolids. Usage can fluctuate based on environmental conditions, the amount of wastewater processed and the type of processing (river discharge or recycled water production), so these have been represented using gallons of chemicals per million gallons processed for both the summer and winter seasons.

Performance Data





Analysis

Generally, chemical consumption per million gallons treated has reduced for most chemicals, although there has been a recent uptick in the amount of sodium hypochlorite used due primarily to decreased flows from the drought and associated increases in loading concentrations. Polymer use reversed in downward trend for the summer months due to the project in July and August to take down the digester and replace the digester mixer (taking the digester out of service required significantly more dewatering polymer usage).

Rating	
Current Year	10-Year Trend
Unsatisfactory	Watch

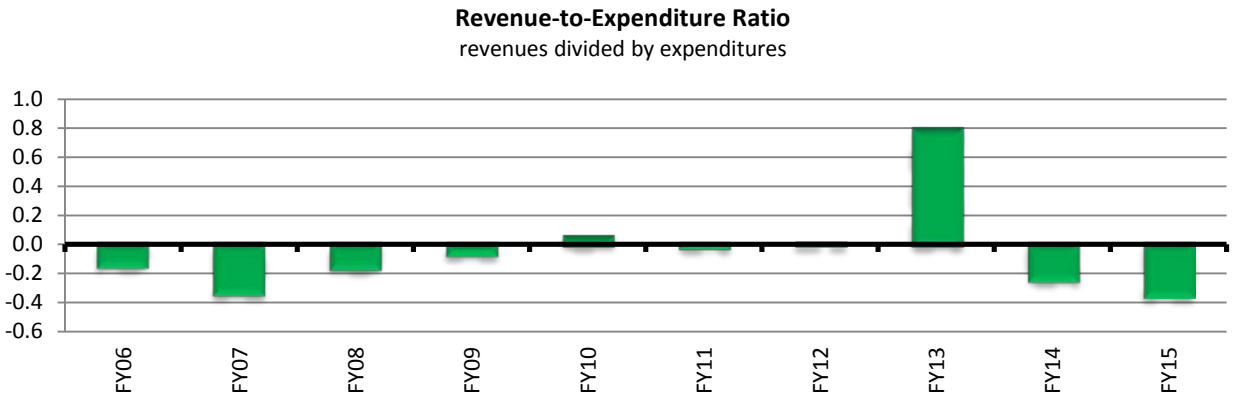
Measurement #5-1

Revenue-to-Expenditure Ratio

Description

This ratio is total revenue from all sources divided by total expenditures, including debt service and capital, but excluding depreciation, minus 1. This ratio shows the annual impact to fund equity. Ratio below 0 means that there were more expenses than revenues in that year, while a number above 0 means there was more revenue than expenditures. The ratio can fluctuate above and below 0, depending on the financial plan for the year, but a long-term trend of expenditures greater than revenues (a ratio of less than 0) is problematic and indicative that reserves are being used to finance capital projects and/or the ongoing expenses of the District, and that a course correction is likely.

Performance Data



Analysis

The three years of 15% sewer service charge increases from FY07 to FY09 are responsible for the stabilizing trend seen through FY12. In FY13 there was a significant increase due primarily to the inflow of proceeds from debt, with corresponding debt service timing causing a temporary imbalance toward the positive. FY14 and FY15 saw decreases, as the debt proceeds were used to pay for capital projects. Additionally in these last two years, significant fund equity has been used to pay for capital projects. There is insufficient fund equity available to continue this trend beyond FY 2016.

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

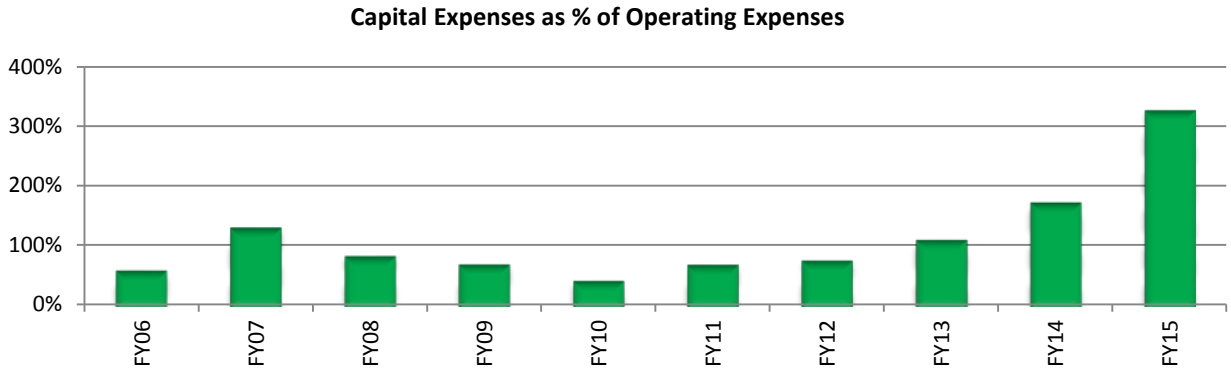
Measurement #5-2

Capital Expenses Compared to Operating Expenses

Description

Capital expenses as a percentage of operating expenses (less depreciation) is a measure that has meaning only when compared against itself over time, or compared to other similar agencies. An upward trend is indicative of an expansion period or a period focused on renewal and replacement of capital assets, while a downward trend is indicative of decreased growth or less investment in system renewal and replacement.

Performance Data



Analysis

More study is necessary to determine what an appropriate "baseline" or "target" number should be. Much of FY15's capital expenses were bond-funded projects and the construction the MST and LCWD recycled water projects that are financed by other agencies. The increase in FY15 was expected, and should decrease in future years as the LCWD, MST and bond-funded projects are completed.

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

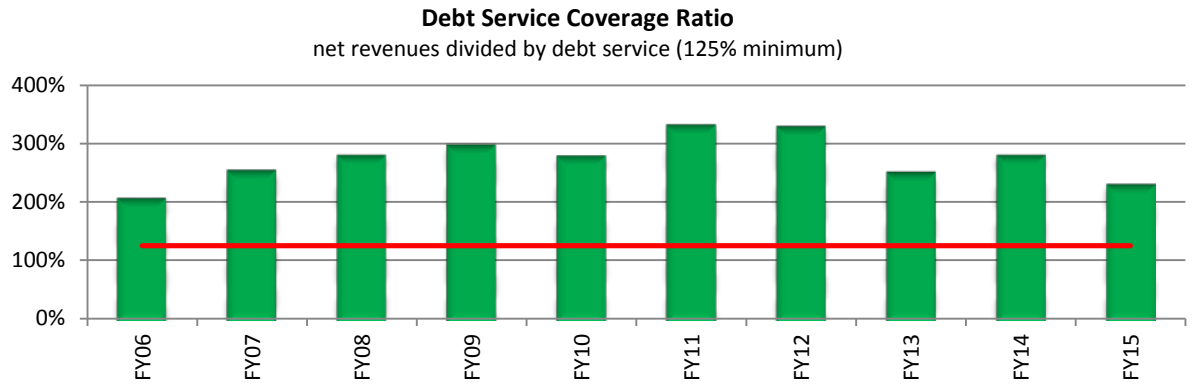
Measurement #5-3

Debt Service Coverage Ratio

Description

The District is required by its debt covenants and financial policies to maintain a debt service coverage ratio of at least 1.25, or 125%. The calculation is made by adding all revenue sources and subtracting all operating expenses (excluding depreciation) to get net revenue. The net revenue (green bars) must be more than 125% (red line) of the sum of all debt service payments.

Performance Data



Analysis

The District has consistently maintained a debt service coverage ratio higher than the 125% minimum requirement. This number is evaluated during each budget development and adoption process to ensure that this covenant is maintained. With the issuance of new debt in FY13, the ratio decreased, but stayed higher than the projected ratio of 200%. The ratio should stay steady until debt is again issued for future capital projects.

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Measurement #5-4

Financial Procedure Integrity

Description

These are questions that gauge the presence of "best practices" and internal processes to ensure a high level of financial management integrity.

Performance Data & Analysis

- **Does the District have financial accounting policies and procedures? (Y/N)**

  Yes. Comprehensive policies were adopted in February 2007, and revised and updated in May 2010 and May 2012.

- **Are the financial results and internal controls of the District audited annually? (Y/N)**

  Yes. The District is required to conduct an annual audit both by its bond covenants and by its accounting policies.

- **Have the number of control deficiencies and material weaknesses been reduced from previous audits? (Y/N)**

  Yes. The number of control deficiencies noted by the financial auditors in their management letters has decreased from two in FY08 to one in FY09 and none in the last six fiscal years.

FINANCIAL VIABILITY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Measurement #5-5

Bond Rating

Description

Bond ratings are a general indicator of financial viability; however the rating is not entirely in the District's control as ratings also take into consideration the condition of the local economy and the condition of the capital markets. A higher bond rating is desirable and can be viewed as one of several factors of financial health.

Performance Data

Year	Debt Type	Agency	Rating (underlying)
1998	COPs	S&P	A+
		Moody's	A2
2009	VRBO		not rated / negotiated sale
2009	COPs	S&P	AA-
2012	COPs	S&P	AA-

Analysis

When the District refinanced most of its long term debt in 2009, Standard & Poor's upgraded the District from "A+" to "AA-" for its fixed rate revenue bonds. In December 2012, S&P confirmed the rating of "AA-/Stable Outlook" for the issuance of new long term debt. "AA-" rating means that the District's debt is considered "High Grade/High Quality" in the bond market.

