EPA
United States
Environmental Protection
Agency

National Characteristics of Drinking Water Systems Serving 10,000 or Fewer People

July 2011

Office of Water (4606M)
EPA 816-R-10-022
July 2011
http://water.epa.gov/drink

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Section 1: Introduction

This report is a national characterization of the small drinking water systems in the United States. It focuses on system characteristics such as ownership, operation, financial stability, infrastructure needs, and compliance with National Primary Drinking Water Regulations (NPDWRs) and how these characteristics may impact water systems short- and long- term capacity. Small public water systems (PWSs) serving 10,000 or fewer people face multiple challenges in providing safe drinking water. These challenges include: lack of financial resources, aging infrastructure, cost of scale, management limitations, lack of long-term planning, and difficulty understanding current and future regulations. The goal of this document is to share characteristics of small drinking water systems so that tools, trainings, and other forms of assistance are better tailored to address the challenges of small drinking water systems.

For the purposes of this report, small systems are defined as those serving 10,000 or fewer people; very small systems are defined as those serving 500 or fewer people; and large systems are defined as those serving greater than 10,000 people. Additional analysis was conducted on community water systems (CWSs) serving a population of 500 or less, since this particular subset of small systems appears to have the greatest challenges achieving capacity and complying with NPDWRs. Noncommunity water systems (NCWSs), which are not included in many of the national surveys that furnish data on water systems, are analyzed separately in Section 3.

The Office of Inspector General identified numerous obstacles that small systems face.[1] Many small systems lack financial capacity, because of small customer bases and declining populations, which result in limited revenue. Not only is revenue hindered by a small customer base, but small systems struggle to obtain sufficient revenue because of inadequate rates. Small systems can be challenged by management limitations, because they are often run by part-time staff with limited experience and time. A lack of strong management may also results in poor operating and/or maintenance of the system's assets that can lead to an increase in operating costs. Aging infrastructure is a significant problem plaguing all systems. Small systems that lack strong management might not be identifying future infrastructure needs, nor the resources needed to make these capital improvements.

The 1996 Safe Drinking Water Act (SDWA) Amendments recognized the challenges that these small systems face, and established a strong emphasis on enhanced water system management to achieve and maintain technical, managerial, and financial (TMF) capacity of water systems. SDWA provides several mechanisms for assisting small communities to comply with drinking water regulations such as the Capacity Development and Operator Certification Program. These programs are then supported federally by the Public Water System Supervision state grant funds and the set-asides established in the Drinking Water State Revolving Fund (DWSRF).

[1] EPA Office of Inspector General. 2006. *Much Effort and Resources Needed to Help Small Drinking Water Systems Overcome Challenges*. Report No. 2006-P-00026.

Since the amendments, EPA has been actively promoting the use of available DWSRF set-asides to fund technical assistance, state programs, and trainings. The states have used these funds to support technical assistance to communities through third-party technical assistance providers, training of operators on rule requirements, conducting rate-setting studies and developing plans for water system partnership, among others. The Agency continues to develop training tools and guidance focused on small systems to help with their knowledge and understanding of drinking water regulations and good practice and to improve their compliance with drinking water regulations and long-term sustainability.

In response to a commitment in the fiscal year 2010 President's Budget Request, EPA prepared the *Small System Approach* to improve public water systems' TMF capacity and public health protection for persons served by small water systems. EPA consulted with representatives of state and local governments, as well as other interested stakeholders in developing this Approach. The principal areas of work emphasized by this Approach are the following:

1. Work with Drinking Water State Revolving Fund programs and the U.S. Department of Agriculture's Rural Utilities Service (USDA-RUS) to strengthen and target technical, financial and managerial support to small systems.

2. Strengthen the State Capacity Development program by actively working with states to provide targeted technical assistance to small systems, educating communities on the value of safe water and promoting the water industry workforce.

3. Promote the restructuring of non-sustainable systems by promoting the use of DWSRF set asides and targeting national technical assistance grants to support long-term systems sustainability practices.

Through the Approach, EPA continues to work in partnership with states and third-party technical assistance providers to understand existing program implementation efforts, evaluate roadblocks to building water system capacity and identify and facilitate the sharing of best practices for program implementation. EPA believes that this Approach can lead to targeting the assistance needed to help these systems attain and maintain compliance with drinking water regulations, and to put them on a path toward long-term TMF capacity.

Information Sources

EPA developed the *1999 National Characteristics Report* as a source for information on small systems. This report updates the data on small systems based on new information drawn from the 2006 Community Water System Survey (CWSS), the 2007 Drinking Water Infrastructure Needs Survey and Assessment (DWINSA), the Safe Drinking Water Information System (SDWIS), the Drinking Water State Revolving Fund National Information Management System (DWNIMS), and the Bureau of Labor Statistics. For more information regarding information sources, please see Appendix B.

Section 2: Community Water Systems Serving 10,000 or Fewer People

This section highlights the national trends of small community water systems (CWSs) based on inventory, operation, finance, infrastructure needs, and compliance with National Primary Drinking Water Regulations (NPDWRs).

Inventory Characteristics

According to fiscal year 2008 Safe Drinking Water Information Systems (SDWIS) data, there are 51,988 CWSs in operation in the United States, serving approximately 292 million people. As shown in Exhibits 2.1 and 2.2, approximately 92 percent of CWSs are small systems, and serve 18 percent of the total population served by CWSs.[1]

As reported in the *1999 National Characteristics Report,* SDWIS data from the fourth quarter of fiscal year 1998 indicates that there were 54,367 CWSs serving about 253 million people, 93 percent of which were small systems serving approximately 20 percent of the population served by CWSs.

Alabama is one example of a state that used regulatory changes to reduce the number of systems in its inventory. In 1976, Alabama assumed primacy for the Public Water System Supervision (PWSS) Program. The state's first task as primacy agency was to conduct an inventory of all systems in the

Exhibit 2.1: Total Number of CWSs by Size[1]
Source: *2008 Factoids* (Data from Appendix A – Table 1)

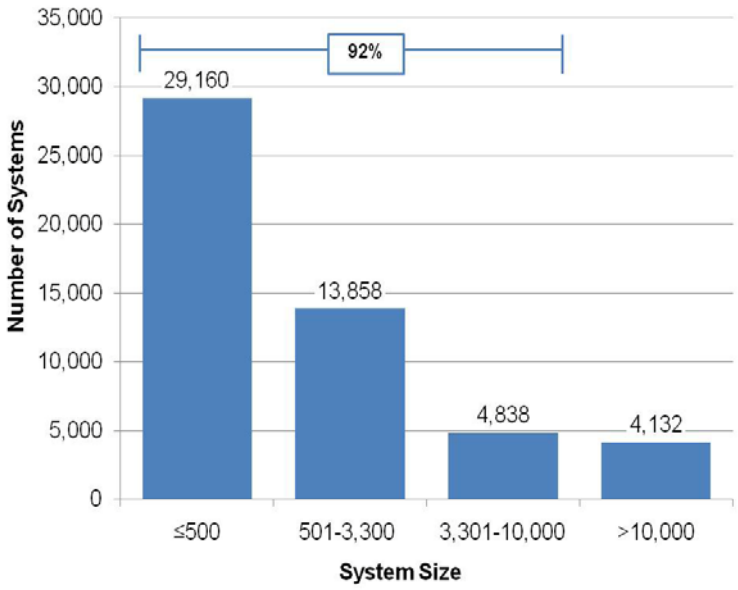
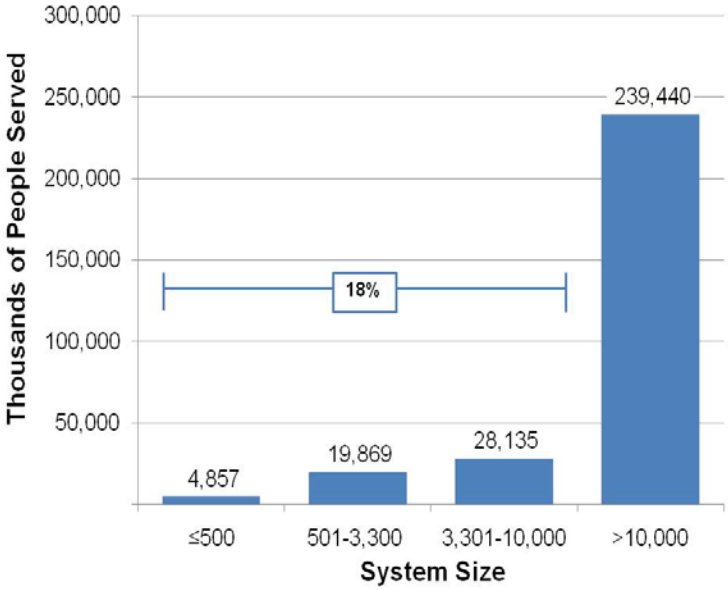


Exhibit 2.2: Total Population Served by Size[1]
Source: *2008 Factoids* (Data from Appendix A – Table 1)



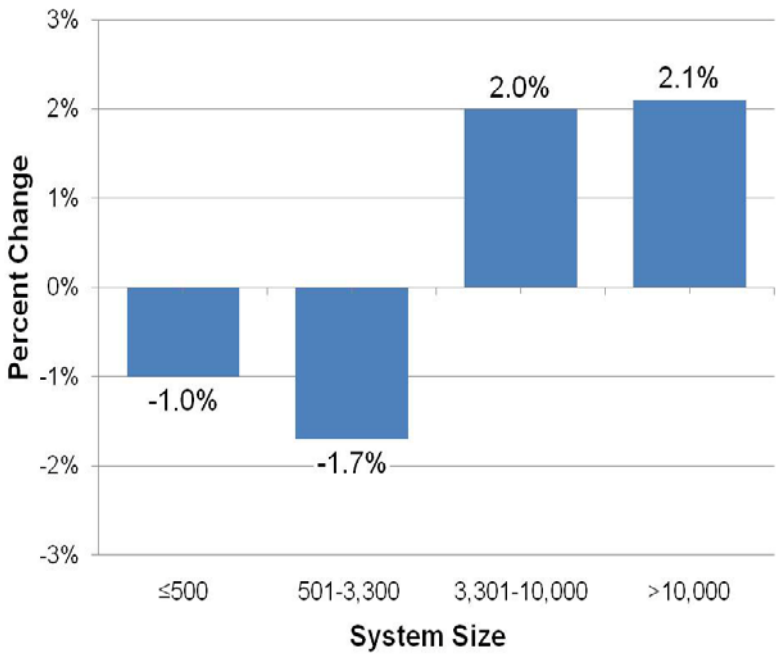
[1] Because this data was drawn directly from the *2008 Factoids*, tribal water systems are included.

state, ultimately identifying 1,300 systems. Recognizing the burden of regulating an inventory of this size, the state decided to reduce their inventory through consolidation; small stand-alone systems were encouraged to connect with larger, publicly-owned systems through new transmission lines. The state also restricted new systems with 500 or fewer connections from forming. After 25 years, these changes have allowed Alabama to reduce its inventory by half. The state has been able to reduce its regulatory workload and can visit each system at least once per year.

Exhibit 2.3 depicts the net change in the number of CWSs from 2006 through 2008. The data show that systems serving 500 or fewer people decreased by 1.0 percent, or 288 systems, and systems serving between 501 and 3,300 people decreased by 1.7 percent, or 240 systems. The number of systems serving greater than 3,300 people increased. These changes are most likely due to states' restructuring efforts. The data also show that since 1992 the number of systems serving 500 or fewer people has continued to decline. The 2006 Community Water Systems Survey (CWSS) indicates that the number of CWSs declined by 6 percent between 2000 and 2006. This change is the largest decrease in the number of systems that has been documented from one survey to the next.

Exhibit 2.3: Percent Change in the Total Number of CWSs by System Size Between 2006 and 2008

Source: *2008 Factoids* (Data from Appendix A – Table 1)



Ownership

SDWIS reports system ownership types using the following three categories: public, private, and public/private. Publicly-owned water systems are systems owned by municipalities, townships, counties, or other public entities.[2] Private ownership encompasses a broad range of owners, from homeowners associations to investor-owned water companies. Systems may also be publicly-owned but privately-operated, which is classified as public/private in SDWIS.

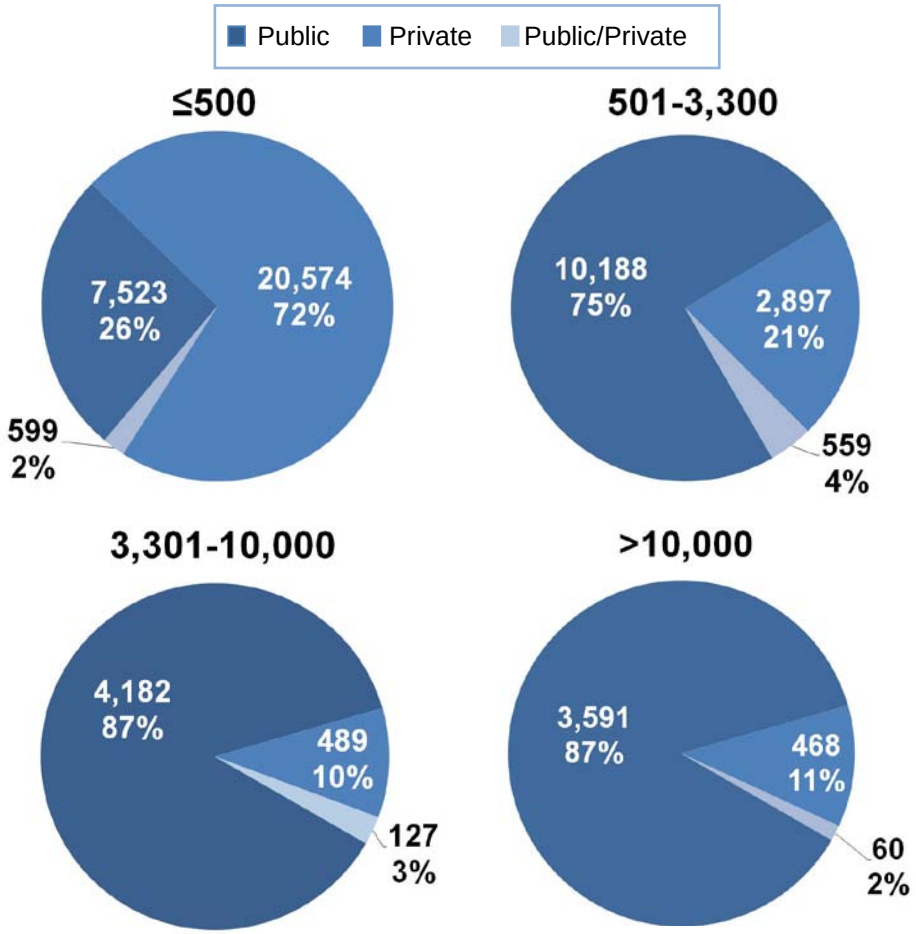
[2] For the purposes of this report, "public systems" refer to systems that are publicly-owned. Public ownership is different than the regulatory definition of public water systems, which are referred to as PWSs.

Ownership type can play a large role in determining the level of managerial and financial capacity of a water system. For instance, a small, privately-owned system may be owned by a large, investor-owned company that has strong financial standings and the ability to borrow money more easily. Conversely, a small privately-owned system not owned by a larger company may have a much harder time receiving loans because they do not have the ability to obtain the necessary financial backing. Additionally, small publicly-owned systems may also have limited resources as they sometimes compete for funding with other town-owned public entities.

As shown in Exhibit 2.4, 72 percent of very small systems are privately-owned. A dramatic shift to public ownership occurs for systems serving more than 500 people. In the largest size category (systems serving greater than 10,000 people), publicly-owned systems comprise approximately 87 percent of the total inventory. Although the number of privately-owned systems decreases steadily as system size increases, there are nonetheless 468 privately-owned systems in the largest size category (systems serving greater than 10,000 people).

Exhibit 2.4: Percent Breakdown of the Total Number of Systems by System Size and Ownership Type

Source: SDWIS FY08Q3 frozen inventory table (Data from Appendix A – Table 2)



Exhibits 2.5 and 2.6 illustrate the net change in the number of systems and population served by type of ownership from 2006 through 2008. The trends shown in Exhibit 2.6 correlate with those in Exhibit 2.5: the numbers of privately-owned systems and population served have decreased in all size categories and the numbers and populations of publicly-owned systems have increased in all size categories.

Exhibit 2.5: Percent Change in the Total Number of CWSs by System Size and Ownership Between 2006 and 2008

Source: SDWIS FY08Q3 frozen inventory tables (Data from Appendix A – Table 3)

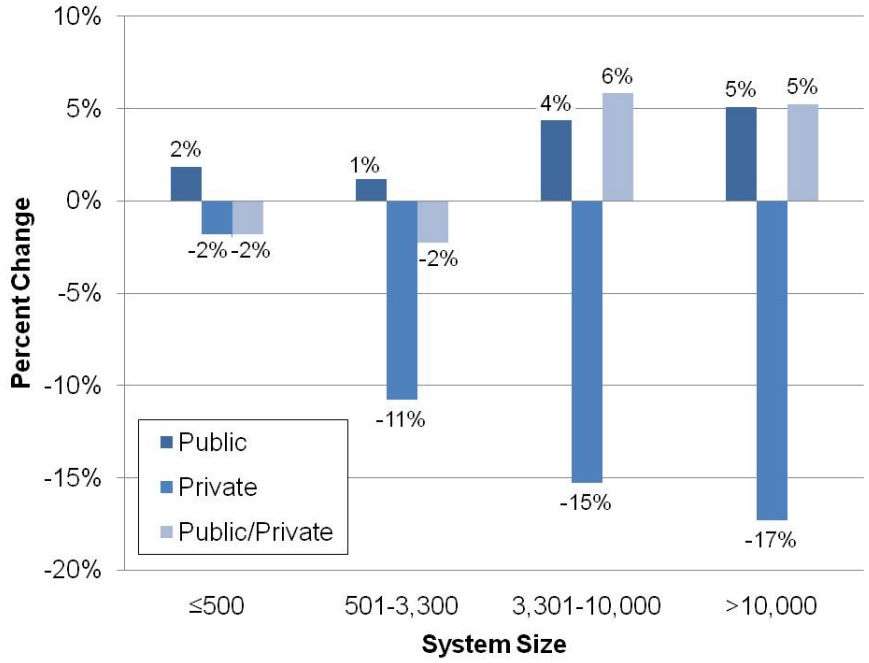
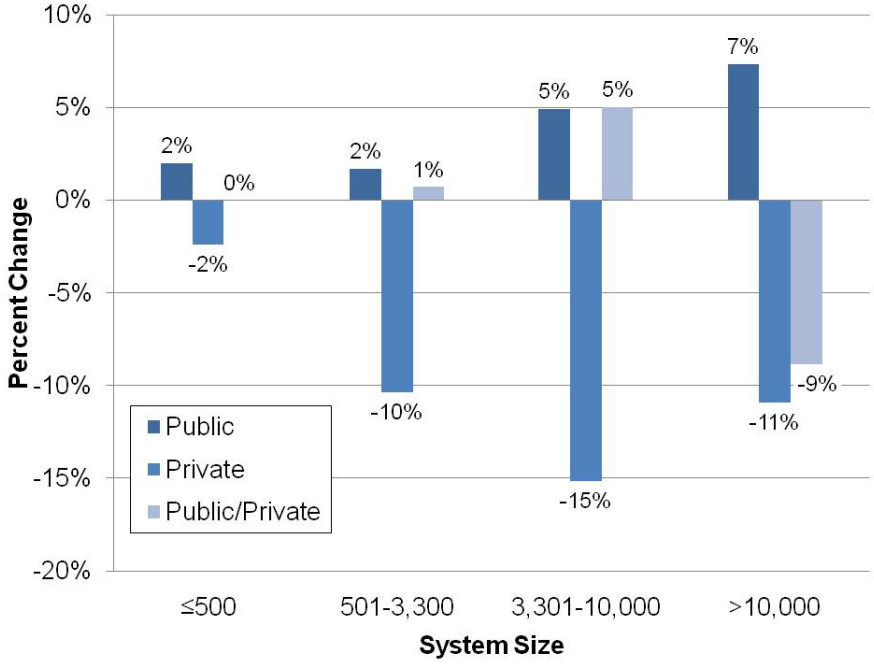


Exhibit 2.6: Percent Change in the Total Population Served by System Size and Ownership Between 2006 and 2008

Source: SDWIS FY08Q3 frozen inventory tables (Data from Appendix A – Table 3)



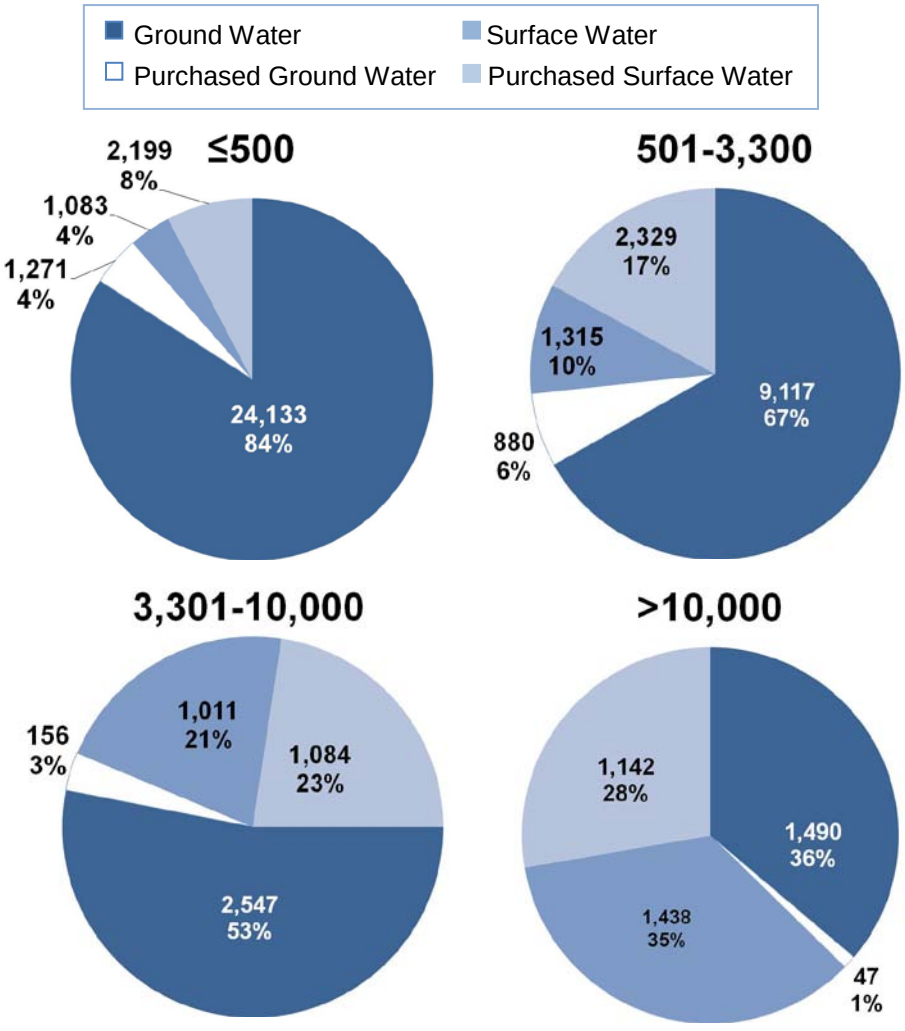
As reported in the *1999 National Characteristics Report,* 43 percent of CWSs were publicly-owned and they served about 84 percent of the population. Most of these systems serve 500 or fewer people, providing water as a convenience to their patrons, employees, or residents. They do not bill users directly for water service. Manufactured homes account for a majority of these small systems. The 2006 CWSS results show a significant decrease in the number of publicly-owned CWSs serving 500 and fewer people, reporting that the percent has dropped to 26 percent. This indicates that there has been a shift towards private ownership for systems serving 500 or fewer people.

Source Water

A system's water source is a key factor in determining operating characteristics and it corresponds closely to system size. As Exhibit 2.7 indicates, small systems are most likely to use ground water as a source of supply. As system size increases, systems are more likely to use surface water or purchased surface water as their primary source. For the purposes of this report, surface water and purchased surface water include ground water under the direct influence of surface water (GWUDI) and purchased GWUDI, respectively. This information is provided separately in Appendix A – Tables 4 and 5. This trend has important implications for treatment and capital investment, because raw water obtained from ground water sources typically requires less treatment than raw water from surface water sources.

Exhibit 2.7: Percent Breakdown of the Total Number of Systems by Water Source and System Size

Source: SDWIS FY08Q3 frozen inventory table (Data from Appendix A – Table 4)



Exhibits 2.8 and 2.9 illustrate the change in the number of systems and population served by water source. The data show that for very small systems the only type of water source that is increasing is purchased ground water. The number of purchased ground water systems is increasing in all system size categories, as is the percent of the total population served.

Exhibit 2.8: Percent Change in the Total Number of CWSs by System Size and Water Source Between 2006 and 2008

Source: SDWIS FY08Q3 frozen inventory tables (Data from Appendix A – Table 5)

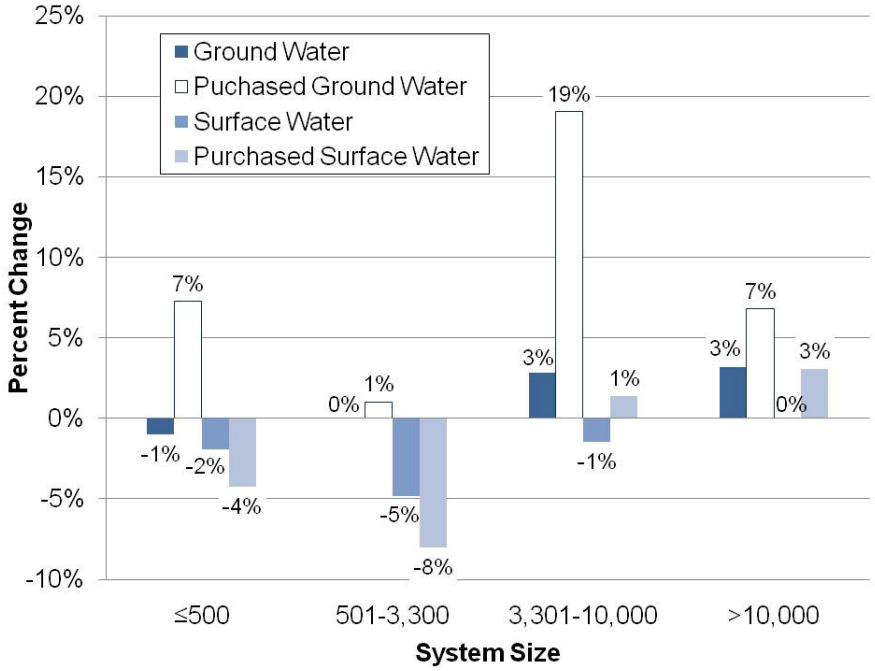
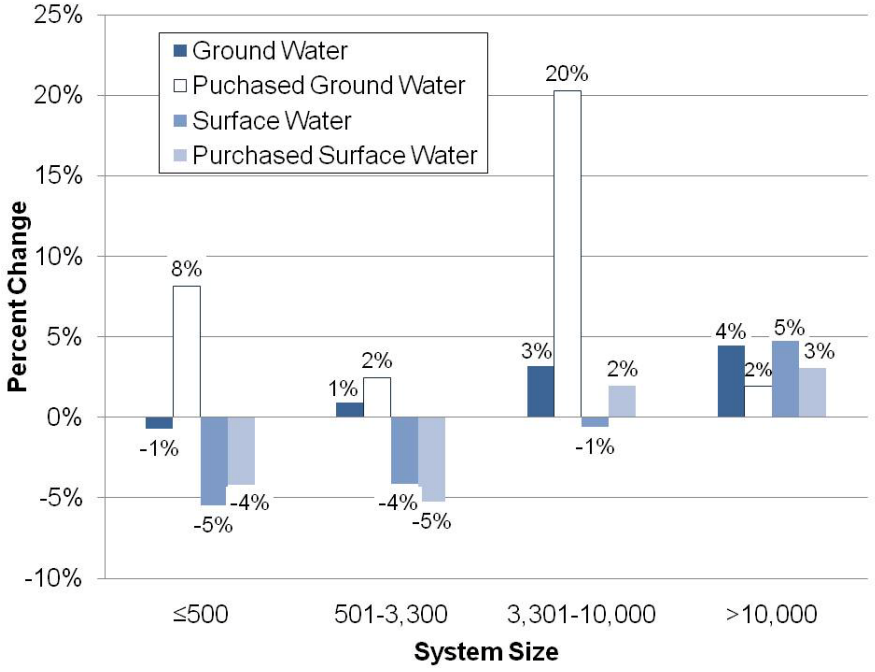


Exhibit 2.9: Percent Change in the Total Population Served by System Size and Water Source Between 2006 and 2008

Source: SDWIS FY08Q3 frozen inventory tables (Data from Appendix A – Table 5)



As reported in the *1999 National Characteristics Report,* larger systems are more likely than smaller systems to use surface water or purchased water as their primary source; most smaller systems use ground water. About 96 percent of systems serving between 25 and 100 people use ground water as their primary source. Only 47 percent of systems serving 10,000 or more people use ground water as their primary source. The percentage of systems that use purchased water as their primary source tends to increase with system size for systems serving 10,000 or fewer people. Of systems serving between 25 and 100 people, only 2 percent use purchased water as their primary source. Purchased water is the primary source for 23 percent of systems serving between 3,301and 10,000 people. These trends are consistent with the findings of the 2006 CWSS, as indicated in Exhibit 2.7. Ground water is the primary source for 84 percent of systems serving 500 or fewer people. Only 36 percent of systems serving 10,000 or more people will use ground water as their primary source. The 2006 CWSS data indicates an increase in the number of small systems that use purchased water as their primary source, as compared to the *1999 National Characteristics Report.*

Key Findings – Inventory Characteristics:

- Small systems comprise 92 percent of the entire CWS inventory, yet only serve 18 percent of the total population served by CWSs.
- The number of systems serving 3,300 or fewer people has decreased, while the number of systems serving more than 3,300 people has increased. Small system inventory may have decreased due to consolidation, stringent implementation of state capacity development programs limiting new small systems without capacity, or the closing of systems without capacity.
- The majority of small systems are privately-owned ground water systems.
- The number of privately-owned systems is decreasing in all size categories.
- The number of purchased ground water systems is increasing in all size categories.

Operating Characteristics

Distribution

Exhibit 2.10 illustrates that for publicly-owned and privately-owned systems serving 10,000 and fewer, the number of service connections per mile is almost equal by size category. Privately-owned systems are shown as having slightly more connections per mile, except in systems serving between 3,301 and 10,000 people.

Exhibit 2.10 also shows that privately-owned systems serving greater than 10,000 people have many more connections per mile than publicly-owned systems of the same size. Although a higher number of connections results in a greater source of revenue, a system's operation and maintenance expenses increase as the number of connections increases.

