

ES. Executive Summary

Water conservation is an important element of Dallas's long range water supply strategy. In 2005, Dallas Water Utilities (DWU) developed a Water Conservation Five-Year Strategic Plan (Strategic Plan) that defined water conservation goals for Fiscal Year (FY) 2004-05 through FY 2008-09 and recommended water conservation strategies and budgets to achieve these goals (Ref. 1.) From FY 2001-02 through FY 2008-09, ongoing water conservation efforts and implementation of the Strategic Plan have helped Dallas to save approximately ninety-eight billion gallons (300,751 acre-feet) of water.

This document defines new water conservation goals for FY 2010-11 through FY 2014-15 and recommends water conservation strategies and budgets to achieve the new goals.

ES.1. Strategic Planning Process

This document was developed through a multi-faceted approach that included review of the previous water conservation planning effort; through review of numerous water conservation programs, initiatives, data, and literature; and through input from DWU staff, water conservation staff from other cities, City of Dallas wholesale customer cities, and stakeholders. City of Dallas water use data were examined to identify strategic areas to target for additional water conservation opportunities. Numerous water conservation strategies were evaluated using screening criteria, a benefit-cost analysis, and other means to determine their suitability for implementation during the five-year planning period. New water conservation goals were established, and recommended strategies were constructed into a framework plan and presented to customer cities, stakeholder groups, and DWU for comment. Feedback was analyzed and used to develop the Updated Strategic Plan.

ES.2. City of Dallas Water Use Profile

To make recommendations that are technically sound and economically feasible, water conservation planners must understand the customer make-up and water use patterns of the service area. For FY 2003-04 through FY 2007-08, DWU provided summary data showing monthly water use by water user category. Categories included residential, general service (GS), optional general service (OGS), municipal, wholesale, and unbilled. In the summary data:¹

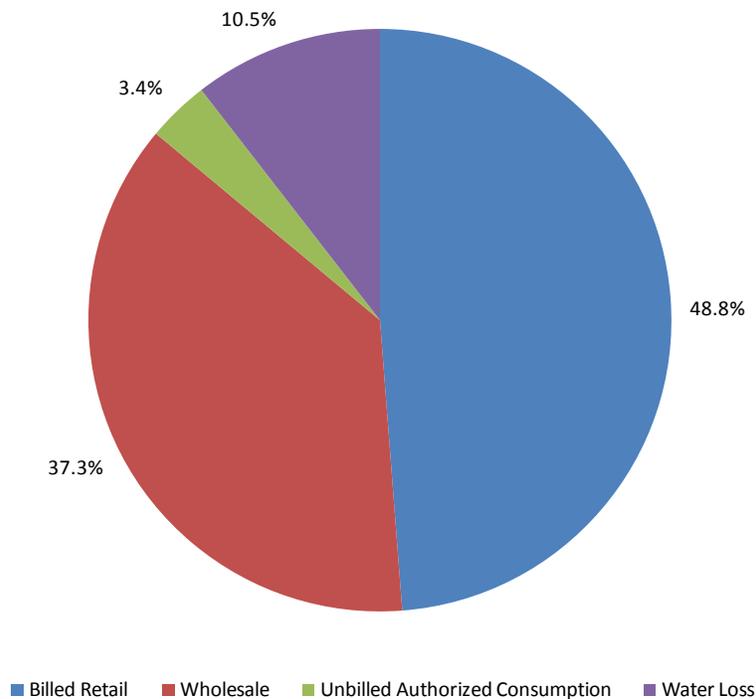
- Residential water use is assumed to be single-family residential water use.
- GS water users include multi-family residential, commercial, and light industrial customers.
- OGS water users consist primarily of large industrial customers.
- Municipal water users consist primarily of city facilities.

¹ There may be minor deviations from these assumptions, but they do not significantly affect the analysis of water use by category.

- Unbilled water, also known as non-revenue water, is a combination of unbilled authorized consumption and water loss. Unbilled authorized consumption includes unbilled municipal uses, ozone cooling water at the Water Treatment Plants (WTPs), main flushing, firefighting, meter testing, and other uses.

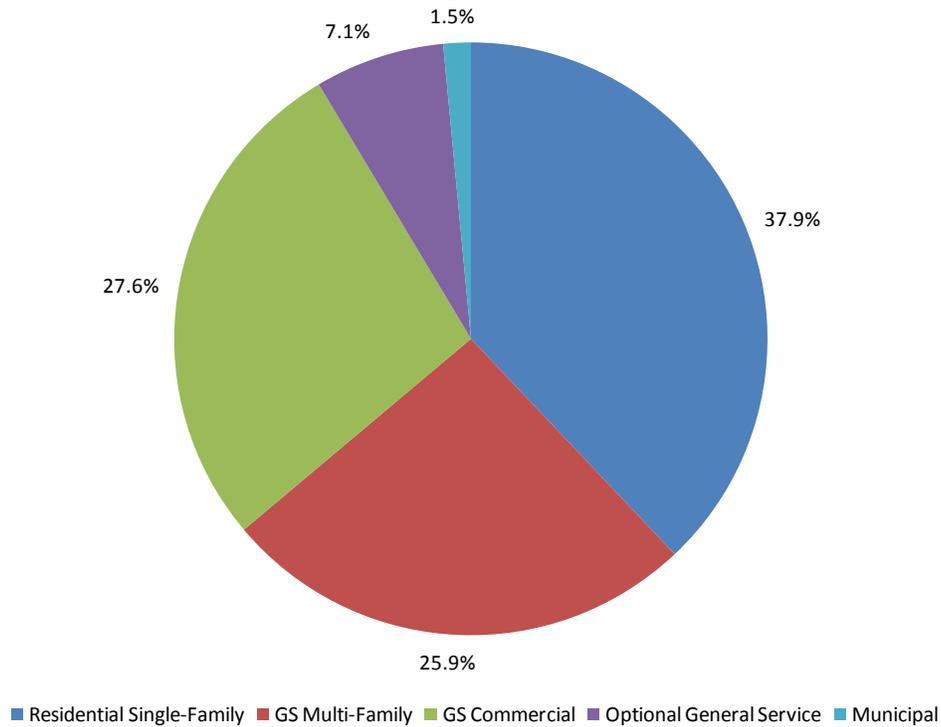
During the analysis period, total Dallas water use ranged from 141 to 170 billion gallons per year. Total water use can be divided into billed retail water sales, wholesale water sales, unbilled authorized consumption, and water loss (Figure ES-1). Billed retail water sales accounted for 48.8 percent of total water use during the analysis period, and wholesale water sales account for 37.3 percent.

