



NACWA FINANCIAL SURVEY HIGHLIGHTS

## Opportunities & Challenges in Clean Water Utility Financing and Management

## Copyright Notice & Disclaimer

*NACWA Financial Survey (© 2012)*

*Opportunities & Challenges in Clean Water Utility Financing and Management*

This work is protected by copyright owned by the National Association of Clean Water Agencies (NACWA) and may not be reproduced, stored, or transmitted in any form or by any means without the consent of NACWA. Persons desiring to reproduce this work should contact NACWA to discuss the intended use and to obtain appropriate permission.

This work contains information reported to NACWA by its member agencies, which has been accurately compiled and analyzed by NACWA's project contractor. Neither NACWA nor its project contractor: represent that the information contained is suitable for any particular situation; have any obligation to update this work or to make notification of any changes to the information discussed in this work; or assume any liability resulting from the use of or reliance upon any information, conclusions, or opinions contained in this work.

# INTRODUCTION

Since 1981, the National Association of Clean Water Agencies (NACWA) has performed a triennial financial survey of its membership to provide public clean water agencies, government officials, and the public, insight into the financing and management of clean water utilities. Each day clean water utility managers are faced with a multitude of decisions that impact how revenues are raised and spent in the service of their communities. Utility budgets and long-term plans reflect competing demands that must be evaluated, including reaching higher treatment levels, rate affordability, chemical and electricity expenditures, repair and replacement of aging infrastructure, building future capacity, retaining high-quality staff and more.

This document highlights the key findings and conclusions from the 2011 NACWA *Financial Survey* (*Survey*) and, together with the full *Survey* report, provides a detailed picture of how utility managers continue to balance their responsibilities to provide an essential service and protect the environment with their obligation to manage their communities' resources responsibly. A total of 117 clean water agencies representing nearly 70 million people served by centralized wastewater treatment responded to the *Survey*.

The statistics detailed in the *Survey* are largely drawn from the 2010 to mid-2011 timeframe, as the Nation began to see signs of recovery from one of the worst economic downturns since the Great Depression. Taken together with data from NACWA's 2008 *Financial Survey*, the new information and trends analysis provide a snapshot of both the short and long-term challenges facing clean water agencies.

## Increasing Costs, Capital Spending Continue to Push Rates Higher

The *Survey* shows that clean water utilities are facing sustained increases in capital expenditures, operations and maintenance costs, and long-term debt. While it is assumed that expenses will naturally increase due to inflationary pressures and population growth, the *Survey* data reveal that utility costs and expenditures are rising at levels higher than would be expected due to these factors alone. Some of the additional costs are due to new regulatory requirements and the controls required to comply with existing Clean Water Act mandates, including sanitary and combined sewer overflow requirements. Other increasing costs, such as those for energy and chemicals, are dictated by external factors often beyond the control of the utility. For some utilities, expanded asset management efforts to address rapidly aging infrastructure are also driving expenditures.

With higher costs and greater capital expenditures comes the need for additional revenue. The *Survey* shows that rates and charges for residential and industrial customers have increased at more than three times the overall rate of inflation from 2007 to 2010. Data from NACWA's 2011 *Service Charge Index Survey* indicate that the nationwide average single-family residential service charge will surpass \$400 in 2012. Earlier surveys, however, projected hitting this milestone by 2011 based on anticipated rate increases, suggesting that some utilities may have delayed planned rate increases due to the recent economic downturn.

## High Levels of Long-Term Debt Threaten Future Borrowing

In both NACWA's 2005 and 2008 survey reports, it was noted that the rapid increase in long-term debt, coupled with increasing capital needs, could result in difficulties for utilities to meet future funding needs through debt financing mechanisms, especially if interest rates begin to rise significantly. The 2011 *Survey* data show that long-term debt is up 24 percent between 2007 and 2010 and nearly 75 percent between 2001 and 2010.





Debt service payments comprise, on average, 26 percent of total expenditures for agencies responding to the *Survey*. These increasing long-term debt figures and high debt service levels may impact future bond ratings and ultimately impact a utility's ability to borrow additional funds for future projects.

### Utilities Continue to Enhance System Management, Improve Service as They Look to the Future

The *Survey* suggests that clean water utilities are continuing efforts to improve efficiency and sustainability through energy recovery initiatives, implementation of asset management programs, and implementation of utility management/excellence programs. Service levels also continue to steadily improve with increasing levels of treatment and high removal efficiencies for key pollutants.

Since the release of NACWA's last *Financial Survey* in 2009, clean water utilities have continued to focus attention on the status of their physical assets, working to characterize the condition, value, and longevity of those assets so they can better plan for future needs. Eighty-five percent of *Survey* respondents indicated that asset management programs are being implemented at their utilities.

While clean water utilities continue to improve service levels and enhance the management of their current operations, many are also keeping a keen eye to the future by expanding their missions to place greater emphasis on resource recovery efforts, like energy production from biogas and nutrient harvesting, and the expanding role that utilities play in the community. From these increasingly prevalent efforts, an image of the "utility of the future" – where compliance with permit requirements is viewed as only part of the mission—is quickly emerging. Utility managers are also working to reasonably assure that utility rate structures are sustainable and are continuing to explore the most resilient business models for utility operations.

As the Nation reflects on the 40th anniversary of the Clean Water Act in October, NACWA looks forward to the next four decades of clean water and the expanding role for the clean water utility. As this document and the full *Financial Survey* report illustrate, the clean water community continues to aggressively pursue sound financing and management practices to position clean water utilities for a sustainable future.

## EXTERNAL DRIVERS

Numerous challenges, both external and internal, continue to have a major impact on clean water agency operations. Population growth and changing demographics, including population shifts between urban and suburban areas, present a common challenge to utility managers who must meet the clean water needs of their communities and find the right balance in the cost for their services. Population growth also has the potential to exacerbate water quality challenges, including adding to already high levels of nutrients being discharged to the Nation's waters, which can result in more stringent and costly treatment requirements for clean water utilities.

Meeting permit requirements is an essential function for all utilities, but water quality concerns and new regulatory requirements that necessitate treatment upgrades or other investments continue to add to the list of resource demands. Recent evidence suggests that historic water quality gains may be slipping. Even though most current water quality challenges are largely attributed to nonpoint sources, efforts to reverse negative water quality trends continue to add to clean water agency regulatory burdens. As they plan for the future, utilities must also factor longer-term drivers, including aging infrastructure, into their efforts to maintain service levels and improve water quality.



## EXTERNAL DRIVERS



*Service populations have tracked U.S. population growth trends closely from 1995 to 2010 and have increased by 1.4 percent per year.*

### Utilities Continue to Meet the Needs of a Growing Population

Publicly owned clean water utilities must be prepared to serve the Nation's growing population. According to the U.S. Census Bureau, the Nation's population grew by 46 million from 1995 to 2010, an increase of 1.1 percent per year. Clean water utility service populations have slightly exceeded U.S. population trends, growing at 1.4 percent per year during the same time period. With growing service populations come additional capital and operation and maintenance costs as plant capacities are increased and collection systems are extended.