Exhibit 2.10: Number of Service Connections per Mile by System Size and Ownership Type
Source: 2006 CWSS (Data from Appendix A – Table 7)

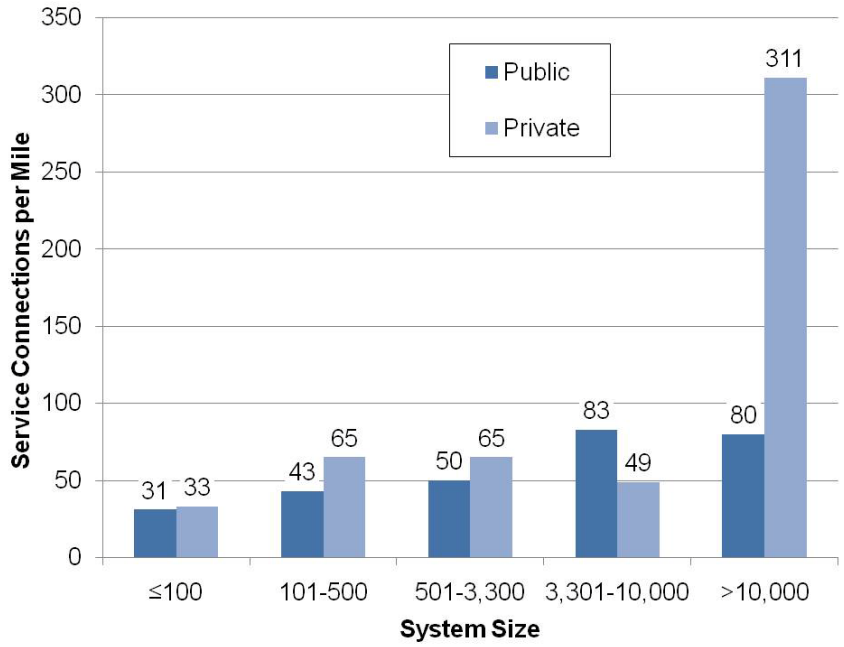
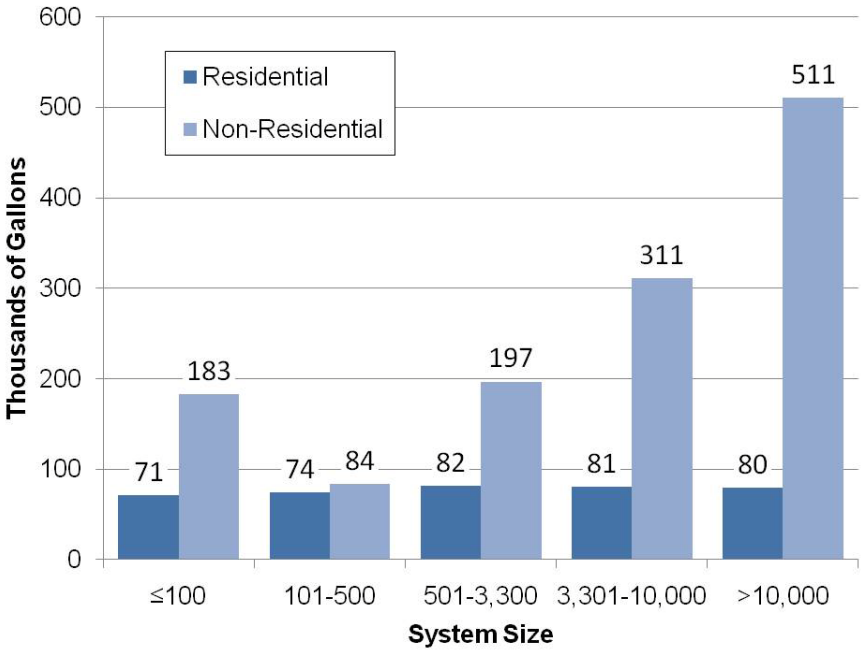


Exhibit 2.11: Annual Median Deliveries (Thousands of Gallons) per Service Connection by System Size and Customer Type
Source: 2006 CWSS (Data from Appendix A – Table 8)



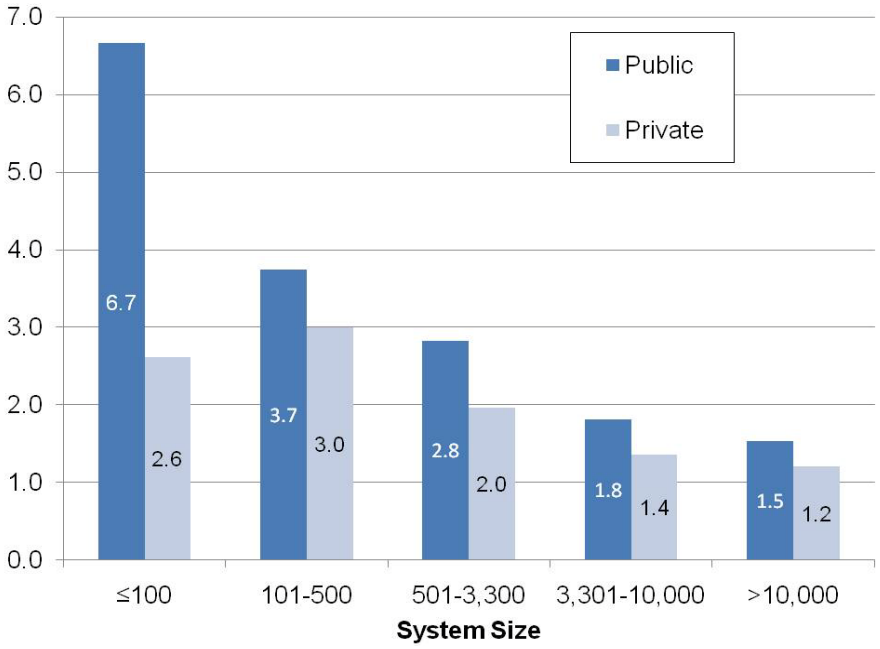
Production

Exhibit 2.11 depicts the median annual delivery of treated water per connection for residential and non-residential customers. Residential customers use less water than non-residential customers. Non-residential customers may be

industrial, commercial, or agricultural. The water use per residential connection is consistent across all system sizes. However, non-residential water use per connection is higher in systems serving over 3,300 people than systems serving 3,300 or fewer people. This trend is indicative of a difference in customer base: large CWSs may serve more large non-residential customers, such as factories or agribusinesses that use much more water per connection than non-residential customers in smaller systems.

Exhibit 2.12 shows the relationship between the maximum output and peak demand for CWSs of different sizes. As shown, publicly-owned water systems in all size categories have higher output compared to demand than privately-owned systems. Overall, the ratio of treatment design capacity to peak demand decreases as system size increases. This relationship suggests that large systems have a more consistent demand for water than small systems. Additionally, there may be some population migration away from areas served by small systems. For small systems, a relatively small change in demand can require a significant change in production. Therefore, careful consideration of population growth and careful record keeping of customer usage can allow small systems to determine appropriate design capacity and accommodate long-term fluctuations in demand.

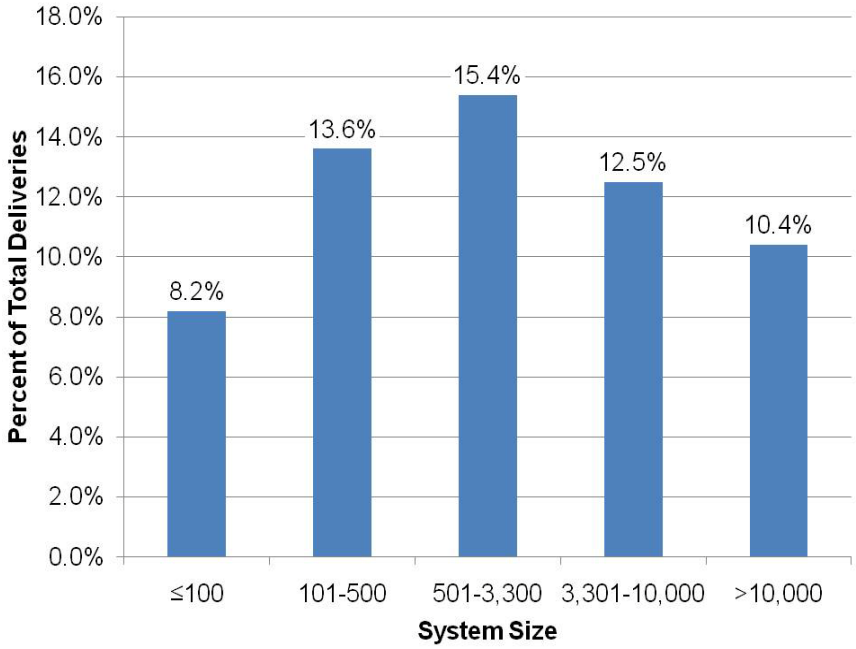
Exhibit 2.12: Ratio of Maximum Daily Treatment Design Capacity to Peak Daily Production by System Size and Ownership Type
Source: 2006 CWSS (Data from Appendix A – Table 9)



Ground water systems also have very different storage conditions than surface water systems. Ground water systems generally rely on additional pumping to meet peak demand, which is more energy-intensive and can increase operating costs. In contrast, surface water systems generally rely on storage facilities to meet peak momentary and hourly demand.

Exhibit 2.13 depicts unaccounted for water as a percentage of total deliveries per year. Unaccounted for water includes system losses and water used for uncompensated purposes such as firefighting. Overall, systems serving between 501 and 3,300 people have the highest amount of unaccounted for water.

Exhibit 2.13: Unaccounted for Water as a Percentage of Total Deliveries by System Size
Source: 2006 CWSS (Data from Appendix A – Table 10)

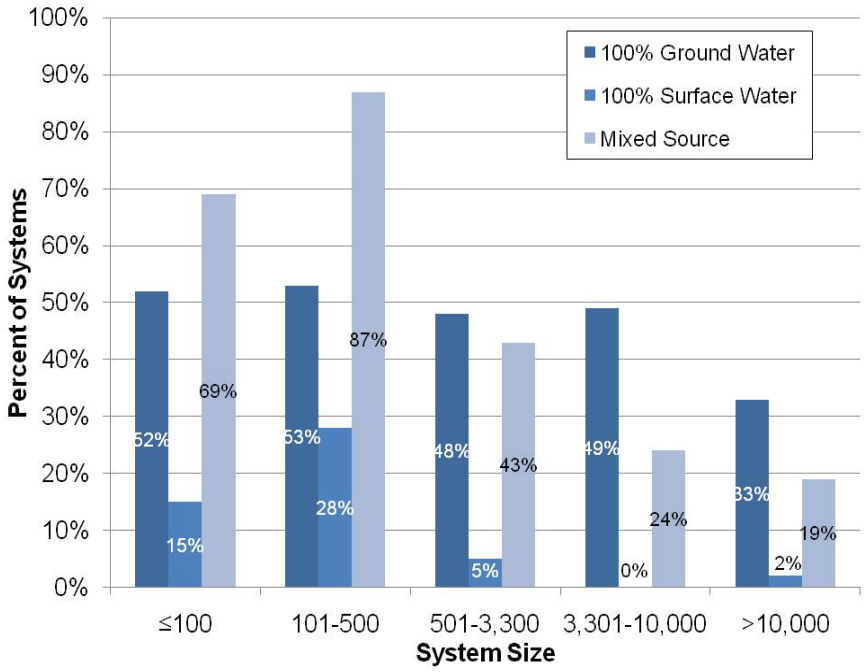


Treatment

The water quality of the source determines treatment requirements. The most widely used form of treatment in the United States is disinfection.

Exhibit 2.14 depicts the percent of systems that disinfect but do not apply any other treatment practices. (*The data in this exhibit excludes systems that do not treat and those that have 100 percent purchased water or primarily purchased water.*) As shown, more than half of very small ground water systems have no additional treatment, while only 15 percent of very small surface water systems have no additional treatment. These surface water systems most likely have filtration avoidance. Meanwhile, over 95 percent of surface water systems serving more than 500 people provide additional treatment.

Exhibit 2.14: Percent of Systems with Disinfection and No Additional Treatment by System Size and Water Source
Source: 2006 CWSS (Data from Appendix A – Table 11)



Key Findings – Operating Characteristics:

- Non-residential water use is highest in systems serving over 3,300 people, indicating that they serve high water demand customers (e.g., factories and agribusinesses).
- Smaller systems have greater excess treatment design capacity, which may increase operating costs.
- More than half of very small ground water systems do not provide additional treatment beyond disinfection. Over 95 percent of surface water systems serving more than 500 people provide additional treatment.

Financial Characteristics

Rate Structures & Revenue

According to the 2006 CWSS data, approximately 60 percent of all water systems meter their residential connections (Appendix A – Table 12). Systems serving between 501 and 3,300 people have the highest percent of connections metered across all system sizes.

Water meters allow CWSs to set rate structures and charge for drinking water based on consumption. However, not all systems use water meters but instead rely on flat rates. Several types of rate structures are commonly used in both metered and unmetered systems. Exhibit 2.15 illustrates the percentage of systems with each type of residential rate structure. Systems may use a combination of these rate structures, such as a flat fee and an increasing block rate.

- Uniform rates are the most commonly used overall, as shown in Exhibit 2.15. Under a uniform rate structure, a single rate is charged for every gallon of water sold. The use of uniform rates is particularly common among smaller systems because of its simplicity. A larger percentage of the systems that serve 10,000 or more people use more sophisticated rate structures, such as declining or increasing block rates, compared to systems serving less than 10,000 or fewer.
- Under a declining block rate structure, the price of water decreases as the amount used increases. There is typically a minimum cost for the first block and each succeeding block is cheaper. This rate

structure is most commonly used for industrial and commercial customers rather than residential customers, and is therefore more likely to be used by larger systems (as shown in Exhibit 2.15).

- Increasing block rates provide relatively low-cost water for people who do not consume large quantities, with increasing rates for large volume customers. This rate structure can be used to promote water conservation, especially in areas with limited water supplies or high treatment costs per unit of water. Only 10 percent of systems serving 100 or fewer persons use an increasing block rate, as shown in Exhibit 2.15.
- Seasonal rates are rates that vary depending on the time of year, establishing a higher price for water consumed during a peak-demand season. This rate structure can be used in conjunction with another rate structure.
- Flat rates use a price that remains constant regardless of how much water is used. Flat fees do not promote conservation, because customers pay the same price for water even if they lower their consumption. Flat fees may be separate from other charges or combined. Combined flat fees are fees for multiple services, such as rental fees, association fees, and pad fees. Exhibit 2.15 shows that overall, separate flat fees are the second most commonly used rate structure. Combined flat fees are the most commonly used rate structure in systems serving 100 or fewer people.
- Flat rates can be detrimental to a small system, because the system's revenue does not increase even if some customers are heavy water users. For instance, one household may use double the amount of water that another household uses over the course of a year; increased consumption results in increased costs to the system to produce and deliver the water. However, both households pay the same amount for their water, and therefore, there is no incentive to conserve.

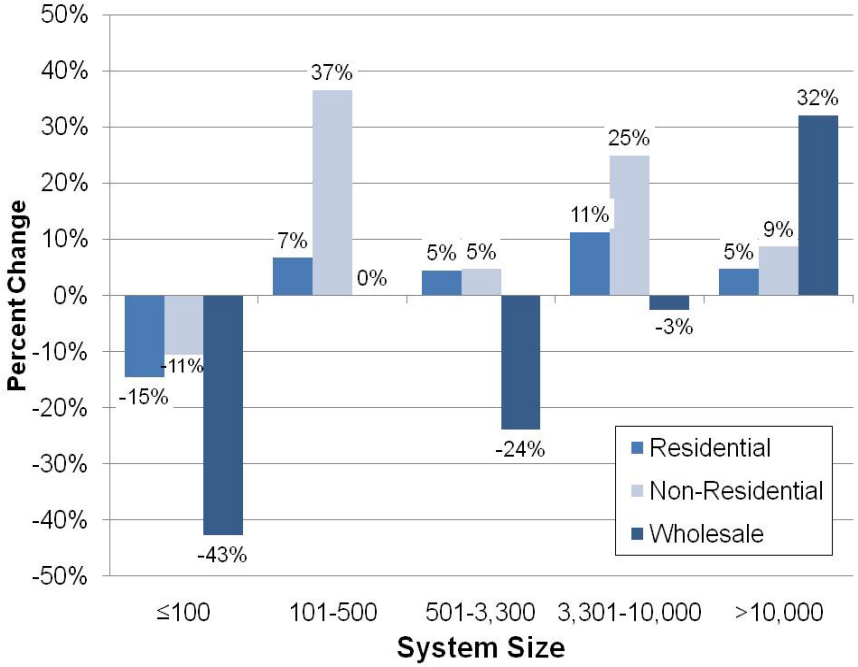
Exhibit 2.15: Type of Residential Rate Structure Used by System Size
Source: 2006 CWSS (Data from Appendix A – Table 13)

Rate Structure		System Size (Service Population)					
		≤100	**101-500**	**501-3,300**	**3,301-10,000**	**>10,000**	**All**
Metered Charges	**Uniform Rate**	18.5%	34.6%	52.7%	38.7%	37.4%	**36.4%**
	Declining Block Rate	1.0%	6.8%	19.2%	13.3%	15.8%	**10.3%**
	Increasing Block Rate	9.7%	11.6%	13.7%	13.8%	25.4%	**13.2%**
	Seasonal Rate	0.0%	0.8%	0.0%	0.0%	1.0%	**0.3%**
Unmetered Charges	**Separate Flat Fee for Water**	12.4%	21.4%	17.0%	17.2%	18.5%	**17.4%**
	Annual Connection Fee	0.0%	0.8%	0.0%	4.2%	5.7%	**1.1%**
	Combined Flat Fee for Water and Other Services	32.5%	23.9%	0.5%	2.4%	4.0%	**15.7%**
Other	**Other Billing Methods**	13.3%	3.4%	7.7%	1.8%	3.8%	**6.8%**

The financial health of water systems can depend on their ability to establish water rates that accurately reflect the cost of treating and delivering water. For this report, the revenue from water sales per thousand gallons delivered is used to reflect water rates. The median rates from the 2000 and 2006 CWSS were used to estimate the percent change in rates for residential, non-residential, and wholesale customers. As shown in Exhibit 2.16, systems serving 100 or fewer people have generated less revenue from all customers. This decrease in revenue may be due to a decrease in customers or a decrease in customers paying the bill. Additionally, Exhibit 2.16 illustrates that revenue has generally increased for residential and non-residential customers in systems serving between 101 and 10,000 people. For systems serving greater than 10,000 people, revenue per thousand gallons delivered has increased for all customers. These increases in revenue may reflect an increase in rates (an increase in customer base could have also increased revenue).

Exhibit 2.16: Percent Change in Water System Revenue from Water Sales per Thousand Gallons Delivered by System Size and Customer Type

Source: 2000 and 2006 CWSS (Data from Appendix A – Table 14)



Although the 2006 CWSS data indicates that residential rates may have increased in all systems except those serving 100 or fewer people, the average water expenditures are well below other household expenses. Exhibit 2.17 shows that approximately 0.9 percent of household expenditures are devoted to costs associated with the provision of water. According to the Office of Inspector General, customers' perception of the cost of water service may inhibit a system's financial capacity.[3] A customer may not always be aware of the necessary system improvements, and therefore, will negatively react to price increases needed for capital investments.

[3] EPA Office of Inspector General. 2006. *Much Effort and Resources Needed to Help Small Drinking Water Systems Overcome Challenges*. Report No. 2006-P-00026.

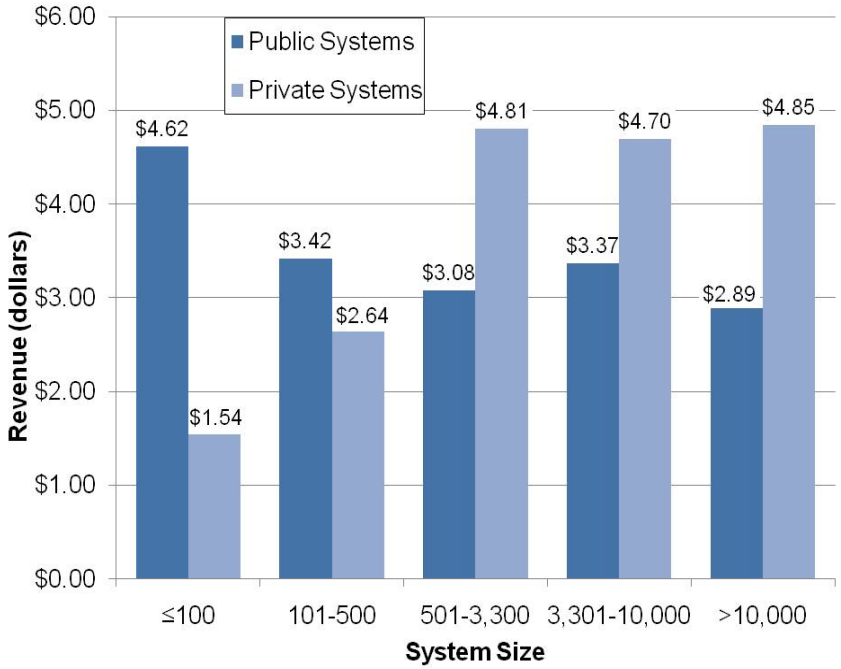
Exhibit 2.17: Comparison of Water Expenditures with Other Household Expenditures[4]
Source: Bureau of Labor Statistics - 2008 Consumer Expenditure Survey

Expense Category	Expenditure	Percent of Total Expenditures
Transportation	$8,604	17.0%
Food	$6,443	12.8%
Healthcare	$2,976	5.9%
Entertainment	$2,835	5.6%
Electricity	$1,353	2.7%
Telephone Services	$1,127	2.2%
Personal Care Products and Services	$616	1.2%
Natural Gas	$531	1.1%
Water and Other Public Services[5]	$446	0.9%
Alcoholic Beverages	$444	0.9%
Tobacco Products and Smoking Supplies	$317	0.6%
Fuel Oil and Other Fuels	$192	0.4%
Average Annual Expenditures	**$50,486**	**100.0%**

Water systems' total revenues are generated from water sales, fees, fines, and other water-related revenue. Systems can also generate revenues from non-consumption based charges, such as interest earnings and subsidies.

Exhibit 2.18 depicts the total revenue per thousand gallons delivered by system size and ownership type. For very small systems, water sales revenue is higher in publicly-owned systems than in privately-owned systems.

Exhibit 2.18: Median Total Revenue per Thousand Gallons Delivered by System Size and Ownership Type
Source: 2006 CWSS (Data from Appendix A – Table 15)



[4] This table does not include all surveyed expenditures and therefore does not add up to the average annual expenditure shown.
[5] Water expenditures per household include households with private wells. Other public services include services such as garbage and trash collection, sewerage maintenance, and septic cleaning.

Conversely, privately-owned systems serving greater than 500 people have higher revenue per thousand gallons than publicly-owned systems.

Exhibit 2.19 shows that water revenue per thousand gallons is almost always higher for surface water systems than for ground water systems across all size categories, except for those systems serving between 3,301 and 10,000 people, where it is equal. This trend likely reflects the higher cost of treating surface water and the need for additional infrastructure improvements with these systems as well as the need for more trained personnel to operate the facilities. These factors lead to higher expenditures for the treatment and provision of water, which are recouped through higher rates and fees.

Exhibit 2.19: Mean Total Revenue per Thousand Gallons Delivered by System Size and Water Source

Source: 2006 CWSS (Data from Appendix A – Table 16)

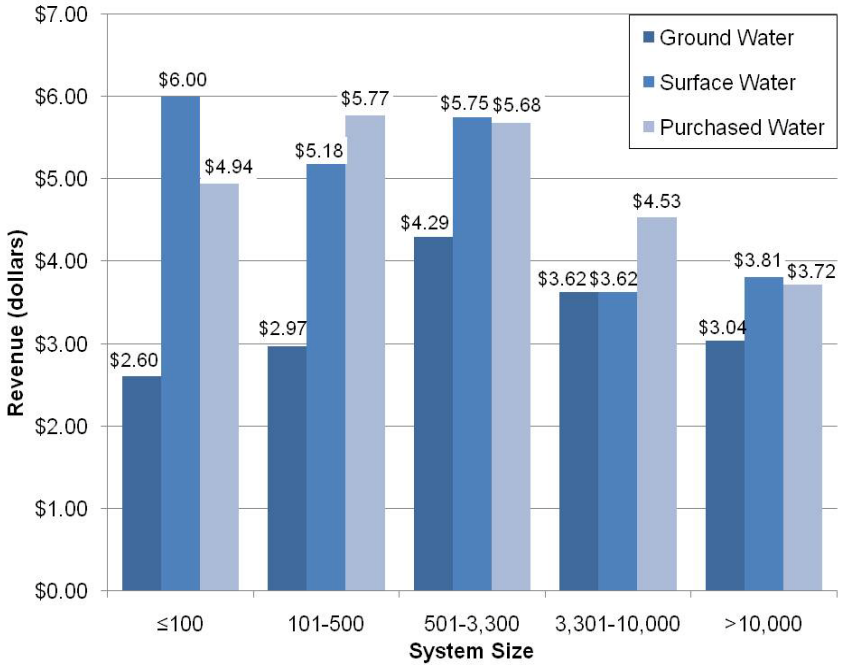
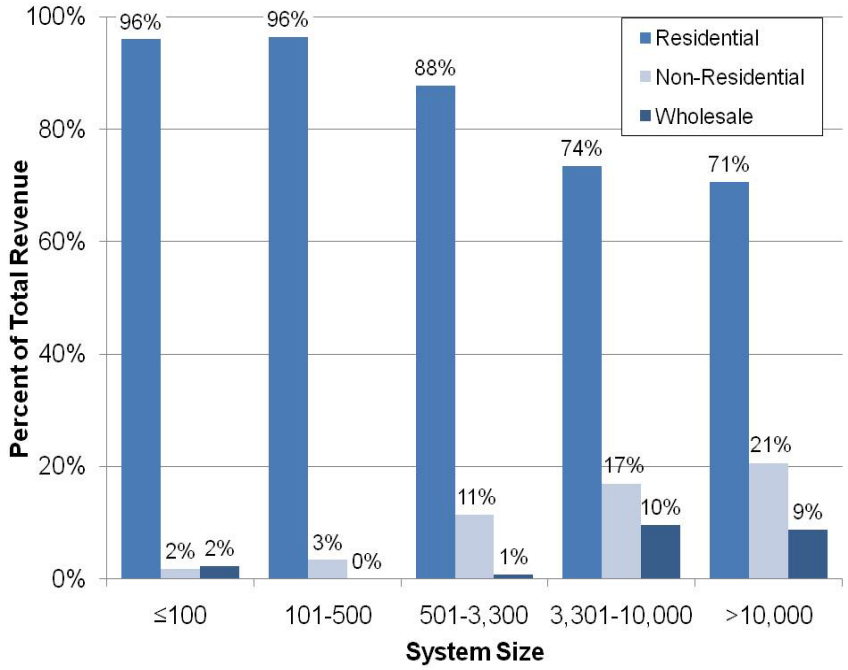


Exhibit 2.20: Percent of Water Sales Revenue by System Size and Customer Type

Source: 2006 CWSS (Data from Appendix A – Table 17)



Small system revenue is primarily dependent upon residential customers. As shown in Exhibit 2.20, water systems serving 500 or fewer people derive approximately 96 percent of their water sales revenue from residential customers. Water sales revenue from residential customers decreases as system size increases, as large systems have a larger non-residential and wholesale customer base. Non-residential

customers are beneficial to water systems because they provide demand stability. Large-volume customers can also help cover fixed costs which may potentially lower costs to residential customers.

Expenditures

The 2006 CWSS organizes expenditures into three categories: routine operating expenses (e.g., cost for chemicals and other materials, lab fees, contractor services, etc.), debt service expenditures (e.g., principal and interest payments), and other expenses (e.g., capital improvements). This report uses the same organization of expenditures.

As shown in Exhibit 2.21, systems across all size categories have similar expenses per thousand gallons of water produced. There is no clear trend between system size and expenses per thousand gallons delivered. However, for all size categories except those serving between 3,301 and 10,000 people, expenses are slightly higher for publicly-owned systems than for privately-owned.

Exhibit 2.22 illustrates the expenditures per thousand gallons delivered by system size and primary water source. As shown, expenditures per thousand gallons delivered are lower for ground water

Exhibit 2.21: Median Expenditure per Thousand Gallons Delivered by System Size and Ownership Type
Source: 2006 CWSS (Data from Appendix A – Table 18)

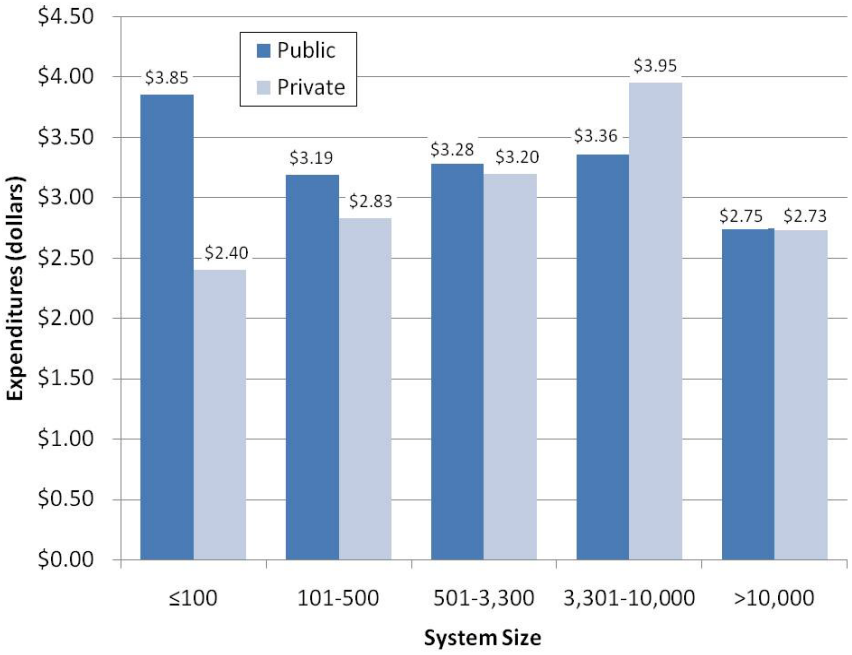
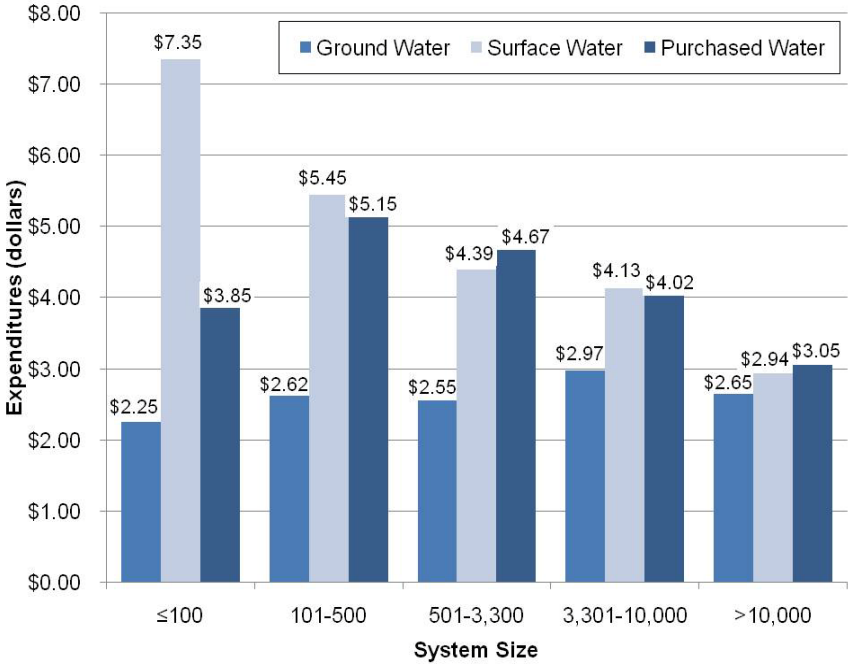


Exhibit 2.22: Median Expenditures per Thousand Gallons Delivered by System Size and Water Source
Source: 2006 CWSS (Data from Appendix A – Table 19)



systems than for surface or purchased water systems across all size categories. This trend is likely indicative of the more costly treatment processes generally used by surface water systems, as discussed under *Treatment*.

