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# Performance Measurement Report

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Performance Measurements  
for the Napa Sanitation  
District Using the “Effective  
Utility Management”  
Framework

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Includes Data and Analysis for  
Calendar Year 2010

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**Table of Contents**

Table of Contents .....3

Introduction.....5

Executive Summary .....7

Summary of Measures and Ratings .....9

Performance Measurement Report .....11

    1. Product Quality.....13

    2. Customer Service .....18

    3. Employee and Leadership Development.....20

    4. Operational Optimization .....24

    5. Financial Viability .....26

    6. Infrastructure Stability .....31

    7. Operational Resiliency .....35

    8. Community Sustainability .....42

    9. Water Resource Adequacy .....46

    10. Stakeholder Understanding & Support.....48



### *Introduction to the Report*

This report is the first of what is intended to be an 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 (EPA) 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](http://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” (blue circle with slash) – signifies that the District has not developed a measurement for this performance indicator.

This report is the first Performance Measurement Report produced by the Napa Sanitation District. It is the District's intention to produce this report annually. 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.

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 significantly below the state average. The number of plugged main lines is down, and the availability of recycled water is good, although the amount of recycled water sold to customers is down, due both to decreased customer need and weather considerations.

**Customer Service** – The reduction in the number of service calls due to District causes should result in more satisfied customers. However, there is no measure yet for customer satisfaction. Data on response times to calls for service need to be tracked better for reporting purposes. The engineering staff has significantly improved its performance, meeting its performance goal for plan review over 98% of the time in 2010.

**Employee and Leadership Development** – There was higher than usual turnover due to retirements in 2009 and 2010, causing a spike in experience turnover, but that trend is not expected to continue in the near term. Employee survey responses indicate that there is no strong indication of unhappiness nor a desire to seek employment elsewhere. The limited measures on training indicate there is steady performance in some training categories. The District has a succession plan for some positions, but lacks a succession plan for many key positions, and therefore is rated "unsatisfactory" in this category.

**Operational Optimization** – The plant has reduced its consumption of electricity overall, as well as its use per million gallons treated. Its self-produced electricity is also at historic highs, although still only around 22%. Chemical consumption per million gallons treated is trending down.

**Financial Viability** – The ratio of revenue-to-expenditure has only recently gone positive, but has been trending up for the past four years. The ratio of capital expenditures is at a sustainable level, and the debt service coverage ratio is significantly higher than the required 125%. The District maintains adequate policies and internal controls, and the District’s bond rating was recently increased. The sewer service charge rate is now pegged to CPI, but is not evaluated regularly for its ability to cover life-cycle cost of service and capital funding options. The District’s reserves are adequate to maintain stable rates.

**Infrastructure Stability** – While the District has not performed an inventory of critical assets in the past 5 years, it does perform condition assessments of the collection system. The District has been spending adequately on renewal & replacement projects to meet minimum standards and targets, but saw spending dip in FY10. 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 collections, and the District is performing more restaurant inspections to help prevent fats, oil and grease (FOG) problems in the collection system. During the past three years, collection staff has also met its goal of cleaning the equivalent of 40% of main lines annually.

**Operational Resiliency** – The District’s total recordable incident rates have met or exceeded the industry standard for several years. For the past six years, the District has been lost time accident free. Insurance claims have been relatively consistent over time, and with the exception of two years, have not been considerably expensive. The District’s Experience Modification Rate (a measure of worker accidents) has gone down steadily since FY 2002/03. The District maintains adequate Emergency Response Plans and practices them regularly. The cogeneration engine has recovered from a recent downward trend in reliability, while the IPS pumps have a good record of uptime. The District is aware of its operational resiliency under emergency conditions.

**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 2010 compared to 2008, with more digester gas used to produce power rather than flared. As for service affordability, sewer service charges have increased as a percentage of median household income. The Low Income Assistance program saw an increase in the number of sewer service units included in the program in FY10, while the overall number of properties in the program has declined.




















**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. Long term, there are more potential customers identified than water potentially available.

**Stakeholder Understanding and Support** – While the District has sought out customer input and engagement on various projects recently, there has not been an evaluation of stakeholder satisfaction or whether stakeholder input has been beneficial. The District’s sewer service charges compare favorably to other provider’s rates, and the media coverage for the District has both increased recently and is generally positive or neutral regarding the District.

### 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.

-  Satisfactory
-  Watch
-  Unsatisfactory
-  No Measure

Attribute	Measurement	Rating	Page
Product Quality	Treatment for BOD and TSS Removal		13
	Total Allowable BOD and TSS		13
	Sanitary Sewer Overflows (SSOs)		14
	Volume of Sewage Overflow		14
	Plugged Main Lines		15
	Recycled Water Service Availability		15
	Recycled Water Reuse by Customers		16
	Biosolids Put to Beneficial Reuse		17
	Customer Service	Service Calls for District Plugged Laterals	
Service Call Response Time			18
Development Review Response Time			19
Customer Satisfaction			19
Employee and Leadership Development	Experience Turnover Rate		20
	Employee Survey Response		21
	Total Training Hours		22
	Online Safety Training Hours		22
	Succession Planning		22
Operational Optimization	Electricity Consumption by Source		24
	Electricity Consumption Efficiency		24
	Chemical Consumption		25

(continued)

-  Satisfactory
-  Watch
-  Unsatisfactory
-  No Measure

Attribute	Measurement	Rating	Page
Financial Viability	Revenue-to-Expenditure Ratio		26
	Capital Expenses Compared to Operating Expenses		26
	Debt Service Coverage Ratio		27
	Financial Procedure Integrity		28
	Bond Rating		28
	Sewer Service Charges Compared to Inflation		29
	Rates Based on Life-cycle Cost		29
	Rate Stabilization Reserve		29
	Infrastructure Stability	Asset Inventory	
Sewer Main Condition Assessment			31
Renewal & Replacement of Assets			31
Collection System Failure Rate			32
Plant Planned Maintenance Ratio			32
Sewer Main Line Cleaning			33
Collections Planned Maintenance Ratio			33
Pollution Prevention Inspections			34
Operational Resiliency	Total Recordable Incident Rate		35
	Lost Time Hours		35
	Number of Insurance Claims		36
	Severity of Insurance Claims		36
	Experience Modification (XMOD) Rate		36
	Emergency Response Plans in Place		37
	Frequency of ERP trainings		37
	Uptime for Cogeneration Engine		38
	Uptime for Pumps at IPS		39
	Power Resiliency		39
	Critical Parts and Equipment Resiliency		40
	Critical Staff Resiliency		40
	Treatment Operations Resiliency		41
Community Sustainability	Watershed-based Infrastructure Planning		42
	Green Infrastructure Approaches		42
	Greenhouse Gas Emissions		43
	SSC Bill Affordability		44
	Low Income Billing Assistance		45
Water Resource Adequacy	Short-term Water Supply Adequacy		46
	Long-term Water Supply Adequacy		47
Stakeholder Understanding & Support	Stakeholder Consultation		48
	Stakeholder Satisfaction		48
	Internal Benefits from Stakeholder Input		48
	Comparative Rate Rank		49
	Media/Press Coverage		49



# **Performance Measurement Report**

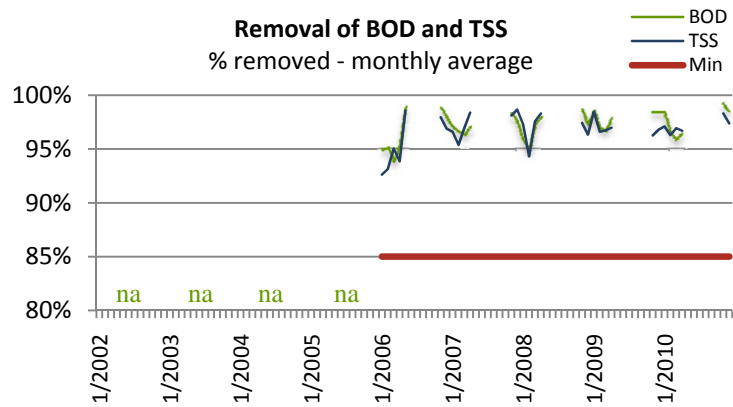




### 1. Product Quality Regulatory Compliance

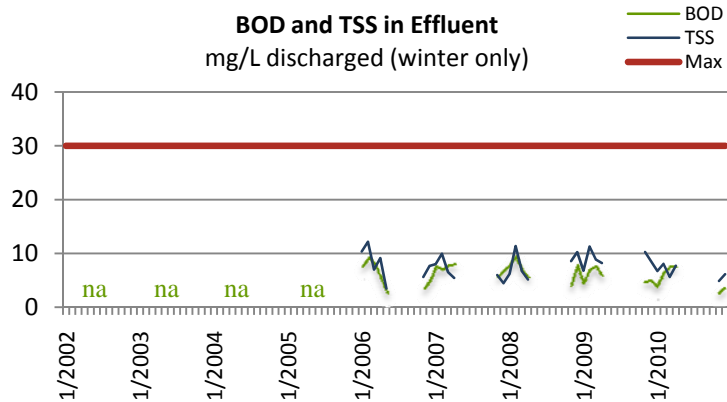
*Product Quality Regulatory Compliance measures the extent to which the District is in compliance with the Federal Water Pollution Control Act (a.k.a., the Clean Water Act), state statutes and the District's permit under the National Pollutant Discharge Elimination System (NPDES).*

- **Treatment for BOD and TSS Removal:** 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.