**FIGURE 1: Clean Water Utility Service Population Growth 1995-2010 (millions)**



*Sources: 2008 NACWA Financial Survey & 1996 EPA Clean Water Needs Survey*

The U.S. Census Bureau estimates that the U.S. population will grow at approximately 9 percent over the next 10 years, with a net population increase of 28 million from 2012 to 2021<sup>1</sup>. With this population growth, an additional treatment capacity of up to 2.4 billion gallons per day will be needed, with an additional cumulative annual operation and maintenance cost of nearly \$2 billion per year<sup>2</sup>.

Based on the 2011 *Survey*, national treatment plant capacity has already been consistently increasing (Figure 2a). For 56 agencies that responded to the 1999, 2005 and 2011 *Surveys* overall plant design capacity rose from 8,154 million gallons per day (MGD) to 9,794 MGD between 1998 and 2010. In other words, a 20 percent increase in plant design capacity over the past 12 years has taken place. In addition, from 1998 to 2010, the overall sewer system length for 55 agencies that responded to the 1999, 2005 and 2011 *Surveys* rose from a total of 77,439 miles to over 90,000 miles, representing a 14 percent increase in total pipe length operated and maintained over 12 years (Figure 2b).

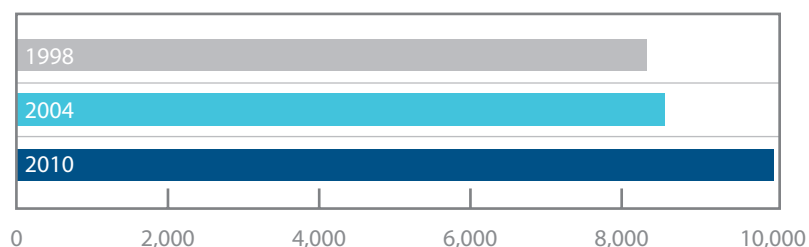
While populations are growing nationwide, this is not the case in every community. Some utilities are struggling to meet growing needs with a decreasing number of ratepayers. With a large portion of wastewater expenditures

<sup>1</sup> <http://www.census.gov/population/www/projections/summarytables.html>

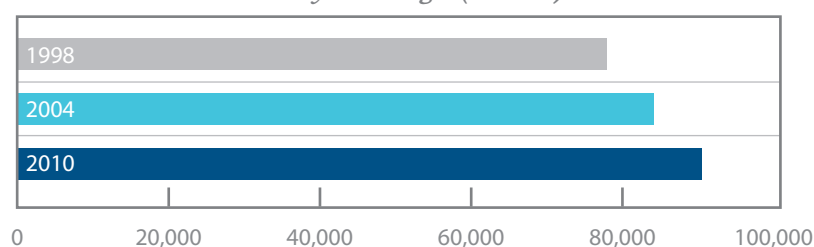
<sup>2</sup> 28 million persons multiplied by 85 gallons per person per day is equivalent to 2.38 billion gallons of wastewater per day. This increased annual flow multiplied by \$2,100 per million gallons treated is equivalent to \$1.82 billion.



**FIGURE 2a: Total Design Capacity (MGD)**



**FIGURE 2b: Total Sewer System Length (in miles)**



being fixed (i.e., costs are incurred regardless of how many people are using the system), a decline in ratepayers and the resulting drop in revenues can have a major impact on utility operations.

Rates of land development, resulting in increases in impervious cover and expanded service areas for clean water agencies, are almost double the rate of population growth. The costs of providing treatment to a larger service area must be balanced with maintaining the existing, older infrastructure in the urban core. The flux of population from these urban

centers to suburban communities, together with the income differences between these two sub-populations, complicates the process of equitably charging for sewer services, and ultimately raises affordability concerns.

## New Mandates Add to Existing Cost Challenges

Clean water agencies have never before been asked to do so much with so little. Ongoing federal enforcement efforts to address sewer overflows, new requirements for nutrient controls, forthcoming regulations for stormwater, all will continue to add to the existing workload for the Nation's clean water utilities.

The past year has seen some significant developments with regard to EPA's handling of the Clean Water Act mandates that are impacting municipalities. As a result of strong advocacy efforts by NACWA and other groups, including the U.S. Conference of Mayors, EPA has for the first time acknowledged the dire situation some communities find themselves in as they try to meet all of their obligations at the same time. EPA has responded and is working to develop a new, integrated planning approach to prioritize investments for meeting Clean Water Act obligations that may help to alleviate some of these problems. EPA's effort shows promise, but the extent to which it will help a large number of clean water utilities seems limited at this point. Communities facing existing, large compliance obligations may benefit by being able to prioritize and schedule investments in a more logical order, but the vast majority of utilities are facing everyday revenue and management challenges that are not addressed by EPA's framework.

At the same time, EPA's enforcement office continues to list sewer overflows as the top enforcement priority and will likely continue to lock many communities into long-term orders committing hundreds of millions – even billions – of dollars to reduce sewer overflows or make other collection system improvements. The nature of these court-approved agreements will require utilities to dedicate resources that might otherwise be spent on other utility needs.

## FINANCIAL TRENDS & CHALLENGES

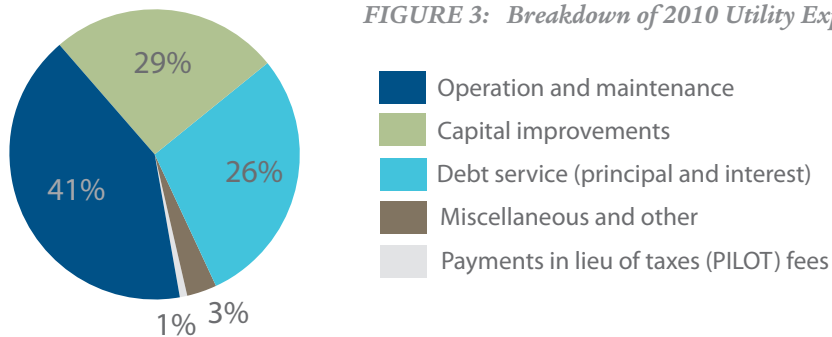
The 2011 *Survey* highlights a continuing trend of rising costs and expenditures for clean water utilities. The cost of clean water utility services has outpaced the rate of inflation for more than a decade, suggesting that factors other than inflationary pressure are contributing to rising costs. Together with increasing costs for personnel, chemicals and electricity, utility spending on capital projects and long-term debt continues to increase. The financial health of the Nation's clean water utilities as a sector, however, remains relatively strong. As discussed below, there are several areas that will continue to threaten this financial position in the long-term.





## Expenditures Increase by 25 Percent over the Past Three Years

Survey respondents reported \$14.8 billion in expenditures for 2010, with an average per capita<sup>3</sup> annual expense of \$224. Figure 3 shows the breakdown of 2010 utility expenditures. Operation and maintenance comprised 41 percent of total expenditures, capital improvements 29 percent and debt service 26 percent of total expenditures. As evidenced by the past two surveys, utilities have been spending nearly as much money paying off old debt as investing in new capital projects to upgrade or expand existing infrastructure.



From 2007 to 2010, clean water utility expenditures increased by 25 percent. Both revenues and expenditures are expected to increase each year due to inflationary pressures and population growth. However, other cost pressures, including those driven by regulatory mandates and consistently increasing chemical and electricity expenses, have undoubtedly added additional burdens to clean water utilities nationwide. Table 1 shows a breakdown of expenditure increases from 2004 to 2010.