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

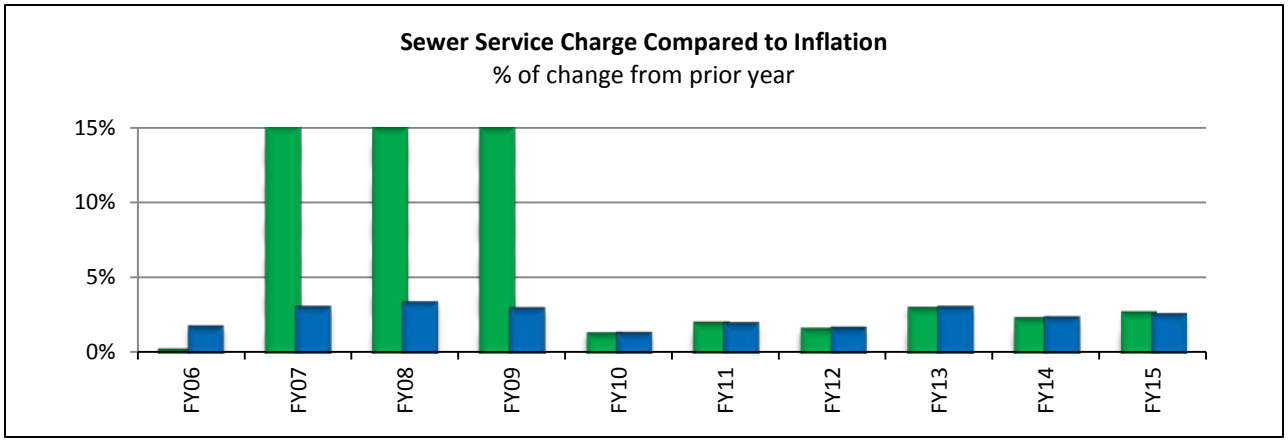
Measurement #5-6

Sewer Service Charges Compared to Inflation

Description

The annual increase in sewer service charges (SSC) compared with the Consumer Price Index for all Urban Consumers (CPI-U) in the San Francisco/Oakland/San Jose area (February).

Performance Data



Analysis

There were no SSC increases from FY02 through FY06. In FY07, the District began the first of three 15% increases to bring the rate up to meet operational demands and to get the rate back in line with inflationary impacts. For the last six fiscal years, the rate increased with CPI.

Rating	
Current Year	10-Year Trend
Watch	Watch

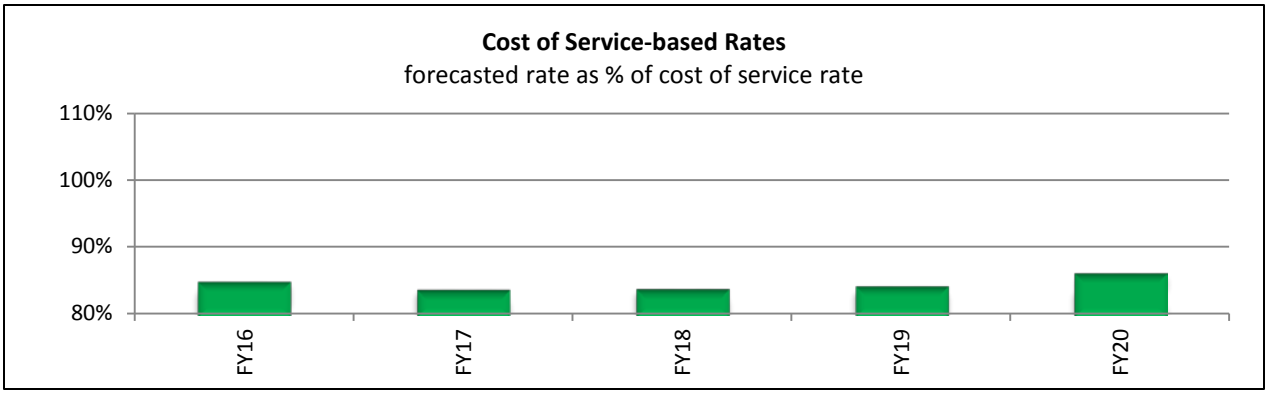
Measurement #5-7

Forecasted Rate Compared to Calculated Full Life-Cycle Cost of Service Rate

Description

The calculated sewer service charge rate, based on renewal and replacement of 3% of depreciable assets, is forecast out five years by the District as part of the budget development and long-term forecast process. This "life-cycle cost of service" rate is compared against the sewer service charge forecasted rate based on inflation assumptions. The District's rate based on forecasted increases should be close to 100% of the rate calculated using full life-cycle cost of service.

Performance Data



Analysis

Sewer Service Charge rates are set based on changes to the CPI. However, as part of the budget development process, the District also calculates what the rate should be based on life-cycle cost of service. This analysis is projected over the next five fiscal years. The calculations show that the calculated rate based on projected CPI is only about 84% that of the projected rate based on life cycle cost of service. The ratio is lower than the goal of 100%, meaning that the rate is too low in comparison to actual costs and may be inadequate to meet ongoing operational needs. Because the ratio is stable and not decreasing, and because the Board is scheduled to address rates in the Spring of 2016 as part of its 5-year rate setting process under Proposition 218, this measure was rated "watch."

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Measurement #5-8

Financial Reserves

Description

The District maintains several reserves in accordance with financial policies and in support of the District's overall financial health.

Performance Data

- **Does the District maintain an adequate Operating Reserve?**
  The District maintains an Operating Reserve that is equal to 15% of annual operating expenses. Because the vast majority of the District's revenues are predictable (they are tied to property tax payments), a larger reserve is not necessary. This revenue serves to assist the District during emergencies and other events where additional cash may be necessary. This reserve is fully funded.

- **Does the District maintain an adequate Cash Flow Reserve?**
  The District maintains a cash flow reserve sized so that on July 1 of every year, there is enough cash to cover all District expenses, including debt service, until mid-December, when sewer service charge revenues are remitted to the District from the County Assessor's office. This reserve is fully funded.

- **Does the District maintain a rate stabilization reserve to sustain operations during cycles of revenue fluctuation, in addition to operating reserves?**
  Reserves for rate stabilization and revenue fluctuation are not necessary at this time. The Operating Reserves functions to cover this need. Rate stabilization is not an issue given the methodology for revenue collection.

Analysis

Sewer service charges constitute over 85% of District operating revenues, with the significant majority of that revenue coming from residential customers. SSCs are collected as an assessment on the property tax statements, and the majority of rate revenue is based on fixed charges, not on consumption. These structural factors combine to provide adequate revenue stability for the District. The operating and cash flow reserves, as established in the District's financial policies, are fully funded and sufficient to cover timing fluctuations in revenue collection without impacting operational readiness.

INFRASTRUCTURE STABILITY

Rating	
Current Year	10-Year Trend
 Watch	 Watch

Measurement #6-1

Asset Inventory

Description

This is the percent of the District's critical assets that have been inventoried within the past 5-10 years.

Performance Data

Inventory is maintained with 2 asset management systems – one for Collections (Hansen) and one for the plant (MP2). Both systems track assets and condition assessments.

Analysis

The District has not conducted a physical inventory of its assets in the past 5 years, although there are several systems at the District that keep inventory of most of the District's assets. The Hansen database is updated regularly as repair work and condition assessment CATV work is completed. The MP2 database is populated with major assets, but still needs to be completed. All capital assets are also tracked in the Fixed Asset database used for financial reporting. This functional area will improve when the District implements an Asset Management Program.

INFRASTRUCTURE STABILITY

Rating	
Current Year	10-Year Trend
Watch	Satisfactory

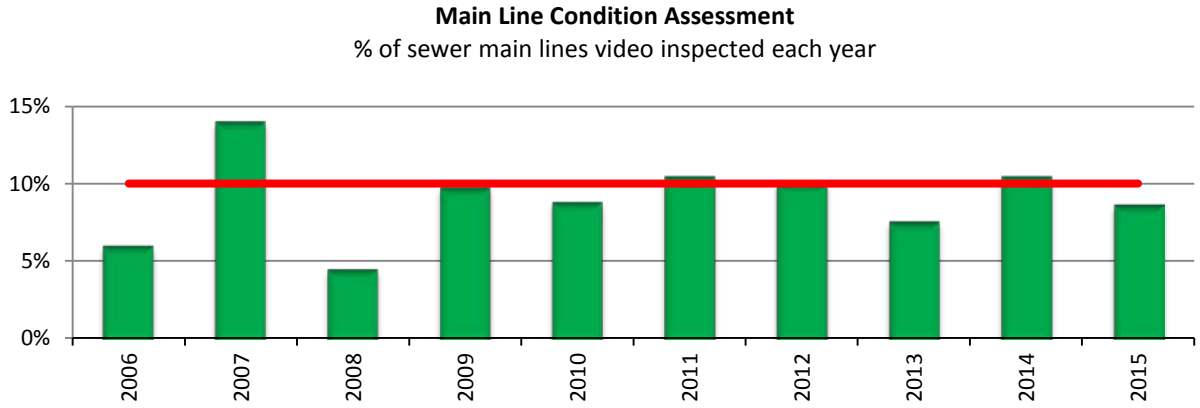
Measurement #6-2

Sewer Main Condition Assessment

Description

This graph shows the percent of sewer main lines that are video inspected each year and assessed for condition and maintenance problems.

Performance Data



Analysis

The District has consistently met or come close to its goal of 10% annually. The 2013 and 2015 drops in assessments were due to fewer people than usual (injuries and position vacancies) able to complete this task. In 2015, there was also additional effort put toward system repairs (lateral and manhole repairs and replacements) in specific areas to keep ahead of the City's road paving schedule, which pulled staff away from this activity.

INFRASTRUCTURE STABILITY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

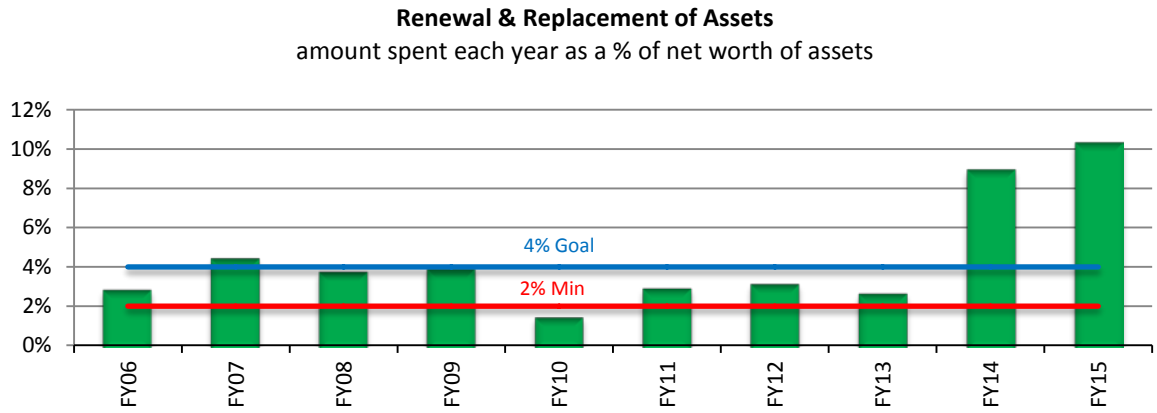
Measurement #6-3

Renewal & Replacement Expenses

Description

This graph shows the amount actually spent toward the renewal or replacement of capital assets divided by the total net worth of assets, shown as a percent.