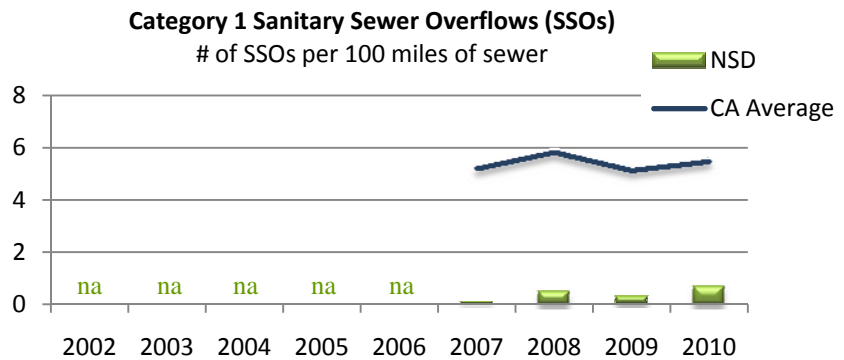
**Analysis:** For the past 5 years reported here, the District has remained in compliance with this NPDES Permit requirement for the percentage removal of BOD and TSS. The District consistently removes over 93%, and in recent years over 95% of these constituents from the influent during the months when the District discharges to the Napa River.

- **Total Allowable BOD and TSS:** 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.



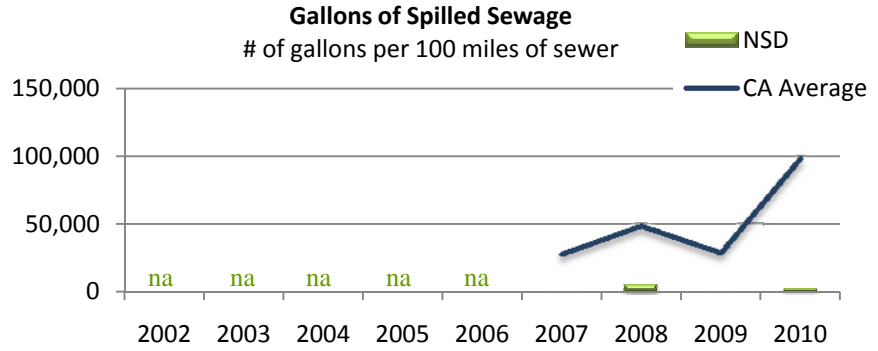
**Analysis:** For the past 5 years reported here, the District has remained in compliance with this NPDES Permit requirement for the total allowable BOD and TSS in its effluent discharge to the Napa River.

- Sanitary Sewer Overflows (SSOs):** The District’s goal is to maintain the sewer collection system so that there are no SSOs. Especially important is to prevent overflows of over 1,000 gallons or overflows that reach a creek, river or other body of water, both of which are considered “Category 1 SSOs”. While the overall goal is to prevent all overflows, the interim goal of the District is to have fewer overflows than the industry average in California.



**Analysis:** For the past several years, there have not been very many Category 1 SSOs in the collection system, with significantly fewer than the California state average.

- Volume of Sewage Overflow:** 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 as possible. This measure is the volume of sewage spilled per 100 miles of sewer.

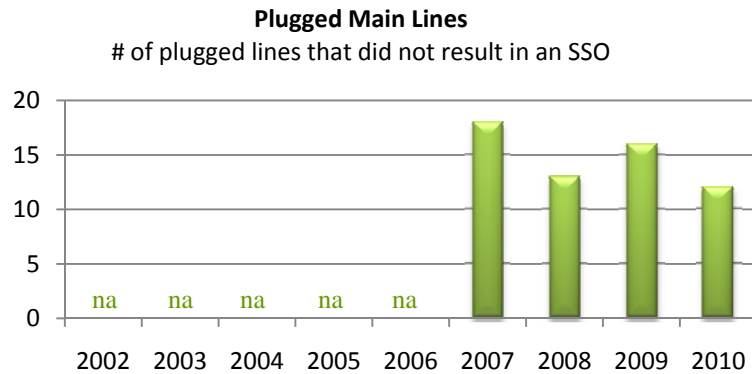


**Analysis:** The District has been very successful in keeping the amount of sewage spilled per 100 miles of sewer at a level significantly below the California state average.

## 2. Product Quality Service Delivery

*Product Quality Service Delivery assesses quality service based on District-established objectives and service level targets. It focuses on non-regulatory performance targets.*

- **Plugged Main Lines:** This is the number of sewer mains that were plugged and needed immediate attention, but did not result in a Sanitary Sewer Overflow (SSO).

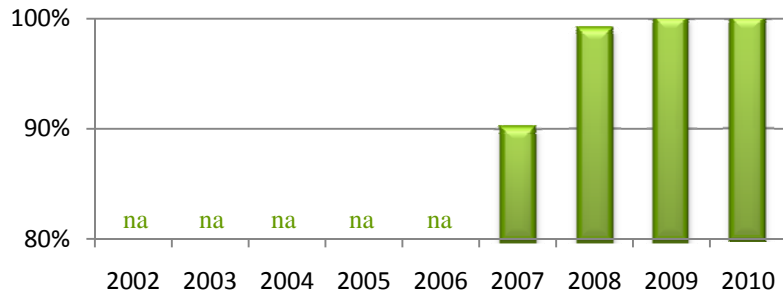


**Analysis:** There has been a positive trend in this measure over the past few years, as the District has made increased investments and efforts toward preventive maintenance.

- **Recycled Water Service Availability:** This is the percentage of days from May 1 through October 31 that there is no interruption in recycled water delivery.



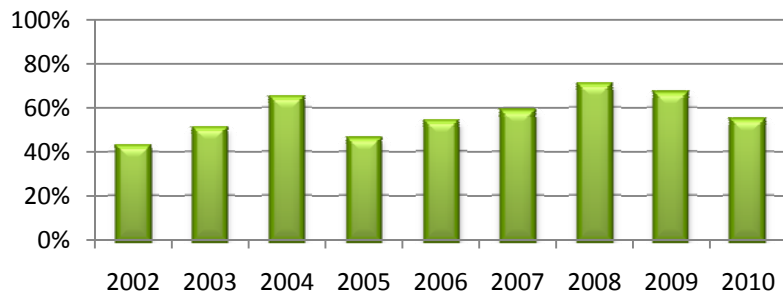
**Recycled Water Service Availability**  
% of time RW delivery available to customers (May-Oct)



**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 last two years at 100% availability during these dates.

- **Recycled Water Reuse by Customers:** 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.

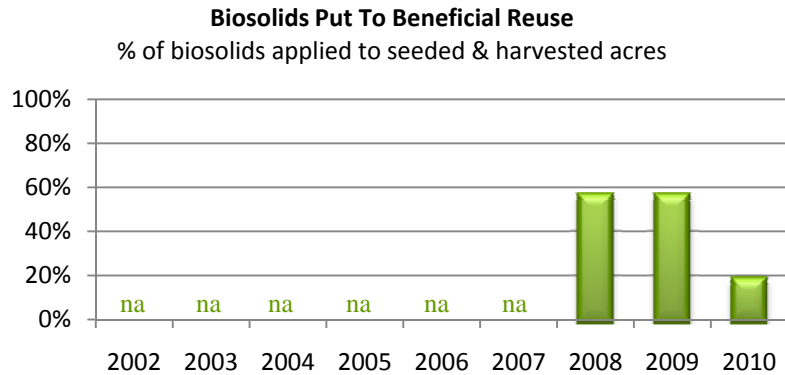
**Recycled Water Customer Reuse**  
% of RW sold to customers



**Analysis:** For several years, the District increased its sales of recycled water. The two most recent years saw declines because of decreased recycled water use at Chardonnay Golf Course, from converting 9 holes to vineyard use. The 2010 year was impacted by a cool summer and wet spring. The District needs to maintain a steady rate of recycled water sales to ensure adequate storage in the ponds and avoid summer discharges to the Napa River. The recent decline is something that needs to be watched to ensure it is not representative of an overall trend.



- **Biosolids Put to Beneficial Reuse:** 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.



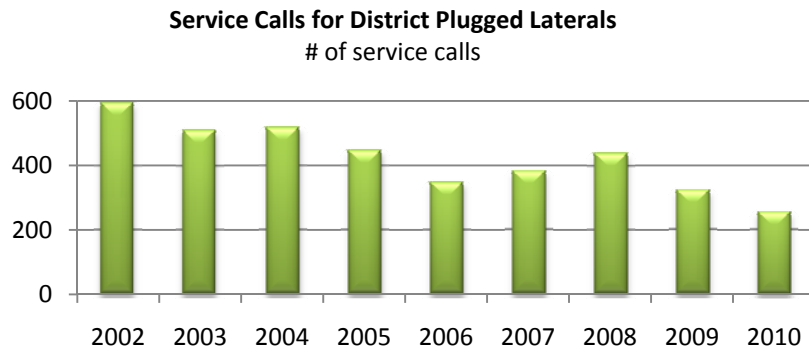
**Analysis:** The District's current program includes the limited beneficial reuse of agricultural application to District owned or leased land. The high percentages in 2008 and 2009 are due to the Pond 1 Solids Project implementation those years. Plans are being developed for the District to expand beneficial reuse within a few years.



### 1. Customer Complaints

*Customer Complaints assesses the complaint rates experienced by the District. Currently, the District does not currently maintain records on customer complaints.*

- **Service Calls for District Plugged Laterals:** 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.