Figure ES-1: Summary of DWU Total Water Use, FY 2003-04 to FY 2007-08



Currently, Dallas provides water to more than 294,000 active retail customers. The division of billed retail water use into customer categories is shown in Figure ES-2. Single-family residential customers comprise the largest water use category, accounting for 37.9 percent of billed retail water use during the analysis period.

Figure ES-2: Summary of DWU Billed Retail Water Use, FY 2003-04 to FY 2007-08



Understanding “base” and “seasonal” water use amounts helps in the targeting of water conservation strategies. Base water use is:

- Generally associated with indoor water uses or other water uses that remain relatively constant throughout the year,
- Estimated to be the amount of water used in the minimum water use month for a given year, and
- Assumed to be constant throughout each year for each category.

Seasonal water use is:

- Generally associated with irrigation and cooling water uses and
- Estimated to be all water use greater than the base use.

Base and seasonal water uses are shown by category and year in Figures ES-3 and ES-4. Among retail customers, residential (single-family), GS commercial and government, and municipal accounts used about 37 to 40 percent of all water supplied for seasonal purposes (Figure ES-4). GS multi-family and OGS accounts had much lower seasonal water use.

Figure ES-3: Seasonal Water Use by Category, FY 2003-04 to FY 2007-08

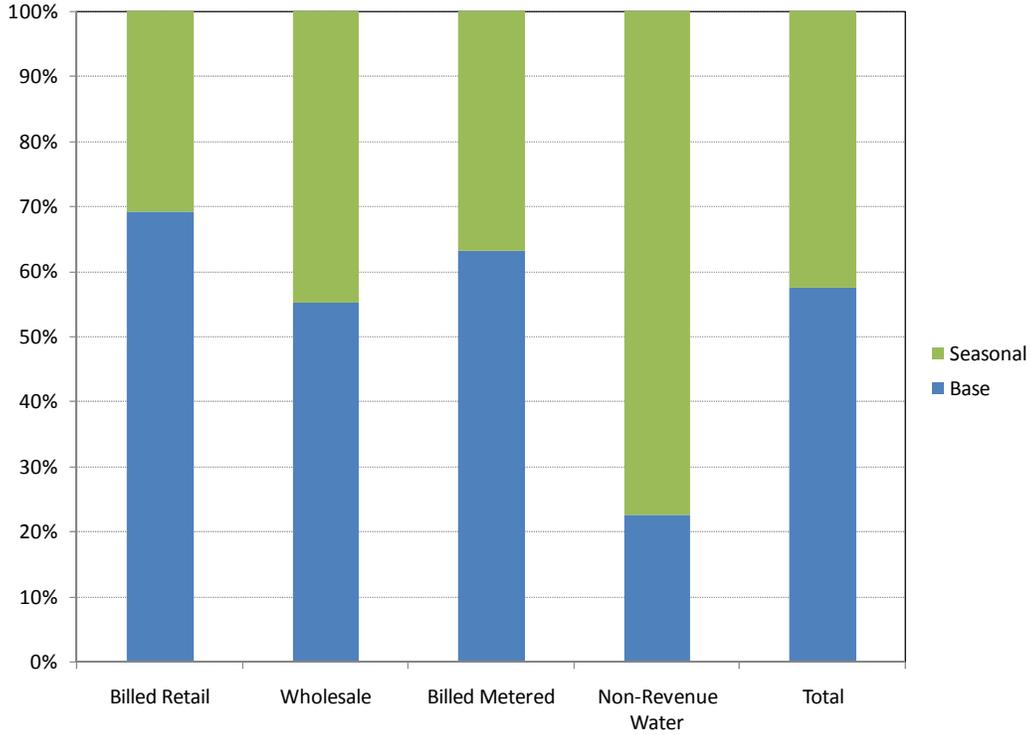
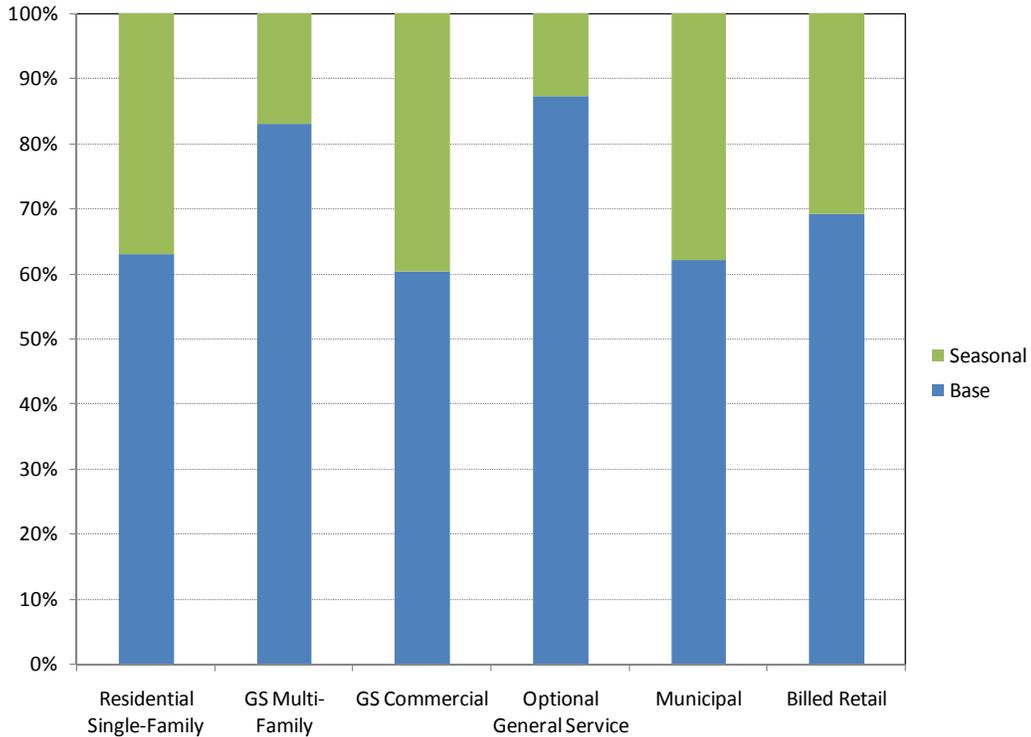
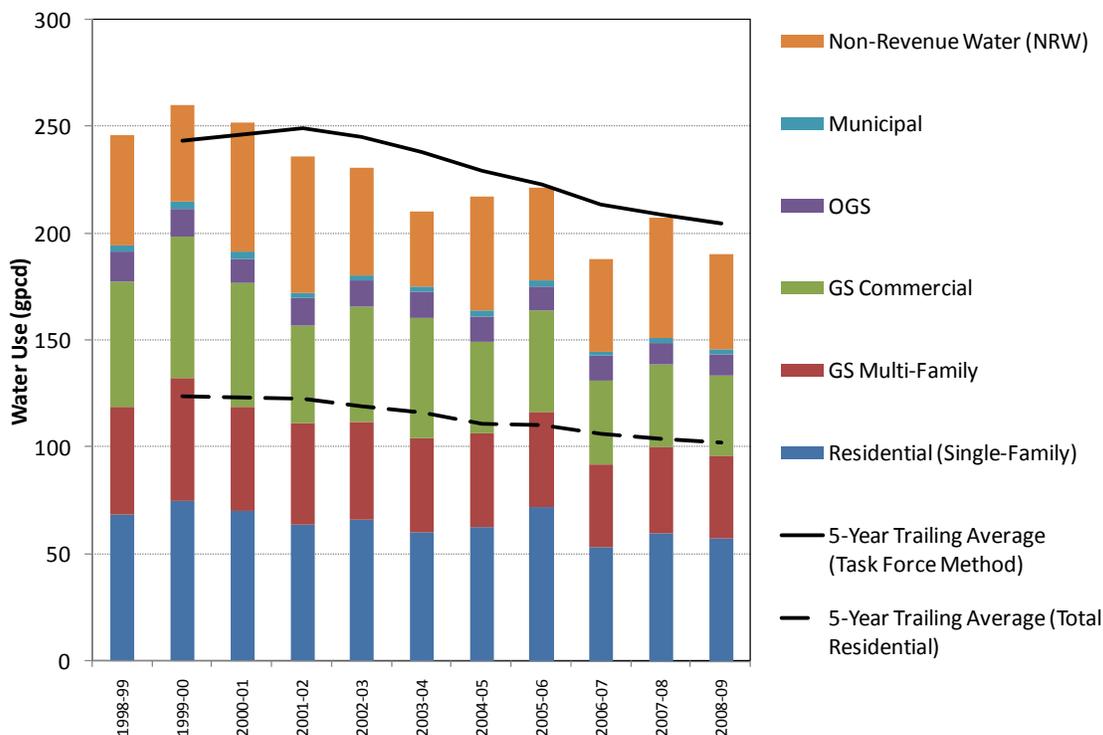