**TABLE 1: Expenditure Increases by Category (2004-2010)**

Expenditures	2004-2007	2007-2010	2004-2010
<b>Total Expenditure (% Change)</b>	<b>+18%</b>	<b>+25%</b>	<b>+48%</b>
O&M Expenditure (% Change)	+17%	+34%	+56%
Capital Improvement Expenditure (% Change)	+19%	+9%	+29%
Debt Service Expenditure (% Change)	+22%	+31%	+59%

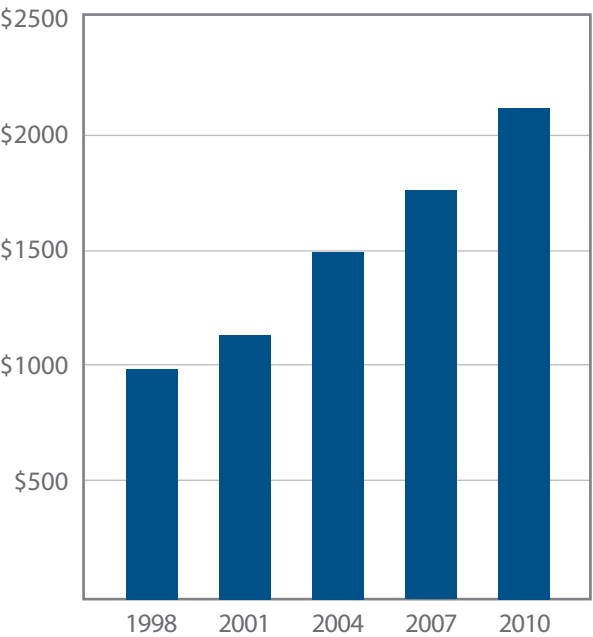
<sup>3</sup> Per person served by the clean water agency.

# FINANCIAL TRENDS & CHALLENGES

## Operation and Maintenance Cost Trends

A total of 107 survey respondents reported \$4.7 billion in operation and maintenance (O&M) costs for wastewater services in 2010, with an average O&M cost per million gallons treated of \$2,100. Table 2 shows a breakdown of O&M expenditures for 2010. Figure 4 indicates that O&M expenditures have increased 114 percent since 1998, and 20 percent between 2007 and 2010.

**FIGURE 4:** Operation and Maintenance Cost per Million Gallons Treated (1998-2010)



**TABLE 2:** Operation and Maintenance Cost Category Breakdown (2007)

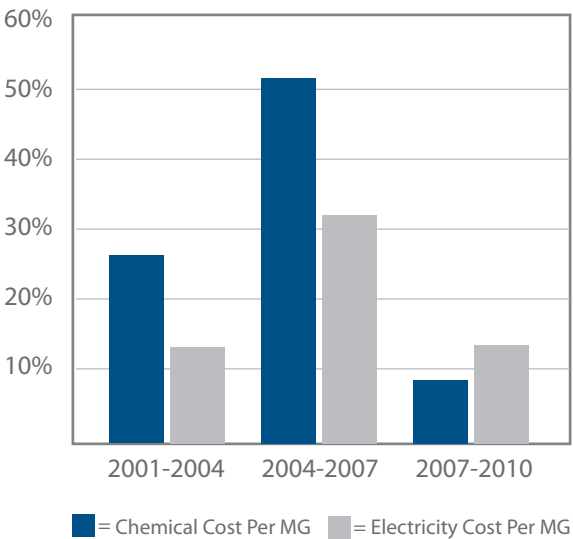
Expenditures	2010
Personnel Costs (Wages, Salary and Benefits)	46%
Private sector services	15%
Electric power	10%
Services provided by other departments	8%
Supplies and materials	7%
Chemicals	5%
Other utilities	3%
Utility management	1%
Other	5%
Total	100%

## Chemical and Electricity Costs

Chemical and electricity costs comprised nearly 15 percent of O&M expenditures and 5 percent of total agency expenditure in 2010. Average chemical cost per million gallons treated was \$97, and average electricity cost per million gallons treated was \$189. While the percent increase in these cost categories between 2007 and 2010 (8.9 percent for chemical costs and 13.8 percent for electricity costs) is lower when compared to the 2004 to 2007 period (51.4 percent increase for chemicals and 32 percent increase for electricity), the continued increases reflect the long-term trend (Figure 5). Since 2001, chemical costs are up 81 percent and electricity costs are up 49 percent.

From 2001 to 2010, chemical costs rose on average 6.8 percent per year and electricity costs rose on average 4.5 percent per year.

**FIGURE 5:** Percent Increases in Chemical and Electricity Cost per Million Gallons Treated (2001-2011)



## Personnel Costs

Personnel costs make up a major portion of clean water utility expenditures. The *Survey* data show that staff wages and benefits comprised nearly 46 percent of total operation and maintenance expenses and 15 percent of all agency expenses in 2010. Personnel costs (wages, salaries, and benefits) increased 12 percent from 2007 to 2010, with a larger percent increase in benefits (14 percent) than wages and salaries (11 percent).

Faced with a growing number of senior staff nearing retirement, and a potential shortage of qualified staff replacements, utilities are working to ensure that compensation packages remain competitive in order to recruit and retain qualified staff. Most job positions surveyed had salaries increase 5 to 14 percent from 2007 to 2010. An abridged list of staff salary trends is shown in Table 3. For comparison, the consumer price index, or inflation rate, rose 5.2 percent during the 2007 to 2010 timeframe.

*The Survey data show that wages and benefits comprised 46 percent of total operation and maintenance expenses and 15 percent of all agency expenses in 2010.*



**TABLE 3: Expenditure Increases by Category (2007-2010)**

Position	Common Respondents	Median Salary 2010 (\$)	Median Salary 2007 (\$)	3-Year Increase (%)
Civil Engineer - Entry Level	52	\$57,150	\$52,803	8.2%
Civil Engineer - Senior Level	60	\$87,366	\$84,821	3.0%
Operator - Entry Level	67	\$40,334	\$35,550	13.5%
Operator - Senior Level	70	\$57,932	\$51,670	12.1%
Plant Superintendent - Entry Level	48	\$69,144	\$64,349	7.5%
Plant Superintendent - Senior Level	66	\$93,073	\$87,397	6.5%
Mechanic - Entry Level	49	\$42,037	\$38,064	10.4%
Mechanic - Senior Level	51	\$57,691	\$52,100	10.7%