**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 is decreasing as a result of these efforts.

### 2. Customer Service Delivery

*This is a measure of the District’s own service level targets as they related to customer service.*

- **Service Call Response Time:** The District maintains a goal of responding to service calls for sewer backups within 30 minutes of the call. This measure shows the percentage of calls that were initially responded to within 30 minutes.

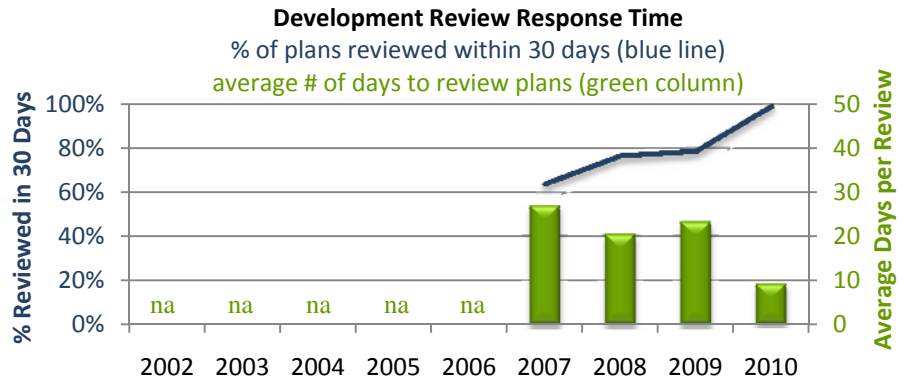
Not available.

**Analysis:** The District’s records for this measure are not complete, and data could not be compiled for prior years. This data will be researched from work orders for 2010 and will be collected for work going forward. This measure will be included in the next report on performance measures.





- Development Review Response Time:** 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.



**Analysis:** Over the past four years that this data was captured, the percentage of plans reviewed within the goal of 30 calendar days has increased, while the average number of days it takes to review a set of plans has fallen. There were fewer plans reviewed in 2010 than in prior years, with these plans generally smaller and less complicated to review. This has positively impacted the review time, but the Department has also established and strengthened expectations among staff regarding the 30-day goal. The District is currently implementing a new permit system that will allow staff to organize and track the review process more efficiently.

### 3. Customer Satisfaction

*This is an overarching customer satisfaction measure based on requested customer feedback (surveys), not calls received or internal customer satisfaction service level commitments.*

- Customer Satisfaction:** This is the measure of how well District staff performed, according to the customer who was directly impacted by that work.

None.

**Analysis:** The District does not currently measure customer satisfaction. The District plans to enact a program of measuring customer satisfaction immediately after service provision through a postage pre-paid mail-in survey instrument. The two interactions to measure would be for plug-up calls (customer calls us for service) and for the installation of sewer cleanouts or lateral replacements (District initiates interaction and involves construction practices).

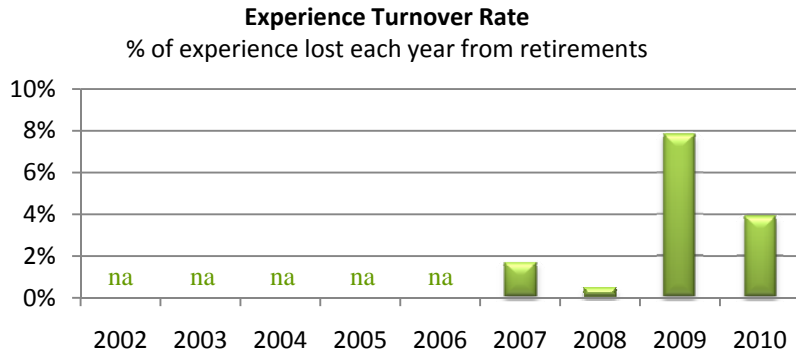




### 1. Employee Retention and Satisfaction

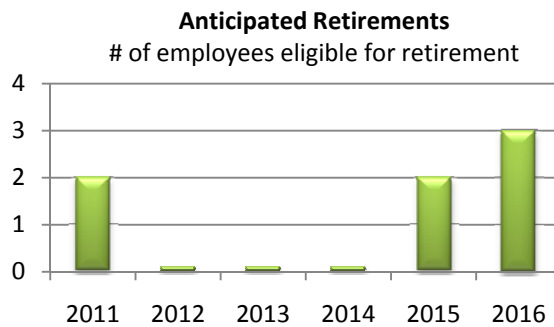
*This measure gauges the District’s progress toward developing and maintaining a competent and stable workforce.*

- Experience Turnover Rate:** This 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.



**Analysis:** Most employees who leave employment from the District do so through retirement. In 2009, there were four retirements of long-term employees that contributed to the almost 8% loss in District experience, but these retirements were known in advance and planned for. The experience turnover for other years are more in line with expectations.

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’s a data set that helps to inform whether there are trends in the workforce to which management needs to respond. Anticipated retirements for the next 5 years are as follows:

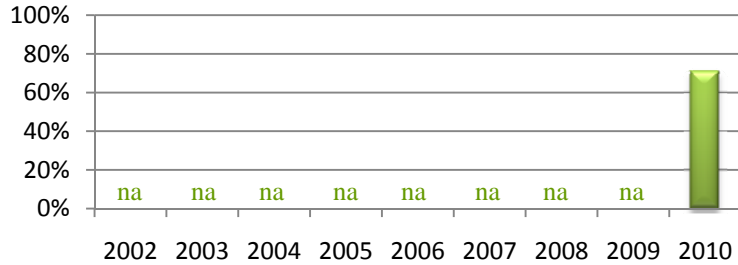


There is nothing in the data to suggest that employees are retiring faster than would normally be expected.

- Employee Survey Response:** The following charts show the response to three questions asked during an annual employee survey. These questions are designed to gauge employee satisfaction. The first survey was conducted in 2010.

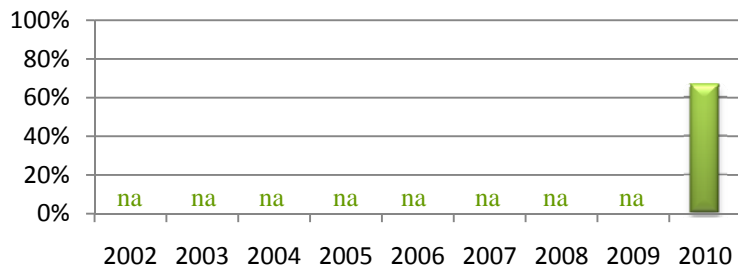
**"I feel I am valued by my work unit."**

% of employees responding "agree" or "strongly agree"



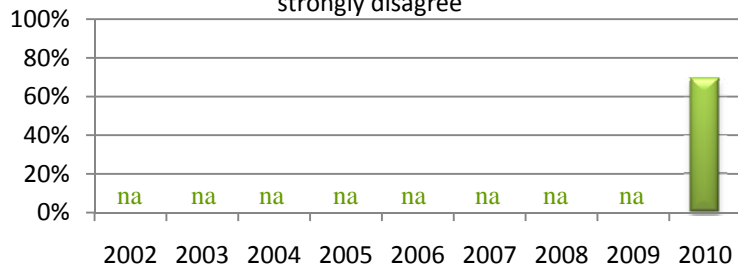
**"I tell others that NSD is a great place in which to work."**

% of employees responding "agree" or "strongly agree"



**"I will look for work outside NSD in the next year."**

% of employees responding "disagree" or "strongly disagree"



**Analysis:** Fall 2010 was the first time the District surveyed its employees on these three attributes. They were graded “watch” (orange diamond) only because of the lack of data to determine whether there is an upward, downward or stable trend at the District in the area of employee retention and satisfaction.



## 2. Management of Core Competencies

*This measure assesses the District's investment in and progress toward strengthening and maintaining employee core competencies.*

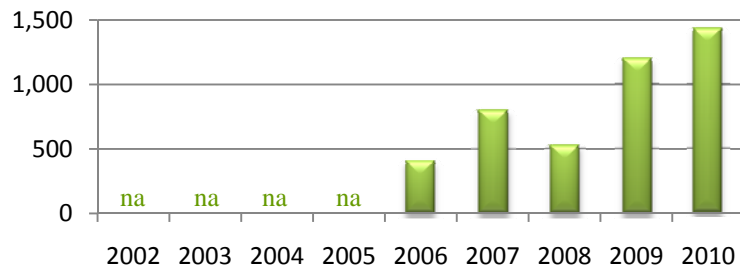
- **Total Training Hours:** This is the total number of training hours provided to employees at the District.

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.

- **Online Safety Training Hours:** This is the total number of class hours completed by staff using the online safety training program.

**Online Safety Training Class Hours**  
total # of class hours completed



**Analysis:** The online safety program began in August 2006. This measure shows the total number of class hours completed by staff. It is expected that this number will remain at approximately 1,500 hours into the future.



## 3. Workforce Succession Preparedness

*This measure assesses the District's long-term workforce succession planning efforts to ensure critical skills and knowledge are retained and enhanced over time, particularly in light of anticipated retirement in future years. Focus is on preparing for workforce succession, including continued training and leadership development.*

- **Succession Planning:** Percentage of key positions covered by long-term workforce succession plan.

There are no formal succession plans in place.