Figure ES-4: Seasonal Billed Retail Water Use by Category, FY 2003-04 to FY 2007-08



The Water Conservation Implementation Task Force recommended standard methodologies for calculating total per capita water use (in gallons per capita per day, or gpcd) and residential per capita water use (Ref. 2). Using this methodology, total per capita water use for the City of Dallas (including billed retail water use, unbilled authorized consumption, and water loss) was calculated for the last eleven years (Figure ES-5). Total per capita water use has steadily declined from its FY 1999-00 peak to present.

Figure ES-5: Normalized Retail Water Use



Some of the variability in annual water use can be attributed to differences in weather from year to year. To better filter out the impact of weather on the annual data, five-year trailing averages were calculated for total retail water use and total residential water use (Figure ES-5). By the Task Force Method (described in Section **Error! Reference source not found.**), the five-year trailing average total water use has steadily declined from about 249 gpcd in FY 2001-02 to about 205 gpcd in FY 2008-09, a total reduction of 17.7 percent, or 2.75 percent per year. During the same period, the five-year trailing average residential water use has declined from about 123 gpcd to about 102 gpcd, a total reduction of 16.7 percent, or about 2.6 percent per year.

ES.3. Identification and Screening of Potential Water Conservation Strategies

Potential water conservation strategies were compiled from various sources, including recommendations by task forces and planning groups, literature sources, 2005 Strategic Plan recommendations that have not yet been implemented, and programs implemented in other cities

that have successful water conservation efforts. Potential water conservation strategies are presented in Appendix **Error! Reference source not found.**

Based on the DWU water use profile, screening criteria were developed to help determine which new or enhanced water conservation strategies would be most effective for Dallas during the next five years. Using these screening criteria, the strategies in Table ES-1 were selected for detailed evaluation of probable water savings, benefits, and costs. These strategies address a broad range of customer types and water use types.

Table ES-1: Customer and Water Use Types Addressed by Measures Selected for Detailed Evaluation

Measure	Customer Type				Water Use Type	
	SF	MF	ICI	Utility	Indoor	Outdoor
Enhanced Real Loss Reduction				✓	✓	
Enhanced Apparent Loss Reduction				✓	✓	✓
Water-Wise Landscape Design Requirements	✓	✓	✓			✓
ICI Water-Efficient Equipment Rule			✓		✓	
Twice-Weekly Irrigation Schedule	✓	✓	✓			✓
ICI Customer Water Audits			✓		✓	✓
ICI Training Programs			✓		✓	✓
ICI Business Partnership Program			✓		✓	✓
ICI Hospitality Program			✓		✓	✓
Residential Irrigation System Incentive	✓	✓				✓
ICI Financial Incentives			✓		✓	✓
Enhanced Residential Toilet Incentive	✓	✓			✓	
Residential Clothes Washer Incentive	✓	✓			✓	
Additional Savings – Existing Real Loss Program				✓	✓	
House Bill 2667 High-Efficiency Toilet Law	✓	✓	✓		✓	
TOTAL	6	6	9	3	12	9

SF = Single-family residential
 MF = Multi-family residential
 ICI = Industrial, commercial, and institutional

ES.4. Detailed Evaluation of Selected Water Conservation Strategies

The goals of the Updated Strategic Plan include the following:

- Develop and implement water conservation programs aimed at:
 - Reducing seasonal peak demands
 - Reducing water loss and waste
 - Decreasing per capita water use (gpcd)
- Continue a heightened public awareness of water conservation in Dallas and the North Texas region.
- Continue and enhance conservation practices that will maintain quality of life and allow economic growth and development.
- Continue to include broad-based public and private stakeholder groups in new program development and implementation processes.
- Continue to lead by example by upgrading city facilities with water-efficient fixtures, landscapes, and irrigation systems wherever possible.
- Assist in facilitating regional conservation efforts among Dallas Water Utilities (DWU) wholesale customer cities and neighboring municipalities.
- Target an average 1.5 percent per year reduction in per capita consumption for the five-year planning period.
- Establish the foundation for continuation of water savings targets for the following five-year period and succeeding five-year intervals.