Exhibit 2.23: Breakdown of Expenditures by Major Category of Expense and System Size
Source: 2006 CWSS (Data from Appendix A – Table 20)

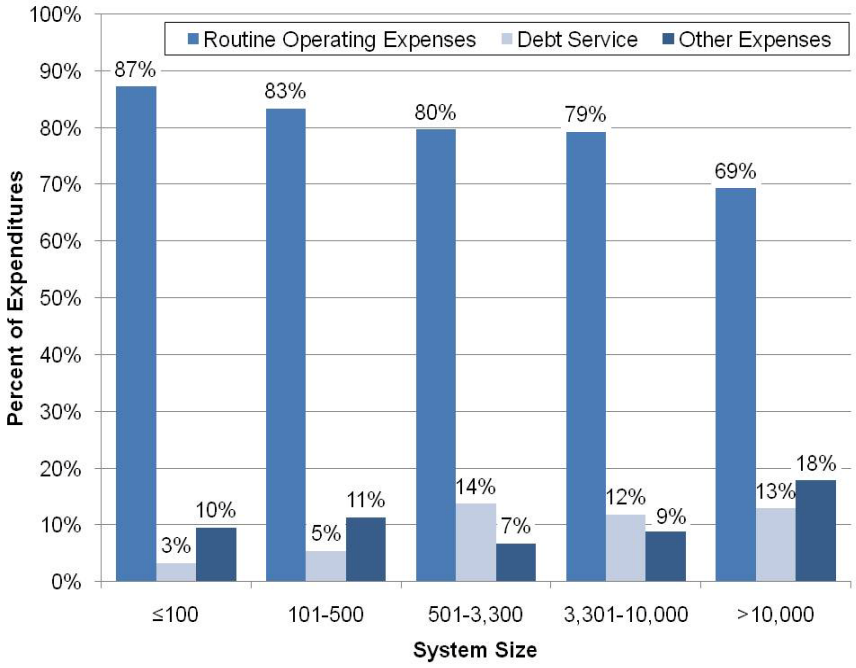


Exhibit 2.23 shows the percentage breakdown of major expenses within each size category. As shown, larger systems spend a higher percentage on debt service and other expenses than very small systems. This trend could likely indicate that larger systems have a higher capability to plan for and obtain financing for improvement projects.

Exhibits 2.24 and 2.25 show the percentage breakdown of the specific type of expenses made by small and large systems. As shown, both size categories of systems spend a large percent of their expenditures on other routine operating expenses. However, small systems spend approximately 68 percent on other routine operating expenses, while large systems spend approximately 43 percent. Other routine operating expenses also include employee salaries and benefits. As discussed under *Labor*,

Exhibit 2.24: Percentage Breakdown of Expenses for Systems Serving 10,000 or Fewer People
Source: 2006 CWSS (Data from Appendix A – Table 21)

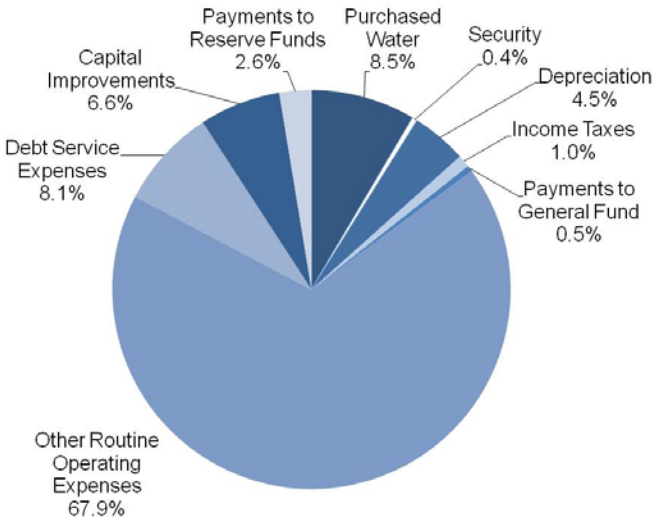
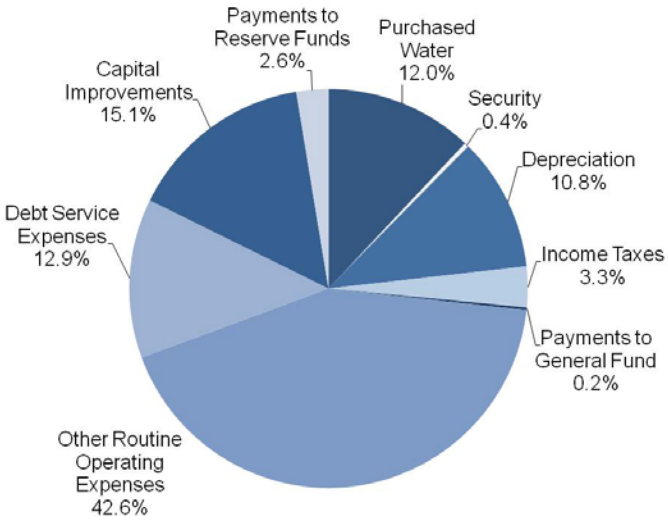


Exhibit 2.25: Percentage Breakdown of Expenses for Systems Serving Greater Than 10,000
Source: 2006 CWSS (Data from Appendix A – Table 21)



employees at systems serving over 3,300 people have higher salaries than those in smaller systems. Because larger systems also have more full-time employees, their expenses increase because they provide more benefits (Appendix A – Table 22). Large systems spend a higher percentage on debt service expenses, capital improvements, purchased water, depreciation, and income taxes than small systems. Small and large systems spend approximately the same percentage on security and payments to reserve funds and general funds.

Labor

Source water and system size impact a system's labor characteristics. Exhibit 2.26 shows the average number of full-time equivalent (FTE) employees by water source, type of employee, and system size. As shown, there is no clear trend between the average number of managers and source water. However, in the remaining 3 categories of employees, surface water systems generally have the highest number of FTEs (except in systems serving 100 or fewer or between 3,301 and 10,000 people, where ground water systems have an equal or higher number of distribution system operators and administrative staff).

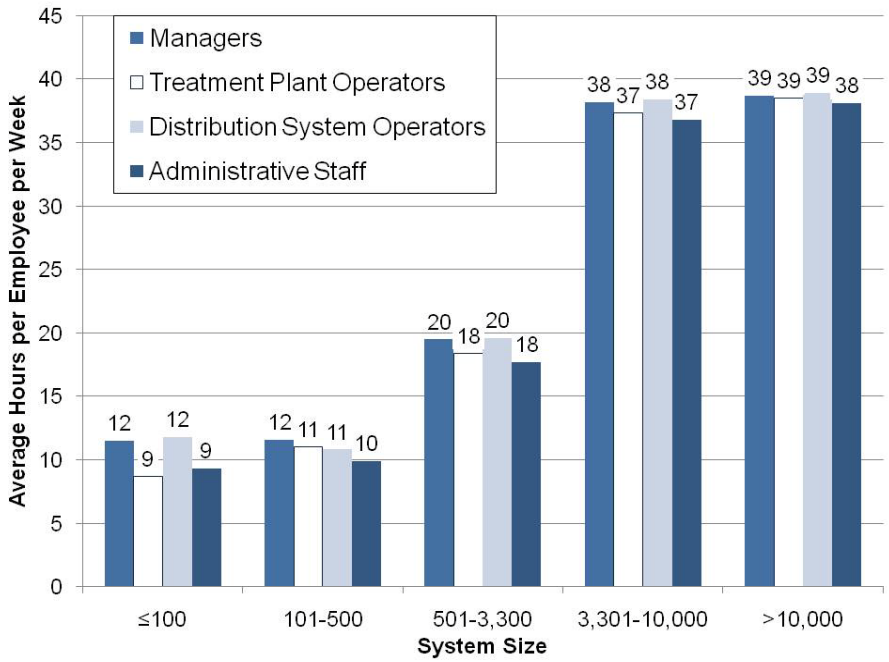
Exhibit 2.26 also shows that the number of FTEs increases with system size for all types of employees. In addition to having more FTEs, larger systems also have more full-time than part-time employees.

Exhibit 2.26: Mean Number of Full-Time Equivalent Employees by Water Source, Employee Category, and System Size
Source: 2006 CWSS (Data from Appendix A – Table 22)

Source	Employee Category	System Size (Service Population)					
		≤100	101-500	501-3,300	3,301-10,000	>10,000	All
Ground Water	Managers	0.3	0.3	0.5	1.4	2.6	0.8
	Treatment Plant Operators	0.3	0.3	0.6	2.3	5.6	0.9
	Distribution System Operators	0.4	0.4	0.7	3.2	8.4	1.5
	Administrative Staff	0.3	0.3	0.6	2.0	4.2	1.0
Surface Water	Managers	0.2	0.5	0.5	1.1	5.2	2.8
	Treatment Plant Operators	0.4	0.5	1.4	2.7	13.9	5.8
	Distribution System Operators	0.2	0.5	1.1	3.5	22.2	10.1
	Administrative Staff	0.2	0.5	0.8	2.0	10.9	5.7
Purchased Water	Managers	0.1	0.1	0.6	1.1	2.6	1.2
	Treatment Plant Operators	0.0	0.2	0.6	1.3	11.7	1.3
	Distribution System Operators	0.1	0.3	0.8	2.5	12.7	2.5
	Administrative Staff	0.1	0.2	0.6	1.5	7.0	1.8

Exhibit 2.27 shows that in systems serving 3,300 or fewer people, employees work an average of 20 hours or less per week. The lack of full-time employees can greatly affect the management capacity of a water system. A part-time system manager may have another job, and therefore, not have the time to train and gain full working knowledge of the regulations. Weak system management can result in poor compliance and a lack of long-term planning.

Exhibit 2.27: Average Hours per Employee per Week
Source: 2006 CWSS (Data from Appendix A – Table 22)



It is difficult for many systems to find skilled operators, because the position is not viewed as a long-term career opportunity and can often pay less when compared to other industries that require personnel with similar sets of skills and knowledge. Exhibit 2.28 shows that all types of employees in systems serving more than 3,300 people have a higher or equal pay than those in systems serving 3,300 or fewer people.

Exhibit 2.28: Average Hourly Salary or Wage (Dollars) by Employee Category and System Size
Source: 2006 CWSS (Data from Appendix A – Table 22)

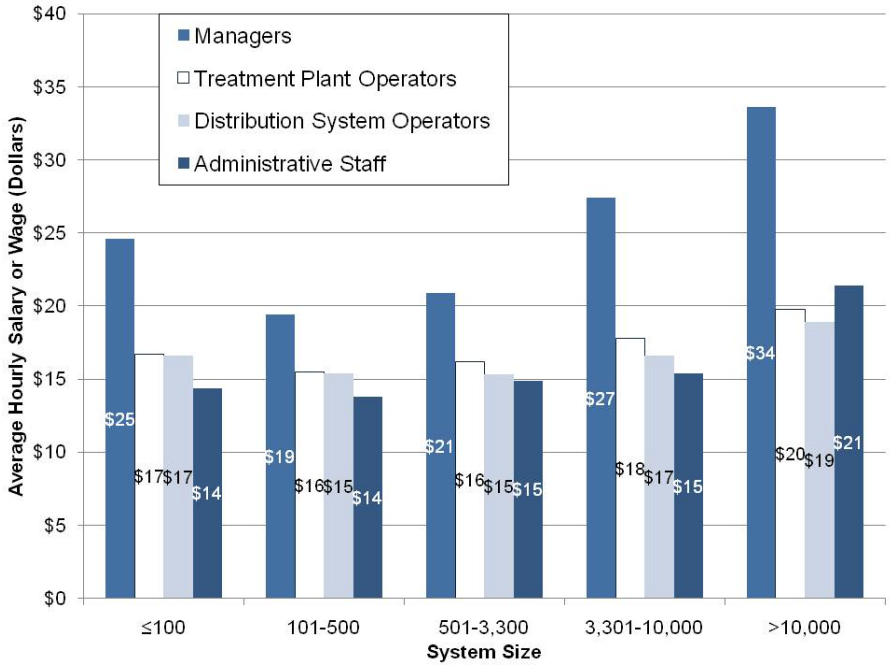


Exhibit 2.29 shows the average number of FTEs by ownership type. As shown, there are no distinct trends among small systems, ownership, and the average number of FTEs. However, in systems serving more than 10,000 people, privately-owned systems have more FTEs than publicly-owned systems of the same size.

Exhibit 2.29: Mean Number of Full-Time Equivalent Employees by Ownership, Employee Category, and System Size

Source: 2006 CWSS (Data from Appendix A – Table 23)

Ownership	Employee Category	System Size (Service Population)					
		≤100	101-500	501-3,300	3,301-10,000	>10,000	All
Public Systems	Managers	0.2	0.3	0.5	1.3	3.2	1.3
	Treatment Plant Operators	0.4	0.3	0.7	2.3	8.7	2.3
	Distribution System Operators	0.2	0.4	0.9	3.1	13.3	3.5
	Administrative Staff	0.4	0.3	0.6	1.8	7.0	2.1
Private Systems	Managers	0.4	0.2	0.5	1.1	5.9	0.9
	Treatment Plant Operators	0.4	0.4	0.5	2.0	20.1	1.1
	Distribution System Operators	0.9	0.3	0.4	3.1	20.9	1.4
	Administrative Staff	0.3	0.3	0.5	1.8	7.7	0.8

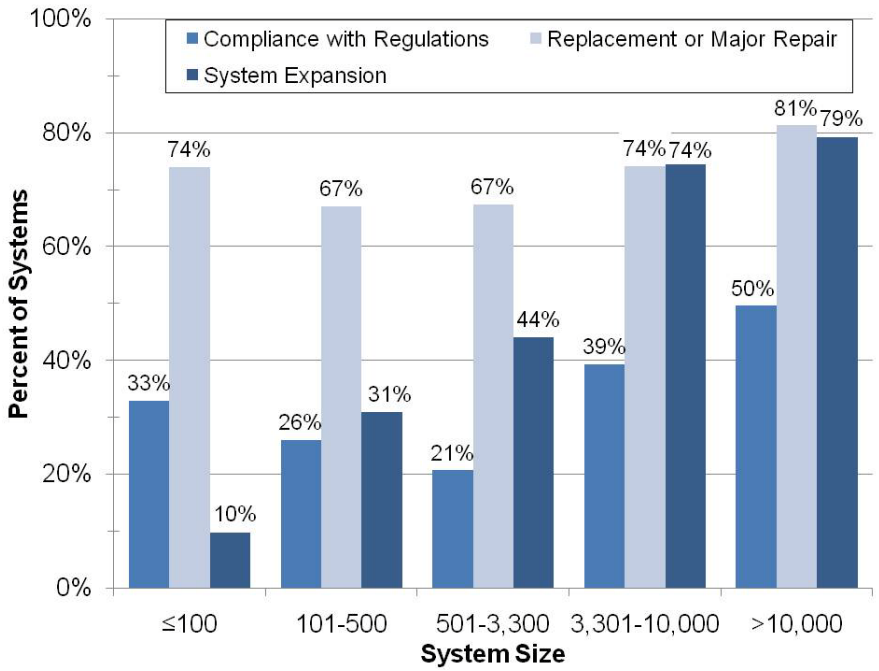
Capital Investments

As shown in Exhibits 2.24 and 2.25, systems serving 10,000 or fewer people spent approximately 7 percent of their total expenditures on capital improvements, while systems serving greater than 10,000 spent approximately 15 percent. Capital improvements can be categorized as water quality improvements, repair and replacement, or system expansion. Systems can make improvements that fall under more than one category.

Exhibit 2.30 examines the purpose of systems' completed capital improvement projects during the past 5 years.[6] A majority of systems in all size categories made capital

Exhibit 2.30: Percentage of Systems Making Major Capital Investments in the Past 5 Years by Investment Purpose and System Size[7]

Source: 2006 CWSS (Data from Appendix A – Table 24)



[6] The 2006 CWSS asked participants to report on capital improvements made within the past 5 years, depending on the most recent 12-month period for which financial data were available when CWSS data collection took place from June to December 2007.

investments to replace or repair water system components. The data also show that the percentage of systems investing in expansion increases with system size. Additionally, the lowest percentage of systems making capital investments to comply with regulations is in the 501-3,300 size category.

Capital fund expenditures are heavily influenced by system size. As shown in Exhibit 2.31, 59 percent of all systems serving 100 or fewer people invested in their water source, but only 31 percent of these systems spent funds on transmission and distribution. However, for the size category 3,301 to 10,000 people, only 30 percent invested in their water sources, and 90 percent of systems used capital funds for transmission and distribution. Additionally, a much higher percentage of large systems designated funds for treatment, storage, security, and land compared to systems serving 10,000 or fewer.

Exhibit 2.31: Percentage of Systems Making Capital Investments by Type of Investment and System Size[7]
Source: 2006 CWSS (Data from Appendix A – Table 25)

Type of Investment	System Size (Service Population)				
	≤100	101-500	501-3,300	3,301-10,000	>10,000
Land	0.1%	2.2%	8.0%	8.5%	29.4%
Water Source	58.6%	47.1%	38.7%	30.0%	42.2%
Transmission and Distribution System	30.8%	56.1%	63.4%	90.1%	87.9%
Treatment	32.1%	25.7%	21.9%	34.7%	53.2%
Storage	29.5%	25.5%	31.6%	38.3%	52.9%
Security	13.5%	2.7%%	3.8%	36.0%	39.1%
Other	3.7%	5.2%	9.9%	19.1%	44.9%

Exhibit 2.32 illustrates the sources of funds for capital improvements for systems serving 10,000 or fewer people. These data show that publicly-owned systems acquire 58 percent of capital funds from current revenues, 32 percent from other government grants, and 21 percent from Drinking Water State Revolving Fund (DWSRF) loans. However, privately-owned systems acquire 72 percent from current revenues, 8 percent from other government grants, and only 3 percent from DWSRF loans.

[7] The 2006 CWSS asked participants to report on capital improvements made within the past 5 years, depending on the most recent 12-month period for which financial data were available when CWSS data collection took place from June to December 2007.

Exhibit 2.32: Percentage of Systems Acquiring Capital Funds from Each Source in the Past 5 Years (Systems Serving 10,000 or Fewer) [8]

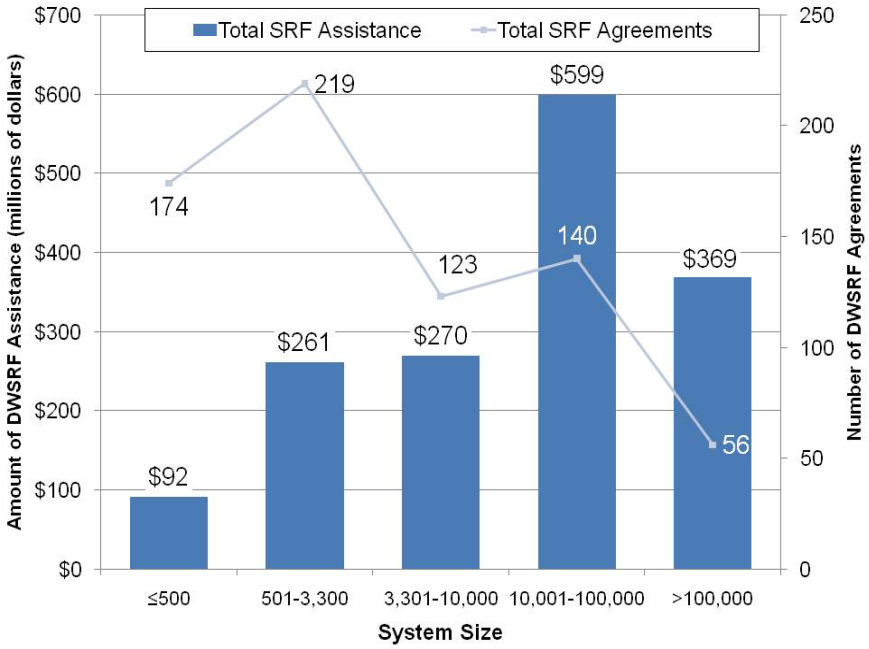
Source: 2006 CWSS (Data from Appendix A – Table 26)

Source of Capital Funds	Public Systems	Private Systems
Current Revenues	57.6%	72.4%
Equity Or Other Funds From Private Investors	3.4%	16.9%
Borrowing From Private Sector Sources	14.1%	11.1%
Department Of Homeland Security Grants	1.2%	0.0%
Other Government Grants	31.5%	8.3%
DWSRF Principal Repayment Forgiveness	2.1%	0.0%
DWSRF Loans	21.1%	3.0%
Other Borrowing From Public Sector Sources	8.5%	5.9%
Other	5.3%	6.9%

As previously shown in Exhibit 2.32, many systems have utilized DWSRF loans to fund their capital investments. Exhibit 2.33 illustrates the total DWSRF assistance (in millions of dollars) and total loan agreements (i.e., projects) that systems received in fiscal year 2009. As shown, systems serving between 501 and 3,300 people received the highest number of loan agreements, with 219 loans. Systems serving 500 or fewer people received 174 loan agreements, totaling approximately $92 million dollars. However, systems serving between 10,001 and 100,000 people received 140 loan agreements, but over six times the amount of money those systems serving 500 or fewer received.

Exhibit 2.33: Total DWSRF Assistance and Agreements by System Size (Fiscal Year 2009)

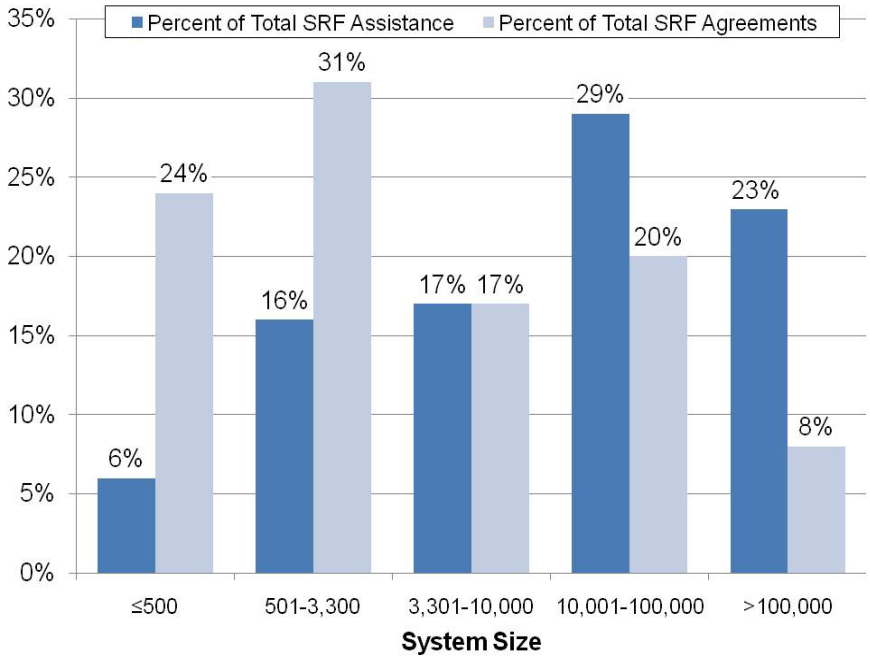
Source: 2009 DWNIMS (Data from Appendix A – Table 27)



[8] Ibid.

Exhibit 2.34 illustrates the percent of the total loan agreements in each system size category, and the percent of the total funding that they received for fiscal year 2009. As shown, large systems receive a higher percentage of funds than small systems, but a greater percentage of smaller systems received loans.

Exhibit 2.34: Percent of Total DWSRF Assistance and Agreements by System Size (Fiscal Year 2009)
Source: 2009 DWNIMS (Data from Appendix A – Table 27)



Disadvantaged communities face many of the same challenges as small systems. They often lack the resources needed to maintain technical, managerial, and financial capacity. The DWSRF program provides additional assistance for disadvantaged communities such as principal forgiveness, greater than 20 year repayments, and lower interest rates. Exhibit 2.35 displays the total assistance and number of agreements that disadvantaged communities received in fiscal year 2009. As shown, disadvantaged communities received over 25 percent of the total DWSRF funding and over 36 percent of the total number of agreements.

Exhibit 2.35: Total DWSRF Assistance to Disadvantaged Communities (Fiscal Year 2009)[9]
Source: 2009 DWNIMS (Appendix A – Table 28)

DWSRF Assistance	Disadvantaged Communities[10]	Assistance with Principal Forgiveness	Assistance with >20 Year Repayment	Total DWSRF Assistance
Amount of DWSRF Assistance (millions of dollars)	**$412.2**	**$151.0**	**$211.8**	**$1,590.7**
Percent of Total DWSRF Assistance	*25.9%*	*9.5%*	*13.3%*	*100.0%*
Number of DWSRF Agreements	**236**	**144**	**98**	**712**
Percent of Total DWSRF Agreements	*36.9%*	*20.2%*	*13.8%*	*100.0%*

[9] Because the amount received by disadvantaged communities, assistance with principal forgiveness, and >20 year repayments only represent a portion of the total DWSRF assistance, these figures do not add up to the total DWSRF assistance or 100 percent.
[10] Assistance to Disadvantaged Communities includes all type of assistance provided to systems identified as disadvantaged by the state, including principal forgiveness, >20 year repayments and lower interest rates.

Assistance

DWSRF set-asides may be used to fund technical assistance. Currently, the Small Systems Technical Assistance Set-Aside allows states to use up to 2 percent of their federal capitalization grant to provide technical assistance to small CWSs and not-for-profit noncommunity water systems (NCWSs) serving 10,000 or fewer people. States use this set-aside to fund technical assistance activities that include project planning, circuit riders, and special small system training. States may also use other set-asides for small system technical assistance. For instance, the Administrative and Technical Assistance Set-Aside may be used for state program administration, Capacity Development program administration, or restructuring. The State Program Management Set-Aside is used to develop and implement Capacity Development and Operator Certification programs, administer source water protection programs (which may include technical assistance to prevent contamination of sources), or fund a portion of their PWSS programs. Technical and financial assistance associated with efforts such as source water protection, wellhead protection, and capacity development can also be provided through the Local Assistance and State Programs Set-Aside. With this set-aside, a maximum of 10 percent of funds set aside can be spent on any single effort.

Exhibit 2.36 displays the amount awarded and transferred to each set-aside in 2009. Although small system technical assistance may be funded through any of the four set-asides, this report uses the Small Systems Technical Assistance Set-Aside as a baseline measure for both the total dollar amount spent on small system technical assistance and the number of systems receiving assistance.

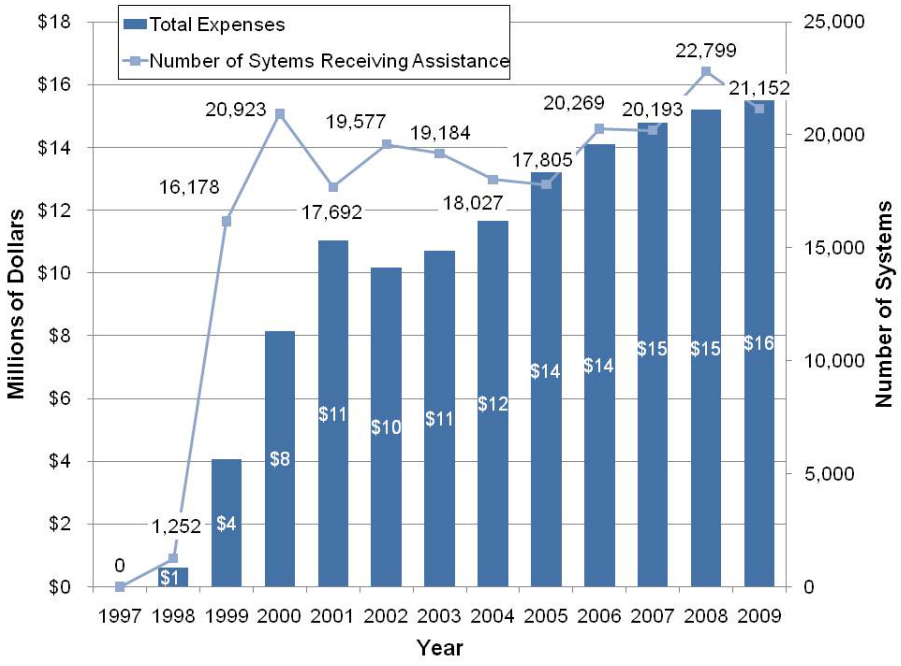
Exhibit 2.36: Amount Awarded and Transferred to Each Set-Aside in 2009
Source: 2009 DWNIMS (Data from Appendix A – Table 29)

DWSRF Set-Aside	Amount Awarded and Transferred	% Federal Capitalization Grant
Administrative and Technical Assistance (4%)	$37,484,507	2.2%
Small System Technical Assistance (2%)	$14,909,358	0.9%
State Program Management (10%)	$51,987,380	3.0%
Local Assistance and State Programs (15%)	$43,658,326	2.6%
Total DWSRF Set-Aside in 2009	**$148,039,571**	**8.7%**

Exhibit 2.37 depicts the annual Small Systems Technical Assistance Set-Aside funds that were spent over the course of the DWSRF program and the number of systems that received assistance. As shown, the number of participating systems increased quickly between the start of the program in 1997 and 2000. Since then, the number of systems receiving assistance each year has ranged from 17,692 to 22,799. Additionally, the total annual funds have generally increased over the course of the program, peaking at $16 million in 2009.