Performance Data



Analysis

The District strives to replace between 2% and 4% of the value of its assets, on average, annually, although this is not necessarily the best measure to determine whether the District is investing sufficiently in asset replacement and rehabilitation. The ratio was up in FY14 and FY 15, and is anticipated to stay above the goal into FY16, as the IPS project is completed, and then fall back within the target range in future years.

INFRASTRUCTURE STABILITY

Rating	
Current Year	10-Year Trend
Satisfactory	Watch

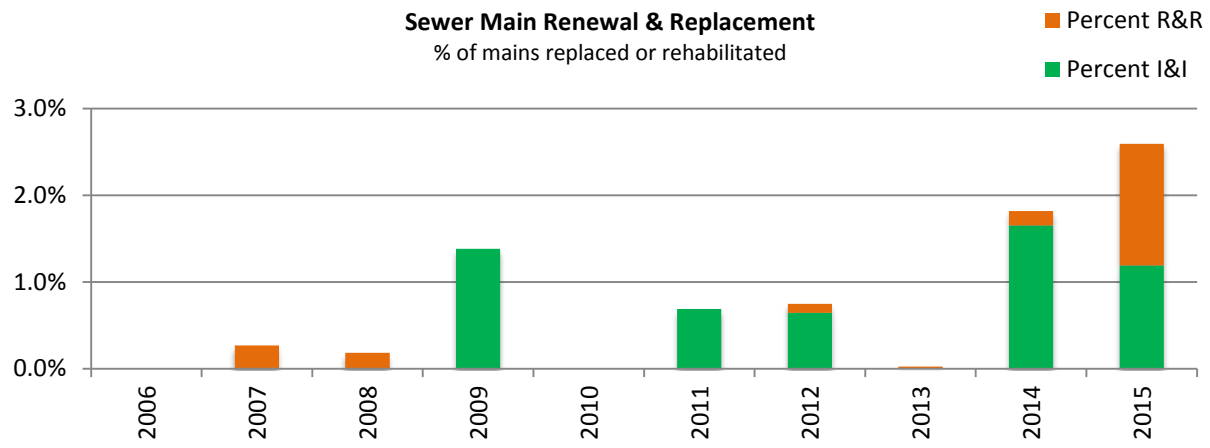
Measurement #6-4

Sewer Main Renewal & Replacement

Description

This graph shows the percent of sewer mains maintained by the District that have been replaced or rehabilitated annually. Inflow and infiltration (I&I) projects are predominantly lining projects designed to decrease stormwater and groundwater intrusion into the sewer pipes. Rehabilitation and replacement (R&R) projects line or replace sewer pipes based on condition assessment showing them to be deteriorating and losing structural integrity.

Performance Data



Analysis

The District started keeping track of this metric in 2006. The District records the mains as being replaced or rehabilitated only at the end of a capital project. The 2015 data represents projects completed in the year, regardless of the year they were started. While there have been large projects completed in the past two years, the five-year average is 1.2%. The District is scheduled to have a discussion about the appropriate level of replacement of sewer assets as part of its rate setting efforts in 2016.

INFRASTRUCTURE STABILITY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

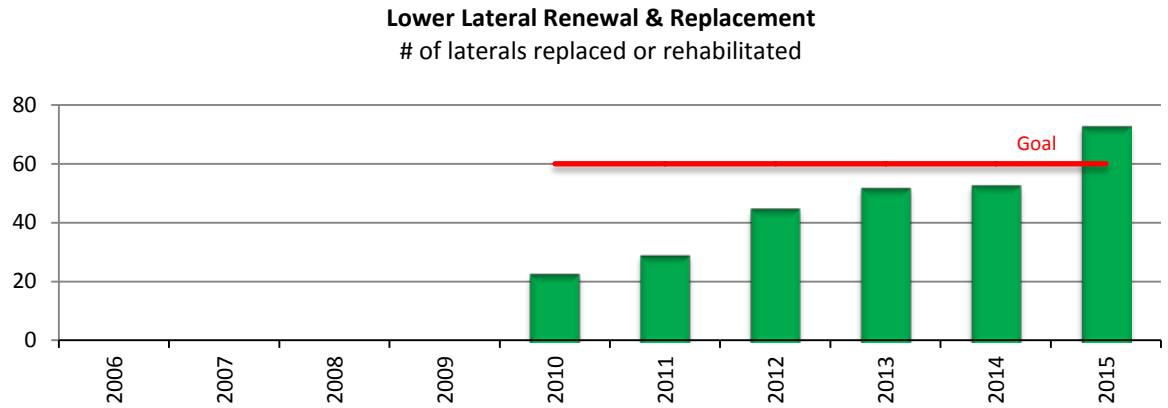
Measurement #6-5

Lower Sewer Lateral Renewal & Replacement

Description

This graph shows the number of lower sewer laterals maintained by the District that have been replaced annually by the Collection Department, understanding that lower laterals are also replaced when sewer mains are replaced as part of capital improvement projects. The aspirational goal is for the Collection Department to rehabilitate or replace at least 60 lower laterals annually.

Performance Data



Analysis

The District started keeping track of this metric in 2010 when it purchased the ability to line lower laterals itself, rather than contracting out. The District has established an aspirational goal of rehabilitating or replacing 60 lower laterals annually. The District has been making steady progress toward meeting the goal, and finally reached the goal by developing new methods for preparing for the implementing lining projects.

INFRASTRUCTURE STABILITY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

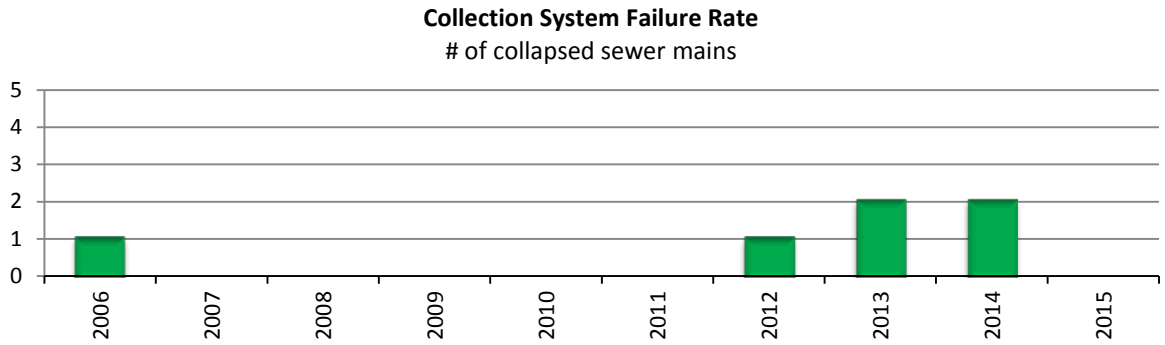
Measurement #6-6

Collection System Failure Rate

Description

A collection system failure is when a portion of sewer pipe collapses and flows become obstructed or uncontained from that collapse, rather than being caused by sediment, grease, roots or some other foreign object.

Performance Data



Analysis

There have been only a handful of repairs in the past 10 years that were required because of collapsed sewer pipe. There were no collapses in 2015.

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

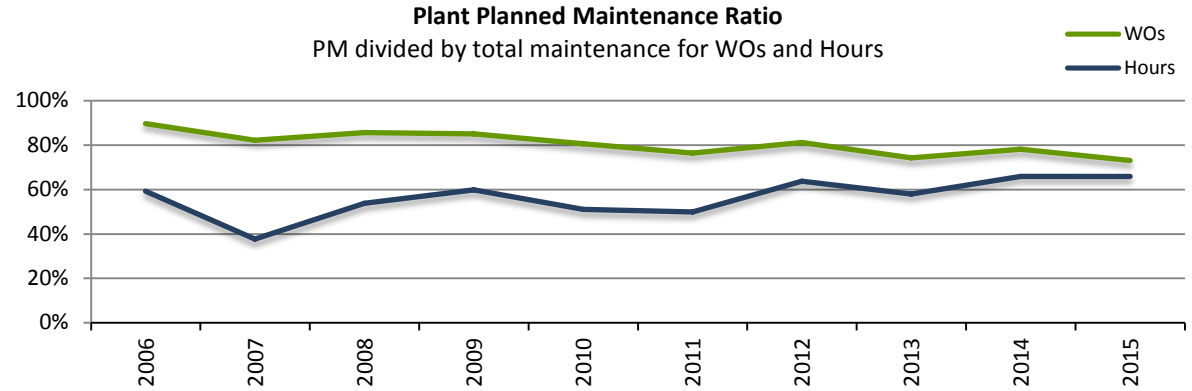
Measurement #6-7

Planned Maintenance Ratio – Treatment Plant

Description

There are two numbers here. The first is the percentage of the number of work orders (WOs) assigned to planned maintenance at the treatment plant divided by the total number of WOs for any maintenance activity (planned and corrective). The second is the same ratio, but uses the total number of hours worked instead of the number of work orders.

Performance Data



Analysis

The plant has been able to maintain a relatively consistent ratio of work orders, between 75% and 85% on preventive maintenance activities, and 15-25% on corrective maintenance activities. The ratio for hours is lower, as corrective maintenance items tend to take more time to complete than performing preventive maintenance.

INFRASTRUCTURE STABILITY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

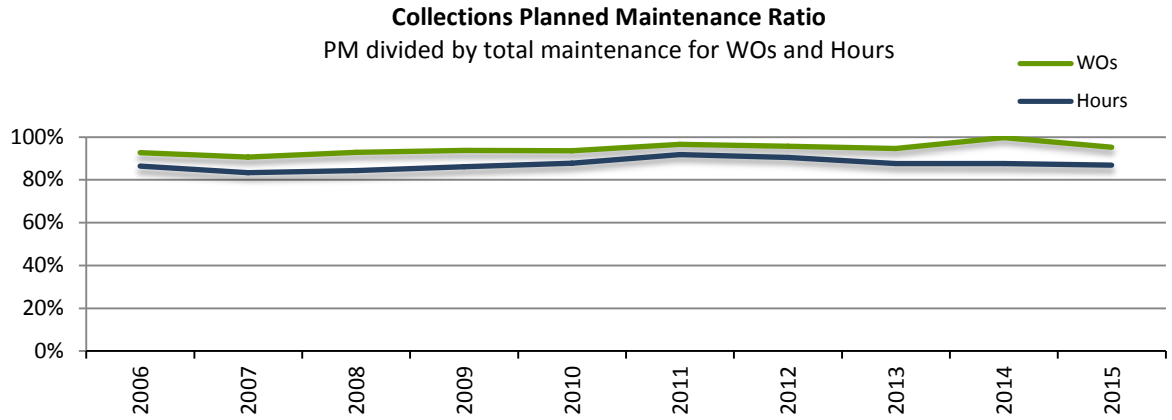
Measurement #6-8

Planned Maintenance Ratio – Collections

Description

This is the total number of staff hours spent on planned maintenance in the collection system divided by the total number of hours spent doing any maintenance activity (planned and corrective). Numbers closer to 100% means that the focus is on planned maintenance activities, rather than responding to emergency repairs.