The strategies listed in Table ES-1 were evaluated based on the following:

- DWU's water conservation goals for the next five years
- Projected water savings
- Probable benefits
- Probable costs
- Feedback from wholesale customer cities and other stakeholders.

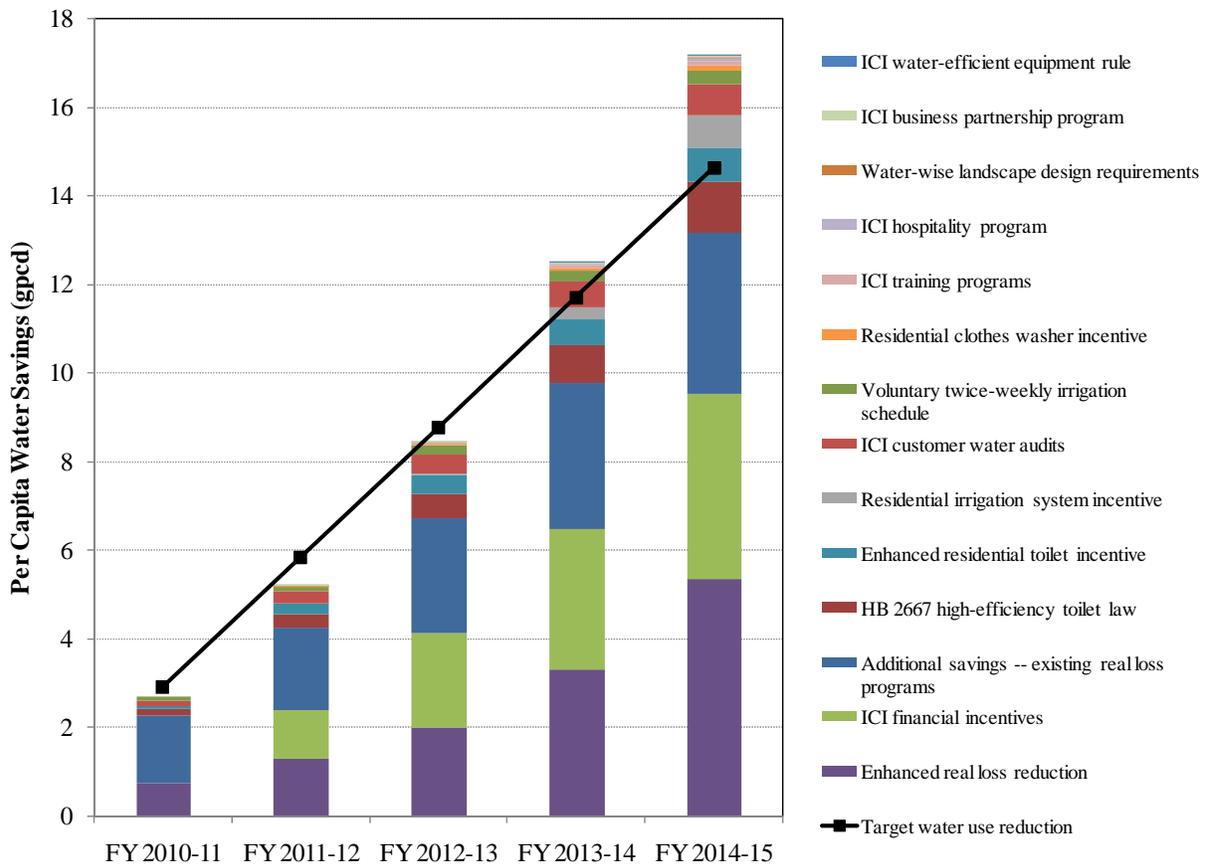
After careful consideration, all strategies listed in Table ES-1 are recommended for implementation during the next five years. In addition, considering how effective DWU's water conservation program has been over the last several years (Figure ES-5), all of the water conservation strategies presently employed by DWU are recommended for continuation or enhancement under the Updated Strategic Plan.

Finally, DWU should continue to pursue implementation of its planned direct and indirect recycled water projects. Although recycling of treated wastewater effluent is an important water efficiency strategy, DWU conducts recycled water planning separately from water conservation planning (as described in Section **Error! Reference source not found.**). No independent water savings projections or budget recommendations for recycled water projects have been developed as part of the Updated Strategic Plan.

Projected Water Savings

Projected water savings for each recommended water conservation strategy were estimated based on historical water use patterns, literature values, and experience with other utilities. Figure ES-6 shows the projected water savings by strategy on a per capita water use basis (gpcd), ordered from greatest projected savings to least. The selected strategies are projected to achieve the target per capita water use reduction (an average of 1.5 percent per year, or about 2.9 gpcd per year) by the last two years of the planning period. The three most important strategies to achieving the savings goal are enhanced real loss reduction, ICI financial incentives, and additional savings from existing real loss programs.

Figure ES-6: Projected Per Capita Water Savings from Selected Strategies



Benefit-Cost Analysis

Water conservation has both economic and non-economic benefits. Water conservation:

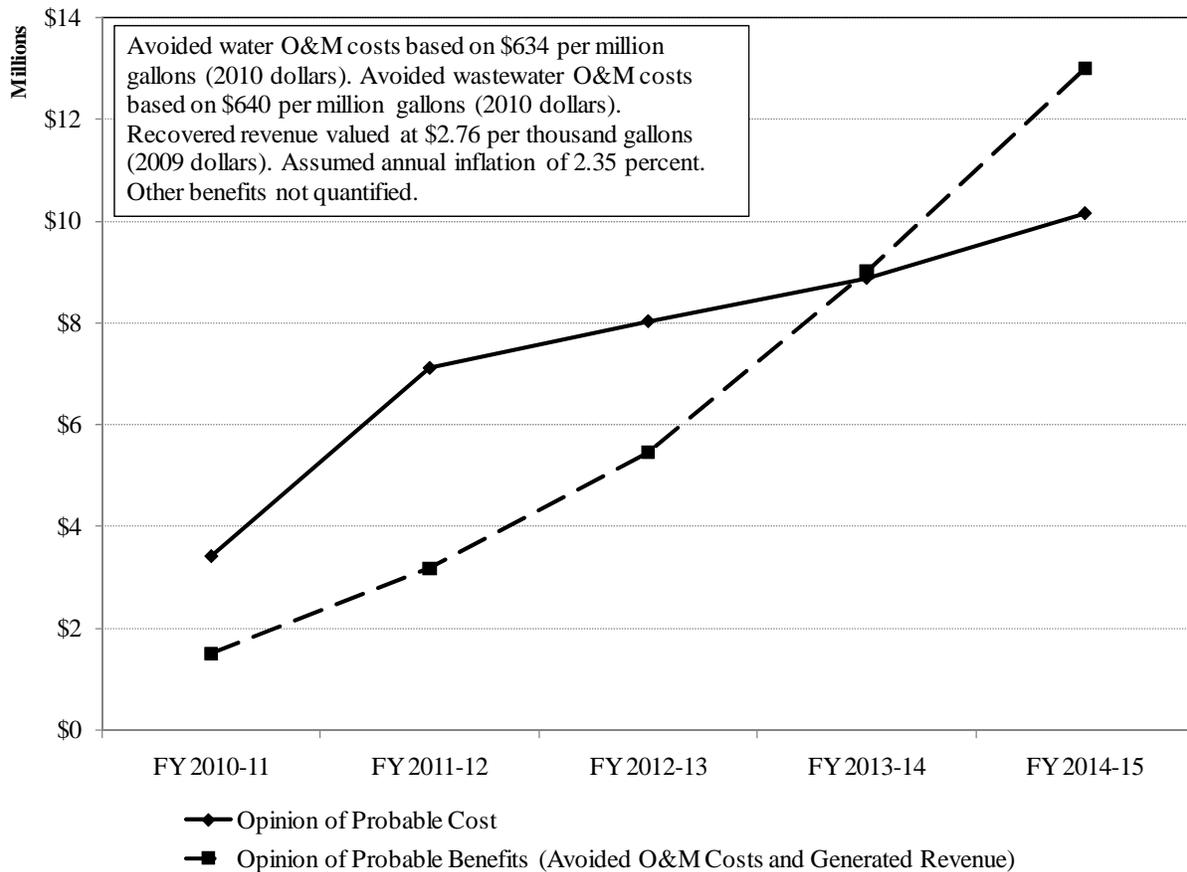
- Extends the life of existing water supplies and delays the need to develop expensive future water supplies. Costs associated with developing new water supplies (or purchasing new water) can include capital costs for construction of reservoirs, pumping facilities, pipelines, treatment plants, water storage, and related facilities; costs of obtaining water rights and permits; and operation and maintenance (O&M) costs such as labor, energy, and chemicals.
- Reduces peak requirements, extending the life of existing infrastructure. Water system infrastructure is sized to meet peak demands. When peak demands are reduced through water conservation, the need for infrastructure expansion is delayed.
- Lowers capital and operating costs of the existing system. Deferral of new water supply development or infrastructure expansion allows the utility to avoid associated capital costs. In addition, operational costs, such as power and chemicals, are reduced.
- Positions the city to obtain future water rights. In the Long Range Water Supply Plan (Ref. 3) and in the 2011 Region C Initially Prepared Plan (Ref. 4), Dallas has identified future water sources that would involve interbasin transfer of raw water. An interbasin transfer authorization requires that the applicant “has developed and implemented a water conservation plan that will result in the highest practicable levels of water conservation and efficiency achievable within the jurisdiction of the applicant” (Ref. 5).
- Other benefits include positive environmental effects, improved customer good will, continued growth and economic development, a reduction of Dallas’s carbon footprint, and a positive image of Dallas.

Typically, capital costs are developed for specific projects in specific locations. However, probable water savings have been developed for the city as a whole and not for specific locations in the water system. Therefore, the avoided capital costs are difficult to quantify. In addition, other avoided capital costs are somewhat speculative, since not all decisions have been made about future water supplies for Dallas. Therefore, the benefit evaluation in the Updated Strategic Plan includes only avoided water and wastewater O&M costs and additional revenue generated through enhanced apparent loss reduction.

An opinion of probable cost for each recommended water conservation strategy was developed based on program participation assumptions, recent Water Conservation Division and Operations Division budgets, reported costs at other water utilities, and unit cost assumptions in the Alliance for Water Efficiency Water Conservation Tracking Tool (Ref. 6). By FY 2013-14, the probable economic benefit from avoided O&M costs and generated revenue are projected to exceed the probable cost of implementing the recommended strategies (Figure ES-7).

There may be additional benefits (e.g., avoided capital costs) and additional costs (e.g., increases in water rates) that have not been considered in the benefit-cost analysis.

Figure ES-7: Opinions of Probable Economic Benefit and Probable Cost for Selected Strategies



ES.5. Recommended Implementation Plan, FY 2010-11 through FY 2014-15

The Updated Strategic Plan is designed to provide the next steps in a long-range, disciplined approach to water conservation. While significant analysis and efforts have gone into development of the Updated Strategic Plan, the Plan should be reassessed annually to make sure that Dallas is achieving its water conservation goals, to revamp programs if necessary, and to take advantage of new water conservation opportunities, such as federal or state funding for water conservation. The overall conservation program should be flexible, allowing strategies to be adjusted based on continued feasibility and support of goals, feedback from stakeholders and focus groups, and public participation or interest.

The recommended implementation plan consists of new or enhanced water conservation strategies, detailed action schedules, DWU staff increases, and budgets as presented in the following sections.

Recommended New or Enhanced Water Conservation Strategies

The recommended new or enhanced water conservation strategies are projected to enable DWU to meet its water conservation goals, to be less expensive than other water supply alternatives, and to provide positive net economic benefits over the next twenty years. These strategies may be grouped into three major elements of the Plan:

- City Leadership and Commitment
- Education and Outreach Initiatives
- Rebate and Incentive Programs

City Leadership and Commitment

Strategies within the City Leadership and Commitment element demonstrate a strong commitment to water conservation; in other words, the city “leads by example.” The visible efforts and actions of the City of Dallas with respect to its own water use will be the best example of the city’s commitment to water conservation. Positive efforts and actions conducted by the city will impact others and encourage like-mindedness in water conservation, not only by DWU customers, but also by others throughout the region. Water conservation leadership includes adopting and promoting water conservation practices at city facilities and continuing and enhancing water conservation-oriented ordinances and policies. Recommended water conservation strategies within the City Leadership and Commitment element are presented in Table ES-2.

Education and Outreach Initiatives

The goal of Education and Outreach Initiatives is to maintain a heightened public awareness of water conservation in Dallas and the surrounding region and to reduce water use and waste by changing customer behavior. Recommended water conservation strategies within the Education and Outreach Initiatives element are presented in Table ES-3.