Exhibit 2.37: Total Expended Annually through the Small Systems Technical Assistance Set-Aside and Total Number of Systems Receiving Assistance

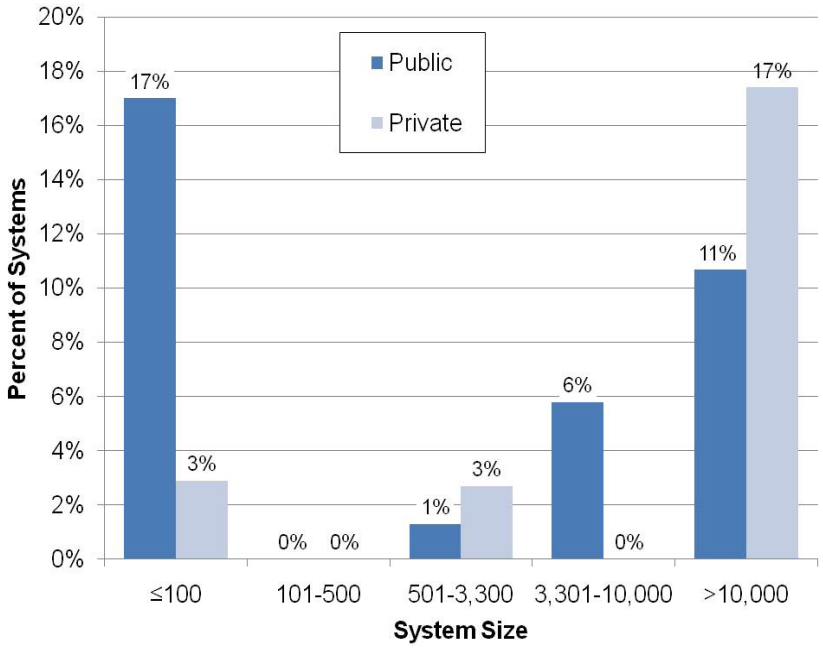
Source: 2009 DWNIMS (Data from Appendix A – Table 30)



Many small systems are faced with the challenge of providing safe drinking water to households with limited incomes. Systems can provide financial assistance to their customers by implementing a program to lower the cost of water to the customer. Households may qualify for the program based on age, income, and/or disability. Exhibit 2.38 shows the percentage of systems that have programs in place to lower the cost of water for these households. Publicly-owned systems serving 100 people or fewer and privately-owned systems serving greater than 10,000 people are the most likely to sponsor such a program.

Exhibit 2.38: Percentage of Systems with Programs to Lower the Cost of Drinking Water for Low-Income Households by System Size and Ownership

Source: 2006 CWSS (Data from Appendix A – Table 31)



Financial Sustainability

Financial ratios can be used to gauge the financial health of water systems. One frequently used financial ratio is the operating ratio. The operating ratio is a system's total operating revenue (water sales and other water-related income) divided by its operating and maintenance expenses. Expenses include depreciation, interest, and operating expenses such as direct compensation (i.e., employee salaries), employee benefits, energy, treatment chemicals, materials and supplies, outside lab services and contractors, water purchases, and taxes. Principal payments and payments to capital and reserve funds are excluded from the operating ratio.

A high ratio indicates that the system is operating efficiently by keeping expenses low relative to revenue. A low operating ratio indicates that the system's expenses are greater than its revenues. According to the *1999 National Characteristics Report*, 61 percent of systems serving 100 or fewer persons had a low operating ratio. However, Exhibit 2.39 shows that as of the 2006 CWSS, there were no systems with a low operating ratio. This dissimilarity could be in part due to the difference in how the ratios were calculated. In the *1999 National Characteristics Report*, expenses excluded depreciation and interest payments. In contrast, the definition of expenses used to calculate the operating ratios in Exhibit 2.39 includes depreciation and interest. Therefore, the operating ratios in Exhibit 2.39 cannot be directly compared to those in the *1999 National Characteristics Report.*

As shown in Exhibit 2.39, privately-owned systems serving between 3,301 and 10,000 people have an operating ratio of 1.2; all other categories of systems have an operating ratio greater than 1.4. It is important to note that smaller systems often have less treatment, and therefore, lower operating expenses.

Exhibit 2.39: Operating Ratios by System Size
Source: 2006 CWSS (Data from Appendix A – Table 32)

Ownership Type	≤100	101-500	501-3,300	3,301-10,000	>10,000
Public	1.4	1.5	1.4	1.6	1.4
Private	1.7	1.4	1.8	1.2	1.5

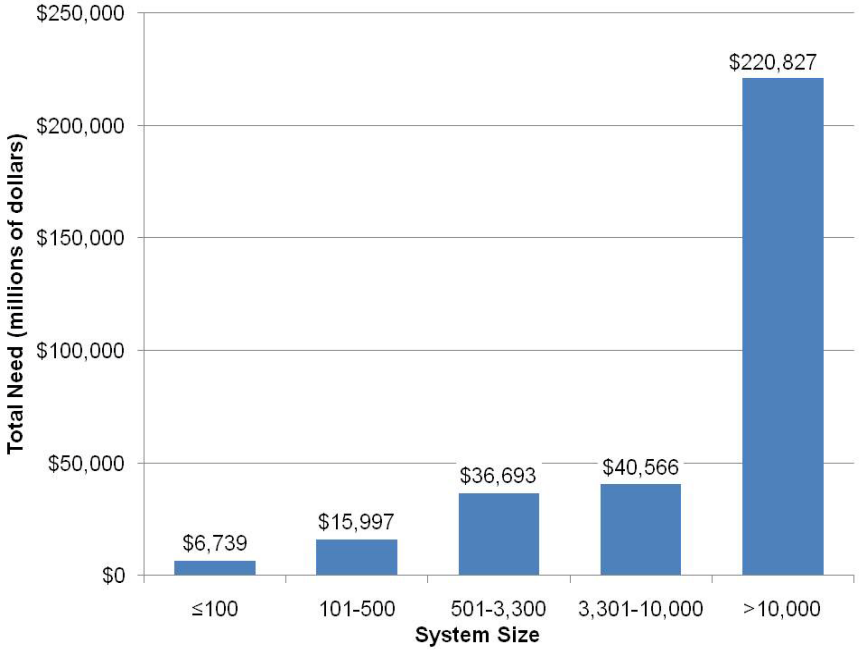
Key Findings – Financial Characteristics:

- Sixty percent of CWSs meter their residential connections. Uniform rates are the most commonly used rate structure for all system sizes; as system size increases, the likelihood of a system using a more complex rate structure increases. The most commonly used rate structure for systems serving 100 or fewer people is combined flat fees.
- According to the 2000 and 2006 CWSS, revenue from water sales per thousand gallons has increased in all size categories except those serving 100 or fewer people and those serving wholesale customers in systems serving between 501 and 3,300 people. Decreased revenue may reflect a decrease in water rates or a decrease in paying customers.
- Publicly-owned systems serving less than 500 customers generate more revenue per thousand gallons than privately-owned systems of the same size; privately-owned systems serving over 500 people generate more revenue per thousand gallons than publicly-owned systems of the same size.
- Surface water systems have higher revenues and expenditures per thousand gallons than ground water systems.
- Large systems spend a higher percentage of total expenses on capital improvements and debt services than small systems.
- The average DWSRF loan is smaller for small systems than large systems, but they have more agreements in place.
- As system size increases, the percent of systems making capital improvements to their transmission and distribution systems increases.
- Publicly-owned systems serving 100 or fewer people and large privately-owned systems have the highest percentage of systems that run programs to lower costs for low-income households.

Infrastructure Needs

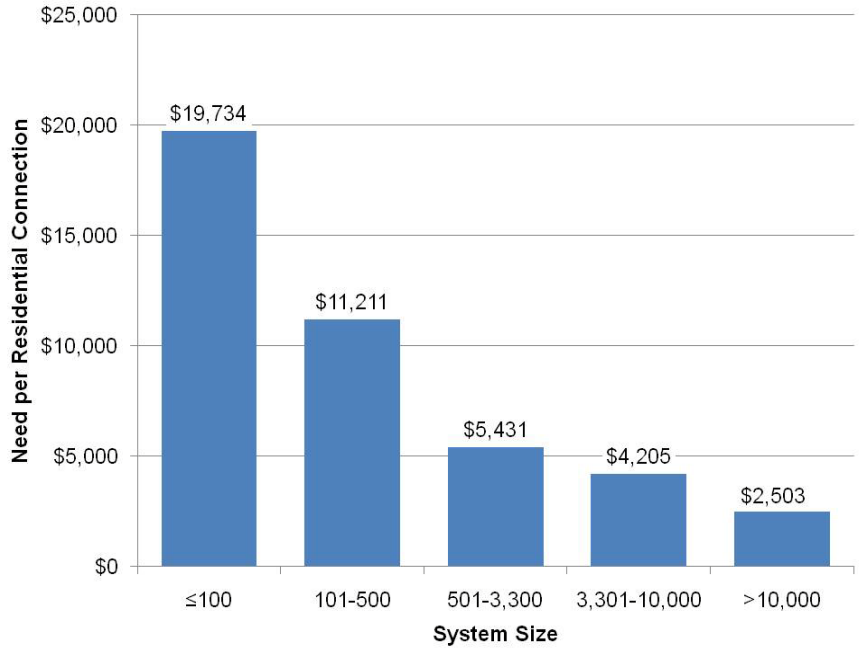
Much of the nation's drinking water infrastructure suffers from deterioration. The 2007 Drinking Water Infrastructure Needs Survey and Assessment (DWINSA) found widespread infrastructure deterioration in all sizes of water systems. These findings depend on water systems' knowledge of their infrastructure and condition. Many systems provided planning documents and information that indicate asset management strategies are being used to better understand and address their infrastructure rehabilitation and replacement challenges. However, for many other systems the information and documentation provided indicate that a significant gap still exists between information about their inventory of infrastructure and their knowledge of that infrastructure's condition or remaining useful life.

Exhibit 2.40: Total Need (millions of dollars) by System Size
Source: 2007 DWINSA (Data from Appendix A –Table 33)



The total dollar need for CWSs for the 20-year period from 2007 to 2026 is estimated to be $320.8 billion. As shown in Exhibit 2.40, need increases with system size, most notably in large systems. Although total need increases with system size, the need per residential connection decreases with system size. As shown in Exhibit 2.41, according to the 2006 CWSS and 2007 DWINSA, systems serving 100 or fewer people have more than 7 times the per-household need of

Exhibit 2.41: Need per Residential Connection by System Size
Source: 2007 DWINSA and 2006 CWSS (Data from Appendix A – Table 33)



systems serving greater than 10,000 people. These systems demonstrate greater need per household, because they have a small customer base to shoulder the considerable cost of infrastructure improvement and replacement. Larger systems have a lower need per household, because infrastructure costs are shared by much larger service populations and the systems can achieve greater economies of scale in treatment and distribution.

According to the 2007 DWINSA, there are 5 major categories of need for CWSs: source, storage, transmission and distribution, treatment, and others. As defined by the 2007 DWINSA, the source category includes needs for drilling wells, spring collectors, and surface water intake structures, but excludes needs for dams and reservoirs. The storage category includes needs to construct, rehabilitate, or cover finished water storage tanks, but also excludes dams and reservoirs. Transmission and distribution needs refer to replacing and rehabilitating transmission and distribution lines. Treatment needs are defined as those associated with the construction, rehabilitation, or expansion of infrastructure for treatment processes. Other needs include any need not included in the other 4 categories, such as installing a system-wide telemetry and supervisory control and data acquisition (SCADA) systems.

Exhibit 2.42 displays the total need per residential connections, calculated by dividing the total need in each category by the national total of residential connections. Of the 5 categories, transmission and distribution needs are the highest across all size categories. As shown in Exhibit 2.42, the total need per residential connection for ground water systems decreases as system size increases; however, the total need per connection for surface water systems is highest for systems serving between 101 and 500 people and then decreases as system size increases. The high need per connection for systems serving between 101 and 500 people is driven by the transmission and distribution needs. Systems of this size are typically spread out physically, and therefore, have more transmission and distribution mains, but still serve a relatively small population.

Exhibit 2.42 also shows that the need per residential connection for systems serving 100 or fewer people is higher for ground water systems than surface water systems of the same size across all categories of need, except for treatment. However, for systems serving between 101 and 500 people, surface water systems have a higher need per connection than ground water systems for all categories, with the exception of source needs and other needs. Additionally, in all systems serving over 500 people, surface water systems have a higher need per residential connection than ground water systems for all components of need, with the exception of source water needs for systems serving between 3,301 and 10,000 people.

Exhibit 2.42: Total Need per Residential Connection by Component of Need, System Size, and Source
Source: 2007 DWINSA and 2006 CWSS (Data from Appendix A – Table 34)

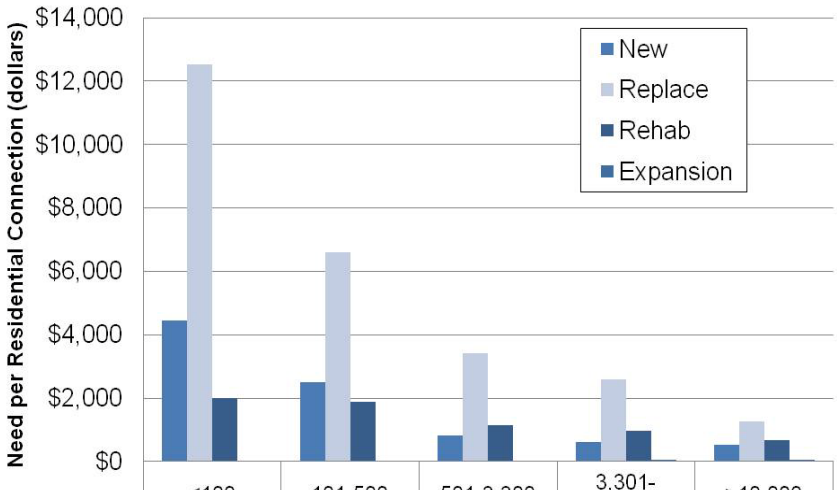
Water Source	System Size	Source	Storage	Transmission/ Distribution	Treatment	Other	Total
Ground Water	≤100	$3,241	$1,914	$10,271	$4,209	$439	$20,074
	101-500	$1,395	$1,596	$6,134	$1,660	$155	$10,941
	501-3,300	$318	$804	$3,197	$791	$29	$5,140
	3,301-10,000	$247	$422	$2,615	$648	$24	$3,957
	>10,000	$139	$248	$1,511	$394	$16	$2,307
Surface Water	≤100	$901	$1,771	$5,827	$5,395	$175	$14,069
	101-500	$806	$1,852	$8,469	$5,570	$154	$16,851
	501-3,300	$424	$1,023	$4,296	$2,068	$69	$7,879
	3,301-10,000	$211	$654	$3,007	$1,440	$39	$5,352
	>10,000	$118	$237	$1,608	$679	$16	$2,657

This trend likely reflects the operating characteristics associated with small water systems using ground water sources. Large systems have increasingly complex infrastructure and treatment and rely heavily on storage to meet peak demands. Additionally, the source water need in surface water systems is most likely low because the 2007 DWINSA excluded the needs for dams and reservoirs.

Exhibit 2.43 illustrates that in all size categories the majority of systems' needs are for replacement of aging infrastructure; systems serving 100 or fewer people have nearly 10 times the replacement need per residential connection than large systems. The need per residential connection decreases as system size increases for all categories of need except for expansion.

Source, storage, transmission and distribution, and treatment needs can be categorized by the type of project: new, replacement,

Exhibit 2.43: Need per Residential Connection by Category of Need and System Size
Source: 2007 DWINSA and 2006 CWSS (Data from Appendix A – Table 35)



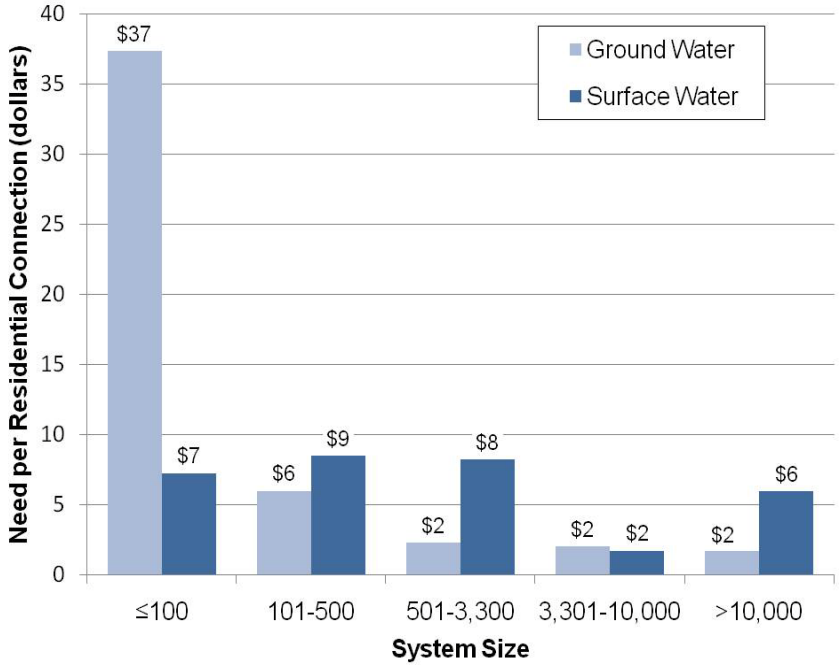
	≤100	101-500	501-3,300	3,301-10,000	>10,000
New	$4,460	$2,516	$836	$618	$516
Replace	$12,520	$6,600	$3,421	$2,585	$1,268
Rehab	$1,993	$1,881	$1,147	$962	$675
Expansion	$13	$17	$35	$43	$45

rehabilitation, and expansion. According to the 2007 DWINSA, "new" refers to projects that install entirely new infrastructure, such as a new storage tank. Replacement projects are any of those which physically replace existing infrastructure (e.g., replace a pump), whereas rehabilitation projects are those which repair existing infrastructure (e.g., clean and line water mains). Expansion projects are associated specifically with treatment plant expansion or upgrades, such as adding a treatment train to increase capacity.

The 2007 DWINSA categorizes security needs as any stand-alone security improvement (i.e., not part of another infrastructure improvement) such as installing fencing, electronic or cyber security, monitoring equipment, or other physical security measures. As discussed in the *Expenditures* section, both small and large CWSs are devoting 0.4 percent of their expenses to security (Exhibits 2.24 and 2.25). Although small and large systems are spending the same percentage of their overall expenditures on security, Exhibit 2.44 shows the security-related need per residential connection is highest in ground water systems serving 100 or fewer people.

Exhibit 2.44: Security-Related Need per Connection by Water Source and System Size

Source: 2007 DWINSA and 2006 CWSS (Data from Appendix A – Table 36)



As discussed in the 2007 DWINSA, all CWSs serving greater than 3,300 people were required by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 to prepare a vulnerability assessment. Thus, larger systems may be more aware of their security needs and in turn have already integrated necessary security measures into other major infrastructure improvements. Exhibit 2.44 also shows that in all size categories (except those serving 100 or fewer people), surface water systems have a nearly equal or greater security need per connection than ground water systems. This trend reflects the greater challenge of securing easily-accessible surface water sources as opposed to ground water sources.

The 2007 DWINSA also estimated the dollar need associated with microbial and chemical regulatory compliance. Regulations associated with microbial treatment needs include: surface water treatment

regulations (Surface Water Treatment Rule, Interim Enhanced Surface Water Treatment Rule, Filter Backwash Recycling Rule, Long Term 1 Enhanced Surface Water Treatment Rule, and covers for finished water reservoirs required by the Long Term 2 Enhanced Surface Water Treatment Rule); the Stage 1 Disinfectants/Disinfection Byproducts Rule; and the Total Coliform Rule. Chemical treatment needs relate to the Nitrate/Nitrite Standard, the Lead and Copper Rule, and other regulations that set maximum contaminant levels (MCLs) or treatment techniques (TT) for organic and inorganic chemicals.

As shown in Exhibit 2.45, surface water systems in all size categories have a higher microbial treatment need per connection than ground water systems. The high microbial need is due to the treatment processes needed to comply with regulations associated with surface water sources. Additionally, the microbial need may also be due in part to the disinfection or flushing practices that are necessary to prevent noncompliance with the Total Coliform Rule. Ground water systems have a higher chemical treatment need per residential connection than surface water systems for all size categories. Chemical regulations require the removal of more than 80 organic and inorganic chemicals, such as arsenic and radionuclides.

Exhibit 2.45: Need per Connection for Regulatory Compliance
Source: 2007 DWINSA and 2006 CWSS (Data from Appendix A – Table 37)

Water Source	System Size	Microbial	Chemical	Total
Ground Water	≤100	$324.67	$1,071.70	$1,396.37
	101-500	$348.88	$526.44	$875.32
	501-3,300	$182.93	$374.11	$557.04
	3,301-10,000	$122.37	$287.46	$409.83
	>10,000	$72.24	$137.61	$209.85
Surface Water	≤100	$3,443.74	$170.59	$3,614.33
	101-500	$4,569.38	$128.43	$4,697.81
	501-3,300	$1,335.32	$100.63	$1,435.95
	3,301-10,000	$851.91	$225.45	$1,077.36
	>10,000	$420.77	$71.90	$492.67

Key Findings – Infrastructure Needs:

- Total infrastructure need increases dramatically as system size increases; however, the need per household of systems serving 100 or fewer people is 7 times the per household need of large systems.
- Transmission and distribution replacement need is highest among all size categories when compared to all other components of need.
- Regulatory need per household is highest for very small ground water systems, which reflects the challenge these systems face complying with existing drinking water regulations.

Compliance and Violations

CWSs of all sizes are subject to regulation. Drinking water regulations set MCLs and maximum residual disinfectant levels (MRDLs), require certain monitoring and reporting (M&R) and treatment techniques (TT). Drinking water regulations also include public notification and establish recordkeeping requirements. There are distinct compliance trends for water systems serving 10,000 or fewer people. For information on regulatory compliance infrastructure needs of systems, see Exhibit 2.45.

Although drinking water regulations are more complex for surface water systems than for ground water systems, surface water systems have better compliance rates because they tend to be larger systems and generally have the technical staff and resources needed to comply. Ground water often requires less complex treatment than surface water, but ground water systems often serve small populations and many lack the technical, managerial, or financial capacity to comply with regulations, including basic monitoring and reporting requirements. As discussed under *Labor*, small systems are largely overseen by part-time managers and operators. This can greatly affect a system's ability to comply with regulations, because staff may lack the proper time and training necessary to understand complex regulations.

As shown in Exhibit 2.46, systems serving 10,000 or fewer people have a higher number of violations than larger systems. The largest number of violations is M&R violations in systems serving 500 or fewer people. Additionally, systems serving 500 or fewer people have over nine times the amount of TT violations and over 7 times the amount of MCL violations than systems serving over 10,000 people. However, there are 7 times more systems serving 500 or fewer people than systems serving over 10,000 people.

Exhibit 2.46: Number of Violations by System Size and Violation Type
Source: SDWIS FY08Q3 frozen violations and inventory tables (Data from Appendix A – Table 38)

Violation Type	System Size (Service Population)				
	≤500	501-3,300	3,301-10,000	≤10,000	>10,000
MCL	5,144	2,895	985	9,024	655
MRDL	5	0	0	5	0
TT	1,525	703	230	2,458	167
M&R	66,316	16,342	7,852	90,510	9,975

M&R violations are most common, especially among smaller systems (see Exhibits 2.47 and 2.48 below). As shown in Exhibit 2.47, very small systems are responsible for over 65 percent of all M&R violations. These violations could obscure more important water quality problems, given that MCL and MRDL violations may not be discovered if a system fails to conduct routine monitoring. M&R requirements are often the most simple compliance requirements, and systems that cannot complete these procedures may have other technical, managerial, and financial (TMF) issues.

Exhibit 2.47: Breakdown of M&R Violations by System Size
Source: SDWIS FY08Q3 frozen violations table (Data from Appendix A – Table 39)

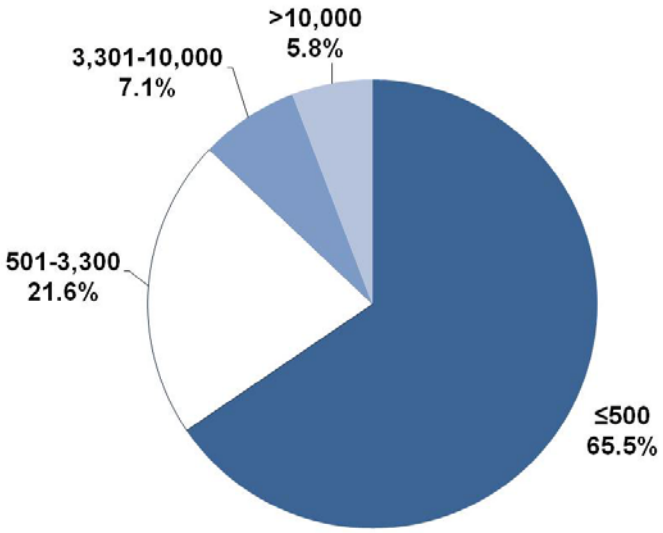


Exhibit 2.48: M&R Violations per 1,000 People Served
Source: SDWIS FY08Q3 frozen violations table (Data from Appendix A – Table 38)

M&R violations are reported jointly in SDWIS; therefore, an M&R violation represents either a monitoring or a reporting violation, but necessarily not both.

Since very small systems comprise a significant portion of all water systems in the U.S., it is not surprising that the majority of noncompliant systems are very small. Exhibit 2.48 illustrates that for every 1 million people served by very small systems, there are 13,899

M&R violations. However, in systems serving more than 10,000 people, there are 42 M&R violations for every 1 million people served. These ratios indicate serious noncompliance among very small systems, and a stark contrast with larger water systems that appear to have the technical, managerial, or financial capacity to meet regulatory requirements.

Key Findings – Compliance & Violations:

- Although surface water systems are subject to more regulatory requirements, ground water systems have a higher number of violations.
- Very small water systems have the highest number of violations per 1,000 people of all system sizes. Very small systems have approximately 13,899 M&R violations for every 1 million people served, whereas large systems only have 42.

Section 3: Noncommunity Water Systems Serving 10,000 or Fewer People

The previous sections of this report contain information on the inventory, operating and financial characteristics, and the infrastructure needs of Community Water Systems (CWSs). Much of this data was drawn from national surveys of CWSs. There are no comparable national surveys examining noncommunity water systems (NCWSs). The primary sources of information on NCWSs are the federally-maintained SDWIS database and the estimated infrastructure needs of not-for-profit NCWSs from the 2007 DWINSA. Available data focus on inventory and compliance information.

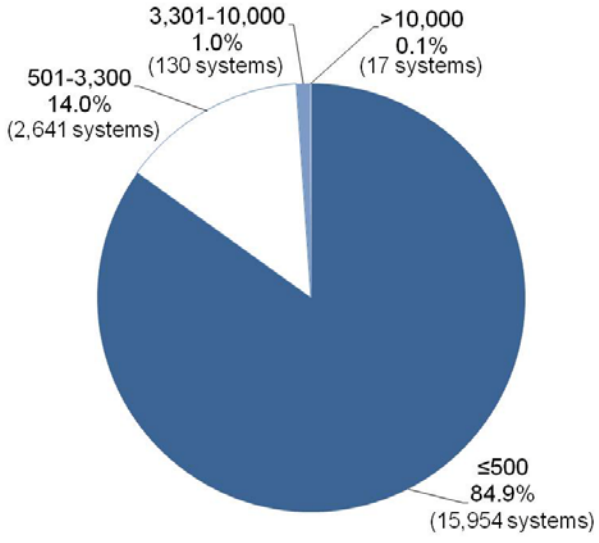
There are two types of NCWSs: nontransient noncommunity water systems (NTNCWSs) and transient noncommunity water systems (TNCWSs). NCWSs are systems that do not serve the same customers year round, such as schools or restaurants; water is not their primary business. Both types of NCWSs are further discussed below. There are 102,891 NCWSs in the U.S. serving approximately 19.8 million people (Appendix A – Tables 40 and 43). Over 97 percent of NCWSs use ground water as their primary source (Appendix A – Tables 40 and 43).

Nontransient Noncommunity Water Systems

Inventory

A NTNCWS is a PWS that is not a CWS and that regularly serves at least 25 of the same people over 6 months per year. Examples of NTNCWSs are schools, factories, office and industrial parks, and major shopping centers. According to the *2008 Factoids,* there are approximately 18,742 NTNCWSs serving 6.3 million people nationwide. Over 96 percent of all NTNCWSs use ground water as their primary source (Appendix A – Table 40). As shown in Exhibit 3.1, approximately 99 percent of NTNCWSs serve 3,300 or fewer people.

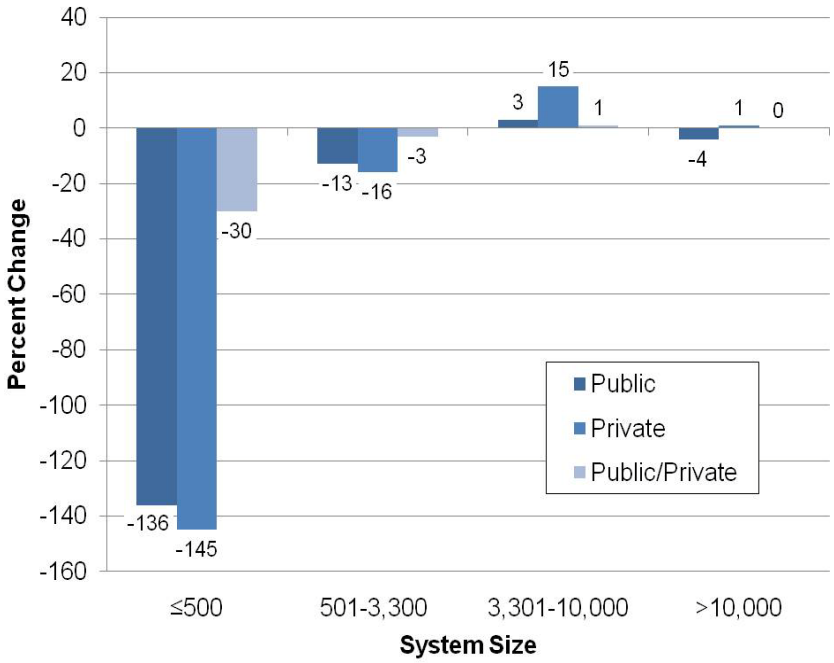
Exhibit 3.1: Percentage of NTNCWSs by System Size
Source: *2008 Factoids* (Data from Appendix A – Table 40)



As reported in the *1999 National Characteristics Report,* SDWIS data from the fourth quarter of fiscal year 1998 indicates that there were 20,255 NTNCWSs serving about 6 million people, 85 percent of which were small systems.

The net change in the total number of NTNCWSs between 2006-2008 is broken down by ownership in Exhibit 3.2. As shown, all ownership types decreased in NTNCWSs serving 3,300 or fewer; the number of privately-owned systems has decreased more than publicly-owned or publicly/privately-owned systems (in systems serving 3,300 or fewer people). NTNCWSs serving over 3,300 people have had relatively small changes in inventory.