## FINANCIAL TRENDS & CHALLENGES

### Capital Needs Remain High

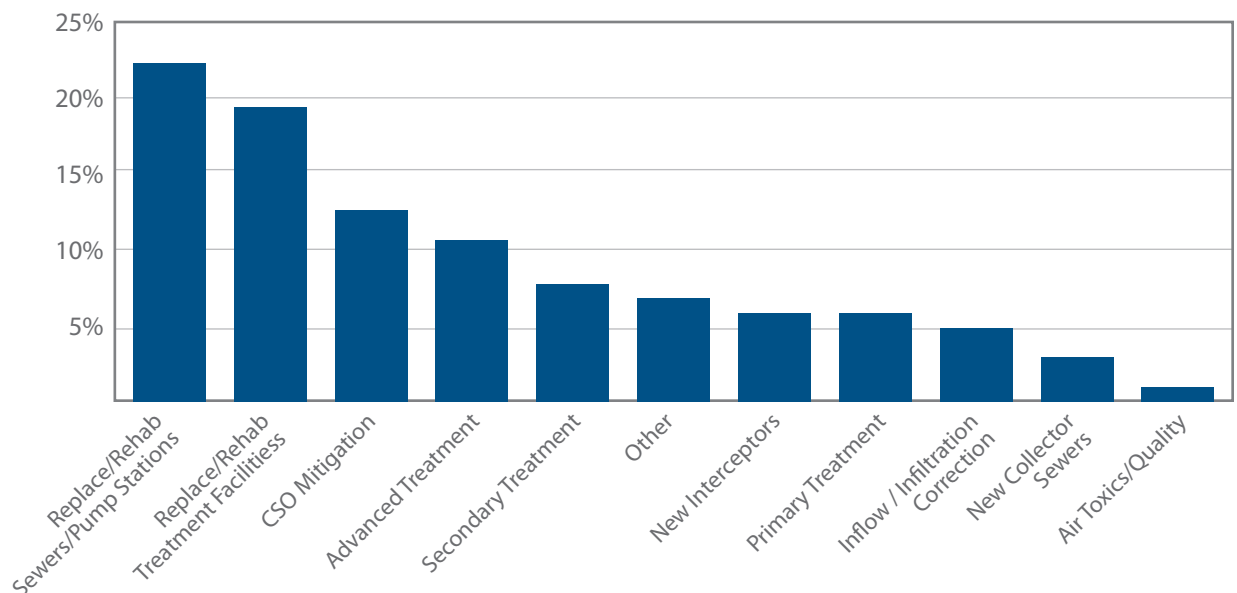
A total of 74 survey respondents reported \$18.8 billion in five-year capital improvement needs for 2011-2015, with an average per capita five-year need of \$509. Figure 6 shows the breakdown of capital needs, with the highest needs for replacement and repair of existing sewers, pump stations, and treatment facilities. *Survey* data indicate an increased needs emphasis on inflow/infiltration (I/I) control and replacement and rehabilitation of sewers, pump stations, and treatment facilities. These three needs categories make up 51 percent of all capital needs, an increase from the 2008 *Survey* when these categories made up only 37 percent of all capital needs.



*Average five-year capital needs amounted to \$254 million per utility respondent.*

While capital needs remain high, trend data suggest that five-year capital needs decreased by 13 percent from 2008 to 2011, after an increase of 25 percent from 2002 to 2008.

**FIGURE 6: Breakdown of 5-year Capital Needs, 2011-2015 (In percent of total needs)**





# Increased Long-Term Debt

Total long-term debt as of January 1, 2011 for 105 responding agencies was reported at \$46 billion with an average per capita debt of \$642. Figure 7 shows that 64 percent of debt is in the form of revenue bonds, 21 percent in state revolving loan funds, and 15 percent in general obligation bonds and other debt. Long-term debt increased 24 percent from 2007 to 2011 and nearly 75 percent between 2002 and 2011.

The average per capita long-term debt for a clean water utility is \$642.



One direct impact of rising long-term debt is the increased proportion of agency expenditures devoted to debt service. Debt service expense has increased from 22 to 26 percent of agency expenditures over the past 9 years, while the total amount of debt service expenditures rose by nearly 31 percent in the past 3 years. Debt service coverage is a key factor for the agencies that develop bond ratings for utilities. As the debt obligation portion of a utility’s budget increases, bond ratings could be negatively impacted, increasing the utility’s cost to borrow additional money. The percent of agency respondents reporting a moderate to strong debt service coverage ratio of 1.2 or more, fell from 92 percent in 2008 to 86 percent in 2011.

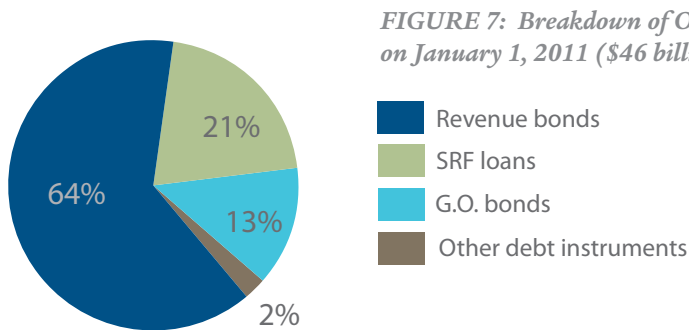


FIGURE 7: Breakdown of Outstanding Long-Term Debt on January 1, 2011 (\$46 billion, 105 utilities)



# FINANCIAL TRENDS & CHALLENGES

## Utility Financial Statements Reflect Strong Overall Position

Clean water utility balance sheets for the end of fiscal years 2004, 2007 and 2010 show that utilities continue to finance a large proportion of their assets through long-term debt. An aggregated balance sheet for 46 clean water utilities with over \$52 billion in assets in 2011, however, shows that the average debt ratio (total liabilities divided by total assets) rose only slightly from 0.46 to 0.48 between 2004 and 2010, reflecting a modest increase in total indebtedness (debt ratios greater than 0.5 indicate that an operation's assets are financed primarily through debt). The average current ratio liquidity measure (current assets divided by current liabilities) has ranged from 2.3 in 2004, to 3.5 in 2007, and was 2.7 in fiscal year 2010. A current ratio of assets to liabilities of 2 (2:1) is usually considered to be acceptable.

*TABLE 4: Aggregated Balance Sheet Summary 2004-2010 (46 Agencies)*

ASSETS	end FY 2010 (millions)	end FY 2007 (millions)	FY 2004 (millions)
Current assets	\$6,896	\$7,281	\$4,007
Noncurrent assets	\$45,691	\$39,517	\$26,087
Total assets	\$52,586	\$46,798	\$30,094
LIABILITIES AND NET ASSETS			
Total current liabilities	\$2,554	\$2,042	\$1,685
Long-term liabilities	\$22,661	\$18,267	\$12,139
Net assets	\$27,320	\$26,410	\$16,195
Total liabilities and net assets	\$52,586	\$46,798	\$30,094

An aggregate statement of revenues and expenses for the end of fiscal years 2004, 2007 and 2010 shows that, despite rising operations costs, utilities continue to generate adequate revenue to cover operational expenses. The average operating ratio (operating revenue divided by operating expense) increased slightly from 1.59 in both 2004 and 2007, to 1.66 in 2010. Ratio values greater than one indicate that annual revenues were adequate to cover expenses during the year.

## MEETING THE CHALLENGES: OPTIMIZED AND SUSTAINABLE UTILITY MANAGEMENT AND OPERATIONS

Despite the growing list of resource demands and other cost pressures, utilities continue to provide improved protection for human health and the environment through higher treatment levels and pollutant removal rates and through measures to reduce their overall environmental footprint like energy efficiency and green power generation. Clean water utilities also continue to adopt new practices and approaches that help to optimize their operations and overall management.