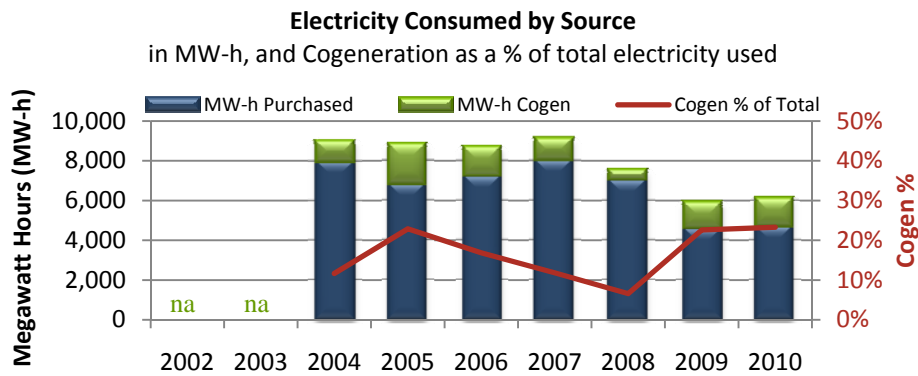
**Analysis:** The District has implemented the “Operator III Training Program” to increase operator knowledge and allow for the necessary skills to operate the plant’s treatment processes and regulatory control on a day-to-day basis. The Plant Maintenance and Laboratory Supervisors have also trained staff sufficiently to provide coverage in the event of vacancy. A partial succession plan for the STFMO was developed prior to the retirement of the incumbent in December 2010, identifying short-term staffing strategies for key functions. These actions are all elements of succession planning, but they do not constitute complete succession plans. There are several key positions, such as Plant Manager, Reclamation Director, Collection System Manager, Human Resources Officer/Clerk of the Board and Senior Accountant where there is insufficient planning for retirement or vacancy.



### 1. Resource Optimization

*This measure examines resource use efficiency, including labor and supplies & services costs per unit of output.*

- Electricity Consumption by Source:** Electricity is one of the largest expenses in the treatment process. The treatment plant uses a cogeneration engine (“Cogen”) powered by captured and compressed methane 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.

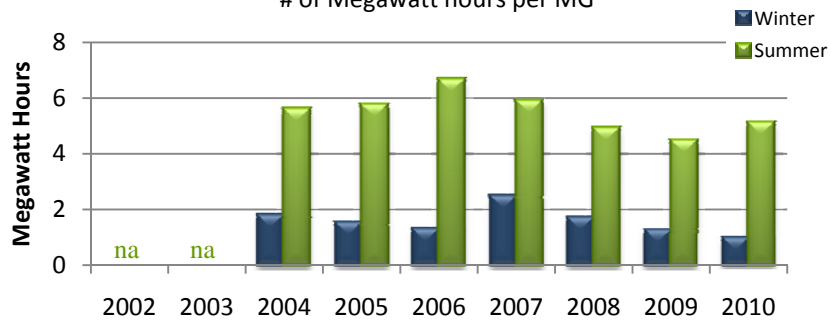


**Analysis:** In May 2007, the Bay Area Air Quality Control Board (BAAQCB) shut down the Cogen for failure to meet emission standards. The system was not brought back online until 2008. Also, from January 2008 to July 2008, the District could not operate the Cogen engine because the Dystor membrane cover failed, eliminating the ability to store methane gas for the Cogen. These events combined to result in a significant decrease in percentage of power generated by the Cogen. Replacement of the aeration panels in Basin 4 in June 2008, replacement of the panels in Basin 3 in November 2008, and the replacement of inefficient blowers with more efficient blowers in November 2008 resulted in lower overall electricity consumption for 2009 and 2010.

- Electricity Consumption Efficiency:** This next 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.



**Electricity Consumed per Million Gallons Treated**  
# of Megawatt hours per MG

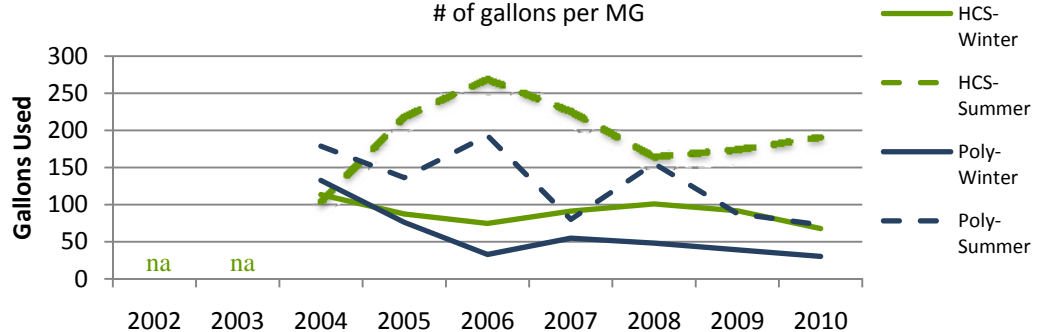


**Analysis:** As overall electricity consumption has decreased at the plant, the amount of electricity per million gallons has also decreased. The winter figures have a more direct relationship between electricity usage and gallons treated than the summer figures, as the amount of recycled water delivered is an outlying factor that impacts the ratio.

- Chemical Consumption:** 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 (Poly). 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.



**Chemicals Used per Million Gallons Treated**  
# of gallons per MG



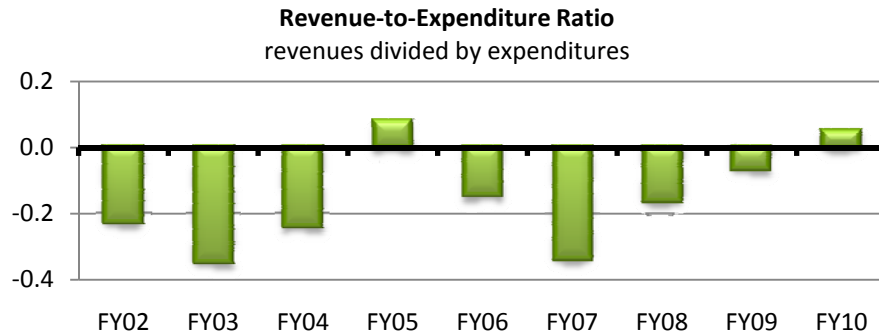
**Analysis:** Generally, chemical consumption per million gallons treated has reduced for most chemicals, although there has been a recent uptick in the amount of sodium hypochlorite used during the summer months. This is expected to stabilize with the implementation of the ORP system and the “plant reset” that was part of the master planning process.



### 1. Budget Management Effectiveness

*This measure includes commonly used financial performance indicators to show the short term health and long term financial trends of the District.*

- **Revenue-to-Expenditure Ratio:** 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 the ongoing expenses of the District and that a course correction is likely.

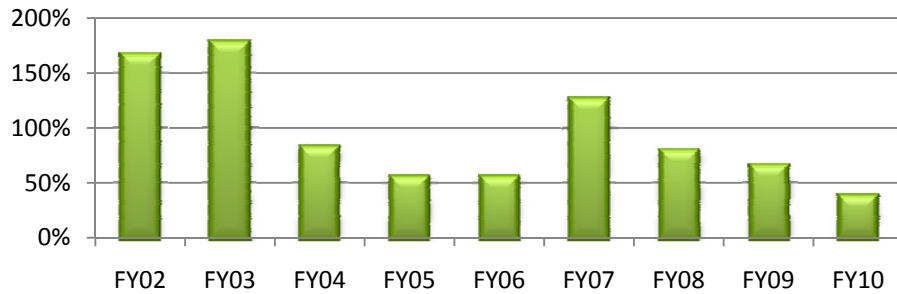


**Analysis:** If not for the sale of land in FY05, generating \$2.8 million in revenue, FY05 would have had a ratio of -0.1. The three years of 15% sewer service charge increases from FY07 to FY09 are responsible for the upward trend seen in the past four years. Although most of the years show negative, this upward trend lead to the identification of this performance measure as “watch” (orange diamond) instead of “unsatisfactory.”

- **Capital Expenses Compared to Operating Expenses:** 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.



**Capital Expenses as a Percentage of Operating Expenses**



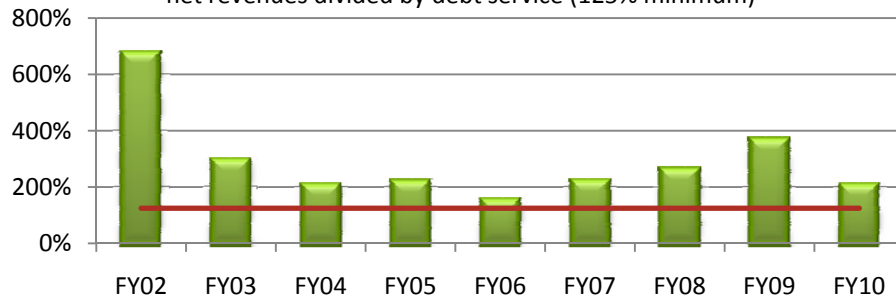
**Analysis:** More study is necessary to determine what an appropriate “baseline” or “target” number should be, although the District currently maintains a Capital Improvement Plan that shows \$80 million to be spent over 10 years. This would indicate a “typical” year having a capital expense to operating expense percentage of approximately 45%.

- **Debt Service Coverage Ratio:** The District is required by its debt covenants 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.



**Debt Service Coverage Ratio**

net revenues divided by debt service (125% minimum)



**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.

## 2. Financial Procedure Integrity

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

- **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.

- **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 have decreased from two in FY08 to one in FY09 and none in FY10.