Exhibit 3.2: Change in the Total Number of NTNCWS by System Size and Ownership Type from 2006-2008
Source: SDWIS FY08Q3 frozen inventory table (Data from Appendix A – Table 41)



Compliance and Violations

Exhibit 3.3 shows violations per 1,000 people by violation type and source. Treatment techniques are the only violation in which surface water NTNCWSs have slightly higher violations per 1,000 people than ground water NTNCWSs. Ground water systems have nearly 12 times the number of M&R violations than any other violation.

Exhibit 3.3: NTNCWSs Violations per 1,000 People by Violation Type and Water Source
Source: SDWIS FY08Q3 violations and inventory tables (Data from Appendix A – Table 42)

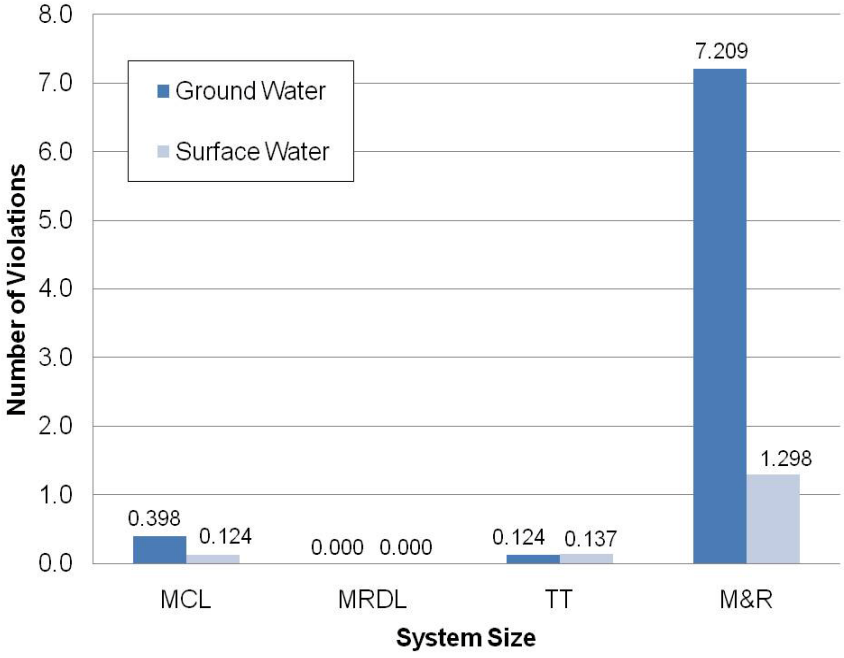


Exhibit 3.4 shows that very small systems have more violations than any other size category. As with CWSs, the number of violations decreases as system size increases. For very small NTNCWSs, there are 1,925 MCL violations and 34,277 M&R violations. In contrast, for large systems, there are 3 MCL violations and 10 M&R violations. The large difference in the number of violations between very small and large NTNCWSs is due in part to the fact that very small systems comprise approximately 85 percent of the entire universe of NTNCWSs, while large systems comprise only 0.1 percent of systems.

Exhibit 3.4: Number of NTNCWSs Violations by System Size and Violation Type
Source: SDWIS FY08Q3 frozen violations and inventory tables (Data from Appendix A – Table 38)

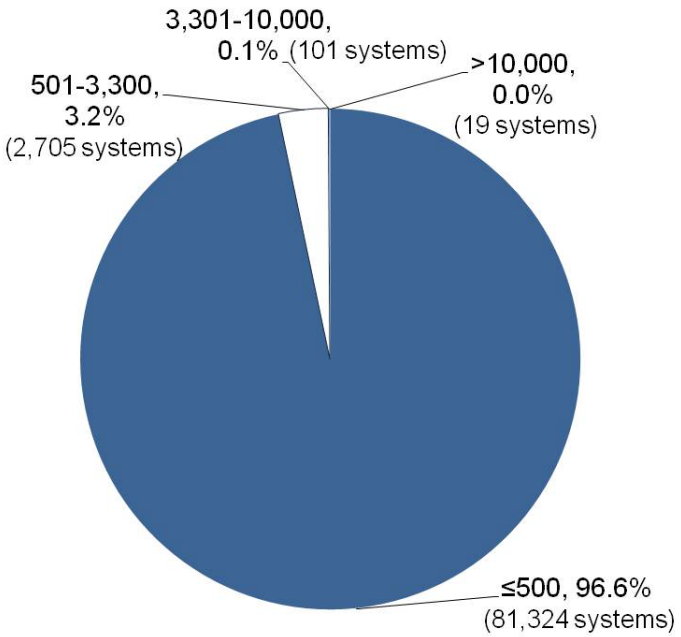
Violation Type	System Size (Service Population)				
	≤500	501-3,300	3,301-10,000	≤10,000	>10,000
MCL	1,925	232	20	2,177	3
MRDL	0	0	0	0	0
TT	662	90	4	756	0
M&R	34,277	4,303	202	38,782	10

Transient Noncommunity Water Systems

Inventory

A TNCWS is a PWS that is not a CWS and that does not regularly serve at least 25 of the same people over 6 months per year. Examples of TNCWSs are highway rest stops, restaurants, and recreation areas. According to fiscal year *2008 Factoids,* there are approximately 84,149 TNCWSs serving 13.6 million people nationwide. Over 97 percent of all TNCWSs use ground water as their primary source (Appendix A – Table 43). As shown in Exhibit 3.5, almost all TNCWSs serve 3,300 or fewer people.

Exhibit 3.5: Percentage of TNCWSs by System Size
Source: SDWIS FY08Q3 frozen inventory table (Data from Appendix A – Table 43)



As reported in the *1999 National Characteristics Report,* SDWIS data from the fourth quarter of fiscal year 1998 indicates that there were 95,754 TNCWSs serving about 17 million people, 97 percent of which were small systems.

The total number of TNCWSs has decreased across all size categories between 2006-2008. The largest decrease in TNCWSs was found in very small systems, with a net decrease of 1,086 systems. Exhibit 3.6 illustrates the net change in the number of systems by ownership. All types of systems are decreasing, except for publicly-owned TNCWSs serving between 3,300 and 10,000. Very small privately-owned systems had the greatest overall decrease, with a loss of 922 systems.

Exhibit 3.6: Change in the Total Number of TNCWS by System Size and Ownership Type from 2006-2008
Source: SDWIS FY08Q3 frozen inventory table (Data from Appendix A – Table 44)

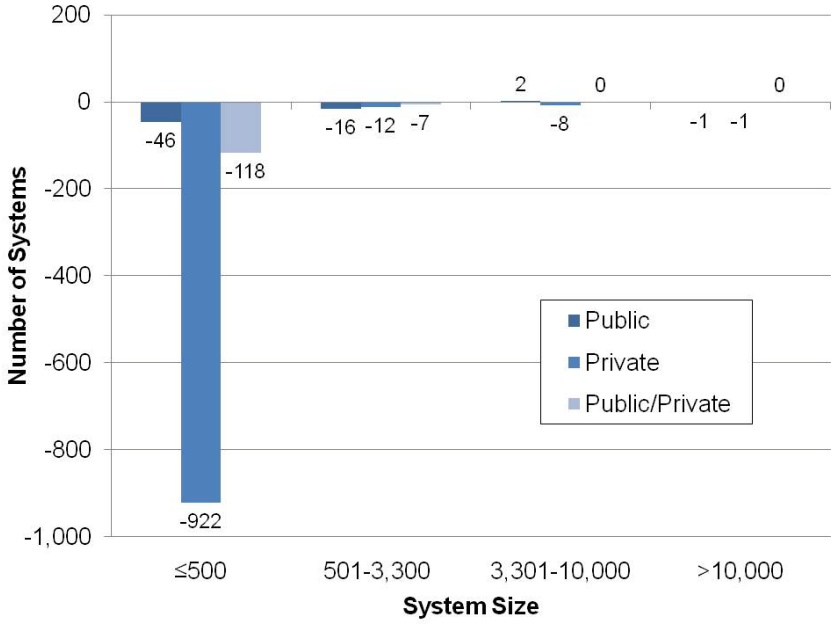
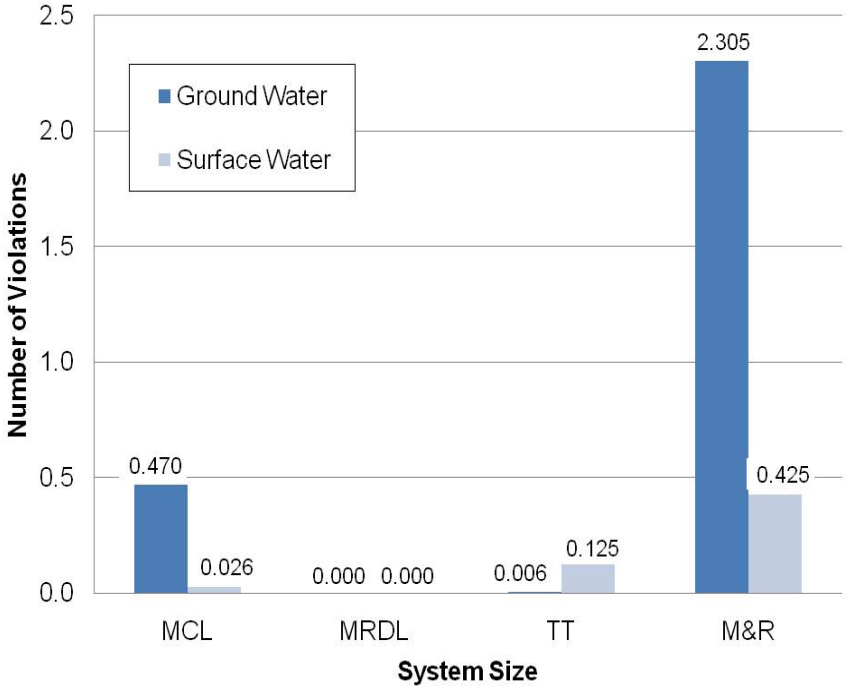


Exhibit 3.7: TNCWS Violations per 1,000 People by Violation Type and Water Source
Source: SDWIS FY08Q3 violations and inventory tables (Data from Appendix A – Table 42)



Compliance and Violations

Exhibit 3.7 shows violations per 1,000 people by violation type and source. As with CWSs, ground water TNCWSs typically have more violations per 1,000 people than surface water TNCWSs in all categories of violations. Treatment techniques are the only violation in which surface water systems have higher violations per 1,000 people than ground water systems. The highest numbers of violations per 1,000 people is in the M&R category.

Exhibit 3.8 shows that the smallest TNCWSs experience more violations than any other size category of TNCWSs. As with CWSs and NTNCWSs, the number of violations declines as system size increases. It is important to note that because of the nature of water consumption at TNCWSs, these systems must comply with fewer regulation requirements than CWSs and NTNCWSs. Very small TNCWSs systems incurred 5,027 MCL violations and 25,594 M&R violations. Large transient systems incurred 3 MCL violations and 2 M&R violations. This trend correlates with the inventory trends described above; very small systems make up almost 97 percent of the entire inventory of systems.

Exhibit 3.8: TNCWS Violations per 1,000 People Served by System Size and Violation Type
Source: SDWIS FY08Q3 frozen violations and inventory tables (Data from Appendix A – Table 38)

Violation Type	System Size (Service Population)				
	≤500	501-3,300	3,301-10,000	≤10,000	>10,000
MCL	5,027	211	9	5,247	3
MRDL	0	0	0	0	0
TT	345	35	4	384	0
M&R	25,594	832	69	26,495	2

Infrastructure Needs

Data from the 2007 DWINSA are only available for not-for-profit NCWSs. The data are not broken down by system size. Schools are one example of not-for-profit NCWSs.

Exhibit 3.9 displays the 20-year need for not-for-profit NCWSs. As shown, NCWSs' greatest need is for storage, which may be their easiest means to meet demands on the system. Additionally, the need for source and treatment is greater than the need for transmission and distribution since on average their distribution systems are very small.

Exhibit 3.9: Total 20-Year Need (in millions) by Component of Need
Source: 2007 DWINSA (Data from Appendix A – Table 34)

System Type	Source	Storage	Transmission/ Distribution	Treatment	Other	Total
Not-for-profit NCWSs	$815.4	$1,940.1	$509.3	$802.5	$0.9	**$4,068.2**

Comparison of 20-year Need between CWSs and NCWSs:

Total 20-Year Need (in millions) by Component of Need
Source: 2007 DWINSA (Data from Appendix A – Table 34)

System Type	Source	Storage	Transmission/ Distribution	Treatment	Other	Total
CWSs	$18,775.3	$34,328.4	$198,709.9	$66,751.0	$2,258.1	**2.6**

- The table above depicts the total 20-year need (in millions of dollars) for CWSs. Unlike not-for-profit NCWSs whose greatest needs are for storage and source, the highest needs for CWSs are transmission and distribution followed by treatment (see *Infrastructure Needs* for more details).
- Additionally, CWSs' needs are much greater than not-for-profit NCWSs. This is due to the fact there are many more CWSs than not-for-profit NCWSs serving a much larger population and CWSs are subject to more regulations and operating standards.

Key Findings – Noncommunity Water Systems:

- Ninety-six percent of NTNCWSs are ground water systems, and 99 percent of NTNCWSs serve a population of 3,300 or fewer.
- Ninety-seven percent of TNCWSs are ground water systems, and almost all serve a population of 3,300 of fewer.
- The total number of very small NTNCWSs and TNCWSs is decreasing, most noticeably in privately-owned systems.
- Violations per 1,000 people are higher in ground water systems than surface water systems (except for TT violations)
- Very small NTNCWSs have the highest number of violations.
- NCWSs' greatest need is for storage, unlike CWSs, whose greatest need is transmission and distribution.

Appendix A

List of Tables

Table 1: Percent Change in the Number of CWSs by System Size and Water Source

Source: *Factoids: Drinking Water and Ground Water Statistics (Annual)* (Data for Exhibits 2.1, 2.2, and 2.3)

Year	Data	CWSs				
		System Size (Service Population)				All
		≤500	501-3,300	3,301-10,000	>10,000	
2006	**Number of Systems**	**29,448**	**14,098**	**4,745**	**4,048**	**52,339**
	Percent of Systems	56%	27%	9%	8%	100%
	Population Served (1,000)	**4,896**	**20,017**	**27,473**	**229,314**	**281,700**
	Percent of Population	2%	7%	10%	81%	100%
2007	**Number of Systems**	**29,282**	**13,906**	**4,822**	**4,100**	**52,110**
	Percent of Systems	56%	27%	9%	8%	100%
	Population Served (1,000)	**4,857**	**19,848**	**27,942**	**233,803**	**286,451**
	Percent of Population	2%	7%	10%	82%	100%
2008	**Number of Systems**	**29,160**	**13,858**	**4,838**	**4,132**	**51,988**
	Percent of Systems	56%	27%	9%	8%	100%
	Population Served (1,000)	**4,857**	**19,869**	**28,135**	**239,440**	**292,300**
	Percent of Population	2%	7%	10%	82%	100%
2006-2008	**Percent Change in Number of Systems**	**-1.0%**	**-1.7%**	**2.0%**	**2.1%**	**-0.7%**

Notes: The *Factoids* do not show size categories ≤100 or 101-500.

Table 2: Number and Percentage of Systems and Population Served by System Size and Ownership Type

Source: SDWIS FY08Q3 frozen inventory table (Data for Exhibit 2.4)

Ownership Type	System Size (Service Population)							
	≤500		501-3,300		3,301-10,000		>10,000	
	Number of Systems	Population (thou)	Number of Systems	Population (thou)	Number of Systems	Population (thou)	Number of Systems	Population (thou)
Public	**7,523**	**1,765**	**10,188**	**15,235**	**4,182**	**24,432**	**3,591**	**205,547**
Percent of Total	26.2%	37.0%	74.7%	77.8%	87.2%	87.5%	87.2%	85.9%
Private	**20,574**	**2,883**	**2,897**	**3,537**	**489**	**2,849**	**468**	**30,761**
Percent of Total	71.7%	60.4%	21.2%	18.1%	10.2%	10.2%	11.4%	12.9%
Public/Private	**599**	**123**	**559**	**806**	**127**	**637**	**60**	**2,889**
Percent of Total	2.1%	2.6%	4.1%	4.1%	2.6%	2.3%	1.5%	1.2%
Total	**28,696**	**4,771**	**13,644**	**19,578**	**4,798**	**27,919**	**4,119**	**239,197**

Notes: The *Factoids* do not show size categories ≤100 or 101-500; therefore, all SDWIS data was drawn using the ≤500 size category.

Table 3: CWS Ownership Trends

Source: SDWIS FY06Q3 through FY08Q3 frozen inventory tables (Data for Exhibits 2.5 and 2.6)

Year	Owner	Size Category (Population Served)							
		≤500		501-3,300		3,301-10,000		>10,000	
		Number of Systems	Population (thou)	Number of Systems	Population (thou)	Number of Systems	Population (thou)	Number of Systems	Population (thou)
2006	Public	7,385	1,731	10,067	14,980	4,007	23,287	3,417	191,459
	Private	20,978	2,954	3,246	3,946	577	3,357	566	34,538
	Public/Private	610	123	572	800	120	607	57	3,169
2007	Public	7,460	1,734	9,960	14,839	4,074	23,692	3,478	196,655
	Private	20,747	2,914	3,161	3,913	582	3,393	555	34,191
	Public/Private	604	122	570	802	125	637	58	2,797
2008	Public	7,523	1,765	10,188	15,235	4,182	24,432	3,591	205,547
	Private	20,574	2,883	2,897	3,537	489	2,849	468	30,761
	Public/Private	599	123	559	806	127	637	60	2,889
2006-2008	Percent Change: Public Systems	**1.9%**	**2.0%**	**1.2%**	**1.7%**	**4.4%**	**4.9%**	**5.1%**	**7.4%**
2006-2008	Percent Change: Private Systems	**-1.9%**	**-2.4%**	**-10.8%**	**-10.4%**	**-15.3%**	**-15.1%**	**-17.3%**	**-10.9%**
2006-2008	Percent Change: Public/Private Systems	**-1.8%**	**-0.3%**	**-2.3%**	**0.7%**	**5.8%**	**5.0%**	**5.3%**	**-8.8%**

Notes: The *Factoids* do not show size categories ≤100 or 101-500; therefore, all SDWIS data was drawn using the ≤500 size category.

Table 4: Number and Percentage of Systems and Population Served by System Size and Water Source

Source: SDWIS FY08Q3 frozen inventory table (Data for Exhibit 2.7)

Water Source	System Size (Service Population)							
	≤500		501-3,300		3,301-10,000		>10,000	
	Number of Systems	Population (thou)	Number of Systems	Population (thou)	Number of Systems	Population (thou)	Number of Systems	Population (thou)
GWUDI	**232**	**44**	**162**	**232**	**45**	**263**	**35**	**2,075**
Percent of Total	0.8%	0.9%	1.2%	1.2%	0.9%	0.9%	0.8%	0.9%
Purchased GWUDI	**45**	**9**	**35**	**53**	**13**	**80**	**6**	**97**
Percent of Total	0.2%	0.2%	0.3%	0.3%	0.3%	0.3%	0.1%	0.0%
Ground Water	**24,133**	**3,826**	**9,117**	**12,620**	**2,547**	**14,549**	**1,490**	**53,027**
Percent of Total	84.1%	80.2%	66.8%	64.5%	53.1%	52.1%	36.2%	22.2%
Puchased Ground Water	**1,271**	**286**	**880**	**1,116**	**156**	**828**	**47**	**1,140**
Percent of Total	4.4%	6.0%	6.4%	5.7%	3.3%	3.0%	1.1%	0.5%
Surface Water	**851**	**159**	**1,153**	**2,020**	**966**	**5,896**	**1,403**	**135,116**
Percent of Total	3.0%	3.3%	8.5%	10.3%	20.1%	21.1%	34.1%	56.5%
Purchased Surface Water	**2,154**	**445**	**2,294**	**3,532**	**1,071**	**6,303**	**1,136**	**47,625**
Percent of Total	7.5%	9.3%	16.8%	18.0%	22.3%	22.6%	27.6%	19.9%
Unknown	**10**	**1**	**3**	**5**	**0**	**0**	**2**	**118**
Percent of Total	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	**28,696**	**4,771**	**13,644**	**19,578**	**4,798**	**27,919**	**4,119**	**239,197**

Notes: Reflects SDWIS classification of water systems, i.e., the hierarchy starting with surface water. If the system receives any of its water from a surface source, it is considered a surface water system. The SDWIS hierarchy is: surface water (SW), purchased surface water (SWP), ground water under the direct influence (GU) of surface water, purchased ground water under the direct influence (GUP), ground water (GW), and purchased ground water (GWP). The *Factoids* do not show size categories ≤100 or 101-500; therefore, all SDWIS data was drawn using the ≤500 size category.

Table 5: CWS Source Water Trends

Source: SDWIS FY06Q3 through FY09Q3 frozen inventory tables (Data for Exhibits 2.8 and 2.9)

Year	Water Source	System Size (Service Population)							
		≤500		501-3,300		3,301-10,000		>10,000	
		Number of Systems	Population (thou)	Number of Systems	Population (thou)	Number of Systems	Population (thou)	Number of Systems	Population (thou)
2006	GWUDI	238	47	146	202	33	193	43	2,490
	Purchased GWUDI	37	9	30	43	13	83	2	36
	Ground Water	24,380	3,853	9,099	12,503	2,477	14,101	1,444	50,761
	Purchased Ground Water	1,185	264	871	1,089	131	688	44	1,118
	Surface Water	866	167	1,236	2,147	993	6,003	1,401	128,489
	Purchased Surface Water	2,259	466	2,502	3,740	1,056	6,179	1,106	46,272
	Unknown	8	1	1	1	1	4	0	0
2007	GWUDI	235	45	156	223	41	236	37	2,338
	Purchased GWUDI	44	9	32	48	12	71	6	89
	Ground Water	24,294	3,843	9,197	12,686	2,605	14,886	1,507	54,353
	Purchased Ground Water	1,272	285	892	1,133	154	811	57	1,889
	Surface Water	845	157	1,133	1,957	960	5,800	1,387	128,930
	Purchased Surface Water	2,111	429	2,277	3,501	1,008	5,913	1,097	46,046
	Unknown	10	2	4	7	1	5	0	0
2008	GWUDI	232	44	162	232	45	263	35	2,075
	Purchased GWUDI	45	9	35	53	13	80	6	97
	Ground Water	24,133	3,826	9,117	12,620	2,547	14,549	1,490	53,027
	Purchased Ground Water	1,271	286	880	1,116	156	828	47	1,140
	Surface Water	851	159	1,153	2,020	966	5,896	1,403	135,116
	Purchased Surface Water	2,154	445	2,294	3,532	1,071	6,303	1,136	47,625
	Unknown	10	1	3	5	0	0	2	118
Percent Change: 2006-2008	GWUDI	-2.5%	-6.4%	11.0%	14.7%	36.4%	35.9%	-18.6%	-16.6%
	Purchased GWUDI	21.6%	9.8%	16.7%	23.2%	0.0%	-2.6%	200.0%	167.8%
	Ground Water	-1.0%	-0.7%	0.2%	0.9%	2.8%	3.2%	3.2%	4.5%
	Purchased Ground Water	7.3%	8.2%	1.0%	2.4%	19.1%	20.3%	6.8%	1.9%
	Surface Water	-1.7%	-5.2%	-6.7%	-5.9%	-2.7%	-1.8%	0.1%	5.2%
	Purchased Surface Water	-4.6%	-4.4%	-8.3%	-5.6%	1.4%	2.0%	2.7%	2.9%
	Unknown	25.0%	46.7%	200.0%	628.4%	-100.0%	-100.0%	NA	NA

Notes: The *Factoids* do not show size categories ≤100 or 101-500; therefore, all SDWIS data was drawn using the ≤500 size category.

Table 6: Percentage of Systems by System Size and Ownership Type

Source: 2006 CWSS

Ownership Type	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems	13.2%	38.4%	72.8%	79.3%	**46.5%**	91.0%	**51%**
Private Systems	39.8%	36.3%	24.6%	20.8%	**32.1%**	9.0%	**30%**
Ancillary Systems*	47.0%	25.3%	2.5%	NA	**21.4%**	NA	**19%**
All Systems	100.0%	100.0%	100.0%	100.0%	**100.0%**	100.0%	**100%**

Notes: Publicly-owned systems include municipal systems, systems run as public enterprise funds, state-run systems, and special districts. It excludes federal systems. Examples of privately-owned systems not operated for profit are homeowners' associations and non-profit cooperatives. Privately-owned systems that are a necessary part of another business are referred to as ancillary systems because the water business is not the primary business. The majority of ancillary systems are mobile home parks that provide water as one of a number of services for residents of the park.

*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 7: Distribution System and Transmission Line Summary by System Size and Ownership Type
Source: 2006 CWSS (Data for Exhibit 2.10)

Ownership Type	Distribution and Transmission Line Summary	System Size (Service Population)						
		≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems	**Distribution Mains**							
	Miles of Pipe in Place	4	4	20	46	**16**	315	**52**
	Service Connections per Mile	31	43	50	83	**49**	80	**53**
	Average Pipe Replaced Annually in the Past 5 Years (miles)	0	0	0	1	**0**	1	**0**
	Average New Pipe Installed Annually in the Past 5 Years (miles)	0	0	0	1	**0**	4	**1**
	Transmission Lines							
	Miles of Pipe in Place	1	0	1	16	**3**	39	**9**
	Average Pipe Replaced Annually in the Past 5 Years (miles)	0	0	0	0	**0**	0	**0**
	Average New Pipe Installed Annually in the Past 5 Years (miles)	0	0	0	0	**0**	0	**0**
Private Systems	**Distribution Mains**							
	Miles of Pipe in Place	8	5	26	80	**14**	393	**20**
	Service Connections per Mile	33	65	65	49	**55**	311	**59**
	Average Pipe Replaced Annually in the Past 5 Years (miles)	0	0	0	1	**0**	1	**0**
	Average New Pipe Installed Annually in the Past 5 Years (miles)	0	0	0	0	**0**	3	**0**
	Transmission Lines							
	Miles of Pipe in Place	0	0	1	14	**1**	84	**3**
	Average Pipe Replaced Annually in the Past 5 Years (miles)	0	0	0	0	**0**	0	**0**
	Average New Pipe Installed Annually in the Past 5 Years (miles)	0	0	0	0	**0**	1	**0**
Ancillary Systems*	**Distribution Mains**							
	Miles of Pipe in Place	1	1	3	NA	**1**	NA	**1**
	Service Connections per Mile	465	103	86	NA	**285**	NA	**285**
	Average Pipe Replaced Annually in the Past 5 Years (miles)	0	0	0	NA	**0**	NA	**0**
	Average New Pipe Installed Annually in the Past 5 Years (miles)	0	0	0	NA	**0**	NA	**0**
	Transmission Lines							
	Miles of Pipe in Place	0	0	0	NA	**0**	NA	**0**
	Average Pipe Replaced Annually in the Past 5 Years (miles)	0	0	0	NA	**0**	NA	**0**
	Average New Pipe Installed Annually in the Past 5 Years (miles)	0	0	0	NA	**0**	NA	**0**
All Systems	**Distribution Mains**							
	Miles of Pipe in Place	4	4	21	53	**12**	322	**32**
	Service Connections per Mile	229	66	55	75	**102**	99	**102**
	Average Pipe Replaced Annually in the Past 5 Years (miles)	0	0	0	1	**0**	1	**0**
	Average New Pipe Installed Annually in the Past 5 Years (miles)	0	0	0	1	**0**	4	**0**
	Transmission Lines							
	Miles of Pipe in Place	0	0	1	15	**2**	43	**6**
	Average Pipe Replaced Annually in the Past 5 Years (miles)	0	0	0	0	**0**	0	**0**
	Average New Pipe Installed Annually in the Past 5 Years (miles)	0	0	0	0	**0**	0	**0**

Notes: Includes systems reporting zero miles of pipe. Service connections include residential customers only.
*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 8: Annual Deliveries per Customer Service Connection (Thousands of Gallons) by System Size, Ownership Type, and Customer Type
Source: 2006 CWSS (Data for Exhibit 2.11)

Ownership Type & Annual Deliveries	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Mean Residential Deliveries	109	107	94	86	**99**	97	**98**
Median Residential Deliveries	112	80	77	75	**78**	86	**79**
Mean Non-Residential Finished Water Deliveries	1,499	156	325	694	**370**	693	**455**
Median Non-Residential Finished Water Deliveries	142	98	197	323	**161**	511	**223**
Mean Non-Residential Partially or Untreated Water Deliveries	NA	NA	317	14,131	**8,085**	84,830	**57,284**
Median Non-Residential Partially or Untreated Water Deliveries	NA	NA	317	9,000	**1,698**	4,114	**4,114**
Private Systems							
Mean Residential Deliveries	114	83	92	91	**94**	81	**94**
Median Residential Deliveries	75	65	83	81	**74**	63	**74**
Mean Non-Residential Finished Water Deliveries	1,339	102	2,716	4,330	**2,674**	661	**2,501**
Median Non-Residential Finished Water Deliveries	1,560	62	367	116	**228**	460	**367**
Mean Non-Residential Partially or Untreated Water Deliveries	NA	NA	NA	NA	**NA**	21,028	**21,028**
Median Non-Residential Partially or Untreated Water Deliveries	NA	NA	NA	NA	**NA**	21,028	**21,028**
Ancillary Systems*							
Mean Residential Deliveries	80	90	217	NA	**91**	NA	**91**
Median Residential Deliveries	64	77	156	NA	**71**	NA	**71**
Mean Non-Residential Finished Water Deliveries	NA	87	23,690	NA	**2,026**	NA	**2,026**
Median Non-Residential Finished Water Deliveries	NA	18	23,690	NA	**18**	NA	**18**
Mean Non-Residential Partially or Untreated Water Deliveries	429	NA	NA	NA	**429**	NA	**429**
Median Non-Residential Partially or Untreated Water Deliveries	429	NA	NA	NA	**429**	NA	**429**
All Systems							
Mean Residential Deliveries	98	94	97	87	**96**	95	**96**
Median Residential Deliveries	71	74	82	81	**77**	80	**77**
Mean Non-Residential Finished Water Deliveries	1,410	145	825	1,588	**828**	691	**797**
Median Non-Residential Finished Water Deliveries	183	84	197	311	**159**	511	**223**
Mean Non-Residential Partially or Untreated Water Deliveries	429	317	14,131	3,947	**3,947**	84,304	**40,337**
Median Non-Residential Partially or Untreated Water Deliveries	429	317	9,000	429	**429**	4,114	**1,213**

Notes: Average deliveries per connection are for systems that have deliveries and connections for that delivery type; it excludes systems that do not have positive deliveries per connection. Average deliveries per connection exclude the upper and lower 5 percent of the observations.
*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 9: Median Per-System Production, Peak Production, and Design Capacity by System Size and Ownership Type (Thousands of Gallons)

Source: 2006 CWSS (Data for Exhibit 2.12)