Rebate and Incentive Programs

Rebate and incentive programs offer targeted customer groups financial motivation to conserve water. Recommended water conservation strategies within the Rebate and Incentive Programs element are presented in Table ES-4.

Table ES-2: Recommended Water Conservation Strategies: City Leadership and Commitment Element

Strategy	Description
Enhanced Real Loss Reduction	<p>Enhanced real loss reduction includes several recommended elements, as described below. This strategy will help DWU meet or surpass its goals of surveying the entire distribution system for leaks every 2.5 years and reducing leakage so that the Infrastructure Leakage Index is less than or equal to three.</p> <ul style="list-style-type: none"> ▪ Continue existing leak detection and repair efforts. ▪ Task 1: Develop and track water loss performance indicators (Error! Reference source not found.) on a monthly basis. This could include automated monitoring of water audit data through software programming and third party review and reporting of data. Use the results to target water loss resources (e.g., leak detection and repair crews). ▪ Task 2: Validate water use in the American Water Works Association (AWWA) water balance categories (Error! Reference source not found.) through field testing where possible. Improvements in data validation could include: <ul style="list-style-type: none"> ○ Perform additional meter testing and analysis of meter test results (this could include all sizes of meters from residential to production meters). Maintain calibration of the production meters and the largest commercial/industrial meters, as these will have the greatest impact on overall average meter accuracy if they are in error. Use the analysis of the meter testing results to refine the meter accuracy assumption in the system water audit. ○ Conduct water loss audits on a pressure zone level. Since smaller district metered areas (DMAs) are not considered at this time, conduct pressure zone water balances to improve the level of accuracy of the system water audit. Analyze minimum flow characteristics and estimate leakage. Conduct leakage detection surveys on the pressure zone and evaluate and record the reduction in real losses. ○ Review and evaluate the pressure reducing valve (PRV) maintenance and replacement program. Tasks could include more frequent monitoring of PRV vaults and continued trending and analysis of collected data.

Table ES-2 Continued: Recommended Water Conservation Strategies: City Leadership and Commitment Element

Strategy	Description
Enhanced Real Loss Reduction (Continued)	<ul style="list-style-type: none"> ▪ Task 3: Add leak detection and repair personnel and equipment and conduct additional training. Analyze the economic level of leakage, including a financial review of the costs of the leak detection and repair program and benefits from the reduction of leakage (e.g., reduced treatment and distribution costs, reduced number of emergency callouts and main breaks, etc.). ▪ Task 4: Continue to plan, develop, and implement water loss recommendations from previous water audits and efficiency studies. Monitor and document milestones reached as the result of recommendations made in the Water Efficiency Study (Ref. 7), the internal City Auditor's Report (Ref. 8), and the Texas Water Development Board's Analysis of Water Loss (Ref. 9). ▪ Task 5: Maximize advanced metering infrastructure (AMI) monitoring capabilities. Use detailed water use monitoring capabilities in the downtown corridor to identify potential leakage on the customer side of the meters. Other uses could include monitoring and providing information on consumption patterns for ICI water users. ▪ Task 6: Evaluate, purchase, and implement leakage management software specifically designed to enhance leak detection efforts. Examples include ILMSS LEAKS Suite (Ref. 10) and Crowder Consulting's NETBASE Water Distribution Management Software (Ref. 11). This will improve cost-benefit analyses and targeting of leak detection and repair efforts and assist in pressure management.
Enhanced Apparent Loss Reduction	<p>Enhanced apparent loss reduction includes several recommended components, as described below. This strategy will help DWU identify and correct apparent losses, generating additional revenue for the utility.</p> <ul style="list-style-type: none"> ▪ Continue existing apparent loss reduction efforts.

Table ES-2 Continued: Recommended Water Conservation Strategies: City Leadership and Commitment Element

Strategy	Description
Enhanced Apparent Loss Reduction (Continued)	<ul style="list-style-type: none"> <li data-bbox="604 313 1915 378">▪ Task 1: Dedicate water loss management analysts to find, trend, and correct discrepancies within the metering and billing systems. <li data-bbox="604 402 1915 654">▪ Task 2: Improve meter accuracy by reviewing all residential meter volumes and changing out meters that have exceeded the warranty limits. There are a number of two-, 1.5-, one-, and ¾-inch meters with flow volumes in excess of the warranty limits (Error! Reference source not found.). Target customers that use a volume of water that would exceed the meter warranty within five years for participation in DWU water conservation programs to help reduce their water use to within the normal range of the meter warranty. If this is not possible, conduct a meter-sizing analysis and replace the meter with a meter of appropriate size for the water use. <li data-bbox="604 678 1915 849">▪ Task 3: Identify customers that are billed for water service and not for wastewater service (and vice versa), and verify that these customers do not receive both services. Correct any discrepancies that are identified. In a study conducted from 2004 to 2006 by Utility Revenue Management (Ref. 12), a number of accounts were found where customers were being billed for water, but not for wastewater. <li data-bbox="604 873 1915 1125">▪ Task 4: Evaluate and correct accounts with misclassified premise types. Update premise types as the water use associated with an account changes. For example, review the fireline classification, as more than fifty fireline accounts were found to have significant, regular monthly usage, which should not occur. Reclassify these accounts or remove the fireline meters and replace them with properly-sized retail meters. As another example, review the cross-tabulation of total water use by premise type and customer type (Error! Reference source not found.) for accounts with inappropriate combinations of premise type and customer type. <li data-bbox="604 1149 1915 1247">▪ Task 5: Interface with all relevant DWU Divisions; collate, organize, and analyze all water loss data, including performance indicators (Error! Reference source not found.); and prepare performance reports that document water loss reduction. <li data-bbox="604 1271 1915 1369">▪ Task 6: Conduct an analysis of unauthorized use and customers not currently receiving a correct bill. Initial review would include analysis of accounts that consistently read zero, identification of addresses with no water service, etc.