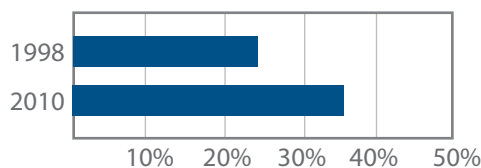
## MEETING THE CHALLENGES: OPTIMIZED AND SUSTAINABLE UTILITY MANAGEMENT AND OPERATIONS

### Improved Treatment Level Performance

Clean water utilities nationwide continue to improve the performance of their treatment plants through upgrades and expansion. Over the past 12 years, the percentage of flow treated to levels above secondary treatment standards (via biological nutrient removal or tertiary treatment processes) has increased 50 percent, and now comprises more than one-third of all flows treated by *Survey* respondents.

*Flows treated to above secondary levels have increased 50 percent since 1998.*

**FIGURE 8: Percentage of Flow Treated Above Secondary Treatment, 1998-2010 (56 common utility respondents)**



### High Levels of Treatment Efficiency

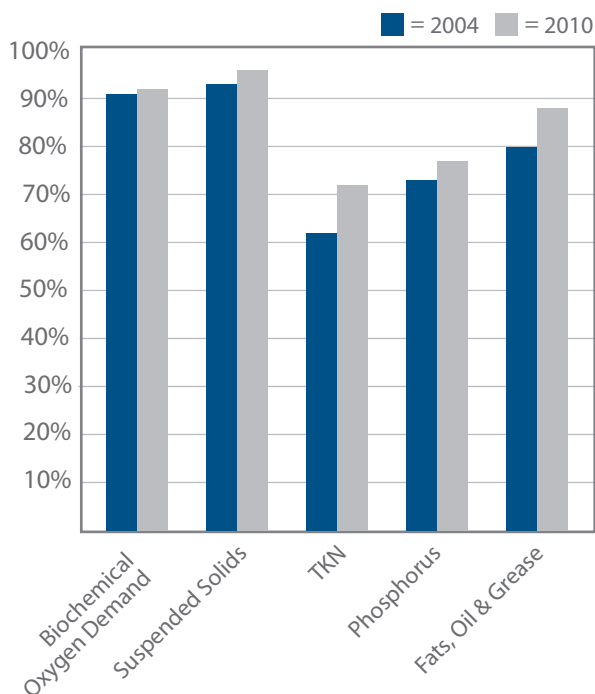
Due to higher treatment levels and improved operational efficiency, the nation's clean water utilities are continuing to remove higher percentages of pollutants, improving on already high levels of removal. Total Kjeldahl Nitrogen (TKN) and phosphorus removal improved from 62 to 72 percent, and 73 to 77 percent, respectively, from 2004 to 2010 (Figure 9a).



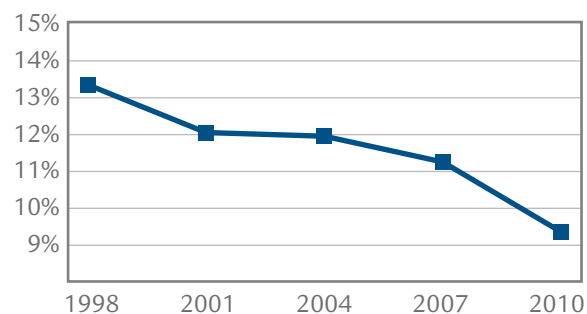
*Over 70 percent of incoming phosphorus and nitrogen loadings are removed by utility respondents.*

In addition to high levels of pollutant removal, utilities have also improved the performance of their collection systems as indicated by trends in the percentage of total flows from inflow and infiltration (I/I), which has been reduced by 30 percent over the past 12 years (Figure 9b).

**FIGURE 9a: High Levels of Treatment Efficiency Continue to Improve (percent removal)**



**FIGURE 9b: Reductions in Inflow and Infiltration (I/I as percent of total flow), 1998-2010**

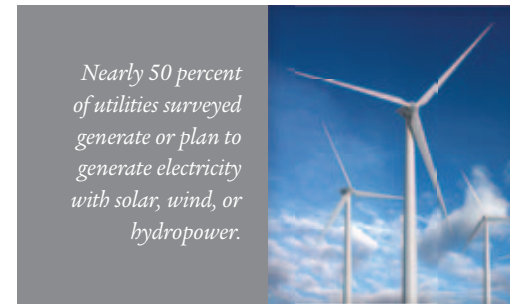




## Energy Efficiency, Cost Reduction and Onsite Energy Generation

As costs for energy increase, clean water utilities are achieving energy and cost reductions and environmental benefits through a variety of energy saving techniques. A large proportion of utilities have already implemented one or more of these techniques at their plants, while a significant proportion plan to do so in the future (Table 5). For example, 77 percent of utility respondents have already installed high efficiency pumps, motors and variable frequency drives, 41 percent of agencies indicated the use of heat recovery, and nearly 95 percent of agency respondents have or are planning to install efficient lighting and/or HVAC for their plants and administrative buildings.

Nearly 70 percent of respondents indicated that they have completed or are planning to complete projects that will generate electricity onsite using biogas, while 48 percent of survey respondents indicated that they are generating or planning to generate electricity with solar, wind or hydropower. More than one-half the survey respondents indicated that electricity is generated onsite. Of these respondents, the median percentage of electricity needs generated onsite was 40 percent. For a handful of utilities, onsite power generation now exceeds their demand and electricity is supplied back to the power grid.



**TABLE 5: Energy Conservation or Cost Reduction Methods Implemented and Planned**

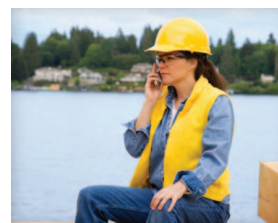
Energy Conservation or Cost Reduction Method	Percent of Agencies that Have Completed Projects	Percent of Agencies that Have Planned Projects
Installation of high-efficiency pumps, motors, & variable frequency drives	77%	27%
Use of efficient lighting, HVAC for plant and administrative buildings	63%	30%
Using SCADA systems to monitor and optimize energy needs	58%	22%
Optimized purchasing strategies & load shifting to reduce peak demand	48%	8%
Reduction of I/I to reduce plant flows	42%	28%
Heat recovery	41%	16%
Electricity generation – (biogas fueled engine, microturbine, fuel cell)	37%	32%
Installation of equalization basin(s) to reduce peak demand	20%	9%
Electricity generation (solar, wind turbine, hydropower)	19%	29%

# MEETING THE CHALLENGES: OPTIMIZED AND SUSTAINABLE UTILITY MANAGEMENT AND OPERATIONS

## Utility Management Initiatives

The 2011 NACWA *Financial Survey* confirms that utilities continue to explore the use of environmental or quality management programs to improve their operations and overall efficiency. The National Biosolids Partnership Environmental Management System (EMS) and the American Water Works Association (AWWA)/Water Environment Federation (WEF) Qualserve program remain popular management systems with over 20 percent of agencies planning or implementing each of these systems

The International Organization for Standardization (ISO) 9000 and 14000 standards continue to generate interest with 15 percent of responding agencies considering or participating in one of these programs.