Performance Data



Analysis

The collection system has consistently maintained a very high ratio of planned maintenance to total maintenance, both for the number of work orders and for the number of hours worked.

INFRASTRUCTURE STABILITY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

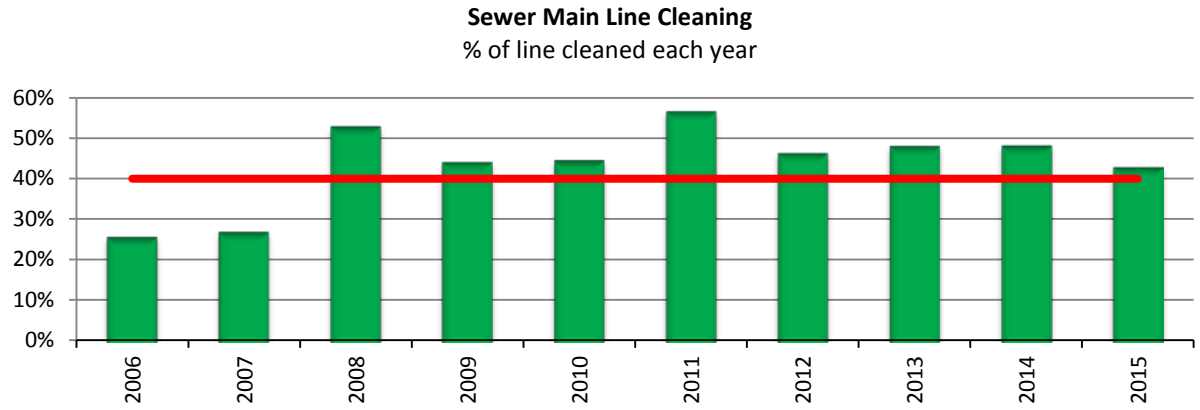
Measurement #6-9

Sewer Main Line Cleaning

Description

This chart shows the percentage of sewer main lines cleaned during the year, compared to the District's goal of 40% cleaned annually.

Performance Data



Analysis

Over the past decade, the District has increased its efforts in preventive maintenance and cleaning of sewer mains, with the goal of cleaning the equivalent of 40% of its sewer mains every year. The District has met this goal for the last eight years.

INFRASTRUCTURE STABILITY

Rating	
Current Year	10-Year Trend
Satisfactory	Satisfactory

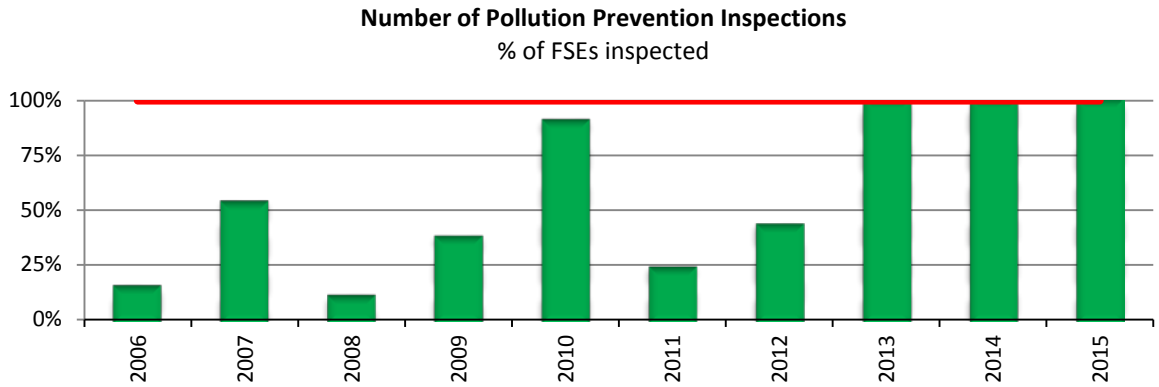
Measurement #6-10

Pollution Prevention Inspections

Description

Pollution prevention inspections ensure that restaurants and other Food Service Establishments (FSEs) are properly maintaining their grease interceptors and following Best Management Practices. Properly maintaining this equipment results in fewer corrective maintenance problems in the collections system. The goal is to inspect every FSE with a grease trap or interceptor at least once per year.

Performance Data



Analysis

In 2011, the Board adopted new Best Management Practices (BMPs) for fats, oil and grease management by food service establishments (FSEs). In 2012, the District increased its inspections for compliance with the District's Sewer Use Ordinance and with the BMPs. With concerted effort applied in this area, every restaurant with a grease trap or interceptor was inspected in the last three years.

OPERATIONAL RESILIENCY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

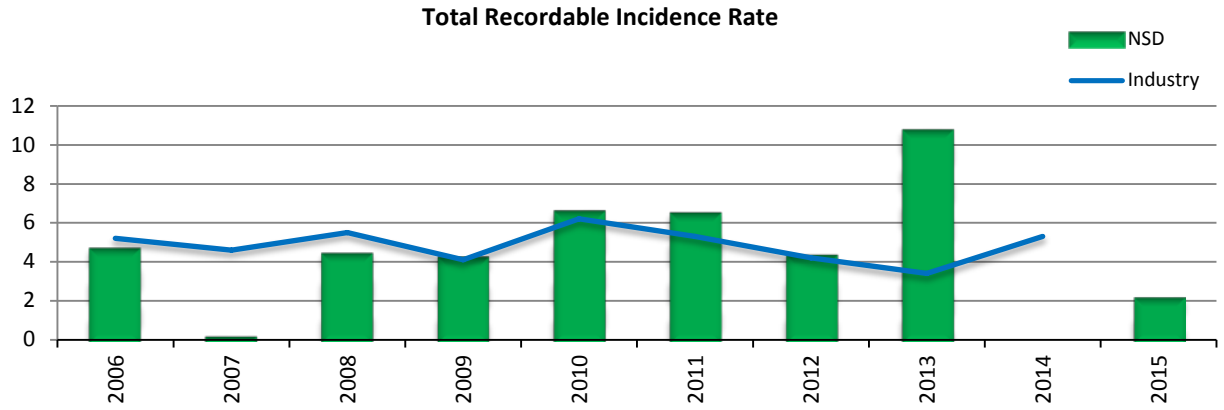
Measurement #7-1

Total Recordable Incidence Rate

Description

This is the number of work-related injuries and illnesses times 200,000 divided by the number of employee hours worked. This is a standard formula used by OSHA to normalize data. The 200,000 represents 100 employees working 40 hours per week, 50 weeks per year, and provides for the comparability of incidence rates.

Performance Data



Analysis

The District is compared here to the "Utility: Sewage Treatment Facility" industry category as reported by the U.S. Bureau of Labor Statistics. Over the past 10 years, the District's incidence rate has been lower or comparable to the national average, with the exception of 2013. The District's incident rate in 2015 was a less than half the national average for 2014 (the most recent data available).

OPERATIONAL RESILIENCY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

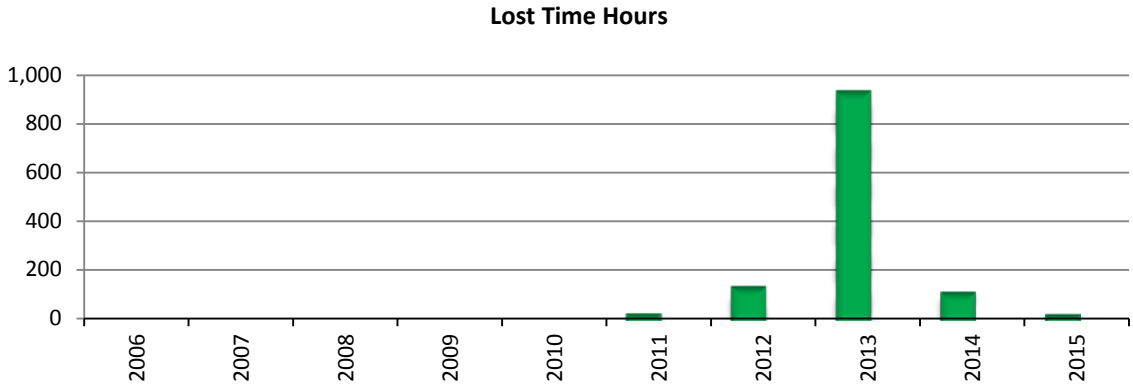
Measurement #7-2

Lost Time Hours

Description

This is the number of hours that a worker could not work due to a work-related injury or illness. Lost time begins to accrue once an employee misses one full day of work.

Performance Data



Analysis

The District did not have a lost time accident from 2005 through 2010. The District continues to have exceptionally low lost time due to workplace injury or illness. In 2012, there was 1 lost time injury. The 2012 injury resulted in significant lost time in 2013. The 2014 hours are related to the same injury in 2012. While the increases from 2012 to 2014 appear to be significant, the fact that they are related to one incident in 2012 has a mitigating impact on the rating. In 2015, there was one injury resulting in 8 hours of lost time.