Table ES-2 Continued: Recommended Water Conservation Strategies: City Leadership and Commitment Element

Strategy	Description
Water-Wise Landscape Design Requirements	Upon City Council approval and adoption, revise the city’s landscape ordinance to limit turf areas in all new landscapes and require low-water-use landscaping in other areas. Other requirements could include minimum soil depths, soil amendments, and turfgrass summer dormancy capability. Turfgrass requires more water than native grasses and low-water-use plants. Reducing the turfgrass area in new landscapes will reduce irrigation water use.
ICI Water-Efficient Equipment Rule	Upon City Council approval and adoption, adopt an ordinance requiring certain water efficiency standards for new and newly-occupied ICI establishments. Example requirements could include repairing all leaks, retrofitting high-flow plumbing fixtures, and other equipment and service requirements, depending on the nature of the business. Collaborate with the city’s Building Inspection Office to verify installation of water efficiency measures prior to occupancy.
Recycled Water Projects	Continue efforts necessary to implement the Cedar Crest Pipeline Extension by 2011 to make recycled water available to the Dallas Zoo and other customers for non-potable uses. Continue development of the White Rock Pipeline Alternative project (which will provide recycled water from the Central Wastewater Treatment Plant (WWTP) to irrigation and industrial customers in the White Rock Creek Corridor), or other projects. Continue efforts necessary to complete the Main Stem Trinity River Pump Station by 2013; this will allow significant indirect reuse for potable purposes, as discussed in Section Error! Reference source not found.

Table ES-3: Recommended Water Conservation Strategies: Education and Outreach Initiatives Element

Strategy	Description
Education & Outreach Initiatives	
Voluntary Twice-Weekly Irrigation Schedule	Through the Public Awareness Campaign, encourage all customers to limit irrigation to a maximum of two days per week from April 1 through October 31. Twice-weekly irrigation will reduce over-watering while also allowing customers to meet plant needs.
ICI Customer Water Audits	Visit an ICI establishment with the company’s engineers or other employees knowledgeable about company water use; review all end uses of water; identify potential water-efficiency improvements and potential costs; directly install small, low-cost devices as appropriate; document the findings; inform the company of applicable DWU water conservation programs; and follow up with the company to track implementation of the recommendations. Complete the ICI customer water audit at no cost to the customer. Make the program available to all ICI customers but target the top ten percent of ICI customers in terms of water use.
ICI Training Programs	<p>Develop, lead, and manage ongoing water efficiency training programs for:</p> <ul style="list-style-type: none"> ▪ ICI facility managers for premise types that use the most water, and ▪ Irrigators, with a focus on EPA WaterSense programs. <p>Topics will include industrial cooling and process, food processing, irrigation management, and leakage control. Bi-monthly or quarterly training programs are recommended. Make the program available to all ICI customers but target the top ten percent of ICI customers in terms of water use.</p> <p>Work with local businesses, green building organizations, and energy utilities to seek their input on the curriculum development and certification process. As facility managers and irrigators become more aware of available water-efficient technologies and methods, they will begin to implement these measures. ICI training programs could increase participation in other water conservation programs.</p>

Table ES-3 Continued: Recommended Water Conservation Strategies: Education and Outreach Initiatives Element

Strategy	Description
ICI Business Partnership Program	<p>Establish an ongoing Business Partnership Task Force or work group for the purpose of engaging the ICI community in DWU's water conservation program, particularly business leaders who represent companies that are top water users. Meet four to six times per year for discussion of water conservation practices, sharing of conservation success stories, and discussion of DWU ICI water conservation programs. Target the top one percent of ICI customers in terms of water use.</p> <p>Increased awareness of the value of ongoing water efficiency practices should lead to water savings for the participating customers.</p>
ICI Hospitality Program	<p>Engage hotels, motels, and restaurants in the city's water conservation program and train hospitality staff on methods to reduce water use and waste. Measures would include water on request, reuse of towels and linens, etc. DWU would provide printed materials to encourage guest participation: table cards, door hangers, pillow cards, etc.</p>

Table ES-4: Recommended Water Conservation Strategies: Rebate and Incentive Programs Element

Strategy	Description
Residential Irrigation System Incentive	<p>Offer a rebate or other incentive worth up to \$200 to single- and multi-family residential customers that retrofit their existing irrigation systems with water-conserving equipment. Qualifying equipment may include:</p> <ul style="list-style-type: none"> ▪ Drip irrigation equipment ▪ Spray heads with greater distribution uniformity ▪ Weather-based irrigation controllers ▪ Other devices <p>Make the program available to all residential customers but target the top twenty-five percent of single- and multi-family residential customers in terms of water use.</p>
ICI Financial Incentives	<p>Implement a site-specific rebate program for ICI customers to promote water-efficient equipment installation and upgrades. Examples could include cooling processes, plumbing fixtures, laundry processing, medical/dental devices, landscape irrigation, rainwater harvesting, etc. Target the top ten percent of large ICI customers for two-thirds or more of the program resources, but use the remainder to target small/medium businesses. Candidates could include office buildings, hotels/motels, restaurants, grocery stores, Laundromats, schools, manufacturers, food processing, and parks/golf courses.</p> <p>Customers propose water-efficiency improvements and project the associated water savings and costs. After review of the proposal, DWU decides whether to fund a portion of the cost (up to an anticipated maximum amount of \$100,000 per customer) for water efficiency measures that meet certain water savings performance standards. The customer installs the approved water-efficiency measures. Upon confirmation of installation, DWU rebates a portion of the measure costs. DWU could also establish financial partnerships with energy utilities and green building organizations.</p> <p>Similar programs operated by Austin Water Utility and San Antonio Water System could serve as models during development of this strategy.</p>
Enhanced Residential Toilet Incentive	<p>Expand the “New Throne for Your Home” program to replace additional existing single- and multi-family residential toilets that use 3.5 gallons per flush or more with high-efficiency toilets (1.28 gallons per flush or less).</p>

Table ES-4 Continued: Recommended Water Conservation Strategies: Rebate and Incentive Programs Element

Strategy	Description
Residential Clothes Washer Incentive	DWU would offer rebates worth up to \$100 for single-family residential customers and worth up to \$250 for multi-family residential customers for replacing older, inefficient clothes washers with water-efficient models (modified energy factor of at least 1.8 and water factor of no more than 7.5). Efficient clothes washers use up to sixty percent less energy and up to forty percent less water than conventional machines.

Recommended DWU Staff Increases

Some of the recommended water conservation strategies require no additional DWU labor (e.g., voluntary twice weekly irrigation schedule).² For others (e.g., residential clothes washer incentive), it is anticipated that DWU will hire a contractor to implement the strategy. The remaining recommended strategies will require increases in DWU staff, as summarized by strategy and fiscal year in Table ES-5.³ In summary, it is recommended that DWU fund and create twenty-nine new full-time equivalents (FTEs) during the five-year implementation period, with sixteen FTEs in the Operations Division, eleven FTEs in the Water Conservation Division, and two FTEs shared between Planning, Financial, and Rate Services; Customer Account Services; and the Distribution Division Meter Section.