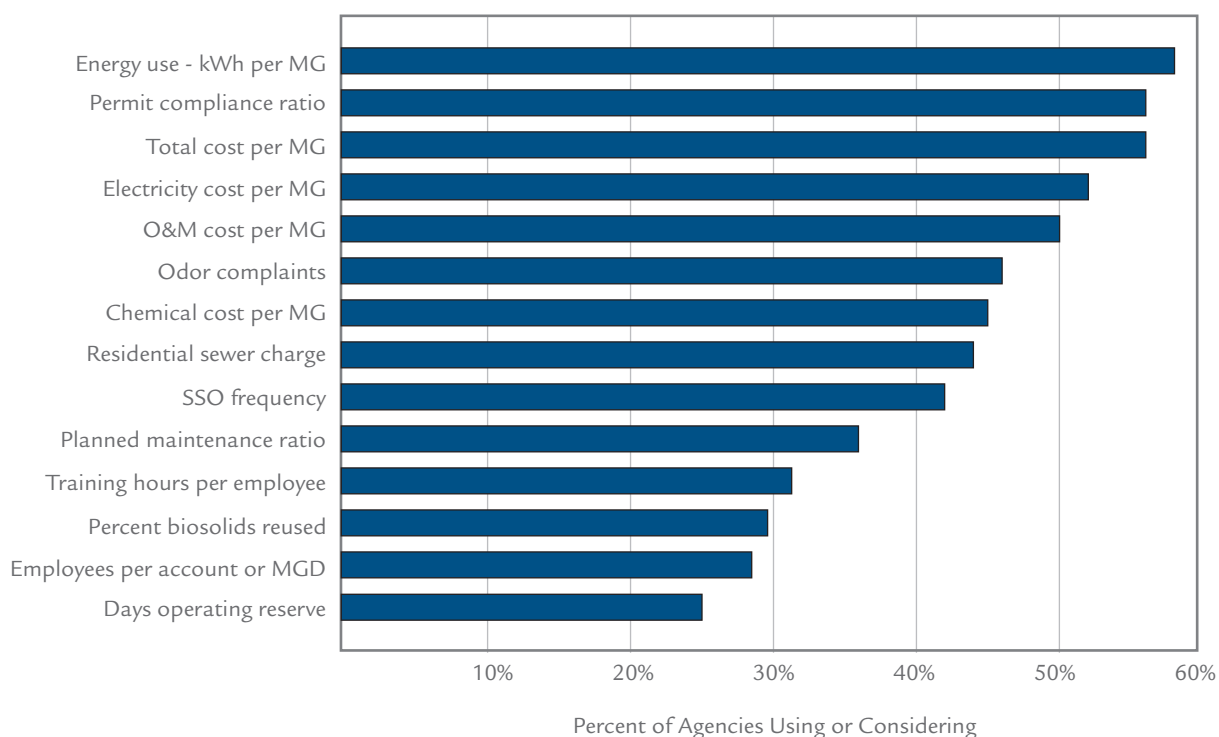


*Nearly 70 percent of survey respondents implement some form of utility management.*

## Performance Benchmarking

In the 2008 *Survey*, NACWA reported that nearly 50 percent of survey respondents used one or more performance benchmarks. Current data indicate that the proportion of respondent agencies using performance benchmarks has risen to 60 percent. Figure 10 illustrates the most commonly reported benchmarks used or being considered by respondent clean water agencies.

**FIGURE 10: Commonly Reported Benchmarks Used or Being Considered by Clean Water Agencies**



## Increased Implementation of Asset Management Systems

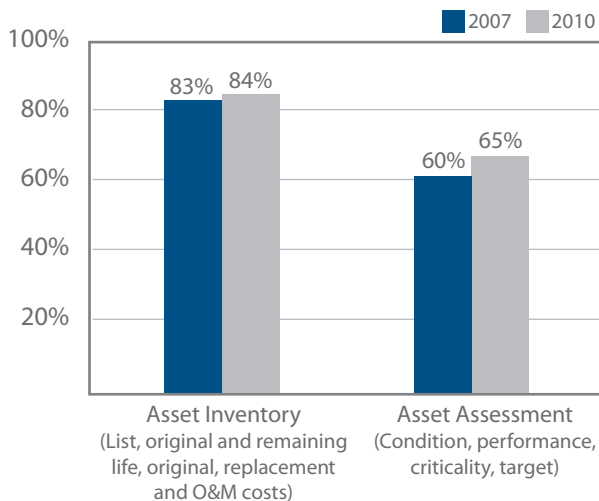
Asset management systems can help utilities determine how to minimize the life cycle cost of owning and operating infrastructure assets, while continuously delivering service levels demanded by customers. According to the 2011 NACWA *Survey*, approximately 85 percent of respondents currently implement an asset management system, as compared to only 68 percent of respondents in the 2005 *Survey*, and 60 percent of agencies responding have staff dedicated to asset management activities. Sixty-eight (68 percent) of agencies use their asset management systems to provide information for their capital improvement programs and 57 percent of agencies use asset management systems to support the modified accounting approach described in Government Accounting Standards Board (GASB) Statement 34.

Figure 11 provides a snapshot of the degree to which respondents have implemented asset management programs. The figure examines the level of information available for all assets in two broad categories, asset inventory (including information on original life span, remaining life, original cost, replacement cost, O&M cost and rehabilitation cost) and asset condition (including condition assessment, performance assessment, criticality analysis, and target condition). For each asset type, the level of information for each of these elements varies. The values in Figure 11 provide average percent of information available for all asset types across all categories of both asset inventory and asset condition.

*Eighty-five percent of Survey respondents implement an asset management system, as compared to only 68 percent of Survey respondents six years ago.*



**FIGURE 11: Level of Asset Management Program Implementation (2007-2010)**



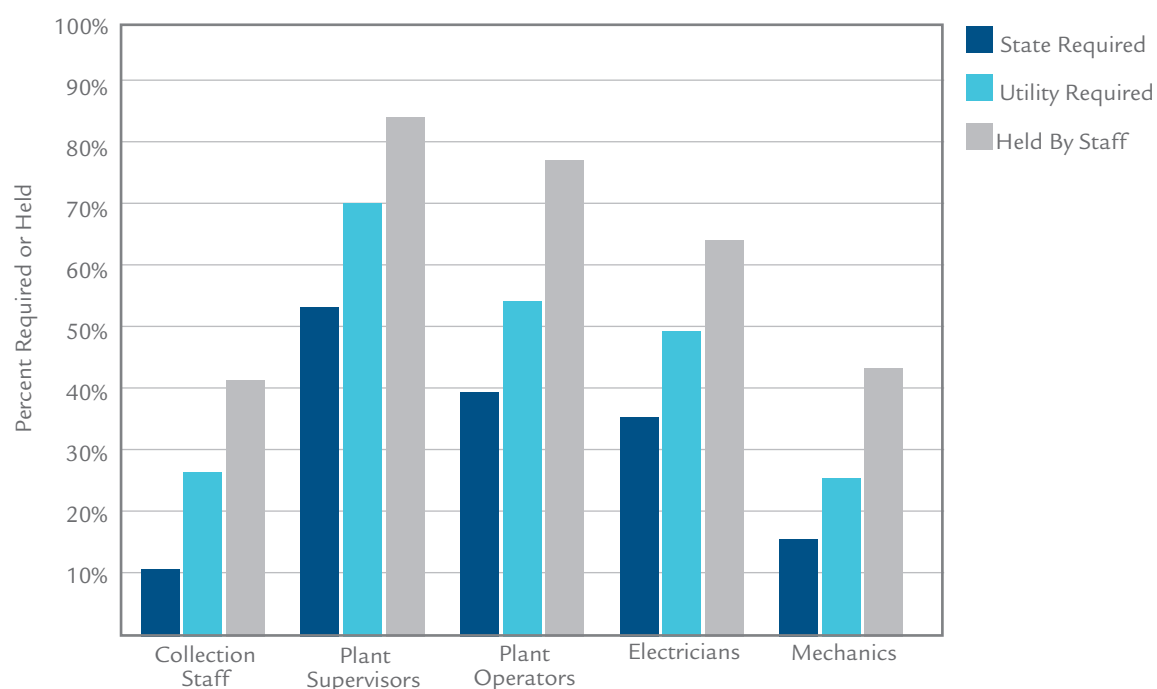
## MEETING THE CHALLENGES: OPTIMIZED AND SUSTAINABLE UTILITY MANAGEMENT AND OPERATIONS