Ownership Type & Production/Capacity	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Median Treated Production	12	29	126	638	**100**	2,950	**155**
Peak Daily Treatment Production	36	77	229	1,107	**214**	5,279	**328**
Treatment Design Capacity	240	288	648	2,000	**500**	8,100	**800**
Median Untreated Flows	0	0	0	0	**0**	0	**0**
Median Deliveries	6	25	109	540	**64**	2,784	**90**
Unaccounted For Water	0	2	14	70	**9**	246	**15**
Private Systems							
Median Treated Production	6	12	89	1,080	**14**	3,284	**16**
Peak Daily Treatment Production	13	24	172	1,205	**35**	4,300	**43**
Treatment Design Capacity	34	72	338	1,641	**130**	5,200	**144**
Median Untreated Flows	0	0	0	0	**0**	0	**0**
Median Deliveries	5	13	81	499	**17**	1,951	**19**
Unaccounted For Water	1	1	10	70	**2**	425	**3**
Ancillary Systems*							
Median Treated Production	3	18	90	NA	**9**	NA	**9**
Peak Daily Treatment Production	4	23	233	NA	**16**	NA	**16**
Treatment Design Capacity	14	72	324	NA	**50**	NA	**50**
Median Untreated Flows	0	0	0	NA	**0**	NA	**0**
Median Deliveries	4	15	90	NA	**5**	NA	**5**
Unaccounted For Water	0	1	8	NA	**0**	NA	**0**
All Systems							
Median Treated Production	5	22	98	650	**48**	2,970	**63**
Peak Daily Treatment Production	10	40	220	1,107	**95**	5,100	**144**
Treatment Design Capacity	40	144	446	2,000	**288**	8,100	**346**
Median Untreated Flows	0	0	0	0	**0**	0	**0**
Median Deliveries	5	18	91	535	**30**	2,699	**36**
Unaccounted For Water	0	2	12	70	**5**	268	**7**

*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 10: Unaccounted for Water as a Percentage of Total Deliveries per Year by System Size and Ownership Type
Source: 2006 CWSS (Data for Exhibit 2.13)

Ownership Type	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems	12.0%	16.2%	16.6%	12.8%	**15.7%**	9.8%	**14.7%**
Private Systems	13.0%	11.4%	11.9%	11.4%	**11.8%**	18.2%	**12.1%**
Ancillary Systems*	1.8%	8.6%	4.6%	NA	**4.4%**	NA	**4.4%**
All Systems	8.2%	13.6%	15.4%	12.5%	**13.5%**	10.4%	**13.1%**

Notes: Unaccounted for water includes system losses, water for fire suppression, and water used in the treatment process.
*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 11: Percentage of Systems Using Each Treatment Scheme by System Size and Water Source
Source: 2006 CWSS (Data for Exhibit 2.14)

Water Source & Treatment	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
100% Ground Water Systems							
Disinfection with No Additional Treatment	52%	53%	48%	49%	**51%**	33%	**50%**
Other Chemical Addition	12%	13%	28%	28%	**18%**	32%	**19%**
Ion Exchange, Activated Alumina, Aeration	18%	10%	11%	10%	**12%**	30%	**13%**
Other Filtration (Not Direct or Conventional)	18%	17%	15%	21%	**17%**	30%	**18%**
Direct Filtration	0%	0%	1%	0%	**0%**	8%	**1%**
Conventional Filtration (With and Without Softening)	0%	1%	2%	5%	**2%**	2%	**2%**
Membranes	0%	1%	1%	0%	**1%**	1%	**1%**
Other	2%	6%	1%	0%	**3%**	3%	**3%**
100% Surface Water Systems							
Disinfection with No Additional Treatment	15%	28%	5%	0%	**10%**	2%	**8%**
Other Chemical Addition	0%	1%	7%	10%	**6%**	2%	**5%**
Ion Exchange, Activated Alumina, Aeration	0%	0%	0%	2%	**1%**	1%	**1%**
Other Filtration (Not Direct or Conventional)	62%	28%	28%	12%	**26%**	4%	**19%**
Direct Filtration	8%	14%	15%	22%	**16%**	15%	**16%**
Conventional Filtration (With and Without Softening)	11%	24%	40%	52%	**37%**	80%	**50%**
Membranes	4%	6%	7%	6%	**6%**	1%	**5%**
Other	0%	0%	0%	0%	**0%**	0%	**0%**
Mixed Source Systems							
Disinfection with No Additional Treatment	69%	87%	43%	24%	**38%**	19%	**30%**
Other Chemical Addition	0%	0%	30%	13%	**19%**	33%	**25%**
Ion Exchange, Activated Alumina, Aeration	0%	0%	0%	7%	**3%**	7%	**5%**
Other Filtration (Not Direct or Conventional)	56%	9%	41%	29%	**33%**	19%	**27%**
Direct Filtration	0%	0%	6%	11%	**8%**	16%	**11%**
Conventional Filtration (With and Without Softening)	0%	7%	17%	36%	**25%**	47%	**34%**
Membranes	0%	0%	8%	0%	**4%**	2%	**3%**
Other	0%	7%	0%	0%	**1%**	4%	**2%**
All Systems							
Disinfection with No Additional Treatment	51%	52%	44%	34%	**47%**	20%	**44%**
Other Chemical Addition	12%	12%	26%	21%	**17%**	24%	**18%**
Ion Exchange, Activated Alumina, Aeration	17%	9%	9%	8%	**11%**	15%	**11%**
Other Filtration (Not Direct or Conventional)	19%	17%	18%	21%	**18%**	20%	**19%**
Direct Filtration	0%	1%	3%	7%	**2%**	12%	**3%**
Conventional Filtration (With and Without Softening)	0%	3%	6%	21%	**5%**	37%	**9%**
Membranes	0%	2%	2%	1%	**1%**	1%	**1%**
Other	2%	6%	1%	0%	**3%**	2%	**3%**

Notes: Excludes systems that do not treat and those that have 100% purchased water or primarily purchased water.

Table 12: Percentage of Systems with Each Residential Rate Structure by System Size and Ownership Type
Source: 2006 CWSS

Ownership Type & Billing Profile	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Metered Charges	65.0%	72.7%	88.5%	61.0%	**77.6%**	76.5%	**77.4%**
Unmetered Charges	25.9%	29.0%	18.8%	26.3%	**23.5%**	25.0%	**23.8%**
Other Billing Methods	0.7%	6.2%	6.5%	2.3%	**5.3%**	3.4%	**5.0%**
Private Systems							
Metered Charges	40.6%	64.2%	82.9%	75.7%	**61.8%**	72.6%	**62.0%**
Unmetered Charges	38.6%	40.8%	12.9%	13.1%	**31.8%**	21.3%	**31.6%**
Other Billing Methods	14.1%	0.2%	9.4%	0.0%	**6.7%**	8.5%	**6.7%**
Ancillary Systems*							
Metered Charges	9.6%	9.9%	26.5%	NA	**10.3%**	NA	**10.3%**
Unmetered Charges	55.4%	79.4%	22.9%	NA	**63.8%**	NA	**63.8%**
Other Billing Methods	16.3%	3.6%	27.7%	NA	**11.5%**	NA	**11.5%**
All Systems							
Metered Charges	29.3%	53.7%	85.6%	63.9%	**58.1%**	76.2%	**59.7%**
Unmetered Charges	44.8%	46.0%	17.5%	23.5%	**34.8%**	24.7%	**33.9%**
Other Billing Methods	13.3%	3.4%	7.7%	1.8%	**7.1%**	3.8%	**6.8%**

Notes: These rate structures only apply to residential customers. Column totals may be greater than or less than 100.
*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 13: Percentage of Systems with Each Residential Rate Structure and Billing Profile by System Size and Ownership Type
Source: 2006 CWSS (Data for Exhibit 2.15)

Ownership Type and Rate Structure	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Metered Charges							
Uniform Rate	41.2%	46.3%	54.5%	35.6%	**47.9%**	36.5%	**46.0%**
Declining Block Rate	7.8%	9.7%	20.6%	16.1%	**15.8%**	15.0%	**15.7%**
Increasing Block Rate	16.0%	14.7%	13.6%	10.9%	**13.6%**	27.4%	**15.9%**
Seasonal Rate	0.0%	2.0%	0.0%	0.0%	**0.6%**	1.1%	**0.6%**
Unmetered Charges							
Separate Flat Fee for Water	8.9%	26.7%	18.8%	19.7%	**20.5%**	18.5%	**20.2%**
Annual Connection Fee	0.0%	0.0%	0.0%	3.9%	**0.7%**	5.9%	**1.5%**
Combined Flat Fee for Water and Other Services	17.0%	2.3%	0.0%	3.0%	**2.4%**	4.4%	**2.7%**
Other Billing Methods	0.7%	6.2%	6.5%	2.3%	**5.3%**	3.4%	**5.0%**
Private Systems							
Metered Charges							
Uniform Rate	24.4%	41.8%	50.6%	51.3%	**38.9%**	47.6%	**39.1%**
Declining Block Rate	0.0%	8.5%	17.2%	2.6%	**7.4%**	24.3%	**7.9%**
Increasing Block Rate	16.2%	13.9%	15.0%	25.2%	**15.6%**	3.0%	**15.3%**
Seasonal Rate	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.5%	**0.0%**
Unmetered Charges							
Separate Flat Fee for Water	19.6%	21.7%	12.9%	8.0%	**18.1%**	18.1%	**18.1%**
Annual Connection Fee	0.0%	2.1%	0.0%	5.1%	**1.2%**	3.2%	**1.2%**
Combined Flat Fee for Water and Other Services	18.9%	17.0%	0.0%	0.0%	**12.6%**	0.0%	**12.3%**
Other Billing Methods	14.1%	0.2%	9.4%	0.0%	**6.7%**	8.5%	**6.7%**
Ancillary Systems*							
Metered Charges							
Uniform Rate	7.2%	6.5%	22.9%	NA	**7.4%**	NA	**7.4%**
Declining Block Rate	0.0%	0.0%	0.0%	NA	**0.0%**	NA	**0.0%**
Increasing Block Rate	2.4%	3.3%	3.6%	NA	**2.8%**	NA	**2.8%**
Seasonal Rate	0.0%	0.0%	0.0%	NA	**0.0%**	NA	**0.0%**
Unmetered Charges							
Separate Flat Fee for Water	7.2%	13.0%	3.6%	NA	**9.4%**	NA	**9.4%**
Annual Connection Fee	0.0%	0.0%	0.0%	NA	**0.0%**	NA	**0.0%**
Combined Flat Fee for Water and Other Services	48.3%	66.4%	19.4%	NA	**54.5%**	NA	**54.5%**
Other Billing Methods	16.3%	3.6%	27.7%	NA	**11.5%**	NA	**11.5%**
All Systems							
Metered Charges							
Uniform Rate	18.5%	34.6%	52.7%	38.7%	**36.4%**	37.4%	**36.4%**
Declining Block Rate	1.0%	6.8%	19.2%	13.3%	**9.7%**	15.8%	**10.3%**
Increasing Block Rate	9.7%	11.6%	13.7%	13.8%	**12.0%**	25.4%	**13.2%**
Seasonal Rate	0.0%	0.8%	0.0%	0.0%	**0.3%**	1.0%	**0.3%**
Unmetered Charges							
Separate Flat Fee for Water	12.4%	21.4%	17.0%	17.2%	**17.3%**	18.5%	**17.4%**
Annual Connection Fee	0.0%	0.8%	0.0%	4.2%	**0.7%**	5.7%	**1.1%**
Combined Flat Fee for Water and Other Services	32.5%	23.9%	0.5%	2.4%	**16.8%**	4.0%	**15.7%**
Other Billing Methods	13.3%	3.4%	7.7%	1.8%	**7.1%**	3.8%	**6.8%**

Notes: These rate structures only apply to residential customers. Column totals may be greater than or less than 100 percent.
*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 14: Change in Water System Revenue from Water Sales per Thousand Gallons Delivered for Systems that Charged for Water by System Size, Ownership Type, and Customer Class (Normalized to 2006 Dollars)

Source: 2000 and 2006 CWSS (Data for Exhibit 2.16)

Ownership Type & Customer Class	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Residential							
2000 Median	$5.97	$4.13	$3.56	$2.98	**$3.66**	$2.80	**$3.56**
2006 Median	$4.45	$3.56	$3.47	$3.57	**$3.56**	$3.14	**$3.47**
Percentage Change	-25%	-14%	-2%	20%	**-3%**	12%	**-2%**
Non-Residential							
2000 Median	$2.43	$3.32	$3.27	$2.33	**$3.16**	$2.40	**$3.01**
2006 Median	$2.18	$4.49	$3.44	$2.82	**$3.44**	$2.64	**$3.09**
Percentage Change	-10%	35%	5%	21%	**9%**	10%	**3%**
Wholesale							
2000 Median	†	†	$2.30	$1.94	**$2.30**	$1.55	**$1.82**
2006 Median	†	$0.00	$1.75	$1.44	**$1.43**	$2.04	**$1.75**
Percentage Change	†	†	-24%	-26%	**-38%**	32%	**-4%**
Private Systems							
Residential							
2000 Median	$3.51	$3.91	$5.65	$3.73	**$4.31**	$3.57	**$4.31**
2006 Median	$3.50	$4.55	$5.69	$4.83	**$4.76**	$5.63	**$4.76**
Percentage Change	0%	16%	1%	29%	**11%**	58%	**11%**
Non-Residential							
2000 Median	$0.00	$3.29	$5.87	$1.89	**$3.29**	$3.46	**$3.29**
2006 Median	$1.13	$14.35	$5.45	$3.24	**$5.38**	$4.00	**$5.38**
Percentage Change	†	337%	-7%	72%	**64%**	15%	**64%**
Wholesale							
2000 Median	$0.00	†	$2.60	$1.95	**$1.95**	$2.65	**$2.33**
2006 Median	$1.07	†	$6.49	$3.84	**$1.07**	$2.91	**$2.46**
Percentage Change	†	†	150%	97%	**-45%**	10%	**5%**
Ancillary Systems*							
Residential							
2000 Median	$9.60	$3.76	†	NA	**$9.60**	NA	**$9.60**
2006 Median	$3.53	$4.42	$5.12	NA	**$4.35**	NA	**$4.35**
Percentage Change	-63%	17%	†	NA	**-55%**	NA	**-55%**
Non-Residential							
2000 Median	†	†	†	NA	**NA**	NA	**NA**
2006 Median	†	$0.00	†	NA	**$0**	NA	**$0.00**
Percentage Change	†	†	†	NA	**NA**	NA	**NA**
Wholesale							
2000 Median	$1.87	†	†	NA	**$1.87**	NA	**$1.87**
2006 Median	†	†	†	NA	**NA**	NA	**NA**
Percentage Change	†	†	†	NA	**NA**	NA	**NA**
All Systems							
Residential							
2000 Median	$5	$4	$4	$3	**$3.85**	$3.08	**$3.77**
2006 Median	$4	$4	$4	$4	**$4.00**	$3.22	**$3.79**
Percentage Change	-15%	7%	5%	11%	**4%**	5%	**0%**
Non-Residential							
2000 Median	$2.43	$3.29	$3.40	$2.33	**$3.24**	$2.43	**$3.14**
2006 Median	$2.18	$4.49	$3.56	$2.91	**$3.44**	$2.64	**$3.22**
Percentage Change	-10%	37%	5%	25%	**6%**	9%	**3%**
Wholesale							
2000 Median	$1.87	†	$2.30	$1.95	**$2.18**	$1.57	**$1.85**
2006 Median	$1.07	$0.00	$1.75	$1.90	**$1.41**	$2.08	**$1.75**
Percentage Change	-43%	†	-24%	-3%	**-35%**	32%	**-6%**

Notes: Only includes systems that charge for water.

*The CWSS did not identify any ancillary systems serving more than 3,300 people.

†No observations were reported in the CWSS.

Table 15: Revenue from All Sources per Thousand Gallons Delivered by System Size and Ownership Type

Source: 2006 CWSS (Data for Exhibit 2.18)

Ownership Type	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Mean	$9.04	$4.04	$4.04	$3.46	**$4.29**	$3.28	**$4.15**
Median	$4.62	$3.42	$3.08	$3.37	**$3.42**	$2.89	**$3.29**
Private Systems							
Mean	$3.08	$3.87	$5.54	$5.48	**$4.08**	$4.53	**$4.09**
Median	$1.54	$2.64	$4.81	$4.70	**$3.06**	$4.85	**$3.09**
Ancillary Systems*							
Mean	$0.96	$0.96	$1.40	NA	**$0.98**	NA	**$0.98**
Median	$0.00	$0.00	$0.00	NA	**$0.00**	NA	**$0.00**
All Systems							
Mean	$2.91	$3.30	$4.34	$3.89	**$3.59**	$3.37	**$3.57**
Median	$0.99	$2.50	$3.58	$3.43	**$2.78**	$2.93	**$2.84**

Notes: Includes wholesale deliveries and unaccounted for water.

*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 16: Mean Revenue Per Thousand Gallons Produced by Primary Water Source

Source: 2006 CWSS (Data for Exhibit 2.19)

Primary Water Source	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Ground Water Systems	$2.60	$2.97	$4.29	$3.62	**$3.27**	$3.04	**$3.26**
Surface Water Systems	$6.00	$5.18	$5.75	$3.62	**$5.22**	$3.81	**$4.78**
Purchased Water Systems	$4.94	$5.77	$5.68	$4.53	**$5.50**	$3.72	**$5.32**
All Systems	$2.91	$3.44	$4.78	$3.89	**$3.79**	$3.44	**$3.76**

Notes: Excludes systems that do not report positive revenue. Total water system revenue includes revenue from water sales to residential and non-residential customers and to other systems, fees, transfers from the government including municipal government transfers from the general fund, and other sources, including penalties and fines.

Table 17: Percentage of Revenue from Each Customer Category by System Size and Ownership Type
Source: 2006 CWSS (Data for Exhibit 2.20)

Ownership Type	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Residential	93.8%	93.3%	86.1%	69.9%	**86.8%**	70.6%	**84.3%**
Non-Residential	6.2%	6.4%	12.8%	19.3%	**11.3%**	21.1%	**12.8%**
Wholesale	0.0%	0.3%	1.0%	10.8%	**1.9%**	8.3%	**2.9%**
Private Systems							
Residential	95.4%	99.5%	93.2%	87.6%	**96.0%**	72.6%	**95.5%**
Non-Residential	0.6%	0.2%	6.6%	7.3%	**2.4%**	11.5%	**2.6%**
Wholesale	4.0%	0.3%	0.2%	5.0%	**1.6%**	15.9%	**1.9%**
Ancillary Systems*							
Residential	100.0%	99.3%	100.0%	NA	**99.7%**	NA	**99.7%**
Non-Residential	0.0%	0.7%	0.0%	NA	**0.3%**	NA	**0.3%**
Wholesale	0.0%	0.0%	0.0%	NA	**0.0%**	NA	**0.0%**
All Systems							
Residential	96.0%	96.4%	87.8%	73.5%	**90.8%**	70.7%	**88.8%**
Non-Residential	1.8%	3.4%	11.4%	16.9%	**7.5%**	20.5%	**8.8%**
Wholesale	2.3%	0.3%	0.8%	9.6%	**1.7%**	8.8%	**2.4%**

Notes: Column totals may not equal 100 percent due to rounding.
*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 18: Total Expenses per Thousand Gallons Delivered by System Size and Ownership Type
Source: 2006 CWSS (Data for Exhibit 2.21)

Ownership Type	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Mean	$8.31	$4.78	$4.89	$4.05	**$4.98**	$3.67	**$4.78**
Median	$3.85	$3.19	$3.28	$3.36	**$3.32**	$2.75	**$3.20**
Private Systems							
Mean	$4.42	$3.54	$3.50	$3.47	**$3.81**	$3.51	**$3.80**
Median	$2.40	$2.83	$3.20	$3.95	**$2.88**	$2.73	**$2.88**
Ancillary Systems*							
Mean	$3.73	$2.19	$2.46	NA	**$3.05**	NA	**$3.05**
Median	$2.12	$1.65	$2.19	NA	**$1.98**	NA	**$1.98**
All Systems							
Mean	$4.61	$3.76	$4.48	$3.94	**$4.22**	$3.66	**$4.18**
Median	$2.55	$2.76	$3.15	$3.36	**$2.95**	$2.75	**$2.93**

Notes: *The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 19: Total Expenses per Thousand Gallons Delivered by System Size and Primary Water Source
Source: 2006 CWSS (Data for Exhibit 2.22)

Primary Water Source	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Ground Water Systems							
Mean	$4.52	$3.44	$3.81	$2.92	**$3.83**	$3.39	**$3.80**
Median	$2.25	$2.62	$2.55	$2.97	**$2.53**	$2.65	**$2.53**
Surface Water Systems							
Mean	$8.98	$7.16	$6.26	$5.59	**$6.67**	$4.00	**$5.79**
Median	$7.35	$5.45	$4.39	$4.13	**$5.11**	$2.94	**$4.37**
Purchased Water Systems							
Mean	$3.80	$4.86	$5.59	$4.64	**$5.08**	$3.70	**$4.95**
Median	$3.85	$5.15	$4.67	$4.02	**$4.48**	$3.05	**$4.40**
All Systems							
Mean	$4.61	$3.76	$4.48	$3.94	**$4.22**	$3.66	**$4.18**
Median	$2.55	$2.76	$3.15	$3.36	**$2.95**	$2.75	**$2.93**

Table 20: Percentage of Expenses by System Size, Ownership Type, and Major Category of Expense
Source: 2006 CWSS (Data for Exhibit 2.23)

Ownership Type & Major Category of Expense	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Routine Operating Expenses	92.1%	78.1%	77.4%	78.1%	78.8%	69.6%	**77.4%**
Debt Service	0.8%	10.8%	14.9%	12.5%	12.3%	12.7%	**12.4%**
Other Expenses	7.1%	11.1%	7.7%	9.3%	8.9%	17.7%	**10.2%**
Private Systems							
Routine Operating Expenses	82.2%	83.8%	85.8%	84.0%	83.8%	65.8%	**83.4%**
Debt Service	4.3%	0.9%	10.5%	8.8%	4.5%	15.0%	**4.7%**
Other Expenses	13.5%	15.3%	3.7%	7.3%	11.7%	19.2%	**11.9%**
Ancillary Systems*							
Routine Operating Expenses	89.9%	92.3%	92.1%	NA	90.9%	NA	**90.9%**
Debt Service	3.2%	2.4%	4.2%	NA	3.0%	NA	**3.0%**
Other Expenses	6.9%	5.3%	3.6%	NA	6.1%	NA	**6.1%**
All Systems							
Routine Operating Expenses	87.2%	83.3%	79.6%	79.2%	82.7%	69.3%	**81.5%**
Debt Service	3.3%	5.4%	13.7%	11.8%	8.1%	12.9%	**8.5%**
Other Expenses	9.5%	11.3%	6.7%	8.9%	9.2%	17.8%	**9.9%**

Notes: Column totals may not equal 100 percent due to rounding. Routine operating expenses include labor, power, purchased water, security, routine maintenance, depreciation, taxes, and payments in lieu of taxes. Debt service includes principal and interest on past borrowing. Other expenses include all other expenses, including purchases of capital equipment and payments to the reserve fund.

*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 21: Percentage of Expenses by System Size, Ownership Type, and Type of Expense
Source: 2006 CWSS (Data for Exhibits 2.24 and 2.25)

Ownership Type & Type of Expense	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Purchased Water	10.2%	7.4%	10.6%	12.2%	**9.9%**	12.2%	**10.2%**
Security	0.0%	0.0%	0.1%	2.6%	**0.4%**	0.4%	**0.4%**
Depreciation	4.6%	5.5%	5.9%	10.4%	**6.3%**	10.6%	**7.0%**
Payments to General Fund	0.0%	0.8%	2.3%	4.2%	**2.0%**	3.6%	**2.2%**
Other Routine Operating Expenses	77.3%	64.5%	58.6%	48.8%	**60.3%**	42.8%	**57.6%**
Debt Service Expenses	0.8%	10.8%	14.9%	12.5%	**12.3%**	12.7%	**12.4%**
Capital Improvements	4.0%	6.8%	5.9%	8.2%	**6.3%**	14.9%	**7.6%**
Payments to Reserve Funds	3.2%	4.3%	1.8%	1.1%	**2.5%**	2.8%	**2.6%**
Private Systems							
Purchased Water	0.3%	11.4%	15.8%	14.3%	**9.1%**	10.0%	**9.1%**
Security	0.3%	0.3%	0.1%	8.6%	**0.6%**	0.1%	**0.6%**
Depreciation	3.0%	1.4%	7.5%	15.2%	**4.0%**	14.6%	**4.2%**
Income Taxes	1.2%	0.1%	3.2%	3.0%	**1.3%**	2.4%	**1.3%**
Other Routine Operating Expenses	77.5%	70.7%	59.3%	42.8%	**68.8%**	38.6%	**68.2%**
Debt Service Expenses	4.3%	0.9%	10.5%	8.8%	**4.5%**	15.0%	**4.7%**
Capital Improvements	7.8%	9.7%	2.0%	7.1%	**7.2%**	19.0%	**7.5%**
Payments to Reserve Funds	5.7%	5.6%	1.6%	0.2%	**4.5%**	0.3%	**4.4%**
Ancillary Systems*							
Purchased Water	6.2%	0.4%	0.0%	NA	**3.8%**	NA	**3.8%**
Security	0.2%	0.0%	0.2%	NA	**0.1%**	NA	**0.1%**
Depreciation	0.8%	0.0%	1.6%	NA	**0.5%**	NA	**0.5%**
Income Taxes	0.7%	0.0%	0.2%	NA	**0.4%**	NA	**0.4%**
Other Routine Operating Expenses	81.8%	91.8%	90.2%	NA	**86.0%**	NA	**86.0%**
Debt Service Expenses	3.2%	2.4%	4.2%	NA	**3.0%**	NA	**3.0%**
Capital Improvements	6.9%	5.3%	1.1%	NA	**6.0%**	NA	**6.0%**
Payments to Reserve Funds	0.0%	0.0%	2.5%	NA	**0.1%**	NA	**0.1%**
All Systems							
Purchased Water	4.5%	7.3%	11.4%	12.8%	**8.5%**	12.0%	**8.8%**
Security	0.2%	0.1%	0.1%	3.6%	**0.4%**	0.4%	**0.4%**
Depreciation	2.2%	2.8%	6.1%	11.2%	**4.5%**	10.8%	**5.0%**
Income Taxes	0.0%	0.3%	1.7%	3.5%	**1.0%**	3.3%	**1.2%**
Payments to General Fund	0.8%	0.0%	0.7%	0.5%	**0.5%**	0.2%	**0.4%**
Other Routine Operating Expenses	79.4%	72.7%	59.6%	47.6%	**67.9%**	42.6%	**65.6%**
Debt Service Expenses	3.3%	5.4%	13.7%	11.8%	**8.1%**	12.9%	**8.5%**
Capital Improvements	6.8%	7.5%	4.9%	8.0%	**6.6%**	15.1%	**7.3%**
Payments to Reserve Funds	2.8%	3.8%	1.8%	0.9%	**2.6%**	2.6%	**2.6%**

Notes: Column totals may not equal 100 percent due to rounding. Excludes systems that did not report positive expenses. Debt service includes principal and interest. The general fund includes payments in lieu of taxes.
*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 22: Number of Full-time Equivalent Employees and Annual Labor Costs for Full-and Part-Time Employees by System Size and Primary Water Source

Source: 2006 CWSS (Data for Exhibits 2.26, 2.27, and 2.28)

Primary Water Source & Employee Category	System Service Population Category						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Ground Water Systems							
Managers							
Mean Number of Full-Time Equvalent Employees	0.3	0.3	0.5	1.4	**0.5**	2.6	**0.8**
Average Hourly Salary or Wage (Dollars)	24.7	17.5	20.7	28.2	**22.4**	33.5	**24.1**
Benefits as Percentage of Salary or Wage	14.5	8.2	21.2	23.7	**17.1**	28.8	**18.7**
Average Hours Per Employee Per Week	12.1	12.4	18.4	39.9	**18.8**	38.7	**21.6**
Treatment Plant Operators							
Mean Number of Full-Time Equvalent Employees	0.3	0.3	0.6	2.3	**0.6**	5.6	**0.9**
Average Hourly Salary or Wage (Dollars)	17.4	15.3	15.4	17.5	**15.9**	19.3	**16.2**
Benefits as Percentage of Salary or Wage	6.6	8.8	17.2	23.8	**12.2**	30.9	**13.6**
Average Hours Per Employee Per Week	9.0	10.9	17.4	37.8	**14.8**	37.8	**16.4**
Distribution System Operators							
Mean Number of Full-Time Equvalent Employees	0.4	0.4	0.7	3.2	**0.8**	8.4	**1.5**
Average Hourly Salary or Wage (Dollars)	17.5	15.2	14.1	16.2	**15.2**	18.1	**15.5**
Benefits as Percentage of Salary or Wage	9.8	9.8	21.5	24.5	**15.5**	32.9	**17.1**
Average Hours Per Employee Per Week	12.8	11.7	18.1	38.7	**17.4**	38.9	**19.3**
Administrative Staff							
Mean Number of Full-Time Equvalent Employees	0.3	0.3	0.6	2.0	**0.6**	4.2	**1.0**
Average Hourly Salary or Wage (Dollars)	14.6	13.3	15.4	14.6	**14.5**	22.4	**15.5**
Benefits as Percentage of Salary or Wage	5.9	8.9	15.5	26.3	**13.3**	30.0	**15.1**
Average Hours Per Employee Per Week	9.9	10.2	17.8	38.4	**16.5**	38.3	**18.9**
Surface Water Systems							
Managers							
Mean Number of Full-Time Equvalent Employees	0.2	0.5	0.5	1.1	**0.8**	5.2	**2.8**
Average Hourly Salary or Wage (Dollars)	41.7	22.4	22.6	26.3	**24.8**	31.7	**28.2**
Benefits as Percentage of Salary or Wage	9.6	20.2	22.7	25.2	**23.5**	32.4	**27.5**
Average Hours Per Employee Per Week	6.9	18.3	21.1	35.6	**27.9**	38.9	**32.9**
Treatment Plant Operators							
Mean Number of Full-Time Equvalent Employees	0.4	0.5	1.4	2.7	**1.5**	13.9	**5.8**
Average Hourly Salary or Wage (Dollars)	12.6	14.0	16.4	17.6	**16.0**	19.8	**17.3**
Benefits as Percentage of Salary or Wage	8.5	13.3	25.1	28.9	**22.4**	33.3	**26.2**
Average Hours Per Employee Per Week	11.8	16.0	32.0	38.6	**29.1**	39.3	**32.6**
Distribution System Operators							
Mean Number of Full-Time Equvalent Employees	0.2	0.5	1.1	3.5	**2.0**	22.2	**10.1**
Average Hourly Salary or Wage (Dollars)	19.9	14.0	15.7	16.3	**15.8**	17.9	**16.7**
Benefits as Percentage of Salary or Wage	9.1	16.6	25.4	31.2	**26.5**	32.9	**29.1**
Average Hours Per Employee Per Week	6.4	14.3	30.4	38.7	**31.6**	39.5	**34.8**
Administrative Staff							
Mean Number of Full-Time Equvalent Employees	0.2	0.5	0.8	2.0	**1.3**	10.9	**5.7**
Average Hourly Salary or Wage (Dollars)	23.1	14.6	15.1	16.2	**15.7**	19.6	**17.5**
Benefits as Percentage of Salary or Wage	19.2	16.1	23.4	28.0	**24.4**	32.0	**27.9**
Average Hours Per Employee Per Week	7.1	17.1	22.4	35.4	**27.0**	38.6	**32.4**