## 3. Bond Rating

*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.*

- **What is the District’s bond rating, and has it changed recently?**

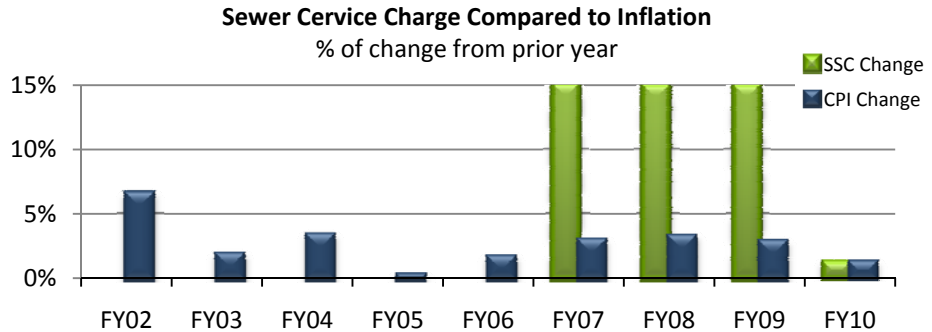
AA- (S&P, 2009)

**Analysis:** When the District refinanced most of its long term debt in 2009, Standard & Poors upgraded the District from “A+” to “AA-” for its fixed and variable rate revenue bonds. This is an excellent rating for the type of debt issued and the size of the District. This was especially impressive given the economic climate in which the upgrade was received (many debt issues were being downgraded at the time due to financial conditions in the broader market).

#### 4. Rate Adequacy

*These measures help the District consider its sewer service rates relative to factors such as external economic trends, short-term financial management, and long-term financial health.*

- **Sewer Service Charges Compared to Inflation:** 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.



**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. Starting in FY10, the rate increases with CPI.

- **Has the District established rates that fully consider the full life-cycle cost of service and capital funding options? (Y/N)**

No.

**Analysis:** Rates are set based on changes to the CPI. The rate is not set based on costs of operation or life-cycle capital cost. The rate setting philosophy is rooted in maintaining rate affordability.

- **Does the District maintain a rate stabilization reserve to sustain operations during cycles of revenue fluctuation, in addition to operating reserves? (Y/N)**

Reserves for rate stabilization and revenue fluctuation are not necessary at this time. The District maintains adequate reserves.

**Analysis:** Sewer service charges constitute over 85% of District 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 District has committed in Ordinance to allow for increases to the SSC rate by CPI. These structural factors combine to provide adequate revenue stability for the District. The operating reserve, as established in the District's financial policies, is fully funded and sufficient to cover timing fluctuations in revenue collection without significantly impacting operational readiness.



### 1. Asset Inventory and Condition Assessment

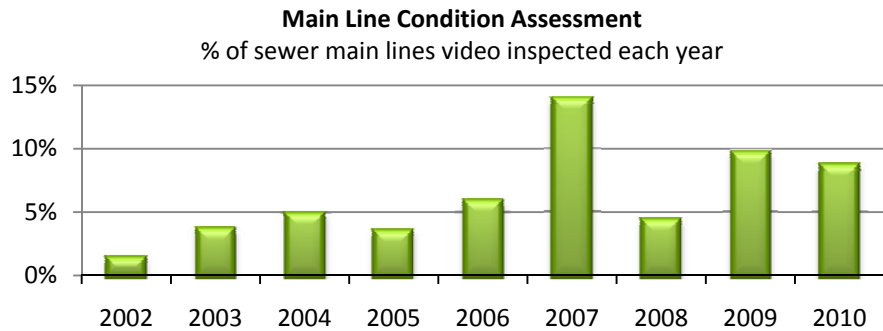
*This measure gauges the District's efforts to assess assets and asset conditions, as a first step toward building a comprehensive asset management program.*

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

None.

**Analysis:** The District has not conducted a physical inventory of its assets in the past 5 years.

- **Sewer Main Condition Assessment:** This graph shows the percent of sewer main lines that are video inspected each year and assessed for condition and maintenance problems.



**Analysis:** The District has steadily increased the amount of video condition assessment done on the sewer mains. The spike in 2007 was in anticipation and support of a large capital project the following year.

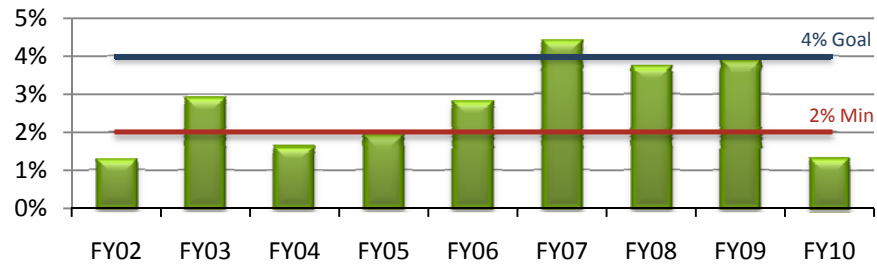
### 2. Asset Renewal / Replacement

*This measure assesses asset renewal/replacement rates over time. The measure should include targets, based on the District's determination of acceptable risk for different asset classes.*

- **Renewal & Replacement Expenses:** 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.



**Renewal & Replacement of Assets**  
amount spent each year as a % of net worth of assets



**Analysis:** The District should be replacing between 2% and 4% of the value of its assets, on average, through renewal and replacement of those assets. The District has done well in recent years, but decreased on FY10. The drop in FY10 and a similar drop in FY11 were and are expected, according to the schedule of projects in the 10-Year Capital Improvement Plan. The ratio is anticipated to increase again starting in FY12.

### 3. Collection System Integrity

*This measure examines the frequency of collection system failures. When tracked over time, the District can evaluate whether the rate is increase, stable or decreasing.*

- **Collection System Failure Rate:** 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.

There have been 3 failures over the past 20 years, two in the 1990s and one in 2006.

**Analysis:** There are so few of these types of failures that a graph would not be meaningful. The District's record of failure rates is outstanding.

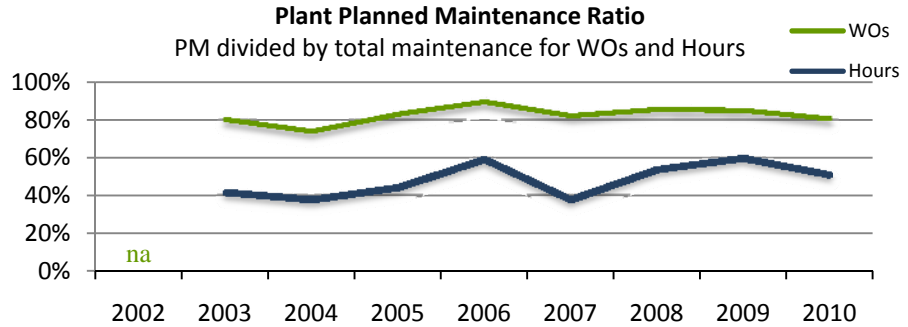
### 4. Planned Maintenance

*Planned maintenance (PM) includes both preventive and predictive maintenance, and is performed according to a predetermined schedule rather than in response to failure. Predictive maintenance is initiated when signals indicate that maintenance is due. All other maintenance is categorized as corrective or reactive.*

- **Plant Planned Maintenance Ratio:** There are two numbers here. The first is the percentage of the number of work orders (WOs)

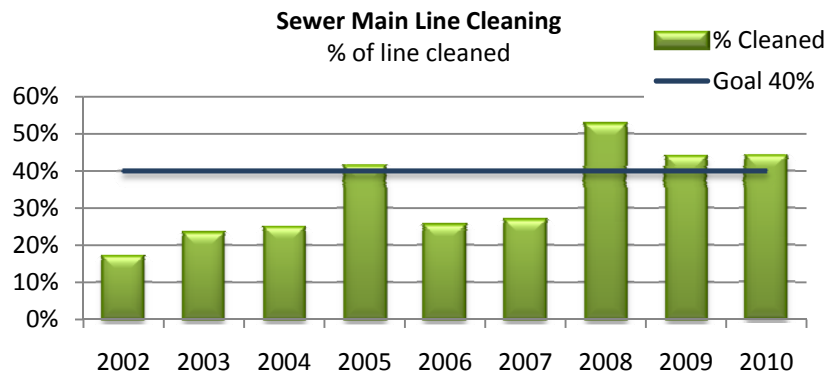


assigned to planned maintenance at the treatment plant divided by the total number of WOs for any maintenance activity (planned and corrective). The second is the same ratio, but uses the total number of hours worked instead of the number of work orders.



**Analysis:** Reliable data for this measure starts in 2003. The plant has been able to maintain a relatively consistent ratio of work orders, at about 80% on preventive maintenance activities, and 20% 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.

- Sewer Main Line Cleaning:** This chart shows the percentage of sewer main lines cleaned during the year, compared to the District’s goal of 40% cleaned annually.

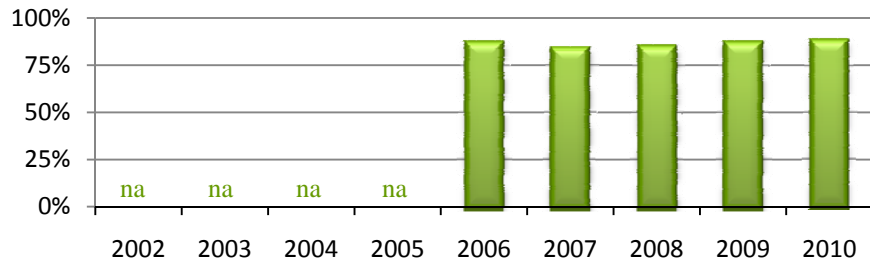


**Analysis:** Over the past three years, the District has increased its efforts in preventive maintenance and cleaning of sewer mains, with the goal of cleaning 40% every year. The District has met this goal for the last three years.