### Staff Licensing Outpaces Regulatory Requirements

Clean water utility workers provide an invaluable service to the community and the environment. In order to reasonably assure that treatment plants and collection systems operate efficiently, most states have set minimum licensing<sup>3</sup> or certification requirements for plant superintendents, plant operators, collection system workers, electricians, and mechanics. The 2011 *Survey* indicates that licensing requirements imposed by utilities continue to exceed state requirements, and that the percent of staff holding licenses continues to outpace both state and utility licensing requirements.

*Utility staff continue to exceed state licensing requirements.*

**FIGURE 12: Staff Licensing<sup>3</sup> Outpaces Both State and Utility Requirements**



<sup>3</sup> The term “license” was used broadly to indicate any grade, class, or level of license or certification issued by a state government, an industry trade association, or labor union.



## MEETING THE CHALLENGES: SUSTAINABLE RATES AND CHARGES

Sewer service charges, which are generally based on an underlying rate and a measure of consumption, a fixed charge or tax, or some combination thereof, are the primary source of revenue for NACWA's members. Sewer service charges have been steadily increasing for the past decade, outpacing the rate of inflation each year. Recently, clean water agencies have begun to express concern about declining revenues as conservation efforts and shifting populations result in decreases in consumption. Utilities are increasingly relying on fixed charges that are not linked to the amount of water used, reflecting the fact that many of the expenditures associated with maintaining their assets are incurred regardless of water usage.

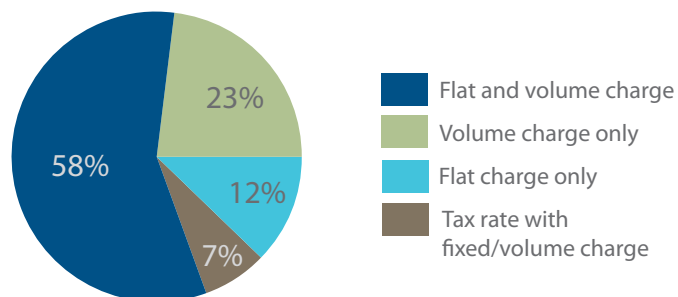


## MEETING THE CHALLENGES: SUSTAINABLE RATES AND CHARGES

### Rate Structures

While nearly all NACWA agencies depend heavily on user service charges for their revenue stream, the rate structures for these charges are diverse. Agencies can use any one or a combination of fixed/flat charges, volume-based charges, and tax-based charges. Figure 13 shows a breakdown of rate structures used by 2011 *Survey* respondents and highlights that a majority of utilities (58 percent) use a combination of a flat charge with a volume-based charge.

*FIGURE 13: Types of Rate Structures Implemented at Clean Water Agencies.*



## Average Sewer Service Charges Outpace Inflation

Because of the variation of rate structures implemented, the average annual single-family residential sewer service charge, inclusive of collection and treatment, provides a consistent benchmark to measure the price of service and changes in the price of service among clean water agencies nationwide.

NACWA performs an annual survey on changes in residential sewer service rates, called the NACWA *Service Charge Index (Index)* to supplement the data in the *Financial Survey*. The NACWA *Index* measures the year-to-year percent change in residential sewer charges, and has tracked the national trends in residential service charges from 1985 onward. The 2011 data indicate that the average residential service charge continues to increase faster than the rate of inflation as measured by the *Consumer Price Index*. Projections from the 2011 NACWA *Index* indicate that the average single-family residential service charge will exceed \$400 per year in 2012, and \$500 by 2016.

The national average single-family residential service charge in 2011 was \$390.

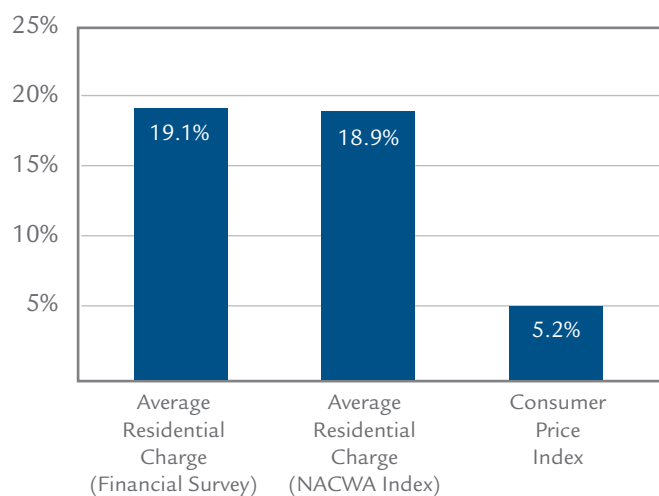
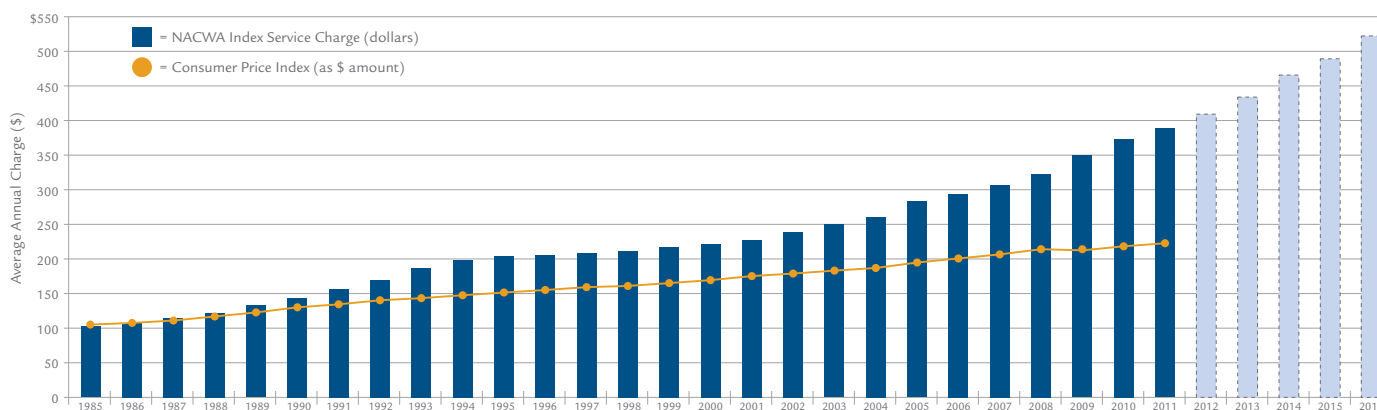