Table 22: Number of Full-time Equivalent Employees and Annual Labor Costs for Full-and Part-Time Employees by System Size and Primary Water Source

Source: 2006 CWSS (Data for Exhibits 2.26, 2.27, and 2.28)

Primary Water Source & Employee Category	System Service Population Category						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Purchased Water Systems							
Managers							
Mean Number of Full-Time Equvalent Employees	0.1	0.1	0.6	1.1	**0.7**	2.6	**1.2**
Average Hourly Salary or Wage (Dollars)	20.0	26.6	20.9	26.9	**23.9**	36.6	**27.1**
Benefits as Percentage of Salary or Wage	0.0	22.9	22.4	17.0	**19.3**	33.4	**23.0**
Average Hours Per Employee Per Week	2.3	4.3	22.9	37.4	**24.3**	38.2	**28.0**
Treatment Plant Operators							
Mean Number of Full-Time Equvalent Employees	0.0	0.2	0.6	1.3	**0.5**	11.7	**1.3**
Average Hourly Salary or Wage (Dollars)	13.9	22.9	19.2	20.1	**19.1**	25.0	**19.5**
Benefits as Percentage of Salary or Wage	17.0	0.7	15.2	16.8	**13.5**	29.1	**14.6**
Average Hours Per Employee Per Week	1.3	7.2	13.7	29.4	**13.0**	38.8	**14.8**
Distribution System Operators							
Mean Number of Full-Time Equvalent Employees	0.1	0.3	0.8	2.5	**0.9**	12.7	**2.5**
Average Hourly Salary or Wage (Dollars)	12.1	16.2	17.6	17.5	**16.8**	22.0	**17.4**
Benefits as Percentage of Salary or Wage	0.0	7.3	20.5	17.2	**14.6**	35.2	**17.3**
Average Hours Per Employee Per Week	4.5	7.2	19.5	37.5	**18.1**	38.2	**20.8**
Administrative Staff							
Mean Number of Full-Time Equvalent Employees	0.1	0.2	0.6	1.5	**0.6**	7.0	**1.8**
Average Hourly Salary or Wage (Dollars)	11.0	15.5	13.6	16.5	**14.6**	22.0	**16.0**
Benefits as Percentage of Salary or Wage	0.0	2.6	14.6	16.9	**11.4**	37.3	**16.0**
Average Hours Per Employee Per Week	2.0	6.9	16.0	34.6	**16.7**	36.9	**20.3**
All Systems							
Managers							
Mean Number of Full-Time Equvalent Employees	0.3	0.3	0.5	1.2	**0.6**	3.4	**1.2**
Average Hourly Salary or Wage (Dollars)	24.6	19.4	20.9	27.4	**22.9**	33.6	**25.3**
Benefits as Percentage of Salary or Wage	13.8	10.6	21.6	22.2	**18.1**	31.0	**20.7**
Average Hours Per Employee Per Week	11.5	11.6	19.5	38.2	**20.6**	38.7	**24.4**
Treatment Plant Operators							
Mean Number of Full-Time Equvalent Employees	0.3	0.3	0.7	2.3	**0.7**	9.6	**1.6**
Average Hourly Salary or Wage (Dollars)	16.7	15.5	16.2	17.8	**16.3**	19.8	**16.7**
Benefits as Percentage of Salary or Wage	7.3	8.7	17.8	24.7	**13.4**	31.9	**15.5**
Average Hours Per Employee Per Week	8.7	11.0	18.4	37.3	**16.1**	38.5	**18.6**
Distribution System Operators							
Mean Number of Full-Time Equvalent Employees	0.4	0.4	0.8	3.1	**1.0**	13.8	**2.7**
Average Hourly Salary or Wage (Dollars)	16.6	15.4	15.3	16.6	**15.7**	18.9	**16.1**
Benefits as Percentage of Salary or Wage	8.7	9.4	21.5	23.8	**16.1**	33.4	**18.4**
Average Hours Per Employee Per Week	11.8	10.8	19.6	38.4	**18.6**	38.9	**21.3**
Administrative Staff							
Mean Number of Full-Time Equvalent Employees	0.3	0.3	0.6	1.8	**0.7**	7.0	**1.7**
Average Hourly Salary or Wage (Dollars)	14.4	13.8	14.9	15.4	**14.6**	21.4	**15.9**
Benefits as Percentage of Salary or Wage	5.7	8.0	15.9	24.2	**13.7**	32.4	**16.8**
Average Hours Per Employee Per Week	9.3	9.9	17.7	36.8	**17.3**	38.1	**20.7**

Table 23: Number of Full-time Equivalent Employees and Annual Labor Costs for Full-and Part-Time Employees by System Size and Ownership Type

Source: 2006 CWSS (Data for Exhibit 2.29)

Ownership & Employee Category	System Service Population Category						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Managers							
Mean Number of Full-Time Equvalent Employees	0.2	0.3	0.5	1.3	**0.6**	3.2	**1.3**
Average Hourly Salary or Wage (Dollars)	23.3	22.2	20.2	27.3	**22.8**	33.9	**25.9**
Benefits as Percentage of Salary or Wage	14.3	16.9	24.0	23.8	**21.6**	30.9	**24.1**
Average Hours Per Employee Per Week	6.8	12.5	19.5	37.9	**21.9**	38.7	**26.5**
Treatment Plant Operators							
Mean Number of Full-Time Equvalent Employees	0.4	0.3	0.7	2.3	**0.9**	8.7	**2.3**
Average Hourly Salary or Wage (Dollars)	17.8	15.3	15.8	17.5	**16.2**	19.9	**16.9**
Benefits as Percentage of Salary or Wage	18.8	13.7	21.5	24.2	**20.2**	31.7	**22.3**
Average Hours Per Employee Per Week	9.0	11.2	19.6	37.0	**20.2**	38.5	**23.5**
Distribution System Operators							
Mean Number of Full-Time Equvalent Employees	0.2	0.4	0.9	3.1	**1.2**	13.3	**3.5**
Average Hourly Salary or Wage (Dollars)	19.1	16.3	15.4	16.3	**16.1**	19.0	**16.6**
Benefits as Percentage of Salary or Wage	9.8	11.7	24.5	24.3	**20.0**	33.3	**22.5**
Average Hours Per Employee Per Week	5.8	11.8	21.5	38.0	**21.3**	39.0	**24.6**
Administrative Staff							
Mean Number of Full-Time Equvalent Employees	0.4	0.3	0.6	1.8	**0.8**	7.0	**2.1**
Average Hourly Salary or Wage (Dollars)	11.7	14.9	14.6	15.2	**14.7**	21.6	**16.3**
Benefits as Percentage of Salary or Wage	11.0	13.3	18.1	24.1	**17.8**	32.3	**21.0**
Average Hours Per Employee Per Week	10.9	11.0	19.1	36.5	**20.1**	37.9	**24.0**
Private Systems							
Managers							
Mean Number of Full-Time Equvalent Employees	0.4	0.2	0.5	1.1	**0.5**	5.9	**0.9**
Average Hourly Salary or Wage (Dollars)	19.2	10.0	23.3	27.4	**21.1**	30.3	**21.8**
Benefits as Percentage of Salary or Wage	9.5	1.3	14.2	16.0	**11.1**	32.5	**12.5**
Average Hours Per Employee Per Week	14.8	8.6	20.4	39.3	**20.3**	38.3	**21.5**
Treatment Plant Operators							
Mean Number of Full-Time Equvalent Employees	0.4	0.4	0.5	2.0	**0.5**	20.1	**1.1**
Average Hourly Salary or Wage (Dollars)	16.5	17.4	17.4	19.5	**17.3**	19.2	**17.4**
Benefits as Percentage of Salary or Wage	8.9	6.9	5.2	28.0	**7.9**	33.5	**8.7**
Average Hours Per Employee Per Week	15.4	10.5	14.7	39.2	**14.1**	38.6	**14.8**
Distribution System Operators							
Mean Number of Full-Time Equvalent Employees	0.9	0.3	0.4	3.1	**0.7**	20.9	**1.4**
Average Hourly Salary or Wage (Dollars)	14.7	13.5	15.0	17.8	**14.7**	17.5	**14.8**
Benefits as Percentage of Salary or Wage	8.0	6.8	12.0	21.1	**10.3**	35.3	**11.2**
Average Hours Per Employee Per Week	25.3	9.5	13.4	39.9	**16.0**	38.0	**16.8**
Administrative Staff							
Mean Number of Full-Time Equvalent Employees	0.3	0.3	0.5	1.8	**0.5**	7.7	**0.8**
Average Hourly Salary or Wage (Dollars)	14.6	10.8	16.0	16.4	**14.3**	18.4	**14.5**
Benefits as Percentage of Salary or Wage	6.9	1.6	8.9	24.9	**7.1**	32.6	**8.2**
Average Hours Per Employee Per Week	13.1	9.5	13.5	38.1	**14.1**	39.9	**15.2**

Table 23: Number of Full-time Equivalent Employees and Annual Labor Costs for Full-and Part-Time Employees by System Size and Ownership Type

Source: 2006 CWSS (Data for Exhibit 2.29)

Ownership & Employee Category	System Service Population Category						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Ancillary Systems*							
Managers							
Mean Number of Full-Time Equvalent Employees	0.3	0.3	0.1	NA	**0.3**	NA	**0.3**
Average Hourly Salary or Wage (Dollars)	34.0	18.1	20.0	NA	**29.1**	NA	**29.1**
Benefits as Percentage of Salary or Wage	17.8	3.9	26.0	NA	**12.6**	NA	**12.6**
Average Hours Per Employee Per Week	14.5	12.5	3.6	NA	**13.2**	NA	**13.2**
Treatment Plant Operators							
Mean Number of Full-Time Equvalent Employees	0.1	0.3	0.7	NA	**0.2**	NA	**0.2**
Average Hourly Salary or Wage (Dollars)	14.5	12.0	18.6	NA	**13.1**	NA	**13.1**
Benefits as Percentage of Salary or Wage	0.3	5.4	26.0	NA	**3.3**	NA	**3.3**
Average Hours Per Employee Per Week	3.7	11.7	18.7	NA	**7.7**	NA	**7.7**
Distribution System Operators							
Mean Number of Full-Time Equvalent Employees	0.3	0.4	0.6	NA	**0.3**	NA	**0.3**
Average Hourly Salary or Wage (Dollars)	14.9	15.3	13.5	NA	**15.1**	NA	**15.1**
Benefits as Percentage of Salary or Wage	8.3	7.7	15.9	NA	**8.4**	NA	**8.4**
Average Hours Per Employee Per Week	10.2	10.2	12.8	NA	**10.4**	NA	**10.4**
Administrative Staff							
Mean Number of Full-Time Equvalent Employees	0.1	0.1	0.0	NA	**0.1**	NA	**0.1**
Average Hourly Salary or Wage (Dollars)	18.0	14.7		NA	**16.2**	NA	**16.2**
Benefits as Percentage of Salary or Wage	0.0	4.1	0.0	NA	**2.5**	NA	**2.5**
Average Hours Per Employee Per Week	2.3	5.6	1.0	NA	**4.4**	NA	**4.4**
All Systems							
Managers							
Mean Number of Full-Time Equvalent Employees	0.3	0.3	0.5	1.2	**0.6**	3.4	**1.2**
Average Hourly Salary or Wage (Dollars)	24.6	19.4	20.9	27.4	**22.9**	33.6	**25.3**
Benefits as Percentage of Salary or Wage	13.8	10.6	21.6	22.2	**18.1**	31.0	**20.7**
Average Hours Per Employee Per Week	11.5	11.6	19.5	38.2	**20.6**	38.7	**24.4**
Treatment Plant Operators							
Mean Number of Full-Time Equvalent Employees	0.3	0.3	0.7	2.3	**0.7**	9.6	**1.6**
Average Hourly Salary or Wage (Dollars)	16.7	15.5	16.2	17.8	**16.3**	19.8	**16.7**
Benefits as Percentage of Salary or Wage	7.3	8.7	17.8	24.7	**13.4**	31.9	**15.5**
Average Hours Per Employee Per Week	8.7	11.0	18.4	37.3	**16.1**	38.5	**18.6**
Distribution System Operators							
Mean Number of Full-Time Equvalent Employees	0.4	0.4	0.8	3.1	**1.0**	13.8	**2.7**
Average Hourly Salary or Wage (Dollars)	16.6	15.4	15.3	16.6	**15.7**	18.9	**16.1**
Benefits as Percentage of Salary or Wage	8.7	9.4	21.5	23.8	**16.1**	33.4	**18.4**
Average Hours Per Employee Per Week	11.8	10.8	19.6	38.4	**18.6**	38.9	**21.3**
Administrative Staff							
Mean Number of Full-Time Equvalent Employees	0.3	0.3	0.6	1.8	**0.7**	7.0	**1.7**
Average Hourly Salary or Wage (Dollars)	14.4	13.8	14.9	15.4	**14.6**	21.4	**15.9**
Benefits as Percentage of Salary or Wage	5.7	8.0	15.9	24.2	**13.7**	32.4	**16.8**
Average Hours Per Employee Per Week	9.3	9.9	17.7	36.8	**17.3**	38.1	**20.7**

*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 24: Percentage of Systems Making Major Capital Investments in the Past 5 Years by System Size, Ownership Type, and Investment Purpose (Percentage of Systems Funding Each Investment Category)

Source: 2006 CWSS (Data for Exhibit 2.30)

Ownership Type & Investment Purpose	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Compliance with Regulations	62.4%	8.9%	22.8%	36.9%	**24.0%**	51.3%	**28.9%**
Replacement or Major Repair	57.3%	77.0%	64.9%	78.6%	**70.1%**	84.1%	**72.6%**
System Expansion	1.6%	36.8%	44.5%	76.3%	**45.7%**	78.2%	**51.5%**
Private Systems							
Compliance with Regulations	30.4%	56.4%	16.1%	50.9%	**35.7%**	21.5%	**35.4%**
Replacement or Major Repair	78.3%	51.0%	75.6%	51.3%	**67.0%**	30.8%	**66.2%**
System Expansion	13.9%	28.7%	44.4%	64.9%	**31.3%**	98.5%	**32.8%**
Ancillary Systems*							
Water Quality Improvements	24.5%	18.0%	6.1%	NA	**20.8%**	NA	**20.8%**
Replacement or Major Repair	75.5%	68.2%	65.6%	NA	**72.4%**	NA	**72.4%**
System Expansion	8.1%	15.6%	34.4%	NA	**12.9%**	NA	**12.9%**
All Systems							
Compliance with Regulations	32.9%	26.0%	20.7%	39.3%	**27.0%**	49.7%	**29.6%**
Replacement or Major Repair	74.0%	67.1%	67.4%	74.1%	**69.5%**	81.3%	**70.9%**
System Expansion	9.7%	30.9%	44.1%	74.4%	**36.7%**	79.2%	**41.5%**

Notes: Excludes systems that have not made major capital improvements in the past five years. Table reports the percentage of systems that funded each investment category. It is not the percentage of funds invested in each category.

*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 25: Percentage of Systems Making Major Capital Investments in the Past 5 Years by System Size, Ownership Type, and Type of Investment (Percentage of Systems Funding Each Investment Category)

Source: 2006 CWSS (Data for Exhibit 2.31)

Ownership Type & Type of Investment	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Land	0.6%	0.0%	8.1%	10.3%	**5.9%**	27.2%	**10.3%**
Water Source	62.0%	46.9%	35.1%	29.5%	**38.8%**	41.2%	**39.3%**
Transmission and Distribution System	22.8%	56.2%	63.1%	89.7%	**63.4%**	87.2%	**68.3%**
Treatment	23.9%	26.5%	16.8%	37.4%	**23.2%**	51.6%	**29.0%**
Storage	15.8%	31.8%	33.5%	41.5%	**33.3%**	51.7%	**37.1%**
Security	0.3%	0.3%	3.7%	39.7%	**8.7%**	40.8%	**15.3%**
Other	0.9%	5.1%	7.7%	21.9%	**9.0%**	45.5%	**16.5%**
Private Systems							
Land	0%	6.7%	9.0%	0.0%	**5.0%**	59.2%	**6.8%**
Water Source	51.7%	42.5%	46.4%	33.4%	**45.8%**	55.6%	**46.2%**
Transmission and Distribution System	38.7%	63.7%	72.5%	91.5%	**60.9%**	97.4%	**62.1%**
Treatment	39.9%	22.1%	40.8%	22.9%	**33.3%**	75.5%	**34.8%**
Storage	38.7%	21.6%	21.3%	24.4%	**26.8%**	68.7%	**28.2%**
Security	15.6%	7.7%	4.5%	19.6%	**9.8%**	16.3%	**10.1%**
Other	0.4%	7.6%	13.4%	6.7%	**7.2%**	37.0%	**8.2%**
Ancillary Systems*							
Land	0.0%	0.0%	0%	NA	**0.0%**	NA	**0.0%**
Water Source	64.5%	56.7%	63%	NA	**61.5%**	NA	**61.5%**
Transmission and Distribution System	25.5%	41.1%	5%	NA	**29.3%**	NA	**29.3%**
Treatment	27.2%	30.1%	0%	NA	**25.6%**	NA	**25.6%**
Storage	25.2%	14.8%	63%	NA	**25.0%**	NA	**25.0%**
Security	16.6%	0.0%	0%	NA	**9.4%**	NA	**9.4%**
Other	8.3%	0.6%	32%	NA	**7.8%**	NA	**7.8%**
All Systems							
Land	0.1%	2.2%	8.0%	8.5%	**4.8%**	29.4%	**8.1%**
Water Source	58.6%	47.1%	38.7%	30.0%	**44.2%**	42.2%	**43.9%**
Transmission and Distribution System	30.8%	56.1%	63.4%	90.1%	**57.7%**	87.9%	**61.7%**
Treatment	32.1%	25.7%	21.9%	34.7%	**26.6%**	53.2%	**30.1%**
Storage	29.5%	25.5%	31.6%	38.3%	**30.2%**	52.9%	**33.2%**
Security	13.5%	2.7%	3.8%	36.0%	**9.2%**	39.1%	**13.2%**
Other	3.7%	5.2%	9.9%	19.1%	**8.3%**	44.9%	**13.2%**

Notes: Excludes systems that have not made major capital improvements in the past five years. Table reports the percentage of systems that funded each investment type. It is not the percentage of funds invested in each category. Percents do not add up to 100 percent because systems may have funded more than one investment type.

*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 26: Percentage of Systems Acquiring Capital Funds from Each Source in the Past 5 Years by System Size, Ownership Type, and Source of Funds (Percentage of Systems Using Each Source of Funds)

Source: 2006 CWSS (Data for Exhibit 2.32)

Ownership Type & Source of Funds	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Current Revenues	58.5%	64.9%	48.3%	74.5%	**57.6%**	74.5%	**61.1%**
Equity or Other Funds from Private Investors	0.5%	0.3%	3.4%	8.8%	**3.4%**	2.7%	**3.2%**
Borrowing from Private Sector Sources	0.3%	15.0%	12.0%	23.9%	**14.1%**	25.8%	**16.5%**
Department of Homeland Security Grants	0.0%	0.0%	1.5%	2.8%	**1.2%**	5.5%	**2.1%**
Other Government Grants	39.9%	34.8%	29.9%	28.5%	**31.5%**	16.5%	**28.5%**
DWSRF Principal Repayment Forgiveness	0.0%	0.3%	3.9%	0.0%	**2.1%**	0.0%	**1.6%**
DWSRF Loans	0.6%	20.0%	24.6%	19.2%	**21.1%**	11.1%	**19.0%**
Other Borrowing from Public Sector Sources	19.1%	9.1%	7.2%	7.5%	**8.5%**	10.3%	**8.9%**
Other	0.0%	5.5%	4.1%	10.7%	**5.3%**	6.9%	**5.7%**
Private Systems							
Current Revenues	61.5%	84.3%	70.0%	75.2%	**72.4%**	46.1%	**71.5%**
Equity or Other Funds from Private Investors	13.9%	13.1%	26.4%	3.3%	**16.9%**	5.4%	**16.5%**
Borrowing from Private Sector Sources	7.0%	2.1%	20.2%	30.0%	**11.1%**	12.5%	**11.2%**
Department of Homeland Security Grants	0.0%	0.0%	0.0%	0.0%	**0.0%**	1.0%	**0.0%**
Other Government Grants	8.0%	14.1%	4.5%	0.0%	**8.3%**	17.1%	**8.6%**
DWSRF Principal Repayment Forgiveness	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	**0.0%**
DWSRF Loans	0.0%	0.0%	0.9%	40.7%	**3.0%**	17.3%	**3.5%**
Other Borrowing from Public Sector Sources	0.2%	6.7%	9.0%	13.0%	**5.9%**	17.0%	**6.3%**
Other	9.0%	8.1%	5.3%	0.0%	**6.9%**	10.9%	**7.1%**
Ancillary Systems*							
Current Revenues	57.8%	82.8%	95.1%	NA	**69.3%**	NA	**69.3%**
Equity or Other Funds from Private Investors	9.0%	14.0%	4.9%	NA	**10.3%**	NA	**10.3%**
Borrowing from Private Sector Sources	0.0%	0.0%	31.7%	NA	**2.9%**	NA	**2.9%**
Department of Homeland Security Grants	0.0%	0.0%	0.0%	NA	**0.0%**	NA	**0.0%**
Other Government Grants	0.0%	0.0%	0.0%	NA	**0.0%**	NA	**0.0%**
DWSRF Principal Repayment Forgiveness	0.0%	0.0%	0.0%	NA	**0.0%**	NA	**0.0%**
DWSRF Loans	0.0%	0.0%	0.0%	NA	**0.0%**	NA	**0.0%**
Other Borrowing from Public Sector Sources	0.0%	0.0%	0.0%	NA	**0.0%**	NA	**0.0%**
Other	25.0%	3.1%	31.7%	NA	**18.1%**	NA	**18.1%**
All Systems							
Current Revenues	59.5%	74.4%	55.0%	74.2%	**63.7%**	72.6%	**64.9%**
Equity or Other Funds from Private Investors	9.7%	6.9%	9.0%	7.8%	**8.4%**	2.9%	**7.7%**
Borrowing from Private Sector Sources	3.1%	8.1%	14.6%	24.9%	**11.6%**	24.9%	**13.4%**
Department of Homeland Security Grants	0.0%	0.0%	1.1%	2.3%	**0.7%**	5.2%	**1.3%**
Other Government Grants	9.9%	22.0%	22.8%	23.5%	**20.0%**	16.6%	**19.6%**
DWSRF Principal Repayment Forgiveness	0.0%	0.1%	2.8%	0.0%	**1.1%**	0.0%	**1.0%**
DWSRF Loans	0.1%	10.0%	18.1%	22.8%	**12.6%**	11.5%	**12.5%**
Other Borrowing from Public Sector Sources	3.2%	6.8%	7.4%	8.4%	**6.5%**	10.8%	**7.0%**
Other	14.0%	6.0%	5.3%	8.8%	**7.7%**	7.2%	**7.6%**

Notes: Excludes systems that have not made major capital improvements in the past five years. Systems can fund by more than one source, therefore column totals may be greater than or less than 100 percent. A small number of privately owned systems serving populations of 3,301-10,000 and 100,001-500,000 relied heavily on the DWSRF. Percents do not add up to 100 percent because systems may have acquired funds from more than one source.

*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 27: Annual DWSRF Assistance by System Size
Source: 2009 DWNIMS (Data for Exhibit 2.33 and 2.34)

Fiscal Year Ending June 30	Amount of DWSRF Assistance (Million of Dollars) Percent of Total DWSRF Assistance							Number of DWSRF Agreements Percent of Total DWSRF Agreements						
	≤500	501-3,300	3,301-10,000	≤10,000	10,001-100,000	>100,000	Total	≤500	501-3,300	3,301-10,000	≤10,000	10,001-100,000	>100,000	Total
1997	**$0.0**	**$0.0**	**$0.9**	**$0.9**	**$0.0**	**$0.0**	**$0.9**	**0**	**0**	**1**	**1**	**0**	**0**	**1**
	0%	0%	100%	100%	0%	0%	100%	0%	0%	100%	100%	0%	0%	100%
1998	**$14.7**	**$97.1**	**$74.0**	**$185.9**	**$104.2**	**$47.4**	**$337.6**	**29**	**62**	**43**	**134**	**29**	**6**	**169**
	4%	29%	22%	55%	31%	14%	100%	17%	37%	25%	79%	17%	4%	100%
1999	**$23.3**	**$163.3**	**$157.1**	**$343.7**	**$275.5**	**$300.5**	**$919.7**	**70**	**174**	**96**	**340**	**84**	**16**	**440**
	3%	18%	17%	37%	30%	33%	100%	16%	40%	22%	77%	19%	4%	100%
2000	**$37.5**	**$191.2**	**$187.1**	**$415.8**	**$569.6**	**$215.6**	**$1,200.9**	**104**	**196**	**113**	**413**	**126**	**29**	**568**
	3%	16%	16%	35%	47%	18%	100%	18%	35%	20%	73%	22%	5%	100%
2001	**$53.3**	**$238.0**	**$269.0**	**$560.3**	**$518.0**	**$227.5**	**$1,305.8**	**107**	**215**	**117**	**439**	**123**	**37**	**599**
	4%	18%	21%	43%	40%	17%	100%	18%	36%	20%	73%	21%	6%	100%
2002	**$87.2**	**$222.5**	**$166.9**	**$476.6**	**$514.8**	**$261.0**	**$1,252.4**	**139**	**229**	**96**	**464**	**159**	**36**	**659**
	7%	18%	13%	38%	41%	21%	100%	21%	35%	15%	70%	24%	5%	100%
2003	**$47.5**	**$256.2**	**$233.4**	**$537.0**	**$430.9**	**$302.3**	**$1,270.2**	**88**	**212**	**119**	**419**	**120**	**44**	**583**
	4%	20%	18%	42%	34%	24%	100%	15%	36%	20%	72%	21%	8%	100%
2004	**$81.2**	**$243.7**	**$250.7**	**$575.6**	**$724.2**	**$296.2**	**$1,596.0**	**145**	**183**	**115**	**443**	**153**	**33**	**629**
	5%	15%	16%	36%	45%	19%	100%	23%	29%	18%	70%	24%	5%	100%
2005	**$81.3**	**$203.4**	**$262.5**	**$547.3**	**$559.6**	**$343.1**	**$1,449.9**	**116**	**163**	**109**	**388**	**121**	**37**	**546**
	6%	14%	18%	38%	39%	24%	100%	21%	30%	20%	71%	22%	7%	100%
2006	**$74.0**	**$227.4**	**$300.3**	**$601.7**	**$631.7**	**$430.2**	**$1,663.7**	**118**	**182**	**99**	**399**	**132**	**43**	**574**
	4%	14%	18%	36%	38%	26%	100%	21%	32%	17%	70%	23%	7%	100%
2007	**$88.2**	**$285.3**	**$312.9**	**$686.4**	**$524.4**	**$442.9**	**$1,653.7**	**99**	**208**	**106**	**413**	**121**	**45**	**579**
	5%	17%	19%	42%	32%	27%	100%	17%	36%	18%	71%	21%	8%	100%
2008	**$80.4**	**$273.7**	**$311.8**	**$665.8**	**$797.1**	**$502.7**	**$1,965.6**	**126**	**193**	**101**	**420**	**136**	**53**	**609**
	4%	14%	16%	34%	41%	26%	100%	21%	32%	17%	69%	22%	9%	100%
2009	**$91.6**	**$261.2**	**$270.0**	**$622.7**	**$599.4**	**$368.6**	**$1,590.7**	**174**	**219**	**123**	**516**	**140**	**56**	**712**
	6%	16%	17%	39%	38%	23%	100%	24%	31%	17%	72%	20%	8%	100%
Total All Years	**$760.0**	**$2,663.1**	**$2,796.7**	**$6,219.8**	**$6,249.3**	**$3,737.9**	**$16,207.1**	**1,315**	**2,236**	**1,238**	**4,789**	**1,444**	**435**	**6,668**
	5%	16%	17%	38%	39%	23%	100%	20%	34%	19%	72%	22%	7%	100%

Table 28: Total DWSRF Assistance to Disadvantaged Communities (Fiscal Year 2009)

Source: 2009 DWNIMS (Data for Exhibit 2.35)

DWSRF Assistance	Disadvantaged Communities	Assistance with Principal Forgiveness	Assistance with >20 Year Repayment	Total DWSRF Assistance
Amount of DWSRF Assistance (millions of dollars)	**$412.20**	**$151.00**	**$211.80**	**$1,590.70**
Percent of Total DWSRF Assistance	*25.9%*	*9.5%*	*13.3%*	*100.0%*
Number of DWSRF Agreements	**236**	**144**	**98**	**712**
Percent of Total DWSRF Agreements	*36.9%*	*20.2%*	*13.8%*	*100.0%*

Notes: Assistance to Disadvantaged Communities includes all type of assistance provided to systems identified as disadvantaged by the state, including principal forgiven, >20 year repayments and lower interest rates.