- Collections Planned Maintenance Ratio by Hours:** 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).



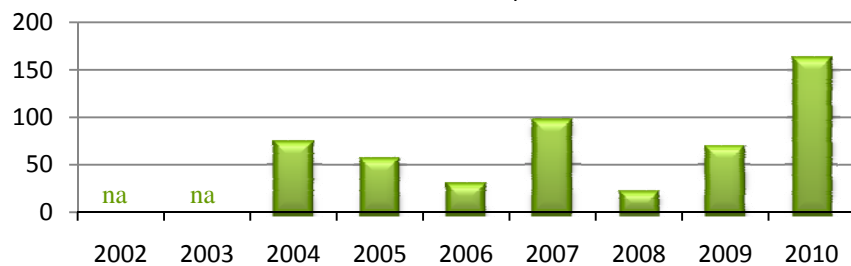
**Collections Planned Maintenance Ratio**  
PM hours divided by total maintenance hours



**Analysis:** The collection system has consistently maintained a high ratio of planned maintenance to total maintenance.

- **Pollution Prevention Inspections:** Pollution prevention inspections ensure that restaurants and other businesses 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.

**Number of Pollution Prevention Inspections**  
# of restaurants inspected



**Analysis:** This program began in 2004. A concerted effort has been implemented to increase the number of inspections and re-inspections of restaurants and facilities, to encourage the proper maintenance of grease interceptors and other Best Management Practices.

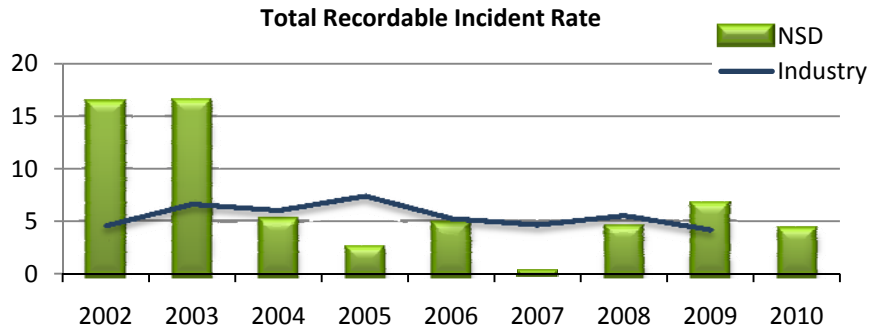




### 1. Recordable Incidents of Injury or Illness

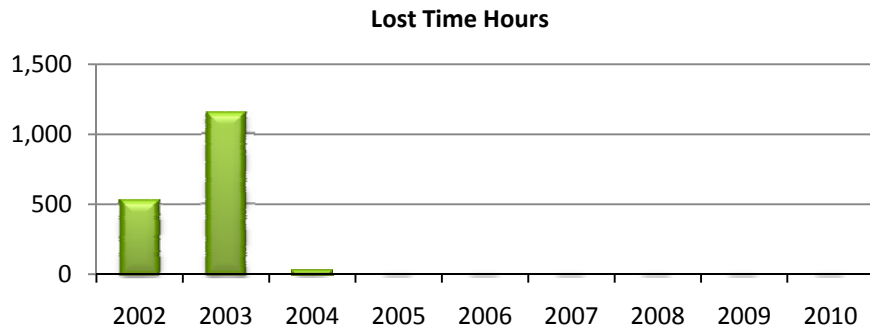
*Incidence rates can be used to show the relative level of injuries and illnesses and help determine problem areas and progress in preventing work-related injuries and illnesses.*

- Total Recordable Incident Rate:** 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.



**Analysis:** The District is compared here to the “Utility: Sewage Treatment Facility” industry category as reported by the U.S. Bureau of Labor Statistics. The District’s incident rate is comparable to the national average.

- Lost Time Hours:** 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.

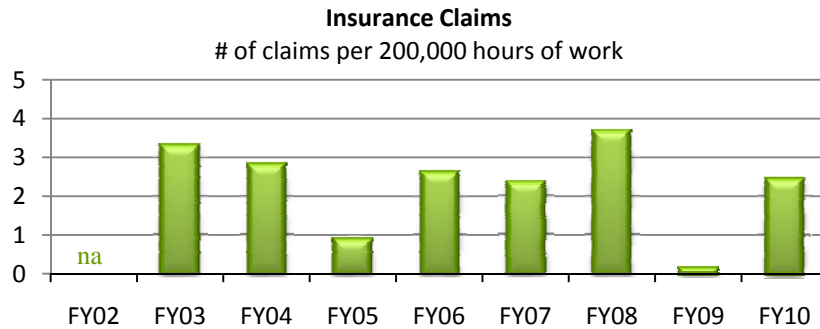


**Analysis:** The District has not had a lost time accident since March 13, 2004.

## 2. Insurance Claims

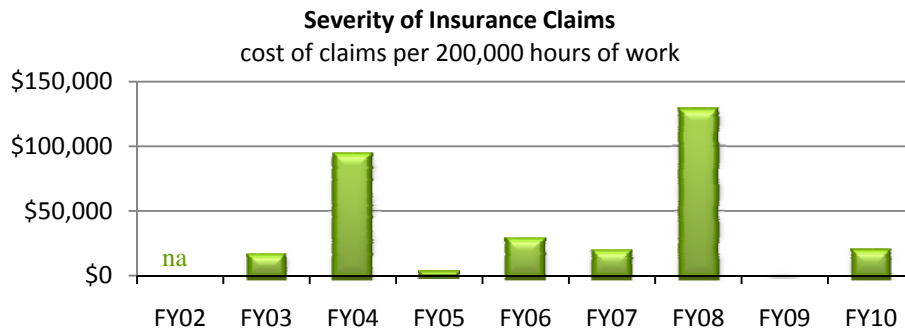
*These measures examine the number, type and severity of insurance claims to understand insurance coverage strength or vulnerability.*

- **Number of Insurance Claims:** This is the number of general liability and automobile liability claims per 200,000 hours worked.



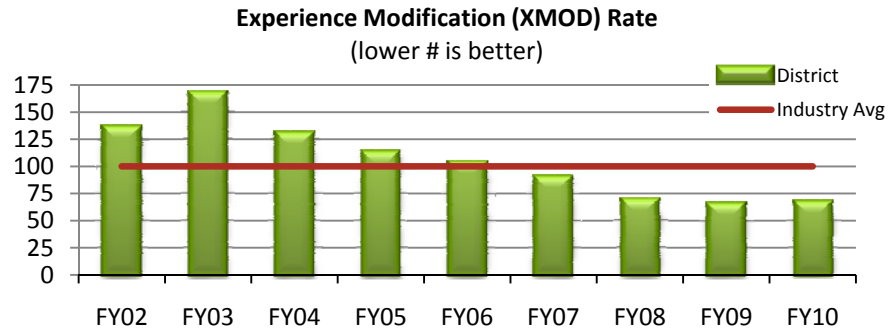
**Analysis:** The District has maintained a relatively constant rate of insurance claims over the past several years.

- **Severity of Insurance Claims:** This is the total amount paid out for general liability and automobile liability claims per 200,000 hours worked.



**Analysis:** With the exception of two years in the past 8 years, the District has had a relatively low average cost per claim. This, combined with a low average number of claims (previous chart) represents a good trend for the District.

- **Experience Modification (XMOD) Rate:** 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 injuries and illness than the industry average, while numbers below 100 are better than the average.



**Analysis:** Through the implementation of several safety programs at the District, the District's XMOD rate has significantly dropped over the years. The District has now consistently performed better than the industry average, with every year better than the prior year for the past 8 years.

### 3. Risk Assessment and Response Preparedness

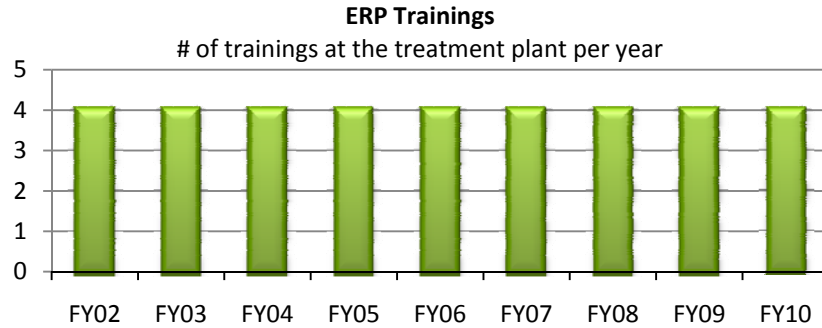
*This measure asks whether the District has assessed its all-hazards (natural and human-caused) vulnerabilities and risks and made corresponding plans for critical needs.*

- **Are Emergency Response Plans in place for the following?**  
(Y/N)
  - **Treatment Plant:** Yes
  - **Lift Stations:** Yes
  - **Collections:** Yes

**Analysis:** Emergency Response Plans and 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.

- **Frequency of Emergency Response Plan (ERP) Trainings:**  
This is the number of emergency response trainings conducted by the treatment plant per year.