Rating	
Current Year	10-Year Trend
Unsatisfactory	Watch

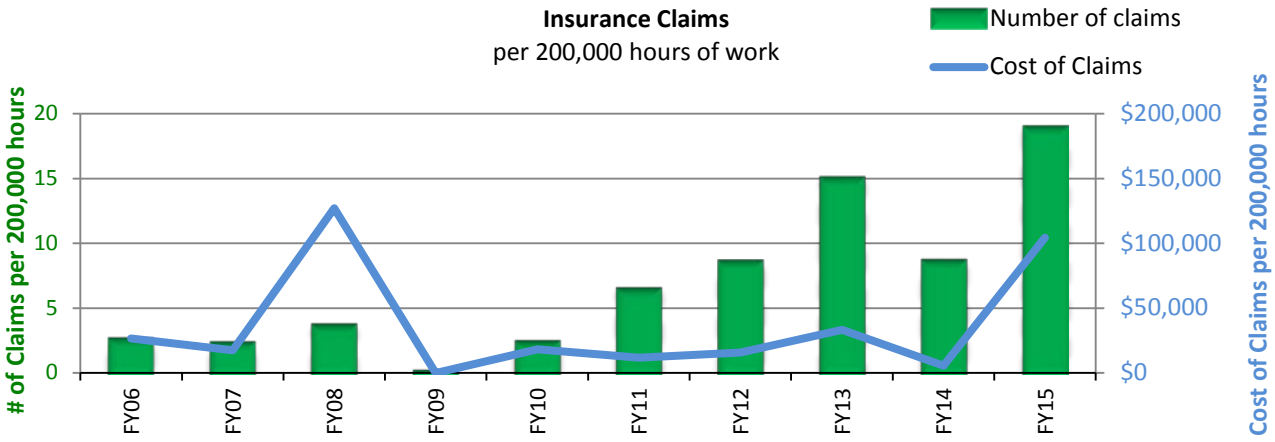
Measurement #7-3

Insurance Claims

Description

This is the number of and total amount paid out for general liability and automobile liability claims per 200,000 hours worked (the equivalent of 100 employees working one year). It is a standard practice to convert claims in this way to allow for comparison across organizations and industries, as it normalizes the data so that small and large organizations can be compared on an equal basis.

Performance Data



Analysis

After a period of relatively constant and low rates of insurance claims per year, the District has seen a significant increase in the past several years, from one claim in 2010 to seven claims in 2013 and nine in 2015. Of those in 2015, four were vehicle accidents (2 caused by others), two were damages caused by manhole covers, two were sewer backups into private residences, and one was wind damage at the treatment plant from a storm.

Two of the incidents, one vehicle accident and one sewer backup, caused damages over $10,000. The cost of claims is paid through the District's liability coverage provider, and impacts premiums in future years.

Rating	
Current Year	10-Year Trend
Satisfactory	Satisfactory

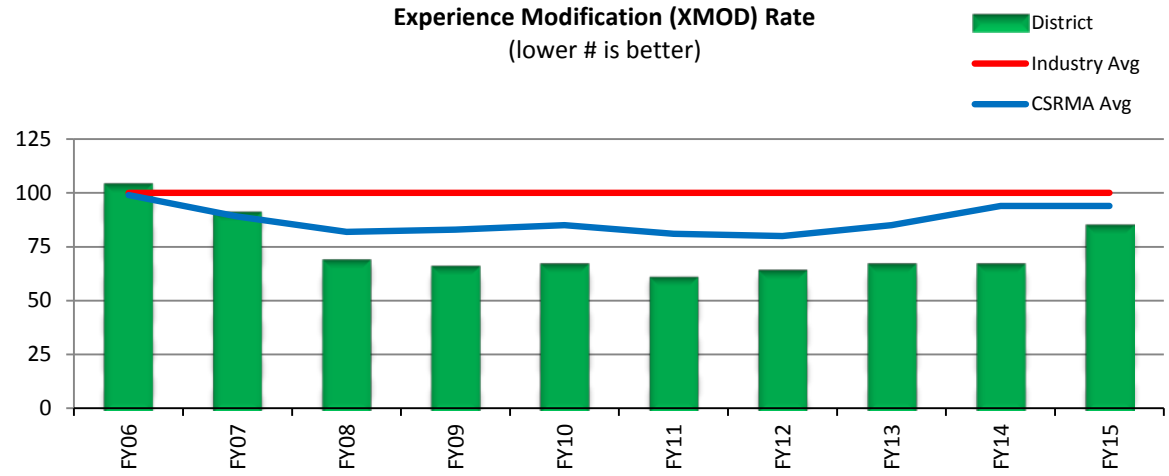
Measurement #7-4

Experience Modification (XMOD) Rate

Description

This is the rate used by the workers compensation insurance company to determine the District's workers compensation experience. One hundred is considered the industry average. Numbers over 100 mean that the District has more claims than the industry average, while numbers below 100 are better than the average. CSRMA is the insurance pool the District is in for Workers' Compensation claims and includes only sanitation districts in the state of California.

Performance Data



Analysis

Through the implementation of several safety programs at the District, the District's XMOD rate has remained lower than the industry average and the Worker's Comp insurance pool representing similar facilities in California for the past eight years. The slight increase in FY15 is primarily the result of lost time from two incidents in 2013, as the impacts of these incidents on the XMOD is delayed and smoothed over three years.

OPERATIONAL RESILIENCY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Measurement #7-5

Emergency Response Plans

Description

Are Emergency Response Plans in place for the following? (Y/N)

Performance Data

- **Treatment Plant:** Yes
- **Lift Stations:** Yes
- **Collections:** Yes
- **Administration:** Yes

Analysis

Emergency Response Plans for the plant and lift stations are in place, and are trained and practiced regularly. The Collection System staff has plans and equipment for system bypasses.

OPERATIONAL RESILIENCY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

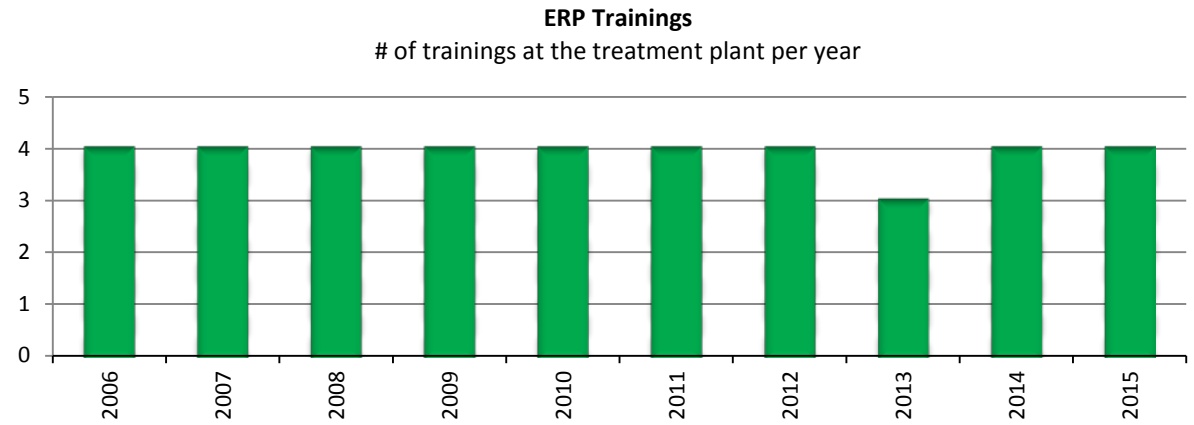
Measurement #7-6

Emergency Response Plan (ERP) Training

Description

This is the number of emergency response trainings conducted by the treatment plant per year.

Performance Data



Analysis

The Plant trains on and practices its Emergency Response Plan quarterly. The plant has also started the practice of training Collection System, Administration and Engineering staff once per year on the plant's ERP. In 2013, the summer quarter training was not conducted because of the move of the Administration, Engineering and Collection System staff to their new locations adjacent to the plant. In lieu of quarterly training, the time was spent integrating these departments into the Emergency Response Plan at the plant. In 2014 and 2015, trainings were again conducted quarterly.

OPERATIONAL RESILIENCY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

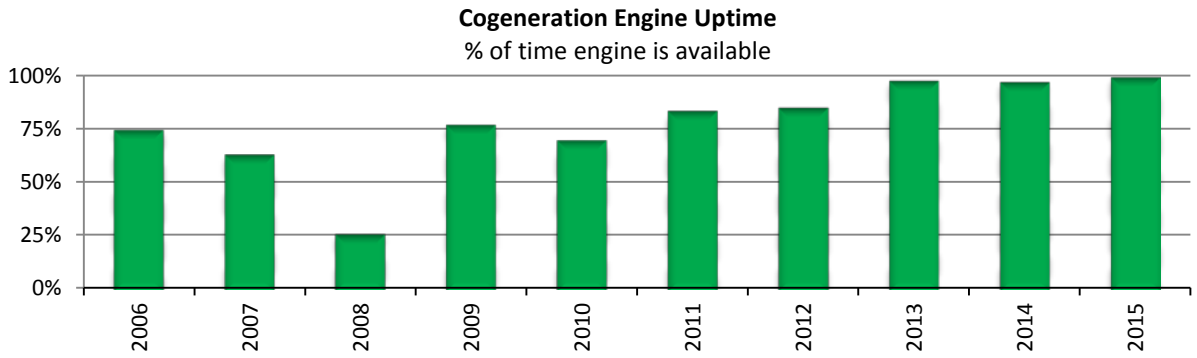
Measurement #7-7

Uptime for Cogeneration Engine

Description

The cogeneration engine ("Cogen") is critical equipment to reduce purchased electricity demand. The use of this equipment also reduced the need to operate the boiler. Increased boiler operation would require extensive and costly upgrades to the boiler to meet air quality standards.

Performance Data



Analysis

Since 2009, the District has maintained the Cogen at an optimal level to provide for significant uptime. With increased FOG (fats, oils and grease) deliveries at the FOG receiving station in recent years, more biogas has been produced allowing for even greater operating efficiencies for the Cogen unit. The Dystor membrane over the day storage tank was damaged in late 2014, but staff was able to continue to capture biogas for use in producing energy. In 2015, the Cogen unit was operating 98% of the time.