Recommended Water Conservation Division Budgets

The recommended water conservation strategies will be implemented by several DWU Divisions, so the associated costs will be included in several Division budgets. A five-year budget for the Water Conservation Division was developed in conjunction with the conservation strategy recommendations (Table ES-6). Existing water conservation programs should continue to be funded at existing levels (adjusted for inflation). Additional funding is recommended for seven new or enhanced water conservation strategies. Recommended Water Conservation Division annual budgets over the next five fiscal years range from about \$5.2 million to \$11.2 million.

The Water Conservation Division budgets in Table ES-6 include operating costs (labor, incentives, etc.) but do not include major capital expenditures for recycled water pipelines or pipeline replacement costs. Budget items for other Divisions are presented in Chapter **Error! Reference source not found.**

² However, some of the recommended measures will require staff time for employees of other city departments. For example, under the recommended ICI water-efficient equipment rule, DWU would collaborate with the Building Inspection Office to verify installation of water efficiency measures prior to occupancy.

³ Although assumptions have been made as to whether DWU will implement the recommended programs using DWU staff or contractors, the recommended budgets in the Updated Strategic Plan are designed to give DWU the flexibility to modify these assumptions as implementation proceeds.

Table ES-5: Recommended DWU Staff Increases

Recommended Water Conservation Strategies ^a	Recommended DWU Staff Increases (FTEs)						Division
	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	Five-Year Total	
City Leadership and Commitment							
Enhanced Real Loss Reduction							
- Field personnel (leak detection)	+2.00	+2.00		+4.00		+8.00	Operations
- Field personnel (leak repair)	+1.00	+3.00	+1.00	+3.00		+8.00	Operations
Enhanced Apparent Loss Reduction							
- Management analyst	+1.00			+1.00		+2.00	Shared ^b
Water-Wise Landscape Design Requirements							
- Plan evaluation, construction compliance			+1.00			+1.00	Water conservation
Education and Outreach Initiatives							
ICI Customer Water Audits							
- Site visits, analysis, reporting	+0.50					+0.50	Water conservation
ICI Training Programs							
- Outreach, development, training	+0.50					+0.50	Water conservation
ICI Hospitality Program							
- Outreach, development, operations	+0.50					+0.50	Water conservation
Rebate and Incentive Programs							
Residential Irrigation System Incentive							
- Site visits, analysis, verification		+0.50		+2.25	+3.00	+5.75	Water conservation
- Clerical				+0.75	+1.25	+2.00	Water conservation
ICI Financial Incentives							
- Clerical	+0.25					+0.25	Water conservation
- Site visits, analysis, verification		+0.25				+0.25	Water conservation
Enhanced Residential Toilet Incentive							
- Site visits, verification		+0.25				+0.25	Water conservation
<i>Water Conservation Division Subtotal</i>	<i>+1.75</i>	<i>+1.00</i>	<i>+1.00</i>	<i>+3.00</i>	<i>+4.25</i>	<i>+11.00</i>	
<i>Operations Division Subtotal</i>	<i>+3.00</i>	<i>+5.00</i>	<i>+1.00</i>	<i>+7.00</i>		<i>+16.00</i>	
<i>Shared^b</i>	<i>+1.00</i>			<i>+1.00</i>		<i>+2.00</i>	
TOTAL	+5.75	+6.00	+2.00	+11.00	+4.25	+29.00	

^a Some recommended water conservation strategies/tasks not shown. Either they require no additional labor or it is anticipated that DWU will hire contractors to execute them.

^b Shared between Planning, Financial, and Rate Services; Customer Account Services; and the Distribution Division Meter Section.

Table ES-6: Recommended Water Conservation Division Budgets by Fiscal Year

Budget Item	Status	Recommended Water Conservation Division Budgets ^a				
		FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15
Salaries and Benefits	Existing	\$608,523	\$622,800	\$637,400	\$652,400	\$667,700
Other Operating Expenses	Existing	\$1,060,263	\$1,085,200	\$1,110,700	\$1,136,800	\$1,163,500
Public Awareness Campaign	Existing	\$1,380,000	\$1,412,400	\$1,445,600	\$1,479,600	\$1,514,400
Minor Plumbing Repair Program	Existing	\$400,000	\$409,400	\$419,000	\$428,900	\$439,000
Environmental Education Initiative	Existing	\$274,000	\$280,400	\$287,000	\$293,700	\$300,600
Pre-Rinse Spray Nozzle Program	Existing	\$290,250	\$297,100	\$304,100	\$311,200	\$318,500
New Throne for Your Home	Existing	\$550,770	\$563,700	\$577,000	\$590,600	\$604,500
Cooling Tower Audits	Existing	\$75,510	\$77,300	\$79,100	\$81,000	\$82,900
<i>Existing Budget Items Subtotal</i>		<i>\$4,639,316</i>	<i>\$4,748,300</i>	<i>\$4,859,900</i>	<i>\$4,974,200</i>	<i>\$5,091,100</i>
ICI Customer Water Audits ^b	Additional	\$0	\$27,500	\$28,100	\$28,800	\$29,500
ICI Training Programs	Additional	\$25,800	\$26,200	\$26,800	\$27,400	\$28,100
ICI Hospitality Program	Additional	\$50,000	\$102,400	\$104,800	\$107,200	\$109,700
Residential Irrigation System Incentive	Additional	\$0	\$42,100	\$94,300	\$695,100	\$1,581,000
ICI Financial Incentives	Additional	\$500,000	\$2,983,200	\$3,023,500	\$3,047,600	\$3,072,200
Enhanced Residential Toilet Incentive ^c	Additional	\$0	\$928,600	\$950,400	\$972,700	\$995,600
Residential Clothes Washer Incentive	Additional	\$0	\$76,600	\$153,300	\$214,000	\$481,900
Next Update to the Strategic Plan	Additional	\$0	\$0	\$0	\$699,100	\$0
<i>Additional Budget Items Subtotal</i>		<i>\$575,800</i>	<i>\$4,186,600</i>	<i>\$4,381,200</i>	<i>\$5,791,900</i>	<i>\$6,298,000</i>
Recommended Total Budget		\$5,215,116	\$8,934,900	\$9,241,100	\$10,766,100	\$11,389,100

^a The existing budget is assumed to increase at an annual inflation rate equal to the historical average inflation rate from 1990 through 2010 (2.35 percent per year). The historical average inflation rate was calculated from the Dallas Federal Reserve Bank trimmed mean personal consumption expenditures inflation rate (Ref. 13).

^b Extension of the Cooling Tower Audit program. Projected additional costs only.

^c Extension of the New Throne for Your Home program. Projected additional costs only.