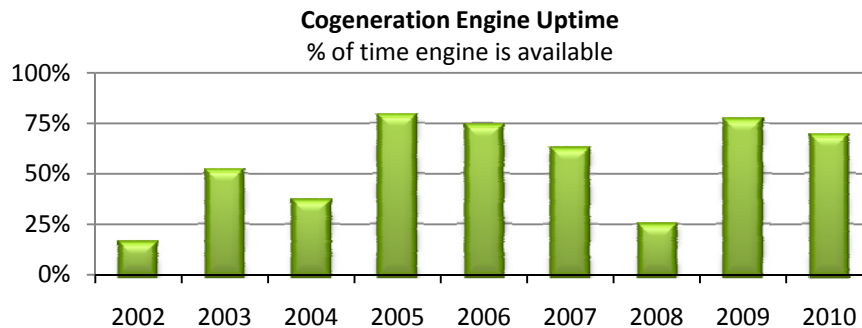


**Analysis:** The Plant trains on and practices its Emergency Response Plan quarterly. The plant has also started the practice of training Collection System, Administration and Engineering staff once per year on the plant's ERP.

#### 4. Ongoing Operational Resiliency

*This measure assessed the District's operational reliability during ongoing or routine operations.*

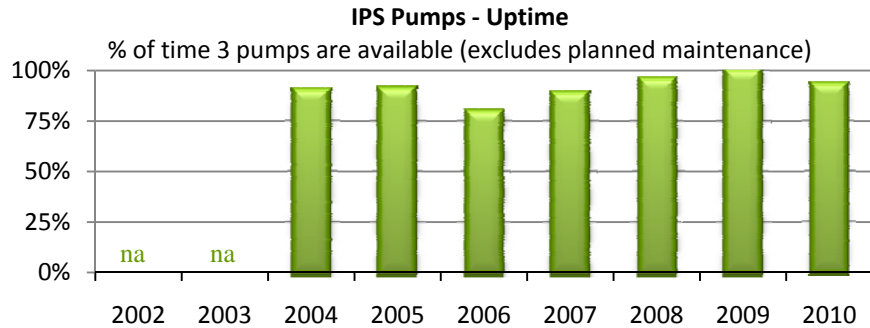
- **Uptime for Cogeneration Engine:** The cogeneration engine ("Cogen") is critical equipment to reduce purchased electricity demand. The use of this equipment also reduced the need to operate the boilers. Increased boiler operation would require extensive and costly upgrades to the boiler to meet air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



**Analysis:** The engine was installed in December 2002. In 2007, the Bay Area Air Quality Control Board (BAAQCB) shut down the Cogen for several months for failure to meet emission standards. Then from January 2008 to July 2008, the District could not operate the Cogen engine because the Dystor membrane cover failed, eliminating the ability to store methane gas for the Cogen. Starting in 2009, staff has changed the way the Cogen is operated, particularly during peak times, to ensure a higher percentage of uptime in future years. If not for the unit being down for 38 days for a top end overhaul (scheduled maintenance), the Cogen would have had over 80% uptime in 2010.



- Uptime for Pumps at Influent Pump Station:** There are 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 are necessary during significant storm events to handle the high flow volumes. Uptime is defined as the percentage of days that all three pumps are operational and in service.



**Analysis:** Data collection began in 2004. VFD replacement parts have been particularly difficult to acquire for these pumps, as they must be ordered directly from Italy. Staff has stockpiled some of the more difficult parts to acquire, resulting in several failures being fixed within a week of the breakdown.

## 5. Operational Resiliency Under Emergency Conditions

*This measure assesses the operational preparedness and expected responsiveness in critical areas under emergency conditions.*

- Power Resiliency:** 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.

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.





- **Critical Parts and Equipment Resiliency:** This is a measure or evaluation of lead times for the repair or replacement of operationally critical parts or equipment.
  - **Influent Pump Station (IPS)** – The pumps at IPS are the most critical equipment at the plant. Other components of the process could be down and there is sufficient redundancy in processes or alternatives available to manage until repairs are made. But during severe storm events, all three pumps at IPS are needed to manage the influent, either into the plant or into the ponds. To consider IPS resilient, the station should have “firm capacity,” meaning that the station could handle all of the influent during high flow events, even if the largest of the three pumps were to be offline. IPS does not have firm capacity, so this measure has been rated as “unsatisfactory.”

To mitigate the firm capacity problem, the District maintains two companies on 24-hour call notice to assist with pump repairs, if needed. Additionally, the District has in stock some of the critical electrical components of the pumps. To assist resiliency further, the District upgraded the soft starts for the variable frequency drives (VFDs), so that even in the event of VFD failure, the soft starts will run the pumps.



- **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 implemented some upgrades/redundancies to avoid future failures.
- **Critical Staff Resiliency:** This is a measure of the ability for backup staff to cover critical operations and maintenance positions.



- **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 eleven field workers, eight 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.

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

- **Treatment Operations Resiliency:** 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.

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 7.4 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.





### 1. Watershed-based Infrastructure Planning

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

- **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 has invested 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.

### 2. Green Infrastructure

*"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.*

- **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.





- **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 years will incorporate “green” features and will comply with the City of Napa’s new “green building” code.
- **Alternative Energy Production** – 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.), and will implement those recommendations that have sufficient return on investment (e.g., Grease Receiving Station).
- **Replacement of Blowers** – In 2008 the District replaced two blowers in its aeration basins with more energy efficient turbo blowers, saving the District approximately \$114,000 per year in electricity costs and reducing greenhouse gas emissions by the equivalent of 148 cars annually.
- **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 reduce 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.

### **3. Greenhouse Gas Emissions**

*This measure is designed to evaluate how the District’s operations impact greenhouse gas (GHG) emissions, and whether those emissions are increasing or decreasing over time.*



- **Carbon Dioxide Emissions:** This is a measure of the metric tons of emissions of carbon dioxide (CO<sub>2</sub>), by source.

	<u>2008</u>	<u>2010</u>
CO <sub>2</sub> from natural gas	257	146
CO <sub>2</sub> from digester gas	1,915	2,285
% of digester gas flared	66.9%	15.3%

**Analysis:** Currently, the District has calculated the amount of carbon dioxide generating from the burning of natural gas and digester gas for 2008 and 2010 only. The natural gas is a purchased fuel, while the digester gas is a byproduct of the wastewater treatment process. 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 will result in a net decrease on CO<sub>2</sub> emissions. The 2010 data shows a positive trend, both in the decreased use of natural gas and in putting the digester gas to beneficial reuse, although the data for 2008 on the amount of digester gas flared reflects that for the first half of 2008, the Cogen engine was offline.

The District does not currently collect data on nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>) emissions, the other two main constituents of GHG.

#### 4. Service Affordability

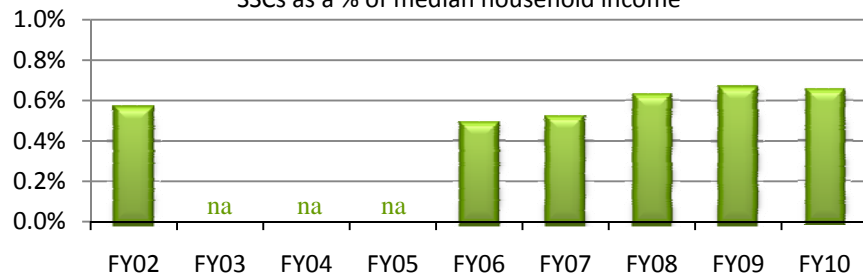
*Wastewater service affordability centers on community members' ability to pay for sewer services. The District must balance keeping sewer service affordable while ensuring the rates needed for long-term infrastructure and financial integrity.*

- **Sewer Service Charge Bill Affordability:** 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 for the City of Napa, using U.S. Census Bureau data.



### Affordability of Sewer Service Charges (SSCs)

SSCs as a % of median household income



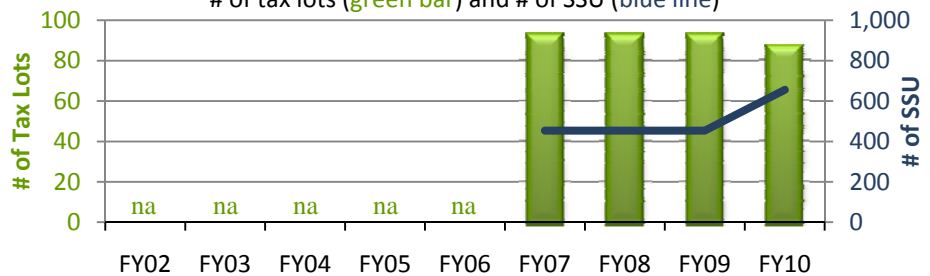
**Analysis:** Median Household Income (MHI) was reported in the 2000 Census (used in FY02 data), but was not reported by the U.S. Census Bureau annually until calendar year 2005 (FY06). The SSC as a percentage of MHI went up from FY07 to FY09, as expected, given the 15% annual fee increases during this time. FY10 seems to have decreased slightly, showing that this measure appears to be holding steady.

- Low Income Billing Assistance:** 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 tax lots in the program is graphed, as well as the number of Sewer Service Units (SSU) that those tax lots represent.