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Measurement #7-8

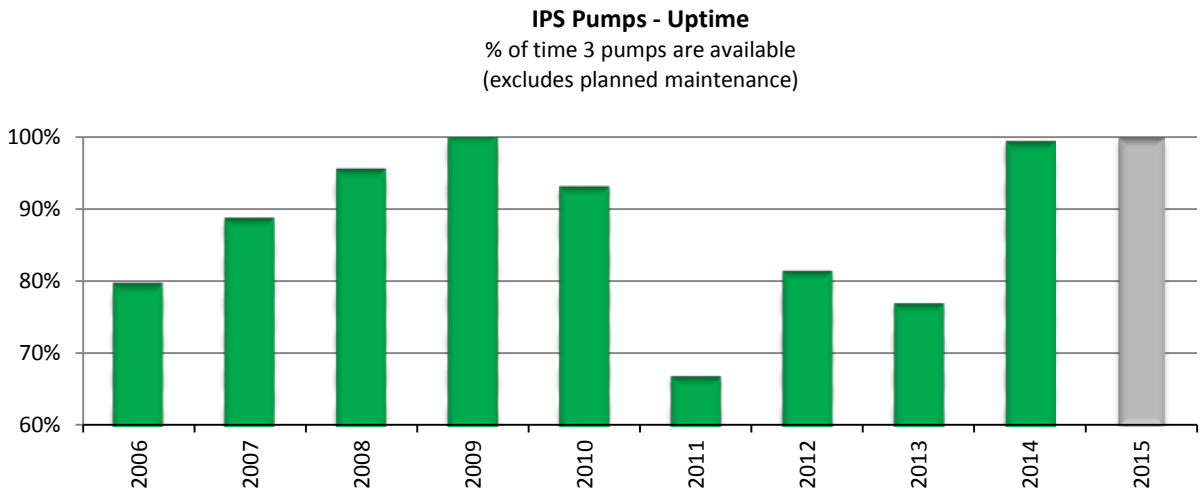
Uptime for Pumps at Influent Pump Station

Description

Up through 2014, there were three pumps at the Influent Pump Station (IPS), the pump station that lifts the sewage up from the collection system and into the plant Headworks. All three pumps at IPS were necessary during significant storm events to handle the high flow volumes. Uptime was defined as the percentage of days that all three pumps were operational and in service.

In 2015, the District completed construction and began operation of a new Influent Pump Station. This station has six pumps, for significantly greater redundancy and capacity during high flow events. ***The measurement of "percent of time three pumps are available" is no longer a meaningful measure for the new facility, and a new measure needs to be developed.***

Performance Data



Analysis

VFD replacement parts have been particularly difficult to acquire for the pumps in the old IPS, as they needed to be ordered directly from Italy. In previous years, staff stockpiled some of the more difficult parts to acquire, resulting in several failures being fixed within a week of the breakdown. In 2011, the #1 pump was down for 122 days due to 2 different events that caused catastrophic failures, and there were significant delays in sourcing parts for the repairs. In 2012, Pump #1 was down for 10 days and Pump #3 was down for 59 days. In 2013, Pump #2 was down for 76 days. Since then, the station has not seen significant downtime due to pump failures. Construction on the IPS replacement in 2013 and 2014 has resulted the installation of six new pumps that are more reliable, with the increased number contributing to increased resiliency.

OPERATIONAL RESILIENCY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Measurement #7-9

Operational Resiliency under Emergency Conditions – Power

Description

This is the number of hours that backup power is available at the treatment plant (including the Influent Pump Station) and at the other three pump stations in the collections system.

Performance Data

Treatment Plant	23.5 hours
West Napa PS	20.5 hours
Riverpark PS	40.0 hours
Stonecrest PS	47.5 hours

Analysis

These times indicate how long the facilities could operate during peak pumping without electricity from the grid and without additional deliveries of diesel fuel for the generators. During power outages longer than 20 hours, staff would be required to refuel the generator at West Napa Pump Station.

OPERATIONAL RESILIENCY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Measurement #7-10

Operational Resiliency under Emergency Conditions – Critical Parts and Equipment

Description

This is a measure or evaluation of lead times for the repair or replacement of operationally critical parts or equipment.

Analysis

- **Influent Pump Station (IPS)** – With the completion of the new Influent Pump Station and the installation of new pumps, this station now has built-in redundancy. Additionally, the replacement parts for these pumps are easier to maintain in inventory and more timely to replace. The IPS is now considered "satisfactory" in its resiliency rating for critical parts and equipment.
- **Backup Power** – Plant backup generators are tested two (2) hours every month, with preventive maintenance performed annually. In response to some problems in the high voltage distribution system a few years back, the District performs annual preventive maintenance on the high voltage distribution system and has implement some upgrades/redundancies to avoid future failures.

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Measurement #7-11

Operational Resiliency under Emergency Conditions – Staff

Description

This is a measure of the ability for backup staff to cover critical operations and maintenance positions.

Performance Data

- **Collections:** All collection system workers are cross trained on tasks and equipment. Regular tasks are rotated to ensure continued familiarity with all tasks during emergency events. Of the ten field workers, seven are on the standby rotation.

- **Plant Operations, Maintenance and Laboratory:** All critical staff positions have backup staff trained to complete all required tasks of that position, and supervisors are trained to complete all tasks within their work unit. The Plant Manager position has limited coverage by the Operations Supervisor.

- **Critical Positions:** For the most critical positions where this is no redundancy in employee coverage, plans have been developed that include instructions on how to perform time-sensitive or regulatory-required activities, including phone numbers of those who could help someone perform the tasks. All critical tasks have assigned backup personnel, and all backups have been trained on necessary procedures.

Analysis

There is significant cross training for critical operations and maintenance positions to ensure adequate coverage with the appropriate skills, experiences and certifications.

OPERATIONAL RESILIENCY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Measurement #7-12

Treatment Operations Resiliency

Description

This measure is the minimum daily demand that can be met with the treatment plant offline. "Minimum daily demand" is defined as the average daily demand for the lowest production month of the year.

Performance Data

88 days of capacity

Analysis

The ponds provide sufficient storage should the plant be unable to produce water with the capacity of storage being dependent on the time of year. At the beginning of the summer season, the ponds are at the lowest level and at an influent flow at 7 MGD, there is 88 days of capacity, assuming there is no demand for recycled water from customers or reclamation that could extend that time horizon. At the end of summer, and at other times during the year, the pond capacity is less.

COMMUNITY SUSTAINABILITY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Measurement #8-1

Watershed-based Infrastructure Planning

Description

This measure addresses the District's efforts to consider watershed-based approaches when making management decisions affecting infrastructure planning and investment options.

Performance Data

- Does the utility employ alternative, watershed-based approaches to align infrastructure decisions with overall watershed goals and potentially reduce infrastructure costs? (Y/N)

  Yes.

Analysis

The District is investing in recycled water infrastructure greater than is necessary to meet the current needs of its ratepayers to avoid summer river discharge. This infrastructure has been directed toward locations within the watershed that are at risk of significant groundwater depletion, so that recycled water can offset the overdraft in these groundwater deficient areas.

COMMUNITY SUSTAINABILITY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Measurement #8-2

Green Infrastructure - Programs

Description

"Green infrastructure" includes both the built and natural/non-built environment. This measure assesses the extent to which the District promotes or engages in practices that protect natural resources and the environment in its community programs.

Performance Data

- Has the District explored green infrastructure approaches and opportunities that are aligned with the District's mandate, goals and objectives and community interests? (Y/N)

  Yes.

Analysis

The District has implemented the following programs or practices:

- Recycled Water Delivery – sold to customers to offset the use of groundwater or city-provided potable water for irrigation.
- Toilet Rebate Program – to promote reduced potable water consumption.
- Clothes Washer Rebate Program – to encourage consumers to purchase appliances that use less potable water.
- Regional Trails Support – work cooperatively with regional trail designers and advocates to connect a non-motorized multi-modal trail segment adjacent to the treatment plant.
- Pharmaceutical Disposal Program – works with local clinics to encourage proper disposal of medications.
- Fats, Oils and Grease (FOG) Receiving Station – accept grease from food service establishment grease interceptors, reducing the need to truck this waste to Oakland, and converting the waste into biogas that can be used to generate electricity.
- Recycle More Program – partner with the City of Napa on a curbside collection program to reuse items that otherwise might be disposed in landfill. This program includes free curbside collection of residential cooking oil which is used to make biodiesel.

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Measurement #8-3

Green Infrastructure – New Infrastructure

Description

"Green infrastructure" includes both the built and natural/non-built environment. This measure assesses the extent to which the District promotes or engages in practices that protect natural resources and the environment in the development of new infrastructure.

Performance Data

- Does the District have procedures that incorporate green infrastructure approaches and performance into new infrastructure investments? (Y/N)

  Yes.

Analysis

The District has implemented the following programs or practices:

- Green Building – the new Administration/Engineering building and corporation yard incorporates "green" features and complies with the "green building" code.
- Electricity Self-Generation – the District has studied ways to use the plant's resources (waste products, land) for the generation of alternative energy sources (methane, solar, wind, etc.). In 2012, the District completed its Fats, Oil and Grease (FOG) Receiving Station that will result in the District generating on its own about 40% of its electricity needs.
- Lateral Lining System – the District started using a trenchless system for lining laterals, which is used in lieu of digging trenches for the repair and replacement of laterals. This process reduces waste through reusing existing pipe rather than disposal, and reduces the use of asphalt, cement and rock to backfill the trench. There is also less diesel emissions from reduced backhoe and dump truck use.
- Pipe Bursting and Cured-in-Place Pipe (CIPP) Lining – the District has developed a preference for pipe bursting or CIPP lining to replace or rehabilitate sewer mains, wherever feasible. These processes eliminate most of the trenching required, thus reducing landfill waste, reducing the use of rock, cement and asphalt to backfill, and reducing diesel emissions from associated equipment.
- Solar Power – In 2015, the District entered into a long-term contract for a private company to build a 1-megawatt photovoltaic solar array on District property, with the electricity generated being sold to the District to offset electricity from PG&E. That project will be constructed in 2016.

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

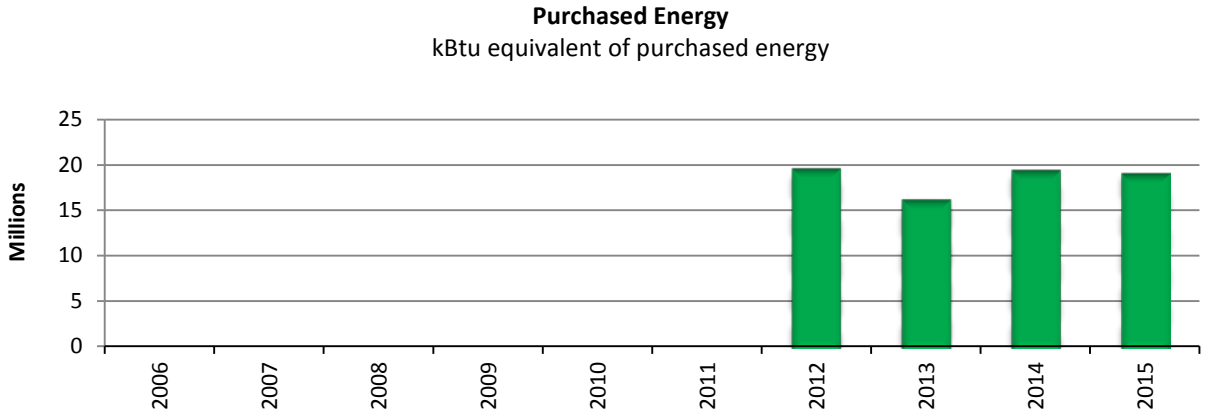
Measurement #8-4

Greenhouse Gas Emissions – Purchased Energy

Description

One source of greenhouse gas emissions is the generation of power. The goal of the District is to maximize its ability to produce its own heat and electricity and reduce the amount of energy that it purchases. The chart shows the amount of energy purchased from electricity, natural gas, fuel oil and propane, converted to kBtu equivalents, used in the treatment plant.