Table 29: Fiscal Year 2009 U.S. DWSRF Set-Asides and Capitalization Grant
Source: 2009 DWNIMS (Data for Exhibit 2.36)

Set-Aside	Annual Amount Awarded and Transferred	Percent of Annual Capitalization Grant
Administrative and Technical Assistance (4%)	$37,484,507	2.2%
Small System Technical Assistance (2%)	$14,909,358	0.9%
State Program Management (10%)	$51,987,380	3.0%
Local Assistance and State Programs (15%)	$43,658,326	2.6%
Annual Capitalization Grant	$1,705,572,026	100.0%

Table 30: Annual U.S. DWSRF Set-Aside for Small Systems Technical Assistance
Source: 2009 DWNIMS (Data for Exhibits 2.37)

Fiscal Year Ending June 30	Millions of Dollars			Number of Systems Receiving Assistance	Expenses as a Percent of Net Amount Awarded	Amount Expended per System
	Net Amount Awarded	Expenses	Remaining Amount			
1997	$0.52	$0.00	$0.52	0	0.0%	**$0**
1998	$9.97	$0.62	$9.35	1,252	6.2%	**$495**
1999	$17.56	$4.06	$13.51	16,178	23.1%	**$251**
2000	$12.33	$8.16	$4.17	20,923	66.2%	**$390**
2001	$13.38	$11.04	$2.34	17,692	82.5%	**$624**
2002	$12.24	$10.18	$2.07	19,577	83.1%	**$520**
2003	$10.65	$10.72	-$0.07	19,184	100.7%	**$559**
2004	$15.93	$11.66	$4.27	18,027	73.2%	**$647**
2005	$17.53	$13.74	$3.78	17,805	78.4%	**$772**
2006	$11.87	$14.10	-$2.23	20,269	118.8%	**$696**
2007	$12.91	$15.17	-$2.26	20,193	117.5%	**$751**
2008	$13.55	$15.21	-$1.66	22,799	112.3%	**$667**
2009	$14.91	$15.55	-$0.64	21,152	104.3%	**$735**
Total All Years	**$163.34**	**$130.20**	**$33.13**	**215,051**	**79.7%**	**$605**

Table 31: Percentage of Systems with Programs to Lower the Cost of Drinking Water for Low-income Households by System Size and Ownership Type

Source: 2006 CWSS (Data for Exhibit 2.38)

Ownership Type	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Percentage of Systems with a Program	17.0%	0.4%	1.3%	5.8%	**2.9%**	10.7%	**4.2%**
Average Number of Households that Qualify	24	6.5	12.3	71.3	**40.4**	485.8	**246.7**
Of the Systems with a Program, the Percentage that Use the Following Eligibility Requirements:							
Income	100.0%	0.0%	9.6%	26.8%	**52.4%**	40.9%	**48.6%**
Age, Disability, and/or Income	0.0%	58.9%	90.4%	73.2%	**46.3%**	55.5%	**49.3%**
Other	0.0%	41.1%	0.0%	0.0%	**1.4%**	3.7%	**2.1%**
Private Systems							
Percentage of Systems with a Program	2.9%	0.0%	2.7%	0.0%	**1.5%**	17.4%	**1.9%**
Average Number of Households that Qualify	†	†	20	†	**20**	404	**341.5**
Of the Systems with a Program, the Percentage that Use the Following Eligibility Requirements:							
Income	0.0%	†	0.0%	†	**0.0%**	100.0%	**12.1%**
Age, Disability, and/or Income	0.0%	†	0.0%	†	**0.0%**	0.0%	**0.0%**
Other	100.0%	†	100.0%	†	**100.0%**	0.0%	**87.9%**
Ancillary Systems*							
Percentage of Systems with a Program	7.2%	0.0%	0.0%	NA	**4.0%**	NA	**4.0%**
Average Number of Households that Qualify	2.3	NA	NA	NA	**2.3**	NA	**2.3**
Of the Systems with a Program, the Percentage that Use the Following Eligibility Requirements:							
Income	50.0%	†	†	NA	**50.0%**	NA	**50.0%**
Age, Disability, and/or Income	50.0%	†	†	NA	**50.0%**	NA	**50.0%**
Other	0.0%	†	†	NA	**0.0%**	NA	**0.0%**
All Systems							
Percentage of Systems with a Program	6.8%	0.1%	1.6%	4.5%	**2.7%**	11.3%	**3.5%**
Average Number of Households that Qualify	11	6.5	14.3	71.3	**23.9**	475.5	**184.6**
Of the Systems with a Program, the Percentage that Use the Following Eligibility Requirements:							
Income	59.7%	0.0%	5.9%	26.8%	**41.8%**	46.0%	**42.8%**
Age, Disability, and/or Income	19.9%	58.9%	55.9%	73.2%	**38.3%**	50.7%	**41.2%**
Other	20.4%	41.1%	38.1%	0.0%	**19.9%**	3.4%	**16.1%**

Notes: *The CWSS did not identify any ancillary systems serving more than 3,300 people.

†No observations were reported in the CWSS.

Table 32: Ratio of Revenue to Expenses for Systems Reporting Positive Revenue and Expenses by System Size and Ownership Type

Source: 2006 CWSS (Data for Exhibit 2.39)

Ownership Type	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
Public Systems							
Average Ratio	1.4	1.5	1.4	1.6	**1.5**	1.4	**1.4**
10th Percentile	0.7	0.7	0.7	0.6	**0.7**	0.8	**0.7**
25th Percentile	1.0	1.0	1.0	0.9	**1.0**	1.0	**1.0**
50th Percentile	1.5	1.3	1.2	1.1	**1.2**	1.2	**1.2**
75th Percentile	1.6	1.8	1.5	1.5	**1.6**	1.6	**1.6**
90th Percentile	2.1	3.0	2.3	2.0	**2.6**	2.2	**2.5**
Private Systems							
Average Ratio	1.7	1.4	1.8	1.2	**1.6**	1.5	**1.6**
10th Percentile	0.4	0.8	0.9	0.8	**0.8**	0.9	**0.8**
25th Percentile	1.0	1.0	1.1	0.9	**1.0**	0.9	**1.0**
50th Percentile	1.2	1.2	1.2	1.2	**1.2**	1.2	**1.2**
75th Percentile	1.6	1.3	1.7	1.3	**1.5**	1.7	**1.5**
90th Percentile	2.3	2.4	2.9	1.5	**2.3**	2.2	**2.3**
Ancillary Systems*							
Average Ratio	1.2	1.7	1.4	NA	**1.4**	NA	**1.4**
10th Percentile	0.4	1.0	1.2	NA	**0.5**	NA	**0.5**
25th Percentile	0.6	1.1	1.2	NA	**0.9**	NA	**0.9**
50th Percentile	0.9	1.4	1.2	NA	**1.2**	NA	**1.2**
75th Percentile	1.7	2.6	1.2	NA	**1.8**	NA	**1.8**
90th Percentile	2.5	3.0	2.5	NA	**2.6**	NA	**2.6**
All Systems							
Average Ratio	1.5	1.5	1.5	1.5	**1.5**	1.4	**1.5**
10th Percentile	0.4	0.8	0.8	0.6	**0.7**	0.8	**0.7**
25th Percentile	0.9	1.0	1.0	0.9	**1.0**	1.0	**1.0**
50th Percentile	1.2	1.2	1.2	1.1	**1.2**	1.2	**1.2**
75th Percentile	1.6	1.6	1.5	1.4	**1.6**	1.7	**1.6**
90th Percentile	2.1	2.8	2.4	1.9	**2.5**	2.2	**2.4**

Notes: Revenues include water sales and other water-related fees. Expenses include operating expenses, depreciation, and interest. It excludes principal payments and payments to capital and reserve funds. Only systems that report positive revenue and expenses are included. The ratio is calculated for each system and this table reports the average of that ratio, as well as the 10th, 25th, 50th, 75th, and 90th percentiles.

*The CWSS did not identify any ancillary systems serving more than 3,300 people.

Table 33: Need by System Size and Water Source

Source: 2007 DWINSA and 2006 CWSS (Data for Exhibits 2.40, and 2.41)

Water Source	System Size (Service Population)						
	≤100	**101-500**	**501-3,300**	**3,301-10,000**	**≤10,000**	**>10,000**	**All**
Ground Water Systems							
Total Need (millions of dollars)	$6,468	$14,897	$31,025	$31,381	**$83,771**	$89,931	**$173,702**
Total Residential Connections	322,190	1,361,623	6,036,303	7,931,329	**15,651,444**	38,974,448	**54,625,893**
Need per Residential Connection	$20,074	$10,941	$5,140	$3,957	**$5,352**	$2,307	**$3,180**
Surface Water Systems							
Total Need (millions of dollars)	$272	$1,100	$5,668	$9,185	**$16,224**	$130,897	**$147,121**
Total Residential Connections	19,312	65,269	719,383	1,716,123	**2,520,087**	49,256,950	**51,777,037**
Need per Residential Connection	$14,069	$16,851	$7,879	$5,352	**$6,438**	$2,657	**$2,841**
All Systems							
Total Need (millions of dollars)	$6,739	$15,997	$36,693	$40,566	**$99,995**	$220,827	**$320,823**
Total Residential Connections	341,502	1,426,892	6,755,686	9,647,451	**18,171,531**	88,231,399	**106,402,930**
Need per Residential Connection	$19,734	$11,211	$5,431	$4,205	**$5,503**	$2,503	**$3,015**

Notes: Excludes American Indian and Alaskan Native Village water systems and the costs associated with arsenic and recently promulgated regulations. Recently promulgated regulations include the Radon Rule, the Stage 2 Disinfectants/Disinfection Byproducts Rule, Long Term 2 Enhanced Surface Water Treatment Rule (treatment needs only), and the Ground Water Rule. Surface water systems include surface water and GWUDI. Ground water systems include ground water, purchased ground water, purchased surface water and purchased GWUDI.

Table 34: Components of Water System Need per Connection (January 2007 Dollars)

Source: 2007 DWINSA and 2006 CWSS (Data for Exhibits 2.42 and 3.9)

Type	Source	System Size (Service Population)	Total Connections	Source	Storage	Transmission/ Distribution	Treatment	Other	Total
CWSs	Ground Water	**≤100**	322,190	$3,241	$1,914	$10,271	$4,209	$439	**$20,074**
		101-500	1,361,623	$1,395	$1,596	$6,134	$1,660	$155	**$10,941**
		501-3,300	6,036,303	$318	$804	$3,197	$791	$29	**$5,140**
		3,301-10,000	7,931,329	$247	$422	$2,615	$648	$24	**$3,957**
		≤10,000	15,651,444	**$436**	**$703**	**$3,303**	**$865**	**$46**	**$5,352**
		>10,000	38,974,448	$139	$248	$1,511	$394	$16	**$2,307**
	Surface Water	**≤100**	19,312	$901	$1,771	$5,827	$5,395	$175	**$14,069**
		101-500	65,269	$806	$1,852	$8,469	$5,570	$154	**$16,851**
		501-3,300	719,383	$424	$1,023	$4,296	$2,068	$69	**$7,879**
		3,301-10,000	1,716,123	$211	$654	$3,007	$1,440	$39	**$5,352**
		≤10,000	2,520,087	**$293**	**$799**	**$3,538**	**$1,757**	**$52**	**$6,438**
		>10,000	49,256,950	$118	$237	$1,608	$679	$16	**$2,657**
	Total		**106,402,930**	**$176**	**$323**	**$1,868**	**$627**	**$21**	**$3,015**
Not-for-profit NCWSs Total Need (millions)				$815.4	$1,940.1	$509.3	$802.5	$0.9	**$4,068.2**

Notes: Excludes American Indian and Alaskan Native Village water systems and the costs associated with arsenic and recently promulgated regulations. Recently promulgated regulations include the Radon Rule, the Stage 2 Disinfectants/Disinfection Byproducts Rule, Long Term 2 Enhanced Surface Water Treatment Rule (treatment needs only), and the Ground Water Rule. Need per connection represents the national average of all connections, not a connection in an average system. Only residential connections were used. Need per connection for not-for-profit NCWSs is not available. Surface water systems include surface water and GWUDI. Ground water systems include ground water, purchased ground water, purchased surface water and purchased GWUDI.

Table 35: Need by System Size and Category of Project
Source: 2007 DWINSA and 2006 CWSS (Data for Exhibit 2.43)

Category of Project	System Size (Service Population)						
	≤100	101-500	501-3,300	3,301-10,000	≤10,000	>10,000	All
New Infrastructure							
Total Need (Millions of Dollars)	$1,523	$3,590	$5,645	$5,963	**$16,721**	$45,503	**$62,224**
Total Residential Connections	341,502	1,426,892	6,755,686	9,647,451	**18,171,531**	88,231,399	**106,402,930**
Need per Residential Connection	$4,460	$2,516	$836	$618	**$920**	$516	**$585**
Replacement of Existing Infrastructure							
Total Need (Millions of Dollars)	$4,276	$9,418	$23,113	$24,943	**$61,750**	$111,894	**$173,644**
Total Residential Connections	341,502	1,426,892	6,755,686	9,647,451	**18,171,531**	88,231,399	**106,402,930**
Need per Residential Connection	$12,520	$6,600	$3,421	$2,585	**$3,398**	$1,268	**$1,632**
Rehabilitation of Existing Infrastructure							
Total Need (Millions of Dollars)	$681	$2,684	$7,752	$9,279	**$20,396**	$59,576	**$79,972**
Total Residential Connections	341,502	1,426,892	6,755,686	9,647,451	**18,171,531**	88,231,399	**106,402,930**
Need per Residential Connection	$1,993	$1,881	$1,147	$962	**$1,122**	$675	**$752**
Expansion/Upgrade of Treatment Plants							
Total Need (Millions of Dollars)	$4	$25	$239	$412	**$679**	$3,963	**$4,642**
Total Residential Connections	341,502	1,426,892	6,755,686	9,647,451	**18,171,531**	88,231,399	**106,402,930**
Need per Residential Connection	$13	$17	$35	$43	**$37**	$45	**$44**
All							
Total Need (Millions of Dollars)	$6,484	$15,717	$36,748	$40,566	**$99,515**	$220,827	**$320,343**
Total Residential Connections	341,502	1,426,892	6,755,686	9,647,451	**18,171,531**	88,231,399	**106,402,930**
Need per Residential Connection	$18,986	$11,015	$5,440	$4,205	**$5,476**	$2,503	**$3,011**

Notes: Excludes American Indian and Alaskan Native Village water systems and the costs associated with arsenic and recently promulgated regulations. Recently promulgated regulations include the Radon Rule, the Stage 2 Disinfectants/Disinfection Byproducts Rule, Long Term 2 Enhanced Surface Water Treatment Rule (treatment needs only), and the Ground Water Rule.

Table 36: Security-Related Investment Needs per Connection (January 2007 Dollars)

Source: 2007 DWINSA and 2006 CWSS (Data for Exhibit 2.44)

Source	System Size (Service Population)	Total Need (Millions of Dollars)	Need per Connection (Dollars)
Ground Water	**≤100**	$12.03	$37.33
	101-500	$8.19	$6.02
	501-3,300	$13.96	$2.31
	3,301-10,000	$16.28	$2.05
	≤10,000	**$50.46**	**$3.22**
	>10,000	$68.39	$1.75
Surface Water	**≤100**	$0.14	$7.27
	101-500	$0.56	$8.51
	501-3,300	$5.92	$8.24
	3,301-10,000	$2.96	$1.73
	≤10,000	**$9.58**	**$3.80**
	>10,000	$293.58	$5.96
Total		**$422.02**	**$3.97**

Notes: Excludes American Indian and Alaskan Native Village water systems and the costs associated with arsenic and recently promulgated regulations. Recently promulgated regulations include the Radon Rule, the Stage 2 Disinfectants/Disinfection Byproducts Rule, Long Term 2 Enhanced Surface Water Treatment Rule (treatment needs only), and the Ground Water Rule. Need per connection represents the national average of all connections, not a connection in an average system. Only residential connections were used. Surface water systems include surface water and GWUDI. Ground water systems include ground water, purchased ground water, purchased surface water and purchased GWUDI.

Table 37: Need per Connection for Regulatory Compliance (January 2007 Dollars)
Source: 2007 DWINSA and 2006 CWSS (Data for Exhibit 2.45)

System Size (Service Population)			Chemical		Microbial		Total	
			Total Need (Millions of Dollars)	Need per Connection (Dollars)	Total Need (Millions of Dollars)	Need per Connection (Dollars)	Total Need (Millions of Dollars)	Need per Connection (Dollars)
CWSs	Ground Water	≤100	$345.3	$1,071.70	$104.6	$324.67	**$449.9**	**$1,396.37**
		101-500	$716.8	$526.44	$475.0	$348.88	**$1,191.9**	**$875.32**
		501-3,300	$2,258.2	$374.11	$1,104.2	$182.93	**$3,362.5**	**$557.04**
		3,301-10,000	$2,280.0	$287.46	$970.5	$122.37	**$3,250.5**	**$409.83**
		≤10,000	**$5,600.3**	**$357.81**	**$2,654.4**	**$169.59**	**$8,254.7**	**$527.41**
		>10,000	$5,363.2	$137.61	$2,815.4	$72.24	**$8,178.6**	**$209.85**
	Surface Water	≤100	$3.3	$170.59	$66.5	$3,443.74	**$69.8**	**$3,614.33**
		101-500	$8.4	$128.43	$298.2	$4,569.38	**$306.6**	**$4,697.81**
		501-3,300	$72.4	$100.63	$960.6	$1,335.32	**$1,033.0**	**$1,435.95**
		3,301-10,000	$386.9	$225.45	$1,462.0	$851.91	**$1,848.9**	**$1,077.36**
		≤10,000	**$471.0**	**$186.89**	**$2,787.3**	**$1,106.05**	**$3,258.3**	**$1,292.93**
		>10,000	$3,541.4	$71.90	$20,725.8	$420.77	**$24,267.3**	**$492.67**
	Total		**$14,975.9**	**$140.75**	**$28,983.0**	**$272.39**	**$43,958.9**	**$413.14**
	Total Arsenic Need for Systems Serving ≤3,300 (Millions of Dollars)							**$480.1**
Not-for-profit NCWSs Total Need			**$120.0**	**NA**	**$172.5**	**NA**	**$292.5**	**NA**

Notes: Excludes American Indian and Alaskan Native Village water systems and the costs associated with recently promulgated regulations. Recently promulgated regulations include the Radon Rule, the Stage 2 Disinfectants/Disinfection Byproducts Rule, Long Term 2 Enhanced Surface Water Treatment Rule (treatment needs only), and the Ground Water Rule. Need per connection represents the national average of all connections, not a connection in an average system. Only residential connections were used. Need per connection for not-for-profit NCWSs is not available. Needs associated with Arsenic are only available for systems serving 3,300 or fewer people. Surface water systems include surface water and GWUDI. Ground water systems include ground water, purchased ground water, purchased surface water and purchased GWUDI.

Table 38: Violations by System Size, System Type, and Violation Type

Source: SDWIS FY08Q3 frozen violations and inventory tables (Data for Exhibits 2.46, 2.48, 3.4, and 3.8)

Violation Type	System Type	System Size (Service Population)									
		≤500		501-3,300		3,301-10,000		≤10,000		>10,000	
		Violations	Violations per 1,000 People	Violations	Violations per 1,000 People	Violations	Violations per 1,000 People	Violations	Violations per 1,000 People	Violations	Violations per 1,000 People
MCL	CWS	5,144	1.078	2,895	0.148	985	0.035	9,024	**0.173**	655	0.003
	NTNCWS	1,925	0.866	232	0.088	20	0.033	2,177	**0.399**	3	0.005
	TNCWS	5,027	0.699	211	0.080	9	0.017	5,247	**0.507**	3	0.001
MRDL	CWS	5	0.001	0	0.000	0	0.000	5	**0.000**	0	0.000
	NTNCWS	0	0.000	0	0.000	0	0.000	0	**0.000**	0	0.000
	TNCWS	0	0.000	0	0.000	0	0.000	0	**0.000**	0	0.000
TT	CWS	1,525	0.320	703	0.036	230	0.008	2,458	**0.047**	167	0.001
	NTNCWS	662	0.298	90	0.034	4	0.007	756	**0.139**	0	0.000
	TNCWS	345	0.048	35	0.013	4	0.007	384	**0.037**	0	0.000
M&R	CWS	66,316	13.899	16,342	0.835	7,852	0.281	90,510	**1.732**	9,975	0.042
	NTNCWS	34,277	15.426	4,303	1.640	202	0.332	38,782	**7.112**	10	0.018
	TNCWS	25,594	3.561	832	0.317	69	0.127	26,495	**2.559**	2	0.001

Notes: Data exclude tribal systems. The *Factoids* do not show size categories ≤100 or 101-500; therefore, all SDWIS data was drawn using the ≤500 size category.

Table 39: Percentage of Systems with Violations by System Size, System Type, and Violation Type

Souce: SDWIS FY08Q3 frozen violations table (Data for Exhibit 2.47)

Violation Type	System Type	System Size (Service Population)				
		≤500	501-3,300	3,301-10,000	≤10,000	All
MCL	CWS	56.0%	26.8%	9.9%	92.7%	100.0%
	NTNCWS	87.9%	11.0%	1.0%	99.9%	100.0%
	TNCWS	95.9%	3.9%	0.1%	100.0%	100.0%
MRDL	CWS	100.0%	0.0%	0.0%	100.0%	100.0%
	NTNCWS	0.0%	0.0%	0.0%	0.0%	0.0%
	TNCWS	0.0%	0.0%	0.0%	0.0%	0.0%
TT	CWS	59.5%	25.4%	8.8%	93.7%	100.0%
	NTNCWS	85.3%	14.0%	0.8%	100.0%	100.0%
	TNCWS	89.0%	10.1%	0.9%	100.0%	100.0%
M&R	CWS	65.5%	21.6%	7.1%	94.2%	100.0%
	NTNCWS	86.2%	13.2%	0.6%	100.0%	100.0%
	TNCWS	96.6%	3.3%	0.1%	100.0%	100.0%

Notes: Data exclude tribal systems. The *Factoids* do not show size categories ≤100 or 101-500; therefore, all SDWIS data was drawn using the ≤500 size category.

Table 40: Percent Change in the Number of NTNCWSs by System Size and Water Source

Source: *Factoids: Drinking Water and Ground Water Statistics (Annual)* (Data for Exhibit 3.1)

Year	Data	NTNCWSs						
		System Size (Service Population)				Water Source		All
		≤500	501-3,300	3,301-10,000	>10,000	Ground Water	Surface Water	
2006	**Number of Systems**	**16,259**	**2,659**	**108**	**19**	**18,429**	**616**	**19,045**
	Percent of Systems	85.0%	14.0%	1.0%	0.1%	97.0%	3.0%	100.0%
	Population Served (1,000)	**2,261**	**2,668**	**586**	**494**	**5,407**	**602**	**6,008**
	Percent of Population	38.0%	44.0%	10.0%	8.2%	90.0%	10.0%	100.0%
2007	**Number of Systems**	**16,034**	**2,662**	**120**	**23**	**18,151**	**679**	**18,839**
	Percent of Systems	85.0%	14.0%	1.0%	0.1%	96.0%	4.0%	100.0%
	Population Served (1,000)	**2,248**	**2,710**	**640**	**737**	**5,503**	**788**	**6,334**
	Percent of Population	35.0%	43.0%	10.0%	11.6%	87.0%	13.0%	100.0%
2008	**Number of Systems**	**15,954**	**2,641**	**130**	**17**	**18,041**	**688**	**18,742**
	Percent of Systems	85.0%	14.0%	1.0%	0.1%	96.0%	4.0%	100.0%
	Population Served (1,000)	**2,235**	**2,702**	**702**	**615**	**5,462**	**788**	**6,254**
	Percent of Population	36.0%	43.0%	11.0%	9.8%	87.0%	13.0%	100.0%

Notes: Includes a small number of systems for which the water source (ground vs. surface) is unknown. The *Factoids* do not show size categories ≤100 or 101-500.

Table 41: NTNCWS Ownership Trends

Source: SDWIS FY06Q3 through FY08Q3 frozen inventory table (Data for Exhibit 3.2)

Year	Owner	Size Category (Population Served)							
		≤500		501-3,300		3,301-10,000		>10,000	
		Number of Systems	Population (thou)	Number of Systems	Population (thou)	Number of Systems	Population (thou)	Number of Systems	Population (thou)
2006	Public	3,731	725	1,262	1,199	41	230	10	302
	Private	11,799	1,405	1,154	1,202	51	260	4	91
	Public/Private	660	119	201	208	4	22	1	49
2007	Public	3,634	711	1,256	1,217	42	234	8	239
	Private	11,674	1,405	1,156	1,219	59	294	8	346
	Public/Private	650	119	195	199	5	27	1	49
2008	Public	3,595	705	1,249	1,212	44	246	6	221
	Private	11,654	1,405	1,138	1,206	66	331	5	283
	Public/Private	630	112	198	206	5	31	1	49
2006-2008	**Net Change: Public Systems**	**-136**	**-20**	**-13**	**13**	**3**	**15**	**-4**	**-81**
2006-2008	**Net Change: Private Systems**	**-145**	**0**	**-16**	**3**	**15**	**71**	**1**	**192**
2006-2008	**Net Change: Public/Private Systems**	**-30**	**-7**	**-3**	**-2**	**1**	**9**	**0**	**0**

Notes: The *Factoids* do not show size categories ≤100 or 101-500; therefore, all SDWIS data was drawn using the ≤500 size category.

Table 42: Violations per 1,000 People Served by Violation Type, System Type, and Primary Water Source

Source: SDWIS FY08Q3 frozen violations and inventory tables (Data for Exhibits 3.3 and 3.7)

Violation Type	System Type	Water Source	
		Ground Water	Surface Water
MCL	CWS	0.077	0.014
	NTNCWS	0.398	0.124
	TNCWS	0.470	0.026
MRDL	CWS	0.000	0.000
	NTNCWS	0.000	0.000
	TNCWS	0.000	0.000
TT	CWS	0.010	0.008
	NTNCWS	0.124	0.137
	TNCWS	0.006	0.125
M&R	CWS	0.946	0.087
	NTNCWS	7.209	1.298
	TNCWS	2.305	0.425

Notes: Data exclude tribal systems. Surface water systems include surface water, purchased surface water, GWUDI, and purchased GWUDI. Ground water systems include ground water and purchased ground water. The *Factoids* do not show size categories ≤100 or 101-500; therefore, all SDWIS data was drawn using the ≤500 size category.

Table 43: Percent Change in the Number of TNCWSs by System Size and Water Source

Source: *Factoids: Drinking Water and Ground Water Statistics (Annual)* (Data for Exhibit 3.5)

Year	Data	TNCWSs						
		System Size (Service Population)				Water Source		All
		≤500	501-3,300	3,301-10,000	>10,000	Ground Water	Surface Water	
2006	**Number of Systems**	**82,387**	**2,745**	**107**	**21**	**83,356**	**1,904**	**85,260**
	Percent of Systems	97.0%	3.0%	0.0%	0.0%	98.0%	2.0%	100.0%
	Population Served (1,000)	**7,261**	**2,691**	**580**	**3,448**	**11,281**	**2,699**	**13,981**
	Percent of Population	52.0%	19.0%	4.0%	24.7%	81.0%	19.0%	100.0%
2007	**Number of Systems**	**81,873**	**2,751**	**102**	**18**	**82,851**	**1,878**	**84,744**
	Percent of Systems	97.0%	3.0%	0.0%	0.0%	98.0%	2.0%	100.0%
	Population Served (1,000)	**7,230**	**2,681**	**546**	**3,294**	**11,077**	**2,669**	**13,752**
	Percent of Population	53.0%	19.0%	4.0%	24.0%	81.0%	19.0%	100.0%
2008	**Number of Systems**	**81,324**	**2,705**	**101**	**19**	**82,126**	**2,010**	**84,149**
	Percent of Systems	96.6%	3.2%	0.1%	0.0%	98.0%	2.0%	100.0%
	Population Served (1,000)	**7,197**	**2,626**	**542**	**3,207**	**11,037**	**2,535**	**13,573**
	Percent of Population	53.0%	19.0%	4.0%	23.6%	81.0%	19.0%	100.0%

Notes: Includes a small number of systems for which the water source (ground vs. surface) is unknown. The *Factoids* do not show size categories ≤100 or 101-500.

Table 44: TNCWS Ownership Trends

Source: SDWIS FY06Q3 through FY08Q3 frozen inventory table (Data for Exhibit 3.6)

Year	Owner	Size Category (Population Served)							
		≤500		501-3,300		3,301-10,000		>10,000	
		Number of Systems	Population (thou)	Number of Systems	Population (thou)	Number of Systems	Population (thou)	Number of Systems	Population (thou)
2006	Public	10,309	996	914	1,030	61	330	14	2,552
	Private	68,127	5,871	1,724	1,567	46	250	7	897
	Public/Private	3,879	384	97	86	0	0	0	0
2007	Public	10,316	991	918	1,036	64	342	13	2,423
	Private	67,657	5,850	1,735	1,558	38	205	5	871
	Public/Private	3,810	379	92	83	0	0	0	0
2008	Public	10,263	988	898	1,008	63	343	13	2,304
	Private	67,205	5,821	1,712	1,535	38	200	6	903
	Public/Private	3,761	378	90	79	0	0	0	0
2006-2008	**Net Change: Public Systems**	**-46**	**-8**	**-16**	**-23**	**2**	**13**	**-1**	**-248**
2006-2008	**Net Change: Private Systems**	**-922**	**-50**	**-12**	**-31**	**-8**	**-51**	**-1**	**7**
2006-2008	**Net Change: Public/Private Systems**	**-118**	**-6**	**-7**	**-7**	**0**	**0**	**0**	**0**

Notes: The *Factoids* do not show size categories ≤100 or 101-500; therefore, all SDWIS data was drawn using the ≤500 size category.

Appendix B

The following section briefly describes the three major sources of information that were used in this report. As described below, all three collect similar aspects of data. However, because each uses a different method of collection, the numbers may sometimes vary. When possible, data was compared to the *1999 National Characteristics Report*.

Community Water System Survey (CWSS)

EPA periodically conducts the CWSS to provide financial and operating data necessary for the development and evaluation of drinking water regulations. For the 2006 CWSS, water system professionals collected data from approximately 600 systems serving 3,300 or fewer people during site visits. Data from systems serving more than 3,300 people were collected through Web-based electronic questionnaires or paper surveys. Different versions of the questionnaire were developed for CWSs of different sizes. Water systems were asked to respond to questions concerning operating and financial characteristics including questions regarding source, treatment, distribution, storage, revenues, expenses, capital improvements, security, and access to computers. Data collection occurred from June to December 2007. Overall, 59 percent of systems included in the CWSS responded. Of the small systems that were included in the sample, 95 percent responded to the survey. The CWSS does not include data on American Indian and Alaskan Native Village water systems.

Drinking Water Infrastructure Needs Survey and Assessment

EPA's 2007 DWINSA documents the infrastructure needs of the nation's water systems for the 20-year period from January 1, 2007, through December 31, 2026. To conduct the survey, water system professionals visited approximately 600 small water systems (those serving 3,300 or fewer people). The 600 systems that were visited were the same systems that were surveyed for the CWSS. Data for the 2007 DWINSA and the 2006 CWSS were collected during the same site visit. Questionnaires were sent to 2,266 medium systems (those serving between 3,300 and 100,000) and all 584 large systems (those serving more than 100,000 people). Medium and large systems had a response rate of 92 percent and 97 percent, respectively.

The 2007 infrastructure need for not-for-profit NCWSs was based on the findings of the 1999 DWINSA, adjusted to January 2007 dollars using the Construction Cost Index. The need reported for American Indian and Alaskan Native Village water systems is also based on 1999 findings adjusted to January 2007 dollars, but these figures are not included in this report.

Safe Drinking Water Information System

The SDWIS database is maintained by EPA and contains information on PWSs throughout the country. It contains a variety of historical and current data on compliance, enforcement, and water system inventory. Information in the database is collected and submitted by the states. The basic inventory data in this report was drawn from the *Factoids: Drinking and Ground Water Statistics* for fiscal years 2006 through 2008. Microsoft Excel PivotTables from fiscal years 2006 through 2008 were used to find violation data and specific inventory data (e.g., inventory data organized by ownership and source). The fluctuations and inconsistencies in states' inventory reporting makes it difficult to compare trends over a long period of time; the fiscal year 2006 through 2008 data was used to avoid these inconsistencies. Where possible, data coded as "Tribal" were excluded from the analysis.