### Low Income Assistance Program

# of tax lots (green bar) and # of SSU (blue line)



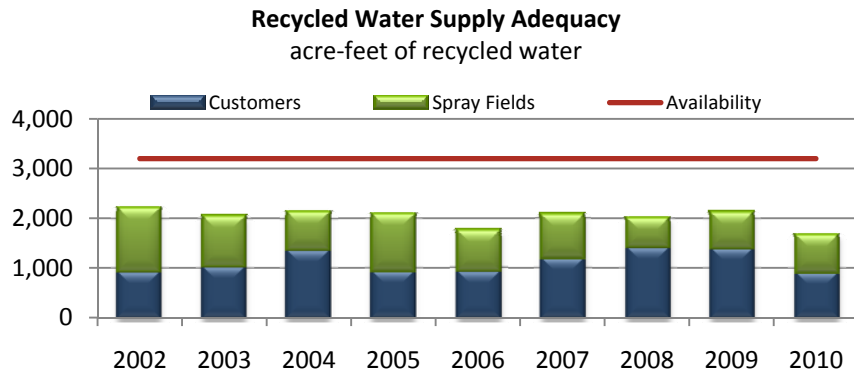
**Analysis:** This program began in FY07, at the same time the District began a process to increase sewer service charges by 15% per year for three years. In FY10, the program provided a reduction of \$121 per household from the annual charges. The number of tax lots in the program decreased last year as some owners either sold their property or become ineligible due to income requirements. The number of sewer units increased due to new multi-family housing units serving low income households entering the program in FY10.



**1. Water Supply Adequacy**

*This measure is designed in the Effective Utility Management framework for potable water suppliers, and assesses short-term and long-term water supply adequacy, and related long-term supply considerations. The District has chosen to modify this attribute to refer to recycled water supply adequacy, to measure the short-term availability and long-term demands on recycled water and the ability of the District to meet those demands.*

- Short-term Recycled Water Supply Adequacy:** This chart compares three things: 1) the amount of recycled water that the District could 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.



**Analysis:** Demand by recycled water customers is approximately between 900 and 1,400 acre-feet per year, depending on weather and irrigation needs. With the District able to produce approximately 3,200 acre-feet of recycled water per year during the irrigation season, there is sufficient recycled water supply for its current customers. (Note that the 3,200 acre-feet estimated supply is currently being studied and evaluated.)

- **Long-term Recycled Water Supply Adequacy:** This table shows the current and potential future demands on recycled water, in acre-feet.

	<b><u>Low Demand</u></b>	<b><u>Avg Demand</u></b>	<b><u>High Demand</u></b>
<i>Existing Uses</i>			
Existing RW Customers	900	1,400	1,500
District Use	90	100	110
<i>Existing Commitments</i>			
Montelcino Golf Course	250	300	320
Valley Gate Vineyards	90	100	110
MST Area	500	500	1,000
<b><i>Subtotal Existing Uses &amp; Commitments</i></b>	<b><i>1,830</i></b>	<b><i>2,400</i></b>	<b><i>3,040</i></b>
<i>Probable Future Commitments</i>			
Infill (Kennedy Park, Industrial Parks)	280	300	320
Napa State Hospital	180	200	220
Stanley Ranch (St. Regis)	180	200	220
<i>Other Possible Areas</i>			
Los Carneros Water District	1,500	1,650	2,000
Suscol Mountain Vineyard	120	150	170
<b><i>Subtotal Future and Possible Uses</i></b>	<b><i>2,260</i></b>	<b><i>2,500</i></b>	<b><i>2,930</i></b>
<b><i>Total Possible Long-Term Demand</i></b>	<b><i>4,090</i></b>	<b><i>4,900</i></b>	<b><i>5,970</i></b>
Estimated Supply with Current RW	3,200	3,200	3,200
<i>Capital Investments</i>			
<b><i>Long-Term Demand Surplus / (Shortage)</i></b>	<b><i>(890)</i></b>	<b><i>(1,700)</i></b>	<b><i>(2,770)</i></b>

**Analysis:** The District can meet its existing uses and current commitment. To meet the projected long-term recycled water demand, the District will need to invest in capital to expand recycled water production, particularly during the spring. Additional storage sites for recycled water would also most likely be needed to provide for the projected long-term demand. (Note that the 3,200 acre-feet estimated supply is currently being studied and evaluated.)



### 1. Stakeholder Consultation

*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.*

- **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:

- **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.
- **Upper Lateral Pilot Project** (2010) – sent letters to affected home owners, held open house in community, made direct contact with home owners, posted information on website.

Outreach was less frequent in prior years.

### 2. Stakeholder Satisfaction

*This measure addresses stakeholder perceptions of the District. Possible calculations of stakeholder satisfaction include overall satisfaction surveys, or message recollection for outreach programs.*

- The District currently does not measure stakeholder satisfaction.

### 3. Internal Benefits from Stakeholder Input

*This measure addresses the value District employees believe stakeholder engagement has provided to the District's projects and activities. Measurement by the District could focus on surveying District employees running projects that have stakeholder involvement.*

- The District currently does not measure the internal benefits of stakeholder input.

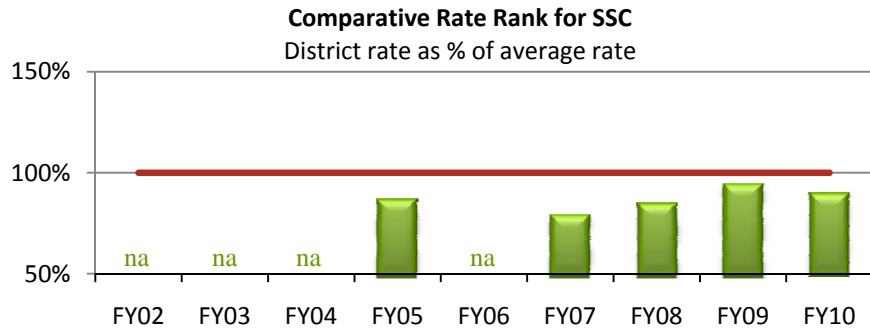




#### 4. Comparative Rate Rank

*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).*

- Comparative Rate Rank:** 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.

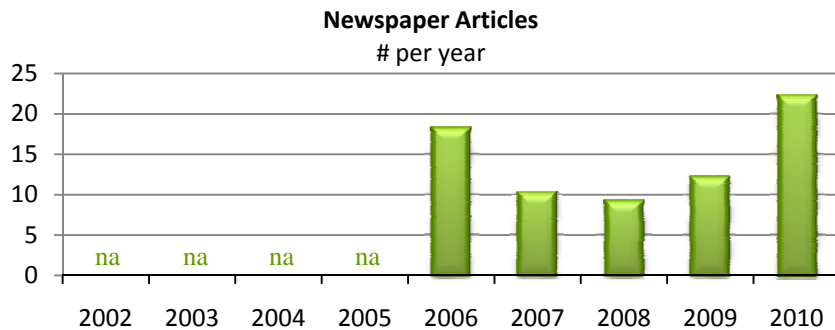


**Analysis:** The District has incomplete data for all fiscal years for comparable providers in the region, and therefore only those years with complete data are shown. Even after the three years of 15% fee increases from FY07 to FY09, the District SSC remains below the average for comparable area providers.

#### 5. Media/Press Coverage

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

- Amount of Coverage:** This is the total number of Napa Valley Register articles concerning the District, per year.

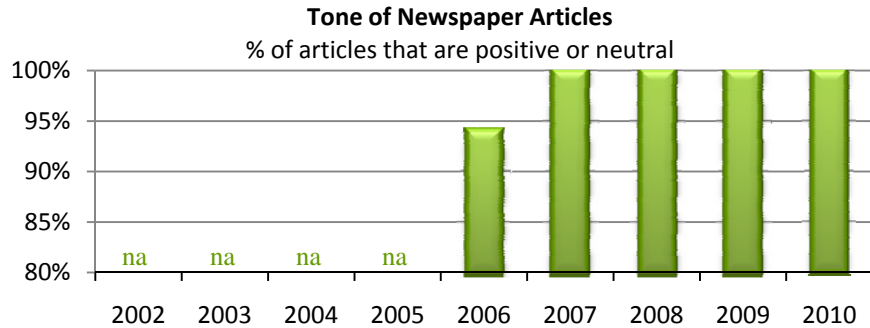


**Analysis:** 2006 saw a large number of articles due to the sewer service charge increase proposal. The increase in 2010 was



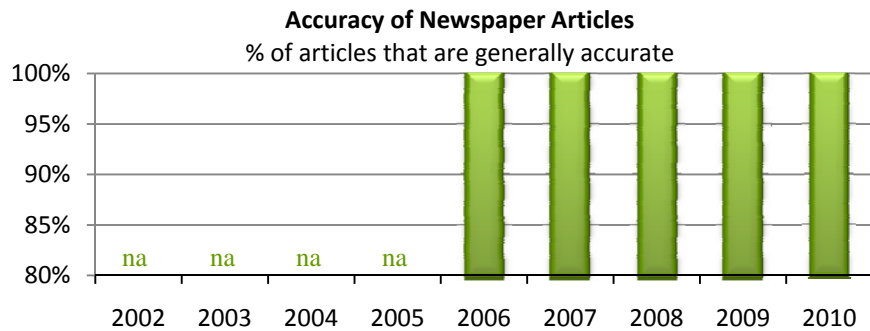
partially due to the proposal to increase capacity charges, but also represents a general increase in the amount of coverage received by the District as part of the District's outreach efforts.

- **Media Coverage Tone:** this is the percent of newspaper stories that cover the District in a positive or neutral way.



**Analysis:** Coverage of the District's activities, programs and policies has been predominantly covered in a neutral or positive tone. This includes editorials and opinion columns.

- **Media Coverage Accuracy:** This is the percent of newspaper stories that accurately describe the District or its activities.



**Analysis:** "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. Media coverage over the past 5 years has been very accurate.