Performance Data



Analysis

The District started collecting this information in 2012. There is insufficient data to determine a baseline for this measurement. In 2016, the District will complete installing solar panels that will reduce the amount of purchased energy.

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

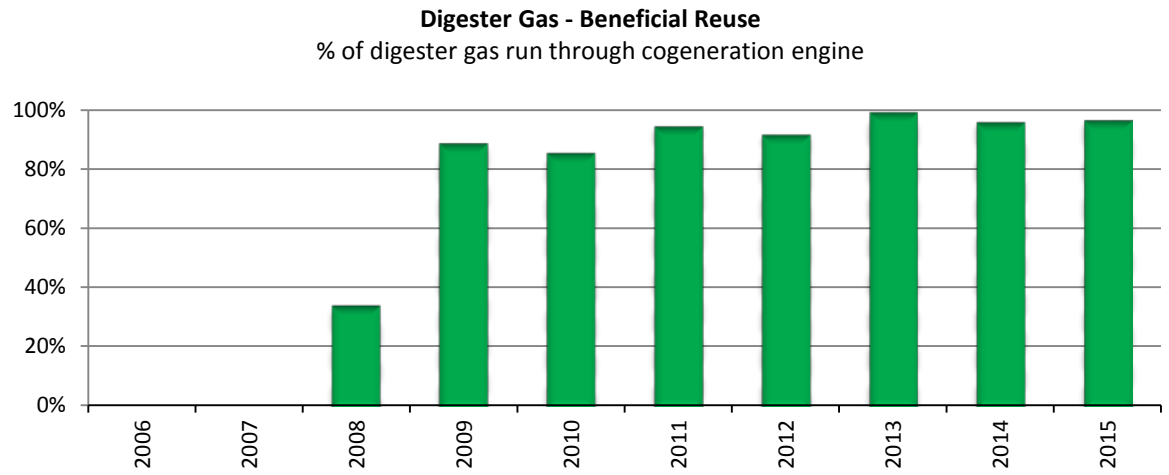
Measurement #8-5

Digester Gas Beneficial Reuse

Description

Biogas (predominantly methane) is a natural byproduct of anaerobic digestion and a greenhouse gas. By using the biogas as a fuel source to generate electricity, the District is reducing the exhaust of methane into the atmosphere (either directly or through flaring the gas). This is a measure of the percentage of digester gas that is used as fuel in the cogeneration engine to create electricity and heat, as opposed to flaring the biogas.

Performance Data



Analysis

One goal of the District is to decrease the amount of digester gas flared (no beneficial reuse) and to increase the use of digester gas for electricity consumption through its cogeneration engine (beneficial reuse). Increased use of digester gas and decreased use of natural gas and purchased electricity will result in a net decrease in greenhouse gas emissions. The data shows a positive trend in putting the digester gas to beneficial reuse, with over 95% of digester gas being used in the cogeneration engine in the last three years.

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

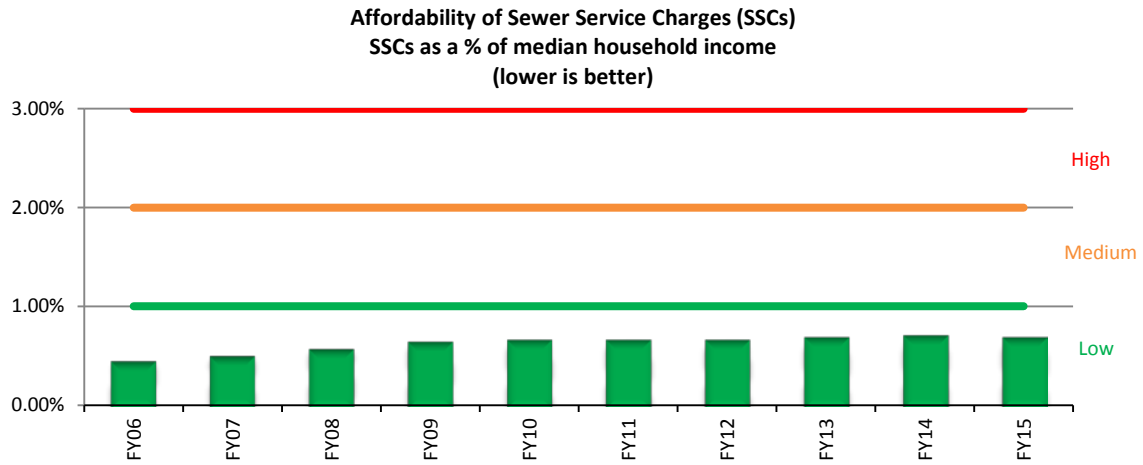
Measurement #8-6

Sewer Service Charges – Affordability

Description

Affordability is subjective. However, tracked over time, the District can evaluate whether the sewer service charges (SSCs) are becoming more or less affordable as compared to median household incomes (MHI) for the Napa County, using U.S. Census Bureau data. The U.S. EPA's 1997 Financial Capability Assessment established that communities with sewer charges between 0% and 1% of MHI have a "low" financial burden, between 1% and 2% of MHI have a "medium" burden, and over 2% as having a "high" burden.

Performance Data



Analysis

The SSC as a percentage of Median Household Income (MHI) went up from FY07 to FY09, as expected, given the 15% annual fee increases during this time. The SSC as a ratio of MHI has remained steady for the past five years at a rate well within the "low" financial burden range.

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

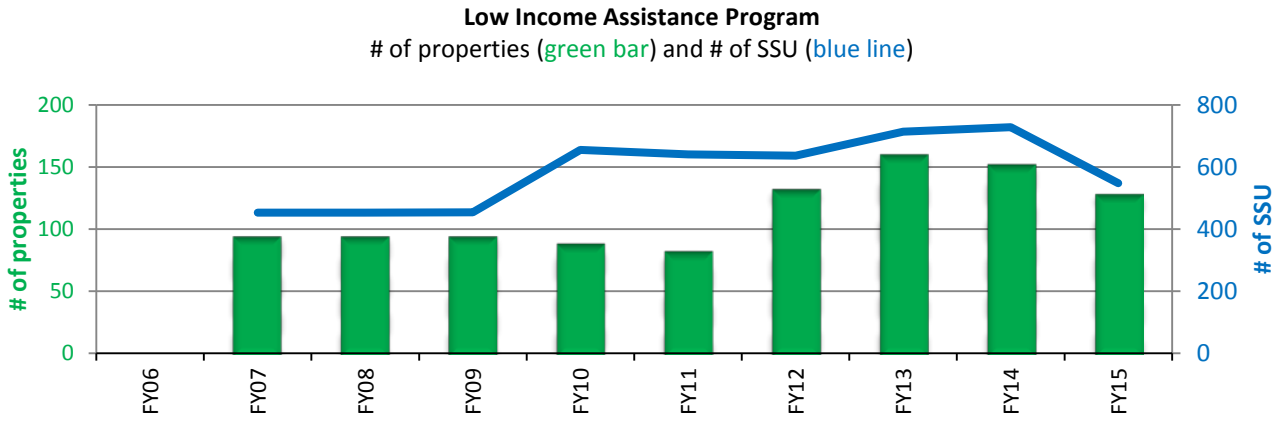
Measurement #8-7

Low Income Billing Assistance

Description

This measures the number of households that are enrolled in the District's Low Income Assistance Program for annual sewer service charges. The number of individual properties in the program is graphed (green bars), as well as the number of Sewer Service Units (SSU) that those properties represent (blue line). These numbers are different, as there may be several low income housing units situated on a single property or tax lot. For example, a multi-family apartment complex that has 10 affordable housing units in it would count as 1 property and 10 SSUs in the chart.

Performance Data



Analysis

This program began in FY07. At the same time the District began a process to increase sewer service charges by 15% per year for three years. In FY15, the program provided a reduction of $132.52 (28%) per household from the annual charges ($469.82). As anticipated with the economic climate, the number of properties partaking in this program increased from FY12 through FY14 from prior years. As the economy improved, the numbers in FY15 reduced as expected.

WATER RESOURCE ADEQUACY

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

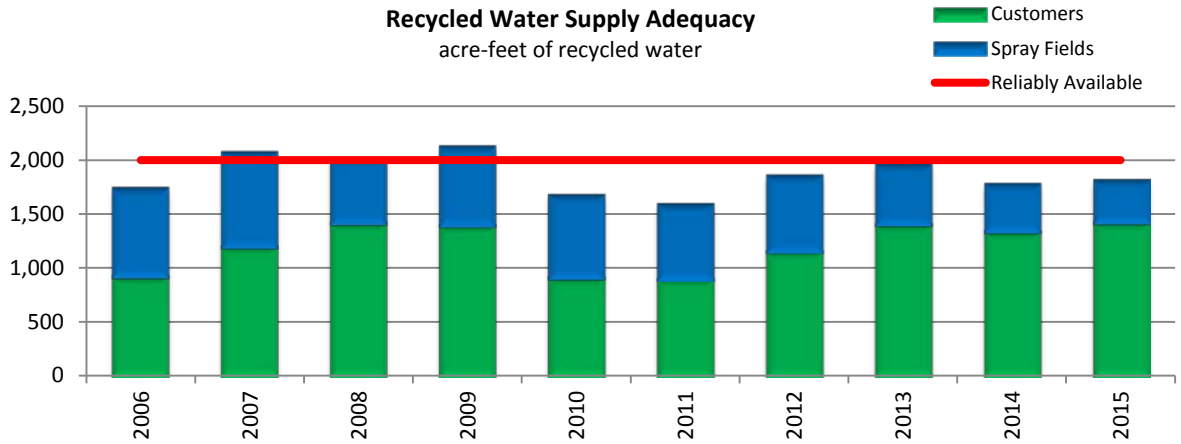
Measurement #9-1

Short-Term Recycled Water Supply Adequacy

Description

This chart compares three things: 1) the amount of recycled water that the District could reliably provide during the summer months for irrigation purposes, 2) how much it did produce for recycled water customers and 3) how much it produced for spray field disposal.