FIGURE 14: Percent Increase in the Annual Residential Service Charge from 2007 to 2010

FIGURE 15: Historical and Projected Average Single-Family Residential Service Charge (1985-2012)



Source: 2011 NACWA Service Charge Index

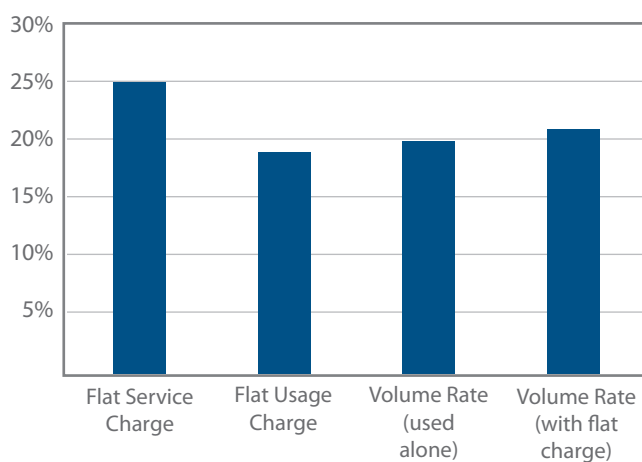


## MEETING THE CHALLENGES: SUSTAINABLE RATES AND CHARGES

### Fixed Charges and Volume-Based Rate Components Increase

The NACWA *Financial Survey* examines the changes in fixed charges and volume rates and how they relate to the change in the average residential service charge. The 2011 *Survey* shows that both flat and volume-based components of residential rate structures have increased at least 20 percent since 2007. Figure 16 shows the changes in fixed charge and volume-based rate components from 2007–2010.

**FIGURE 16: Percent Increases in Flat and Volume-Based Rate Components (2007 to 2010)**



*The average fixed rate for service and billing in 2010 was \$95. This rate has increased an average of 8 percent per year over the last three years.*





Industrial Users Also Pay for Rising Costs of Wastewater Collection and Treatment

Industries discharging to the sewer system are also impacted by the rising cost of wastewater collection and treatment. While utility rate structures for commercial and industrial dischargers are more diverse than residential rate structures, most agencies require that industrial dischargers pay a volume-based charge and applicable extra strength charges for high strength waste. High strength charges are generally expressed as a cost per quantity discharged (\$ per pound) in excess of a threshold concentration level. The most common parameters for high strength charges are biochemical oxygen demand (BOD) and suspended solids (SS). Figure 17 shows the increase in the industrial volume-based charge and extra-strength charges from 2007 to 2010. These increasing costs present challenges for communities struggling to attract and keep businesses and the jobs they provide for the local community.

FIGURE 17: Percent Increase in Industrial Rates from 2007 to 2010

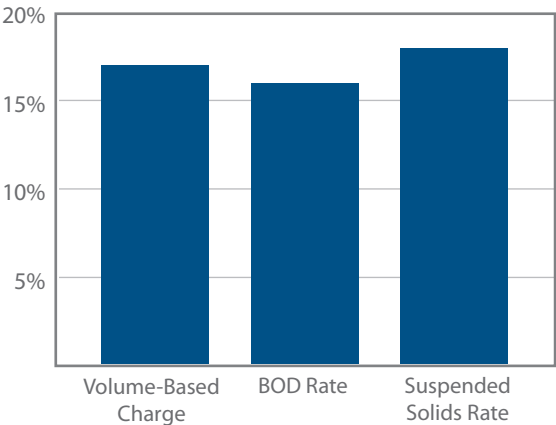


TABLE 6: Average Industrial Rates in 2010

Parameter	2010 Average Rate
Volume Charge (\$/1,000 gallons)	\$3.29
BOD (\$ per pound)	\$0.3112
SS (\$ per pound)	\$0.2588

Residential Fees - Connection and Hookup Fees

In addition to yearly service charges, new customers can be charged connection fees (the cost of connecting a house lateral) and hookup fees (one-time fees used to offset capital improvements associated with the expansion of the system). Both these fees increased from 2007 to 2010. Overall, average residential connection fees increased by 13 percent from 2007 to 2010 and average facility/hookup fees increased by 23 percent.



## CONCLUSION

The 2011 *Financial Survey* provides strong evidence that clean water utilities are continuing to improve their operations and management practices in the face of steadily growing regulatory obligations, rising costs and declining revenues. Overall, clean water agencies continue to demonstrate a strong financial position, but the increasing reliance on long-term debt to finance assets and the large portion of utility budgets dedicated to servicing that debt, have and will continue to present challenges for communities nationwide.

Though still emerging from one of the most severe economic downturns in the country's history, the Nation's clean water utilities continue to explore new ways to provide better and more holistic service to their communities. The growing prevalence of resource recovery activities, increased focus on management approaches that look at social and economic, as well as environmental impacts of their actions, and other innovative initiatives are beginning to shape the image of the 'utility of the future'.

The challenges, however, remain formidable. Many communities continue to struggle due to the impacts of the faltering economy coupled with increasingly costly Clean Water Act regulatory requirements. Housing prices and foreclosures have impacted tax revenues and many communities are having difficulty providing basic services. Looming issues that will more directly impact clean water utilities include the aging workforce and impending wave of retirements, as well as underfunded pension programs. These challenges on top of existing and new regulatory mandates and efforts to rehabilitate aging infrastructure will no doubt continue to push clean water utilities to the limits of their financial capability.

It will be important to continue to track the trends detailed in the 2011 *Financial Survey* closely, especially metrics like long-term borrowing levels, and to continue to explore more flexible approaches for utilities to meet expanding Clean Water Act obligations. The clean water community is acutely aware of the challenges it faces and aggressive efforts to explore more sustainable rate structures and resilient business models are already underway.



## Acknowledgments & Ordering Info

This report summary and the full NACWA *2011 Financial Survey... A National Survey of Clean Water Agency Financing and Trends, July 2012* were produced and published by the National Association of Clean Water Agencies (NACWA) under the general direction of the NACWA Board of Directors. The *2011 Financial Survey* is the latest edition of NACWA's triennial survey. The *2011 Survey* provides analysis of the most recent clean water financial data and updates and expands upon the content of past surveys, specifically the *2008 Financial Survey*, released in 2009.

We are particularly grateful to the members of the Financial Survey Workgroup who provided guidance and comments to ensure the quality of this publication

The complete *2011 Financial Survey* report is available for purchase on NACWA's website at: [www.nacwa.org/pubs](http://www.nacwa.org/pubs).



## Follow NACWA Online



[www.nacwaengage.org](http://www.nacwaengage.org)



[twitter.com/nacwa](https://twitter.com/nacwa)



[facebook.com/nacwaorg](https://facebook.com/nacwaorg)



[blog.nacwa.org](http://blog.nacwa.org)



[youtube.com/nacwaorg](https://youtube.com/nacwaorg)



A Clear Commitment to America's Waters

**National Association of Clean Water Agencies**

1816 Jefferson Place, NW

Washington, DC 20036-2505

202.833.2672

[www.nacwa.org](http://www.nacwa.org)