Performance Data



Analysis

Demand by recycled water customers is approximately between 850 and 1,400 acre-feet per year, depending on weather and irrigation needs. With the District able to produce reliably approximately 2,000 acre-feet of recycled water per year during the irrigation season, there is sufficient recycled water supply for its current customers. In 2016, it is expected that the amount of water that can be reliably available and the amount used by customers will increase at the new MST and LCWD customers begin to use recycled water.

WATER RESOURCE ADEQUACY

Rating	
Current Year	10-Year Trend
Watch	Watch

Measurement #9-2

Long-Term Recycled Water Supply Adequacy

Description

This table shows the current and potential future demands on recycled water, in acre-feet, for a "typical" weather year.

Performance Data

Current Recycled Water Supply: 2,000 Acre-feet

	Estimated Demand	Per Board Policy
Existing Uses		
Existing RW Customers	1,200	1,400
District Use	100	100
Kennedy Park & Napa Valley College	85	(incl. above)
Existing Commitments		
Montelcino Golf Course	300	300
Valley Gate Vineyards	85	100
Kirkland Ranch	15	(incl. above)
Napa State Hospital	250	200
Stanly Ranch/St. Regis	200	200
Infill-Industrial Areas	50	250
MST Area	500	700
Los Carneros WD	450	450
Subtotal Existing Uses & Commitments	***3,235***	***3,700 acre-feet***
Recycled Water Surplus / (Deficit)	***(1,235)***	***(1,700) acre-feet***

Current and Planned Recycled Water Supply: 3,700 Acre-feet

Existing uses and Commitments	***3,235***	***3,700***
Other Possible Uses		
Los Carneros Water District	1,150	1,150
MST Area	200	0
Suscol Mountain Vineyard	150	150
Subtotal Other Possible Areas	***1,500***	***1,300 acre-feet***
Total Potential Uses	***4,735***	***5,000 acre-feet***
Current and Planned RW Surplus / (Deficit)	***(1,035)***	***(1,300) acre-feet***

Analysis

If all of the existing commitments were to complete development or transition to recycled water, the District would be in danger of not meeting its current recycled water commitments. To meet the projected long-term recycled water demand, the District completed construction of an expansion to its recycled water production system. The expanded system will produce enough water for the existing uses and commitments per Board policy, but will be inadequate to meet all of the possible future user needs. Additional storage sites for recycled water would most likely be needed to provide for the projected long-term demand.

STAKEHOLDER UNDERSTANDING & SUPPORT

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

Measurement #10-1

Stakeholder Consultation

Description

This measure addresses the District's actions to reach out to and consult with stakeholders about District matters, including the District's goals, objectives and management decisions.

Performance Data

- Does the District identify stakeholders, conduct outreach, and actively consult with stakeholders about matters? (Y/N)

  Yes.

Analysis

The District has consulted stakeholders and the general public on the following projects:

- **Winery Waste Forum** (2015) – Public meeting with interested stakeholders to discuss various options regarding winery waste that is trucked outside of Napa County for treatment or disposal.
- **Sewer Service Charge Rate Study** (2015) – public meeting to specific stakeholders on a study recommending increase to the sewer service charges in 2016.
- **Capacity Charge Methodology** (2014) – three public meetings and presentations to specific individuals on a study recommending changes to the methodologies used for calculating capacity charges for commercial buildings, restaurants and industrial users.
- **Recycled Water User Agreements** (2014) – Public meeting with current and future recycled water users, seeking input on the proposed new recycled water user agreements.
- **Winery Industrial User Permits** (2013) – public meetings and presentations to the Vintners Association and Chamber of Commerce on efforts to bring unpermitted wineries into the Industrial User program.
- **MST Recycled Water Pipeline** (2012 and 2013) – partnered with the County in their outreach efforts associated with the new recycled water pipeline in the MST area.
- **Recycled Water Rate Policy** (2011) – held public meetings and small meetings with interested stakeholders regarding the methodology and rate structure for recycled water rates.
- **Recycled Water Policy** (2010) – requesting written feedback from stakeholders, inviting stakeholders to present views to Board, presentation to Chamber of Commerce, soliciting feedback from general public via press release and website comment form.
- **Capacity Charges Increase** (2009, 2010) – meetings with city staff, residential and commercial developers, and building industry association; invitations to present views to Board, presentation to Chamber of Commerce.

Rating	
Current Year	10-Year Trend
Watch	Watch

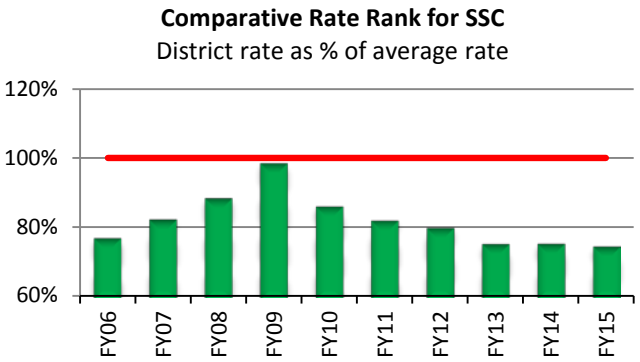
Measurement #10-2

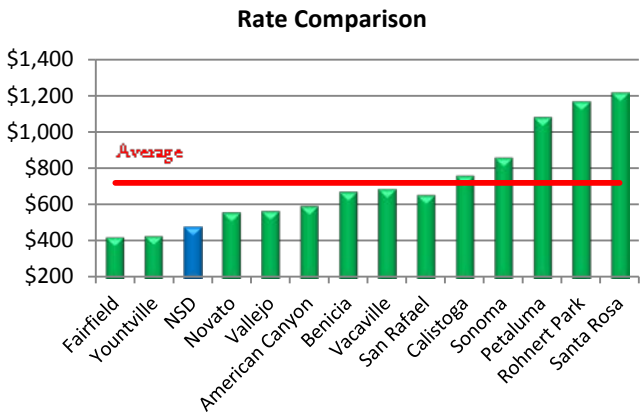
Comparative Rate Rank

Description

This measure depicts how the District's sewer service charge compares to similar service providers in the region (i.e., local area wastewater providers with treatment and collection systems). This measure takes the District's sewer service charge (SSC) and divides it by the average SSC for comparable wastewater providers in the region. A number over 100% means the District's rate is higher than the area average, while less than 100% means the District's rate is lower than the area average.

Performance Data





Analysis

The three years of 15% increases from FY 07 to FY09 saw the District return to match the regional average SSC. Since then, other agencies have increased their SSCs at rates greater than CPI, resulting in NSD's rate being lower than the regional average. While a lower than average rate is beneficial to rate payers, it may also be an indication that the rate is not keeping up with operational costs, maintenance demands and the necessary capital improvements of the District. The rapid drop from 100% to 74% of the average resulted in the "watch" rating.

Rating	
Current Year	10-Year Trend
★ Satisfactory	★ Satisfactory

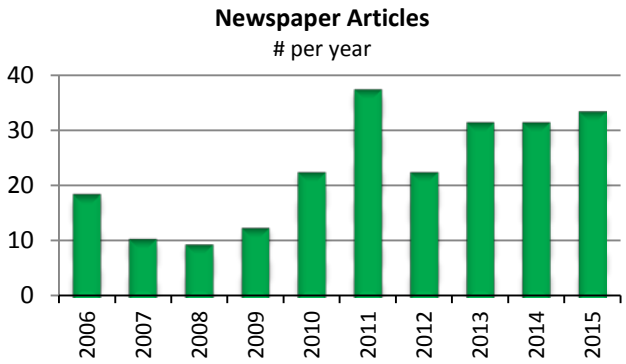
Measurement #10-3

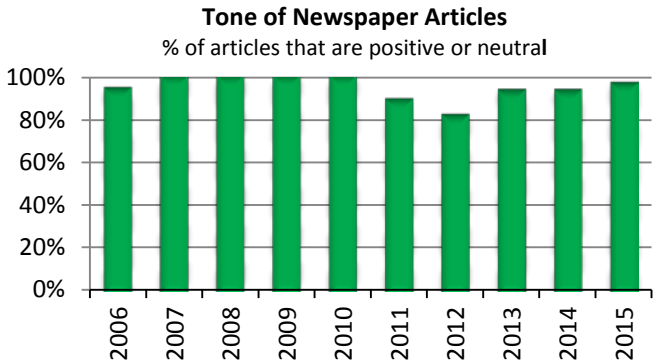
Media Press Coverage

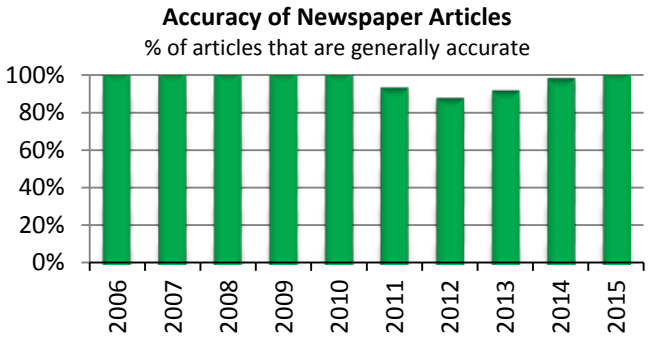
Description

This measure captures the print media portrayal of the District in terms of awareness, accuracy and tone.

Performance Data







Analysis

The spikes in the number of articles in 2006 and 2011 were due to hearings regarding sewer service charge increases that are required under California Proposition 218, which are required at least every 5 years. The District has been able to maintain media presence at around 33 articles per year for the past three years through concerted efforts, working with local reporters on stories and actively issuing press releases. The tone of the articles have been overwhelmingly positive or neutral in tone (97% in 2015), and all of the articles in 2015 were evaluated and determined to be factually accurate. "Accuracy" can be subjective, so here it has been defined narrowly as meaning that there were no significant factual errors in the story that could cause a reader to misinterpret what was being reported.